May 29–June 4 1987 Vol 6 No 21 60p

POPULAR Computing WEEKLY

Forward with the Spectrum Plus 3?

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NEWS DESK

Games consoles: a case of hit and miss

CP/M signed up for Spectrum Plus 3

Compunet launches new multi-user game

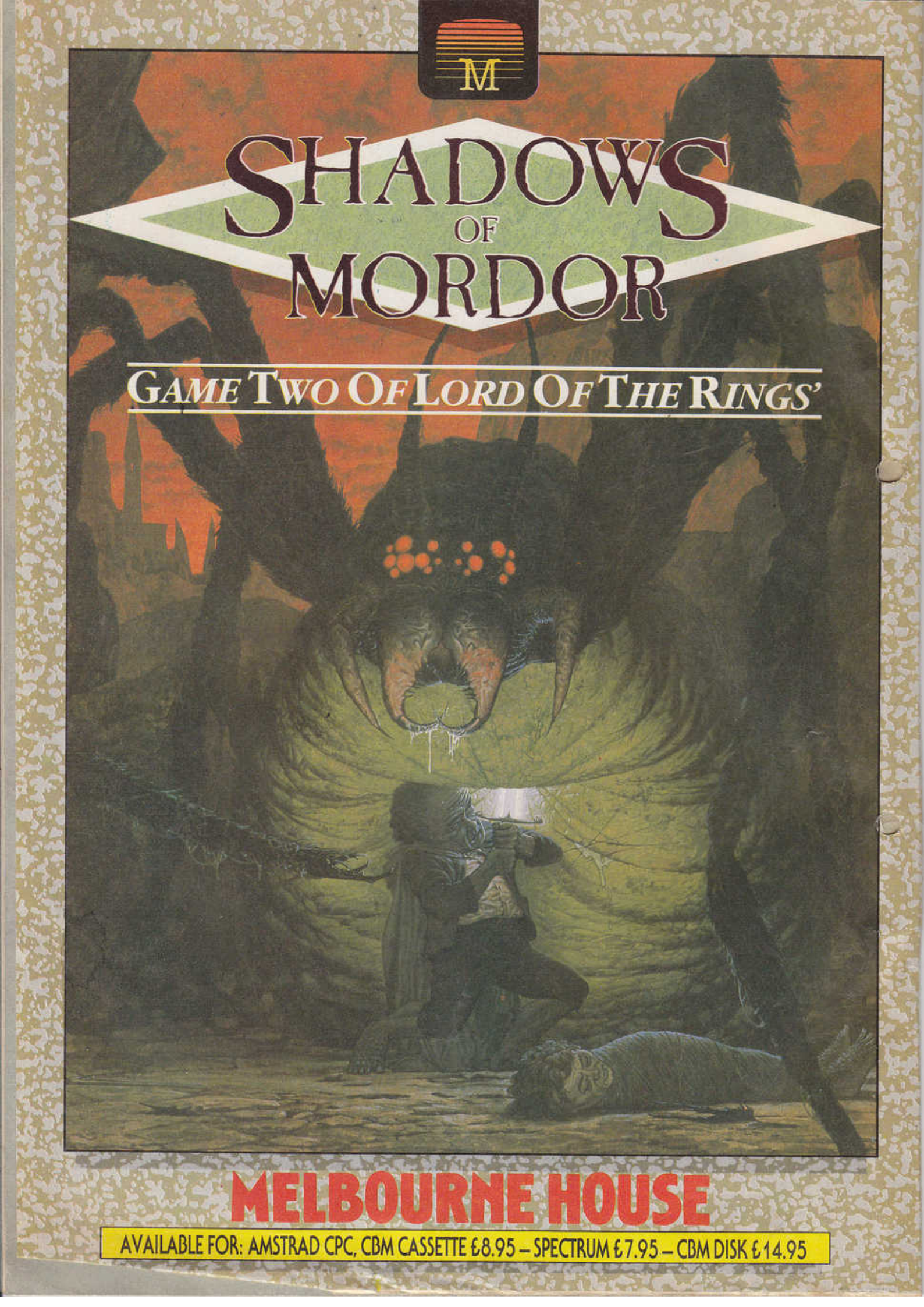
The Pawn spawns Guild of Thieves

Commodore 64 utilities

C compilers

Special offers galore

Spectrum Plus 3


M
SHADOWS OF MORDOR
GAME TWO OF LORD OF THE RINGS'
MELBOURNE HOUSE
AVAILABLE FOR: AMSTRAD CPC, CBM CASSETTE £8.95 – SPECTRUM £7.95 – CBM DISK £14.95

POPULAR Computing WEEKLY

May 29–June 4

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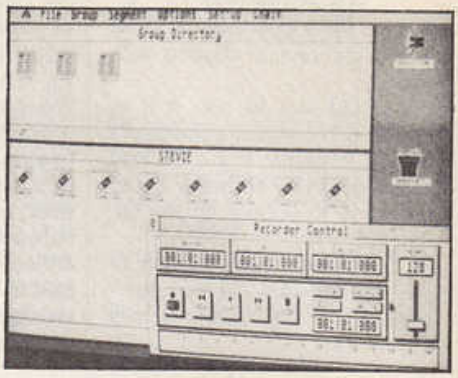

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Editor Christina Erskine **News editor** John Brissenden **Technical editor** Duncan Evans **Production editor** Michelle Beauchamp **Supplements editor** Christopher Jenkins **Supplements designer** Barbora Hajek **Marketing and Advertisement manager** David Osen **Advertisement executives** Jon Beales, Athena Peerman **Classified executive** Susannah King **Editorial secretary** Annmarie O'Dwyer **Credit control manager** Gabriella Piscina **Managing editor** Peter Worlock **Publishing director** Jenny Ireland. **Published by** Sunshine Publications Ltd, 12–13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 296275 Fax 01-439 0681 **Typeset by** Magazine Typesetters, 6 Parnell Court, East Portway, Andover, Hampshire. **Printed by** McCorquodale Magazines, Andover, Hampshire. **Distributed by** S M Distribution, London SW9, Tel 01-274 8611, Telex 261643.
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ABC

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LETTERS

Spectrum to QL possible?

I have seen your May 8 issue with its section dealing with the QL.

I would like to ask if it is possible to connect a Spectrum and QL together in such a way that Spectrum software could be made to appear on the QL screen?

There has been mention of this in previous issues, but I cannot find satisfactory details anywhere.

J B Roadley
Coalville, Leicester

We aren't aware of a functioning Spectrum software emulator for the QL, although it should be theoretically possible.

Where to get Oric Software

Where can I obtain Oric Atmos 48K software?

Can any other computer's software run on my machine; maybe Spectrum, as I hear they are similar makes?

P Appleby
Annesley, Notts

WE Software has, we understand, Oric software in stock. Based in Great Malvern, the phone number is 06845 69059.

Similarities between the Oric and Spectrum are largely confined to looks, age and general capabilities, I'm afraid.

You certainly won't be able to get software for other machines to run on your Oric.

Looking around for a graph pad

I own a 48K Spectrum, but I am planning to get a 128K Spectrum later on.

Do you know where I can get a Graph Pad/Sketch Pad for my Spectrum? I have looked everywhere and I can't find one.

I would like to know if a company has written Cobol for the Spectrum 48K/128K. If so, where can I get it from?

F Charalambous,
Mitcham, Surrey

We can't think of any such products currently available (we're not being very helpful this week, are we?). However, we *think* a Graf Pad was released by a company called British Micro Works some time ago. Over to readers for more assistance.

Welcome to the MUD club

Your readers may be interested to know that a *MUD* meet is being held at the Novotel in Hammersmith after the Commodore show on June 13. Anyone who plays or is interested in *MUD* is welcome to come along.

Tickets can be obtained from me at 16 Trinity Road, Barkingside, Ilford, Essex 1G6 2BQ, priced at £8.50. This includes buffet, hire of suites, personal badge and raffle ticket.

If anyone would like more details (eg, of raffle prizes), they can MBX me on Compunet on HIL1, or Prestel on 219995927, or *Mud 2* (persona Charesh).

You can also ring me on 01-518 1745 between 7pm–10pm most evenings.

Simon Lewis
Ilford

Questions and congratulations

Congratulations on your 5th birthday, but why did you have to change the format? It was much nicer with the chunky lettering.

I have several questions to ask, namely: Is there an analogue to digital converter for the Atari ST or any other type of scientific interface?

I use the *Fast Basic* cartridge, but I can't send any control codes to the printer, which works fine under *1st Word*.

When is the next *ST Update* coming out?

Finally, how about an article on how to produce sound with *Fast Basic* and a few games listings?

Marcus Marr
Aberdeen

No analogue to digital converter that we know of; we've had no problems with *Fast Basic*, and it certainly shouldn't interfere with printer control codes (contact Computer Concepts on 0442 63937 to check this out); the next issue of our sister magazine *ST Update* is due out next week.

We've passed over the suggestion about sound with *Fast Basic* to *STU*, and we on *Popular* welcome listings for the ST, or, indeed, any machine. If your game is good enough, we'll publish it.

Which computer show launched Memotech?

I think that you've boobed somewhat in the Fifth Birthday feature: page 15, May 12, 1983. Surely the Memotech was actually launched at the Earl's Court Computer Fair and not, as you claim, at the London Computer Fair?

I strongly suspect that you've made the all-too-common mistake of getting these two events confused. To recap, the London Computer Fair was run (initially at the North London Poly, later at the Central Hall, Westminster) by LCF Ltd, a wholly-owned subsidiary of the Association of London Computer Clubs, and was a non-profit event.

The Earl's Court Computer Fair (or "the Computer Fair" to give it its official title – see page 17 of the same feature) was run by IPC Magazines Ltd.

There was, of course, considerable anger on the part of the ALCC (whose show had already been running two to three years by 1982) that IPC had usurped their title, especially as IPC's show kept being referred to as the "London" Computer Fair. Perhaps ALCC should have renamed its show "The Original London Computer Fair".

Robert J Baker
London SW4

Further excavation in the Sunshine Towers' vaults has unearthed hitherto unknown manuscripts which, if authenticated, would prove you to be absolutely correct (*Popular*, June 23, 1983).

Wave that Memotech flag!

Without wishing to repeat what Alan Wilson said in his letter to *Popular* in the May 15 issue, I'd like to wave the Memotech flag a bit more.

I admit that in the past the MTX 512 did receive poor publicity and suffered from bad advertising, but I am sure that *Popular* would like to do its best to help keep this branch of the computer world alive. Those computer users not fortunate enough to have access to a '512 don't know what they are missing.

All the popular computers boast about how fast they are at graphics but with the good ol' Z80A revving away under the bonnet at 4MHz, most things that have to be done on machine code on the likes of the C64, can be done in MTX Basic without loss of speed.

Alan Hamilton
Beith, Ayrshire

Who are the real professionals?

I have often been amused by the letters and articles in many magazines, including your own, about the eternal dispute as to whether or not the Amiga is a better system than the Atari.

I do not wish to enter into this debate as I feel that both systems are good, but I personally considered purchasing an Amiga. After a visit to my local dealer, I sent a letter to Commodore to try to answer some technical questions my dealer could not answer. No reply.

A few months later, during a visit to London, I was able to obtain answers to most of my questions. After the release of the Amiga 2000 system, I wanted clarification on the definition of the screen and details of which Commodore monitors could handle the 640 × 512 display resolution which the sales literature from Commodore insists is available on the UK systems.

In spite of the fact that I commented on the lack of response to my first letter (a copy of which was enclosed with the second), I have still never received any reply from Commodore.

I now think I should take a second look at the Atari. After all, who wants to buy a system from a company which offers absolutely no support at all to the end user.

As a contrast, I feel I should congratulate OkiData for its backup. Within 10 days of writing to OKI in Japan over the problem of its OkiMate 20 colour printer on the Amstrad PC, I received a phone call from their UK agent X-DATA, who assured me that it should have a new utility for colour screen dumps within the next few weeks.

A reply from Japan within 10 days for a product costing under £200, and yet when you are prepared to purchase over £2000 of Amiga from Commodore, it does not reply to letters after three months. Who do you think are the professionals?

Robert Lumsden
West Lothian

In defence of the Amiga A500

Why am I so disgusted? It concerns your continued vendetta against the Commodore Amiga and your editorials being so grossly biased towards the Atari ST.

You're doing a great injustice to your readers who are not going to thank you for persuading them to buy an ST after they've seen what the Amiga is capable of.

Why is *Popular* so biased now? Has Atari promised you a lot of two page colour adverts like the one in last week's issue?

The only real argument anyone can put forward is the amount of software 'officially' available for the ST. Well, even this doesn't stick.

Most of the software available for the ST that's listed by Atari is from the USA where, as you know, the Amiga is more popular. All of this software is also available for the Amiga. I've seen literally thousands of pieces of software for the Amiga.

Jason Hattrell
Woodhall Spa, Lincs

What about the software?

John Brissenden in News Analysis, May 15, fails to mention the vast superiority of the Amiga's graphics and sound facilities.

He fails to mention the Amiga's sensible software standards allowing easy porting of data between different manufacturers' packages.

He fails to mention the vast superiority of the operating system software itself over TOS.

Finally, he presents his price comparisons in a very biased way. A price list I have received dated April 1987 quotes an Amiga 500 plus colour monitor at £799 plus VAT: £918.85. Only about £100 more than the comparable Atari offering mentioned.

W Plummer
Hemel Hempstead

An all-time classic

The all-time classic is paragraph 10 (News Analysis, May 15), "The STFM and the A500 are, of course, similar in many ways". The only similarities are that they both use a Motorola 68000 and come with 512K of Ram! They do not use the same disc drives, operating systems, support hardware, peripherals, software. Whether this is a good or bad point on each machine is what should have appeared in the review.

Geoff Hatto
Farnham, Surrey
(Letters edited for length)

The editor replies

Let's set a few things straight:

● John Brissenden's piece was never intended to be, nor did it claim to be, a review of either the Atari ST or the Commodore Amiga.

● John Brissenden owns neither an ST nor an Amiga.

● Neither John, nor *Popular Computing Weekly*, has any axe to grind against Commodore, nor a brief to promote the ST.

● We all had a good laugh at the idea that Atari is showering anyone with gifts. It is actually Commodore that is offering journalist's discounts on the Amiga.

● Nobody here knew that Atari would be booking advertising in *Popular* at the time the article was written.

● A complete, usable system will set you back £825 for an Amiga, £699 for an ST. If you have a colour TV, the entry price for the ST comes down to £399. To those filthy-rich Amiga owners for whom £126 is a sum beneath notice, we can suggest a great many charitable institutions who would take a different view.

● By our best estimate there are approximately 150 software packages available now for the Amiga in Britain. The ST can boast a software library at least twice that size and the ST software base is growing quicker than the Amiga's.

● Many opinions expressed in the article were not John's but those of two of Britain's leading software companies.

● Two minor errors of fact did creep into the article. Yes, the Amiga can accept more than two external disk drives. Yes, the Amiga's memory can be expanded up to 8½Mb.

The point of the article was not to discuss the technical pros and cons of these two systems (which are comparable in the eyes of most computer-buyers, regardless of loud protestations to the contrary). The point was to discuss which machine looked likely to sell in the UK.

I see no reason to argue with John's conclusion that the ST looks like the winner.

Peter Worlock
Managing Editor

We're sorry but Popular Computing Weekly cannot guarantee to reply to *all* letters requesting a personal answer. It helps us enormously if readers are prepared to have general queries answered on these pages, so, if possible, please do not send SAEs.

Preparing the attack

In Game One of the *Colossus* chess tournament, the readers, playing black, have chosen the move Qd5–b5.

This week, *Colossus* did not attack the black queen again, but is preparing to do so, with its selected move Pb2–b3.

Make your move

What do you think would be the best way to head off this proposed attack?

Send your suggested readers' move to *either* Inter-Mediates (*Popular* Chess), Freepost, Sawbridgeworth, Herts CM21 9YA (no stamp needed), *or Popular* Chess, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp). Please note that Freepost is slower than the normal service.

All entries must reach either address by June 3.

Prizes

A British Museum reproduction Arran chess set will go to the person suggesting the most accepted moves at the end of the game. Five copies of *Colossus Chess 4* (available for most machines) will go to the most consistent entrants.

Game One

The moves so far:

1	Pe2–e4	Pc7–c5
2	Ng1–f3	Nb8–c6
3	Bf1–c4	Ng8–f6
4	Nf3–g5	Pd7–d5
5	Pe4xd5	Nc6–a5
6	Bc4–b5+	Pc7–c6
7	Pd5xc6	Pb7xc6
8	Bb5–e2	Ph7–h6
9	Ng5–f3	Pe5–e4
10	Nf3–e5	Bf8–d6
11	Pd2–d4	Pe4–d3 (en passant)
12	Ne5xd3	Qd8–c7
13	Nb1–c3	Ke8–g8 o–o
14	Pf2–f4	Qc7–b6
15	Nc3–a4	Qb6–d4
16	Pc2–c3	Qd4–d5
17	Ke1–g1 (o–o)	Rf8–e8
18	Be2–f3	Qd5–b5
19	Pb2–b3	?

Atari set for High St summer games battle

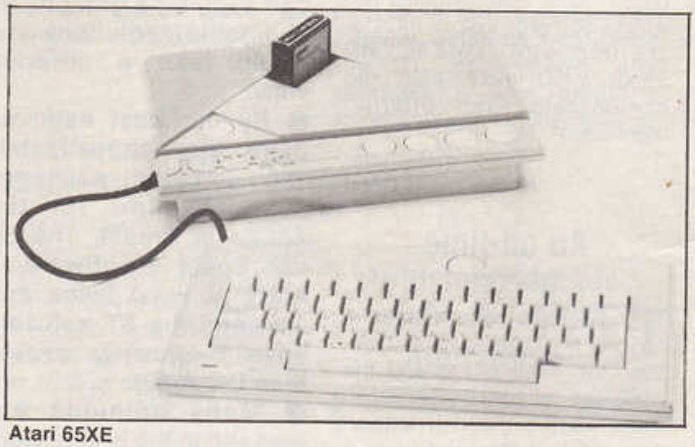
ATARI is set fair for a three-way games console battle with Nintendo and Sega this summer.

The Atari XE games system, including keyboard and cassette, is receiving very heavy advance orders including a $23 million order from Toys 'R' Us in the United States.

An Atari spokesman was unable to give precise details on the UK position, but there have been rumours of orders worth £220,000 for the new system.

"Atari is in discussion with all the major high street retailers," said the spokesman. It is known that Atari have been negotiating with W H Smith for several months over a retail contract for the system (see *Popular Computing Weekly*, March 13).

WHS recently signed a deal on the 520STFM, which will be in 50 of the company's larger stores from the beginning of June.



Atari 65XE

Meanwhile the Nintendo console system will finally be available from Mattel from the first two weeks of June.

The entire system – the Deluxe – features the console, the robot Rob, and a zapper gun, as well as two free games: *Duck Hunt* and *Gyromite*.

Prices are undecided yet, but are likely to be as follows: Deluxe system £159, console £100, Rob £45, zapper gun £20.

There will be about 27 games cartridges available, ranging from £22 to £28.

The Nintendo system will be available through a wide range of national retail outlets, including Argos, Toys 'R' Us, Woolworth, Fenwick, and Littlewoods, Freemans, Grattan and Empire Stores mail order.

The two machines are likely to be in open competition without any immediate threat from the Sega machine.

This was previously due to be distributed by Ariolasoft. That contract has now laped, and discussions are understood to be taking place with a number of companies. But for the next few months at least, the Sega has no UK distribution deal.

CBM sets up A500 network

COMMODORE has set up a distribution network for the Amiga A500 to ensure that the machine is available in independent dealers throughout the UK and Ireland after its launch in two weeks' time.

As well as Commodore's regular independent distributors Lightning, Zappo and Hugh Symons, SDL UK will also be taking on the A500 to distribute to its countrywide network of dealers.

SDL has already been handling the A1000, and will take on the A2000 as well. It also has a software catalogue, mainly US imports, to distribute to retail outlets.

Commodore hopes that dealers will sell the machine not only as a home computer (Commodore stressed the A500's target market as "upgraders" at its preview in March) but as a business machine, making use of the Amiga's special capabilities in the graphics and multitasking fields.

"While Commodore has positioned it as a home computer, we recognise its potential for business use," said Tom Hart, Commodore's UK consumer sales manager.

The A500 will also be available through high street multiples. A spokesman said, "We cannot comment on individual contracts, but I can confirm that arrangements have been made to sell through a number of multiple stores."

EOA plans not yet AOK

ELECTRONIC Arts' UK plans are suffering long delays.

The US-based company set up a British division in April (see *Popular Computing Weekly*, March 27), but a spokesman said last week that the company wouldn't be ready to announce details of its UK operations for "a matter of months".

The spokesman put the delay down to negotiations over premises, and said it would be "premature" to make any announcement before final premises were arranged. EOA – as the UK offshoot is called – is currently based in west London.

When the UK office was opened, plans were announced to manufacture *Skyfox*, *Mule*, and the *Deluxe* range of graphics programs in the UK.

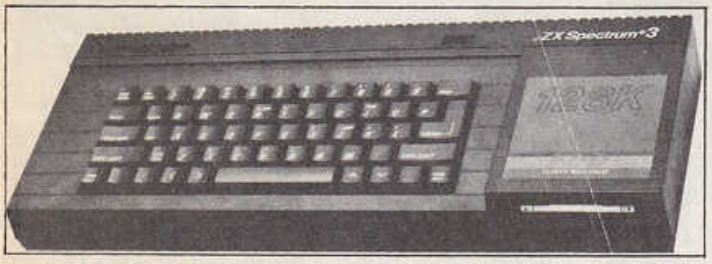
Amstrad and Spectrum conversions of existing and forthcoming programs are also expected at some date.

The company's distribution contract with Ariolasoft expired at the end of April, and the current hiatus leaves EOA without a UK distributor.

PLUS 3 WILL GET CP/M

LOCOMOTIVE Software has confirmed that it will be making a full-blown version of CP/M available on the Spectrum Plus 3.

The Plus 3, which was unveiled last week at Amstrad's Brown Goods show (see *Popular Computing Weekly*, May 22), has a built-in disc drive which takes 3 inch discs, the same as Amstrad's CPC 6128 and PCW 8256/8512.



Locomotive, which wrote the disc operating system for the Plus 3, has written in file compatibility with Amstrad CP/M discs for the machine.

Now, according to Howard Fisher, Locomotive's director of marketing, the company and Digital Research, the original publisher of the CP/M operating systems, has come to an agreement whereby a full CP/M implementation can be produced on the new Spectrum.

"By mid-July, when the Plus 3 is launched, CP/M should be up running on it," said Fisher.

Locomotive's own Mallard Basic, which is currently packaged with the Amstrad PCW machines, will also be made available for the Plus 3. This Basic within the machine is essentially a version of the original Sinclair Basic.

Later this year, Amstrad is also expected to launch the PCW9512 and PC2512 machines. The new PCW is believed to substitute a daisy wheel printer for the current dot-matrix. The PC2512 will be an IBM PC-AT clone, using the Intel 80286 processor.

● *For more details and a preview of the Spectrum Plus 3, turn to page 16.*

Schools face crisis over BBC spare parts

ACORN Computers has informed the Department of Education that it will stop stocking spare parts for the BBC machines in 1991.

Acorn's policy is to keep parts for up to five years after the manufacture of the particular machine has ceased, so the deadline appears to have been stretched. Production of the BBC stopped in 1985.

There are about 250,000 BBCs and BBC Pluses in schools throughout the UK, and educational establishments cannot afford to update their micro technology.

Consequently, almost all the BBCs placed in schools, four years ago or so, are still in use.

The news has led to two educational authorities, Bedfordshire and Kent, already beginning to stockpile old BBCs to use for parts when they become difficult to obtain.

SOFTWARE HOTLINES

Starfox from **Ariolasoft** sounds as though it ought to be direct follow-up to Electronic Arts' *Skyfox* and *Arctic Fox*.

"Not exactly," says Ariolasoft. After all, the contract between Ariolasoft and Electronic Arts expired in April when EA set up its UK division to go it alone (see separate item).

Seems that this time the coding has been done by **Realtime,** software heroes of Spectrum *Starglider* fame.

Appearing on Spectrum, Commodore 64 and Amstrad, *Starfox* features rotating, shaded 3D graphics as you whizz around the galaxies in search of eight planets, blasting the baddies as you go. Expect to see it on the streets in June.

The travesty of *A View to a Kill* notwithstanding, **Domark** is licensed to convert again. The company has got its mitts on the rights to *The Living Daylights*, the forthcoming James Bond romp.

This time it could be big. A new James Bond (pictured below: Timothy Dalton). Furthermore, a James Bond who will concentrate on all-out action rather than romantic toing and fro-ing if the newspapers are to be believed.

Megabucks spent on the movie, and considering the success of Domark's last release *Trivial Pursuit*, megabucks are certainly there to be spent on the game.

Oh yes, the game. There'll be ten levels of action with a 'select your weapon' screen in between. That's cue Q to you.

Then it's off round the world with 007, kicking off in Gibraltar.

If all this sounds familiar, then don't blame Domark entirely. I haven't been able to tell one Bond film from t'other since *Diamonds are Forever*.

The Living Daylights is due for release on almost any machine you care to think of in July. The film of the same name goes on general release in July as well.

If you thought the adventure scene was looking a bit anaemic these days, **CRL** is out to either change or reinforce all that with the announcement of *Frankenstein,* sequel to *Dracula*.

Dracula, you'll remember, came with the neat publicity stunt of a 15 certificate from the British Board of Film Censors.

Well, they've done it again. *Frankenstein* too is going to get such a rating. And that's not all. The programmers from that downright peculiar software house **St Bride's** are writing a game for CRL based on Jack the Ripper. They're desperately trying for so much blood and guts as to rate an 18 sticker.

The only possible reason for doing this is to incite the under 18s into scoring points off the shop by successfully getting away with buying a copy. And if *Dracula* is anything to go by, I think they'll be disappointed by the gore content.

NEXT WEEK

SPECIAL supplement

The BBC

The BBC may be a veteran computer, but there's no shortage of new products being released for the machine.

In our supplement, we'll be looking at the Quest mouse and paint software from Watford Electronics, more application programs from Computer Concepts in the shape of *Inter Chart* and *Spellmaster* and desktop utilities from DMS.

Then we've got music software from Hybrid Technology and Peartree, and all the latest games, from Tynesoft, Micropower and Bubble Bus, to name but a few.

First steps in machine code

Kenn Garroch begins a new programming series, with guidelines on how to get started with machine code.

Compunet

Graham Edkins brings you another of his regular updates on the Commodore network.

General election

We can't let the part-leaders get away with all the limelight, so for those of you not already bored stiff with the forthcoming event, we're muscling in on the act.

General Election is a board game style listing for the Spectrum. The object? To get to Number Ten, of course.

Readers' survey

Have your say in *Popular* by filling out our questionnaire and letting us know what you think.

Multi-user game for Compunet

COMPUNET will be introducing a new multi-user space game this July, once its new mainframe comes on-line.

Called *Federation II*, the game can handle up to 128 players at once, with up to 2,500 locations depending on the number of players.

In true adventure tradition, *Federation II* will offer hundreds of locations to explore, puzzles to solve and treasures to find.

Players are also given the opportunity to build up trading empires in the galaxy's commodity markets, run the economy of their own planet or engage in political plots or interplanetary warfare.

In way of introduction, a free on-line demo of *Federation II* is available now to those with any teletype software and a modem. The demo is a single-user version running on a PC, with 130 locations and a limited vocabulary and action set.

There will also be a Federation bulletin board for your messages and comments.

The hours of operation for the demo are between 8.00pm and 8.00am during the week, and all day over the weekend. (No protocol, 8 data bits and one stop bit, 300/300, 1200/1200 full duplex or 2400/2400. Ring 01-965 2989.)

Compunet plans to open *Federation II* to all modem owners on any micro in the autumn.

£50 cut for Amiga Superbase

THE Amiga version of *Superbase Personal* is to be slashed in price by £50. Publisher Precision Software announced the move in a bid to net new customers following next month's launch of the A500.

Precision claims it has sold 13,000 units of the relational database package in its Amiga version, with healthy sales in PC and ST versions as well.

Now reduced from £149.95 to £99.95 inclusive, *Superbase Personal* will be available at the Commodore Show, where the A500 will make its public debut.

Tai-pan comes out of Ocean

OCEAN releases one of its most ambitious projects to date next month: *Tai-Pan*, a tale of buccaneering off the Chinese coast, based on the James Clavell novel.

Ocean plans to release *Tai-Pan*, which has been in development for the past nine months, over a wide spread of machines, but the Atari ST and Spectrum versions are due out first, in June.

You play the hero Dirk Struan, aiming to get rich by trading commodities in the Far East. The game includes trading elements, arcade adventure sections a fair amount of blasting.

Tai-Pan will cost £7.95 on Spectrum, £19.95 on the ST. The later Commodore, Amstrad and MSX versions will cost £8.95 tape, £12.95 C64 disc, £14.95 on Amstrad disc.

Spectrum

Atari ST

This superb arcade game is based on the popular multiple-choice adventure series by Mark Smith and Jamie Thomson, published by Sphere Books. Set in 3033 AD you are a special agent, codename **FALCON**, and your mission is to halt the tracks of a renegade Time Lord who is threatening to disrupt future history by his ruthless meddling in the past. Your time machine "**Falcon's Wing**" takes you in your quest to ensure the timelines of the future remain uncorrupted!

Please send me **FALCON: The Renegade Lord**

Commodore **64/128** ☐ Spectrum **48/128** ☐

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LEGAL, DECENT

The controversy over Sir Clive Sinclair's Z88 portable is a typical example of the terrible record of the computer industry when it comes to complaints about advertising. John Brissenden investigates.

IN just five years the computer industry has moved from nowhere in the records of the Advertising Standards Authority to number three in the 'most complained about' charts!

The ASA 'top three' for 1986 contains the stalwarts Holidays and Cars at numbers one and two (Cars slipping from the number one slot).

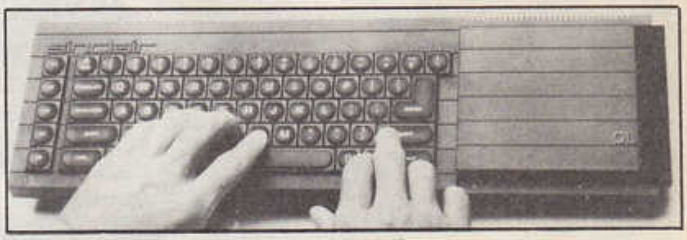
There were 121 complaints lodged against holiday advertisements, 115 against car ads, and then comes computers, with 85 protests.

The majority of advertisments causing complaint have been those for hardware and peripherals and the claims they make for the products, although software release dates have made a recent appearance.

To cite just a few of the complaints lodged with the Advertising Standards Authority over the last two years: Acorn went through a bad patch a couple of years back over claims of compatibility between the Compact and BBC Bs, and claims about the size of Ram in the BBC.

Amstrad has also run into problems recently over advertising for the PC1512s. A press advertisement stated that the PC "uses all the same famous software that the IBN PC can use". The complainant questioned the validity of this on the grounds that the PC1512s do not run Basics under PC DOS.

Amstrad has also fallen foul of insufficiently stressing its quoted price of £450 was exclusive of VAT in its "How much computer can you buy for £450?" Both complaints were upheld.



THE SINCLAIR SYNDROME: The QL . . .

However, both these examples pale into insignificance when compared with the record of one Sir Clive Sinclair. The Spectrum QL, and the Sinclair C5 electric vehicle in abundance, have all cropped up in ASA reports from 1984 onwards.

Other appearances on the ASA 'black list' have included Data Technologies (over a non-available upgrade to the BBC), Viglen Computer Supplies, Toshiba (overstating comparison of sprite capabilities in the MSX with other machines), Micro Peripherals (estimate of print speeds), and Dixons.

Nine complaints about computer companies, or computer repair services, appear in the ASA's latest quarterly report alone.

We have seen in recent months a recurrence of the Sinclair syndrome. Sir Clive has once again advertised a product – the Z88 portable – which is so far unforthcoming. The ASA remarked on the fact at the time that there was no delivery date mentioned, and Sir Clive was asked to stop advertising it.

What is remarkable is that anticipating release dates, and missing them, is signally unremarkable nowadays. Indeed the industry as a whole has become notorious for broken promises, and unfulfilled orders.

To such an extent that the most profitable company in the world, IBM, can "launch" its new series of personal computers virtually a year before it, and its new operating system, will be on sale. Nobody was that surprised, and the most adverse rection was that some commentators thought it 'a mistake' and 'a shame'.

However, you could say this is a 'no win' situation. Amstrad made not a few people disgruntled 18 months back when the CPC6128 appeared in the shops a week or so before the machine was launched. The disgruntled, you'll remember (particularly if you were one of them) were mainly CPC664 owners.

In 1984, the Authority's Annual Report showed that it had received 92 complaints about computers or related products. This compared with 89 about financial services (banks, building societies, etc.) and a staggering 151 about the motor trade.

By 1985/6, the figures were: computers 85, financial 52 and motors 115, as quoted above. In other words, among the top

AND HONEST?

three or four industries for complaints about advertising, the computer industry has zoomed in from nowhere.

It is also worth noting that the financial services market and car industry are considerably larger than computers.

The authority is obviously well aware of this state of affairs, and has conducted some limited research into it. In its Case Report 144, dated 15 April 1987, the ASA reported:

"We asked a random selection of (computer software) advertisers to prove to us that they were able to supply the goods they advertised. We found that approximately a third of the advertisers we contacted admitted to having current problems . . . which affected their ability to supply the products they had advertised."

Back in 1984, the ASA was wringing its hands over the issue, trying to suggest reasons for the problems connected with the comuter industry.

". . . the problem is the . . . outcome of the fast and furious growth of the market and the chaos that has attended it . . . Today's advertisers range from the large and well known computer manufacturers and marketers to the bright lad who devises saleable programmes (sic) . . .

. . . ."The ASA Cases Officer who has dealt with a number of the complaints about computer advertising, regards much software and peripherals development as a 'cottage industry'."

So the best explanation appeared to be something akin to the 'back bedroom' syndrome: starts off happily as small one-person business, expands very fast, subsequently programmer/electronics enthusiast does not have experience of running a growing business.

This doesn't really stand close attention. The description barely fits any of the examples quoted above, and the number of computer companies still in the hands of the 'back bedroom' individual has shrunk to a very small proportion of the whole.

More likely is the first part of the extract. New products to complement/enhance the current stock are always on the go, they need to be released before someone else gets in first, and so the expected time of arrival gets more and more optimistic.

This is true of software release dates, which have recently attracted the ASA's attention, after a considerable amount of confusion last year, with several titles advertised before being ready for release.

Earlier this year, the authority contacted a number of software advertisers and found that around a third had problems with supplying products by the time advertised.

The authority "requested them to make more vigorous efforts".

This brings us to one of the main criticisms, or drawbacks, or stumbling blocks, or assets (depending on your point of view) of the ASA. It has no legal power to enforce its conclusions. It can advise, chide, throw out or uphold complaints.

It can pronounce companies guilty of breaking the Code of Advertising Practice, and can seek assurances from the advertiser concerned that the matter will be rectified and won't occur again, but, so far, computers – and yes, companies involved in cars, holidays and financial services – are still black sheep.

An ASA spokeswoman gave her thoughts on possible legal measures.

"The law takes years to operate, doesn't it? Besides which new industries like the computer industry defeat them, and so the law has to be updated."

A further advisory measure, the Directive on Misleading Advertising, is currently being worked on by the Office of Fair Trading and the Department of Trade and Industry, in conjunction with the EEC.

But the General Election has put that back by months.

So, for the moment, it is up to customers to report complaints to the ASA, and to those responsible for accepting advertisements to ensure, as far as possible, that the advertisement is reliable before being accepted for publication or broadcast.

. . . and the Z88 were both advertised before they were available.

Sign of the times for the Amstrad PCW

Tony Kendle reviews a new type of desktop publishing package especially for use on signs, posters and other advertising-type things.

Over the last year there has been a boom in the number of desktop publishing programs of varying sophistication.

In most cases, 'print quality' pages are really only possible with the use of laser printers way beyond the pocket of most micro users. But even the most crude DTP programs and cheap dot matrix printers have together proven themselves to be invaluable for producing fanzines, newsletters, posters and signs.

Signwriter is a simple text font and graphics printer that is capable of producing signs, posters, letter headings, calendars, tickets and, to a limited extent, newsletter pages.

Text can be centred, justified or flush with the left and right margins, but beyond that the program provides almost no formatting options such as tabs or columns. Nor can it import text from word processors unless this is first surrounded by some rather complex internal control numbers designating print size, etc.

However, the program is really an extremely clever piece of work that allows the user to, almost effortlessly, produce output that is completely flexible in size.

It works by defining the outline of each character in terms of a complex of linked curves and lines rather than as a matrix of dots; the technical term is a vector design. The outline that is so determined can be then mathematically scaled to any size, in millimetre steps, and the printout is automatically calculated and adjusted to maintain the highest possible resolution.

This method is rather more demanding than, say, with *AMX Pagemaker*, but it is possible to produce quite complex type styles, graphics, logos, etc, and to prove it there is a file of animal pictures.

There were six font files provided with the demo package (although one provides just scientific and foreign characters) and another four are close to release. All extra fonts cost just £5 plus the cost of a disc.

Once designed, different fonts can be merged together. Such hybrid fonts can then be used to produce more complex output with possibly several apparent changes in type style across one line. The only real limitation is the complexity of the individual characters, and the number of characters in the line, which can in extremis exceed the processing power of your computer. In this respect PC users can be much more adventurous than those with either a BBC or PCW.

Entering the text of your 'sign' is a very easy process. You can define maximum height of each textline, the gaps between the lines, the spacing between individual letters, the sign width, and so on. Blocks, boxes and lines can be added for a completely professional output.

The sign text can be orientated horizontally or vertically on the page. Photo reduction of the output improves quality.

It is not possible to view a graphics representation of the resulting sign before printing, but a fast draft mode print is provided for dummy runs to allow final adjustments.

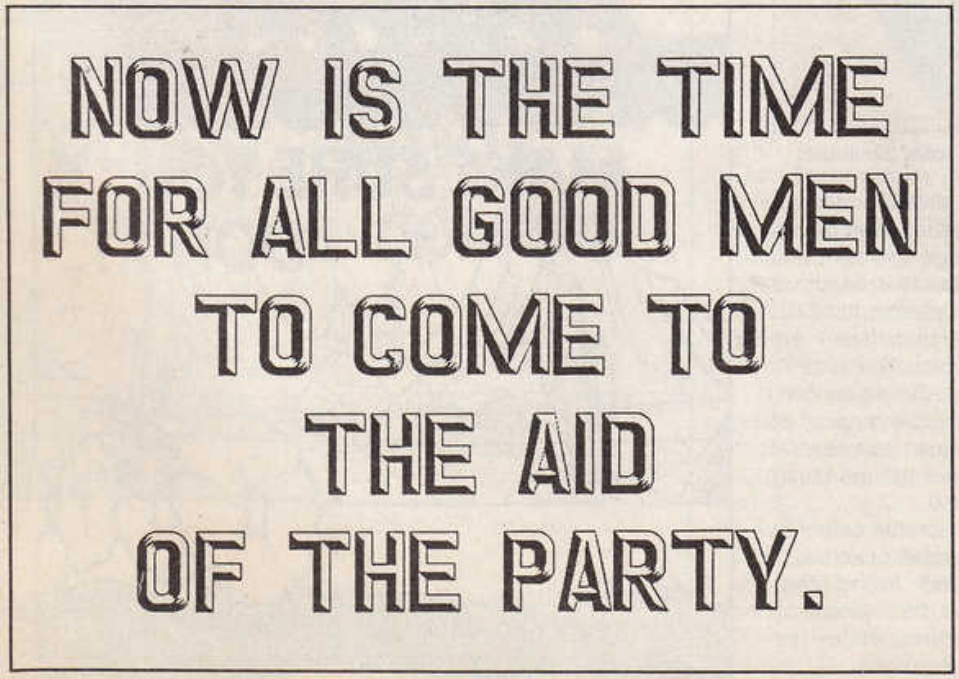
As well as dot matrix and laser printers, *Signwriter* is being adapted to drive plotters and even metal cutters. Many useful features are included in the program, such as the ability to reverse a sign so that it can be used to produce transfers for T-shirts and to add sequential numbers to tickets.

The PCW version only supports the supplied printer, and works much more easily on a machine with expanded memory or two disc drives, but is perfectly usable on the normal 8256 if you do not mind a little disc shuffling.

The graphics display for the font design is particularly slow on the PCW, which is attributed to the fact that the Amstrad video display is not documented, forcing the programmers to use the creakingly slow GSX routines.

Wight Scientific's documentation is entertaining, to say the least – *Signwriter* came with a positive fistful of updates and explanatory leaflets. The program is undergoing constant revision and purchasers are entitled to claim one upgrade free and subsequent ones cost £5.

I was highly impressed with *Signwriter*, and even more so with the intelligent, way it was presented and documented.



Not a party political message, but a screen dump from *Signwriter*.

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(These figures do not allow for searching)

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A trio for your Commodore

Chris Jenkins reviews three new packages for the Commodore 64, including *Xper*, one of the new breed of "Knowledge-based expert systems."

"Knowledge-based expert systems" are as much a current fad as, say, desktop publishing. In effect, the concept involves transferring the knowledge of an expert on to a database program, which can respond to questioning with meaningful answers.

While a database can only retrieve facts, the function of an expert system is also to derive new knowledge from the facts provided. For instance, quoting from one of the examples included on the disc, a conventional list of African felines – tiger, lion, jaguar, puma – may well contain details about their environment and habits, which can be accessed and sorted. Only an expert system, though, can deduce by comparison that "all tree-climbing African felines have retractile claws".

What you can get out of *Xper*, a 1984 vintage now repackaged by Abacus Software, depends on what you put into it, as with all similar systems.

The Editor section allows the creation of lists of objects (tiger, lion, jaguar), features (fur, habitat) and attributes (stripes, breathing underwater). The enquirer then allows you to cross-question the database to check whether the system makes sense.

While the defined knowledge base can be illustrated graphically as a grid, more useful is the ability to search out objects by defining their attributes; for example, you can work through the enquiry routine, which displays counters of the question number, number of remaining features left to interrogate, and number of objects left not eliminated.

Given enough information about markings, size, weight, and habitat, for instance, *Xper* can work out that the mottled, six foot, 100 kilo plains-dwelling feline which just bit your foot off was a cheetah.

Xper can produce unique solutions, lists of solutions, or deduce that there is no solution to a given problem; according, of course, to whether you entered the correct information in the first place. If an attribute is unknown, it can be entered as such; you can also use "father-son" attributes, which bring up sub-menus in response to certain answers to the main attribute section.

Also available from Abacus in a new box is *Cadpak 64*, another 1984 oldie. This one has not stood the test of time so well.

Your first shock will be discovering that this disc-based package can be controlled only with a light pen (£12.95 extra) or cursor keys. Joystick? No way. Mouse? You've got to be joking!

The next shock to the system is the printer installation routine. One would expect a simple menu, a choice of printers, and on with the design work. Not so. In order to install your printer, you have to go through a routine which is as harrowing as a visit from the Spanish Inquisition.

Using the SIZE routine, the program prompts you to select your printer and interface type from a wide range, then proceeds to print out two boxes, the X and Y dimensions of which you have to measure – like, with a ruler, man – and enter into the program. This took a staggering 20 minutes on my MPS-801.

Having set up the printer, you can move through the main menu to the drawing screen, and things get better. Here it's possible to enter points either by typing in co-ordinates, or by positioning them on the screen with cursor or light-pen. Positions can be absolute, or relative to the last point.

Lines can also be drawn continuously, vertically, horizontally, parallel to last, at right angles or as rays from a central point.

While *Cadpak* has many of the attributes of a conventional drawing package, it lacks the extra touches like definable brushes and pens, colour cycling, airbrush shapes and so on. As a CAD package, it lacks any attempt to introduce 3-D effects, or the ability to overlay designs. In other words, it's showing its age.

Chartpak is similarly unwieldly; in order to load and print out a bar chart, example, I had to perform around 30 keystrokes; selecting DATA FILES from the main menu, defining the file-type, selecting data sets, loading specification files, setting the disc and printer device numbers, and so on.

Graphs are produced by entering numerical data, either in one- or two-dimensional arrays. Data from *Multiplan*, *CalcResult* and *BusiCalc* can also be used.

Labels, base values, divisions, and chart types can also be defined and edited; there are seven sorts of charts available, including pie, bar and comparison types.

Suffice it to say that while *Chartpak-64* can produce some very complex and professional-looking results, rivals such as Database's *Mini Office* are far easier to use and offer enough facilities for most non-professional computer users.

Programs *Cadpak-64*, *Chartpak*, *Xper*.
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Xper: **can respond with meaningful answers.**

PLUS THREE, MINUS TAPE

Chris Jenkins takes an advance look at the new Spectrum Plus 3 – this time with a built-in disc drive.

Five years on, and at last the Spectrum gets what it really needed in the first place; an efficient, standard, built-in mass storage unit. The Spectrum Plus 3 has been unveiled, offering (yet another) new lease of life to a perennial favourite.

Sir Clive Sinclair's alternative to cassette, the notorious Microdrive, was never really in the running as a serious storage option. Based on unreliable floppy-tape cartridges, incompatible with any other operating system known to mankind, it failed to establish the Spectrum in any real sense as a "serious" machine.

While excellent alternatives like the Opus Discovery made some headway, without an official manufacturers' standard for disc storage, the software revolution required could never happen.

It took an Alan Sugar to make the obvious step of bolting Amstrad's disc system to Sinclair's computer, creating a machine which – if the price was right – might revitalise the UK's 6-bit market.

The Sinclair ZX Spectrum Plus 3 128K, to give it its full title, contains a few surprises. But it's enough that the final step has been taken, and the built-in disc drive can now prompt a change in attitude toward Spectrum software.

Completely redesigned internally, externally the machine looks very much as one might have imagined; the keyboard remains the same, a 58-key full-travel unit with only the major Sinclair Basic functions – LOAD, RUN, CODE – marked in addition to the querty symbols.

To the right, replacing the Plus 2's cassette deck, is an Amstrad-type 3 inch disc drive. The case is finished in matt black, and is slightly deeper and chunkier than that of the Plus 2. The power-on light remains between the keyboard and the drive, while the drive itself features an operating light and disc eject button.

"The Sinclair ZX Spectrum Plus 3 128k, to give it its full title, contains few surprises. But it is enough that the final step has been taken, and the built-in disc drive can change the attitude to Spectrum software."

Some major changes are found in the line-up of ports at the rear of the machine. A Centronics compatible parallel printer port has been added, fully supported from the new Plus 3 Basic. For the first time the Spectrum can be connected directly to quality printers without special interfaces or non-standard cables.

In addition, the rear of the machine boasts a UHF output for TVs; RS-232/ "Midi" port; external power supply socket; auxiliary disc interface; RGB output; audio out/cassette in port; and the standard expansion I/O connector. The two Amstrad SJS-1 joystick ports and the reset switch are to the left of the machine; there's still no on/off switch.

The Plus 3, then, offers the convenience of a built-in disc drive; can be connected to extra disc drives and a wide range of printers; has a proper keyboard, 128K memory and the improved Basic and sound facilities of the Plus 2, and can still be used with tape software. It begins to sound suspiciously like a good machine.

Most important for the potential buyer, of course, are the capabililties of the disc drive. It's a single-sided 3 inch device using the 40 track, nine sector, 512 bytes per sector standard Amstrad discs; total storage, then, to save you the calculation, is around 350K per disc.

Although the disc operating system is CP/M compatible, it doesn't appear likely that CP/M programs can be run on the Plus 3. It's more the case that it is possible to read data files generated with other CP/M machines, such as the Amstrad PCW; useful enough in itself.

"Most important for the potential buyer, of course, are the capabilities of the disc drive. It's a single-sided, 3-inch device using the standard Amstrad discs."

Obviously, Sinclair Basic (now Plus 3 Basic) and the Plus 3's operating system have had to be revised to take account of the disc system. Most old Basic programs should run without modification.

On powering up, the screen now displays the copyright notice "C 1982, 1986, 1987 Amstrad PLC; Drives A; and M; available"; and four options; LOADER, Plus 3 Basic,

Amstrad's Spectrum Plus 3 with built-in 3-inch disc drive

Calculator and 48 Basic.

Default, then, is disc loading, which can be performed from the built-in drive, auxiliary drive, or the voltatile Ram disc area. Loading from tape can now only be performed by going into Basic.

The question remains, what will be offered in the way of software? The initial package consists of six expanded Ocean games: *Supertest 1*, *Supertest 2*, *Cosmic Wartoad*, *N.O.M.A.D.*, *Gift of the Gods* and *Mailstrom*. Each takes advantage of the 128K available in the Plus 3, and benefits from the faster loading times – up to 50 times quicker than tape – of the disc drive.

> **"Undoubtedly a well-conceived machine, it remains to be seen whether the Plus 3's pricing makes it an attractive purchase for existing Spectrum owners."**

None, though, use the continuous disc access principle which could allow Plus 3 programmers to create powerful utilities or adventure-type games of enormous depth and complexity.

Alan Sugar's intention is to create a market where blank discs cost around £1, and games software is released mainly in the form of compilation discs at less than £10. Software houses have mixed feelings about this; some are willing to follow the great man's lead, while others speak of reduced profit margins and increased development time. Doubtless the quality of serious Spectrum software can only improve with the advent of the standard disc drive.

At £249, including the joystick, manual and six-game disc, the Plus 3 is priced highly enough, to make the £149 Plus 2 still a viable proposition.

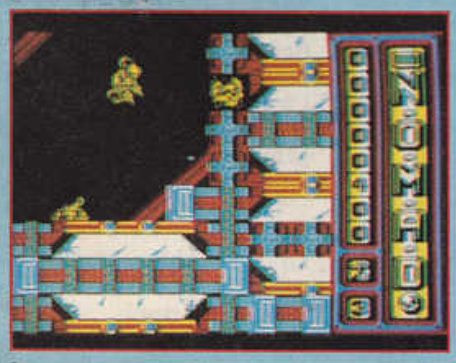
One problem is that while owners of the Plus 3 can use Amstrad FD-1 additional disc drives – £110 with the connecting cable – this option is not open to Plus 2 owners.

The differences between the machines are so major that it's impossible to connect the Plus 2 to the Amstrad disc drive. Existing Plus 2 owners are blocked from upgrading to disc without selling their existing machine and starting from scratch with the Plus 3, and a cassette deck to load their tape software. Many Plus 2 owners will be furious; but, in the words of Alan Sugar, "Pan Am takes good care of you, Marks and Spencer loves you, Securicor cares . . . at Amstrad we just want your money."

Undoubtedly a well-conceived machine, it remains to be seen whether the Plus 3's pricing makes it an attractive purchase for existing Spectrum owners or computer neophytes.

Over the next few weeks we'll be considering the issues raised by the Spectrum Plus 3, such as compatibility with the small number of 128K Spectrum programs already released, the options for Spectrum Plus and Plus 2 owners, and the plans of the software houses. We'll also be looking at the new Basic and DOS in more depth.

The Plus 3 keyboard: only the major Sinclair Basic functions are marked in addition to the qwerty symbols.



***Supertest* and *N.O.M.A.D.*: two of the games bundled with the Plus 3. Above right: the new, black look of the Spectrum.**

with Kenn Garroch

Text handling

A Duckworth, of Royton, Lancs, writes:

Q I am writing an adventure program that needs to handle text. The problem is that I need to convert all input to upper case. Is there an easy way of getting upper case from lower case?

A As it happens, there is a really easy way. Consider the Ascii codes of A and a, 65 and 97. In binary these are 01000001 and 01100001 with the only difference being the 6th bit set to one for lower case.

So to convert from lower case to upper case simply AND the Ascii value with 255-32 or 223. This simply sets the sixth bit to zero making the character upper case.

The only drawback is that the space character is 32 and hence becomes zero through this operation. Similarly, punctuation marks and numbers are altered wrongly so these have to be skipped.

Fortunately, the characters to be converted are in groups. Lower case characters start at 97 with 'a' and go to 122 with 'z'. Anything outside of this range should be ignored. A subroutine along the following lines should do the trick:

```
1000 U$=""
1010 FOR T=1 TO LEN(L$)
1020 IF ASC(MID$(L$,T,1))<97 OR
ASC(MID$(L$,T,1)>122 THEN
U$=U$+MID$(L$,T,1):GOTO 1040
1030 U$=U$+CHR$(ASC
(MID$(L$,T,1)) AND 223)
1040 NEXT T
1050 RETURN
```

L$ holds the string to be converted.

The routine puts the new string in U$.

Routine registers

Peter Breeze of Huddersfield writes:

Q I have recently begun to learn machine code on my Spectrum and was managing quite well when the book I was reading gave me the following small routine to enter into my machine. The routine was as follows:

```
PUSH AF
PUSH BC
PUSH DE
PUSH HL
LD E,A
LD C,02
CALL 0005
POP HL
POP DE
POP BC
POP AF
RET
```

The first four lines save all the registers and the fifth line places the contents of the accumulator (which holds the code of the character to be output) into the E register. The next line I understand but do not see the point of it. The next line (the all important line) calls another of the computer's routines, and the rest of the lines restore the registers.

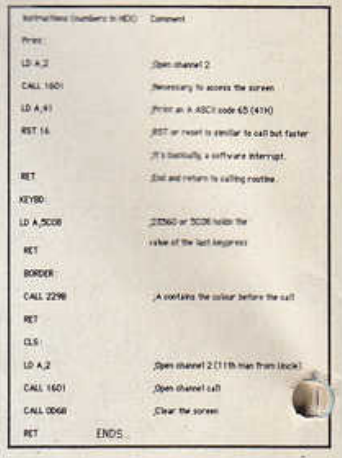
When I came to run this routine, I found that it did not work. The book tells me that this is because my Spectrum does not operate under the 'Control Program Monitor' system and I would have to find an alternative address to call. I have exactly the same problems when I enter a routine to accept a key press. Could you please explain why it is necessary to load the C register with a number (1 or 2) and explain what the CP/M operating system is and what alternatives there are? Also, could you give me an address to call that will give the desired effect and give me any other of the computer's own routines that may come in handy.

A It seems that the book you are using to learn machine code from is for a computer running under the CP/M system. CP/M is a series of routines that load into the computer and can be used as a standard basis for program input/output. The problem is that the Spectrum, as it stands, does not run under CP/M but has its own operating system.

Starting with your first question, the CP/M BDOS (Basic Disk Operating System) has a whole series of commands that are accessed with *Call 5*. To differentiate between the various commands, the C register is loaded with the command number. When the computer performs *Call 5* (under CP/M) the routine at location 5 checks the C register to see which command is to be executed. When sending information to the BDOS routines, any arguments such as a character to be output are transferred in the E register. Any routines which return values are then transferred in the accumulator. In general, for BDOS, command numbers go in C, parameters and arguments go in E (sometimes DE), and values are returned in A or HL. There are 36 routines in all, generally dealing with screen, keyboard, and discs. However, they are not available on the Spectrum and so will not be of much use. The above explains most of the second question as well.

Other operating systems, similar to CP/M, are MS-DOS/PC-DOS which runs on 80N86 (N can be null, 1, 2, or 3) and 8088 machines, possibly UNIX which is mainly for 68000 machines (UNIX is slightly different), and GEM which runs on both. The similarity between all of these is that they contain a standard set of commands (individually since they are pretty well incompatible with each other) that are the same on whichever machine they are implemented on. They all control the input/output functions of the particular computer, and programs written for one machine with a particular operating system should run on another machine with the same system. The basic idea is one of standardisation, the only problem being that there are a number of standards.

The answer to the third question is perhaps the most important for you. The Spectrum has a built in control system in its Rom which controls all of the input/output, and also the Basic programming system. There are quite a few useful routines but, unfortunately, I do not have time to detail them all. There are a number of books on the market that do reveal all, what you need is a Spectrum Rom disassembly book. Anyway, here are a few commands you can use from machine code.



BBC shift

Mr Y Mayat, of Batley, West Yorks, writes:

Q I used to have a tape based system on my BBC Micro 32K. I do some programming in Assembly language and now, having upgraded to disc drive – an Opus Challenger – I am facing problems saving machine code onto disc.

An example I can give is a program from *Input* magazine – a graphics program in Mode 2 – which mentions that page=&3000 should be typed in and the machine code saved onto tape with *SAVE "NAME" D00 FD7. The program can then be loaded back in again when required and called with the instruction CALL &F5B. This procedure worked perfectly on tape but, as yet, I have not been able to make it work on disc even though I believe the object code is save on disc, the program does not work when called directly.

The manual on the disc drive mentions that to save machine code onto discs, the following should be done:

***SAVE <filename> <start addr> <end**

addr> <load addr> <execution addr>
or
***SAVE <filename> <start addr> + <length> <load addr> <execution addr>**

The load and execution addresses of the file are set to load address and execution address respectively, or to start address if not. These default addresses are used by *LOAD and *RUN.

A The first thing to note when the disc drive system has been installed on a BBC is that the normal value of Page has been altered. With cassette systems Page is &E00 but, when the DFS (Disc Filing System) is in, this moves up, usually to &1900 (Type P.PAGE to find out what Opus' DFS Page address is).

I'm not sure what your machine code routine does but it appears to be slap bang in the middle of some of the operating system workspace.

&D00-&D9E is the NMI routine (Non Maskable Interrupt), &D9F-&DEF is the expanded vector set, and &DF0-DFF is the paged Rom workspace locations. All of these are probably used by the Opus DFS Rom.

Your problem is that either the routine is using the NMI for some reason although, in a cassette based machine, NMI is not used at all, or it is using space that is normally unused in page &D. Having installed a new DFS chip in your computer, sections of this page will be different and as NMIs are implemented, the program does not work.

There are two solutions, the hardest is to work out what the machine code does and move it somewhere else while allowing it to do the same thing or, slightly easier, load the machine code from disc into a different memory location, turn the disc off (*TAPE) and then move the code to its original location and call it.

For the first solution &900, &A00, &B00 or &C00 are usually good empty locations as long as you are not using sound for &900, tape for &A00, function keys for &B00, or defined characters for &C00. Since your program is from &D00 to &FD7 then moving it to &A00-&CD7 may well work. You will however have to re-assemble it with the new starting addresses.

The second solution is the easier of the two but has the draw back that once it is done, the disc system cannot be used. Use *LOAD to load the machine code into memory as, say, &2500 (where you actually put it depends on how big your other programs are) ie *LOAD NAME 2500 Then enter *TAPE to turn off the DFS, and move the code to &D00 with a for next loop ie FOR T%=0 TO&FD7-&D00:T%?&D00=T%?&2500:NEXT then CALL &F5B to execute it. As you can see, this is not a very satisfactory measure, and the first solution is much better.

I'm not sure why *Input* asks you to enter PAGE=&3000 since, in mode two, this is the bottom of the screen. Hopefully the two suggestions above will help you get the code going.

Not fazed by phasor

P A Knight of Phasor Video, Elcot Lane, Marlborough, Wilts, writes:

Q With reference to your problem "The Sord Connection", *PCW* May 8–14, perhaps I can throw a little light on the subject, if you have not been inundated with thousands of solutions already!

The socket in question is usually known as an EIAJ 8 pin (Associated Electrical Industries of Japan, I think), and has been knocking around for some 20 years or so. It is used as a bi-directional vision and audio monitoring port between industrial video tape recorders (Hi & Lo Band U-Matic, older Sony portables, and some VHS machines) and Japanese manufacturer's receiver/monitors. The VTR has a socket marked "TV" and the receiver/monitor one marked "VTR", strangely enough.

The connector is of a non-constant impedence nature, and thus is not recommended for 'real' video applications but is quite happy as a monitoring input/output. The equipment at either end expects to see a standard encoded vision signal i.e. 1V peak-peak (.3V sync/burst, .7V signal), and audio at -10dB (200mV). However, most monitors will accept anything up to a volt or so of audio before distortion occurs.

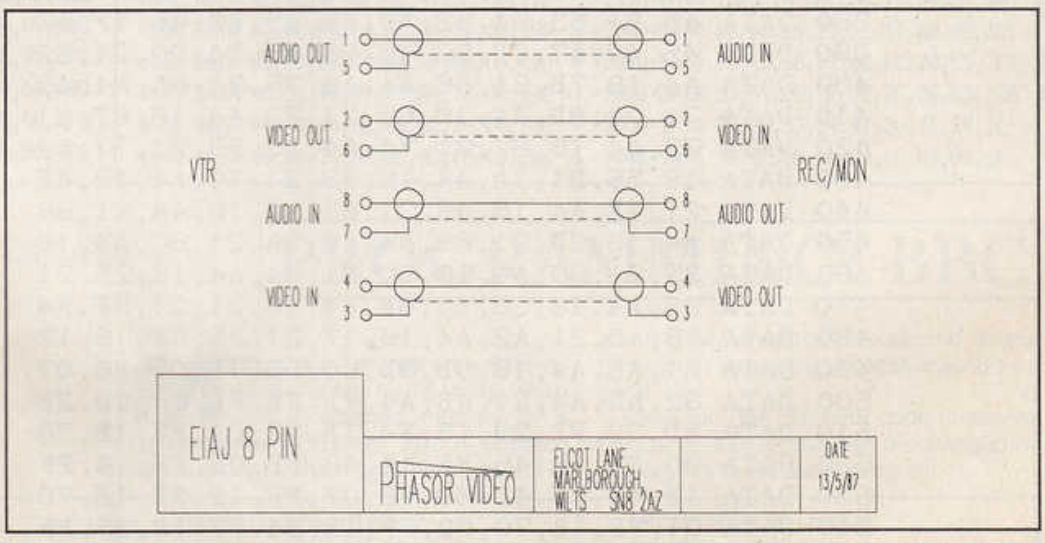
The vision inputs terminate in 75Ω which may have to be removed internally in some computer applications – such as the case in question where the chap is tapping vision from the modulator which itself is terminated internally.

Quite often the monitor terminating resistor is mounted directly behind the socket and is thus very easy to remove. However, it could be mounted on the video board so a certain amount of cable tracing may be involved to find it. The resistor colour code will be purple, green, black, gold/pink.

Connecting cables are wired pin for pin between two plugs using multicore comprising two audio screened cables and two 75Ω video cables. This means that the socket connections are wired "mirror imaged" (VTR out = mon in etc), but this should be of no matter in this case as you are only interested in the monitor end.

I have never encountered one of these connectors being used for RGB signals – usually it is BNCs, D, DINs Phonos, and SCARTs (ugh!) but you never know. I shall be interested to hear of the eventual outcome.

The plugs themselves can be obtained from the more usual component suppliers (RS part No. 470–730) at around a fiver each. Any difficulties and Phasor can supply them.



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 WC2H 7PP.

A Thanks, sometimes I need all the help I can get.

Print Codes

Alastair Scott

This program allows you to send printer codes to any Amstrad or Epson compatible printer in a legible form.

On running the program, 24 RSX commands will be installed. The full set is shown on running.

For example, *|Strike1* sets double strike mode on.

```
100 'Abbreviated Printer Codes
110 'by Alastair Scott
120 MODE 2:MEMORY &A2FF
130 FOR a=&A300 TO &A4AE
140 READ b$:POKE a,VAL("&"+b$):c=c+PEEK(a)
150 NEXT
160 IF c<>46493 THEN PRINT CHR$(7)"ERROR IN DATA!":END
170 CALL &A300:PRINT"New commands are..."
180 PRINT:PRINT"|NLQx |BOLDx |WIDEx |MINIx |CONDx |PROPx
|ITALICx |UNDERx |SUBx
|SUPERx |STRIKEx";
190 PRINT:PRINT"|RESET |FOREIGN,n"
200 PRINT:PRINT"with x=1 (on) or 0 (off) and n=0 to 7."
210 PRINT:END
220 DATA 01,09,A3,21,AF,A4,C3,D1,BC,53,A3,C3
230 DATA D6,A3,C3,DB,A3,C3,E0,A3,C3,E5,A3,C3
240 DATA EA,A3,C3,EF,A3,C3,F4,A3,C3,F9,A3,C3
250 DATA FE,A3,C3,03,A4,C3,08,A4,C3,0D,A4,C3
260 DATA 12,A4,C3,17,A4,C3,1C,A4,C3,21,A4,C3
270 DATA 26,A4,C3,2B,A4,C3,30,A4,C3,35,A4,C3
280 DATA 3A,A4,C3,3F,A4,C3,49,A4,C3,44,A4,4E
290 DATA 4C,51,B1,4E,4C,51,B0,42,4F,4C,44,B1
300 DATA 42,4F,4C,44,B0,57,49,44,45,B1,57,49
310 DATA 44,45,B0,4D,49,4E,49,B1,4D,49,4E,49
320 DATA B0,43,4F,4E,44,B1,43,4F,4E,44,B0,50
330 DATA 52,4F,50,B1,50,52,4F,50,B0,49,54,41
340 DATA 4C,49,43,B1,49,54,41,4C,49,43,B0,55
350 DATA 4E,44,45,52,B1,55,4E,44,45,52,B0,53
360 DATA 55,42,B1,53,55,42,B0,53,55,50,45,52
370 DATA B1,53,55,50,45,52,B0,53,54,52,49,4B
380 DATA 45,B1,53,54,52,49,4B,45,B0,46,4F,52
390 DATA 45,49,47,CE,52,45,53,45,D4,00,21,62
400 DATA A4,18,7B,21,66,A4,18,76,21,6A,A4,18
410 DATA 71,21,6D,A4,18,6C,21,70,A4,18,67,21
420 DATA 72,A4,18,62,21,74,A4,18,5D,21,77,A4
430 DATA 18,58,21,7A,A4,18,53,21,7C,A4,18,4E
440 DATA 21,7E,A4,18,49,21,82,A4,18,44,21,86
450 DATA A4,18,3F,21,89,A4,18,3A,21,8C,A4,18
460 DATA 35,21,90,A4,18,30,21,94,A4,18,2B,21
470 DATA 98,A4,18,26,21,9B,A4,18,21,21,9F,A4
480 DATA 18,1C,21,A2,A4,18,17,21,A5,A4,18,12
490 DATA 21,A8,A4,18,0D,3D,C0,DD,7E,00,E6,07
500 DATA 32,AD,A4,21,AB,A4,7E,FE,FF,C8,CD,2B
510 DATA BD,30,FB,23,18,F4,1B,78,01,FF,1B,78
520 DATA 00,FF,1B,45,FF,1B,46,FF,0E,FF,14,FF
530 DATA 1B,4D,FF,1B,50,FF,0F,FF,12,FF,1B,70
540 DATA 01,FF,1B,70,00,FF,1B,34,FF,1B,35,FF
550 DATA 1B,2D,01,FF,1B,2D,00,FF,1B,53,01,FF
560 DATA 1B,54,FF,1B,53,00,FF,1B,54,FF,1B,47
570 DATA FF,1B,48,FF,1B,40,FF,1B,52,07,FF,00
```

Xen 3

Simon T Goodwin

Here is the final part of Xen 3, which adds extra commands to Basic.

:464

This reclaims 2K of memory (ie, reverts to 464 memory format) by disabling the disc drive. This allows some pieces of incompatible software to be run (from tape).

:CHARSET

Switches to an alternate character set.

Note that it is not possible to return to the original format after this command has been used.

:PATCH

Patches printer output to the screen.

:NORMAL

Reverts printer output to normal.

```
1000 DATA A1,98,00,00,00,00,00,00,139
1010 DATA 00,52,53,58,20,45,52,52,206
1020 DATA 4F,52,2E,58,45,4E,20,46,220
1030 DATA 55,52,54,48,45,52,20,45,23F
1040 DATA 58,54,45,4E,53,49,4F,4E,278
1050 DATA 20,28,63,29,20,53,69,6D,21D
1060 DATA 6F,6E,2E,54,2E,47,6F,6F,2B2
1070 DATA 64,77,69,6E,20,31,39,38,274
1080 DATA 37,20,3E,9B,C3,62,98,C3,3B0
1090 DATA 9B,98,C3,94,98,C3,B0,98,52D
1100 DATA C3,D1,98,C3,6F,99,C3,CB,585
1110 DATA 99,C3,FC,99,C3,3C,9A,C3,54D
1120 DATA 58,9A,C3,75,9A,C3,81,9A,4A2
1130 DATA C3,9A,9A,C3,B1,9A,43,52,49A
1140 DATA D4,46,4C,41,53,48,4F,CE,35F
1150 DATA 46,4C,41,53,48,4F,46,C6,2C9
1160 DATA 46,49,4C,CC,54,57,4F,54,2F5
1170 DATA 4F,4E,C5,48,45,4C,D0,4C,357
1180 DATA 49,4E,45,53,43,52,4F,4C,25F
1190 DATA CC,43,48,41,52,53,45,D4,356
1200 DATA 53,43,52,41,4D,42,4C,C5,2C9
1210 DATA 55,4E,53,43,52,41,4D,42,25B
1220 DATA 4C,C5,42,41,4E,4B,53,57,2D7
1230 DATA 49,54,43,C8,34,36,B4,50,316
1240 DATA 41,54,43,C8,4E,4F,52,4D,2DC
1250 DATA 41,CC,FF,00,00,00,00,00,20C
1260 DATA 00,00,00,00,00,00,00,00,0
1270 DATA 00,00,00,00,00,00,00,00,0
1280 DATA 00,00,00,00,00,00,00,00,0
1290 DATA 38,44,82,82,FE,82,82,00,382
1300 DATA FC,82,82,BC,82,82,FC,00,4BC
1310 DATA 7C,82,80,80,80,82,7C,00,37C
1320 DATA F0,88,84,84,84,8C,F0,00,480
1330 DATA FE,80,80,FE,80,80,FE,00,4FA
1340 DATA 7E,80,80,F8,80,80,80,00,3F6
1350 DATA 7C,82,80,BE,82,82,7E,00,3BE
1360 DATA 82,82,82,FE,82,82,82,00,40A
1370 DATA 7C,10,10,10,10,10,7C,00,148
1380 DATA 3E,08,08,08,88,88,70,00,1D6
1390 DATA 44,48,50,60,50,48,44,00,218
1400 DATA 40,40,40,40,40,40,7C,00,1FC
1410 DATA 82,C6,AA,92,82,82,82,00,40A
1420 DATA 82,C2,A2,92,8A,86,82,00,40A
1430 DATA 38,44,82,82,82,44,38,00,27E
1440 DATA FC,82,82,82,FC,80,80,00,47E
1450 DATA 7C,82,82,82,9A,8C,76,00,39E
1460 DATA FC,82,82,FC,90,88,84,00,498
1470 DATA 7E,80,80,FC,02,02,FC,00,37A
1480 DATA FE,10,10,10,10,10,10,00,15E
1490 DATA 82,82,82,82,82,82,7C,00,388
1500 DATA 82,82,82,82,44,28,10,00,284
1510 DATA 82,82,92,92,AA,44,44,00,35A
1520 DATA 82,44,28,10,28,44,82,00,1EC
1530 DATA 82,82,44,28,10,10,10,00,1A0
1540 DATA FE,04,08,10,20,40,FE,00,278
1550 DATA 7C,86,8A,92,A2,C2,7C,00,3FE
1560 DATA 20,60,20,20,20,20,F8,00,1F8
1570 DATA 7C,82,02,FC,80,82,FE,00,3FC
1580 DATA 7C,82,02,3C,02,82,7C,00,23C
1590 DATA 08,18,28,48,FC,08,08,00,19C
1600 DATA FE,82,80,7C,02,82,7C,00,37C
1610 DATA 7C,82,80,FC,82,82,7C,00,3FA
1620 DATA FE,82,02,04,08,10,20,00,1BE
1630 DATA 7C,82,82,7C,82,82,7C,00,37C
1640 DATA 3C,42,42,3E,02,42,3C,00,17E
1650 DATA 00,00,F8,04,FC,84,76,00,2F2
1660 DATA 80,80,B8,C4,84,C4,B8,00,47C
1670 DATA 00,00,78,84,80,84,78,00,278
1680 DATA 04,04,74,8C,84,8C,74,00,28C
1690 DATA 00,00,7C,82,BC,80,7C,00,2B6
1700 DATA 00,7C,80,80,F8,80,80,00,374
1710 DATA 00,00,7C,82,82,7E,02,FC,2FC
1720 DATA 80,80,B8,C4,84,84,84,00,408
1730 DATA 00,10,00,30,10,10,38,00,98
1740 DATA 04,00,04,04,44,44,38,00,CC
1750 DATA 00,88,90,A0,C0,A0,98,00,3B0
1760 DATA 60,20,20,20,20,20,70,00,170
1770 DATA 00,00,6C,92,92,92,92,00,2B4
1780 DATA 00,00,58,64,44,44,44,00,188
1790 DATA 00,00,7C,82,82,82,7C,00,27E
1800 DATA 00,00,F8,84,84,F8,80,80,3F8
1810 DATA 00,00,7A,84,84,7C,04,06,208
1820 DATA 00,00,58,64,40,40,40,00,17C
1830 DATA 00,00,7E,80,FC,02,FC,00,2F8
1840 DATA 00,20,38,20,20,28,10,00,D0
1850 DATA 00,00,84,84,84,84,7C,00,28C
1860 DATA 00,00,44,44,44,28,10,00,104
1870 DATA 00,00,82,92,92,AA,44,00,294
1880 DATA 00,00,88,50,20,50,88,00,1D0
1890 DATA 00,00,44,44,44,3C,04,78,184
1900 DATA 00,00,7C,08,10,20,7C,00,130
1910 DATA 48,61,63,6B,69,6E,67,20,2D5
1920 DATA 73,74,72,69,63,74,6C,79,37E
1930 DATA 20,70,72,6F,68,69,62,69,30D
1940 DATA 74,65,64,2E,2E,2E,42,79,282
1950 DATA 20,6F,72,64,65,72,20,48,2A4
1960 DATA 4D,20,67,6F,76,65,72,6E,2FE
1970 DATA 6D,65,6E,74,2E,4D,69,6E,306
1980 DATA 69,73,74,72,79,20,6F,66,330
1990 DATA 20,53,69,6C,6C,79,20,57,2A4
2000 DATA 61,6C,6B,73,2E,57,68,69,301
2010 DATA 74,65,68,61,6C,6C,20,53,2ED
2020 DATA 57,31,2E,2E,2E,2E,28,63,1CB
2030 DATA 29,20,53,54,47,20,31,39,1C1
2040 DATA 38,37,00,00,00,00,00,00,6F
```


Memzap Utility

lain Tatch

Memzap is a fast, real time machine code memory dump utility. When run, it displays memory in a format similar to **Dump*. This is updated continuously by the program at a speed of about 15 screen refreshes a second, as can be seen by examining an area around zero page.

Once run, the machine code is assembled at &7000 but this can be changed by altering *P%* in the Basic program.

```
10FORT=0TO2STEP2
20P%=&7000
30[OPTT
40LDA#22:JSR&FFEE:LDA#7:JSR&FFEE
45LDA#10:STA&FE00:LDA#32:STA&FE01
50.go LDA#0:STA&70:LDA#&7C:STA&71
60LDX#24:.bigloop
70LDA&73:JSRhex:LDA&72
80JSRhexsp:LDA#32:JSRprnt
90LDY#0:.loopa
100LDA(&72),Y:JSRhexsp
110INY:CPY#8:BNEloopa
120LDA#32:JSRprnt:LDY#0:.loopb
130LDA(&72),Y:BPLovera
140SEC:SBC#128:.overa
150CMP#127:BNEoverb
160LDA#ASC".":.overb CMP#32:BPLoverc
170LDA#ASC".":.overc
180JSRprnt:INY:CPY#8:BNEloopb
190LDA#32:JSRprnt
```

continued on page 22 ▶

```
200LDA&72:CLC:ADC#8:STA&72
210LDA&73:ADC#0:STA&73
215DEX:BNEbigloop
220LDA#129:LDY#255:LDX#&D6
230JSR&FFF4:CPX#&FF:BNEno
240CPY#&FF:BNEno
250LDA&72:CLC:ADC#8:STA&72
260LDA&73:ADC#0:STA&73
262LDA#129:LDY#255:LDX#&FF
264JSR&FFF4:CPX#&FF:BNEno
266CPY#&FF:BNEno
268LDA&72:CLC:ADC#176:STA&72
269LDA&73:ADC#0:STA&73
270JMPcont:.no
280LDA#129:LDY#255:LDX#&C6
290JSR&FFF4:CPX#&FF:BNEcont
300CPY#&FF:BNEcont
310LDA&72:SEC:SBC#8:STA&72
320LDA&73:SBC#0:STA&73
322LDA#129:LDY#255:LDX#&FF
324JSR&FFF4:CPX#&FF:BNEcont
326CPY#&FF:BNEcont
328LDA&72:SEC:SBC#176:STA&72
329LDA&73:SBC#0:STA&73
330.cont
340LDA#129:LDY#255:LDX#&8F
350JSR&FFF4:CPX#&FF:BNEnxt
360CPY#&FF:BNEnxt
370LDA#31:JSR&FFEE
380LDA#0:JSR&FFEE:LDA#24:JSR&FFEE
390BRK:EQUB27:EQUS"Escape":BRK
890.nxt
900LDA&72:SEC:SBC#192:STA&72
910LDA&73:SBC#0:STA&73
920JMPgo
1000.prnt STY&75:LDY#0
1010STA(&70),Y:LDA&70:CLC
1020ADC#1:STA&70:LDA&71
1030ADC#0:STA&71:LDY&75:RTS
1040.hexsp JSRhex:LDA#32:JMPprnt
1050.hex PHA:AND#&F0
1060LSRA:LSRA:LSRA:LSRA:JSRohex
1070PLA:AND#&F
1080.ohex
1090CMP#10:BPLalph
1100CLC:ADC#48:JMPprnt
1110.alph CLC:ADC#55:JMPprnt
10000]:NEXT
```


Recovery

A F Wilson

Recovery is a utility for the Memotech MTX series of micros which mimics the BBC micro command *Old*. Recovery, as its name suggests, recovers programs which have been accidentally erased. The utility is interrupt driven, thus the program is available at all times. Function key *F1* is used to save the system variables and *F2* to restore the saved system variables.

As you will soon see, the recovery listing is for the disc-based system, but by removing the *USER* command from line 120 of listing this allows the program to work on a tape-based MTX micro. Note MTX 500 owners should change all £4000 references to the equivalent £8000 addresses. The program, when loaded, auto runs itself, and relocates itself in high memory, then sets the interrupt vector and NEW's itself. The program won't affect any Basic programs and is available at all times, just press *F1* and *F2*.

To save the program, type *GOTO 120*. This will save the program. When you come back to reload the program, the Basic OS is ready to execute line 140. The *RUN* command sets the Basic OS to line 10, which goes to line 100. The code at line 100 then moves the relocatable code in line 20, to the top of free space, sets the interrupt vector to point to the relocated code. Once this is done the program NEWs itself, as we don't need the basic listing – just the code at £BF34.

To use the program, load it using *USER LOAD "RECOVERY.BAS"* for disc users, or *LOAD " "* for tape users. Type in the following example.

```
10 PRINT "TEST"
20 REM
```

Now press *F1* to save the current program. Type in *PANEL <RET>,D BF97 ,<BRK>*. The hex dump at the bottom of the screen displays the contents of *FIRST8B,SYSVARS*. These should be:

```
0C 00 0A 00 90 22 54 45 12 40 00 40 12 40
12 00 00 40 12 40 00
```

Type *NEW <RET>*, then press *F2* to recover.

However, if you press the RESET keys then you lose the interrupt code. This means you cannot use the function keys. At this stage you can either save the program you are working on and reload the *Recover* program or use the following two commands to save and restore.

To save : RAND USR(48960)
To recover : RAND USR(49012)

```
Listing 1

10 GOTO 100
20 CODE

4010           LD A,(£FD7D)  ;LET A=THE LAST ASCII KEY PRESSED.
4013           CP £80        ;IS IT 'F1'
4015           JR Z,SAVEPRG  ;IF SO GOTO SAVE VARIABLES
4017           CP £81        ;IS IT 'F2'
4019           JR Z,RESTPRG  ;IF SO GOTO RESTORE VARIABLES
4018           RET           ;RETURN TO CALL ROUTINE
401C SAVEPRG:LD HL,£4000     ;POINT HL TO START OF BASIC
401F           LD DE,£BF97   ;SAVE AT FIRST8B
4022           LD BC,8       ;8 BYTES TO SAVE
4025           LDIR          ;SAVE THE 8 BYTE BLOCK
4027 SAVLOOP:LD DE,£BF9F     ;POINT DE TO SYSVARS
402A           LD IX,£BF90   ;POINT  IX TO LSB  OF SYSTEM VARS.
402E           LD B,7        ;SEVEN WORDS TO SAVE.
4030 SYSVLOP:LD A,(£BFAD)    ;LET A=SAVE OR RESTORE FLAG.
4033           LD H,£FA      ;H=MSB OF SYSTEM VARIABLE
4035           LD L,(IX+0)   ;L=LSB OF SYSTEM VARIABLE
4038           PUSH DE       ;SAVE DE AS AFFECTED ON RESTORE
4039           CP 0          ;IS FLAG=0?
403B           JR Z,SAVE     ;IF SO SAVE SYSTEM VARIABLES
403D           CALL £BFB7    ;RESTORE SYSTEM VARIABLES
4040           JR LOADED     ;ONCE RESTORED WORD BYPASS SAVE.
4042 SAVE:     CALL £BFB8    ;SAVES SYSTEM VARIABLES
4045 LOADED:   POP DE        ;RESTORE CORRUPTED REGISTER PAIR
4046           INC DE        ;MOVE DE ONTO 2 PLACES
4047           INC DE        ;
4048           INC IX        ;MOVE IX TO NEXT WORD IN VARDISP
404A           DJNZ SYSVLOP  ;IS ALL FINISHED
404C           LD (£BFAD),A  ;RESET FLAG
404F           RET           ;RETURN TO CALLING ROUTINE
4050 RESTPRG:LD HL,£BF97     ;RESTORE FIRST8B AT £4000 ON A MTX
4053           LD DE,£4000   ;512 COMPUTER,£8000  ON A MTX 500.
4056           LD BC,8       ;8 BYTES TO BE RECOVERED
4059           LDIR          ;MOVE THEM BACK.
405B           LD A,1        ;SET FLAG FOR RESTORE
405D           LD (£BFAD),A  ;SAVE IT IN FLAG
4060           JP £BF4B      ;GOTO SAVLOOP
4063 RESSYSV:EX DE,HL        ;LET DE=HL & HL=DE ,FOR RESTORING.
4064 SAVSYSV:LD A,(HL)       ;SWAP CONTENTS OF DE AND HL.
4065           LD (DE),A     ;
4066           INC HL        ;REMEMBER SWAPPING TWO BYTES
4067           INC DE        ;
4068           LD A,(HL)     ;
4069           LD (DE),A     ;
406A           XOR A         ;CLEAR REGISTER A AND FLAGS
406B           RET           ;RETURN TO MAIN PART
406C VARDISP:DB £A4,£A7,£AA,£AC,£CC,£CF,£D6
4073 FIRST8B:DS 8
407B SYSVAR: DS 14
4089 FLAG:   DB 0
408A           RET
```

```
100 CODE

420C          LD HL,£4010    ;MOVE THE CODE IN LINE 20 TO
420F          LD DE,£BF34    ;TOP OF FREE SPACE.
4212          LD BC,123      ;JUST BELOW THE BASIC VARIABLE
4215          LDIR           ;RAM AT £C000 TO £D6FF.
4217          LD A,£C3       ;LET INTERRUPT VECTOR TO JP £BF34
4219          LD (£FA98),A   ;THE JP £BF34 IS STORED IN A
421C          LD HL,£BF34    ;RESERVED 3 BYTE SPACE AT £FA98.
421F          LD (£FA99),HL  ;THIS IS CALLED EVERY 64TH OF A

4222          LD A,(£FD5E)   ;SECOND WHEN INTFFF,ADDRESS IS
4225          OR £9F         ;SET BY SETTING BITS 4 AND 7,SEE
4227          LD (£FD5E),A   ;BASIC REFERENCE MANUAL.
422A          RET            ;RETURN TO BASIC

110 NEW
120 USER SAVE "RECOVERY.BAS" :REM FOR DISC USERS
130 REM USE SAVE "RECOVERY" FOR TAPE USERS.
140 RUN
```


Micromon

P A Fairclough

Here's part three of Micromon, the multi-function machine code programming utility.

M – Memory.
Format : *M addr* or
M addr, addr
Memory will convert memory into hexadecimal bytes. Any value may be changed by overtyping the original and pressing Return.

"Micromon is a multi-function machine code programming utility for the Commodore 64"

N – Number.
Format : *N addr,addr,offset,addr,addr* or
N addr,addr,offset,addr,addr,W
Number allows all absolute addresses in a machine code program to be changed. If *W* is specified then the code is assumed to be a word table consisting of an iteration of addresses in low byte/high byte format.

The first two addresses specify the block code to be numbered. The last two addresses specify the old block of the code. Offset is a hexadecimal value indicating how much is to be added to each absolute address to make the addressing correct.

O – Out.
Format : *O value* or
O value,value

Out will tell the monitor how the *Roms* are set before memory access. The command may consist of one or two hexadecimal values.

The first data value used is to show how the memory is set up before access. Only the first 3 bits are used and have the same function as location $01. The images seen are:

Value	I/O ($D000)	Kernal ($E000)	Basic ($A000)
00	Ram	Ram	Ram
01	I/O	Ram	Ram
02	Chr	Ram	Ram
03	Chr	Ram	Ram
04	Ram	Ram	Ram
05	I/O	Ram	Ram
06	I/O	Ram	Ram
07	I/O	Ram	Ram

I/O are the VIC, SID and CIA chips. Chr is the Character Rom.

The second value is used by the *G*, *Q* and *W* commands to show how the Basic Rom (at $A000) is always set. Only the first bit is used. The first value has priority over this one. The byte has the following function:

Value	Basic ($A000)
00	Ram
01	Rom

P – Print.
Format : *P value data*
Print allows the user to send data bytes to the printer. The printer must have been opened by using the relevant function key.

The value tells the monitor what Ascii code to send along with a carriage return. Data may consist of one or more hexadecimal bytes.

Q – Quick.
Format : *Q or Q addr*
Quick runs a machine code program starting at the PC or the address. Each instruction is checked to see if a breakpoint should occur. Pressing the Stop key will display the registers. Program execution will be passed to the *W* command if a breakpoint occurs.

R – Registers.
Format : *R*
Registers will display the current register values of the 64. They are:
PC – Program Counter
SR – Status Register
N – Negative Sign Bit
V – Overflow Bit
– – Unused Bit
B – Break Bit
D – Decimal Bit
I – Interrupt Bit
Z – Zero Bit
C – Carry Bit
AC – Accumulator
XR – X Register
YR – Y Register
SP – Stack Pointer
Any of the values may be changed by typing over the old value and pressing *Return*.

S – Save.
Format : *S "filename",device,addr,addr,sec* or
S @addr,device,addr,addr,sec
Save will store a block of memory as a file on a device.

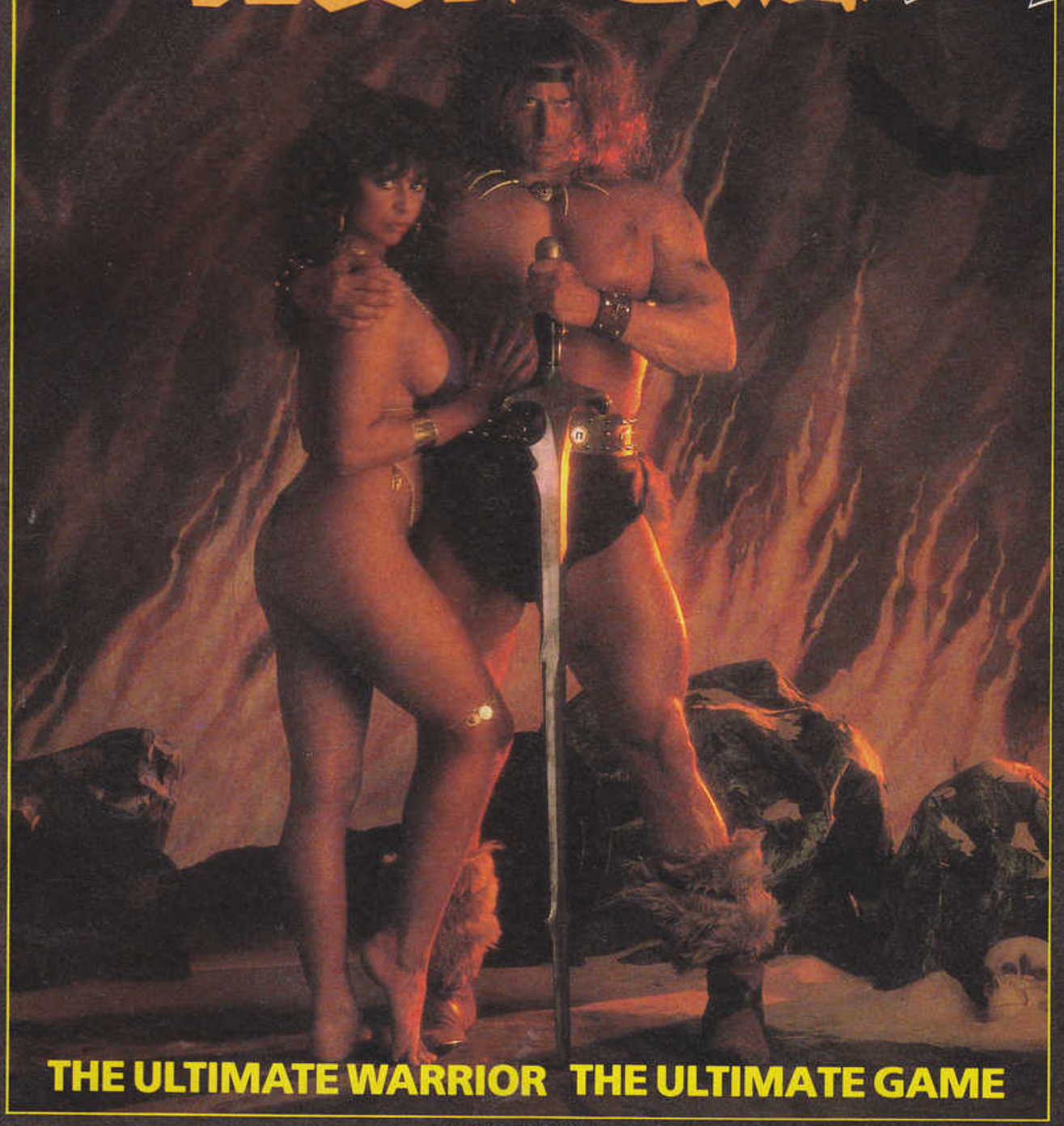
The filename must be enclosed in quotation marks. If the filename supplied is an '@' sign with an address then the filename will be taken from the 187 bytes commencing at the address.

The device must be 01 for cassette, or 08 for diskette. The secondary address must be 00 for a relocatable file, or 01 for an unrelocatable file.

```
10227 DATADC,C9,7F,D0,2C,A2,53,4C,1121
10228 DATA82,C0,A9,40,D0,06,A9,80,1066
10229 DATAD0,02,A9,00,85,15,A9,00,702
10230 DATA85,FB,A4,11,84,43,A4,12,946
10231 DATA84,44,20,1D,C6,F0,07,20,738
10232 DATAC6,C8,85,02,86,03,20,E2,928
10233 DATAC0,A5,1A,F0,20,A5,0F,C5,1032
10234 DATA02,D0,13,A5,10,C5,03,D0,818
10235 DATA0D,A5,15,D0,14,20,73,CC,778
10236 DATAA9,C0,85,14,D0,0B,A5,15,919
10237 DATAD0,07,20,6F,CC,A5,15,F0,988
10238 DATA0C,AD,ED,CF,8D,19,03,AD,971
10239 DATAEC,CF,8D,18,03,78,A6,08,905
10240 DATA9A,A5,03,48,A5,02,48,A5,798
10241 DATA04,48,A5,05,48,A6,06,A4,654
10242 DATA07,20,F0,C9,A5,15,05,14,691
10243 DATAF0,17,A9,FF,8D,0D,DD,A9,1231
10244 DATA07,8D,04,DD,A9,00,8D,05,688
10245 DATADD,AD,0D,DD,A9,0B,8D,0E,963
10246 DATADD,68,40,20,63,C8,85,45,922
10247 DATA86,46,20,C3,C8,85,22,86,932
10248 DATA23,20,C3,C8,85,AE,86,AF,1078
10249 DATAA0,00,20,1D,C6,F0,08,20,699
10250 DATACF,FF,C9,57,D0,01,C8,84,1291
10251 DATA1D,20,B3,C8,A6,28,D0,18,878
10252 DATA20,85,C1,90,13,A4,1D,D0,922
10253 DATA18,20,66,CC,20,B7,C3,AA,942
10254 DATABD,C1,CE,D0,06,20,11,C3,1046
10255 DATA4C,97,C0,A4,20,C0,02,D0,1017
10256 DATA39,84,20,88,38,20,66,CC,751
10257 DATAAA,E5,22,C8,20,66,CC,E5,1200
10258 DATA23,90,27,88,20,66,CC,85,825
10259 DATA16,A5,AE,E5,16,C8,20,66,946
10260 DATACC,85,16,A5,AF,E5,16,90,1094
10261 DATA11,88,18,8A,65,45,20,7A,639
10262 DATACC,C8,20,66,CC,65,46,20,945
10263 DATA7A,CC,20,2F,C9,88,10,FA,1008
10264 DATA30,9A,20,D7,C8,29,07,85,830
10265 DATAF8,20,D4,C8,29,01,09,06,749
10266 DATA85,F9,4C,97,C0,20,D7,C8,1248
10267 DATA85,42,20,D4,C8,20,F0,C0,1107
10268 DATA4C,5A,C8,20,80,C8,20,C3,953
10269 DATAC8,85,25,86,26,20,15,C6,793
10270 DATA20,C6,C8,85,C1,86,C2,60,1180
10271 DATA20,C6,C8,B0,06,20,70,C8,956
10272 DATA20,C3,C8,85,C3,86,C4,60,1181
10273 DATA20,DB,C0,A5,C2,20,92,C8,1180
10274 DATAA5,C1,48,4A,4A,4A,4A,20,758
10275 DATAAA,C8,AA,68,29,0F,20,AA,902
10276 DATAC8,48,8A,20,E4,C0,68,4C,1042
10277 DATAE4,C0,C9,0A,90,02,69,06,888
10278 DATA69,30,60,A2,01,B5,C1,48,858
10279 DATAB5,C3,95,C1,68,95,C3,CA,1368
10280 DATA10,F3,60,20,15,C6,20,D7,853
10281 DATAC8,90,06,AA,20,D7,C8,B0,1143
10282 DATAF1,4C,92,C0,20,15,C6,20,938
10283 DATA15,C6,F0,FB,20,3B,CC,0A,1015
10284 DATA0A,0A,0A,85,2A,20,15,C6,456
10285 DATA20,3B,CC,05,2A,38,60,20,526
10286 DATAE2,C0,A9,3A,20,88,C8,A9,1182
10287 DATA08,A8,20,DE,C0,20,48,CC,930
10288 DATA20,92,C8,20,2F,C9,88,D0,1002
10289 DATAF1,60,A2,03,4C,7D,C3,20,930
10290 DATAD7,C8,90,0A,A2,00,20,08,771
10291 DATAC2,20,4E,C1,D0,B3,20,2F,963
10292 DATAC9,C6,1E,60,A9,05,85,C1,1025
10293 DATAA9,00,85,C2,A9,04,60,E6,995
10294 DATAC1,D0,06,E6,C2,D0,02,E6,1271
10295 DATA28,A6,28,60,A5,1A,F0,0A,783
10296 DATA20,73,CC,98,85,1A,85,0F,810
10297 DATA85,10,4C,97,C0,A2,04,20,766
10298 DATA66,C1,A9,3B,20,DB,C0,A5,1131
10299 DATA03,20,92,C8,A5,02,20,92,726
10300 DATAC8,20,6D,C9,20,24,C9,20,843
10301 DATAF9,C8,4C,97,C0,20,DE,C0,1314
10302 DATAA5,04,85,21,A0,07,26,21,573
10303 DATAA2,30,90,01,E8,8A,20,E4,985
10304 DATAC0,88,10,F2,60,20,C3,C8,1109
10305 DATA85,02,86,03,20,9E,C9,20,695
10306 DATA24,C9,85,1E,20,15,C6,20,683
10307 DATA0F,C9,D0,F8,F0,CC,20,15,1169
10308 DATAC6,20,15,C6,20,AA,C9,85,985
10309 DATA04,60,A0,07,84,1E,D0,03,640
10310 DATA20,15,C6,29,01,18,26,27,394
10311 DATA05,27,85,27,C6,1E,10,F0,700
10312 DATA60,78,A2,F8,9A,A9,37,85,1137
10313 DATA01,20,F0,C9,6C,02,A0,AD,917
10314 DATA14,03,AE,15,03,CD,EA,CF,867
10315 DATAD0,05,EC,EB,CF,F0,10,85,1280
10316 DATA0B,86,0C,AD,EA,CF,AE,EB,1180
10317 DATACF,8D,14,03,8E,15,03,60,633
10318 DATAA5,0B,8D,14,03,A5,0C,8D,658
10319 DATA15,03,60,AD,F1,CF,48,AD,986
10320 DATAF0,CF,48,A9,00,48,48,48,904
10321 DATA48,6C,0B,00,A0,00,20,2F,430
10322 DATACC,C9,3A,F0,06,C9,2C,F0,1194
10323 DATA02,C9,27,60,A5,39,D0,30,816
10324 DATAE6,39,AD,8D,02,C9,06,D0,1018
10325 DATA13,A0,50,CA,D0,FD,88,D0,1266
10326 DATAFA,20,02,CC,AD,88,02,E9,1032
10327 DATA03,20,9C,CA,A5,C6,F0,0E,1010
10328 DATAAD,8D,02,AA,29,02,F0,03,772
10329 DATA20,56,CA,20,CF,CA,C6,39,1016
10330 DATA68,A8,68,AA,68,40,AD,77,1006
10331 DATA02,C9,89,D0,13,A9,0D,20,781
10332 DATAF0,C0,A9,04,20,C3,FF,A9,1256
10333 DATA03,20,C9,FF,A9,00,85,FB,1044
10334 DATAC9,8A,D0,13,A9,00,8D,BD,1065
10335 DATAFF,A9,04,AA,20,BA,FF,20,1103
10336 DATAC0,FF,A2,04,20,C9,FF,C9,1302
10337 DATA8B,D0,04,A9,80,85,FB,C9,1233
10338 DATA8C,D0,3B,20,02,CC,AD,88,954
10339 DATA02,18,69,04,8D,88,02,29,455
10340 DATA3C,0A,0A,85,1E,AD,18,D0,648
10341 DATA29,0F,05,1E,8D,18,D0,A5,629
10342 DATAD2,29,03,0D,88,02,85,D2,748
10343 DATAAD,88,02,49,C0,29,C0,0A,819
10344 DATA2A,2A,85,1E,AD,00,DD,29,682
10345 DATAFC,05,1E,8D,00,DD,60,A6,911
10346 DATAD1,86,C1,A6,D2,86,C2,A2,1402
```

BARBARIAN

The Ultimate Warrior



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Shake

Robin Davies

The following routine for the Commodore 64 will move the characters around to give the effect of an earthquake or explosion, causing the screen to shake.

```
10 REM SCRREN SHAKE EFFECT
11 REM
12 FORA=1TO10:POKE53265,23
13 FORB=1TO10:NEXTB
14 POKE53265,27:NEXTA:GOTO16
READY.
```

Rattle

Paul Hutchison

This Amstrad CPC routine will invert the entire screen. It works in any mode but the following *Pokes* must be carried out on location *&AB07* when the mode is changed.

Poke &AB07,&FF (mode 0)
Poke &AB07,&FO (mode 1)
Poke &AB07,&CO (mode 2)
Use *Call &AB00* to use.

```
10 MEMORY &AAFF
20 A=43776
30 READ B$:IF B$="-1" THEN END
40 POKE A,VAL("&"+B$)
50 A=A+1
60 GOTO 30
70 DATA 21,00,C0,01,00,40,16,FF,7E,AA,77,23,0B,78,B1,C2
80 DATA 06,AB,C9,-1
```

Roll Clear

Paul Hutchison

The last of our screen utilities is for the Amstrad CPC again, and clears the screen in an interesting fashion. The effect is obtained by rotating each location eight times and gives the impression of each character gradually rotating off the screen.

To use enter, *Call &AB00*.

```
10 MEMORY &AAFF
20 A=43776
30 READ B$:IF B$="-1" THEN END
40 POKE A,VAL("&"+B$)
50 A=A+1
60 GOTO 30
70 DATA 16,08,21,00,c0,01,00,40
80 DATA 7E,17,77,23,0B,78,B1,C2
90 DATA 08,AB,15,C2,02,AB,C9,-1
```

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C: the final chapter

Kenn Garroch winds up his series on programming in C, and we bring you some special offers to get you started on your own C programs

For all that C is able to access the lower levels of a machine, with inline, and pointers, it also has features that put it well into the high level language class.

Data structuring is one of these features. A data structure is a way of blocking together different types of information under one name. For example, a structure named 'person' could have the subsections 'name', 'age', and 'address'. These are of different data types, addresses usually consisting of arrays of characters, and ages of single numbers.

C sets up what is known as a template for a structure with the *struct* command. The template is a design for the structure which doesn't set aside any memory space until it is actually used. Taking the above example:

```
struct person {
char name[15];
int age;
char address[40];
};
```

sets up the template for a person structure. To actually start using this, the structure must be given a name, eg,

```
struct person someone {"Jane",25,"28 long lane"};
```

defines the structure 'some-one' and places some data into it. A minor note here is that some versions of C do not allow this pre-filling of the structure. However, this doesn't usually matter since any information to be put in can do so during the course of the program.

Inside a structure

Once a data structure has been defined, the separate portions of it need to be accessed. For instance, the name of someone may be needed. To get at the insides of a structure, either the '.' operator, or a pointer can be used.

The simplest of these two is the dot which is placed between the structure name, and one of its internal section names. With the above example, *someone.age* gives the contents of the age portion.

When accessing strings within structures, the same rules as with all other strings apply, ie, the name is a pointer to the first item in the array, and not the item itself. The same thing applies to structure names, the name is a pointer to the location in memory where the structure is stored.

A single structure is usually of limited use, and the ability to have arrays of them makes them much handier. Following the definition of the structure, an array can be set up in a similar way to other arrays, eg,

```
struct person people[10];
```

This defines an array of ten structures of the type person which has been set up previously. Accessing each individual's details can now be performed with, for example, *people[1].name,* which gives a pointer to the first character in the name of individual 1 in the people array.

Using pointers

It is also possible to use pointers to structures with the -> operator. Set up a structure:

```
room {
char exits[6];
char descr[100];
int connect[6];
};
```

which could be used in an adventure game to describe a room. Set up one room with:

```
struct room entrance;
and a pointer to entrance with:
struct room *p=&entrance;
```

The *&* operator gives the start address in memory of where the structure is stored. For example, after the above, try:

```
main()
{
p->exits[0]='U';
printf("First char is %c at memory location %x",*p,p);
}
```

which proves the point and also shows the order in which the structure is set out in memory, ie, the same as the template.

If there were an array of rooms (makes sense in an adventure), then the pointer should be set up to point to a particular room, eg, *'struct room *P=&entrance[0]* sets up *p* to look at the first in the array.

To look at the next room in the array, simply increase the pointer by one which moves to the next structure entry in the array.

The incrementing of the pointer shows an important detail about pointers – they are typed. Incrementing the pointer by one moves it to the next structure in the array, not the next memory location.

Complex information

Structures can also have other structures within them allowing quite complex information to be stored and manipulated in a simple and logical fashion. The overleaf program demonstrates a number of features of C including the use of structures. It sets up a simple adventure program system with room descriptions and connections followed by a playing routine.

As it stands, it is simply a demonstration. However, it can easily be expanded to create a complete stand alone adventure design and playing program.

GOTO label

Looking back over the past few articles, I have noticed a few inaccuracies have crept in. Firstly, it is possible to jump around a program in Basic fashion with GOTO label where label has been previously set up, ie:

```
/* this goes on forever */
main()
{
here:
printf("Stop me please!!\n");
goto here;
}
```

GOTO cannot be used to jump from within one function to another but it can sometimes (rarely, if possible) be useful.

Secondly, it seems that there was a misprint stating that the '/' is used to precede format characters of course, this should have been '\' as in \n for a new line.

continued on page 28 ▶

◀ continued from page 27

I also noticed that in the inline poke command, the address was said to be back to front for a Z80, ie, lo-hi. Actually this is taken care of and the poke command is:

```
#define ldhl 0x2A
#define lda 0x3A
#define sta 0x77
poke(addr,n)
|
static unsigned loc;
static char val;
loc=addr;
val=n;
inline(lda, &val, ldhl, &loc, sta);
|
```

and just for completeness this is peek (note definitions are different):

```
#define ldhl 0x2A
#define lda 0x7E
#define sta 0x32
peek(addr)
|
static unsigned loc;
static char val;
loc=addr;
inline(ldhl, &loc, lda, sta, &val);
return val;
|
```

"Structures can also have other structures within them allowing quite complex information to be stored and manipulated in a simple and logical fashion"

Lastly, a C program is not a program but a collection of one or more functions – which is technically quite true. I am, unfortunately, corrupted from having used too many different programming languages. I tend to refer to the products of them all as 'programs'.

My thanks to Mr Lavelle (and any others who have written in) for his kindness on pointing these facts out.

```
struct room {
 char exits[6];
 char descr[100];
 int connect[6];
 };
struct room adv[10];
main()
 {
 int e,move,maxrm,r,t;
 char dir;
 r=1;
 printf("How many rooms ?\n");
 maxrm=gnum();
 for (r=0 ; r<maxrm ; r++)
  {
   printf("Enter the description for room
%d\n",r);
   gtext(adv[r].descr);
   Printf("Room number %d has description
%s \n",r,adv[r].descr);
   Printf("Enter exits Up Down North East
West South \n(initial letter only eg UD
is Up and Down):  \n");
   gtext(adv[r].exits);
   t=0;
   while (adv[r].exits[t] != 0)
   {
    printf("Enter connecting room %c \n"
,adv[r].exits[t]);
    adv[r].connect[t++]=gnum();
   }
  }
  for (r=0 ; r<maxrm ; r++)
   {
    printf("Room %D has description %s
and exits \n",r,adv[r].descr);
    t=0;
    while (adv[r].exits[t] != 0)
     printf("%c leading to %d\n",
adv[r].exits[t],adv[r].connect[t++]);
   }
  /* play from here */
  r=0;
  e=0;
  while (e == 0)
   {
    doroom(adv[r].descr,adv[r].exits);
    move=0;
    while (move==0)
     {
      dir=gdir();
      if (dir=='Q') {e=1; move=1;}
      t=0;
      while ((dir != adv[r].exits[t])
&& (adv[r].exits[t] != 0))
       t++;
      if (adv[r].exits[t]==0)
      printf("You cannot go that
way\n");
      else move=1;
     }
    r=adv[r].connect[t];
   }
  }

gtext(pnt)
char *pnt;
 {
  char c;
  int t;
  while ((c=getchar()) != '\n')
  *pnt++=c;
  *pnt=0;
 }
gnum()
 {
  char s[5];
  int c,t,tot;
  t=0;
  tot=0;
  while((c=getchar()) != '\n')
  s[t++]=c;
  for (c=0 ; c<t ; ++c)
   tot=tot*10+s[c]-'0';
  return tot;
 }
doroom(pnt0,pnt1)
 {
  printf("You are in %s available
exits are: %s.\n",pnt0,pnt1);
  printf("Which way do you want
to go?\n");
 }
gdir()
 {
  char c,d;
  while((c=getchar()) != '\n')
  d=c;
  return d;
 }
```

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If your appetite for C has been whetted by our series and you're thinking of rushing out to buy a compiler, why not take advantage of one of these exclusive special offers?

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Prestel-Telecom gateway about to open

David Wallin brings you up-to-the minute news on Easylink's new telex system, the Micronet-Telecom Gold gateway, the new Viewfax and other communications news

This week I've got news of some very interesting developments to do with some of the E-Mail service giants in the UK. Firstly, the telex service. Currently, people who have telex systems available through their E-Mail system, have a telex number which is for a bureau that collects their telex and passes it on. A reference has to be put after the telex number, for example: 265871 MONREF G quoting ref 73:MAG30190.

All that is about to change, or at least on EasyLink it is. EasyLink subscribers are now going to get their own unique telex number and four character answerback (The answerback is sent by the receiving telex machine to identify itself, MONREF, in the above example. G is the country code and means Great Britain). There will no longer be the need for references to be quoted.

Well under way

This change is well under way at present, and subscribers have been asked to let EasyLink know what answerback they wish to use.

The lack of a reference will give the telex number a more professional look and it will look neater when printed on stationery and literature. It will be interesting to see how well the system works compared to present telex/E-Mail systems.

Long promised

Next, on to Telecom Gold and Micronet. The long promised gateway from Micronet to Telecom Gold is now due to open very soon, and there's already a response frame on which you can request an application form.

If you go to page 800111007 on Prestel, there are a few frames of information about InterLink (the name of the gateway), followed by the above mentioned application form – which can also be directly reached on page 811611.

Unfortunately, this gateway links to Telecom Gold's system 74; personally, I feel it would have been better if it were to use system 72, and register users through Microlink as it has many more features. But, as it says on Prestel, it is free. On 74, the facilities available will be; E-Mail, on-line chat and on-line databases such as World Reporter.

There is a possibility that in the future you will be able to use any of the TG system computers, but at present, the only one is 74.

How's it going to work? Well, you dial up your local Prestel phone number (assuming you are not in the one per cent of the population who does not have Prestel on a local call), and then go through a gateway to Telecom Gold. This means that you only need to make one phone call and you have access to both Prestel and Telecom Gold.

The big advantage is that the E-Mail system on Gold is far, far superior to the one of Prestel, so you get the best of both worlds – the better E-Mail facility of Gold, coupled with the colourful and user friendly environment of Prestel.

Having gone through the gateway, the display will remain at 40 columns with some colour. If you direct dialled, used PSS or Datec, you are stuck with black and white.

Far cheaper

Initially, use of the gateway will be free, though after a month a 1p a minute charge is planned. This is still far cheaper than the 3p a minute charge for use of PSS/Datec route. All charges for Interlink use will be recorded on your Prestel bill, under the heading of Telecom Gold, so you won't be getting separate bills from each service.

One thing which I am unsure of is whether or not the £3 a month standing charge which Telecom Gold charge is being waived, but it's only £36 a year, if not.

I'm sure you've all heard the bad news as regards Viewfax 258 on Prestel, which recently closed down. Unfortunate though it is, up from the ashes of 258 a new database is currently in the planning stage.

The new database is to be called something on the lines of the Leisure Database and aimed at everyone. It will *not* be part of any CUGs such as Micronet and use of 95% will be free. Quizzes, software, etc, will have frame charges, but overall the system should be cheap to use.

It is designed to be like a general interest magazine. Though many databases claim to be like this, few, if any, are. A simple style is one of the main aims of the database and if it bears any resemblance to PRESS288, it should meet this specification well.

There is one area which anyone reading this page should be interested in. It's the communications section (of the leisure database), starting with 20 pages and to expand with demand, it will be edited and run by myself and William Holmes. I will write the articles and features, and set up the quizzes, etc, and William will be responsible for most of the graphics.

As I said, we will start with around 20 pages and with demand hopefully expand – 20 pages may sound a lot, but when you take into account things like title pages, menus and a response frame, there's not a lot left.

Musictel

Four to five pages will be dedicated to Musictel. As Musictel is the newest and fastest moving thing in communications, it really needs some on-line space on a system such as Prestel to report any developments.

Each week, the Musictel 'Note' board will contain news of developments (present and planned) in the network; a word or two from James (of Musictel HQ) or maybe one of the other sysops; a complete list of Musictel boards; a response frame to contact Musictel and a list of advertisers on the network (when I get some more pages).

Other features of the section will be news, editorial articles, reviews, adverts (second hand equipment) and the entirely new the 'crazy page'. It's crazy for two reasons. Firstly, the frame charge will be between £1.50 and £4 most of the time. Secondly the page will contain great offers – each lasting one month – with things like free MicroLink membership, reduced *GODs* membership, bargains on hardware and software.

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The music processor for the ST

Mark Jenkins reviews Tigress Designs' *Iconix*, a new British software package of highly professional class

While the Atari ST has been dominating the world of computer music for the last few months, there are now some signs that the opposition is catching up. Cheetah has released the Amstrad version of their MK5 Midi keyboard, software and interface, and U-Music has staged something of a revival in order to create the UMI 3S, a stripped-down version of the powerful UMI 2B sequencer hardware/software package for the BBC B.

U-Music will be giving a full demo at the forthcoming Acorn User show, and promises updates for the inexpensive 3S which will, in time, give it almost all the abilities of the original 2B.

We'll be reviewing both these packages in the next couple of weeks. However, it's about time we had a detailed look at Iconix on the Atari ST, a new British software package which is very much in the professional Steinberg/Hybrid Arts class. Iconix sells for £249 and comes with an anti-pirating "dongle" and a handbook – there are extensive Help menus in the software as well if you don't want to rely on the handbook all the time.

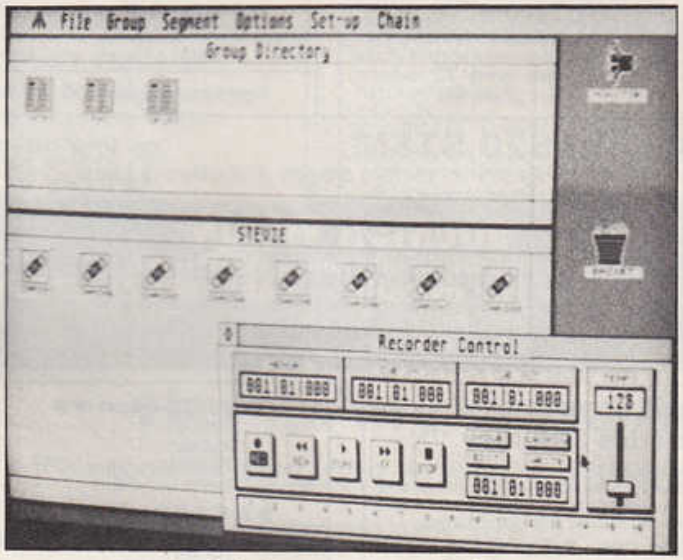
The basic idea is to provide a completely flexible "music processor" which lets you work any way you want to; in other words, you can either treat the computer's memory as one very long piece of tape, cutting and splicing sections wherever you like, or you can write many short sections and chain them together.

Every group of data recorded by Iconix can contain information on all 16 Midi channels, but a group can be as short as one bar or as long as the computer's entire memory.

Like Steinberg's *Pro-24* and many other software packages, Iconix uses a representation of a tape recorder's control panel; this is referred to as the Recorder section and can be placed anywhere on the screen, like most of Iconix's facilities.

There's also a clipboard where you can temporarily store notes, segments and elements of a chain while you're not using them, a monitor section which shows what's going on in the groups you're not listening to (you can run eight groups simultaneously theoretically creating a 128-track recorder!) and a basket to throw away unwanted data.

There are seven pull-down menus at the top of the screen and these cover all the usual functions such as saving and loading songs, calling up whole groups or segments, setting synchronisation options, and defining chains when in song mode. You can control all the record functions using the mouse or the computer keyboard, or use the Soft Keys page to re-define any controller on your synth to replace the controls on the screen.



Keys, switches, the pitch bend wheel, the data entry slider on a Yamaha DX7 could all be useful if your synths are on one side of the studio and your computer is on the other; the ability to hit (say) the top C to go into record, the next B to stop, the next A to rewind, and to use the modulation wheel to alter tempo as you're playing, is absolutely invaluable.

When you record some music you can save the latest "take" or the one immediately before – you don't have to commit yourself to wiping out an apparently bad take until you're really sure. When you start to record you have to define a new group, which for instance you could call Intro if it's going to be used for the start of a tune.

The group window then opens up and will show you 16 tracks each of which can have an instrument name, a patch number, a Midi channel number and a solo/mute status associated with it.

Iconix produces a metronome click through the computer's monitor and you record your first piece in time to it. This piece defines the length of your first segment and there are several counter displays to show your current position, a position for drop-ins, drop-outs and so on. One of the most exciting aspects of Iconix is the way you can drag the contents of one box straight into another, which saves a lot of tedious typing if you want to set a new cue point, or whatever.

A moving bar graph shows activity on all 16 Midi channels and you can rewind through what you've recorded in various ways. You can set a new tempo while stopped or while playing, and dropping in and overdubbing on Iconix is very straightforward. Splicing new material on to the end of an existing section is simply a matter of returning to the group window to define a new group and going back to the recorder to carry on working.

"Replicate" copies notes from one part of a segment to another to create repeated bass lines; this is just a matter of typing in a line such as 02 BARS FROM 01 into the Replicate box.

You can transpose a segment's pitches, velocities or timing data relative to the rest of the group and the step editor section lays out every Midi event in a group like a vertical piano roll; you can enter new notes using the mouse or Midi keyboard, insert pitch bends and patch changes, alter the length of notes and the speed of onset of control changes, and generally edit your performance with the utmost accuracy.

Overall, though, this is the friendliest, fastest, most powerful sequencer package I've seen to date. It has some opposition coming up in the form of the C-Lab *Creator* program, but for the moment (and apart from the monochrome monitor business!) Iconix comes with an unconditional recommendation.

Iconix, c/o Tigress Designs, 25 Burmester Road, London SW17 0JL, 01-946 7870.

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NEW RELEASES

Your complete guide to all the software released this week

Amstrad CPC

Program *Cosmic Shock Absorber* **Type** Arcade **Price** £8.95 (tape) £14.95 (disc) **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE.

Shoot 'em up with brain-bender element. Minimal instructions make this Starglider lookalilke a test of deduction as you try to mend your wonky craft before the aliens blast you.

Program *Deathscape* **Type** Arcade **Price** £8.99 (tape), £14.99 (disc) **Supplier** Starlight, Ariolasoft, 68 Long Acre, London WC2E 9JH.

Program *Passengers on the Wind* **Type** Adventure **Price** £9.95 (tape), £14.95 (disc) **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.

Apparently the comic book this is based on is so-o-o-o filthy Infogrames didn't dare include a copy with the game.

The game is *trés bon* though – a Napoleonic romp of an adventure that plays like a strip cartoon, not a book. It's all icon driven and looks absolutely beautiful. Tough but fun, *mes petits!*

Program *Pneumatic Hammers* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Program *Prohibition* **Type** Arcade **Price** £9.95 (tape), £14.95 (disc) **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.

Program *Pulsator* **Type** Arcade **Price** £8.95 (tape), £14.95 (disc) **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex NB24 6EE.

Big maze game with a collection of keys and groups of gates to confuse the issue.

Program *Strike* **Type** Arcade **Price** £2.99 **Supplier** MAD, 8-10 Paul Street, London EC2.

Atari ST

Program *Super Conductor* **Type** Application **Price** £49.95 **Supplier** Microdeal Ltd, Box 68, St Austell, Cornwall PL25 4YB.

. . . As in Sir Adrian Boult, not in applied physics. A 16 track Midi sequencing package.

Program *Prohibition* **Type** *Adventure* **Price** £19.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.

Program *Passengers on the Wind* **Type** Adventure **Price** £24.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.

Atari XL/XE

Program *Chimero* **Type** Arcade **Price** £1.95 (disc) **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Program *Micro Rhythm* **Type** Application **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

BBC B

Program *Birdstrike* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

See Electron for comment.

Program *The Hacker* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Commodore 64

Program *Deathscape* **Type** Arcade **Price** £9.99 (tape) £12.99 (disc) **Supplier** Starlight, Ariolasoft, 68 Long Acre, London WC2E 9JH.

Like some unholy hybrid of *Ant Attack* and *Highway Encounter*, Gremlin's *Alien Evolution* looks good and offers some stimulating challenges.

Set on a post-holocaust world, infested by evil aliens, the game is presented in four-way scrolling perspective using nicely detailed monochome Spectrum graphics. The scenery consists of a maze of walls and hedges, interspersed with matter transporters and alien installations.

Your groundcraft is armed with a limitless supply of four kinds of weapon; mines, bombs, TNT and lasers. The trick is to work out which weapons destroy which aliens. Weapons are selected from an icon menu to the right of the screen.

There are also shiny bubbles which can be pushed around the screen, to act as barriers to keep off the more violent aliens, I presume. But there could be more to it . . .

Things get more complicated when the aliens you've destroyed start to mutate into faster and more dangerous forms. Polishing off four different strains and their descendants gets you onto the next level.

Although the scrolling isn't particularly smooth, it's pleasingly fast.

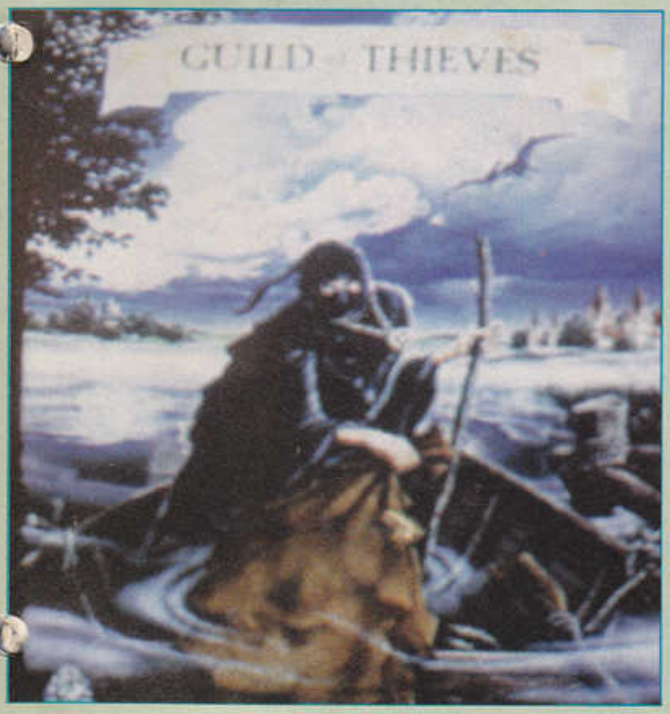
***Alien Evolution* features some nice classical title music and looks altogether like a well-conceived and programmed blast. And when you consider that it's only £4.99, you realise that it's more than well worth the money.**

continued on page 43 ▶

Hall of Fame

Program *Guild of Thieves* **Type** Adventure **Micro** Amiga, Atari ST **Price** £24.95 **Supplier** Rainbird, 74 New Oxford Street, London WC1A 1PS

GUILD OF THIEVES



Guild of Thieves: set in Kerovnia, same territory as *The Pawn*, including mountains, castles, wheat fields and an uncrossable river.

Wanted – thieves, rascals, rapscallions and other light-fingered types. Rewards – riches for successful applicants for this high risk job. Apply – Kerovnia Guild of Discreet Entry and Removal Operatives.

When Magnetic Scrolls issues an invitation to return to the land of Kerovnia, setting of *The Pawn*, few computer users will be able to resist, though unless you own an Amiga or ST you'll have to wait a while. Commodore 64, Atari 8-bit, CPC and PCW versions are all planned for release at some stage, however.

You start *Guild of Thieves* all at sea, though this is more in the literal than the metaphorical sense, and it shouldn't take too much wit to discover how you get out of the boat and onto the jetty.

From there on you are facing a mission to ransack the treasure house of an island kingdom and return to the master thief, who's acting as your mentor on this mission, with proof of your thieving abilities.

As you make your whistle stop tour of the island you'll encounter the usual selection of Kerovnian characters, all of whom may or may not be useful in your mission.

Location descriptions are as atmospheric and literary as you could hope. Wandering for a while will take you across a wheat field, into a forest, up a mountain with tantalising caves and to the banks of an uncrossable river.

Eventually, though, you'll come to the castle and that's where the fun begins as you discover what riches the chambers hold.

As with its predecessor, there's a selection of pretty, pastel pictures. All very Magnetic Scrolls, very Laura Ashley.

Add to these the clever, cypher-like hints feature, which can be invaluable if you find yourself stumped. There's no doubt that the whole game is very similar in style to *The Pawn*, so don't expect any wild departures in parsing capability or format.

Finally, Magnetic Scrolls 'guild' the lily with some wacky packaging including your own copy of *What Burglar?* magazine. It looks like Rainbird has got another light-fingered winner.

John Minson

Program *Guild of Thieves* **Type** Adventure **Micro** Amiga, Atari ST **Price** £24.95 **Supplier** Rainbird, 74 New Oxford Street, London WC1A 1PS

Hints Box

- When leaving the boat, don't try walking on the water.
- While you're in the woods, don't neglect to explore properly, in search of the temple. But watch for traps as you move in it.
- Getting into the castle can cause problems; offer a helping hand to an old man.
- Moving modern masterpieces in the king's bedroom uncovers a secret, but look before you leap.

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GOLD

◀ continued from page 40

Program *Force One* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Program *I, Ball* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Program *Metrocross* **Type** Arcade **Price** £9.99 (tape), £14.99 (disc) **Supplier** US Gold, Unit 2 & 3 Holford Way, Holford, Birmingham B6 7AX.

Jolly jump and dodge arcade conversion. Some sacrifices have been made from the original ST version, which is small comfort to C64 owners. But all the same, it's horrendously addictive, providing you're in brain-off mode.

Program *Milk Race* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program *Treasure Island* **Type** Adventure **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program *Twin Tornado* **Type** Simulation **Price** £9.95 **Supplier** Doctor Soft, 66, East Preston, Littlehampton BN16 2TX.

Program *Wiz* **Type** Arcade/Adventure **Price** £9.95 (tape) £14.95 (disc) **Supplier** Melbourne House, 8-10 Paul Street, London EC2.

Program *Wizball* **Type** Arcade **Price** £8.95 (tape) £12.95 (disc) **Supplier** Ocean Software, 6 Central Street, Manchester M2 5WS.

Program *Election* **Type** Arcade **Price** £9.95 **Supplier** Virgin Games, 2-4 Vernon Yard, London W11 2DX.

You've guessed it – this is a general election game, featuring Matcher, Ninnock, Owing and Pig Iron and you as Daniel Pauls, leader of the Idealist party. Anyone still awake at the back there?

Program *Falcon* **Type** Adventure **Price** £9.95 **Supplier** Virgin Games, 2-4 Vernon Yard, Portobello Road, London W11 2DX.

Claiming to be the first ever multi-user flight simulator – funny, we're sure we remember at least one other – you can wire two C64s together for the standard collection of complex controls as you fly into battle.

C16/Plus 4

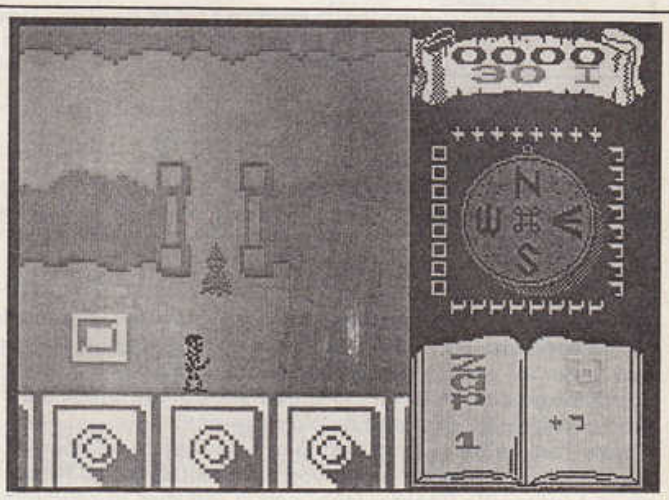
Program *Terra Nova* **Type** Arcade **Price** £7.95 **Supplier** Anco, 4 Westgate House, Spital Street, Dartford, Kent.

Electron

Program *Birdstrike* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Shoot the planes and pot the pigeons to name that tune. Standard shoot 'em up.

Program *The Hacker* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.



Wiz. Short for Wizard, eh? Hours of thought must have gone into that one, down at Melbourne House. And would you believe the game is just as original?

The plot, as such, concerns the meeting of the worlds of Light and Dark in one almighty clash. On Magical Isle the manifestations of evil are reaching epidemic proportions.

The Council of Wizards is reluctant to act though, because the only solution would be to destroy the link between the worlds, and in the dark world there are two runes which are still needed for spell-cashing.

Ho-hum! The upshot of all this is that you need to become a fifth level wizard and acquire the spells before you can break the link.

But not so fast. There are hordes of hungry beasties after your hide plus something called the Tracer, which would you believe – tracks you relentlessly? You can't even destroy it, just send it back to its own world, temporarily.

Even witless plots like this can be redeemed if the game is up to scratch but . . . this one isn't. The background and small and blobby sprites are colourful enough but the scrolling is numbingly slow. The end result is a third-rate *Druid* clone sold at full-price.

Duncan Evans

continued on page 44 ▶

NEW RELEASES

◀ continued from page 43

Apple Macintosh

Program *Jewels of Darkness* **Type** Adventure **Price** £19.95 **Supplier** Rainbird, 74 New Oxford Street, London WC1A 1PS.

IBM PC and compatibles

Program *A-B-C* **Type** Application **Price** £171.35 **Supplier** A-B-C Systems, Regent House, 188 High Street, Sutton SM1 1HH.

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Program *Five-a-Side Soccer* **Type** Arcade/Simulation **Price** £9.95 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Lord of the Rings* **Type** Adventure **Price** £19.95 **Supplier** Melbourne House, 8–10 Paul Street, London EC2.

Program *Pro Golf* **Type** Arcade/Simulation **Price** £9.95 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Passengers on the Wind* **Type** Adventure **Price** £24.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.

Spectrum

Program *Alien Evolution* **Type** Arcade **Price** £4.99 **Supplier** Gremlin, Alpha House, 10 Carver Street, Sheffield S1 4FS.

See box for comment.

Program *Deathscape* **Type** Arcade **Price** £8.99 **Supplier** Starlight, Ariolasoft, 68 Long Acre, London WC2E 9JH.

Program *Kick Boxing* **Type** Arcade/Adventure **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Program *Pulsator* **Type** Arcade **Price** £7.95 **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE.

See Amstrad CPC for comment.

Program *The Best of 3D* **Type** Arcade **Price** £8.99 **Supplier** Vortex, US Gold, Unit 2 & 3 Holford Way, Holford, Birmingham B6 7AX.

. . . Or the Best of Costa Panayi. All classics in their day, *Android Two, Tornado Low Level, Highway Encounter* and *Revolution* still hold up pretty well . . . and this compilation won't Costa Packet!

Program *Wiz* **Type** Arcade/Adventure **Price** £7.95 **Supplier** Melbourne House, 8–10 Paul Street, London EC2.

See box for comment.

Program *Mag Max* **Type** Arcade **Price** £8.99 **Supplier** Imagine Software, 6 Central Street, Manchester M2 5NS.

Program *Falcon* **Type** Adventure **Price** £9.95 **Supplier** Virgin Games, 2–4 Vernon Yard, Portobello Road, London W11 2DX.

There was a time when the name Tony Crowther was one to be conjured with. After the success of Alligata's *Blagger* and *Loco*, all weebly music and knock-out graphics, things started to go downhill with the appearance of the suspiciously familiar *Black Thunder* and *Suicide Express*.

Now Tony, after drifting from one compnay to another, like some Flying Dutchman of the software industry, has fetched up at Ariolasoft's Reaktor label and is reduced to producing Jeff Minter lookalikes. A sorry tale!

***Challenge of the Gobots* is a horizontally scrolling shoot 'em up, based on those Japanese robots that turn themselves into kitchen appliances. While Ocean's *Transformers* was clever but slow, Crowther's robot game opts for the fast and simple approach.**

It would be a fairly straightforward *Defender* style game if not for the inclusion of Minteresque gravity effects. Your flying robot can land on either the floor or the ceiling.

Your task is to knock out invaders' bases by collecting scooters (scooters???). You then drop these Vespas on the bases. You can also mine rocks to drop on the less well-protected enemies.

There are plenty of bloopy sprite effects, zooming baddies and zippy sounds, but they can't disguise the fact that the whole game is deadly dull.

Also included in the limited edition only, is an illustrated 'software book' on the flip side of the cassette, which explains the plot in more detail and ties in with the Gobots' background story. I'm convinced it's Lenny Henry telling the story, although Ariola says not, and the music is infuriatingly catchy and sounds uncannily like *Space Detective* by Robert Schroeder.

Chris Jenkins

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A few years ago, in the infant years of personal computing, I answered such an advert. In return for my few pounds of hard earned money I received a small set of duplicated sheets, loosely stapled into a small pamphlet.

Enclosed in these sheets were a number of ideas to be used to create my fortune. The first of these ideas was to form a software company, and for this I was told I would need no experience whatsoever.

All I had to do was to advertise for programs in the computer press and then pick the best from the resulting flood of applicants. These could then be duplicated and sold off by mail order using the same advertising media.

The second idea proposed was to offer the services of my machine to the local business world. The proprietors of said businesses would soon be falling over themselves in the rush to use my 'businessman's dream'. I'd never heard my ZX81 called that before!

I wonder how many businesses have gone under while the auditor attempted to understand the printout from a ZX printer, or the workforce argued about the mistakes in their wage packets. I am confident that this idea was produced by the accountancy profession as it was sure to double the time taken by your accountant.

The third idea looked a better bet at the time. This consisted of purchasing hardware and software, again through the computer press! Once purchased, the goods were to be thoroughly cleaned and tested before being sold back to the queues of eager buyers.

The trouble with this was that in the early days of home computing if you bought a computer one day, by the end of that week you could well have seen its 'new' value in your local chain store fall below your secondhand purchase price! The other major problem being the price the public expected you to pay for their kit: after all, if it cost them £49.99 why shouldn't you pay them £40 for it?

The final idea, and undoubtedly the best, was to use your computer to produce small A4 pamphlets. These could be on any subject from DIY plumbing to 101 ways to earn money from your home computer. Once compiled, you could advertise in the local and national press, depending on the subject matter, and sit back and wait for the post office van to pull up outside.

So you see it is possible to make a million with your computer. All you have to do is persuade 200,000 people to buy your pamphlet, *How to Make a Million From Your Home Computer.*

PUZZLE

Puzzle No 259

Percy has just computerised his supermarket! In order to increase efficiency, and to keep an up-to-date record of his stock he has installed a simple method of keeping an updated tally of his sales.

Each product now has a four digit code from 0000 to 9999, in order to identify it. This number appears on the price ticket attached to the product, so the cashier at the checkout simply enters this code into the computer, and the computer then does the rest.

The key pads are as shown in the diagram, and very soon after the system was introduced, the cashiers found that some product codes were 'quick' to enter, whereas others were not.

7	8	9
4	5	6
1	2	3
	0	

A 'quick' number is one in which each successive digit is either a repeat of the digit before it, or which uses an adjacent key. A 'non-quick' number involves a jump over an intervening key.

For example, 1266 is a 'quick' number as 1 is adjacent to 2, 2 is adjacent to 6 (even diagonally), and the 6 is then repeated. On the other hand 1066 is not quick, as it involves a jump between the zero and the 6.

Clearly, it would be an advantage to use as many quick numbers as possible in the system. Of the ten thousand possible codes with four digits, how many are 'quick' and how many are not?

Solution to Puzzle No 254

The multiplication was 2332 × 4 = 9328.

Each of the three values O, T and I are generated in the three FOR/NEXT loops. As each is generated it is checked against those already in use to prevent duplication of digits.

The value of 'OTTO' is calculated in line 130, and the product is found by multiplying this value by 'I'. This result is converted into a string variable and digits in common with those in the multiplier (T and O) are checked.

If these match, and the other two digits (S and P) are different, the results are printed.

Winner of Puzzle 254

This week's winner is Denise A Holme, who will receive £10.

Closing date for Puzzle 259 is June 17.

```
>
  100 FOR O=1 TO 9
  110 FOR T=0 TO 9
  120 IF O=T THEN 250
  130 OTTO=O*1000+T*100+T*10+O
  140 FOR I=1 TO 9
  150 IF I=O OR I=T THEN 240
  160 ST=OTTO*I
  170 IF ST>9876 THEN I=9:GOTO 240
  180 ST$=STR$(ST)
  190 IF VAL(MID$(ST$,2,1))<>T OR VAL
      (MID$(ST$,3,1))<>O THEN 240
  200 S=VAL(MID$(ST$,1,1)):P=VAL(MID$
      (ST$,4,1))
  210 IF S=O OR S=T OR S=I OR S=P THEN
      240
  220 IF P=O OR P=T OR P=I THEN 240
  230 PRINT O;T;T;O;"*";I;"=";S;T;O;P
  240 NEXT I
  250 NEXT T
  260 NEXT O
```

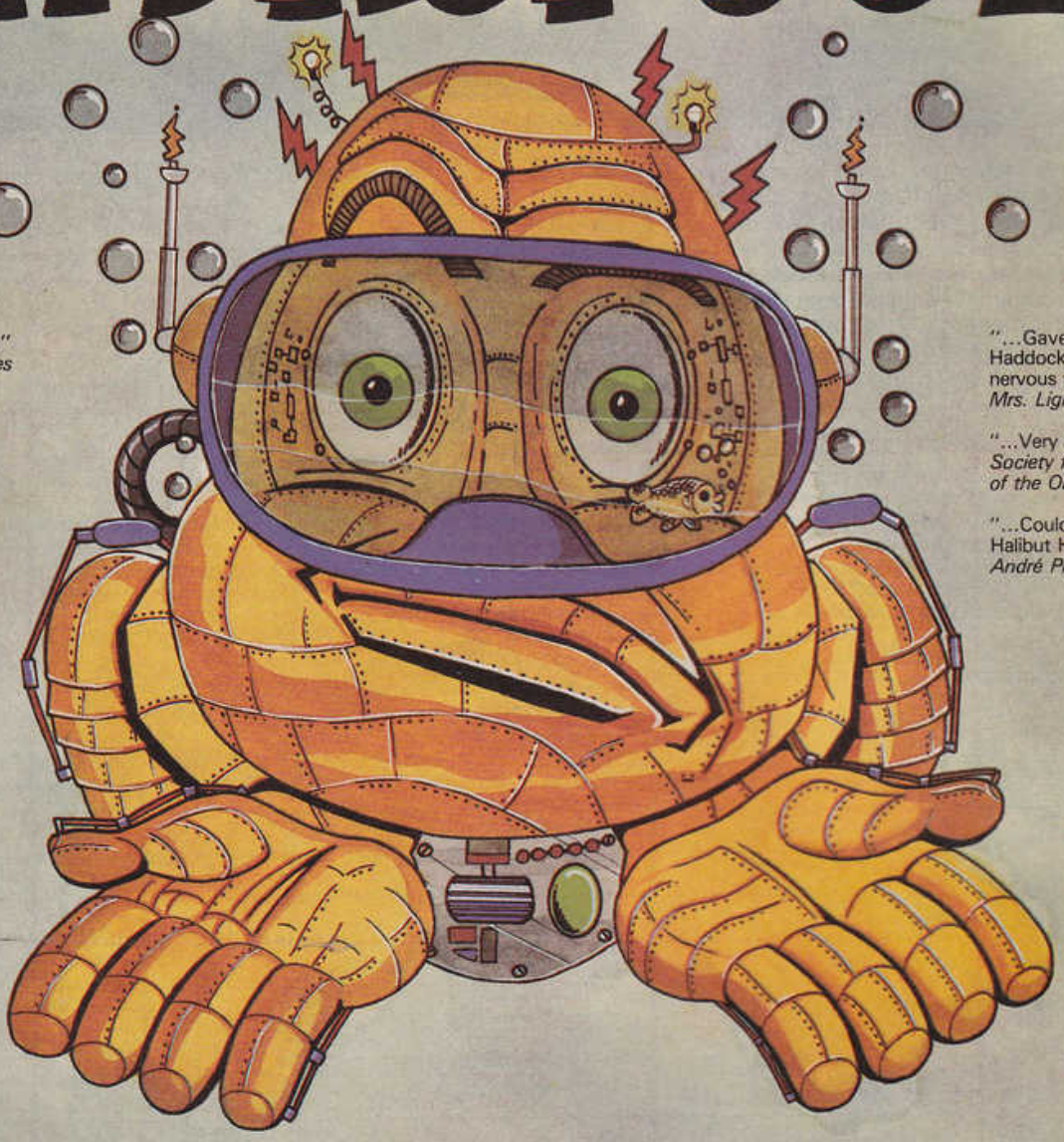
HACKERS

WOOLWORTHS TOP 30 COMPUTER SOFTWARE

MAY 1987

NO.	TITLE	SOFTWARE HOUSE	FORMAT	PRICE
1.	Enduro Racer	Activision	Spectrum	9.99
2.	6 Pack	Elite	C64	9.95
3.	6 Pack	Elite	Spectrum	9.95
4.	World Games	U.S. Gold	Spectrum	8.99
5.	Auf Wiedersehen Monty	Gremlin	Spectrum	7.99
6.	Arkanoid	Ocean	C64	8.95
7.	Gauntlet	U.S. Gold	Spectrum	8.99
8.	Star Raiders 2	Electric Dreams	C64	9.99
9.	Gunship	Microprose	C64	14.95
10.	Arkanoid	Ocean	Spectrum	7.95
11.	Nemesis	Konami	C64	8.95
12.	10th Frame	U.S. Gold	C64	9.99
13.	Bombjack 2	Elite	Spectrum	7.95
14.	Saboteur 2	Durrell	Spectrum	7.95
15.	Nemesis	Konami	Spectrum	7.95
16.	Marble Madness	Ariolasoft	C64	9.95
17.	Leaderboard	U.S. Gold	Spectrum	9.95
18.	Samurai Triology	Gremlin	C64	9.99
19.	Escape From Singes Castle	Software Projects	Spectrum	7.95
20.	Ranarama	Hewson	Spectrum	7.95
21.	Konami Coin Op	Imagine	Spectrum	9.95
22.	5 Star Games Vol. 2	Beau-Jolly	C64	9.95
23.	Paperboy	Elite	Spectrum	7.95
24.	Auf Wiedersehen Monty	Gremlin	C64	9.99
25.	Paperboy	Elite	C64	9.95
26.	Gauntlet	U.S. Gold	C64	9.99
27.	Konami Coin Op	Imagine	C64	9.95
28.	6 Pack	Elite	Amstrad	9.95
29.	5 Star Games Vol. 2	Beau-Jolly	Spectrum	9.95
30.	World Games	U.S. Gold	C64	9.99

HYDROFOOL



"...Worth shelling out for..."
The Woolwich Arsenal Times

"...A game for the hard of herring..."
'Hearsay' Magazine

"...Whale Kipper Whelk home in the Eel-side..."
Cardiff Choir News

"...Gave me a ba... Haddock and made me a nervous wreck..."
Mrs. Lighthouse

"...Very fishy..."
Society for the Preservation of the Obvious.

"...Could have filled the Halibut Hall..."
André Prawn

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