# POPULAR Computing WEEKLY

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29 January–4 February 1987

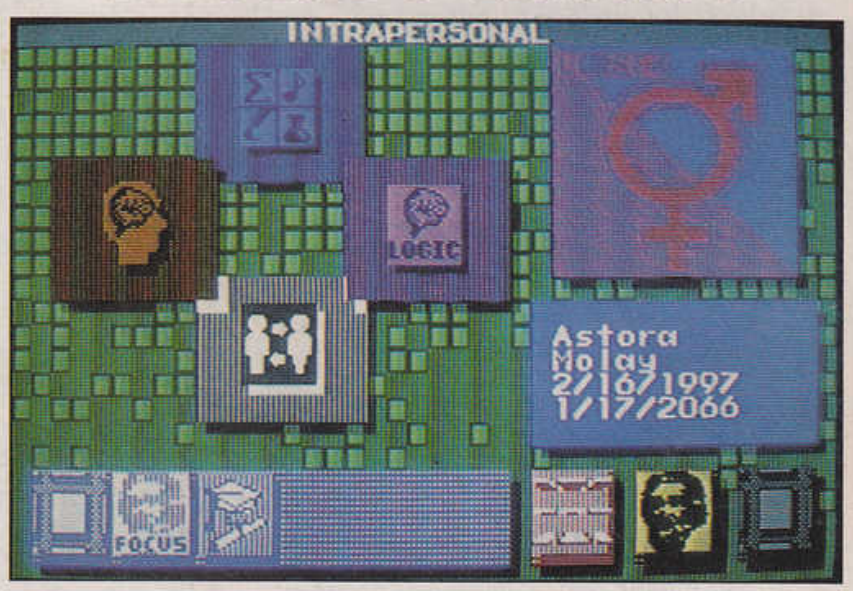
Vol 6 No 5


SPECIAL supplement

## Beginners' Guide to Computing Part three

Basic graphics
Communications

# Commodore's new Amiga A500 Picture inside




## REVIEWS

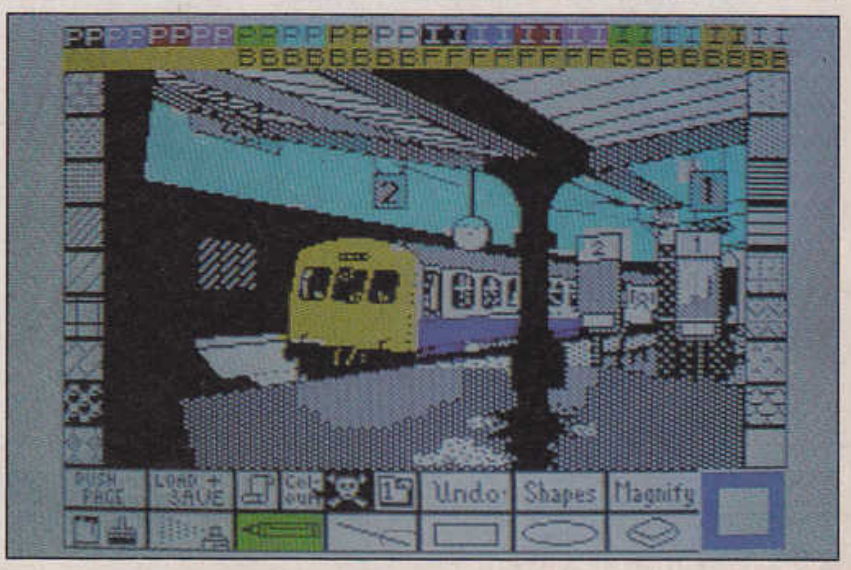
Activision's Portal – the computer novel

Icon Graphix 128: extended Spectrum art

## NEWS DESK

Mastertronic's Ninja Mission – on the ST for under £10

Commodore's plans for 8-bit range



# RAID 2000

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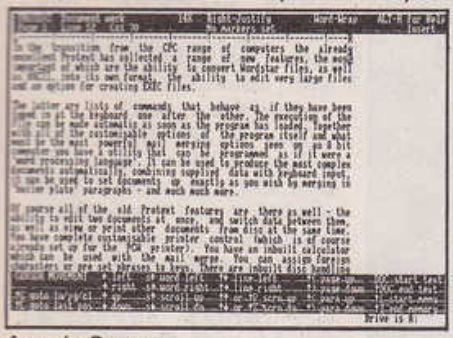
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Arnor's *Protext*

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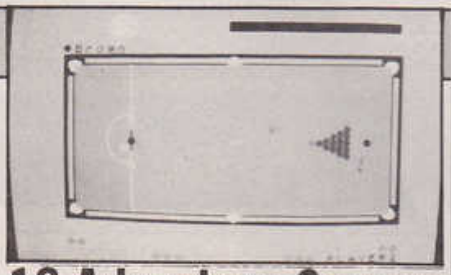
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ISSN 0265-0509

**Popular Computing Weekly. Tel: 01-437 4343.**

ABC

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

# Amiga 500 – see for yourself



**THE picture (left) shows Commodore's Amiga A500 machine, previewed privately, along with the A2000, at the CES show in Las Vegas earlier this month.**

**The 512K A500 with built-in 3½ inch disc drive will sell in the US at $599 (£428) – see News Desk, January 22 – and will almost certainly be priced competitively with Atari's entry level ST machines in the UK.**

**Commodore is keeping quiet about UK launch dates for the machines. A spokesman for the company said, "There will inevitably be extensions to the Amiga, and certainly this year, but there are no firm plans."**

# C128 offers in the air

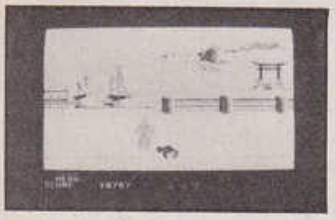
MOVES are afoot at Commodore UK and its main distributor to reposition its older range of machines for 1987.

Commodore UK's marketing manager, Mike Clarke, hinted that the C128 machine, which has had little publicity in recent months, may be the subject of a promotion this year.

"It's probably true that the 64C Compendium is a more attractive buy right now, but that pack will be replaced in the spring. Spring would be a good time to do something with the 128 – we're always looking to take the initiative and make things happen."

Commodore's distributor, Zappo, has recently started a promotion with the C128D in which the machine is sold with a free Philips green screen monitor and £50 off Precision Software's *Superbase* and *Superscript* programs. "Sales have boomed. It's transformed what has been something of a Cinderella product," said Don Carter of Zappo.

# Mastertronic set to release 16-bit Ninjas



*Ninja Mission* on Atari ST

MASTERTRONIC is ready to release its first budget Atari ST and PC compatible game next week. *Ninja Mission* is, as its name suggests, a martial arts combat game. Developed in the US, it will retail at £9.95 in the UK on both ST and IBM formats.

Further 16-bit machine releases from Mastertronic include *Pro Golf* and *5-a-Side Soccer*, also originated in the US.



While the price is exceptionally cheap for 16-bit games, Tynesoft also has a range of ST products for under £10.

# Plastic menus

*MENU Mate* is an accessory for the Amstrad PCW machines produced by Richman Software.

*Menu Mate* is a plastic sheet which fits over the PCW keyboard. Overwritten on the transparent plastic are various details listing, for example, actual size reproductions of pitch widths and an explanation of the copy, cut and pasting procedure.

Richman claims that it is more convenient than referring to a book or manual.

*Menu Mate* costs £6.99 from Richman at 14–16 Little Walk, Harlow, Essex.

# Sparklers explode up-market

BUDGET software publisher Creative Sparks is to launch a full-price label later this year.

Called Status Software, the new division will publish software for machines from the Spectrum to the IBM PC and compatibles, using both in-house and contracted programmers.

The first titles will be *The Vikings*, a scrolling arcade game licensed from Denmark, to be released for the Commodore 64 and Spectrum at £9.95 on tape (£14.95, Commodore disc).

Two PC-compatible games will follow, *Icon Quest for the Ring* and *Fortune Teller*, both licensed from the US.

While these will sell for a budget price (for PCs) at £14.95, CSD felt that Status was a more appropriate label than Sparklers for PC products.

Status will not, however, produce any games originated by MikroGen, the company which it bought at the end of last year. "MikroGen will operate as an entirely separate entity," said CSD's publishing manager Leigh Richards.

# Public domain libraries under threat in UK

THE distribution of public domain software in the UK has taken a jolt with the arrival of American company International Software Distributors (ISD) into the country.

ISD sells the large PC-Sig library – public domain games, utilities and business programs for the IBM PC and compatibles, comprising around 600 discs, with a number of programs per disc.

In the UK, two user groups, PD-Sig and Compulink, have been distributing PC-Sig software in the UK for some years now. Both have recently been sent solicitor's letters from ISD claiming infringement of PC-Sig's copyright.

With public domain software, the copyright rests with the program authors, who then grant permission for the software to be freely copied and distributed, without royalties being paid to the author (in this way, public domain software is distinct from 'shareware', where users are expected to pay the author – if they are satisfied with the program).

## Different order

ISD is not claiming copyright on the individual programs held within the PC-Sig library, but on the PC-Sig cataloguing and numbering system, and documentation.

Ian Philipps, of PD-Sig, commented, "We have now produced our own library, utilising vast quantities of the software in a different order, at the lawyer's request. We've had no communication from ISD since, so I presume it's all cleared up."

However, Frank Thornley, head of Compulink, does not accept ISD's claims. "We acknowledge its copyright on PC-Sig's catalogue, but we dispute its claim on the numbering system. It's virtually the same as copyrighting the numbers 0–9.

"Basically we're sitting back and letting them get on with it. We don't distribute PC-Sig discs, we distribute 100% compatible discs. We've removed any mention of PC-Sig from the discs.

"We're not paying any attention and if they pursue us any further, we'll retaliate."

## No doubt

Rita Wolfe, who heads ISD's newly set-up UK division, based in Sutton Coldfield, says there is no doubt about claims to copyright. "We're not talking about rights to PD software, but to the cataloguing – the numbering system, the write-ups, making sure there are no bugs. To copy a library from 1–500 is illegal. Compulink is taking the work wholesale that PC-Sig has built up over six years."

One feature of this dispute which rankles with both PD-Sig and Compulink is that ISD aims to be run as a commercial concern, although the original aim of public domain software was that it should be available either free, or at a nominal charge to cover basic costs. Both PD-Sig and Compulink say they are non-profit making organisations.

ISD charges £10 for a single disc volume of titles, while both PD-Sig and Compulink say they only charge enough to cover costs.

Rita Wolfe said, "Yes, we do aim to make a profit – it costs a lot to get this going and working. To say you're non-profit making is ridiculous – you might as well work hard and make it grow.

"Our prices will probably be going down soon anyway. We're setting up in Europe, so we won't have such high import costs."

**More news on pages 6 and 8**

# Software Hotlines



School's out at Grange Hill

**English Software** is well known for being short on hype, long on quality – yet doesn't seem to have had that huge mega-hit that will put it well and truly into the software First Division. Maybe *Leviathan* will change things for the company.

*Leviathan* (see below) is a graphically and technically impressive shoot 'em up that should appeal to anyone who enjoys a good blast.

**English,** headed up by Philip Morris, wanted to produce a two-way diagonal scroller with an emphasis on the manoeuvrability of the ship – as well as the obligatory zapping. Judging by the way the thing almost turns inside out as it weaves its way across the colourful screens, the company has succeeded.

Much of the programming was done by the Binary Design team, which is certainly putting itself around. As well as producing games for **Mastertronic** (includ *Feud,* its first **Bulldog** title . . . it's called **Bulldog,** incidentally, because produce will be released in a constant dribble) it got roped in to do *Grange Hill* for **Argus Press Software.**

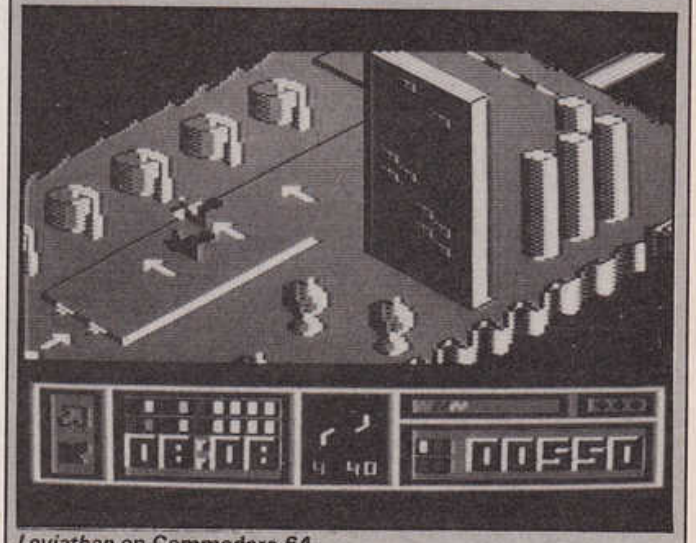
Combined with the fact that the game has been designed by Colin Jones, this means it has a chance of being a decent game, despite the naff tie-in. The plot has you returning to school after hours to retrieve your Walkie from the Staffroom, as it's been confiscated by an uncool teacher. Look out for a review soon.

Other **Argus** up and coming releases include *Agent Orange* (classy shoot 'em-up) and *Wibstars* (Mario Brothers meets Micro Dealer). **Lothlorien** will be releasing three titles that sound good, *Circus Maximum* (chariot racing), *Roundheads* (English Civil War stuff) and *World War One* which will be using that great 'cartographic' map display system, first used in *Legions of Death.*

There are also plans for a book tie-in from **Argus,** called *The Hunt for Red October,* based on the book by Tom Clancy. Best of luck, but book tie-ins don't seem to have done that well in the past.

*The Fourth Protocol* probably did best, soon to be a movie staring that lovable fact merchant Michael Caine. And now **Ariolasoft** will be bringing out Amstrad PCW, PC and Apple II versions of the game. Not a lot of people know that . . .

**John Cook**



*Leviathan* on Commodore 64

# Micro games of the future at arcades exhibition?

THERE were few surprises on the arcade machines front at the Amusement Trades Exhibition International at Olympia last week. But amidst the cacophony of fairground rides, bingo machines and one-armed bandits there were one or two interesting attractions.

Star of the show was undoubtedly Konami's *WEC Le Mans* simulator, the fully dynamic racing game first seen in Tokyo in October. It looks like the kiddie rides found outside supermarkets, but its action is anything but juvenile as it twists and turns, even vibrating if you run off the road.

Meanwhile the on-screen landscape turns from day to night, then back to day. A spokesman for Konami said that he could see no reason why it couldn't be converted for home micros – though obviously that would lose the dynamics.

Konami was also showing *Rock and Rage,* a two player combat game where you hit the baddies with your guitar, and *Gryzor,* also two player, which arms you with more traditional weapons like machine guns.

**Atari's *720°***




On the Atari stand there was "The Ultimate Aerial Experience!" No, not a flight simulator but a skateboard game called *720°* with various landscapes, such as ramps, jumps and slaloms. This uses a new controller to help with those tricky manoeuvres, speech and the arcade operator's favourite, an add-a-coin facility.

On the same stand Namco's *Rolling Thunder,* "for game freak" as the Japanese publicity sheet tells you, sets you against the evil Maboo, leader of Gledra, in the New York City of 1960. Not that the locals seems to matter much as it's mostly set indoors.

Still, there's lots of jumping over railings and shooting, so go for it, game freak.

Atari will also be handling the Seeburg Compact Disc jukebox in Europe. It was unable to say whether any of their new games will be converted for the home, but did reveal that there had been some enquiries. Representatives of many major software houses were attending the show.

Brent Leisure was demonstrating the *Play Choice-10* machine from Nintendo. It's the arcade equivalent of the compendium tapes, allowing you to play a variety of games until your money runs out. The real interest lies in its circuits; they record the popularity of individual titles, letting the owner change them at will!




My favourite machine wasn't a video game at all though. Doron's SR2 is actually quite a veteran. It's a huge, hydraulic cannister, mounted on hydraulic legs, rather like a professional flight simulator. The audience is shown films of big dippers or bobsleigh rides while a custom-built computer tosses them round and operates effects inside. Not one for the home, alas – unless some clever reader can find a way of interfacing a micro to a rickety, old typists' chair!

**John Minson**

## Legal aid

LEGAL advice is now available electronically from London solicitors Pennefather and Co.

The network being used is Microlink, and to introduce the new legal service, Microlink subscribers are entitled to one free reply to any legal query they care to put to the company.

Details from Microlink on 061-483 2737.

## BMX competition

CODE Masters, the company founded late last year by ex-Mastertronic programmers Richard and David Darling, is giving away a 20 inch Sony Trinitron TV in a competition based on its *BMX Simulator* game.

Entry forms are available from stockists of *BMX Simulator* and depict a screen shot from the game with one of the characters missing. Entrants must guess where the character should be on the screen. Proof of purchase of Code Masters games is required to enter, and the competition is open until the end of March.




# Apple increases revenue

APPLE Computer has announced sales of $662.3 million (£435.7m) for the financial quarter ending in December 1986. This is 24% up on the same period for 1985.

Apple's chairman John Sculley, speaking for the US market, commented that the "new Apple IIGS has been well received and our Macintosh products continue to achieve record sales levels."

For the UK side of the company, MD David Hancock noted that the figures "parallel our success in the UK market, where we have seen strong growth in Macintosh Plus sales, as well as the launch of the Apple IIGS."

# Kuma enters Atari ST business territory

KUMA Computers, which has produced a number of Gem-based utilities for the Atari ST, has moved to the Amstrad PC (and other PC compatibiles with Gem) with *K-Spread 2.*

According to Jon Day, Kuma's sales manager, *K-Spread 2,* a spreadsheet, "is the first in our data-compatible series of Gem-based applications for PC compatibles. Supporting packages such as *K-Graph 2* will be released very soon."

More details from Kuma, 12 Horseshoe Park, Pangbourne, Berks (07357 4335).

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## Tape upgrade aids alignment

LOAD-IT is a data-recorder modification that makes it easier to vary tape alignment. The device, basically an adjusting knob with calibrated scale, can be supplied in kit form or can be fitted by the manufacturer.

It costs £19.95 for the Commodore version, which includes an internal speaker, or £12.95 for other data recorders. Kit versions are £9.95 and £7.75 respectively.

Details from Load-It, 35 Stretton Road, Solihull, West Midlands B90 2RX (021 745 4970).

## Supersoft Zooms in on BBC

ZOOM, Supersoft's Commodore 64 machine code monitor, has now been converted to run on the BBC and Commodore 128. The BBC version incorporates a Commodore-style editor along with a verify function. the 128 version of *Zoom* is claimed to be more flexible than the built-in monitor, and allows any memory configuration to be set up rather than 16 standard banks. The program costs £12.95 for tape or £14.95 for disc versions.

Details from Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middx HA3 7SJ.

## Flight stuff

MICROSOFT'S *Flight Simulator,* one of the most popular programs for the IBM PC, has gained the ultimate accolade – a series of guidebooks for 'pilots'. The books are being published by Microsoft Press, a joint venture between Microsoft and Penguin Books, and are intended to complement the program.

First out will be *Flight Simulator Co-Pilot,* by Charles Gulick. The book takes you through basic flight and navigation techniques, and is due for publication in late February at £7.95. Second in the series will be *Runway,* which is due out in April.

Details from Penguin Books, 27 Wrights Lane, London W8 5TZ (01-938 2200).

## Postal games meeting planned

THIS year's British Play by Mail Conference is to be held at the Porchester Centre, Queensway, London W1 on February 2. The main focus of the conference will be traditional play by mail and *Dungeons and Dragons* type games, but computer and computer assisted games are also to be featured. Tickets are £1.50.

Details from Play by Mail-Players Association, 59 Kiln Court, Newell Street, London E14 7JP.




## English spoken

MICRO English is an O level English language tuition and revision course for the Amstrad PCW. It consists of 24 lessons alongside an audio cassette, and is intended to teach the rules of English usage. It costs £24.

Details from LCL, Melody House, Greys Road, Henley on Thames, Oxon RG9 1QU.

## Footnotes

MUCH aheming, uneasy shifting of feet and before my time guvnoring round at Telecom Towers as *Superman,* giant space turkey of Christmas '85, re-enters the software charts at number 24. We pass no comment on the game's value, but recall a Beyond operative many moons ago telling us – on the record – that the Spectrum version was "dreadful".

As two thirds of the large pile of remaindered stock currently being shifted seems to be Spectrum this comment seems peculiarly pertinent one year on.

Bad-mouthing seems to be in fashion. Two "reputable" computer dealers approached by a small business for a PC system came up with quotes not only beyond Amstrad prices, but beyond (lot of Beyonds in the column this week) belief.

The price quoted for one Olivetti-based system was £2,800, while lots and lots of other dealers are shifting similar systems around £1,500–£1,800.

Neither of the systems suggested actually did the job the business wanted to do, and when challenged on pricing the dealers bashed on about how unreliable Amstrad's machines were.

Not half as unreliable as some dealers . . .

Ariola is meanwhile dipping its toes into the strategy market, one of several new releases being *Blitzkrieg,* where you lead the German forces in a "historically and geographically accurate" assault on Britain.

If it's that accurate we assume the game involves hanging around in the Channel ports for a year or so, then getting bored and attacking Russia instead. Look out for *Blitzkrieg 2* . . .

## DIARY DATES

### FEBRUARY

17–20 February
**Which Computer? Show**
NEC, Birmingham
**Details:** Mainly business exhibitors
**Price:** £5
**Organiser:** Cahners Exhibitions, 01-891 5051

### MARCH

20–22 March
**The Electron & BBC Micro User Show**
UMIST, Manchester
**Details:** Software, hardware and peripherals for Acorn's micros
**Price:** £3 adult, £2 children, £1 discount for advance booking
**Organiser:** Database Exhibitions, 061-456 8835

### APRIL

24–26 April
**The Atari Computer Show**
Novotel, London W6
**Details:** First chance for Atari to show off exciting new strategy
**Price:** £3 adult, £2 children, £1 discount for advance booking
**Organiser:** Database Exhibitions, 061-456 8835

### MAY

8–10 May
**The Electron & BBC Micro User Show**
New Horticultural Hall, London
**Details:** Software, hardware and peripherals for Acorn's micros
**Price:** £3 adult, £2 children, £1 discount for advance booking
**Organiser:** Database Exhibitions, 061-456 8835

### JUNE

12–14 June
**The Commodore Computer Show**
Novotel, London W6
**Details:** Software, hardware and peripherals for Commodore range of machines
**Price:** £3 adult, £2 children, £1 discount for advance booking
**Organiser:** Database Exhibitions, 061-456 8835

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

# TERROR of the DEEP

"It is a strange craft that I control. The task before me is colossal, the dangers immense. The loch awaits..."



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# Letters

## A tip for Zeus

I use the Spectrum Zeus Z80 Assembler, which was published by Sinclair Research, and have found the following tip useful.

If, after using the assembler, *Print Peek 23296* gives the answer 15 (the attribute for white ink on blue paper) then the following two pokes prevent corruption of the printer buffer and, incidentally, allow the assembler to be fully used from 128K Basic.

```
POKE 62696 , 255
POKE 62697 , 2
```

*G Wearmouth*
*London N17*

## Alive and kicking

With reference to your article stating that the Opus Discovery disc drive is dead, let me say that it is alive and kicking, and resides with the Opus Discovery User Group at the address below.

It's about time Amstrad/Sinclair realised that a twelve minute load for a 128K game will send everybody to sleep and kill off the machine, while waiting in the wings there is a disc drive of excellent specifications for the taking.

*Peter Lilley*
*8 Raynham Crescent*
*Black Hill*
*Keighley*
*West Yorks*

## Wintersoft hibernating?

I would like to get in contact with Wintersoft, which produced *Ring of Darkness* for the Dragon many years ago. I would like to convert and improve the game on my Atari ST using C, but need to check some details and the copyright situation.

*Joel Hughes*
*Pontypool*

**Wintersoft certainly no longer operates under that name; can anyone help Mr Hughes?**

## Fast talking

With regard to the letter from Ivan Wilson, No Fast Loads?, I have a Commodore 128 and 1571 disc drive, and would like to say that it is nonsense to say that the 1571 will not cope with fast loaders (with the exception of Elite).

Ivan should try Digital Integration's *Tomahawk* helicopter simulator, and see the speed it loads at. When I use the 128 in 64 mode I also use the Epyx *Fast Load* cartridge; this speeds things up by about six times. It's not the fast-loaders Ivan should worry about, it's the dopes in the computer shops.

If Ivan had taken the shop's advice and bought a 1541 to use CP/M, it would have loaded with the speed of a stunned slug and would not have been able to use discs from other computers, since the 1541 is single sided. Don't listen to the idiots in the shops; getting the 1571 is the best move you could make. I have over 200 discs of software and have had very few problems since upgrading from the 64 to the 128 and 1571.

*James Strang*
*Manchester*

## Zeus bytes back

Anyone using Crystal's Zeus assembler on the 128K Spectrum will find that on exit to Basic to run their code, or to save any code or source file, the machine will crash.

This is because on running Zeus does a block move of 768 bytes to change the screen colour, 22528 to 23296; this block move is also used when you clear the screen.

As the 128K Spectrum uses the Printer buffer (address 23296) for extra routines, the Zeus block move will corrupt the first byte at 23296. The answer is to change the 768 bytes to 767, rectifying the problem.

To do this, *Clear 32767* and *Load''''Code*, so that Zeus will load but not run. Now *Poke 62696,255, Poke 62697,2*. To run Zeus, call it as the manual tells you to: *Print Usr 57344*. Zeus code starts at 57344 and is 6800 bytes long. My modified copy now works exactly as before, except for the printer option.

*R Wilkinson*
*Peterborough*

## The much-maligned MSX

Home computer owners tend to have a narrow field of opinions, normally formed around the machine which they own. This is understandable, since other machines, each with their own peculiar quirks, are obviously alien to them.

There has never been a better example of narrow mindedness than the letter from Mark Smith of Somerset. (PCW Vol 6, No 3).

As a subscriber to your magazine for more than four years, currently owning three computers (from a small Tandy portable through to an IBM PC), I am able to offer my humble opinion without any biased views, that the MSX system IS a failure. It has a tiny percentage of owners compared to other machines. Despite Mr Smith's comment, the software market is laughable, most certainly not big, nor even very popular. This fact is confirmed by the evidence that there are almost

# Puzzle

**Puzzle No 243**

Triangular numbers are those in the series 1 +2 + 3 + 4 + 5 + . . . etc. This triangle of dots represents the first five triangular numbers:



These numbers are 1, 3, 6, 10 and 15, because each of these numbers of dots can be arranged into a perfect triangular arrangement. By enlarging the triangle an infinite number of triangular numbers can be found.

However, can you find: a) the smallest triangular number which consists of the nine digits 1 to 9, each digit appearing once only (no zero); and, b) the largest number with these conditions.

**Solution to Puzzle No 238**

**Answer:** 'A' is equal to 244 and 'B' is equal to 146.

We can see from the grid that A has a cube with eight digits, so A must lie somewhere between 215 and 464. This range can be further reduced as its square has only five digits. Therefore A must lie between 215 and 316. Listing 'A' tests all of these values, the corresponding squares and cubes being converted into string variables. This allows us to check for matching digits in line 40. There are two possible values for A which have the relevant digits matching in the square and cube. These values are 244 and 315.

Program 'B' tests for possible values for variable B. As A must be one of the two possibilities given above, B must have a middle digit '4' and the middle digit of its cube a '2', or it must have a middle digit a '5' with the middle digit of the cube a '5'. This is tested for in lines 50 and 60.

Of the two possibilities printed out, one can be discounted as it contains a number of zeros, leaving just the one solution.

**Winner of Puzzle No 238**

This week's winner is Peter Ross, of Workington, Cumbria, who will receive £10.

**Rules**

The closing date for Puzzle 243 is February 15. Answers should include a program listing if possible.

```
>
Listing 'A'
>
   10 FOR A=215 TO 316
   20 S=A*A:C=S*A
   30 A$=STR$(A):S$=STR$(S):C$=STR$(C)
   40 IF MID$(A$,2,1)=MID$(C$,2,1) AND
MID$(S$,3,1)=MID$(C$,3,1) THEN PRINT
A$,S
$,C$
   50 NEXT A
>
Listing 'B'
>
   10 FOR B=111 TO 215
   20 B$=STR$(B)
   30 IF MID$(B$,2,1)<>"4" AND
MID$(B$,2,1)<>"5" THEN 70
   40 C=B*B*B:C$=STR$(C)
   50 IF MID$(B$,2,1)="4" AND
MID$(C$,4,1)="2" THEN PRINT B,C$
   60 IF MID$(B$,2,1)="5" AND
MID$(C$,4,1)="5" THEN PRINT B,C$
   70 NEXT B
```

never any MSX programs in the best-selling tables of either games or business software. To come to the defence of an innocent publication which is doing its best, his provocative comments to your magazine are at the very least, unnecessarily rude.

If he could just sit back, take stock of the market, and properly analyse his statements (perhaps even put the facts through his computer!), he will realize he is talking out of the back of his head, or perhaps even a little lower!

*Keith Alston*
*Wivenhoe*

**discs at £2.99. Try shopping around a bit more!**

## No lunatics here

Tony Kendle is wrong to say that PCW owners "can't do anything about the lunatic prices of ribbons". They certainly can! They can send their old ones to Aladdink for re-inking, as can owners of many other types of printer. See classified ads for details.

*Nick Godwin*
*Aladdink*
*Berwickshire*




*"This must be the de-luxe version"*

## Slippery discs

Back in *Popular*, November 13, your News Desk reported Amstrad CF2 disc prices had been reduced to £2.99.

Since then I have been to all the computer shops and high street chains in Leeds who stock and sell the discs only to be met with blank stares and "Our discs are £4.99".

I have even launched forth from Lave in my trusty Cobra to scour the galaxies but still to no avail.

I now turn to you, can you help me find some of these mythical beasties?

*S Hazelgrave*
*Leeds*

**Off the top of our heads, Pinner Wardpro of Dawlish Drive, Pinner, Middx, and Computers by Post (credit card hotline no: 01-760 0014) are both selling ten-packs of CP2**

## A non-Enterprising student

Having been an Enterprise owner for two years, and during this time putting in an investment of nearly £600, I have sold up due to the frustration of not being able to walk into a high street shop and obtain add-ons.

As a computer studies student I relied on it a lot, and I'm now looking at the Atari ST range, but have come across a question no-one so far has been able to answer.

The 1040STF was designed to be able to take the blitter chip, forthcoming sound processor and the TT 68020 co-processor unit, and the circuit board allows for these extras.

The 520STM circuit board was only able to take either a plug-in blitter or a solder-on blitter with additional Ram.

Is the new 520STFM designed like the 1040STF (but with less Ram and single-sided disc drive), being able to take the co-processor, blitter and other forthcoming developments on the circuit board?

Also could you please tell me when the next Hanover Fair is as I am not investing in Atari until then. Like many hopefuls I foresee a price reduction.

*G P Dawes*
*Letchworth, Herts*

## Back to the future

Did you publish an Index for 1965? I've looked in my back numbers and cannot find one anywhere.

*S W Hammond*
*Selston*

**Most of us were still in infants' school in 1965. If perchance you mean 1985, try *Popular*, March 6, 1986 (Vol 5 No 10).**

# Black to basics

We return to Game One in our Readers vs *Colossus* chess tournament this week, with the completion of move ten in the game.

The Readers, playing black, have voted to move the bishop forward – see diagram below for details. *Colossus*, playing white, has turned its attention to the ? column pawn.

## Back to black

Now we need your suggestions for the next Readers' move. Send your suggested move to *either* Inter-Mediates (*Popular* Chess), Freepost, Sawbridgeworth, Herts CM21 6YA (you do not need to use a stamp with this address), *or Popular* Chess, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp). Freepost is slower than normal mail, so if you want to save money on stamps, post your entry promptly. Entries must reach either address by Wednesday, February 4.

The move which gets the most votes will be entered into the game. Results and *Colossus's* response will be published in two weeks' time.

## Prizes

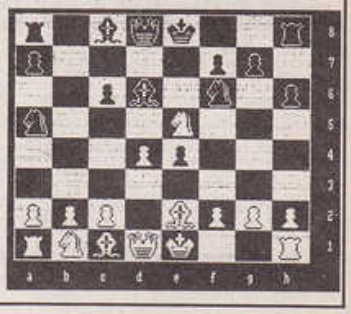
A British Museum reproduction Arran chess set will go to the person suggesting the most accepted moves at the end of the game. Five copies of *Colossus Chess 4* (available for most popular micros) will go to the most consistent entrants for the duration of the game.

*Next week, we return to Game Two, where the Readers are playing white.*

## Game One

**The moves so far:**

| | | |
|---|---|---|
| **1** | Pe2–e4 | Pe7–e5 |
| **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 | ? |



## Correction

Unfortunately the data loader for the Spectrum +2 disassembler printed recently won't work. This is the correct version.

```
10  FOR a=32000 TO
    33279 STEP 8
20  LET b=0
30  PRINT a;" : ";
40  FOR f=0 TO 7
50  INPUT x: PRINT x;" ";
    :LET b=b+x
60  POKE a+f,x:NEXT f
70  INPUT " Checksum =
    ";c
80  IF c<>b THEN PRINT
    "Error ! Re-type":GO
    TO 30
90  NEXT a
```

# Too Busy Earning a Living To Make Any Real Money?

You think you've got problems?

Well, I remember when a bank turned me down for a $200 loan. Now I lend money to the bank – Certificates of Deposit at $100,000 a crack.

I remember the day a car dealer got a little nervous because I was a couple of months behind in my payments – and repossessed my car. Now I own a Rolls Royce. I paid $43,000 for it – cash.

I remember the day my wife phoned me, crying, because the landlord had shown up at the house, demanding his rent – and we didn't have the money to pay it.

Now we own five homes. Two are on the oceanfront in California (I use one as my office). One is a lakefront "cabin" in Washington (that's where we spend the whole summer – loafing, fishing, swimming, and sailing). One is a condominium on a sunny beach in Mexico. And one is snuggled right on the best beach of the best island in Hawaii – Maui.

Right now I could sell all this property, pay off the mortgages – and – without touching any of my other investments – walk away with over $750,000 in cash. But I don't want to sell, because I don't think of my homes as "investments." I've got other real estate – and stocks, bonds, and cash in the bank – for that.

I remember when I lost my job. Because I was head over heels in debt, my lawyer told me the only thing I could do was declare bankruptcy. He was wrong. I paid off every dime.

Now, I have a million dollar line of credit; but I still don't have a job. Instead, I get up every weekday morning and decide whether I want to go to work or not. Sometimes I do – for 5 or 6 hours. But about half the time, I decide to read, go for a walk, sail my boat, swim, or ride my bike.

I know what it's like to be broke. And I know what it's like to have everything you want. And I know that you – like me – can *decide* which one it's going to be. It's really as easy as that. That's why I call it "The Lazy Man's Way to Riches."

So I'm going to ask you to send me something I don't need: money. £10 to be exact. Why? Because I want you to pay attention. And I figure that if you've got £10 invested, you'll look over what I send you and decide whether to send it back... or keep it. And I don't *want* you to keep it unless you agree that it's worth at least a hundred times what you invested.

Is the material "worth" £10? No – if you think of it as paper and ink. But that's not what I'm selling. What I am selling is information. *More* information than I give when I'm paid $1000 as a guest speaker. *More* information than I give in a one-hour consultation for $300.

But you're really not risking *anything*. Because I won't cash your cheque or money order for 31 days *after* I've sent you my material. That's the deal. Return it in 31 days – and I'll send back your cheque or postal order – uncashed.

How do you know I'll do it? Well, if you really want to be on the safe side, postdate your cheque for a month from today – *plus 2 additional weeks*. That'll give you plenty of time to receive it, look it over, try it out.

I know what your thinking: "He got rich telling people how to get rich." The truth is – and this is very important – the year before I shared "The Lazy Man's Way to Riches," my income was $216,646. And what I'll send you tells just how I made that kind of money... working a few hours a day... about 8 months out of the year.

It doesn't require "education." I'm a high school graduate.

It doesn't require "capital." Remember I was up to my neck in debt when I started.

It doesn't require "luck." I've had more than my share. But I'm not promising you that you'll make as much money as I have. And you may do better. I personally know one man who used these principles, worked hard, and made 11 million dollars in 8 years. But money isn't everything.

It doesn't require "talent." Just enough brains to know what to look for. And I'll tell you that.

It doesn't require "youth." One woman I worked with is over 70. She's travelled the world over, making all the money she needs, doing only what I taught her.

It doesn't require "experience." A widow in Chicago has been averaging $25,000 a year for the past 5 years, using my methods.

What does it require? Belief. Enough to take a chance. Enough to absorb what I'll send you. Enough to put the principles into *action*. If you do just that – nothing more, nothing less – the results will be hard to believe. Remember – I guarantee it.

You don't have to give up your job. But you may soon be making so much money that you'll be able to. Once again – I guarantee it.

I know you're sceptical. Well, here are some comments from other people. (Initials have been used to protect the writer's privacy. The originals are in my files.) I'm sure that, like you, these people didn't believe me either when they clipped the coupon. Guess they figured that, since I wasn't going to deposit their cheques for at least 31 days, they had nothing to lose.

They were right.

*And here's what they gained:*

**'Thanks to your method I'm a half millionaire'**

"Thanks to your method I grossed about $500,000. Would you believe last year at this time I was a slave working for peanuts?"

G.C., Toronto, Canada.

**'$24,000 in 45 days'**

"...received $24,000.00 in the mail the last 45 days.

"Thanks again."

Mr. E.G.N., Matewan, W.VA

**'Made enough to retire at 41'**

"If it hadn't happened to me, I wouldn't have believed it... A few years ago, I had nothing to lose. I was unemployed and broke."

"Now, thanks to you and the 'Lazy Man's' program, I have made enough money (at age 41) to retire in style.

R.A., Huntingdon Beach, Calif.

**'There's no stopping me'**

"Since I've got your (Lazy Man's Way to Riches) in July, I've started 4 companies... there's no stopping me and I'm so high I need chains to keep me on the ground."

M.T., Portland, OR

**'Wow, it does work!'**

"Oddly enough, I purchased Lazy Man's Way to Riches some six months ago, or so, read it... and really did nothing about it. Then, about three weeks ago, when I was really getting desperate about my financial situation, I remembered it, re-read it, studied it, and this time, put it to work and WOW, it does work! Doesn't take much time, either... I guess some of us just have to be at a severe point of desperation before we overcome the ultimate laziness, procrastination."

Mr. J.K., Anaheim, CA

**'Made $70,000'**

"A $70,000 thanks to you for writing The Lazy Man's Way to Riches. That's how much I've made...

"I use this extra income for all of the good things in life, exotic vacations, classic automobiles, etc. Soon I hope to make enough to quit my regular job and devote full time to making money the easy way..."

Mr. D.R., Newport Beach, CA

**'$260,000 in eleven months'**

"Two years ago, I mailed you ten dollars in sheer desperation for a better life... One year ago, just out of the blue sky, a man called and offered me a partnership... I grossed over $260,000 cash business in eleven months. You are a God sent miracle to me."

B.F., Pascagoula, Miss.

**'Steadily upward ever since'**

"I ordered Lazy Man's Way to Riches in June... by September, my career was launched and has gone steadily upward ever since."

Mrs. B.A., Walnut Creek, CA

**'$7,000 in five days'**

"Last Monday I used what I learned on page 83 to make $7,000. It took me all week to do it, but that's not bad for five day's work."

M.D., Topeka, Kansas

What I'm saying is probably contrary to what you've heard from your friends, your family, your teachers, and maybe everyone else you know.

I can only ask you one question. How many of them are millionaires?

So it's up to you.

A month from today, you can be nothing more than 30 days older – or you can be on your way to getting rich. You decide.

The wisest man I ever knew told me something I never forgot: "Most people are too busy earning a living to make any money."

Don't take as long as I did to find out he was right.

I'll prove it to you, if you'll send in the coupon to my publisher now. I'm not asking you to "believe" me. Just try it. If I'm wrong, all you've lost is a couple of minutes and a postage stamp. But what if I'm right?

*Some have called it a Miracle. Some have called it Magic. You'll call it "The Secret of the Ages."*

*As for me, I thank God that before he died Millionaire Joe Karbo left, for all to share, the secret of "The Lazy Man's Way to Riches." The above story, which is in his own words, is his gift to you.*

**PROOF!**

**Don't take my word for it. These are excerpts from articles in newspapers and magazines:**

**Time:**

He only works half the year in his stunning office on California's Sunset Beach, and even when he's there he puts in short hours... In other words, Joe Karbo, 48, is the prototype for... "The Lazy Man's Way to Riches.'

**Boston Herald-American:**

The book has drawn hundreds of letters from persons who have profited by it...

**Los Angeles Herald-Examiner:**

An unpretentious millionaire, Joe Karbo of Huntingdon Harbor is a vibrant, living testimonial to his intellectual, pragmatic conviction.

**Money Making Opportunities:**

Maybe Joe Karbo has the secret. Don't you think you owe it to yourself to find out what it is all about?... I just finished it – and I'm off on a vacation myself. Get the idea?

Sworn Statement:

"On the basis of my professional relationship as his accountant. I certify that Mr. Karbo's net worth is more than one million dollars."

Stuart A. Cogan

Chartsearch Ltd.,
11 Blomfield Street,
London EC2M 7AY

You may be full of beans, but what have I got to lose? Send me the Lazy Man's Way to Riches. *But don't deposit my cheque or postal order for at least 31 days after it's in the mail.* If I return your material – for any reason – within that time, return my uncashed cheque or postal order to me.

☐ On that basis, here's my £10
☐ Please charge my credit card.

A/C Number (Access/Visa/Diners/Amex)

Name

Address

Code

Signed Date

(Please Print Clearly)

Please allow 14-21 days for delivery

REGISTERED IN ENGLAND No. 1340222

# High quality prints

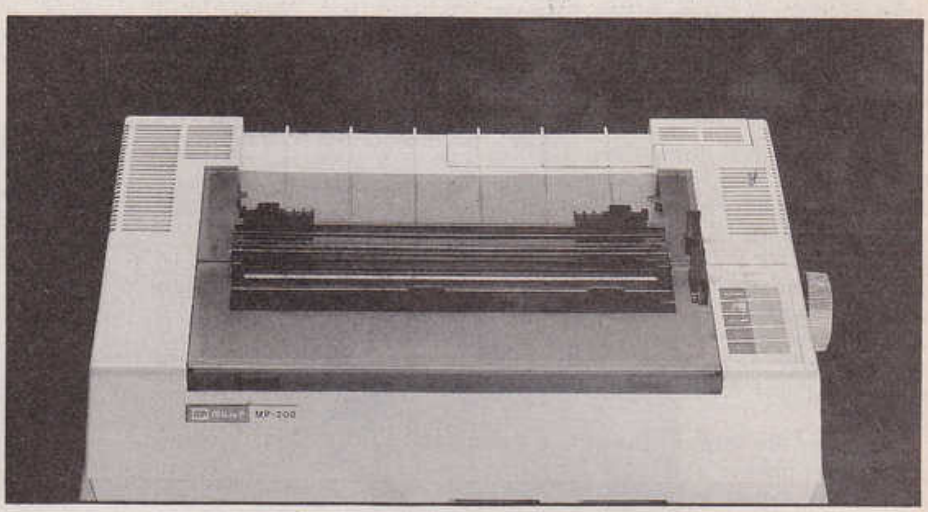
*Keith Hoyle found himself impressed by MicroPeripherals' MP 200 dot-matrix printer. It's not cheap, but performs to a high standard*

The MicroPeripherals MP 200 gives the impression of being a well-built printer which could do a fair day's work, and not suffer a backache afterwards!

The printer is a badged version of a Nakajima product, and comes complete with a power cord and plug, a paper feed separator and manual. The standard Centronics interface comes in the form of a plug-in circuit board which fits neatly at the back under a plastic cover. There's also an RS-232 option.

Also at the back of the printer is a sliding cover which lifts to reveal two banks of eight DIP switches. These allow you to set standard or IBM mode, perforation skip length, text mode and so on. The printer buffer can also be set from 1K to 7K. All these facilities, plus others, can also be set through software, making the MP 200 very versatile indeed.

The MP 200, as its name suggests, can print at 200 cps in draft mode. In NLQ mode, speed is 40 cps; this gives outstanding quality, especially when using the emphasised mode at the same time. Condensed, expanded, and differently pitched texts are also available.



The MP 200's footprint is 435 x 345 x 110mm, and weight is around 8Kg. The 157-page manual is in ring-bound A4 format, and is pretty thorough, explaining how to access all the printer's modes of operation quite nicely.

The front panel of the MP 200 has several soft-touch buttons on the right hand side. These select NLQ mode on/off, character pitch (10, 12, or 17 cpi and proportional spacing), on/off line, line feed and form feed. Each has its own LED, and there are also LEDs for power, ready, and paper out.

Usefully, the MP 200 takes friction or tractor feed paper, from 110 to 250mm wide. With friction feed, the paper bail release lever doubles as an auto paper feeder; like the Amstrad PCW 8256's printer, you position the paper so that it is just gripped by the rollers, pull the lever towards you, and the paper is advanced one inch. Tractor feed is more fiddly, but no more so than with any other printer!

The MP 200 uses inexpensive (£3–£4) Epson RX80-type ribbons. These are easy to change and come in several different colours. The manifold lever just inside the noise cover allows you to alter the distance between print head and ribbon, giving lighter or darker print. Pressing the *Select* button while the printer is working makes it stop at the end of the next line, allowing you to change the ribbon to another colour before continuing with the following line.

Although the retail price of the MP 200 is over that of comparable machines such as the Citizen 120D, Epson LX80, Commodore MPS1000 and Star NL10, it's worth shopping around for bargains.

I don't feel that the competitors can touch the MP 200 for speed or quality of print, and my only regret was not being able to afford the MP 201, which has the same spec as the 200, but with a wider 16 inch carriage. With the reassurance of a two year warranty, I could recommend the MP 200 to anyone.

**Hardware** *MP 200 Printer* **Micro** Any with standard Centronics/ RS-232 **Price** £378.35 **Supplier** MicroPeripherals, Intec Unit 3, Hassocks Wood, Wade Road, Basingstoke, Hants. Tel: 0256 473232.

**MP 200 – Print sample**

```
                V1.05  *

SWITCHES:       S1-1 S1-2 S1-3 S1-4 S1-5 S1-6 S1-7 S1-8
                OFF  OFF  OFF  ON   ON   OFF  OFF  OFF

                S2-1 S2-2 S2-3 S2-4 S2-5 S2-6 S2-7 S2-8
                ON   ON   OFF  OFF  OFF  OFF  OFF  OFF
```

!"№$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ;Ñ¿^_`abcdefghijklmnopqrstuvwxyz{Ñ}~

# Pro power for the PCW

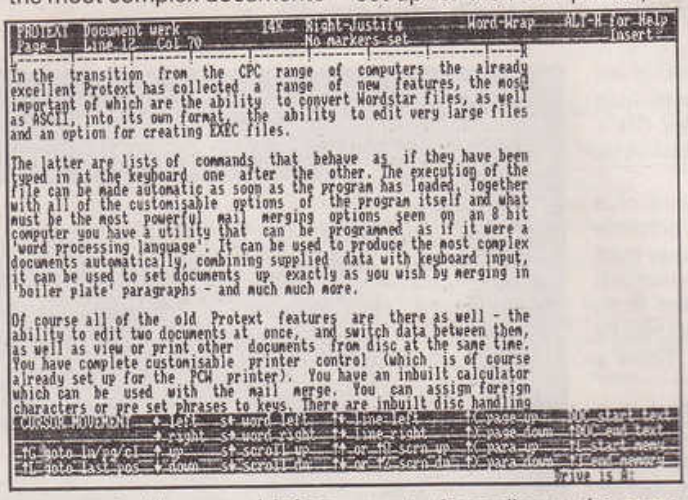
*Protext* arrived on my desk just in time to earn itself the (unofficial) title of 'PCW utility program of 1986'. The program is actually an amalgamation of the three utilities sold for CPC machines – the *Protext* word processor, the *Promerge* mail merge extension and *Prospell* spelling checker.

In the transition from the CPC range of computers the already excellent *Protext* has collected a range of new features, the most important of which are the ability to convert *Wordstar* files, as well as Ascii, into its own format, the ability to edit very large files and an option for creating *Exec* files.

The latter are lists of commands that behave as if they have been typed in at the keyboard one after the other. The execution of the file can be made automatic as soon as the program has loaded.

Together with all of the customisable options of the program itself and what must be the most powerful mail merging options seen on an 8-bit computer you have a utility that can be programmed as if it were a 'word processing language'.

It can be used to produce the most complex documents automatically, combining supplied data with keyboard input, it can be used to set documents up exactly as you wish by merging in 'boiler plate' paragraphs – and much much more.




Of course all of the old *Protext* features are there as well – the ability to edit two documents and switch data between them, as well as view or print other documents from disc at the same time.

You have an inbuilt calculator which can be used with the mail merge. You can assign foreign characters or pre set phrases to keys. There are inbuilt disc handling options that let you copy or format discs without even leaving the program (you can even format or copy CPC data discs using the PCW).

*Protext* is a command-based word processor rather than a menu-driven one like *Locoscript*. Not only does this make it much faster to use but it makes it possible to get the most from the *Exec* files. Learning to use the program is however made simple by an exhaustive manual and the most logical selection of keypress commands I've ever seen on a word processor.

A welcome improvement on the old version is a complete inbuilt help option that gives a summary of every command and keypress.

Accept no substitutes, this is the genuine as-seen-on-TV actual-size article, this is *the* word processor for the PCW. Its range of features leaves *Wordstar* looking basic and its lightning speed leaves *Locoscript*, in even its improved forms, squeaking and creaking at the joints.

**Tony Kendle**

**Program** *Protext* **Micro** Amstrad PCW or CPC with CP/M Plus **Price** £89 **Supplier** Arnor, 118 Whitehorse Road, Croydon, Surrey CR0 2JF.

# Look after your money

Until recently, any form of personal accounting on a home computer was largely considered a waste of time.

What with the laborious chore of loading and saving data to tape and the relatively unsophisticated programs – it was simply easier to use the 'back of an envelope' method of accounting for most households.

The advent of disc-based systems, however, and the increasing interface between the arenas of home and business computing have changed things a little – with the admiral *Plan-It* from Database Software as the latest example.

This package consists of a suite of four programs, namely *Personal Accounts, Financial Diary, Card Index* and *Loan Calculator* – which between them should satisfy the needs of most home users.

*Personal Accounts,* as you might expect, comprehensively deals with the area of day to day financial transactions, such as bank account, cash dispenser and credit card transactions, together with another section breaking down your normal outgoings (bills, food, car, etc) into separate headings that can be renamed, if need be.

## Cheque numbers

Quite simply, you enter in your expenditure under each section, and each financial transaction – giving dates and cheque numbers when prompted.

If kept up to date, this can provide you with complete bank statements (unlike the abbreviated print-outs supplied by most clearing banks), together with itemised expenditure (yes, you did spend that much on booze last month!) and an up to date, accurate picture of your financial situation.

The penalty for this detail is that you must be meticulous in entering the relevant data.

*Card Index* provides a reasonably flexible database that will serve as a primitive mailing list, whereas *Financial Diary* is an events/expenses reminder utility that includes search facilities.

*Loan Calculator* provides little more than a 'plug in the numbers' facility for working out loan repayments, but might come in useful for those once in a while 'what if?' sessions.

All programs are used via clear and simple menus that shouldn't be too confusing for new users, and the accompanying manual, although concise, is adequate.

Available for the CPC and PCW machines, *Plan It* can be recommended if you feel the need for stringent financial control in your life – and have the willpower to keep up the entries.

**John Cook**

**Program** *Plan It* **Micro** Amstrad CPC/PCW **Price** £24.95 (disc) £14.95 (tape – CPC only) **Supplier** Database Software, Europa House, 68 Hazel Grove, Stockport SK7 5NY.

# Icon see clearly now

*Chris Jenkins assesses the improvements made in ASL's Icon Graphix 128, a development from its original Spectrum 48K package*

*Icon Graphix 128* is a much extended version of a fairly successful 48K program, and incorporates many drawing functions first seen in the better-known Rainbird *OCP Art Studio* or Softek's *The Artist*.

The main improvement, of course, is that the 128K version has more working memory space. This has allowed ASL to incorporate two extra menus of drawing facilities.




**Using up to eight paper and eight ink colours with *Icon Graphix***

## Spraycan

Like the original 48K version (which is still available at £9.95), *Icon Graphix 128* makes great use of said wee pictures in its function selection menus. You can use either a Kempston joystick, Kempston mouse, Interface 2 joystick or keyboard to control the cursor, which changes shape according to the current function. This gets a mite confusing when the spraycan cursor, for instance, is superimposed over the felt-tip icon; possibly a case where the pull-down menus of the OCP *Art Studio* were a better solution to the problem.

## Selecting new patterns

Another annoying oddity is the display of fill patterns available, which appear around the drawing area rather than on a separate page. Although this makes it easier to select new patterns, I would have preferred a larger drawing area. Being able to push the drawing window around is little consolation.

So what are the real improvements? The main menu features are exactly the same as the original version: fill, brush, pen, line, square, circle, magnify and so on.

The magnify option is less useful than that of, say, *The Artist;* it blows up the selected area to fill the whole screen, rather than filling a small window which can be worked on in reference to the main picture.

The other options are pretty standard, each one being illuminated in yellow as you select it; selecting shapes gives you access to a choice of sixteen pen shapes, although there's only one spray can shape available.

The 34 built-in fill patterns can be edited in the pop-up pattern box, the magnified version being repeated in normal size in the pattern strip. There are also erase and undo facilities on the main menu.

Menu page two brings up a new set of option boxes at the bottom of the screen. These include text entry (there are ten fonts supplied with the package), bold and outline font options, screen clear (this can be undone), horizontal and vertical flip, inverse video, and *Hide* which displays the full drawing without menus. For some reason, most of these options are labelled with text rather than icons, and there are several functionless boxes inhabited only by spiderwebs (you think I'm joking!). This goes to give the program an unfinished feel which does not inspire great confidence.

## Cut and paste

Most of the facilities on the third menu page are concerned with cut and paste, the area where *Icon Graphix 128* shows the most improvement. A cut area can be defined using a box, or, usefully, by outlining an area. The area can then be cut out and moved, repeated, inverted, and, if you have used the box cut, have everything inside outlined. Many of these facilities are only otherwise found on Softek's *Artist 2*.

The whole program can be transferred to microdrive, and you can save pictures, patterns and cuttings to tape or microdrive. The biggest failure of the program, though is that it can only print out to Sinclair or Alphacom printers.

## Oddities

Overall *Icon Graphix 128* is fairly straightforward to use, but has some oddities and omissions. Given that, at £12.95, it is not as expensive as *OCP Art Studio* or the *Artist 2*, so you may not want to dismiss it out of hand; but both these programs have extra facilities and polish which make *Icon Graphix 128* look unfortunately incomplete.

**Program** *Icon Graphix 128* **Micro** Spectrum 128/Plus 2 **Price** £12.95 **Supplier** Audiogenic, PO Box 88, Reading, Berks.





# Time is of the essence

*Tony Kendle finishes the guide to level one of Nosferatu and introduces some useful tips for Tau Ceti and Dan Dare*

Let's finish off the tips for level one of Piranha's *Nosferatu* first:

"Leave the dining room now and cross the corridor. If you get attacked by the bats just hit them with the sword – its easy to do as long as you are facing the correct way. Get underneath the balcony and the bats will not be able to get you – walk to the right, past the staircase until you see another door to the bottom right. This is the library.

"In the library search the desk drawers for food and the deeds. If you still haven't got them you need to tackle the secret passageway, and to do that you need to light the lamp. Go to the bottom right hand room of the library.

"Move the ladder to the left of the gap in the bookcases and climb up it. You will find yourself in a secret room where there may be some food and also, on the desk, a box of matches. Take these and you will have a lit lamp.

"Go back to the library and on the bookcase on the right hand wall you will find the secret passageway.

"Continue down the stairs, killing bats, and turn left at the bottom. Go to the top left and search the cupboard for food. Then go through the arched door in the top right into a graveyard.

"Keep going and leave through the top left door. Here you may find the deeds in the desk or the fireplace.

"Off a door and down some stairs you will find Nosferatu the vampire. Best thing to do is not to bother tackling him. The sword doesn't even dent him. You could try taking the garlic or crucifix to him but you either have to do without the sword or the light to do so – which is essentially fatal.

"Leave through the bottom left (there is some food in the fireplace), go left and back up the stairs. You come out in a room with a key on a rack – this room is actually on the opposite side of the hall to the dining room.

"From this room you can leave by the middle left corner where you find yourself behind some cupboards – carrying on to the left brings you to the kitchen with loads of food

"Returning to the key room leave by the bottom right and go right along the corridor, staying under the balcony, exit by the door on the top right (don't worry about the dogs) and go down and right to the triple stairs. Drop the deeds here and return to the key room. Take the key off of the left-most rack.

Return back up the corridor to the front door. Unlock this door. Pick up the deeds and you are free to go on to level two!"

Many thanks to Chris Stoneham, now does anyone have help for later levels?

On to other business now with some, doubtless welcome, tips for some recent blockbuster Commodore games from Chris Eastwood of Witney. As usual with the tips that Chris sends, you need a reset switch to get the pokes in.

**Tau Ceti**

"First type in the following listing and save it to either tape or disc for further use.

```
10 FOR T=18590 TO 18592 : POKE T,234 : NEXT
20 FOR T=15325 TO 15326 : POKE T,234 : NEXT
30 FOR T=15175 TO 15176 : POKE T,234 : NEXT :
   POKE 15178,234
40 FOR T=15992 TO 15994 : POKE T,234 : NEXT
50 POKE 19828, 191 : POKE 15990, 169 : POKE
   15991,191
60 SYS 8192
```

"When you have saved the listing load in *Tau Ceti* as usual, but when it has loaded reset on the title page. It is important that you don't reset at any other point in the game or the pokes will not work.

"When you have reset the computer load in the listing and run it. You can now play *Tau Ceti* with infinite missiles, infinite flares, infinite AAM's and infinite shield strength making the game much more enjoyable and playable. You can still run into docking buildings though so beware.

**Dan Dare** (which is also Richard Branson's new nickname, I understand).

"Load *Dan Dare* as usual, but then reset the game on the title page, then type in the following pokes to obtain 24 hours for completing your task.

```
POKE 22888,50
POKE 22889,52
POKE 22891,48
POKE 22892,48
POKE 22903,50
POKE 22904,52
POKE 22906,48
POKE 22907,48
```

"Then type *Sys 22700* and hit *Runstop/Restore* to start the game with a lot more time on your side."

# Charts

## Top Twenty

| | | | |
|---|---|---|---|
| 1 | (1) | Gauntlet | US Gold |
| 2 | (2) | Paperboy | Elite |
| 3 | (3) | 180 | Mastertronic |
| 4 | (8) | Konami's Coin-op Hits | Imagine |
| 5 | (7) | BMX Simulator | Code Masters |
| 6 | (4) | Footballer of the Year | Gremlin Graphics |
| 7 | (9) | Trivial Pursuit | Domark |
| 8 | (–) | Ninja | Mastertronic |
| 9 | (6) | Ollie and Lisa | Firebird |
| 10 | (5) | Space Harrier | Elite |
| 11 | (11) | Computer Hits Vol 3 | Beau Jolly |
| 12 | (–) | Super Soccer | Imagine |
| 13 | (12) | Hit Pack | Elite |
| 14 | (10) | Five Star Games | Beau Jolly |
| 15 | (13) | Breakthrough | Data-East/US Gold |
| 16 | (–) | La Swat | Mastertronic |
| 17 | (19) | Speed King II | Mastertronic |
| 18 | (15) | Head Coach | Addictive Games |
| 19 | (–) | Konami's Golf | Imagine |
| 20 | (16) | Flash Gordon | Mastertronic |

**All figures compiled by Gallup/Microscope**

# Adorable Activision




One day, all games will be made this way; well, that might be a bit of an exaggeration, but if you, are interested in the future of the computer game then check this one out.

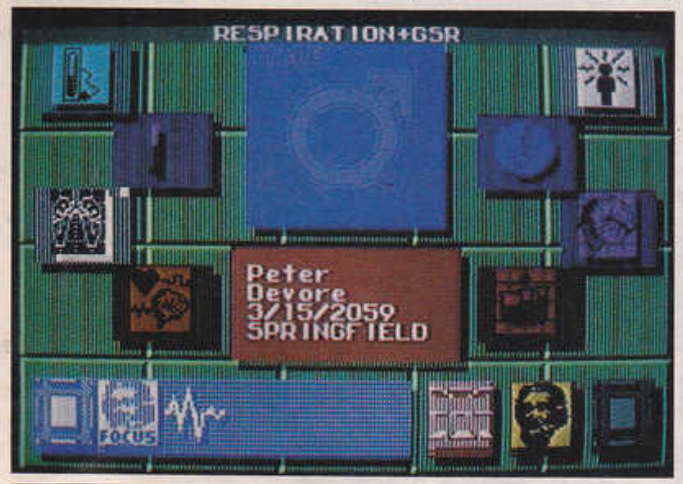
And thank you very much Activision for having the guts to bring it out. Because you can bet your Auntie's pet goldfish that no UK based software house would ever have tried such a venture – a disc-based computer novel.

The British software market is still in the tape-based, small memory, post computer console phase of home computing – a phase that never existed in the comparatively affluent States – so the user base to justify such a product just doesn't exist.

*Portal* is genuinely something very different from the run of the mill game. The scenario has you (returned from a failed 100 year mission to outer space) sitting in front of a computer console, accessing WorldNet (like Micronet, only with 17 billion terminals) – trying to find out where all the people have gone.

Earth is empty. No sign of human life whatsoever and you must interrogate the equally baffled computer to try and find out where they have all vanished – then maybe follow.

The plot is slowly revealed by accessing each of the 12 databases that make up WorldNet. At first, almost all are empty – but slowly the computer (which has a personality called Homer) begins to remember, and files begin to appear on the database directories.




Some seem to be narrative, conversations picked up by the alert systems of the year 2106AD.

Some are straightforward history lessons and background information on the 21st Century. Others contain bewildering arrays of biochemical and genealogical data on the major personalities that seem to be part of the story.

With each file you read (all this accessing is done under simple joystick control), the computer remembers more, and the story begins to unfold.

Written by Rob Swigart, programmed by Nexa (recently acquired by Mirrorsoft), the package is an experience not to be missed by any science fiction buff.

With *Portal,* information is given to you slowly – bit by bit. It's frustrating but gives it an uncannily addictive quality.

On Commodore 64 now (three discs), ST by March; if you've become jaded with the current crop of releases, try this. You'll love it.

**Popular Appeal** ♦♦♦♦♦

**John Cook**

**Program** *Portal* **Micro** Commodore 64 **Price** £24.95 (disc only) **Supplier** Activision, 23 Pond Street, London NW3.

# Lair – the remake

Dirk's back. That's all you see of him at the start of this second set of eight episodes from *Dragon's Lair.*

Dirk feels pretty queasy too. He's really up the creek, this time, with very little time to respond to the arrows which show him which channel to take. If he follows them correctly, he's in for a spell of 'dodge the whirlpool'. It's a Dirk's life!

I only saw the Spectrum version of the original *Dragon's Lair* and wasn't too impressed. It was pretty bad graphically and lacked playability. I'm told the Commodore 64 version suffered similar shortcomings. What a pleasant surprise that this time Software Projects seems to have got it right.

The falling disc that started the original was simply frustrating. So are these river caves – but in a way that makes you think you must have one more go. Eventually you'll make it, if you realise that the secret is to concentrate on the appearance of the direction arrows – not the aquatic Dirk.

There are other reaction sequences, as well as traps to tackle, before you attain the final, two part sequence. Rather like the original's dragon challenge, Dirk has to cross dangerous ground as he makes for a magic bottle.

This is more than a worthy successor. If you liked part one – and surprisingly, going by the charts, it seemed that a lot of people did – you'll love this. And if you weren't convinced by the original, this could convert you.

**Popular Appeal** ♦♦♦♦

**John Minson**

**Program** *Dragon's Lair II* **Micro** Commodore 64 **Price** £9.95 (tape), £13.95 (disc) **Supplier** Software Projects, Bearbrand Complex, Allerton Road, Liverpool L25 7SF.



# Glory baize

Like golf, snooker has been a popular computer game because it can be easily reduced to estimating an angle. The secret of a good program is to make this process look less mechanical. Well, *Pro Snooker* certainly does that, and the Simulator tag is fully justified.

You position the cue by letting it revolve around the white ball, using coarse and fine tuning keys. Meanwhile, at the top of the screen, you get a view along the cue, which shows any ball that may lie in a direct line with it. You're also able to set spin at this stage, if you want to be particularly flashy.

Taking the shot consists of hitting your trigger key twice; the longer the gap, the weaker the shot, so for the most powerful pots you'll need speedy reactions. This is a purely two player game and each player has a different trigger to stop cheating.

There are lots of other options though, including a useful practice mode that lets you remove balls from the table or set up positions. There's even a Demo game, for dedicated spectators.

Despite this wealth of detail, I do have one or two grumbles concerning playability.

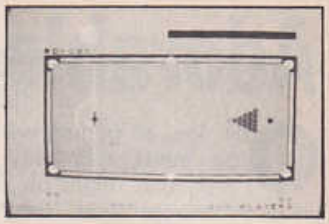
One is a result of the Spectrum's graphics, which means that the balls of a different colour tend to take on chameleon qualities when close, owing to attribute problems.

In fact, because of the accurate scaling, you'll need a very well tuned telly to tell your pink from your brown.

But even if these rather squidgy graphics can make things difficult, practice should make something close to perfect.

**Popular Appeal ♦♦♦**

**John Minson**



**Program** *Professional Snooker Simulator* **Micro** Spectrum 48K/128K **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Banbury, Oxon OX16 7RT.

# 3D catastrophe

The great well of originality is getting pretty dry these days so Pyramide can be applauded for drawing something refreshing up.

Cats. Those furry things the Swedish like to throw. The galactic dictator called the Sphinx, has been collecting them. Presumably because he owns everything else. You, the hero of this tale, must set forth to defeat the fiend in your Space Ship (tm), all in *Elite*-style 3D.

To gain an audience, you must collect 8000 cats (squash those moggies into that hold!) or have a good hand of cards.

Collect the cards from various planets, collect the cats, fight off the bad guys, blast the Ark and meet the Sphinx, all in 3D (red and blue lines with special glasses to give the effect), to win the game.

*Wanderer* is very much hit and miss. Some of the 3D effects are excellent, some don't work. The poker element is quite interesting.

**Popular Appeal ♦♦♦**

**Duncan Evans**

**Program** *Wanderer* **Micro** Atari ST **Price** £24.95 **Supplier** Pyramide, via Rio Promotions Ltd, 28 Waverly Grove, London N3 3PX.





# Adventuring with some added incentive

*Tony Bridge examines two GAC'd adventures in Incentive's Gold Medallion range*

It's some while now since I started singing the praises of Incentive's *GAC*, and only a few adventures written with the utility have come my way. This is rather surprising, as *The Quill* has certainly made its impression on the adventure-writing public.

But there have been one or two commercial examples of *GAC*'d material, and now a whole series is set for release by the authors of *GAC*, Incentive. The first two Medallion Adventures to hit us unsuspecting consumers are *Apache Gold* and *Winter Wonderland* – two very evocative titles, and I'm a sucker for good titles, since they're half the battle, aren't they?

*Winter Wonderland* is written by Tim Walsha and Simon Lipscombe and, with the recent weather, is rather a good one to be playing at the moment. I hope the required atmosphere will be evoked in the middle of August! It stands a good chance, though, because right from the start the all-pervading cold makes itself felt – you are cast in the role of an anthropologist who is summoned by an old friend to share a discovery in Tibet. It's no less than Shangri-La, the fabled lost civilisation, so of course you must join him.

Unfortunately, your plane crashes in the Himalayas, and you are now lost in the snow.

The graphics created are not bad at all, with a frame around each picture and a good frosty feeling to each one.

You can wander around your crashed plane a bit, and the first puzzle is depressingly simple and hardly worth the trouble – as long as you have found the flare gun, the bear is no problem at all, and his demise will allow you into the interesting bit of the game, Shangri-La. Now things warm up in more than one way, as locations galore are discovered (including a health shop – in Shangri-La?).

The scenario is interesting, and the atmosphere sustained very well, with boys throwing snowballs at you, skiers walking by, shoppers bustling past, ticket collectors frowning at you (until you find the credit card that is) and more. What's more, the pictures are good, well drawn, each one being nicely framed with a suitably wintry motif.

The puzzles that I've come across so far haven't been particularly brain-stretching and the uses to which you must put objects are obvious in most

cases. In fact, you'll find that you stumble across the correct solution to problems almost by sheer luck. For example, a snowdrift blocks the way near the beginning, and *Dig* was the first and correct response. Of course, things aren't always such plain sailing, witness the ski pass encased in ice and an icicle which melts once you've carried it for a certain length of time.

In a way, I'm all for a nice easy tramp around an interesting landscape, but I find this one just a little too bland at the start, despite the atmospheric touches.

However, I certainly want to keep bashing away because I want to see just what is on that inaccessible (for now) ledge – I want to see what the icicle does – and I want to know, among other things, what is in the crevasse. That's the mark of a good story, I suppose, that you should want to keep coming back to it.

The second adventure in the Medallion series, *Apache Gold,* is by a favourite writer of mine, Pete Torrance – you'll know his name from the other best-sellers of his, *Subsunk* and *Seabase Delta.* These two were smashing stories and all the better for being budget titles. They were also both written with *The Quill* – Torrance is certainly giving the utilities a bashing!

His new opus displays much of the wry humour and weird problems that characterised the previous programs, and is consequently as enjoyable as those.

The title gives away much of the story, and you will get no prizes for guessing that you will be cast in the role of a cowboy (Luke Warme, which is almost excruciating as Ed Lines of the *Subsunk* saga) in search of Indian gold, and so it




turns out to be.

Not only were the puzzles and atmosphere well drawn in Torrance's earlier efforts, but so were the pictures, and this is true of *Apache Gold* – they're a little slow to draw, being full of detail, but the *Word* command makes things quicker (its opposite, *Pictures,* reveals the graphics in all their glory).

Again, asking for help gives just the right amount of nudge to the correct solution – actually, *Help* gives the universal response *Try examining things, pardner;* but acting on that advice will give you vital information about most objects.

As in *Winter Wonderland,* puzzles aren't too horrendous, and there are a lot of locations to be explored before a full stop is reached. The puzzles seem to come naturally out of your surroundings, with the requisite object for the solution being close at hand and rather obvious.

To start, you must feed the horse to get him awake and then flick the reins to get him moving – this sequence will keep you busy for a while, but not for long given all the help from the program itself, and it seems like a shameful waste of memory and a bit of a waste of time all round.

Although both programs are enjoyable and worth looking at, I feel that £7.95, although a pound or two less than the top flight games are asking at the moment, is still two or three pounds more than the true value.

For the moment, they are available for the Amstrads, and soon for the Commodore, BBC and Spectrum. A word of warning – you must physically disconnect your *Protext* Rom (and others for all I know) otherwise all sorts of weird things will happen.

# Games: Adventure Helpline

**Aftershock on Spectrum.** I have completed 44%, explored the city zoo (I can't get the elephant to do anything except kill me!), sewers, underground stations all the way to the filling station. I can get no further. I've been over it three times – what have I missed? Dan A Townsend, 9002 Winding Way, Germantown, TN 38138-6625, USA.

**The Pawn on Atari ST.** What does the guru want? Where's the key to the tree? P Wilson, 61 St Swithin's Walk, Acomb, York.

**Heroes of Karn on Amstrad.** Where do you find the falcon and how do you get to it? Desmond Hart, 12 Manesfield Road, Port Ellen, Islay.

**The Colour of Magic on C64.** How do you get past the troll in part two? T N Branston, Hollies Farm, The Posts, Cropwell Butler, Notts NG12 3AS.

**Hitchhikers' Guide to the Galaxy on PCW8256.** Screen door (plus any other hints welcomed). A D Cox, Fieldhead House, Leafy Grove, Keston, Kent BR2 6AH.

**Planetfall on Amstrad CPC6128.** How do I get Floyd the robot to give me his elevator card? Ms Adrienne Briggs, Flat 1, 24 The Avenue, W Ealing, London W13 8LP.

**Heavy on the Magick on Amstrad.** How do I open the locked door? Derek Wong, 42 Ingram Road, Thornton Heath, Surrey CR4 8EB.

**Smugglers Cove on Amstrad CPC464.** Stuck in Palatian Room and need exact words to get on to pentacle. What do you do with the acid, hungry cat and pirate? Have completed and can offer help on *Red Moon, Jewels of Babylon, Heroes of Karn, Message from Andromeda, Seabase Delta, Forest at World's End* and *Warlord.* Limited help on *Mordon's Quest* and *Smugglers Cove.* Christopher Eng, 14 Amner Road, London SW11 6AA.

**Three Weeks in Paradise on Amstrad CPC6128.** How do you sharpen the blunt axe, if at all? How do you use the bottle and corkscrew? T Snell, 89 Sweetman's Road, Hill Farm Estate, Shaftesbury, Dorset SP7 8EH.

**Questron on Atari.** Where is the trumpet and how do I get it? Ian Brooker, 163 Verity Crescent, Canford Heath, Poole, Dorset BH17 7TX.

**Sphinx on Electron.** I can't find the boat or the mithril ring – have tugged a lot of hair up to now! Stephen Mellor, 139 Langlee Drive, Galashiels, Selkirkshire TD1 2EA.

## Adventure Helpline

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# Picture this!

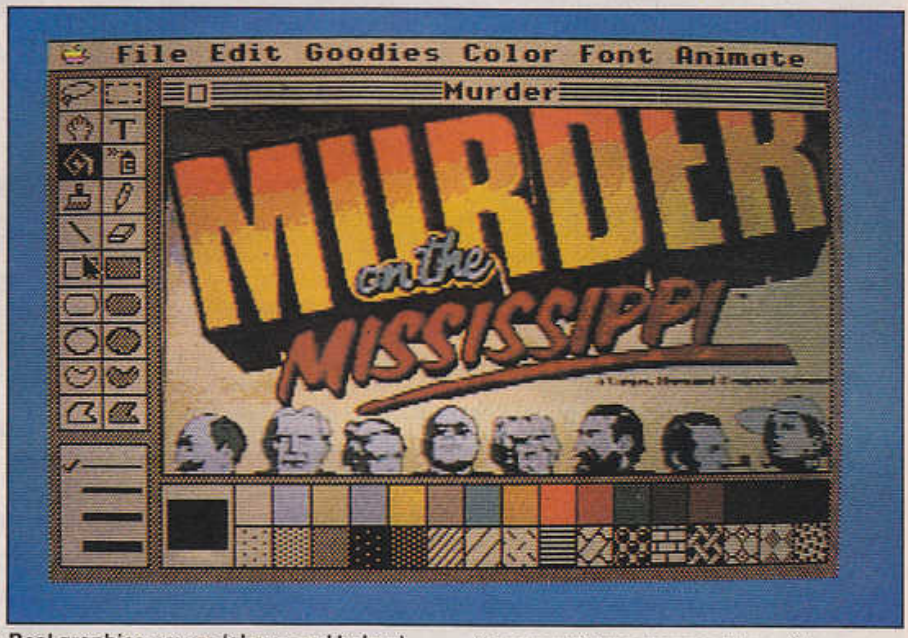
Computer graphics have probably sold more machines than any other aspect of the hobby. Whether it's fast-action animation in an arcade game, the superb displays of *The Pawn*, or intriguing 3D displays from drawing and design programs, there's something about graphics that grabs the attention – and the imagination.

The evolution of personal computers can almost be tracked in the parallel development of their ability to display pictures. To start with, no graphics were possible. Computers were designed to display text only. This led some imaginative individuals to create those now-extinct pictures of Snoopy on his kennel built up of letters and numbers.

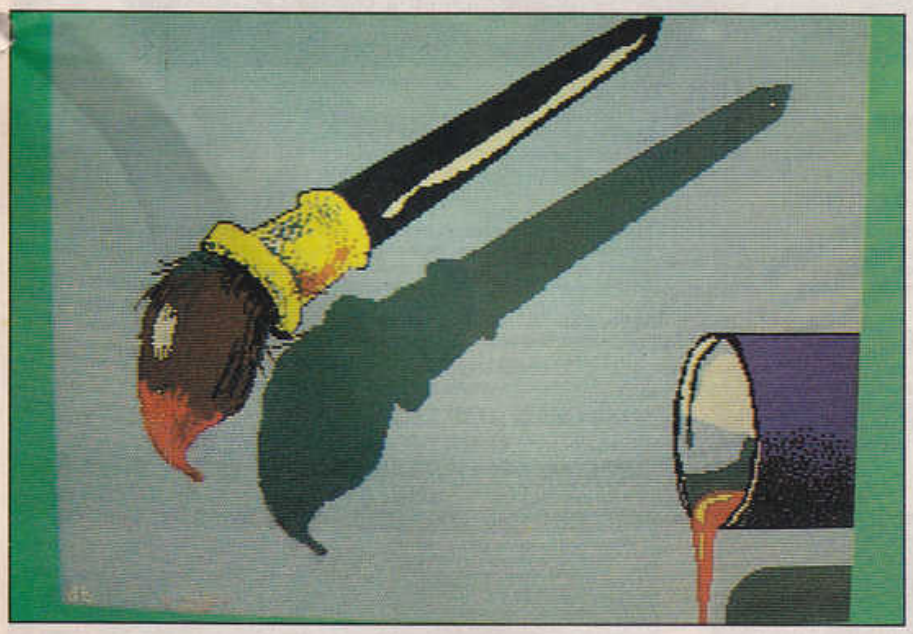
The earliest games on computers were either text-only adventures, or space games in which you attempted to shoot down a fleet of asterisks with your capital "A", while trying to dodge the hail of deadly full-stops.

The next breed of machines, like the Commodore Pet and Tandy TRS-80, supported chunky block graphics which allowed you to create very crude graphics displays, but not in colour.

The breakthrough into multi-colour, high resolution displays did not come until the price of memory fell to allow machines with more than 16K of memory. The reason for this is that graphics make great demands on memory. It works like this:




Real graphics power (above and below) from the new Apple II GS. 640 x 200 resolution, choice of 4,096 colours.



The smallest item a computer can manipulate is a bit (one eighth of a byte). So it takes one byte to handle eight dots on a screen. Computer resolution is usually discussed in terms of low (about 100×100 dots), high (250×200) and very high (currently up to around 1200x800). It can be seen that a display of 250×200 is 50,000 dots, or about 6K.

But this is only two colours because the dots can only be on (foreground colour) or off (background colour). To introduce extra colours takes even more memory. One bit has two possible values, 0 or 1. Two bits can have four values – 00, 01, 10, 11. Most computer designers have settled on 16 colours as a compromise because it allows you to store colour display information in half the memory required by the actual picture information.

From this it can be seen that computer graphics is a two-stage affair. First, your own programs, or commercial software packages, create the display in memory. Next, several times a second the computer automatically transmits the contents of this video memory to the TV or monitor.

## Introduction to Computing – part three

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Also note that there is no direct link between the resolution of your monitor, and the resolution supported by your computer.

The chances are that your monitor will be able to display a far higher resolution than your computer can generate. The exceptions to this general rule are the truly advanced graphics machines like the Atari ST and the Commodore Amiga which require very high resolution monitors to get the most from their display capabilities.

All this discussion of memory, bits and bytes raises another point about graphics. Simply that a high resolution display contains a large amount of information – perhaps as much as 32K or 64K by the time you include colour. So trying to animate computer graphics – ie, to move large parts of the display, or many smaller parts – requires a very fast, very powerful microprocessor. The older 8-bit processors as used in the Commodore 64, Amstrad CPC, BBC Micro and others, just aren't up to the task, which is why programs like flight simulators usually produce pictures that change in noticeable stops and starts. The STs and Amigas employ the superb 68000 processor which is much faster and can display fast-changing graphics with no noticeable jerking.

As a way of overcoming this graphical handicap, several computer designers introduced special graphics processors to take some of the workload off the main processor. Perhaps the most successful of these is the VIC-II chip in the Commodore 64. In addition to handling colour and other graphics information, the VIC chip also provides another powerful feature – sprites.

Before we talk about sprites, we need to back-track a moment and look at character graphics – the way a computer handles text and numbers.

If you look closely at your computer screen (don't try too hard – it hurts your eyes) you'll see that each character is made up of a series of dots, usually on an 8×8 grid. It would obviously be wasteful if the computer had to create the characters individually each time, since they don't change.

**'CAD programs allow you to perform actions like 3D rotations'**

Computer designers quickly determined that the most efficient way to handle this was to build in a fixed character set which contained the definitions for each character: the letters A to Z, numbers and symbols like *, £, #, @ and so on.

The catch with doing things this way is that because the characters are built in, they can't be changed. So the next step was to allow users (that's you) to copy the characters into RAM memory where they can be altered. The ability to support user-defined characters is a very useful one. It means that you can design atmospheric texts, or build up other graphics characters by redefining existing ones.

Useful though this is, it has one drawback for animated characters – the computer puts characters into fixed spaces, ie the first 8×8 dots in the top left corner of the screen are one character space, the next 8×8 dots are the second, and so on. Creating an illusion of movement involves displaying a character, erasing it, displaying in a slightly different position. But with character graphics, the smallest movement is eight dots, so the animation looks jerky.

Now with sprites, the computer can move them as little as one dot at a time, giving a very smooth animated effect. And because the computer can handle sprites automatically, you can also create other effects like putting sprites in front of, or behind, other characters, as well as detecting collisions between sprites.

The same techniques have been employed in the Amiga and the ST, so that not only do they have the benefit of the faster processor, but because their graphics chips are equally advanced they can handle more and bigger sprites.

But whatever computer you own, you will very quickly come to the realisation that programming in Basic is completely inadequate for all but the simplest graphics exercises. Basic simply isn't fast enough to manipulate all the information required.

So you have two choices: either program in a faster language, either machine code, or one of the compiled languages like Pascal or C; or use commercial graphics software.

It isn't worthwhile going into graphics programming here since every computer uses different commands, or stores graphics data in different places in memory. You must resort to your manual, or one of the many programming books available for nearly every computer, to learn how to manipulate graphics in programming, and to find a good memory map – essential for learning where your computer stores its displays, colour, sprites etc.

However, we can take a quick look at some of the many kinds of graphics software packages available.

## Paint programs

There is a paint program available for just about every machine on the market. Often your problem will be choosing amongst the many at your disposal.

Most of these provide a number of graphics tools to help you create an image. These include pens for fine line drawing, brushes for thicker strokes, box and circle tools to create these items quickly and easily, and both colour and pattern fills which allow you to "paint" large areas. You should also look for a zoom, or magnify function, which allows you to enlarge a section of the screen for detailed work.

Other useful features are the ability to undo your last action, rotate items, add text, and – more essentially – the ability to load and save pictures to tape or disc, and to print out your designs on paper.

You should note that care is needed when creating a design for printing because 90 per cent of printers only work in black and white. The printing process can make a terrible mess of your design when all your colourful work gets rendered in shades of grey.

## Draw programs

Several computers support what are called "draw" programs, which differ from paint packages in that they are really designed for more technical graphics work – producing accurate technical designs, maps, architectural plans and so on.

**'Programming in Basic is inadequate for all but the simplest graphics'**

Some of the tools are the same: pens, brushes, boxes and circles, zoom, and pattern fills. Often they don't support colour because it is always intended that the designs should be printed out and colour support is of questionable value.

## CAD programs

Computer-aided design software is a highly developed form of the draw program (or rather the reverse – draw programs are simplified CAD packages; CAD was there first). The main differences are the degree of accuracy the software provides, and the fact that CAD software almost always features three-dimensional manipulation of objects.

For example, with a draw program, you can create a design which looks three-dimensional because of clever use of perspective. But it remains a two-dimensional drawing. A CAD program will store your design as a series of 3D co-ordinates. This allows you to perform actions like 3D rotations, and to look at the design from different angles.

## Animation programs

These packages work in similar fashion to paint programs in so far as creating designs goes. However, the bonus is that you can then animate the finished product.

The method is identical to that used in film animation, you create a series of frames. The computer then displays these frames in rapid succession allowing you to create your own short cartoon sequences. The snag is that animation, as we've already seen, is very expensive in terms of memory – you're creating not one picture but many.

So, although there are animation programs for machines like the Spectrum and the C64, this kind of software really requires an ST or an Amiga to show off its talents to full effect.

# Comms: The Baud's

Communications has not traditionally been a major area of concern either for micro users or for manufacturers. Many of the bread and butter home computers sell in volume despite the fact that they lack an RS232 interface, which is essential for comms, and many of the people whose micros do have this facility find that they seldom, if ever, use it.

Despite this there's a small but growing community of micro owners who are committed to comms, and technological advances are likely to trigger a more dramatic expansion over the next few years. In the meantime you may feel that you want to experiment in the field, and that it's worth finding out more about it.

Currently the form of computer-to-computer communications is dictated by the nature of the technology. Computers are digital, so their input has to be boiled down to a series of digits




that are either off or on, while the world in general and telephone lines in particular are analogue, ie a value can be anywhere on a continuous scale. So in order to understand the outside world a computer needs to have sound, light or whatever translated into a series of numbers.

An RS232 port is crucial to this process, because it allows you, through the computer's software, to control the rate of flow and nature of digital data received by the port. If you connect two computers directly communication is then simply a matter of synchronising the two RS232s, as the data will be sent in digital form and received in digital form (typically this sort of setup, or a development of it, will be used in a local area network) but for wider-







range communications you'll almost certainly need a phone line.

Unfortunately, the telephone system isn't geared to data communications, so if you're sending digital information down a phone line you have to convert it to a sound signal first, and then at the other end it has to be converted back to digital. In order to do this you need to place a modem, or "modulator/demodulator" between the computer and the telephone. And that's where the fun begins.

## Baud rates

Data transfer rates can vary, depending on the sophistication of the modem and the purpose for which it's designed, so the first thing you need to do is synchronise your sending rate (measured in baud, or bits per second) with that of the receiving device at the other end. The most commonly used baud rates are 1200/75, 300/300 and 1200/1200, 1200/75 being the split baud rate used by Prestel and similar services. It may seem illogical for one end of a communications setup to be sending at 1200 baud while the other sends at 75, but actually it's quite sensible in this case. Prestel and its rivals are basically menu driven systems where you move through a series of screens of information by inputting a series of keystrokes. The keystrokes are sent at 75, while the screens come back at 1200, so actually it's a very economical way of using telephone time.

But this economy only applies if you want to use Prestel in the way it was designed, as an information provider. If on the other hand you want to send substantial quantities of information yourself you'll find it a protracted business at 1200/75, and that's where 300/300 and 1200/1200 come in. It's quite easy to categorise modems operating at these rates, 300/300 is (obviously) slower but more reliable, while 1200/1200 is more expensive and theoretically faster, although the limitations of BT's phone lines can often introduce enough errors to make the latter advantage debatable.

RS232 ports will generally have the ability to operate beyond these speeds, often going up to 19200 baud, but although 2400/2400 is starting to become available higher speeds will have to wait for improvements both to the phone lines and to error-checking protocols.

In the meanwhile current protocols can be quite confusing enough, although fortunately you can usually get by just by being able to set them rather than having to understand them. The three major such parameters are word length, parity and stop bits. Word length sets the number of bits in each character (usually seven or eight), parity determines whether or not an extra bit is inserted with each character to check for transmission errors, while stop bits sets the number of bits at the end of each character.

Most communications software, however, has simple facilities allowing you to set these and other protocols, so it's generally simply a matter of setting them up for the communications systems you want to use, then forgetting all about them.

A few computers will come with basic facilities for controlling the RS232 port, and at a pinch these can sometimes be used for communications, but generally you'll want purpose-built communications software. Some integrated software packages for business machines include a communications module, but otherwise comms software is sold as a separate package or bundled with a modem, and comes in varying degrees of sophistication.

When you're buying comms software it's worth doing a certain amount of research first, as you could find the software you've bought is unable to access a particular system. The most common problem is probably differences




between Prestel-type frame-by-frame software and scrolling bulletin board software. In the latter information is sent a line at a time, and simply scrolls up the screen, so you can have some interesting, if ultimately illegible, results if you try to mix the two.

## Autodial

Comms software can also include frills of varying usefulness, such as autodial and autoanswer. An autodial facility does make life a little easier if your modem will support it, and can sometimes be combined with a phone directory that allows you to dial and log-on with a minimum of keystrokes. Autoanswer is less useful for most people, but if you want to

# Tale

operate your own bulletin board, or for some reason to have your micro answer the phone while you're out, it's vital.

Once you've got all this sorted out, what exactly should you use computer communications for? Ultimately, say the pundits, we'll all be using comms to send letters to each other rather than using the boring old mail service, but in the shorter term most modems are likely to be employed in hooking people up to Prestel or to electronic mail services.

Prestel has the virtue of being relatively cheap and easy to understand and offers the most comprehensive range of services.

Some of these are designed to allow Prestel to operate as a kind of electronic newspaper/magazine, so you can get screens of news, weather, travel information, and so on.

Of more interest to computer-users is a section called Micronet, which has news and reviews of developments in the computer industry, as well as sub-sections for owners of specific machines.

Commodore owners have their own Micronet-type service called Compunet, which offers the same kind of services.

Perhaps the best reason to subscribe to these services is the club-like feel they have, and the benefits that accrue from this. For example, you can download software from these services which gives you a very cheap




source of music, graphics, utility and games programs, and the quality is often very high.

You can also send electronic mail to other subscribers - handy if you are experiencing programming or hardware problems. In some cases this correspondence can take the form of real-time, electronic conversations.

Another important reason for "going on-line" is the ability to play MUGs, or multi-user games. These are usually adventure or strategy-type games in which you compete with other computer users around the country (or even in other countries). The best-known of these is MUD, the multi-user dungeon, but others are being introduced all the time.

For more serious-minded users, there are dedicated electronic mail services such as Telecom Gold, One-To-One and Easylink. These are designed as faster replacements for traditional paper mail, but their usefulness is limited by the fact that very few people actually have subscriptions.

Worth trying if you're really interested, or if your company (or any other group) needs really fast communication facilities.

The third option, and the cheapest because they're free, are the dozens of bulletin boards around the country. These offer some of the same facilities as Micronet and Prestel, but on a much smaller scale.

They are run by enthusiasts and usually confine themselves to programming tricks and tips, industry gossip, dubious humour, and downloadable software. The best are truly excellent sources of information and entertainment and are free except for phone costs.

In short, there's a world of computer users out there, and all you need to join in is a modem and some software. Watch your telephone bills, though.




## Modems: the key to comms

**Modems come in all shapes and sizes, supporting a variety of features, transmission rates and bits of gimmickry. The Miracle Technology WS2000, above, was one of the early leaders in the field.**

**Although it's now several years old, it demonstrates many of the features you can expect from more modern devices.**

**Working from left to right, you can see a row of lights which indicate various actions available to the modem. Tx Data and Rx Data are common abbreviations for transmit and receive, respectively. Carrier indicates that the modem has identified a carrier signal which is put out by other electronic equipment – if you don't get this you've probably got a human on the other end of the line. On-line indicates that the modem has established contact with anoter computer.**

**The upper of the two dials in the middle of the panel controls the two most common transmission set-ups: 1200/75 for Prestel and similar services, and 300/300 for bulletin boards and some electronic mail services. The lower dial switches between test mode and on-line.**

**The larger dial on the right allows more precise control of the modem operation, and would commonly be used in for direct micro-to-micro communications. The letters CCITT at top indicate European standard protocols, while Bell indicates US standards. ORIG and ANS stand for originate and answer, other terms for transmit and receive.**






# Are ya ready to roll?

Once you've grasped the basics and you have an idea for a program, you're faced with the problem of where to start. At this point you shouldn't even turn your computer on, let alone begin typing, as you will rapidly lose track of which sections do what, and what all the variables are for.

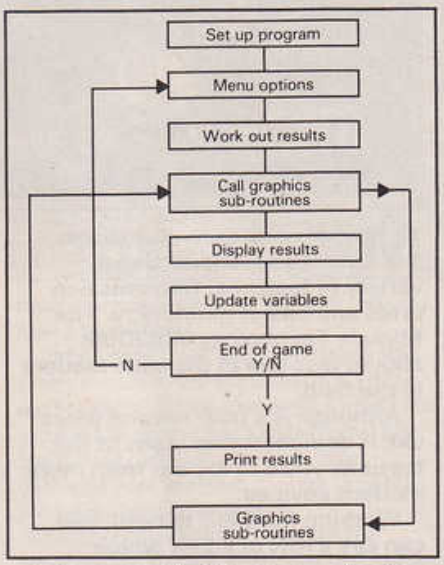
The first thing to do is plan, as exactly as you can, what the objective of the program is and how it will go about doing it. The more information you can get down on paper at this stage the easier the writing of the program becomes, and the easier it is to debug when all typed in.

While at the planning stage, pay some attention to what the display will look like in the finished version. A clear, easy-to-follow display with a few graphic frills is usually best for non-games programs, while making games software look as attractive as possible stands more chance of capturing the players' imagination.

Getting out the graph paper now and marking out exactly where items of information are supposed to appear will save a lot of trial and error later.

Another useful item to have on paper is a rough chart of the flow of the program. That is, what order the various sections of the program are executed in, and where the major loops occur. Take for example the Superbowl listing we've run over the past couple of weeks; below is the rough chart of its flow.

**Declare variables and set up display**
**Main menu options**
**Work out results of options**
**Call graphic subroutines and display results**
**Book keeping routines. If not end of game goto main menu**
**Print results**




Having some soft of flow diagram also helps. In the actual programming as you know roughly in what order to lay things out.

Now you can begin to organise a list of specific variables, preferably giving them meaningful names, and allocate a few general variables (for use in statements like *A&=Inkey$*, for example) for temporary use where needed, and then it's programming time.

The variables should be defined at the beginning of a program, or in a subroutine that is called at the beginning. If you do put the variables at the start then it's a good idea to start the main flow of the program on line 500 or 1000. This way it's fairly easy to fit new variables into the front of the program when you discover you need them . . . and you always will.

## Advisable

As you slowly build up the program the points made last week about structured programming should be born in mind. Any section which is used more than once in the running of the program should be considered fair game for turning into a subroutine. It's advisable to use *Rem* statements to mark where a block starts as it makes reading a program much easier. You can always delete them when the product is finished.

While commencing a program can be arduous, it really does pale in comparison when compared with the chore awaiting when everything has been typed in. Debugging.

This is where you find out that not only do some things not work at all, but others don't work the way you imagined they would. If there's a golden rule of programming then it's this, 'No program ever works correctly the first time you run it'.

Rooting out the bugs can be enormously frustrating, and it's here that having everything down on paper (including a program listing if you have a printer) bears fruit as it all helps you understand what is going on. When something does go wrong you should have some idea about where to start looking for the problem.

Usually it involves something you've overlooked, so if your program is intelligently laid out you can more easily fit in the extra lines.

A final point worth mentioning is that no program is ever truly finished. A few weeks after completion you'll suddenly get an idea on how the presentation can be improved, or how it would be a great idea if a certain feature was added. You can go on forever, or until you run out of memory but if time presses you have to draw the line somewhere.

Now, a telephone database program for all micros to type in and study, and maybe improve yourself. Note that, as two weeks ago, if you see a list of machines after a Rem statement on a line and your computer is not mentioned, then don't type it in.

The program is menu driven and offers the facility to add or delete records and display the requested telephone number.

```
10 DIM A$(100):DIM T$(100):REM BBC ST C64
20 DIM A$(100,40),T$(100,16):REM SPECTRUM
100 CLS:REM BBC CPC ST SPECTRUM
110 PRINT"[illegible]":REM C64
120 PRINT TAB(8,3);:REM BBC ST
130 LOCATE 8,3:REM CPC
140 PRINT AT 3,8;:REM SPECTRUM
150 PRINT "TELEPHONE DIRECTORY"
160 PRINT:PRINT:PRINT
170 PRINT "1.     LOAD OLD FILE"
180 PRINT "2.     SAVE CURRENT FILE"
190 PRINT "3.     ADD NAMES"
200 PRINT "4.     DELETE NAMES"
210 PRINT "5.     DISPLAY NUMBER"
220 PRINT:PRINT:PRINT "     SELECT 1 TO 5"
230 INPUT A
240 IF A<1 AND A>5 THEN GOTO 230
250 IF A=1 THEN GOSUB 1000
260 IF A=2 THEN GOSUB 2000
270 IF A=3 THEN GOSUB 3000
280 IF A=4 THEN GOSUB 4000
290 IF A=5 THEN GOSUB 5000
300 GOTO 100
1000 INPUT "ENTER FILENAME ";F$
1010 X=OPENIN(F$):REM BBC
1020 OPENIN F$:REM CPC
1030 OPEN 1,0,1,F$:REM C64
```

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# Phone book

The first couple of lines in the program dimension the two arrays which are used to hold peoples names, in A$, and telephone numbers, in T$.

Lines 100 to 220 clear the screen and display the options menu while line 230 waits for the user to type in the selection.

Line 240 makes sure that the input is a valid selection, while lines 250 to 290 go to the relevant subroutine.

The block of lines from 1000 to 1140 opens a user-specified file, read in the data and close the file again. Control then returns to the menu for the user to presumably manipulate.

The next block from 2000 to 2140 opens a file and saves the data currently in memory before closing the file again.

Lines 3000 to 3070 deal with adding names to the database. First the array containing the peoples' names is searched until an empty element is found. Line 3010 checks the length of each element to see whether it is empty or not. If it is, then the user is prompted to enter the name to add or press Return immediately to go back to the main menu. Assuming the user wants to continue there is a prompt for a telephone number (line 3050).

The lines from 4000 to 4050 are used to delete names and telephone numbers from a file currently held in memory. Line 4020 checks through the relevant array until either the target name is found, and then deleted, or the end of the array is reached.

Finally lines 5000 to 5060 allow the user to add names and telephone numbers to the file held in memory. After the details have been entered by the user, the program line 5030 checks through the array containing the names until a blank element is found.

This is then filled with the details entered by the user. If no spare elements are found then a warning message (line 5050) is printed.

```
1040 OPEN "I",#1,F$:REM ST
1050 LOAD F$ DATA A$():LOAD F$ DATA A$():REM SPECTRUM
1060 FOR F=1 TO 100:REM BBC CPC ST C64
1070 INPUT #1,A$(F),T$(F):REM ST C64
1080 INPUT #9,A$(F),T$(F):REM CPC
1090 INPUT #X,A$(F),T$(F):REM BBC
1100 NEXT F:REM C64 ST CPC BBC
1110 CLOSE #X:REM BBC
1120 CLOSEIN:REM CPC
1130 CLOSE 1:REM ST C64
1140 RETURN
2000 INPUT "ENTER FILENAME ";F$
2010 X=OPENOUT(F$):REM BBC
2020 OPENOUT F$:REM CPC
2030 OPEN 1,1,1,F$:REM C64
2040 OPEN "O",#1,F$,200:REM ST
2050 SAVE F$ DATA A$():SAVE F$ DATA T$():REM SPECTRUM
2060 FOR F=1 TO 100:REM CPC ST C64 BBC
2070 PRINT #X,A$(F),T$(F):REM BBC
2080 PRINT#9,A$(F),T$(F):REM CPC
2090 PRINT#1,A$(F),T$(F):REM ST C64
2100 NEXT F:REM ST C64 BBC CPC
2110 CLOSE #X:REM BBC
2120 CLOSEOUT:REM CPC
2130 CLOSE 1:REM C64 ST
2140 RETURN
3000 LET F=1
3010 IF LEN (A$(F))>0 THEN GOTO 3060
3030 INPUT "PRESS RETURN FOR MENU OR TYPE IN NAME   ";A$(F)
3040 IF A$(F)="" THEN GOTO 3070
3050 INPUT "TYPE IN PHONE NO. ";T$(F)
3060 LET F=F+1:IF F<101 THEN GOTO 3010
3070 RETURN
4000 INPUT "TYPE IN NAME ";F$
4010 LET F=1
4020 IF A$(F)=F$ THEN LET A$(F)="":LET T$(F)="":PRINT "OKAY":GOTO 4050
4030 LET F=F+1:IF F<101 THEN GOTO 4020
4040 PRINT "NO-ONE BY THAT NAME"
4050 FOR F=1 TO 100:NEXT F:RETURN
5000 INPUT "TYPE IN NAME ";F$
5010 INPUT "TYPE IN PHONE NO. ";P$
5020 LET F=1
5030 IF A$(F)="" THEN LET A$(F)=F$:LET T$(F)=P$:PRINT "OKAY":GOTO 5060
5040 LET F=F+1:IF F<101 THEN GOTO 5030
5050 PRINT "RUN OUT OF SPACE"
5060 FOR F=1 TO 100:NEXT F:RETURN
```

# Superbowl

*Duncan Evans*

Put on your shoulder pads, it's time for part two of the *Popular* Superbowl listing. This week an explanation on the strategies involved.

Quarterback sneak is where the ball is kept by the quarterback and he sprints upfield before the defense can catch him. Good for small gains, more if the defense expects you to pass.

Rush produces medium gains unless the defense expects a rush.

Pass is the big yardage play but runs the risk of an interception and loss of possession.

Punt is normally used when it's fourth down to kick the ball upfield to safety. If the defense has a man back to receive the ball it will be returned some way.

Field goal is obviously an attempt for three points and is used when scoring a touchdown looks unlikely.

Playing the wrong sort of defense against the offense actually helps the offense gain more yardage (usually).

More notes next week including how to customise the teams ratings. Sensible people will send £2.00 to Duncan Evans, 19 Veronica Road, Balham, London SW17 8QL for a copy on cassette.

```
4100>REM Computer defense
4110 IF oplay>3 AND ball<50 THEN  LET dp
lay=5: GO SUB 5000: GO TO 6000
4120 IF oplay>3 THEN  LET dplay=4: GO SU
B 5000: GO TO 6000
4130 IF (down=1 OR down=2) AND RND*100>2
0 AND (ball<20 OR ball>80) THEN  LET dpl
ay=1: GO SUB 5000: GO TO 6000
4140 IF (down=1 OR down=2) AND RND*100>2
0 AND (ball<20 OR ball>80) THEN  LET dpl
ay=2: GO SUB 5000: GO TO 6000
4150 IF (down=1 OR down=2) AND RND*100>3
5 THEN  LET dplay=2: GO SUB 5000: GO TO
6000
4160 IF down=1 OR down=2 THEN  LET dplay
=3: GO SUB 5000: GO TO 6000
4170 IF down=3 AND ytgo<6 AND RND*100>30
 THEN  LET dplay=2: GO SUB 5000: GO TO 6
000
4180 IF down=3 AND RND*100>80 THEN  LET
dplay=1: GO SUB 5000: GO TO 6000
4190 IF down=3 AND RND*100>20 THEN  LET
dplay=3: GO SUB 5000: GO TO 6000
4200 IF down=3 THEN  LET dplay=2: GO SUB
 5000: GO TO 6000
4210 IF ytgo<4 AND RND*100>70 THEN  LET
dplay=2: GO SUB 5000: GO TO 6000
4220 IF (ball<20 OR ball>80) AND ytgo<4
THEN  LET dplay=1: GO SUB 5000: GO TO 60
00
4230 IF RND*100>20 THEN  LET dplay=3: GO
 SUB 5000: GO TO 6000
4240 LET dplay=2
4250 GO SUB 5000: GO TO 6000
5000 REM Play influences
5010 IF oplay=1 AND dplay=1 THEN  LET ch
ance=-20: LET bonus=0: LET minus=INT (RN
D*6)
5020 IF oplay=1 AND dplay=2 THEN  LET ch
ance=-10: LET bonus=0: LET minus=INT (RN
D*4)
5030 IF oplay=1 AND dplay=3 THEN  LET ch
ance=20: LET bonus=INT (RND*6): LET minu
s=0
5040 IF oplay=1 AND dplay=4 THEN  LET ch
ance=30: LET bonus=INT (RND*6): LET minu
s=INT (RND*4)
5050 IF oplay=1 AND dplay=5 THEN  LET ch
ance=50: LET bonus=INT (RND*10): LET min
us=0
5060 IF oplay=2 AND dplay=1 THEN  LET ch
ance=-10: LET bonus=INT (RND*8): LET min
us=INT (RND*5)
5070 IF oplay=2 AND dplay=2 THEN  LET ch
ance=-20: LET bonus=0: LET minus=INT (RN
D*6)
5080 IF oplay=2 AND dplay=3 THEN  LET ch
ance=20: LET bonus=INT (RND*10): LET min
us=0
5090 IF oplay=2 AND dplay=4 THEN  LET ch
ance=30: LET bonus=INT (RND*10): LET min
us=INT (RND*4)
5100 IF oplay=2 AND dplay=5 THEN  LET ch
ance=50: LET bonus=INT (RND*15): LET min
us=0
5110 IF oplay=3 AND dplay=1 THEN  LET ch
ance=0: LET bonus=INT (RND*25): LET minu
s=INT (RND*8)
5120 IF oplay=3 AND dplay=2 THEN  LET ch
ance=15: LET bonus=INT (RND*20): LET min
us=INT (RND*4)
5130 IF oplay=3 AND dplay=3 THEN  LET ch
ance=-25: LET bonus=0: LET minus=0
5140 IF oplay=3 AND dplay=4 THEN  LET ch
ance=5: LET bonus=INT (RND*20): LET minu
s=INT (RND*6)
5150 IF oplay=3 AND dplay=5 THEN  LET ch
ance=0: LET bonus=0: LET minus=0
5160 IF oplay=4 AND dplay=1 THEN  LET ch
ance=5: LET bonus=INT (RND*25): LET minu
s=INT (RND*5)
5170 IF oplay=4 AND dplay=2 THEN  LET ch
ance=20: LET bonus=INT (RND*15): LET min
us=0
5180 IF oplay=4 AND dplay=3 THEN  LET ch
ance=40: LET bonus=0: LET minus=0
5190 IF oplay=4 AND dplay=4 THEN  LET ch
ance=0: LET bonus=INT (RND*20): LET minu
s=INT (RND*10)
5200 IF oplay=4 AND dplay=5 THEN  LET ch
ance=50: LET bonus=0: LET minus=INT (RND
*10)
5210 IF oplay=5 AND dplay=1 THEN  LET ch
ance=10: LET bonus=0: LET minus=INT (RND
*10)
5220 IF oplay=5 AND dplay=2 THEN  LET ch
ance=50: LET bonus=0: LET minus=INT (RND
*5)
5230 IF oplay=5 AND dplay=3 THEN  LET ch
ance=50: LET bonus=0: LET minus=INT (RND
*5)
5240 IF oplay=5 AND dplay=4 THEN  LET ch
ance=0: LET bonus=0: LET minus=INT (RND*
10)
5250 IF oplay=5 AND dplay=5 THEN  LET ch
ance=50: LET bonus=0: LET minus=0
5260 RETURN
6000 REM Outcome of Player v computer pl
ays
6001 IF dplay=1 THEN  LET cplay=cblit
6002 IF dplay=2 THEN  LET cplay=cblok
6003 IF dplay=3 THEN  LET cplay=cpass
6004 IF dplay=4 THEN  LET cplay=cbk
6005 IF dplay=5 THEN  LET cplay=25
6010 IF oplay=1 THEN  LET dummy=yqbr
6020 IF oplay=2 THEN  LET dummy=yrun
6030 IF oplay=3 THEN  LET dummy=ypass
6040 IF oplay=4 OR oplay=5 THEN  LET dum
my=yspt
6090 LET puret=0: LET chance=chance+dumm
y: IF chance<cplay THEN  LET chance=chan
ce-(cplay-chance): IF chance<10 THEN  LE
T chance=10
6091 IF chance>90 THEN  LET chance=90
6092 GO TO 6000+(oplay*100)
6100 IF RND*101<=chance THEN  LET gain=I
NT (RND*6+bonus): GO TO 7000
6120 LET gain=-INT (RND*6-minus): IF RND
*10<=1.5 THEN  LET win=1
6130 GO TO 7000
6200 IF RND*101<=chance THEN  LET gain=I
NT (RND*8+RND*8+bonus): GO TO 7000
6220 LET gain=-INT (RND*3-minus): IF RND
*10<=1.5 THEN  LET win=1
6230 GO TO 7000
6300 IF RND*101<=chance THEN  LET gain=I
NT (RND*10+bonus+RND*10+RND*17): GO TO 7
000
6320 LET gain=1-minus: IF RND*10<=4.5 TH
EN  LET win=2
6330 GO TO 7000
6400 IF (RND*101)>chance THEN  LET gain=
2-minus: LET win=4: GO TO 7000
6415 LET gain=25+INT (RND*45): LET win=3
: IF dplay=5 THEN  LET puret=5+INT (RND*
50): LET win=5: LET gain=gain-puret
```

continued on page 30 ▶

# Programming: Spectrum

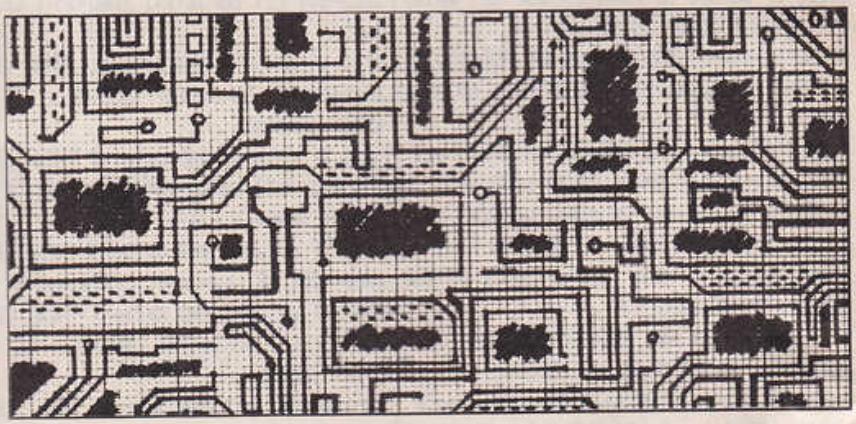
◀ continued from page 29

```
6420 GO TO 7000
6500 IF pos=0 AND (RND*101+80-ball)<=cha
nce THEN  LET gain=100-ball: GO TO 7000
6510 IF pos=1 AND (RND*101+ball-20)<=cha
nce THEN  LET gain=ball+1: GO TO 7000
6520 LET gain=0: LET win=4
7000 REM Book keeping
7005 LET ytgo=ytgo-gain: GO SUB graph
7010 IF pos=0 THEN  LET ball=ball+gain
7020 IF pos=1 THEN  LET ball=ball-gain
7030 OVER 1: IF ball<=0 THEN  LET ball=-
1
7035 IF ball>=100 THEN  LET ball=105
7040 PAPER 4: BRIGHT 0: IF win=0 THEN  G
O SUB (8400+oplay*100): GO TO 7100
7050 GO SUB (7900+100*win)
7060 IF pos=0 THEN  LET pos=1: LET down=
0: LET ytgo=10: GO TO 7100
7070 IF pos=1 THEN  LET down=0: LET pos=
0: LET ytgo=10
7100 PAPER 7: IF ytgo<1 AND (ball>0 AND
 ball<100) THEN  LET ytgo=10: LET down=0:
 PRINT AT 20,8; BRIGHT 1;"  FIRST DOWN
": FOR f=1 TO 100: NEXT f
7110 BRIGHT 0: IF ball<100 AND ball>0 TH
EN  GO TO 7500
7120 REM scoring results
7125 LET jsc=1
7130 IF ball<1 AND pos=0 THEN  LET jsc=0
: LET cscore=cscore+2: PRINT AT 20,8; BR
IGHT 1;"! ! SAFETY ! !": LET ball=20: GO
 TO 7210
7135 IF ball>99 AND pos=1 THEN  LET jsc=
0: LET yscore=yscore+2: PRINT AT 20,8; B
RIGHT 1;"! ! SAFETY ! !": LET ball=80: G
O TO 7210
7140 IF ball>99 AND oplay<4 THEN  LET ys
core=yscore+6: GO SUB 9600: IF RND*101<y
spt THEN  LET yscore=yscore+1: GO SUB pb
lank: PRINT AT 17,10; BRIGHT 1;"Converte
d": GO TO 7170
7150 IF ball<1 AND oplay<4 THEN  LET csc
ore=cscore+6: GO SUB 9600: IF RND*101<=c
spt THEN  LET cscore=cscore+1: GO SUB pb
lank: PRINT AT 17,10; BRIGHT 1;"Converte
d": GO TO 7170
7160 IF (ball<1 OR ball>99) AND oplay<4
THEN  GO SUB pblank: PRINT AT 17,8; BRIG
HT 1;"Not converted"
```

# Programming: Memotech

## Expand Utility

*Eric Roy*



The following utility for the Memotech series enables double height and double width characters to be displayed on the graphics screen. Two new commands are installed, these being, *User H"string"* for double height and *User W"string"* for double width.

It is also possible to use string variables instead of the string.

```
80 REM
100 CODE

4117 SYSTEM:  LD HL,(#FA8A)
411A          LD BC,#F5B3
411D          AND A
411E          SBC HL,BC
4120          JR NZ,SYST
4122 SYSD:    LD HL,NEWCOM
4125          LD (#F5B4),HL
4128          LD A,#C3
412A          LD (#F5B3),A
412D          LD HL,#F5B6
4130          JR SYSV
4132 SYST:    LD A,07
4134          LD (#FA88),A
4137          LD A,#C9
4139          LD (#FA87),A
413C          LD HL,NEWCOM
413F          LD (#FA8A),HL
4142          LD A,#C3
4144          LD (#FA89),A
4147          LD HL,UNDEF
414A SYSV:    LD (#FA8D),HL
414D          LD (#FA8C),A
4150          RET
4151 NEWCOM:  LD A,(DE)
4152          CP "H"
4154          JR Z,DHIGH
4156          CP "W"
4158          JR Z,DWIDE
415A NAMERR:  LD A,(#FAD2)
415D          JP #FA8C
4160 DWIDE:   CALL GETSTR
4163 DW:      LD A,(HL)
4164          CALL DWO
4167          INC HL
4168          DEC BC
4169          LD A,B
416A          OR C
416B          JR NZ,DW
416D          JR PRTPOS
416F DWO:     PUSH BC
4170          PUSH DE
4171          PUSH HL
4172          CALL CHADDR
4175          PUSH DE
4176          DI
4177 DW1:     CALL GETCHR
417A          DJNZ DW1
417C          EI
417D          POP HL
417E          LD DE,CB1
4181          LD B,08
4183 DW2:     LD A,(HL)
4184          INC HL
4185          PUSH HL
4186          PUSH DE
4187          PUSH DE
4188          POP HL
4189          LD DE,13
418C          ADD HL,DE
418D          POP DE
418E          PUSH BC
418F          CALL DW3
4192          PUSH BC
```

```
4193            CALL DW3
4196            LD (HL),C
4197            POP BC
4198            LD A,C
4199            LD (DE),A
419A            INC DE
419B            POP BC
419C            POP HL
419D            DJNZ DW2
419F            CALL CR1
41A2            RST 10
41A3            DB #82,129,130
41A6            POP HL
41A7            POP DE
41A8            POP BC
41A9            RET
41AA DW3:       LD B,04
41AC            LD C,00
41AE DW4:       RLCA
41AF            PUSH AF
41B0            RL C
41B2            POP AF
41B3            RL C
41B5            DJNZ DW4
41B7            RET
41B8 PRTPOS:    LD A,(DE)
41B9            CP ","
41BB            JR NZ,PR1
41BD            RST 10
41BE            DB 09
41BF            JR PR2
41C1 PR1:       CP #3B
41C3            JR Z,PR2
41C5            CALL #001B
41C8            RET
41C9 PR2:       INC DE
41CA            RET
41CB DHIGH:     CALL GETSTR
41CE DH:        LD A,(HL)
41CF            CALL DHO
41D2            INC HL
41D3            DEC BC
41D4            LD A,B
41D5            OR C
41D6            JR NZ,DH
41D8            RST 10
41D9            DB #0A
41DA            JR PRTPOS
41DC DHO:       PUSH BC
41DD            PUSH DE
41DE            PUSH HL
41DF            CALL CHADDR
41E2            PUSH DE
41E3            DI
41E4 DH1:       CALL GETCHR
41E7            LD (DE),A
41E8            INC DE
41E9            DJNZ DH1
41EB            EI
41EC            POP HL
41ED            CALL CREATE
41F0            RST 10
41F1            DB #85
41F2            DB 129,10,8,
130,11
41F7            POP HL
41F8            POP DE
41F9            POP BC
41FA            RET
41FB CHADDR:    LD L,A
41FC            LD H,00
41FE            ADD HL,HL
41FF            ADD HL,HL
4200            ADD HL,HL
4201            LD DE,#1800
4204            ADD HL,DE
4205            LD B,08
4207            LD DE,BUFFER
420A            RET
420B GETCHR:    LD A,L
420C            OUT (02),A
420E            LD A,H
420F            OUT (02),A
4211            INC HL
4212            PUSH HL
4213            POP HL
4214            IN A,(01)
4216            LD (DE),A
4217            INC DE
4218            RET
4219 GETSTR:    INC DE
421A            CALL #3E7E
421D            PUSH DE
421E            LD HL,(#FA81)
4221            CALL #3FEC
4224            LD (#FA81),DE
4228            EX DE,HL
4229            POP DE
422A            RET
422B CREATE:    LD BC,08
422E            LD DE,CB1
4231            LDIR
4233            LD BC,08
4236            LD DE,CB2
4239            LDIR
423B CR1:       RST 10
423C            DB #8B,15,1,129
4240 CB1:       DS 08
4248            RST 10
4249            DB #8B,15,1,130
424D CB2:       DS 08
4255            RET
4256 UNDEF:     RST 28
4257            DB #26
4258 BUFFER:    DS 16
4268            RET
```



# Splat

*John Consadine*

The following listing contains three sprite ideas. They are exclamations which can be made to appear with the action on screen to give a game added interest and impact.

Lines 1005–1015 Set up display and load data into cassette buffer.

1020 Tell machine where data is.

1030 Set colour of sprites to white.

1040 Randomises X,Y position of sprite and which one.

1042–1046 Sets parameters depending on which sprite.

1050–1060 Positions sprite and turns it on.

1070–1080 Delay then repeat.

```
1005 PRINT"■":POKE53281,4:POKE53280,1
1010 V=53248
1015 FORI=0TO191:READA:POKE832+I,A:NEXT
1020 FORI=0TO2:POKE2040+I,13+I:NEXT
1030 FORI=0TO2:POKEV+39+I,1:NEXT:REM
COLOUR
1040 X=INT(255*RND(1)):Y=INT(190*RND(1)
):Z=INT(3*RND(1)):IFX<40ORY<40THEN1040
1042 IFZ=0THENS=0:T=1:P=1
1044 IFZ=1THENS=2:T=3:P=2
1046 IFZ=2THENS=4:T=5:P=4
1050 POKEV+S,X:POKEV+T,Y:REM   POSITION
SPRITE
1060 POKEV+21,P:REM  TURN SPRITE ON
1070 FORDE=1TO600:NEXT
1080 GOTO1040
3020 REM ***SPLAT***
3030 DATA 15,2,0,9,2,2,73
3040 DATA 2,4,72,66,8,48,162
3050 DATA 16,1,160,32,2,96,0
3060 DATA 4,8,0,0,16,31,0
3070 DATA 32,0,0,64,0,248,32
3080 DATA 192,0,17,32,0,3,32
3090 DATA 0,4,200,4,0,132,8
3100 DATA 33,6,16,32,9,32,32
```

continued on page 32 ▶

# Programming: Commodore 64

◀ continued from page 31

```
3110 DATA 16,64,32,32,0,32,0
3120 DATA 0
3130 REM ***POW***
3140 DATA 130,1,0,66,0,128,34
3150 DATA 0,64,16,32,32,8,17
3160 DATA 224,3,137,0,226,68,0
3170 DATA 2,35,0,1,16,0,16
3180 DATA 144,0,40,112,127,68,0
3190 DATA 0,40,0,0,16,0,128
3200 DATA 8,32,64,4,32,32,0
3210 DATA 32,16,0,32,8,0,32
3220 DATA 4,0,32,2,0,32,1
3230 DATA 0
3240 REM ***ZAP***
3250 DATA 132,8,33,66,8,66,33
3260 DATA 8,132,16,0,8,0,0
3270 DATA 0,254,62,60,4,34,34
3280 DATA 8,34,34,16,62,62,32
3290 DATA 34,32,64,34,32,254,34
3300 DATA 32,0,0,0,8,0,16
3310 DATA 16,64,136,32,136,68,65
3320 DATA 8,34,130,8,17,4,8
3330 DATA 8,8,8,4,16,8,2
3340 DATA 0

READY.
```

# Programming: Amstrad CPCs

## Converter

*Simon T Goodwin*

This program will convert bytes in memory to a tape/disc file containing Basic data statements. This is useful for programmers who wish to display their code in a format suitable for magazine readers. Machine code programs of up to 10K can be handled although this will be fairly slow. A better method is to convert code in 2K sections and then merge the programs.

```
50 :
60 OPENOUT "D":MEMORY HIMEM-1:CLOSEOUT
70 DIM a$(3000)
80 MODE 1
90 INPUT "START ADDRESS",address:start=a
ddress
100 INPUT "LENGTH OF DATA",length
110 lin=1
120 WHILE address<=start+length
130 a$(LIN)=a$(LIN)+STR$(LIN)+" DATA "
140 FOR n=1 TO 7
150 a=(PEEK(address)):GOSUB 330
160 address=address+1
170 NEXT
180 a=(PEEK(address)):GOSUB 360
190 PRINT a$(LIN)
200 lin=lin+1
210 address=address+1
220 WEND
230 :
240 :
250 INPUT "FILENAME> ",f$
260 OPENOUT (f$)
270 FOR n=1 TO LIN STEP 1
280 PRINT #9,a$(n)
290 NEXT
300 CLOSEOUT
310 END
320 :
330 IF PEEK(address)>15 THEN b$=HEX$(PEE
K(address)):a$(LIN)=a$(LIN)+b$+",":RETUR
N
340 b$="0"+HEX$(PEEK(address)):a$(LIN)=a
$(LIN)+b$+","
350 RETURN
360 IF PEEK(address) >15 THEN b$=HEX$(PE
EK(address)):a$(LIN)=a$(LIN)+b$:RETURN
370 b$="0"+HEX$(PEEK(address)):a$(LIN)=a
$(LIN)+b$
380 RETURN
```

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# Keyboard Beep

*Simon Parr*

This program for the BBC helps avoid making mistakes in typing by giving a short beep when lower case letters are entered.

Use **Fx214,1* to shorten beep and **Fx212,216* or *232* softens it.

```
10 *K.10?&210=0:?&211=9:*FX214,1:M
20 VEC=!&210 AND &FFFF:IFVEC=&900 END
30 FORP=0 TO 2 STEP2
40 P%=&900:[OPT P
50 CMP#(ASC"a"):BCC E
60 CMP#(ASC"z"+1):BCS E
70 LDA#7:JSR &FFEE
80 .E JMP VEC
90 ]:NEXT
```

# Memory Copy

*A Wright*

This routine for the Commodore 64 copies sections of memory from one location to another. The syntax of the command is – *Sys 49152, start address, destination address, length.*

```
0 REM MEMORY COPY
1 DATA32,107,192,141,40,192,140,41
2 DATA192,32,107,192,141,43,192,140
3 DATA44,192,32,107,192,133,250,132
4 DATA251,173,14,220,41,254,141,14
5 DATA220,165,1,41,251,133,1,173
6 DATA0,208,141,0,56,24,173,40
7 DATA192,105,1,141,40,192,144,4
8 DATA238,41,192,24,173,43,192,105
9 DATA1,141,43,192,144,3,238,44
10 DATA192,56,165,250,233,1,133,250
11 DATA176,2,198,251,165,251,208,207
12 DATA165,250,208,203,165,1,9,4
13 DATA133,1,173,14,220,9,1,141
14 DATA14,220,96,32,253,174,32,138
15 DATA173,32,247,183,165,20,164,21
16 DATA96
20 MC=49152:CK=0:FOR A=MC TO MC+120
30 READ D:POKE A,D:CK=CK+D:NEXT A
40 IF CK<>14869 THENPRINT "ERROR":STOP
50 SYS MC,53248+1024,12288,2048:POKE5327
2,(PEEK(53272)AND240)+12
```

# Replace

*Graham Russell*

This QL function will replace all occurrences of a word, *a$*, in the string, *b$*, with the word *c$*. For example, *Print Replace$(''don't'','I don't read Popular'', ''do'')* will print 'I do read Popular'.

```
10 DEFine FuNction replace$(a$,b$,c$)
20 LOCal v,e$
30 v=1:v=a$ INSTR b$:IF v=0:GO TO 50
40 do_replace:GO TO 130
50 RETurn b$
60 END DEFine
70 DEFine PROCedure do_replace
80 e$=b$(1 TO v-1):e$=e$&c$
90 IF v+LEN(a$)<=LEN(b$):e$=e$&b$(v+LEN(a$) to )
100 b$=e$
110 END DEFine
```

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**with Kenn Garroch**

## A danger to wildlife?

*G Woods of Uxbridge, Middlesex, writes:*

**Q I have a Commodore 128, a 1570 disc drive, and a Commodore MPS 1000 printer. Although I am happy with the equipment, I do have one problem.**

**Before Christmas, I bought *Geos* to use its fonts for a local wildlife magazine I do. As you see from the example print out of *Geos* fonts, I can't get them darker or clearer and although my dealer has tried to help me I can't find a way of solving the problem.**

**I would like to use this system for the Easter issue of the magazine. Should I try another printer, or other software, or does my printer need to be adjusted, or does it need a new ribbon?**

A From the example you have sent me (not reproduced for lack of space), it looks as though the printer driver for *Geos* is more or less copying the screen output to the printer. If you have access to a photocopier, you might try simply taking a photocopy as this will smudge the text a little making it appear more solid (you should also be able to adjust the contrast). Alternatively, print the text larger than needed and reduce it (if the photocopier will do this) in size, making all the dots closer together.

What the printer and driver should be doing is printing a line of dots that make up the text, moving the platen up and to one side very slightly, and then printing it again. It may be that the MPS 1000 cannot do this so the best thing to do would be to go to your dealer and ask him to try it with a more advanced printer – anything will do – to see what the result is.

## Joystick only

*M Hall of Meersbrook, Sheffield, writes:*

**Q I recently purchased a Comcon programmable interface for my Spectrum. It works perfectly until I plug my Alphacom 32 printer into the through port. The printer works OK but the joystick interface will only respond to down and left. Why is this and what can be done about it?**

A I think the problem is that both devices are using the same control lines on the back of the Spectrum. The printer is holding two or more lines in a state (either high or low) where the Comcon expects them to be free.

The only solution is to use one device at a time and not try and use them together. Unless, of course, any other readers know of a better solution.

## More chips wanted

*Christopher Wates of Wakefield, West Yorkshire, writes:*

**Q I am interested in expanding the memory of my Amstrad CPC464 and was wondering if it is possible to replace each of the 8K memory chips with higher value chips.**

**Also, I would like to know if it is possible to change the Amstrad's Z80A microprocessor for a Z80B.**

A The architecture of the Amstrad system (the way in which the memory is set up and the various chips interact) does not allow the expansion you suggest.

One problem is that the addressing system is geared to 8K chips and simply substituting higher capacity memory for the current system would not work, they would also probably not fit in the sockets.

Another problem is that an 8-bit microprocessor such as the Z80 can only directly access 64K of memory.

To get more, as is done with the Roms in the CPC, requires bank switching.

Bank switching is a method of substituting one section of memory with another section occupying the same address space, ie, both respond to the same addresses but only one is there at a time.

The switch is usually a bit in a memory location or output port, setting it to one switches in one option, zero the other.

A point to consider when expanding Ram is, do you really need it? Most programs that will run on an 8-bit processor such as the Z80 shouldn't need more than 64K to operate.

If they do, then a disc drive is probably of more use since it allows program sections to be overlaid by pulling them in from the drive when they are needed. With a disc drive, you also get much more permanent capacity than you would with Ram.

Concerning the change from the Z80A to the Z80B, the only difference between the two processors is that the B version is capable of running faster.

Unfortunately, the Amstrad system is geared to run at the speed set by the system clock which in turn is geared to the speed of the processor and the memory.

If you did replace the processor, you would not get any more speed from the system unless you increased the clock rate.

The upshot of all this is that unless you know what you are doing in terms of microprocessor system design, it is better to opt for a commercial add-on that will do what you require.

## Looking for a games machine

*Brian Hughson of Cunningsburgh, the Shetland Isles, writes:*

**Q I own an MSX HX-22 computer which has superb capabilities, quite easily matching the other three big un's, but there aren't very many games available.**

**I've now decided to keep my MSX, but also get one of the following computers, the Commodore 64 or the new Sinclair Spectrum Plus 2.**

**Could you please tell me which of the two I have stated is the best games only computer, which one has the best graphics, sound, and games available? Remember, I only want another computer for playing games on.**

A Well, some people may diagree, but I would certainly go for the Commodore 64 as the best all round games machine of the two you have mentioned.

Its capabilities are better in all departments, plus a lot of time and effort has been put into writing some excellent games for the machine. The Spectrum Plus 2, although it is based on an old machine with a great deal of games background, has a number of new features over the older 48K models.

However, most of these have not, as yet, been used to their fullest extent.

**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.**



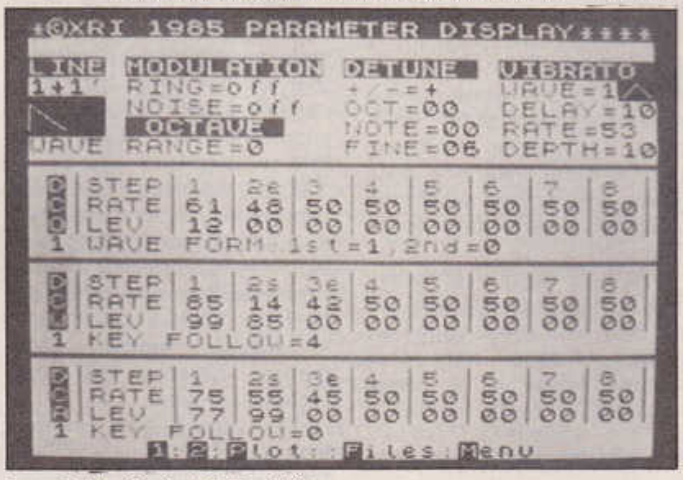
# The musical Spectrum

*Mark Jenkins with a selection of Midi programs for the Sinclair Spectrum*

After our extended Atari ST orgy over the last couple of weeks we'll move on this week with some software for Spectrum users which allows you to store sounds from most Midi synthesisers and also edit sounds from the Casio CZ range.

Casio's CZ "phase distortion" synths still represent the best value for anyone entering Midi synthesis, the CZ-101 offering a compact miniature keyboard, battery power, eight-note chords with powerful professional sounds, or four different monophonic sounds played simultaneously over Midi, for around £230.

XRI's *Casio CZ Tool Kit* (£22.95) works with its Micon Midi interface and the CZ-101 or (more upmarket) the full-size CZ-1000, the splittable CZ-3000, the CZ-5000 (splittable with a sequencer) and the CZ-230S (96 presets, four programmable memories and a programmable drum machine). The *Tool Kit* doesn't work with the flagship CZ-1 since it doesn't have facilities to address its velocity and pressure sensitivity functions.




From XRI's Casio *CZ Tool Kit*

*Tool Kit* reads the parameters relating to the sound currently being played, but isn't able to display the parameters of sounds in its own library unless you first load them into the synth. There are four main menu options; *(D)isplay/Edit Parameters, (F)ile Sound Library, (L)oad Sound Library* and *(S)ave Sound Library*. If we go for the (D) option we see several lines listing the current waveshape, line (the order in which modulation effects are added on the synth), modulation type, octave range and so on. If you change a parameter on the synth itself the screen display will change appropriately; the CZ design incorporates two 'lines' of oscillators (DCO's), waveform modifiers (DCW's) and amplifiers (DCA's) plus effects, and the software only displays one 'line' at a time.

Each line has three envelope generators for oscillator pitch, waveform modification during the course of a sound and overall volume, and each envelope can have between five and eight stages.

By selecting *DC(O), DC(W)* or *DC(A)* you can plot out any envelope shape; the wave is plotted across the width of the screen, and the software automatically compensates for the overall length of the sound.

You can choose whether or not to wipe out the existing envelope when plotting a new one, for comparison; the envelope step number is selected using the cursor keys and the values are changed with coarse or fine resolution using the *0* key for value up and the *9* key for value down (rather a peculiar combination, almost as bad as having to use *U* for a *(U) to clear)*. When a new stage is plotted it's automatically sent to the synth and you can play the keyboard to hear the changed sound.

So the editing function is handy, since it's normally a complex process on the synth, but since you can only see one 'line' at a time and plot one of the six envelopes it's by no means lightning fast.

The file menu stores 128 sounds and displays their names in banks of 32 (useful since the programmable memories of the Casio synths except the CZ-1 don't allow you to enter names).

The XRI system can be a boon if you want to handle large numbers of sounds (with Casio cartridges at £50 and all but unobtainable, it's economical, too) and there are some excellent sounds in the library – fizzy basses, tinkles, fifths, metallic and noise effects. You can dump one sound or 16 sounds (starting at any point in the current display) to the synth or cartridge in a few seconds, and can also transfer the library to Microdrive and swap sounds around at will.

On to the XRI *Midi Database* (£22.95), which stores patches from any Midi synth capable of transmitting them over Midi (except the XZ range, for which XRI may be able to offer a custom database).

To use the database you have to set it up for your particular synth, which involves transmitting a patch a few times to make absolutely sure that the program knows how many bits of data are involved. You can then access the database itself, load it and save it, and print out the 'system exclusive' data involved (this may not be very useful since with some synth manuals, such as that for the Yamaha DX100, you still can't work out what bits refer to which parameters).

Sounds can be given a number, name and type, swapped around and inserted/deleted (the command is given as *Insect* in the manual but we'll put that one down to a misbehaving word processor) and you can search through the pages 16 sounds at a time.

You can also search for and load the first available sound of a given type, and, of course, one of the main advantages of the database is that you can name sounds from synths which don't normally offer that facility (such as the Roland Juno 106).

You can save a lot of money spent on cartridges, but you do have to make a customised copy of the software for every synth, and being tape-based the system isn't amazingly fast (microdrive would be better though).

On the whole, a pair of inexpensive, useful and straightforward programs which could do with slightly more explanatory manuals and perhaps some better choices of control functions.

*XRI Systems, 10 Sunnybank Road, Wylde Green, Sutton Coldfield, W Midlands B73 5RE. Tel: 021 382 6048 (not Weds).*

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# Picking up the tab

*David Wallin explains how phone bills can rocket when you are using the modem, and suggests some ways of keeping costs down*

The nightmare of everyone who accesses bulletin and databases must be receiving their phone bill, particularly the first one. It is quite usual for there to be a £100 to £200 a quarter increase in your bill when you use a modem and people frequently underestimate the amount the bill will increase.

I know this is a subject that a number of people want to know more about, so this week we'll go into it in some detail.

There are two main ways of logging your calls, so that you can be prepared for the financial shock when it arrives: using a meter, or meticulously recording your calls.

BT will install a meter on your line for you which counts the number of units you use in each call and gives a running total.

This is useful as all you have to do is multiply the number of units by 4.4p and the result is your phone bill (excluding Vat).

The meter does not automatically reset when your bill is sent so the total is a constant running total since the meter was installed. To overcome this and enable you to time one specific call, there is also a second meter which can be reset by pushing a button, like a car tripmeter.

A meter costs about £40 to initially have installed and your line rental goes up by nearly £10 a quarter.

You cannot meter only specific calls (ie, modem ones only) unless you use the resettable meter and keep a running total on paper.

Timing your calls cuts out the cost of fitting a meter. However, while it is cheaper, it does require a bit of work.

Some pieces of communications software have built-in call timers which save you having to start and stop a stopwatch/stare at the clock all the time.

When you time your calls you must know how to calculate them; time the call, and convert the time to seconds only (ie, two minutes, 45 seconds is 165 seconds).

Then divide by the number of seconds per unit at the distance and rate involved (see table one right), eg, standard rate, distance b1 = 30 seconds per unit; 165/30 = 5.5.

If the above result is not a whole number then round it up to the next whole number (5.5 becomes 6). Multiply the result by the unit cost, currently 4.4p (excluding Vat, 5.06p including Vat). In our example, 6 × 4.4 = 26.4p.

## How BT times your calls

When the call you dial is answered, you are charged for one unit. Simultaneously, a count-down timer starts. The time of this depends on number of seconds per unit at the distance and rate involved (see table one). When this reaches zero, you are charged for another unit and again the timer starts.

```
Calculating your charges

10 PRINT "Rate (C/S/P)"
20 INPUT rate$
30 PRINT "Distance"
40 PRINT "1) Local"
50 PRINT "2) a"
60 PRINT "3) b1"
70 PRINT "4) b"
80 PRINT "5) Republic of Ireland"
90 INPUT dist
100 IF rate$="C" THEN LET rate=0
110 IF rate$="S" THEN LET rate=5
120 IF rate$="P" THEN LET rate=10
130 LET unitposition=rate+dist
140 FOR LOOP = 1 TO unitposition
150 READ unit
160 NEXT LOOP
170 PRINT "Please enter call length"
180 INPUT "Minutes:"
190 INPUT minutes
200 PRINT "Seconds:"
210 INPUT seconds
220 LET time = (minutes * 60) + seconds
230 IF time <> INT(time) THEN
time=INT(time) +1
240 LET charge=(time/unit)*5.06
250 PRINT "Cost of call: ";charge;" (inc.
Vat)"
1000 DATA 360,100,60,45,12,90,34,
3,30,24,8,60,25,7,22,5,18,8
```

## Making the most of a call

Since a cheap rate local call gives you six minutes for your 4.4p, a five minute, 30 second call costs as much as a 30 second one.

If you use this knowledge wisely, whilst on-line, you can work out how much longer you have already 'paid for' and can stay on-line for longer without extra cost.

This could save £10 to £15 a quarter for the average user.

Since you are charged in advance, immediately logging off a board by manually breaking the line (hanging the modem up, turning it off, etc) does *not* save money.

It causes sysops a lot of trouble to have people constantly just breaking the line and since it is of no personal advantage to do so, on behalf of all sysops, please do not.

## Charges Program

For those of you who are going to want to start timing your calls, then the short Basic program (shown left) should help you. It is in very simple Basic and should work on most micros.

Line 230 converts a non-integer (not a whole number) into an integer and may not work on some computers.

When you first use the program check the results yourself, if they don't agree then you may need to alter a few bits of the program to suit your own Basic dialect.

**Table one: number of seconds given per unit for calls of various distances and at various times**

| | Cheap Rate | Standard Rate | Peak Rate |
|---|---|---|---|
| **Local** | 360 | 90 | 60 |
| **Call Rate a** | 100 | 34·5 | 25·7 |
| **Call Rate b1** | 60 | 30 | 22·5 |
| **Call Rate b** | 45 | 24 | 18 |
| **Republic of Ireland** | 12 | 8 | 8 |

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This package contains all you need to turn your QL into an Icon controlled super micro – takes the tedium out of typing; unlike some systems, ours is fully programmable. You can program the Icons to do anything you like – you can of course redesign the Icons themselves and we have even included a special designer program to make the task that bit easier.
This toolkit also contains lots of new graphics commands, all of which have the ability to draw using user defined patterns, not just solid lines. There is even a new fill command that will fill any shape with any user defined pattern (features like these are normally only to be found in the most expensive of drawing programs). We even throw in a special pattern designer so that you can design your own new patterns at leisure.
There are also 2 Epson compatible screen dumps, a print spooler and an on screen notepad.

**★ GAME TOOLKIT £5 ★**

This toolkit contains everything you need to create fast animated arcade games on your QL. It also contains extra routines to allow you to produce multi-tasking tunes (like the ones found in all the best arcade games). You can have up to 32 sprites all of which can have up to 16 frames of animation. Collision detection is also provided and of course it goes without saying that our sprites are some of the fastest and smoothest around. A sprite designer is also included.

**★ COMPLETE TOOLKIT £10 ★**

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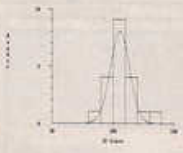
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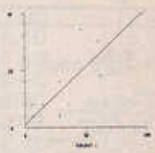
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# New Releases

***John Cook looks through this week's new arrivals***

## Amstrad CPC

**Program** *Ballblazer* **Type** Arcade **Price** £9.99 (tape), £14.99 (disc) **Supplier** Activision, Activision House, 23 Pond Street, Hampstead, London NW3 2PN.

Lucasfilm Games title with impressive split-screen 3D perspective graphics.

**Program** *Willow Pattern* **Type** Arcade Adventure **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.



Re-release from the now defunct Super Silver range. Cute, maze-style actioned, based on the old Willow Pattern legend, as explained on Blue Peter, 15 July, 1973.

**Program** *Koronis Drift* **Type** Arcade/Strategy **Price** £14.99 (disc only) **Supplier** Activision, Activision House, 23 Pond Street, Hampstead, London NW3 2PN.

You want fractals? (Adopts Jewish mother voice.) You want more fractals? OK. I'll get you fractals.

**Program** *500cc Grand Prix* **Type** Arcade **Price** £9.99 (tape), £14.99 (disc) **Supplier** Loriciels, via Activision, Activision House, 23 Pond Street, London NW3 2PN.

For some reason, to date there isn't a decent motor spot simulation on the CPC machines – this goes some way to solving the problem. Split screen (like *Pole Position II*), 1 or 2 player, the graphics are good, even though the bikes themselves aren't too responsive. Hold hard before you spend the pennies, though – Digital Integration's *TT Racer* will be around soon. It'll be worth making a comparison before you buy.




**Program** *Little Computer People* **Type** Pet Simulation **Price** £14.99 (disc only) **Supplier** Activision, Activision House, 23 Pond Street, Hampstead, London NW3 2PN.

For comment see Spectrum 128/Plus 2 listing.

**Program** *Bactron* **Type** Arcade Adventure **Price** £9.99 (tape), £14.99 (disc) **Supplier** Loriciels, via Activision, Activision House, 23 Pond Street, London NW3 2PN.




Pick of the week

## Mission Impossaball

**Program** *Impossaball* **Type** Arcade **Micro** Spectrum and Amstrad CPC **Price** £8.95 (tape), £14.95 (disc, CPC only) **Supplier** Hewson, 56B Milton Trading Estate, Milton, Abingdon, Oxon.

There's a vicious rumour going round that Andrew Hewson spends most of his time wandering around the streets of Abingdon wearing a sandwich board saying, "Sorry to bother you but I was just wondering, err, err, if you had any computer programs worth publishing."

Well, who knows how he does it, but *Impossaball* is another 'drag them in off the streets' job – from John Phillips. Granted that it's another bouncy-bouncy control the ball program – call it a second-cousin to the hugely under-rated *Action Reflex* if you like – but it's done very well and it's in pseudo-3D.

Within each level, you have a time limit in which you must bounce on a number of cylinders (closely guarded by fatal spikes) and get to the end of the course, avoiding the weeblies.

Revolutionary? No. Original? Not much. But for some beautifully programmed, race against time action, you need look no further.




## Atari ST

**Program** *Lock It 1* **Type** Utility **Price** DM217.54 (plus DM10 p&p) **Supplier** Tommy Software, Mainzer Landstrasse 147, D-6000, Frankfurt/M 1, West Germany.

Professional copy protection for your ST programs. The company are presently looking for distributors in the UK, but it's mail order only right now.

**Program** *Crypt It 1* **Type** Utility **Price** DM217.54 (plus DM10 p&p) **Supplier** Tommy Software, Mainzer Landstrasse 147, D-6000, Frankfurt/M 1, West Germany.

Encryption for your more sensitive data, for storing on disc or sending via modem.

**Program** *Silicon Dreams* **Type** Adventure **Price** £19.95 **Supplier** Rainbird Software, 74 New Oxford Street, London WC1.

The new, improved versions of three Level 9 'classic' adventures, *Snowball*, *Return to Eden*, and *The Worm in Paradise*.

Nice work in terms of vocabulary, parser and save features – but don't expect Pawn-like graphics.

**Program** *The Wanderer* **Type** Arcade **Price** £24.95 **Supplier** Pyramide, via Reo Promotions, 28 Waverley Grove, London N3 3PX.

3D *Elite*-style graphics (red and blue plotting on screen, and you wear the funny glasses), which falls down a little on gamesplay.



**Program** *Eazy Calc* **Type** Utility **Price** £49.95 **Supplier** Robtek, Unit 4, Isleworth Business Complex, St Johns Road, Isleworth, Middx TW7 6NL.

GEM-based spreadsheet for your very own ST.

## CBM 64

**Program** *Murder Off Miami* **Type** Adventure **Price** £7.95 **Supplier** CRL, CRL House, 9 Kings Yard, Carpenter's Road, London E15 2HD.

Murder mystery based on a Denis Wheatley novel, written by Delta 4, brought to your computer courtesy of CRL. Comes complete with photos of the dramatis personae (can you spot the Irene Handle look-alike?) and a plan of where the dirty deed took place. As a three-parter, it should keep you going for a while, Inspector.

**Program** *Willow Pattern* **Type** Arcade Adventure **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

See Amstrad CPC listing section for comment.

**Program** *Conquest* **Type** Arcade Adventure **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Slightly reminiscent of *Avalon*, maybe, but still jolly good fun from the keyboard of Derek Brewster.

**Program** *The BIG Deal — Floyd The Droid II* **Price** £9.95 (tape), £14.95 (disc) **Supplier** Radarsoft, via Ariolasoft, Long Acre, London WC2.

Remember *Floyd The Droid*, where you have to keep the sewers clear with your electronic chum? Now Floyd has been modified to work in a fast food joint – let's hope he washed his stepper motors first.

Looks good – and there's more to the game than first meets the eye.

## Spectrum

**Program** *Willow Pattern* **Type** Arcade Adventure **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

For comment, see under Amstrad CPC listing.

**Program** *Samurai* **Type** Strategy **Price** £7.95 **Supplier** CRL, CRL House, 9 Kings Yard, Carpenter's Road, London E15 2HD.




Strategy in the Land of the Rising Sun from CRL. Icon driven, scrolling map, it looks like a winner.

**Program** *Ninja* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

## Spectrum 128/Plus 2

**Program** *Koronis Rift* **Type** Arcade/Strategy **Price** £9.99 **Supplier** Activision, Activision House, 23 Pond Street, London NW3 2PN.

**Program** *Little Computer People* **Type** Pet Simulation **Price** £9.99 **Supplier** Activision, Activision House, 23 Pond Street, London NW3 2PN.


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# Preaching to the converted

I was fascinated to read the article in Ziggurat, 8–14 January 1987, by K P Dutton saying how he felt that much of the excitement generated by the launch of such computers as the Atari ST, the Amiga and the cheap IBM PC Clones is a product of media hype, and that the average user simply does not *need* the amount of Ram, processing power, or icon-driven mouse-infested front end which many of the new machines boast.

Up until around 10 months ago, I would have totally agreed with Mr Dutton. Then, I had a system similar to his own, a BBC model B with discs, printer, colour monitor, and a few other peripherals such as a modem and a teletext adaptor. I had very similar uses for the machine.

Using Rom software for word-processing, I was quite convinced that 32K was enough. And anyway, when I ran out of Ram, I could always shovel what I had written onto disc, and carry on afresh with a blank 32K.

When the database ran out of Ram, things were a little more serious, but cutting the data into two separate files meant that the Beeb coped.

It was also annoying when adventures were truncated because of the Beeb's meagre memory . . . and so I joined the band of 'text-only-is-better' adventure players, mainly because BBC adventures couldn't fit graphics in.

Then I finally decided that I would jump on the bandwagon, and bought an Atari 520ST, after seeing one demonstrated at my local computer club. Beforehand, I went through a similar dilemma to Mr Dutton, telling myself that I didn't really need the new machine. This was true, I didn't. But I could have used a similar argument about upgrading from a type-writer to a word-processor.

My ST doesn't do anything that my Beeb couldn't do. Indeed, I still have my BBC system, and I use it for communications, because it is quite simply the best computer for comms around. What my ST does do is make word-processing, or handling a database so much *easier*. And that means it's *faster* too. As for games, anyone who has played *The Pawn* or *A Mind Forever Voyaging* knows what 16-bit graphics power and extra Ram can do.

As to the mouse-infested, icon-driven front end, I agree that the Beeb style O/S is quite adequate. But I don't think that many people would disagree that housekeeping on micros which only use command line Interfaces is a chore, and using an icon system, perhaps with a Ram disc, makes things quicker, easier, and therefore increases the likelihood that the housekeeping gets done!

And what about the things which I didn't do on my Beeb because it was inconvenient? After I'd had my ST for a month or so, someone showed me a drawing program. "Huh!", I said "What do I want with a drawing program?!". But it was cheap, quick and easy to use, and it produced professional results.

I bought a copy to play around with, and before you could say "mouse droppings", found myself including black and white illustrations with my articles which were of a good enough quality (printed on a matrix printer) to be photographed and printed in magazines.

I would never have considered doing that on an 8-bit machine. But with the Wimp environment, it was so easy to do that it was no more than a natural progression. Some AMX mouse owners will be screaming for my blood by now, but I still maintain that until a mouse is used to control *all* the machine's facilities, including O/S commands, etc, using one as an addition is uncomfortable, and I know of many AMX users who agree.

So what should Mr Dutton do? Well, I would suggest that he should borrow an ST, and use it for a month or two. If after that time, he still feels that his Beeb can do all the ST can, I apologize for wasting his time. Somehow, though, I doubt if that would be the case.

**David Machin**

## NEXT WEEK

### Beginners Guide to Computing part four

**The final part of our series for newcomers to computing looks at the industry standard CP/M operating system, an additional feature of many Z80-based micros today (held over from this week) and alternative computer languages. How do languages like Pascal, Logo and Forth score over Basic, and what do they do?**

**Having got started with your micro, where do you hope to end up? We peer into our crystal balls to look at some of the newest technology which will becoming available to the micro owner in the years to come.**

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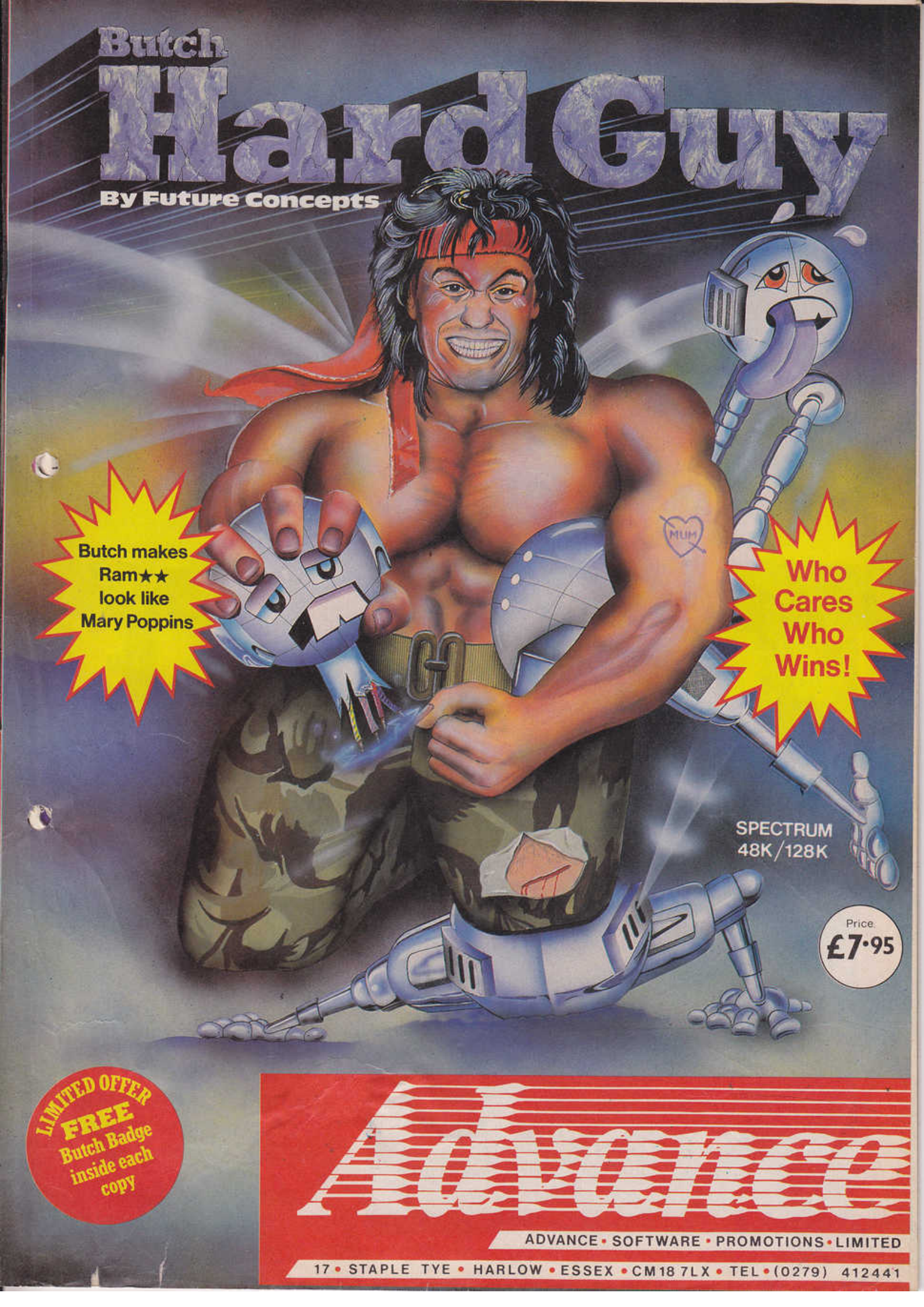
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## Hackers



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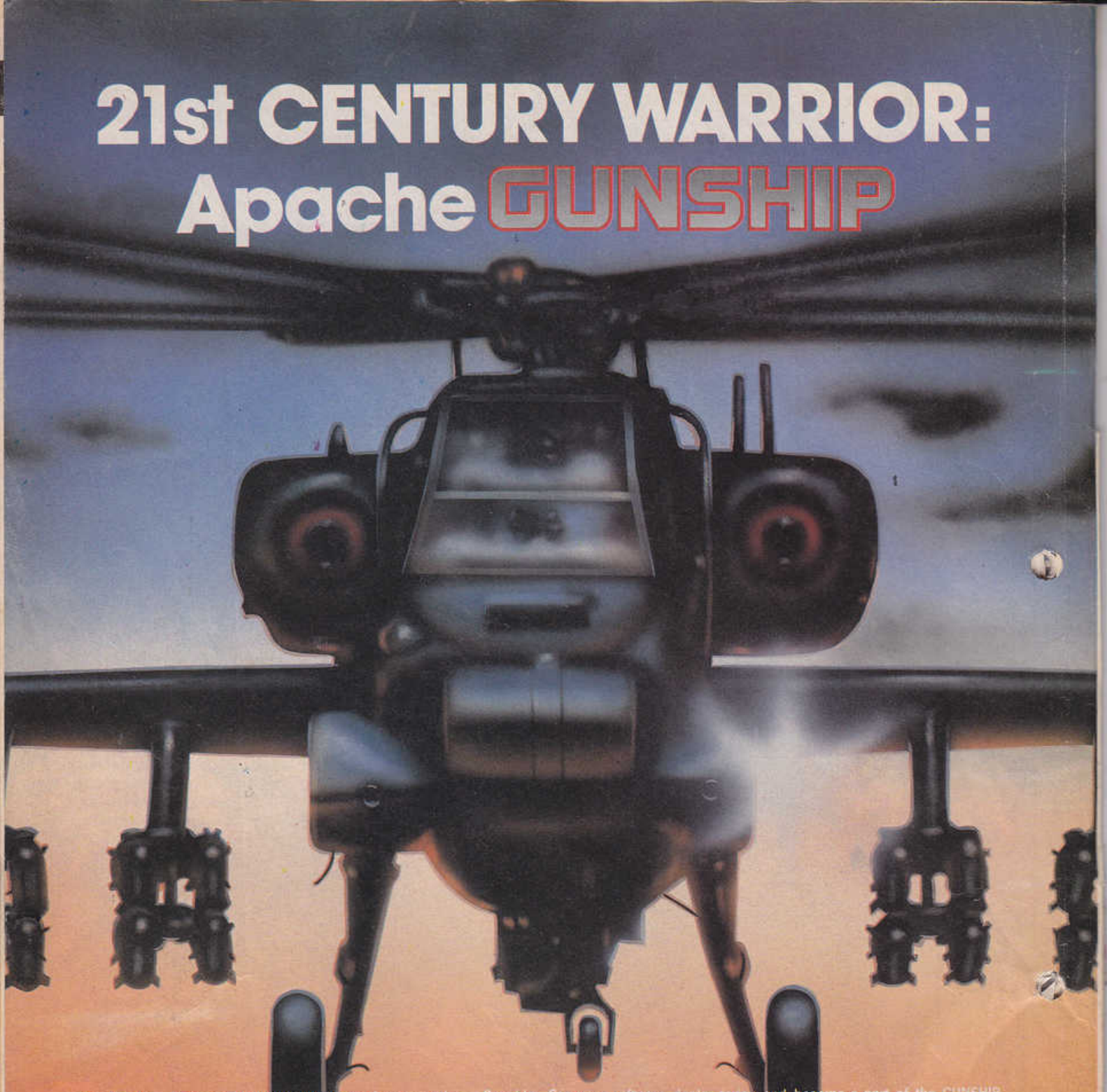



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