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Spectrum 128 software now ready in UK

SOFTWARE companies are gearing up products for the Spectrum 128 in this country, despite Sinclair's continued silence on the subject of a British launch for the machine.

A number of software houses have had Spanish Rom versions of the Spectrum 128 for some months, ostensibly to produce titles for the Spanish market. Now, apparently, versions of the machine with English Roms are being sent to companies for development as well.

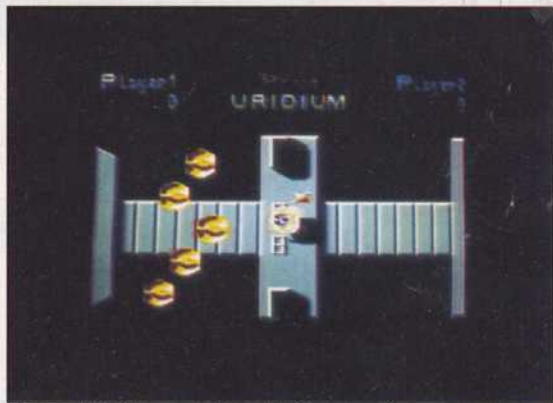
Popular thinking indicates that Sinclair will introduce the

Spectrum 128 in the UK at the end of January (see *Popular Computing Weekly*, December 12). If so, then Tasman Software will be one of the companies to release titles.

"We are doing an implementation of Tasword for the Spectrum 128," said Simon Howarth of Tasman. "It will be a conversion of Tasword 6128, for the Amstrad machine, which is our most powerful Tasword version yet.

"It will make full use of the additional memory, and priced, probably, at £15.50. However, it will be released

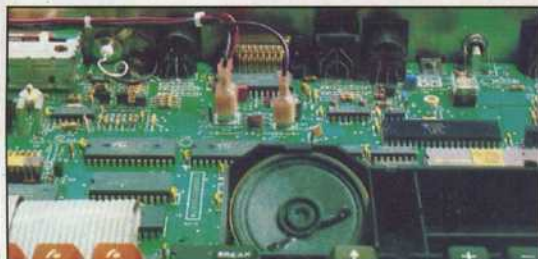
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Hewson's follow-up to *Paradroid* - see p4

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- *Showdown in Las Vegas* — news from CES
- *US Gold's empire expands*
- *Biggles on the micro*



Acorn's Master Series previewed - see p10



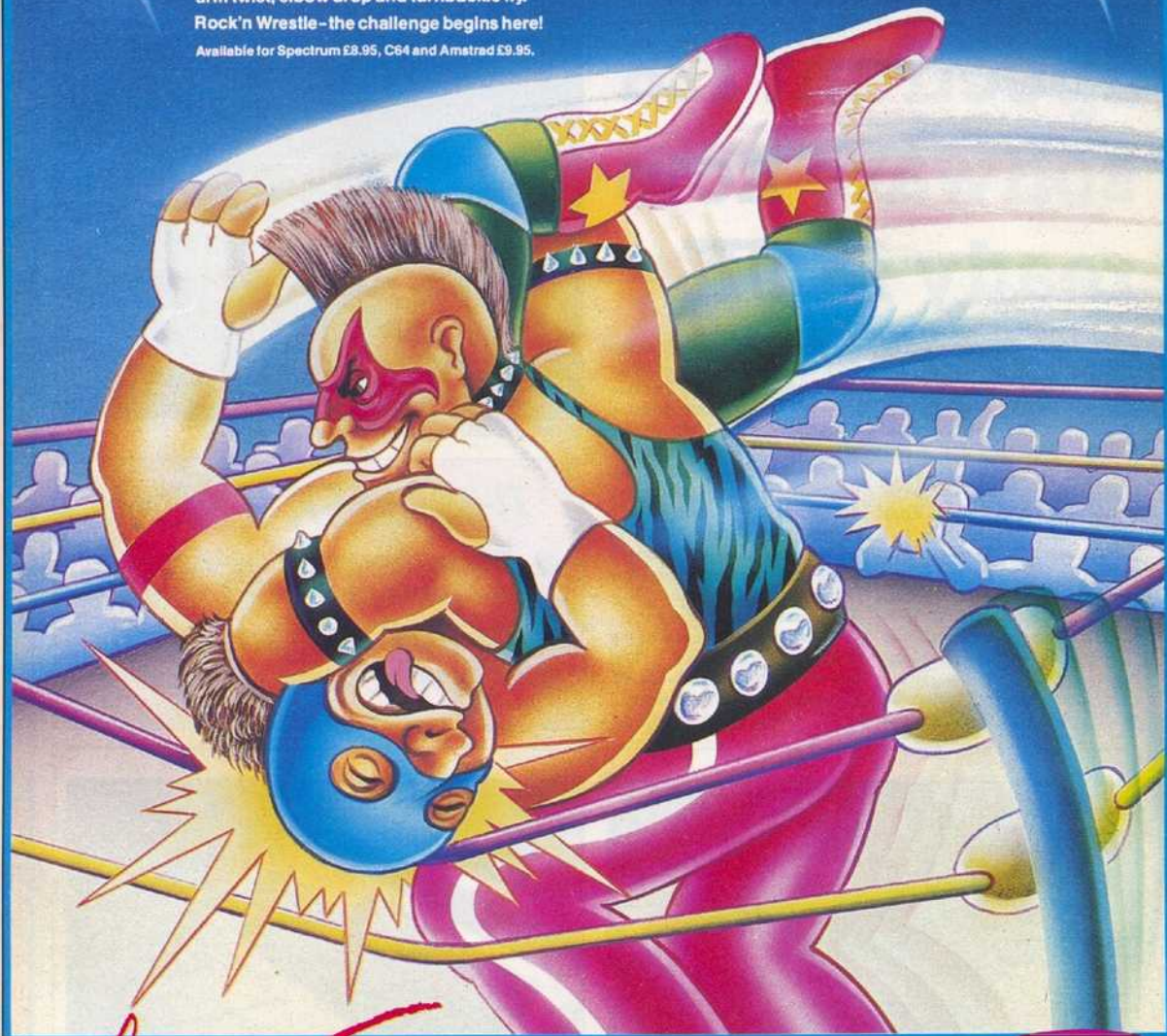
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EDITORIAL

Last week Acorn came out of its hibernation of reorganisation/rationalisation to launch the next generation of BBC labelled micros - the Master Series. And a substantial looking range it is too. The person that once compared owning a BBC computer to owning a Volvo must have been clairvoyant, as the best now comes complete with crumple zones for inserting second processors and the like, plus the usual comprehensive range of ports (say maybe a towing bar and roof rack), plus in-built Rom's (read stereo radio/cassette deck). But the question is, who is going to buy the thing?

All these extras cost quite a lot; any claims of 'competitive pricing' at £500 for the basic 8-bit 128K system, with no disc drive and no monitor sound rather silly. Nevertheless, the Master Series has still got quite a lot going for it. Any existing BBC B owner wishing to

upgrade is going to buy one. The fact that many potential buyers of the new series won't be using their own money (but that of various educational establishments) will work in its favour.

Yet Acorn seems to have the idea that what it has got hold of here is a mass market machine - in addition to the schools, colleges and laboratories. But once again who are they selling to? At the lower end, what newcomer will buy a Master in preference to, say, a 6128 (effectively half the price). What business is going to spend £1800 on an relatively unestablished business system?

All the glossy ads in the world don't change the fact that customers for the Master Series will come from select, esoteric areas of the market, probably largely from existing BBC owners. Acorn is not likely to attract new users with the range.

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Spectrum 128

◀ continued from page 1

on microdrive only," he continued. "The product should be ready in early February - it will be available when the machine reaches the shops."

Other utilities for the British Spectrum 128 include Softechnics' word processor *The Writer*; *The Magus*, a development system from Ocean IQ; *Music Box* from Melbourne House, an extended version of its 48K *Wham! Music Box*; and *Art Studio* from Oxford Computer Publishing via BT's new Rainbird label. "We are also looking at enhancing and expanding our word processor *Word Manager*," said OCP's Bruce Everiss. DKTronic is also thought to be working on peripherals for the machine for its launch.

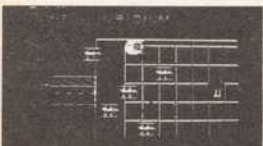
On the games side, many of the top companies are working on versions of existing titles. *Fairlight* from The Edge, *Yie Ar Kung Fu* from Ocean/Imagine, *Knight-Tyme* (a sequel to *Spellbound*) from Mastertronic, and Firebird's *Rasputin* are all being beefed-up for release on the 128. The Ocean/US Gold group is also planning conversions.

It will be sold in the normal High Street outlets. "We have spoken to Sinclair and expect to be taking it," said John Greengrass of Boots.

Hewson follows Paradroid with Uridium

HEWSON'S latest game for the Commodore 64 is *Uridium*, a space combat game written by *Paradroid* author Andrew Braybrook.

The game features 3D graphics moving across the



screen at very high speeds.

Uridium costs £8.95 on cassette and £12.95 on disc, and will be available next month.

Head-on fight for ST and Amiga at CES

ATARI announced its one megabyte Ram 1040ST at the Winter Consumer Electronics Show in Las Vegas last week, and confirmed that the 520ST will now become its entry level 16-bit machine, to be sold in chain stores and mass market outlets. The 1040ST will replace it in specialist dealers. The machine is not currently intended for the UK.

Atari US also announced at CES that it will no longer continue with the 260 ST, which it previewed at the *Personal Computer World* show in London last September. This move leaves the future of the promised - and delayed - 260ST in the UK very unclear. Rob Harding, Atari UK's sales and marketing manager, said, "We, in the UK, are now sorting out our product plans for this year, and our intention is still to continue with the 520ST and introduce the 260ST in the first quarter of 1986."

Scott Adams to join US Gold stable

ADVENTURE International is likely to be the next company to join the US Gold stable. The two companies are set to sign a deal similar to that between US Gold and Ultimate (see *Popular Computing Weekly*, January 9).

"We have a draft contract set up, although it is not yet signed," said Tim Chaney, US Gold's general manager. "It is on the cards that we will be doing the marketing and publishing for at least the Scott Adams adventures released by Adventure International."

The company's next release, which will probably now have US Gold's name on the packaging as well as AI's, is *Questprobe III: The Fantastic Four*, which is due for release in March. US Gold plans to publish the product on its All-American Adventures label.

The 1040ST will cost \$999.95 (around £700) with a high resolution monochrome monitor, disc drive and bundled software. The same package, but with a colour monitor, will cost \$1199.95 (£800). Atari hopes to release its SHD-204 20M hard disc unit for the machine next month. The 1040ST is intended as a head-on competitor to Commodore's Amiga, which costs \$1750 (£1200) for an equivalent package but with just 256K, and also Apple's Macintosh at \$2499 (£1700).

Commodore did not take a stand at CES, but held a conference at a nearby hotel suite on the first day. The company is having problems over the paucity of Amiga software, which has been on sale in the US since September.

While many US software companies have turned to producing 16-bit software from 8-bit packages, including the two leading houses, Activision and Electronic Arts, many are still undecided which of the 16-bit micros - the ST, Amiga or Apple Macintosh - to fully support.

So far, the ST is gaining more than the Amiga. Bing Gordon, marketing vice president of Electronic Arts, said, "Tramiel has shown himself to be pretty canny, and Commodore has made some bad moves recently."

British software was also in evidence at the show, with large stands taken by Mastertronic and Firebird Licensees, an offshoot of Firebird/Rainbird.

A full CES report will appear in next week's issue.

Commodore's profit claim suffers setback

COMMODORE International has backed down from its claim that it would make a profit in the second quarter to December 31, 1985 (see *Popular Computing Weekly*, January 9). The company has recently suffered a string of four quarterly deficits, which led to a £90m loss for 1984-1985.

Now Commodore International spokesman, Paul Lazovick claims that asset write-downs may turn a small profit into a loss: "We will have a pre-tax profit based on

ongoing operations for the December quarter. That does not take into account asset write-downs, which are not an event strictly concerned with earnings and sales.

"I am not categorically stating there will be a loss - it depends on write-downs."

Also to be taken into account are the losses from the closure of Commodore's Corby plant, and also the shutdown of a semiconductor plant at Costa Mesa in California with the loss of 200 jobs.

Amstrad's PCW 8256 for hire

AMSTRAD PCW 8256 machines are now available for hire, courtesy of Sagesoft, if you live in the London area.

"We started this pilot scheme just before Christmas and already we have had several hundred inquiries," said David Goldman, Sagesoft's managing director.

"We are offering people not just the machine, on a weekly rental basis, but a

complete service and insurance agreement. We give users full training on the machine, maintenance and replacement of software if anything goes wrong."

A two-year rental contract from Sagesoft costs £13.54 per week, three years £10.75 per week, and four years £9.42.

Details from Sagesoft on 091-284 7077.

By Jove, Biggles, we're a computer game!

BIGGLES, a computer game based on a movie of the same name, is to be released by Mirrorsoft in the spring. The film is based around the famous series of books by Captain W E Johns. Mirrorsoft has the film rights, while Palace

eties of game play". The game will load in several sections. Despite the presence of Biggles and flying chums like Algy, the game does not primarily feature flying, being broadly a strategy game.

Biggles (the film) is to be



Scene from the film *Biggles*

Software has licensed the books.

Mirrorsoft describes *Biggles* as a "multi part game involving several classic vari-

given a Royal Premiere this spring and Mirrorsoft hopes to donate that day's sales of the game to the *Off the Hook* charity.

Atari ST titles now number over 100

The list of software available in the UK for the Atari 520 ST now numbers over 100 programs. The titles range from games to powerful business utilities, although the emphasis is more on the games side.

Many are American imports, available in this country from SDL, the distribution arm of Atari dealer Silica Shop. Home produced products include *Desk Diary* from Eidersoft (£59.95), *Rhythm*, a diary cum general desk utility, from Softechnics (£39.95, macro assemblers from GST (£39.95) and Metacomco (£49.95), *Devpac ST* from HiSoft (£49.95), *GSTC* from GST (£59.95) and *K-Seka* from Kuma 49.95).

Other utilities include Talent's *Ram Disc/Print Spooler* (£24.95), Microdeal's *Soft Spool/M-Disc* (£19.95), and *K-Ram* from Kuma (£29.95).

On the entertainment side, Microdeal has three titles now available: *Lands of Hav-*

oc, *Flipside* and *Mudpies* (all £19.95).

Talent's *Zkul* and *West adventures* are available on a single disc at £24.95, Eidersoft has *Mission Mouse* at £19.95, and *Brataccas* from Psynogon at £34.95 is also out.

Rob Harding, Atari UK's sales and marketing manager said, "We are determined that the ST will have software covering all areas of the market from games and entertainment through to serious business and vertical market applications."

Most of the above titles, and many from the US, should be available from Silica Shop, SDL on 01-309 1111.

Play by Mail convention

PLAY BY MAIL game fans will be interested to hear of Britain's first PBM convention, to be held at Islington Town Hall, on Saturday, February 15. Tickets cost £1 from Mike McGary, 2 David Court, Lansdown Road, London N17 9XW.

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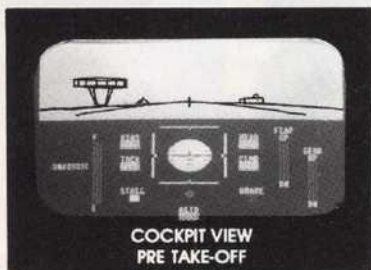
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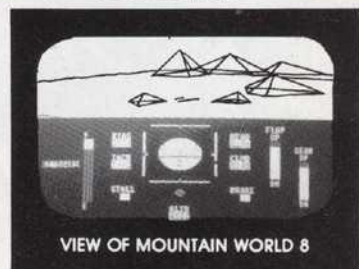


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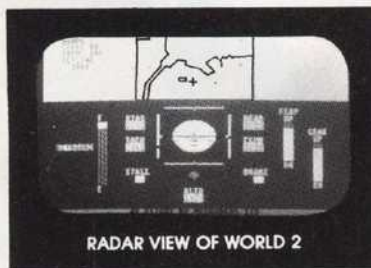


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SOFTWARE

Print options

Having just received a copy of OCP's *Word Manager*, which I bought largely on your recommendation, I'd like to add a few comments to your rather gushing review.

Word Manager is certainly flashier than *Tasword*. I found it amazingly simple to configure it to fit my printer and interfaces. Its editing process is flashier, but not better than *Tasword's*, it has helpful features such as automatic paragraph indent and the automatic erasure of the old text on a cartridge, though I'm not happy about being able to format from menu, I foresee appalling accidents!

It also has a perfectly useless ability to swap two consecutive words; and of course its prime advantage is its ability to print more than *Tasword's* very limiting 64 characters.

However, *Tasword* offers a jump to start or end of text, and the ability to move strings left and right. Also *Word Manager* has no on-screen information, and when you find this info it doesn't include the number of lines used, or the line number of the cursor, so if you want to print part of a text you have to count up and work out very carefully whether it will fit.

Tasword offers three options to print - justified complete words, justified broken words and 'ragged right' as from an ordinary typewriter. *Word Manager* does not have this last option. When printing, *Tasman* asks for a left margin and prints all text at that distance from the left of the paper.

On balance, if I were buying a word processor, I'd still buy *Tasword*.

John Ledbury
London, N22
Wilt

Just the icing

I am the proud owner of an Amstrad CPC 464 and a DDI-1 disc drive, and I can say that I have found it a formidable computer. Not only has it got excellent games, but it also provides the user with a vast amount of business software, especially in the CP/M field (and this is

what made me buy the computer).

Your magazine appears to treat the CPC 464's CP/M compatibility with scepticism and you do not appear to counsel your readers to purchase the computer solely to gain access to CP/M. On the contrary, even your DDI-1 disc review (*Popular Computing Weekly*, 29 November-8 December 1985) states CP/M should be regarded as icing on the cake and not the cake itself, mainly due to the software being more expensive than the hardware. What's more, further objections were made regarding the fact that only 39.5K remains for CP/M programs to run in.

It is my opinion that being given a cheap CP/M compatible computer to run tried and tested CP/M software is like being let into a pub under age, provided that you pay for your own drinks. May I also remind you that in another issue of the magazine William Poel himself states that "All the hooks are present in the system design to permit some enterprising soul to devise an MSDOS 512K add-on if they so desire. . ." I look forward to such an add-on.

Finally, thank you very much for the support that your magazine gives the Amstrad range of computers.

Vincent Sladden
70 Kent Street
Fgura
Malta



"Funny how the Spanish market has taken off in the last few weeks"

Vortex Software Sales Ltd, producers of the excellent *Highway Encounter* on the Spectrum and Amstrad, have asked us to point out that they are not associated with the Vortex Expansion Board for the Amstrad reviewed in last week's issue of *Popular Computing Weekly*. Screen Micro is the only distributor of the board.

Print options

I am Chairman of the newly formed South Eastern Einstein User Group. We have got together because there seems little support for the machine even though it is probably one of the best micro's on the market.

Because it supports CP/M the wealth of Public Domain software is readily available and since it is a soft machine, it speaks a variety of languages including BBC Basic, Cobol, Forth and many others without loss of available memory. There is a Spectrum Emulator due out for it shortly whereby it will run any Spectrum software and it is rumoured that it is being used to develop software for the Amstrad.

Any readers interested should contact me at the above address.

C S Giles
South Eastern Einstein
User Group
75 Oakdene Crescent
Mile Oak
Portslade
Sussex
BN4 2RP

Print options

Having read recently of a bug in the Spectrum version of *Elite*, discovered by Paul Hughes, I tried it out and was delighted to find it works.

One point which raises its head, however, is that Tigeans Sun is about to go Nova and you must hyperspace immediately to avoid destruction. Another effect is that the space stations become invisible, which doesn't affect the game so long as your docking computers are not destroyed in a fight. The only option is to abandon the

game and start again.

I am trying to discover a way of equipping my ship with a decking computer while my status remains harmless, as docking is the only barrier to my achieving *Elite* status. However, I am not a very competent hacker and would welcome any help in explaining the above and how to get docking computers at the start of a normal game.

James Carter
74 Northlands
Moss-side
Leyland
Lancs

Bigger battles

It's been some time now, since you incorporated *Home Computing Weekly* into your magazine. But where is the evidence of its continued existence?

Surely you didn't think it had gone unnoticed . . . in all this time you have mentioned the blessed TI99/4A only once.

Weren't you told that *HCW* was the bastion of hope for the Tiers? Do you think that you could just sit back and let them fade away like old worn-out soldiers?

Well, I, for one, will not lie down. We fight bigger battles than that every time we switch on the best computer ever to grace this earth.

The trouble with you lot is that you're biased towards those Spectrums and Commodores and that flash Amstrad. What's wrong with having wires trailing all over the place, anyway? And surely God never intended computers to go that fast - it's even faster than I can think.

M Sleight
Doncaster
S Yorks

A small bug

In my review of *Tasman's* utility for the Amstrad 6128, *Tas-spell*, I mentioned a small bug that affected the first line of text upon Saving and Loading. Robin Thompson of *Tasman* assures me that this problem was present only on the first few copies - these will, of course, be replaced.

Tony Bridge

Peter Worlock previews a Master Series – Acorn's new generation of BBC machines offering power, but at a price

Whatever your feelings about Acorn, it has to be said that 1985 was not the best year for the chaps at Cambridge. It proved to be 12 months of financial disaster resulting in two bail-outs by Olivetti, the dumping of Electrons at fire-sale prices, and a chaotic product policy towards the BBC Micro which underwent two upgrades in rapid succession.

However, the company has got off to a confident start in 1986 with the launch of a range of five machines, based around a replacement for the BBC model B in all its disguises. The outstanding question is whether that confidence is justified.

The Master Series

The base model of the new range is the Master 128. If you surmised from the name that it has 128K of Ram you'd be right. If you further surmised that it's just another variation on the Model B you'd be half right.

The most obvious changes are on the outside. The Master features a redesigned case incorporating a numeric keypad, cartridge socket in Electron style, and a substantial bulge to incorporate the upgrade boards internally.

lower power requirement, faster speed and an extended instruction set.

The memory map has also undergone some major changes resulting in a more flexible and powerful system but the price for that is likely to be some confusion.

The 128K of Ram is installed as four 64K x 4 bit chips and configured as 64 of main memory and four pages of 16K in shadow Ram. Graphics in shadow mode provide the high-quality BBC displays without affecting user memory.

One innovation is the use of 12K as "private Ram" by the operating system and sideways Roms, which means they do not eat into user memory. A further 50 bytes of CMOS, battery-backed Ram provide a permanent real-time clock (accessible from Basic) and allow you to choose among 22 start-up options and configure them permanently.

System Rom is also considerably changed. The Master comes with 128K of Rom including a bigger operating system, an upgraded Basic dubbed version 4.0, the View word processor, Viewsheets spreadsheet, a text editor and not one but two disc filing systems – an upgraded version and the older DFS 2.2 to maintain compatibility.

to access the real-time clock, and extended graphics commands allowing colour blending.

The upgrades

The first of the three upgrades is called the Turbo. It adds a 65C102 processor, still 8-bit but running at 4MHz and boosting the Master's speed by 50%. The board also adds 64K of Ram and operating system support for parallel processing.

The Master Scientific is aimed, obviously, at the scientific community and is the most powerful of the options. Main processor is a National Semiconductor

The question of IBM compatibility, once only the concern of business computer manufacturers and their customers, is raising its head among the home computer companies.

Rumours point to Amstrad producing a 16-bit MS-DOS machine sometime this year, Commodore is making great play of the Amiga's ability to run IBM software, and for Acorn it has been a pressing need for some time because MS-DOS and the software running under it represent the standard in personal computing – something of great concern to schools, colleges and universities.

But what is the connection between MS-DOS, 16-bit computers and IBM? Before IBM entered the personal computer market, there were 16-bit machines in common use but no single operating system predominated. When IBM launched the PC it employed Microsoft's operating system MS-DOS and thus set the standard in a single move. The reason is quite simply that where IBM leads others follow.

Then, in typical IBM fashion, the computer giant changed the operating system slightly, calling it PC-DOS and creating a situation where some IBM programs, but not all, will run under MS-DOS. In the business computer market, therefore, there are three states of existence. In declining order they are: IBM-compatibility, which is yer actual bees' knees; MS-DOS compatibility which is better than nothing; and anything else which is the same as nothing at all unless you happen to be Apple.

For the Acorn Master 512, MS-DOS is okay, but at £1,600 by the time you've added a monitor and disc drives, it may be offering too little and costing too much.

Input/output ports remain much the same with Centronics parallel and RS423, user port, 1MHz bus, disc and cassette interfaces. The Tube, Acorn's customised fast interface for driving second processor boards, is also present.

Inside, the changes are more significant. They start with the introduction of a new main processor, the 65C12. This is a CMOS upgrade of the 6502 which has a

Some compatibility problems will arise because of the changes. Acorn claims 80% compatibility and says only "naughty" programs that use illegal operations will fail. Among the identified incompatibles are Level 9's *Return to Eden*, and Acornsoft's own *Aviator*.

Changes to Basic include an enhanced assembler to take advantage of the 65C12's instruction set, a *Time\$* function





32016 32-bit chip running at 8MHz with the 32081 maths co-processor. Memory is upgraded to 512K.

The major attraction of the Scientific is the bundled software. The board comes with an enhanced operating system, Fortran 77, ISO Pascal and C, all with full library support, and a 32000 series macro assembler.

Before getting to the star of the show, a detour round the fifth model in the range, the Econet Terminal. Fondly called ET by Acorn, it is more a downgrade, dropping the bundled software but incorporating a network interface card. ET is designed to appeal to educational establishments seeking a low-cost networking system.

The Master 512

And here it is, Acorn's long-awaited entry into the 16-bit business computer arena, a machine to stand alongside the Apricots, Olivettis and IBM PCs, and on paper it looks attractive.

Again, it comes in the form of an add-on board for the Master 128. The enhancements over the basic model include Intel's 80186 chip as main processor and 512K of Ram.

For the operating system software, Acorn has plumped for Digital Research's DOS+ which provides compatibility with Digital Research's own CPM-86 and, more importantly, the industry-standard MS-DOS.

While this doesn't give true IBM compatibility, it does mean that the Master will be able to run many of the most

important business programs from the big names like Microsoft, Ashton-Tate and Lotus.

The 512 comes bundled with DR's Gem Collection - the Gem desktop which provides the Macintosh-like use of windows, icons and pull-down menus (as on the Atari ST), the word processor *GemWrite*, and *GemPaint*, the sketchpad program.

Gem demands the use of a mouse so the 512 upgrade includes one.

First impressions

The technical excellence of Acorn's products has never been questioned and there is every indication that the Master series is built to the same high standards. However, it must be said that the Master adds up to a pretty ugly system and bears many signs of a cost-cutting kludge. Those of you with long memories will recall striking similarities with the now-dead ABC range. The major difference is that the bastardised Model B case replaces the smart, business-style housings of the ABCs.

None of the models includes monitor

or disc drives and the lack of the latter seems a stunning omission in the case of the 512, where they are essential.

The biggest question mark stands against pricing (see panel for details). Acorn's worst failing has long been its insistence on holding prices up when its major competitors have cut theirs considerably. At £499 the base model is arguably competitive given the inclusion of *View* and *Viewsheet*, and the 512 upgrade at another £500 is reasonable if you already have the Master 128. But if you go straight for a working 512 system, £1,000 without discs and monitor is clearly expensive.

By the time you've paid for a working system, there'll be little

change out of £1,600 in a market where comparable systems offering true IBM compatibility are commonplace at around the £1,000 mark.

In the educational market, the Master 512 is up against the established Nimbus from Research Machines which offers similar features at a similar price.

In the home market it's hard to see the Master standing up against Amstrad's machines, particularly if the Amstrad MS-DOS system emerges in the near future.

The 128 is the only model available now, with the Econet Terminal and Turbo upgrades following next month. The 512 and Scientific upgrades may not appear until April or May.

While the machines are undoubtedly technically good, they stand the best chance of success in specialist niches in science, industry and education. Software that takes advantage of the new features may be thin on the ground for a while since that would preclude the 600,000 owners of existing BBC micros.

In conclusion, I'm afraid the Master series may see the end of Acorn as one of the big players in the mainstream personal computer market.

Model	Price	System price
Master 128	£499	£499
Master ET	£399	£399
Master Turbo	£125	£624
Master 512	£500	£999
Master Scientific	£1,500	£1,999

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The Atari ST Companion

Jeremy Vine



Jeremy Vine's Atari ST Companion will tell you all you need to know if you're wondering whether to invest in the most talked-about new micro of 1985 — the Atari 520ST. Jack Tramiel's new wonder-machine offers you the "power without the price" — a 68000-based window, icon, mouse micro with the GEM graphics environment from Digital Research, all for £750.

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Code Words

Name: David Jones Mastertronic programmer

My first computer was a Video Genie 16K which I bought in 1980. It had a Basic very similar to Tandy Basic and I began learning that. About a year later I got a Tandy Model III; the machine cost me £368 and I remember thinking that I had to make the money back somewhere so I started writing games.

The first real programming I did was to convert some TRS 80 games by Big Five in the States to the Video Genie - they were very similar. I really learnt machine code by experience though I did find a small pocket book on the Z80 by Sybex very useful - it's a sort of cut down version of the massive Zaks book which I have but don't use. When the Spectrum came out I was very scathing about it - it didn't cost enough and my machine had discs! Later I got interested in the colour and graphics possibilities.

The best way to learn machine code is to read as many computer magazines as possible. That gives a wider and more up to date insight into what's going on

than out-of-date books. It's probably worth getting one technical guide like the Sybex book and an assembler, but once you start programming you'll find you know best what you need next.

For myself I use the Zen 85 assembler on the Tandy where my Spectrum programs are assembled and then downloaded. I have my own graphics system called *Graphics Creator* (which Mastertronic have released) and I use a Spectrum Graphpad.

Many of the programmers I admire are not well known. Ray Owen is a friend who does many of graphics, Ed Hickman is a Mastertronic programmer who does incredibly good and quick conversions from the Spectrum to Amstrad and the MSX. I also love Rob Hubbards work, Ultimate's middle period (*Knight Lore* and *Alien 8*) and Andy White.

I think the best thing I've done so far are the Sprite routines for my latest game, *Knight Time*. I've been able to keep them solid looking and prevent the kind of colour problems you usually see.

Name: David Jones

Age: 25

Favourite Programs: *Lords of Midnight* and more recently *Gyroscope*, but I must admit I don't really play games a lot.

Favourite Machines: Although I haven't really used one it does seem that the Amstrad is everything the Spectrum is with none of the problems. I like to work with the ST and the Amiga but there's no point in writing games until the machines sell enough. From that point of view I think the Atari ST is the better bet.

Softography

Some early basic programs. *Dynamic Graphics* and *Dynamic Programming* for a company called Procom, also a game called *Bonkers*. *Finders Keepers*, *Graphics Creator*, *Spellbound* and a new program called *Knight Time* for Mastertronic.

Hobbies

I use to belong to a club called 18+ (not to be confused with 18-30) and it was nice to meet non programmers. I used to do Morris dancing and karate, but that's gone by the wayside recently. I like science fiction, particularly Edmund Cooper and Larry Niven,

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London W1X 3LA.

The financial simulation game reached its apotheosis in Parker Brothers' *Monopoly* and has remained a firm favourite of board-game manufacturers ever since.

Being a number-cruncher, the computer is the ideal medium and several versions of *Monopoly* as well as other more prosaic examples have been released over the last few years.

Stock Market Speculator is from BrainPower/Collins and takes you gently through the stages from being the lucky recipient of 10,000 sovs from dear old Auntie (deceased) to a money mogul and lord of the Stock Exchange - unless you go broke of course.

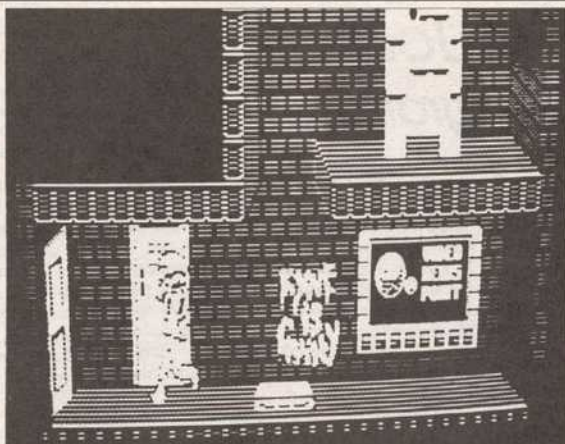
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There's a wealth of detail, too, in the thick manual which covers each company in depth and finishes with a close look at the stock market and how to play it.

The manual is good, but seems to have been put together before the game was finished, as many of the menus shown as examples in the manual are now different in the program itself.

A few rough edges in programming lose the program a star, and I feel that BrainPower missed an opportunity to go one further and allow data from the daily papers to be input - as it is, *Speculator* is a good way to pass the time until that cheque from Auntie arrives.

Tony Bridge



Brat is back

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Atari ST, Apple Macintosh,
Amiga 512K **Price** £34.95
Supplier Psygnosis, 1st Floor,
Port of Liverpool Building,
Pier Head, Liverpool L3 1BY.

Once upon a time, in the early days of home computers, there was a software house called Imagine which became very famous by producing average computer games.

Eventually Imagine disappeared up its own ego because it made the mistake of talking about its wonderful forthcoming products instead of actually producing them. The saga of the so-called Megagames has since been chronicled in the pages of *Popular Computing Weekly* but now, at last, the finished article albeit in changed form on different micros, is with us.

Lacks bounce

Program *Bounder Micro QL*
Price £14.95 **Supplier** Sinclair Research, Stanhope Road, Camberley, Surrey GU15 3BR.

Hot off the publisher's press and from its launch at the ZX Micro fair comes Brian Kelly's *Bounder*. An arcade adventure promising sound effects and over 50 different screens.

The idea of the game is to run from one screen to another

And, it must be said, it's been worth the wait.

Brataccas is a true animated adventure that casts you in the role of Kyne, a fugitive both from the police and the galactic equivalent of the Mafia. Your task is to find the evidence that will clear your name of the crime you didn't commit.

The action takes place in and on *Brataccas*, an asteroid equivalent of Prohibition Chicago. Life revolves around the police, the mob, and the bars. The natives are mostly hostile (a sword in the gizzard is one way of telling you to mind your manners).

You control Kyne by mouse or keyboard and it will take some practice to get him to walk, run, turn, duck, jump and fight with any grace. The animation is excellent. If you want to pick something up simply pull down on the mouse and Kyne stoops and collects it. The same motion with the mouse button down

draws his sword with an Errol Flynn flourish.

As is common, the violent bits are among the best and you can get involved in some splendid, swashbuckling swordplay.

If *Brataccas* has a major failing it is in the sound. What sound effects there are are done very well (doors opening, sirens going off) but they are few and far between.

There are other problems too - not so much bugs as design flaws. For example, the characters talk in comic-style speech bubbles which aren't cleared until the character leaves the room. This slows down the animation considerably. And when Kyne has a number of alternative actions these are cycled in a thought bubble until one is selected. This also tends to be a slow process.

On the whole, though, *Brataccas* is very good indeed. The main puzzle will take a long time to solve, involving as it does the discovery of the various objects you'll need in your quest (some you'll find, others you'll have to fight for). You'll also need to learn about the different characters - who can you trust? Who merits a quick taste of cold steel?

But above and beyond all that are the graphics. It is difficult to imagine *Brataccas* on the Spectrum or the Commodore 64 - the detail is simply beyond 8-bit hardware. In comparison with what has gone before, *Brataccas* is stunning and great news for software starved ST owners.

Peter Worlock



er collecting yellow bags of loot, overcoming all the moving enemies that march up and down the hall way.

This game, however, is not as impressive as it is described and deserves little, if any, acclaim. It is a crude version of the computer classic *Jet Set Willy* and does nothing to enhance the power of the QL - it compares unfavourably with Spectrum games.

The sound facility is an occasional random beep and the screens all look equally boring.

The only good part of this

software package is the additional blank Microdrive cartridge, for backup purposes.

However, it would be better if you reformatted both cartridges and used them to write a long letter of complaint to Sir Clive, about quality software at quality prices.

I find it hard to believe that Sinclair can seriously want to put their name to such software and think they can get away with charging such prices.

Matthew Palmer



Problems

Program Masquerade Micro
 CBM 64/Atari Price £14.95
 disc only Supplier US Gold,
 Unit 10, Parkway Industrial
 Estate, Birmingham.



I have always tried to keep an open mind when sitting down to review an adventure. However, I must admit when I received the above game memories of such forgettable, overhyped games like *The Wizard and The Princess* and *Mission Asteroid* came to mind, possibly because they are all released by All American Adventures from US Gold.

This is the second new releases from the above company. In this adventure you play the part of a private eye trying to track down the crime boss. There seems to be quite a lot of this type of adventure around and it makes a welcome change from slaying

orcs, etc.

The graphics are some of the best I've seen on the 64. Drawn instantly in large cartoon style, they do add a certain amount of added interest to the game. However, if you prefer text only, there is the facility to turn them off.

The game commences in a seedy run-down hotel where you have managed to track down one of the crime boss's stooges. After knocking him out with your trusty .45, a quick search reveals a few needy items, which will allow you to progress further but not too far because the programmer seems to take a great delight in killing you off. In fact, I think I was killed a

total of 30 times before I worked out one small problem, so saving the game regularly is an essential part of this adventure.

There's a good mixture of problems to overcome before any real progress can be made, and these must be solved or it's a quick knife in the back and back you go to the beginning.

I don't think I would recommend this game to the ardent middle-earth type adventurer, who like to explore lots of locations and solve the occasional problem here and there. This game makes you scratch your head from the first location and carries on with each new location.

As I previously mentioned, if, after a not too glorious start, All American Adventures carry on bringing out games of this standard I will certainly give them a big thumbs up.

Roger Garrett



Much thought

Program Think! Micro
 Spectrum Price £7.95 Supplier
 Ariolasoft UK, Suite 105/
 106, Asphalte House, Palace
 Street, London SW1E 5HS.

An imperative title that's justified for once: *Think!* will make you do just that. *Think!* is a board game but paradoxically, it would be impossible to play on a board.

Like many of the best games, *Think!* has a minimum of rules - four, in fact. Played on a six by six grid between two players, one of whom may be the computer, moves are made by sliding

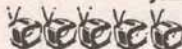
counters on from either the bottom or the right hand side. When a counter is introduced everything else in that row or column, spaces included, shifts too, eventually falling off the far edge. The aim is to get four in a horizontal, vertical or diagonal row but (and this rule enlivens it no end) if at the same time as completing a row, the player also completes one for their opponent, the opponent wins.

With so little complexity, entering moves is simply by single key input which lets you concentrate on what is happening on the board, and though strategies are undoubtedly possible it seems to be primarily a game of sharp wits and observation as you scan the quickly shifting

situation for winning openings that won't snatch victory via the 'own goal' rule.

There's a host of options, chosen by trendy little icons, from two-player to problem solving, skill levels, colour or mono display... even speed limit variations. The only slight dislike I had was for the tutorial mode which marks you strictly on the computer's predecided choice of best move. But that problem's so minimal as not to count. This is amazing value for money because I guarantee it will outlast virtually all other games... so long as you've got the least grey matter to *Think!* with.

John Minson



Risen again!

Program Spook Micro QL
 Price £12.95 Supplier
 Eidersoft

It may come as a great cultural shock, to those that assumed Pacman had died of indigestion, to find that the ever hungry yellow blob is eating out these

days, on the QL.

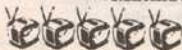
The now infamous maze, familiar from a thousand arcade screens, has been redesigned. Features from both the original and the second version of the classic have been implemented, and add to the enjoyment of the game.

The ghosts move smoothly, without any flicker across the screen. Gates open and close, causing chaos to planned escape routes. And

for those really tricky situations, the power pills are at Pac's disposal to transform Pacman into an invincible yellow peril and the ghosts into blue jibbering net curtains.

The game, however old the idea is, is probably the best version of Pacman for any micro computer.

Matthew Palmer



Low drag

Program Sir Fred Micro
 Spectrum Price £9.95 Supplier
 Mikro-Gen, Unit 15, West-
 ern Centre, Bracknell, Berks.

Godzooks, those Spaniards have a problem. It doth appear that their best champion is ye worthy but ancient Sir Fred, not the sort of man you'd want to invite for a knight at the Round Table. But their other nobles are involved in greater quests so they have sent him to rescue a fair Princess.

Now, ye may perchance think, there is nothing original in that. Yea, verily I agree, but at least the inevitable dragons are not here. An old fool he may be, there's little about this game to drag on.

I knoweth not about Don Quixote but there's certainly some donkey in Fred for when you press move he does fair gallop, gaining momentum, and if he should gallop into a wall then he does take some damage. This feature is novel indeed, though I did find that it made the knight a mite difficult to control in tricky situations such as jumping off ledges. He may also climb and swing on ropes though this too takes much practice.

Mostly, though, this gallant knave will spend his time collecting, choosing and using objects that litter the landscape, and these may spare him some danger. Once he has the bow and arrows he may fire, hurl a rock, or even fence with delightful results.

Yea, here is the best part of Sir Fred. The animation of the figure is excellent, looking very much like a character from a continental cartoon. It did amuse his majesty greatly to watch his efforts and angry hopping. Methinks that here Mikro-Gen have a character as endearing and perchance enduring as Sir Wally of the Week.

However, I must confess that I found the control problems rather too great for my liking, though if ye are into hours of practice, or hacking out infinite lives pokes, then spend a knight with Sir Fred.

John Minson



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PD330A



PAINT ROUTINE

by Ian Briscoe

The Spectrum is an old machine, and graphically it has a lot lacking, in hardware as well as software terms. Unfortunately, there is little to be done about the hardware, but extra power is available through software, and the most serious omission in the Spectrum's graphics armoury is a paint routine. The usefulness of a fill does not need to be laboured, so I thought that a quick paint routine, that will work anywhere in memory, was a must, and here it is.

Relocation is achieved through Basic - the code itself is not relocatable. All you have to do is type in the program, save

and then RUN it. The program will ask you for the address at which you want the code placed. So long as it is not too low that it will interfere with the program, or too high that it will overflow into the ROM and thus be useless, any address can be entered. The code will be placed from this address onwards, and as the program runs, it checks that the code has been correctly entered. Once correctly poked in memory, the code will be saved.

If you want to, you can type in the demonstration program and see just how quickly things can be filled in.

To use the routine, you need to POKE

two system variables with the coordinates of the point at which you wish the paint to commence. These are 23677, the x-coordinate, and 23678, the y-coordinate.

If the point at this coordinate is filled, then no paint will commence. The machine stack is used for storage, so if this gets near to Basic or the variables, then the routine stops with the report 4: *Out of Memory*.

Also make sure the area you want filled is 'leak-proof' because it would take just one pixel missing from a line for the 'paint' to spill out into the rest of the screen.

```

55 LET length=193
60 PRINT AT 2,8;"Paint routine.":
70 INPUT "Where do you want the routine located? ";start
80 LET bottom=PEEK 23653+256*PEEK 23654+100
90 IF start<bottom OR start>65536-length THEN BEEP 1,1: GO TO 70
91 POKE 23728,start-256*INT (start/256)
92 POKE 23729,INT (start/256)
95 CLEAR start-1
96 LET length=193
97 LET start=PEEK 23728+256*PEEK 23729
98 DEF FN h(b)=INT (b/256)
99 DEF FN l(b)=256*INT (b/256)
100 LET temp=start+2
101 LET point=start+4
102 LET stckch=start+177
103 LET point1=start+30
109 PRINT "Address of start and entry point of the routine is ";start
110 PRINT "Length of the routine is ";length
113 FOR i=0 TO 23
116 LET sum=0
120 FOR a=0 TO 7
130 READ b
135 IF b<0 OR b>255 THEN GO TO 210
140 POKE start+(a*16)+i,b
150 LET sum=sum+b
160 NEXT a
170 READ total: IF total<>sum THEN PRINT "Error in data - try
looking at line ";1000+i*10
175 NEXT i
177 POKE start+length-1,201
180 PRINT "Saving "PAINT"..."
190 SAVE "PAINT"CODE start,length
200 PRINT "Verifying "PAINT" - please rewind tape..."
205 VERIFY "PAINT"CODE start,length
210 STOP
990
1000 DATA 24,16,0,0,197,205,170,34,646
1010 DATA 71,4,126,7,16,253,230,1,708
1020 DATA 193,201,237,75,125,92,205,FN l(point),1128+FN l(point)
1030 DATA FN h(point),192,33,255,255,229,121,254,FN h(point)+1339
1040 DATA 0,40,11,197,13,205,FN l(point),FN h(point),FN l(point)+FN
h(point)+666
1050 DATA 193,32,3,13,24,240,237,67,809
1060 DATA FN l(temp),FN h(temp),22,192,120,254,0,40,628+FN l(temp)+FN
h(temp)
1070 DATA 21,5,205,FN l(point),FN h(point),32,12,203,478+FN l(point)+FN
h(point)
1080 DATA 122,40,10,203,186,197,205,FN l(stckch),FN l(stckch)+963
1090 DATA FN h(stckch),24,2,203,250,4,120,254,FN h(stckch)+857
1100 DATA 175,40,21,4,205,FN l(point),FN h(point),32,FN l(point)+FN
h(point)+477
1110 DATA 12,203,114,40,10,203,178,197,957
1120 DATA 205,FN l(stckch),FN h(stckch),24,2,203,242,5,FN l(stckch)+FN
h(stckch)+681
1130 DATA 121,254,255,40,6,12,205,FN l(point),FN l(point)+893
1140 DATA FN h(point),40,193,237,75,FN l(temp),FN h(temp),121,FN l(temp)
+FN h(temp)+FN h(point)+666
1150 DATA 230,7,32,21,197,205,170,34,896
1160 DATA 193,126,254,0,32,11,54,255,925
1170 DATA 205,219,11,121,198,7,79,24,864
1180 DATA 7,197,213,205,229,34,209,193,1287
1190 DATA 121,254,255,40,6,12,205,FN l(point),893+FN l(point)
1200 DATA FN h(point),40,212,193,120,254,255,194,FN h(point)+1268
1210 DATA FN l(point),FN h(point),121,254,255,194,FN l(point),FN
h(point),24+FN l(point)+FN h(point)+824
1220 DATA 201,213,42,101,92,17,50,0,716
1230 DATA 25,237,114,56,2,207,3,209,853
10 REM
20 REM Demonstration for the PAINT routine.
30 REM You will need to locate the paint routine at 64000.
40 REM
50
60 CLEAR 63999
70 PRINT "Loading the routine..."
80 LOAD "PAINT"CODE 64000
90 CLS
100 FOR a=80 TO 1 STEP -15
110 CIRCLE 107,80,a
120 NEXT a
130 FOR a=75 TO 1 STEP -30
140 POKE 23677,107-a
150 POKE 23678,80
155 IF a=75 THEN INK 0
156 IF a<75 THEN INK 2
160 RANDOMIZE USR 64000
170 NEXT a
180 PAUSE 30
190 OVER 1: INK 8: PRINT AT 0,0;: LIST 75: OVER 0
195 PLOT 255,80: DRAW INVERSE 1:-200,0
200 POKE 23677,0: POKE 23678,0
210 RANDOMIZE USR 64000

```


24 HOUR CLOCK

by D Howard



and pokes them into memory. This having been completed the program asks you to set the clock. This is held in temporary memory until you tell it to start the clock. Control is then handed to the machine code routine which sets the TOD clock in the CIA device and alters the IRQ vectors at \$0314 and \$0315 to point to the second read/display routine. Having completed this the initialisation routine then erases itself from the memory.

Every 1/60th seconds the processor stops what it is doing to complete its various interrupt routines. However, by altering the IRQ vectors we have told the computer to run our routine first. To help with display conversion the information in the TOD clock is stored in binary coded decimal (BCD) format.

For those who have not met it before BCD is a hybrid of binary and decimal. In BCD each byte is divided into two nybbles. As the first nybble counts up and reaches nine, one is added to the second nybble and the first nybble clocks over to zero. In this way we are able to count up to 99 in each byte. Thus the number 56 would be displayed as

```
Binary 00111000
BCD    0101 0110
      5     6
```

Although this may at first seem wasteful of memory (in normal decimal each byte can contain up to 255), in programs that require numerical displays, it allows very rapid decoding and in fast programs a very high standard of accuracy can be obtained. The 6810 processor on the Commodore 64 can also perform arithmetic functions in BCD mode. From assembly language call SED to set BCD mode, with CLD to clear BCD mode.

Whilst this routine is running all functions of the computer remain operational; however Line, One of the screen is inaccessible and if the cursor moves into this space, press cursor down to retrieve it. The \$C block of memory is never used by Basic and so any Basic program and many machine code programs can be loaded, entered and run. The program is unaffected by a NEW command but a system reset will require the program to be reloaded again. Unlike routines which make use of the Jiffy clock (\$00A0-\$00A2) this program is unaffected by input and output routines.

For anybody who does not wish to type in this program I will supply them with copies if they write to me at 5 Elmhurst Road, Forest Town, Mansfield, Notts NG19 0EU, enclosing £1.50 for cassette or £2.50 for disc + 50p towards post and packing.

One of the problems of programming a computer is the complete unawareness of the passing of time. In desperation I wrote this program that continually displays a 24 hour clock at the top of the screen.

The program itself can be divided into two parts, the initialisation routine and the read/display routine. The initialisation routine is written in both Basic and machine code. Once run the Basic program reads the data statements

```

1 REM*****
2 REM# INTERRUPT DRIVEN CLOCK *****
3 REM#
4 REM#
5 REM#
6 REM# COPYRIGHT D.J.HOWARD 1985
7 REM#
8 REM#
9 REM*****
10 DATA 72, 138, 72, 152, 72, 173, 11, 228, 72, 41, 128, 208, - 1359
20 DATA 8, 169, 129, 141, 35, 4, 76, 39, 192, 169, 144, 141, - 1239
30 DATA 36, 4, 104, 41, 127, 72, 169, 174, 141, 37, 4, 141, - 1058
40 DATA 39, 4, 169, 141, 141, 39, 4, 104, 72, 32, 126, 192, - 1062
50 DATA 141, 27, 4, 104, 32, 138, 152, 141, 28, 4, 173, 18, - 394
60 DATA 228, 72, 32, 126, 192, 141, 39, 4, 104, 32, 138, 192, - 1283
70 DATA 141, 31, 4, 173, 9, 228, 72, 32, 126, 192, 141, 33, - 1174
80 DATA 4, 104, 32, 138, 152, 141, 34, 4, 173, 8, 228, 169, - 1219
90 DATA 166, 141, 29, 4, 141, 32, 4, 169, 169, 141, 35, 4, - 1046
100 DATA 162, 8, 157, 8, 4, 232, 224, 27, 208, 248, 184, 152, - 1518
110 DATA 184, 138, 184, 76, 49, 234, 41, 248, 168, 4, 74, 136, - 1368
120 DATA 288, 252, 24, 189, 176, 96, 41, 15, 24, 189, 176, 96, - 1318
130 DATA 128, 169, 42, 162, 8, 157, 8, 4, 157, 169, 4, 232, - 1239
140 DATA 224, 2, 289, 245, 169, 48, 141, 87, 4, 169, 41, 141, - 1472
150 DATA 89, 4, 169, 3, 141, 88, 4, 169, 4, 141, 31, 4, - 907
160 DATA 141, 108, 4, 169, 46, 141, 92, 4, 141, 94, 4, 141, - 1877
170 DATA 181, 4, 141, 107, 4, 169, 18, 141, 93, 4, 169, 8, - 951
180 DATA 141, 95, 4, 169, 15, 141, 96, 4, 169, 83, 141, 97, - 1895
190 DATA 4, 169, 3, 141, 98, 4, 169, 18, 141, 99, 4, 169, - 1917
200 DATA 49, 141, 183, 4, 169, 57, 141, 184, 4, 169, 56, 141, - 1138
210 DATA 169, 4, 169, 53, 141, 186, 4, 169, 21, 141, 24, 208, - 1145
220 DATA 169, 8, 141, 28, 3, 169, 192, 141, 21, 3, 173, 14, - 1846
230 DATA 228, 9, 128, 141, 14, 228, 173, 15, 228, 41, 127, 173, - 1481
240 DATA 251, 8, 141, 17, 228, 173, 282, 8, 141, 18, 228, 173, - 1592
250 DATA 253, 8, 141, 9, 228, 169, 8, 88, 141, 8, 228, 96, - 1345
260 DATA -99, -99, -999
899 GOTO1899
900 IFC13THEN959
910 IFR=0THENPRINT"DATA ERROR IN LINE "CHR$(13)"PLEASE RECHECK DATA."
920 R=8 C=8 GOTO1810
930 IFR=0THENREADX
940 IFR=0THENREADX
950 IFR=0THENREADX
960 IFR=0THENREADX
970 IFR=0THENREADX
980 PRINT"ERROR IN PROGRAM, PLEASE RECHECK,"END
1000 A=49151 C=8 R=8 PRINT"ZM"
1010 PRINT"READING DATA FROM LINE "PEEK(63)+256*PEEK(64))
1020 C=C+1:READX
1030 IFC13THENGOTO1090
1040 A=A+1:POKEA,R:R=R+X
1050 GOTO1820
1100 PRINT"ZM"
1105 PRINT"INTERRUPT DRIVEN CLOCK. MEMORY USED #C000 TO #C090,
1110 PRINT"ALL DATA ENTERED CORRECTLY."FORN=0TO2000:NEXT
1120 POKE251,0:POKE252,0:POKE253,0
1130 PRINT"J SET MODE."
1140 PRINT"HOURS, MINS, SECS, AM/PM,"
1150 PRINT"00 00 00 AM/PM,"
1160 PRINT"ZM"
1170 H=0:H#=0:INPUT"ENTER HOURS,"H
1180 IFC1208H<0THENPRINT"TTT" GosUB1600:GOTO1170
1190 IFC18THENGOTO1220
1200 H1=INT(H/10)
1210 H#H-(H1*10)
1220 POKE1186,(H1+48):POKE1187,(H#+48)
1230 H1=#H/16
1240 H#H#H
1250 POKE251,H:GOSUB1600
1270 M1=0:M#=0:INPUT"ENTER MINUTES,"M
1280 IFC590R3<0THENPRINT"TTT" GosUB1600:GOTO1270
1290 IFC18THENGOTO1320
1300 M1=INT(M/10)
1310 M#M-(M1*10)
1320 POKE1195,(M1+48):POKE1196,(M#+48)
1330 M1=#M/16
1340 M#M#M
1350 POKE252,M:GOSUB1600
1370 S=0:S1=0:INPUT"ENTER SECONDS,"S
1380 IFC590R3<0THENPRINT"TTT" GosUB1600:GOTO1370
1390 IFC18THENGOTO1420
1400 S1=INT(S/10)
1410 S#S-(S1*10)
1420 POKE1204,(S1+48):POKE1205,(S#+48)
1430 S1=#S/16
1440 S#S#S
1450 POKE253,S:GOSUB1600
1470 PRINT"ENTER A OR P /M,"
1480 GETD#
1490 IFR=18ANDD#="P"THENPOKE1212,16:POKE251,PEEK(251)AND127:GOTO1520
1495 IFR=18ANDD#="A"THENPOKE1212,1:POKE251,PEEK(251)OR128:GOTO1520
1500 IFR="P"THENPOKE1212,16:POKE251,PEEK(251)OR128:GOTO1520
1505 IFR="A"THENPOKE1212,1:POKE251,PEEK(251)AND127:GOTO1520
1510 GOTO1480
1520 PRINT"PRESS F1 TO START CLOCK, F7 TO ALTER."
1530 GETD#
1540 IFR=CHR$(133)THENPRINT"ZM" SYS49297:GOTO1570
1550 IFR=CHR$(136)THENPRINT"J" GOTO1120
1560 GOTO1530
1570 FORN=49297TO49450:POKEN,8:NEXT:NEU
1600 FORN=1384TO1463:POKEN,32:NEXT
1610 RETURN

```


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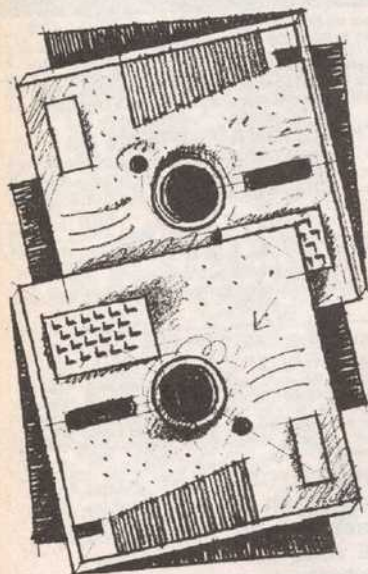
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RANDOM ACCESS

by Brian Cadge



The method Amstrad opted for to interface disc commands to Basic has the tremendous advantage of making nearly all software written for cassette directly compatible with disc drives. However, it has the disadvantage of supporting only serial files, that is files can be opened, read in record one, followed by two, followed by three and so on. There is no facility for 'Random Access' files, (although these are sup-

ported in the CP/M environment). In a random access file any record can be read at random. For example, record 85 can be read directly, without Basic having to read in and skip over records 1 to 84 as with a serial file.

The machine code program presented here over the next two weeks gives the Basic programmer the facility to use simulated random access files. I say simulated because the program itself uses Amsdos serial files as there is no file mapping available in Amsdos, but to the Basic user the files appear to be randomly accessible. Another advantage of using this filing system is that as files do not have to be opened and closed there is no limit to how many files a Basic program can access 'at once'. Amsdos normally supports only one input and one output file simultaneously.

The user interface is via three new RSX commands, these are *DREAD*, *DWRITE* and *CREATE*. Each will be described in detail, but you will find it easier to understand their use by using and studying the demonstration program included. To use the new commands you will first of all need to type in and run the Basic loader program, this

will inform you if you have made any errors in the data statements, in which case you should recheck your listing.

Before you can read or write to a file it must first be created, using the *CREATE* command. This is followed by a filename string and the maximum size of the file. Note that once created you cannot enlarge a file, so always over estimate the number of bytes required. The usual format of RSX's is required, that is a ':' (shift @) character preceding the command name, and a comma directly after it. This should be familiar to disc users as it is the same as is used by the *ERA*, *REN*, *DIR*, etc, commands. A valid sequence to create a file called "PCW01.DAT", which can hold up to 2000 characters would be:

```
FS = "PCW01.DAT"
:CREATE,@FS,2000
```

A random file must have a fixed record length, (the number of characters in each record). In the demo program this is 40 characters. When writing a string to a file you must pad out the length to the full record length with spaces, using for example the function FNp\$ as in the demo program. Details of *DWRITE* and *DREAD* next week.

```
10 ' Basic loader Program for simulated random disk files
20 MEMORY 37000
30 FOR i=37001 TO 37853
40 READ a$:v=VAL("&"a$)
50 cs=cs+v:POKE i,v
60 NEXT i
70 IF cs<>96918 THEN PRINT"DATA ERROR - Check listing";CHR$(7):STOP
80 CALL 37001:CLS:PRINT"New commands loaded successfully"
90 PRINT"You can now NEW this loader Program"
100 END
110 DATA 01,93,90,21,EA,A3,CD,D1,BC,C9,9E,90,C3,BD,90,C3,68,91,C3,D5,92,44
120 DATA 52,45,41,C4,44,57,52,49,54,C5,43,52,45,41,54,C5,00,0E,00,CD,0F,B9
130 DATA CD,00,B9,1E,1F,C3,94,CA,CD,AE,93,FE,03,20,66,DD,66,03,DD,6E,02,22
140 DATA E3,93,7C,CB,7F,20,50,CD,C1,92,B7,28,52,32,E5,93,ED,53,E6,93,CD,CD
150 DATA 92,62,6B,47,11,EA,93,CD,77,BC,30,31,2A,E3,93,2B,7C,B5,22,E3,93,28
160 DATA 07,CD,80,BC,30,21,18,EE,DD,2A,E6,93,DD,E5,CD,80,BC,DD,E1,30,12,DD
170 DATA 77,00,DD,23,3A,E5,93,3D,32,E5,93,20,E9,CD,7A,BC,C9,21,4A,91,CD,5F
180 DATA 91,CD,7A,BC,C3,B0,90,21,2F,91,18,F2,2A,49,6C,65,67,61,6C,20,70
190 DATA 61,72,61,6D,65,74,65,72,20,76,61,6C,75,65,0D,0A,00,2A,52,65,61,64
200 DATA 20,65,72,72,6F,72,20,28,45,4F,46,3F,29,0D,0A,00,7E,B7,C8,CD,5A,BB
210 DATA 23,18,F7,CD,AE,93,FE,03,C2,28,92,DD,66,03,DD,6E,02,22,E3,93,7C,CB
220 DATA 7F,C2,28,92,CD,C1,92,B7,CA,28,92,32,E5,93,ED,53,E6,93,CD,CD,92,32
230 DATA DE,93,62,6B,22,DF,93,47,11,EA,93,CD,77,BC,D2,55,92,21,B0,92,06,08
240 DATA 11,EA,98,CD,8C,BC,D2,55,92,AF,32,E1,93,CD,80,BC,30,42,32,E2,93,3A
250 DATA E1,93,B7,20,10,2A,E3,93,2B,22,E3,93,7C,B5,20,05,3E,FF,32,E1,93,3A
260 DATA E1,93,B7,20,0A,3A,E2,93,CD,95,BC,30,57,18,D2,2A,E6,93,7E,32,E2,93
270 DATA 23,22,E6,93,3A,E5,93,3D,32,E5,93,20,E2,32,E1,93,18,DD,28,3A,EA,E5
280 DATA 93,B7,20,57,CD,7A,BC,CD,8F,BC,DD,21,AE,92,21,BB,92,CD,D4,BC,3E,01
290 DATA CD,1B,00,DD,21,AC,92,21,B8,92,CD,D4,BC,3E,02,CD,1B,00,C9,21,2F,91
300 DATA CD,5F,91,CD,7D,BC,CD,8F,BC,C3,B0,90,21,5F,92,CD,5F,91,CD,7D,BC,CD
310 DATA 8F,BC,DD,21,AC,92,21,BB,92,CD,D4,BC,3E,01,CD,1B,00,C3,B0,90,21,6F
```



```

320 DATA 92,18,D1,21,87,92,18,DB,2A,57,72,69,74,65,20,65,72,72,6F,72,0D,0A
330 DATA 07,00,2A,46,61,69,6C,65,64,20,74,6F,20,6F,70,65,6E,20,66,69,6C,65
340 DATA 73,0A,0D,00,2A,49,6C,6C,65,67,61,6C,20,61,74,74,65,6D,70,74,20,74
350 DATA 6F,20,77,72,69,74,65,20,70,61,73,74,20,45,4F,46,0D,0A,00,BE,92,DE
360 DATA 93,54,45,4D,50,2E,52,41,4E,52,45,CE,45,52,C1,08,B0,92,DD,66,01,DD
370 DATA 6E,00,7E,23,5E,23,56,C9,DD,66,05,DD,6E,04,18,F2,CD,AE,93,FE,02,C2
380 DATA 28,92,DD,66,01,DD,6E,00,22,E8,93,7C,FE,61,30,2A,DD,23,DD,23,CD,C1
390 DATA 92,47,62,68,11,EA,93,CD,8C,8C,30,21,2A,E8,93,7C,B5,28,0D,2B,22,E8
400 DATA 93,3E,2A,CD,95,BC,30,14,18,EC,CD,8F,BC,C9,21,28,93,CD,5F,91,C3,B0
410 DATA 90,21,4E,93,18,F5,21,64,93,18,F0,2A,4D,61,78,20,73,69,7A,65,20,6F
420 DATA 66,20,32,34,35,37,36,20,66,6F,72,20,72,61,6E,64,6F,6D,20,66,69,6C
430 DATA 65,73,0D,0A,00,2A,43,61,6E,6E,6F,74,20,63,72,65,61,74,65,20,66,69
440 DATA 6C,65,0D,0A,00,2A,57,72,69,74,65,20,65,72,72,6F,72,20,64,75,72,69
450 DATA 6E,67,20,63,72,65,61,74,69,6F,6E,2C,0D,0A,20,46,69,6C,65,20,6E,6F
460 DATA 74,20,70,72,6F,70,65,72,6C,79,20,63,72,65,61,74,65,64,20,20,44
470 DATA 4F,20,4E,4F,54,20,55,53,45,21,0D,0A,00,32,E2,93,21,C5,93,CD,D4,BC
480 DATA 3A,E2,93,D8,E1,21,C9,93,CD,5F,91,C3,B0,90,44,49,53,C3,2A,43,61,6E
490 DATA 27,74,20,66,69,6E,64,20,41,4D,53,44,4F,53,0A,0D,00

```

```

10 '
20 ' Demo Program for simulated random disk files
30 '
40 DEF FNP$(a$)=STRING$(40-LEN(a$),32): 'pad string function
50 DEF FNR(rec)=(rec-1)*40+1: 'find position of record in file function
60 ON ERROR GOTO 450
70 INK 0:INK 1,15:BORDER 0
80 MODE 1:PEN 0:PAPER 2:PRINT " Random Disk Files Demonstration " :PEN 1:PA
PER 0
90 LOCATE 1,5:PRINT "Creating file called DEMOFILE.DAT with 20 records of 40 cha
racters each"
100 filename$="DEMOFILE.DAT":size=20*40
110 !CREATE,@filename$,size
120 WINDOW #1,1,40,2,25:CLS #1
130 LOCATE 1,5:PRINT "Writing a few records into file"
140 record=1:a$="Popular Computing Weekly record 1":buf$a$+FNP$(a$)
150 !WRITE,@filename$,FNR(record),@buf$
160 record=20:a$="This is the last record of the file":buf$a$+FNP$(a$)
170 !WRITE,@filename$,FNR(record),@buf$
180 record=10:a$="Record #10 of the file":buf$a$+FNP$(a$)
190 !WRITE,@filename$,FNR(record),@buf$
200 CLS #1
210 LOCATE 1,5:PRINT "Press (R) to read a record, (W) to write
a record (Q) to finish demonstration"
220 i$=INKEY$:IF i$="" THEN 220
230 IF UPPER$(i$)="Q" THEN 420
240 IF UPPER$(i$)="R" THEN 270
250 IF UPPER$(i$)="W" THEN 340
260 PRINT CHR$(7):GOTO 220
270 CLS #1:LOCATE 1,5:INPUT "read which record (1-20)":record
280 IF record<1 OR record>20 THEN 270
290 buf$=STRING$(40,32)
300 !DREAD,@filename$,FNR(record),@buf$
310 LOCATE 1,10:PRINT "Contents of this record are:"
320 PRINT:PRINT buf$
330 LOCATE 1,20:PRINT "Press any key for menu":WHILE INKEY$=""!WEND:GOTO 200
340 CLS #1:LOCATE 1,5:INPUT "write which record (1-20)":record
350 IF record<1 OR record>20 THEN 340
360 PRINT:PRINT "Enter record contents:"
370 LINE INPUT a$
380 IF LEN(a$)>40 THEN PRINT "Record too large - truncated!":a$=LEFT$(a$,40)
390 buf$a$+FNP$(a$):PRINT:PRINT "Writing record":record
400 !WRITE,@filename$,FNR(record),@buf$
410 GOTO 330
420 CLS #1:LOCATE 1,5:PRINT "deleting DEMOFILE.DAT from disk..."
430 !ERA,@filename$
440 CLS:END
450 'error handler
460 PRINT:PRINT
470 IF ERR=28 THEN PRINT "You must use the loader program before this demo to lo
ad in the new commands!":END
480 ERROR ERR:END

```




CIPHER

by John Beckett

During the Second World War, a computer called Colossus was used to crack the German Enigma codes. Today, however, modern codes are deemed to be unbreakable. The program presented here allows you to encode and decode messages using a system devised by the famous statesman and philosopher Sir Francis Bacon.

Before we turn to the program itself, a brief explanation of how the code is constructed. Once you understand the code, there are hundreds of variations that can be used. Letters don't have to be used, just any two things that look slightly different.

First of all, we need our main coding chart which contains all the letters of the alphabet plus its key cipher, for our purposes, see lines 600-680.

For this example, we are using the

letters A & B. The letter A is represented by AAAAA etc. The main rule for working this code is as follows:

A in the cipher represents any upper case letter.

B in the cipher represents any lower case letter.

The cipher is nothing but a simple double substitution. Let us say that we want to encode the word JOHN. First write out the word and underneath write its equivalent cipher as follows:

```

      J       O       H       N
    BBBBA  ABBAB  AABBB  ABBAA
  
```

So, our final line will have the A's & B's substituted by upper and lower case letters. Remember the rule. An example of the message sent could be: figUR ltoUt lFyou WiLL. This message is the secret code that is sent to your partner. it can say anything or be merely a jumble of

words. It does not matter as long as the clear distinction is made against A & B, upper and lower case letters. In the program, the letters are generated randomly and then squashed together. So if you send the same message twice, it will appear different! Naturally it will be decoded the same.

Once you run the program, you have the option to encode or decode. Press the appropriate number for each choice. Encoding is easier than decoding as you don't have to enter five times as much. Upper case letters should be used and spaces aren't necessary. When decoding you may have to split the message into separate lines if it has not already been done. This will give you a maximum of 51 letters against 255. This is a slight limitation, but it means the code is very secure.

```

10REM - Francis Bacon Cipher -
20REM John T W Beckett 1986
30DIM A$(26),E$(26)
40CN ERR0R G0T0690
50PROC5
60MODE4:PROCB
70CN C G0T080,90
80PROCc:G0T0100
90PROCd
100PRINT "Continue (Y/N) ";
110A=(GET AND $DF)
120IF A=B9 THEN 60
130END
140:
150DEF PROCe
160B$="":PROC1
170FOR A=1 TO LEN(T$)
180N$=MID$(T$,A,1)
190IF N$=" " THEN 230
200FOR B=1 TO 26
210IF A$(B)=N$ B$=B$+E$(B)
220NEXT
230NEXT
240FOR A=1 TO LEN(B$)
250N2$=MID$(B$,A,1)
260IF N2$="A" PRINT MID$(U$,RND(26),1);
270IF N2$="B" PRINT MID$(L$,RND(26),1);
280NEXT
290ENDPROC
300:
310DEF PROC1
320CLS
330INPUT "Enter message: ",T$
340IF T$="" VDU7:G0T0330
350PRINT "Message: ",T$
360PRINT "Result: "
370ENDPROC
380:
390DEF PROCd
400B$="":PROC1
410FOR A=1 TO LEN(T$)
420N$=MID$(T$,A,1)
430IF ASC(N$)>96 THEN B$=B$+"B" ELSE B$=B$+"A"
440NEXT
450FOR A=1 TO LEN(B$) STEPS
460N2$=MID$(B$,A,5)
470FOR B=1 TO 26
480IF E$(B)=N2$ PRINT A$(B);
490NEXT
  
```

```

500NEXT
510ENDPROC
520:
530DEF PROC5
540L$="":L$=""
550FOR A=65 TO 90:L$=L$+CHR$(A);NEXT
560FOR A=97 TO 122:L$=L$+CHR$(A);NEXT
570RESTORE 610
580FOR A=1 TO 26:READ A$(A),E$(A);NEXT
590ENDPROC
600:
610DATA A,AAAAA,B,AAAAB,C,AAABA,D,AAABB
620DATA E,ABABA,F,ABAB,B,ABBA,H,ABBB
630DATA I,ABAA,J,BBBA,K,ABAB,L,ABABA
640DATA M,ABAB,N,ABBA,O,ABAB,P,ABBA
650DATA Q,ABBB,R,AAAA,S,BAAB,T,ABBA
660DATA U,BBBB,V,BAAB,W,BABA,X,BABAB
670DATA Y,BABBA,Z,BABB
680:
690IF ERR=17 THEN 100
700REPORT:PRINT "at line ";ERL
710CLS("KEYO LIST"+STR$ERL+";M")
720FX138,0,128
730END
740:
750DEF PROCx(Z$,X,Y)
760AZ=6A:XY=0:YZ=39:Z=6900
770FOR B=1 TO LEN(Z$)
780?Z=ASC(MID$(Z$,B,1)):CALLM$FF1
790VDU23,224,Z71,Z71,Z72,Z72,Z73,Z73,Z74,Z74
800VDU23,225,Z75,Z75,Z76,Z76,Z77,Z77,Z78,Z78
810PRINT TAB(X+B,Y);CHR$Z24;TAB(X+B,Y+1);CHR$Z25
820NEXT
830ENDPROC
840:
850DEF PROCB
860PROCx("Francis Bacon Cipher",9,0)
870PRINT TAB(9)"John T W Beckett 1986"
880PRINT "The following program will allow you to"
890PRINT "decode and encode messages using the"
900PRINT "cipher devised by Francis Bacon."
910PRINT "STRING$(40,"")
920VDU28,0,31,39,10
930PRINT TAB(15)"...Encode..."
940PRINT TAB(15)"...Decode..."
950FX15,1
960C=GET-48
970IF C=C1 OR C=2 VDU7:G0T0950
980ENDPROC
  
```


Bytes and Pieces

Slow Down on Spectrum by Simon Walker

This is a short interrupt driven machine code program which will slow down Basic programs. .in fact it slows down the whole computer.

Type in the listing, save the program (just in case it crashes on running) and then run it. Try using 5000 as a value for speed.

```
0 5 IF PEEK 65064=201 THEN GO T
10 POKE 65053,1: POKE 65054,0:
FOR f=65063 TO 65064: READ a: P
OKE f,a: NEXT f
20 DATA 10,264,243,60,250,237,
71,237,94,261,204,105,15,264,255
,243,205,237,213,220,217,245,197
,243,205,237,213,220,217,245,197
30 DATA 1,1,0,11,100,177,32,-15
40 DATA 56,129,92,60,50,129,92
,253,225,221,225,225,220,123,241
,2317,225,221,225,225,220,123,241
,65,201
50 INPUT "Speed.1-65535.1=fast
...":a
60 POKE 65054,INT (a/256)
70 POKE 65053,a-(PEEK 65054*25
61
80 RANDOMIZE USR 65025
85 REM .....
90 REM .....
SLOW-FUNCTION TYPE
100>REM RANDOMIZE USR 65062
110 REM .....
```

Password on Commodore by C Cattanach

This is a short program for the Commodore 64, which you may choose to incorporate into your own programs. So many of the published routines where the CPU scans the keyboard under the auspices of the GET statement, result in "action" the moment one solitary key is depressed. With the routine shown, the password given by Z\$ in Line 10, in this case "CHERRY", must be entered in full, before the program can continue. If a wrong key is pressed, one is given a further chance to enter the correct password, and then the program stops if this is not executed correctly in one go.

It can be seen that this could form part of a simple security system. If desired, the STOP command in Line 135 could be replaced with the command to disable the keyboard, and to sound an alarm.

```
1 REM"PASSWORD ROUTINE"
2 PRINT"PASSWORD ROUTINE - C.J.CATTANACH"
10 PRINTCHR$(147):Z$="CHERRY":ZL=LEN(Z$)
100 PRINT"NOGIVE PASSWORD"
105 FORS=0TOZL-1
112 GETA$:IFA$=""THEN112
114 IFA$=MID$(Z$,S+1,1)THEN120
117 PRINTCHR$(147):IFF=1THEN130
118 PRINTCHR$(147)"ERROR !! YOU HAVE ONE MORE CHANCE
TO ENTER CORRECT CODE"
119 F=1:GOTO100
120 PRINTA$:NEXT
125 GOTO150
130 PRINTCHR$(147)"NOT CORRECT PASSWORD"
132 PRINT"NOAN UNAUTHORISED ATTEMPT AT ENTRY HAS BEEN
MADE"
135 STOP
150 PRINT"":PRINT"PASSWORD IS CORRECT
READY.
```

The Rogue Program





FLOATING POINT

by T P Mervyn

Anyone who wishes to incorporate QDOS floating point arithmetic routines in their assembly language programs will know that a special six byte internal format is used to hold these values. Any routines that take floating point arguments will expect to find them already written in this form.

It is no easy matter to convert from the normal decimal format to this internal format. This is particularly true when dealing with decimal fractions. Although Sinclair have documented the format (see page 50 of the QL Technical Guide), no simple algorithm is given to convert values into the format. For example, the value '1' is stored as the six byte hexadecimal sequence 08 01 40 00 00 00 and the value of $1/(\text{SQRT}(2*\text{PI}))$, required

when evaluating certain statistical functions, is stored as 07 FF 66 21 14 CF.

I wrote then, and provide here, an additional SuperBasic function written as a resident function extension to SuperBasic, which returns the internal format used to store floating point values. The function, `FP$()`, takes any floating point argument and returns as a six byte hexadecimal string the internal format of that argument.

`FP$` has been implemented in the normal way - ie, by providing an assembly language routine to link it into the list of resident functions.

Listing one is the assembler source code for the function, with comments that should allow the techniques used to be understood. Once assembled into an

object code module - eg, `FP-OBJ` - it can be linked into SuperBasic using the loader

`10 base=RESPR(150) 20 LBYTES MDV1 FP-OBJ, base 30 CALL base 40 NEW`

Alternatively, those without assemblers can enter the program via the SuperBasic Loader given in Listing Two. This employs a weighted checksum technique that should pick up any Data line containing errors.

Once the function has been loaded, `FP$()` can be used in simple SuperBasic programs to provide conversions when required. For example:

`10 REPEAT main 20 INPUT 'Value to be converted'; value 30 PRINT 'The internal format of 'value;': FPS (value) 40 END REPEAT main.`

Listing One

```
#Floating point conversion Function
#(c) T P Mervyn 1985
#Version 1

*
*Vectored Utilities
*
CR_GTFP EQU $114
BP_INIT EQU $110
CN_ITDHL EQU $FE
CN_ITDHW EQU $FC
BV_RIP EQU $58

*
*Error codes
*
ERR_BP EQU -15

START
LEA PROC_TAB, A1 Procedure table address
MOVE.W BP_INIT, A2 Linking utility address
JSR (A2) Perform linking
MOVEQ #0, D0 No errors
RTS Return

PROC_TAB
DC.W 0 No procedures
DC.W 0 End of procedures marker

DC.W 1 1 function
DC.W FPT-- Address of FPT routine
DC.B 3, 'FPS' Length and form of function
DC.W 0 End of functions marker

FPT
MOVE.W CR_GTFP, A2 Collect floating point
JSR (A2) arguments
BNE.S FP_RET Wrong argument type
SUBD.W #1, D3
BNE.S ERRO_BP Wrong number of arguments
MOVE.L A1, A0 First part of floating point value
SUBA.W #5, A0 Adjust arithmetic stack pointer
MOVE.W CN_ITDHW, A2 Convert word part
JSR (A2)
MOVE.W CN_ITDHL, A2 Convert long word part
JSR (A2)
SUBA.W #14, A1 Adjust arithmetic stack pointer
MOVE.W #12, A1 Reset arithmetic stack
MOVE.L A1, BV_RIP(A6) And store it
MOVEQ #1, D4 Return function type
MOVEQ #0, D0 No errors

FP_RET
RTS And return

ERRO_BP
MOVEQ #ERR_BP, D0 Set error type
RTS And return
END
```

Listing Two

```
100 REMARK SuperBasic Program loader
110 REMARK Floating point (internal format) conversion - FPS
120 RESTORE 1000
130 size=84
140 base=RESPR(size+150)
150 address=base+line_number=1000:endflag=0
160 REPEAT loadcode
170 count=0:checksum=0
180 REPEAT loadline
190 READ byte
200 PDKE address, byte
210 checksum=checksum+byte+(count+1)
220 address=address+1
230 count=count+1
240 IF address=base+size:endflag=1:EXIT loadline
250 IF count=10:EXIT loadline
260 END REPEAT loadline
270 checksum=checksum MOD 256
280 READ ccheck
290 IF ccheck()checksum
293 PRINT "Checksum error at line "line_number
295 STOP
297 END IF
300 line_number=line_number+10
310 IF endflag=1:EXIT loadcode
320 END REPEAT loadcode
330 CALL base
340 PRINT "Code loaded"
350 STOP
1000 DATA 67, 250, 0, 12, 52, 120, 1, 15, 78, 145, 52
1010 DATA 112, 0, 78, 117, 0, 0, 0, 0, 1, 55
1020 DATA 0, 8, 3, 70, 80, 35, 0, 0, 52, 120, 29
1030 DATA 1, 20, 78, 145, 102, 40, 83, 67, 102, 38, 184
1040 DATA 32, 73, 144, 252, 0, 6, 52, 120, 0, 252, 122
1050 DATA 78, 145, 52, 120, 0, 254, 78, 145, 145, 252, 142
1060 DATA 0, 14, 51, 188, 0, 12, 152, 0, 45, 73, 162
1070 DATA 0, 88, 120, 1, 112, 0, 78, 117, 112, 241, 112
1080 DATA 78, 117, 0, 0, 55
```


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Tony Bridge's Adventure Corner



Fantasy world

Although there have been many huge part works since, all (coincidentally, naturally!) set in a prehistoric/future world of mystery and fantasy, no other book has for me come close to *Lord of the Rings* in evoking a real fantasy world (this is not a contradiction). Imagine then how I approach *Lord of the Rings, Part One*, the new adventure from Melbourne House.

This review is impossible, because, like me, every adventurer will have his or her own expectations of what the program should achieve. It's too early for me to make a final judgement on the adventure as a whole, but I can discuss the bare facts of the package and draw some rather hesitant conclusions.

The packaging is comfortably impressive, as it should be, being contained within the largest video case I have seen. Two cassettes are needed for the two parts of the main adventure along with a detailed instruction booklet and a copy of the first part of Tolkien's trilogy, *The Fellowship of the Ring*. On the reverse of each cassette is an introductory adventure, being a stripped-down version of the main program as a gentle introduction to adventuring in general and LOR in particular.

play? The screen layout is quite pretty and colourful with what looks like the pages of a book, the current location being displayed on the top-most page. Like *The Hobbit*, graphics adorn many though not all of the locations; unlike MH's earlier adventure, the pictures are blocky, but quickly-drawn. They're pretty, and pretty useless too – and you can't turn them off. The location text, brief on the second visit to a location, is written in a well-designed character set and is always several lines long, thus creating a nice atmosphere throughout most of the adventure. At the bottom of the screen are three lines reserved for your (normal character set) input, which can be edited before entering. The documentation makes much of the fact that the player can change characters and thus view proceedings through different eyes and move the party of four around to different locations as required.

Current ego

Typing *Become* or *I Am* or simply the name of another character accomplishes this. It's not a unique facility – Infocom, as usual, cornered the market for this a couple of years ago with *Suspended* among others, and Phipps' *Knight's Quest* also featured a simple character-switching which was necessary to progress in the adventure. At the top of the screen then, is a little picture of your current ego, with the name of that character: down the left side of the screen are pictures of all the characters in the party, with your current character highlighted.

All this sounds rather complicated, and it is: it's easy for the players to assimilate after a few minutes with the pro-

gram, but of course all this shifting about of characters takes up a lot of processing time. Thus the response time is poor, with reported times of between four and 12 seconds (though it feels as if you could watch rocks growing while the program works everything out).

Helpful advice

The level of conversation is, I'm afraid, back to the 'Thorin starts singing about gold' level; although it seems at first that other characters are responding intelligently to your remarks, you can input any old rubbish and wait around until the right response is forthcoming, which is usually some helpful advice.

The *Help* command is only available, says the documentation, in the beginner's game, though I couldn't ever get any sense out of it ('Don't be Silly' was the standard response), and although both programs carried out *Save*, I couldn't get the beginner's version to *Load* anything back.

As I write this, I've just heard from the first reader to finish the adventure in just a couple of days; Mike Bateman of Wolverhampton is justifiably proud of his achievement (I hope he heard the butterflies during the race), and he had some interesting comments to make. "Part One ends more by luck than judgement – I think... and Part Two, once the Riders are killed is just a matter of solving a huge, interlinked maze. This part ends with Galadriel giving the survivors presents as they sail down the river rejoicing. The atmosphere is spoilt by an Orc Heavy Metal Band and cannabis plants (I didn't dare dally with the Elven Maidens and am still wondering what suggestion causes Galadriel to *Decline Demurely!*") Mike reckons that Part One is excellent and, interestingly, doesn't mind too much about the long response time.

Bug-spotting a Philip Mitchell game has always been a favourite pastime for adventurers, and the first of the Ringbugs is an absolute dilly; typing *Leave* (the program doesn't, for all its 800 words, recognise *Exit*) in the Begin-

ner's game (the main game doesn't even respond to it) elicits the fabulous: *I don't see any Leech to I am my name is!* Great, isn't it, almost as good as the classic Evaporating Black River, or the Great En Do. This happens with many words that the program almost recognises, but funnily enough, input of complete garbage is correctly trapped. Another word not recognised, despite a mention in the manual, is *Score*.

There are two tests of the worth of any adventure: quite apart from any trappings of packaging, hype and so on, does the game contain good puzzles and second, does the adventure create the sort of atmosphere in which the player's disbelief is suspended – that is, does the player feel that he or she actually exists *within* the game itself? Although the instruction booklet with LOR tries hard to transport the player to The Shire ('*Best of luck my furry-footed friend!*' is typical), frankly, the shortcomings of programming and hardware keep getting in the way. This is, we are made only too aware, a computer game, and not a recreation of a beautiful and fantastic myth.

As yet, the only puzzle I have encountered – apart from how to avoid or deal with the Black Riders (it's not done like the book), or how to get your companions out of the abyss (a hint: always try to get other people to follow you, their unique strengths will be of help) or how to get past the Hobbit Guard to the Mathom-house, where I hope to find the Dwarf armour – is what to do while waiting for the computer to wake up again.

Flawed program

Melbourne House have called *Lord of the Rings* 'the best adventure game to be released': it should have been, and indeed could have been, but, although Mike believes that 'while it is not a great program, and is somewhat flawed, I wasn't actually disappointed with it', frankly, I was. Instead of Chateaubriand, I feel, despite the fact that LOR is better than most adventures, we have been served just a sirloin steak. What do you think?

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Games Writer

As promised in our Christmas roundup issue this week the column is going to have a close look at *Laser Basic*, a brilliant new games writing aid from Oasis Software sold on the Ocean IQ label.

You will remember that Oasis was responsible for the *White Lightning* games designer. Being *Forth* based it was a daunting package for novice programmers to use but its power can't be denied. Oasis impose no copyright restrictions on the sale of programs produced using their utilities but they do ask for a mention somewhere on the packaging which sadly they don't always get.

However, I know of several commercial releases on software labels as diverse as Mastertronic and Alligata that have been produced using *White Lightning*.

Laser Basic has been designed with many of the same graphics and sprite handling features of the earlier *Lightning* releases, but presented in a much more accessible way for the majority of home computer users.

There are in fact four separate types of commands available, graphics, sound, toolkit (such as *Renum*, *Auto* line numbering) and structured programming.

It also supports multi-tasking events driven by interrupts, it's an awesome experience to set some sprites bouncing around the screen to music and then being able to get on with expanding or debugging the listing without seeming to slow them down at all.

The manual is thankfully comprehensive and easy to follow. However, you shouldn't underestimate the program - you are given almost total control over your computer and there are over

200 new commands to learn. A working knowledge of Basic is essential.

Almost all Oasis releases have appeared for the Spectrum and Commodore machines but this is the first to appear on the Amstrad CPC range as well.

All three versions are excellent but Commodore owners have possibly got the best all round deal with 256 new commands and a turbo tape facility as well.

This is partly because the hardware is the strongest for games writing but also because the original Basic is so badly in need of improvement.

Owners of the earlier release *Basic Lightning* for the CBM will find that they have sufficient in common that it is probably not worth their while buying the new program.

There are 30 odd differences but many of your games programs will run on

structured programming commands, lacking *Procedures*, line labels, *Caseof*, *Casend* and other nice features of the other versions.

However, it is on the Amstrad that the greatest graphic magic has been worked. Although this is a machine that is commonly berated for having slow screen handling, and although it has twice as much screen Ram to shunt around than the Spectrum or CBM 64, Oasis has told me that they coded and recorded the graphics routines to make them as efficient as possible.

Shot in the arm

The results as shown in the demo are absolutely knock-out - much faster, smoother and clearer than the majority of half-hearted commercial games conversions for the CPC, including a marvelous little vignette taking the mickey out of *Hunchback* games.

Oasis have also realised an important point that many games writers miss - you can often produce a better game in four colour hires than in chunky multi-colour mode.

The word from both Oasis and Ocean is that they intend to invest more and more effort into the CPC machines in the future so we can expect a significant boost in the quality of available software.

All three versions of the program come with several predefined sets of sprites, a sprite designer, a

demo program and the *Laser Basic* interpreter itself. The Amstrad version has a sound design program but on the CBM 64 you are also given full control of the Sid chip.

The Spectrum version has an example game that is much less exciting than the demo but it has been partly included for you to try on the compiler.

Laser Basic is more than just a games designer, it's a major shot in the arm for your

computer, driving it to new heights of performance. It is in a completely different league to any sprites or games designer package you may have seen before and I know that Ocean are getting enthusiastic responses from everyone that sees it, including jaded distributors who are normally wary of utility programs.

Of course you must have *Laser Basic* in memory before you can run your games but Oasis are working on a mini-Basic that omits the commands used for the design of sprites, etc. to save memory and reduce loading times.

More important is the next release on the IQ label which is a compiler for each of the versions of the Basic. Because the *Laser Basic* routines are themselves semi-compiled and extremely fast there may actually be little increase in speed of the graphics, although your game's logic will be enormously improved, but you will also finish up with machine code games than run completely independently of the utilities.

You can also compile programs that use no *Laser Basic* commands.

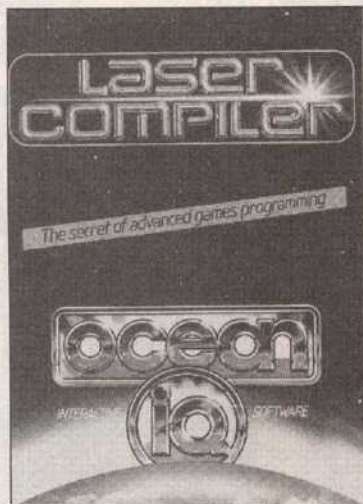
Superb utilities

Many other superb utilities are promised from the same label, including sound and graphics packages that produce data compatible with the *Laser Basic*. There is also a second games designer planned that will produce 3D vector graphics rather than sprite games but this is many months off yet. They also promise an awesome assembler/monitor that includes some features of a compiler and emulator, together with some of the source code used for the *Laser* graphics routines.

The final piece of good news is that Ocean have promised a competition to see who can produce the best screen/short game using *Laser Basic*.

We'll have more details when the program has been around long enough for people to find out how it works, but I advise you to start thinking about it as soon as possible - it's going to be good.

Tony Kendle



Laser Compiler - *Laser Basic* companion program

both without alteration.

The Spectrum version comes with no sound commands, for obvious reasons although I would have thought that something could be done in the area of interrupt driven effects.

Graphic magic

Partly for technical reasons and partly out of respect for Locomotive Basic, the Amstrad version is weakest



Redefined characters

William Hart, of Chipping Campden, Glos, writes:

Q I am writing an arcade/adventure game for the 48k Spectrum which requires more than 21 UDGs. I have used the program below to redefine the whole character set, but the characters appear as normal afterwards. Why is this?

```
5 CLEAR 60000
10 FOR a = 64000 TO
   64000 + 8*95
20 READ b
30 POKE a,b
40 NEXT a
50 DATA .....
```

A You have done all of the hard work, what you have not done is to tell the Spectrum where to pick up your new character set from.

There is a system variable (*Chars*) which holds an address 256 less than the actual address of the character set.

You need to point this to your new set. This can be done (in your case) by: *Poke 23606,0* and *Poke 23607,249*

UDG problems

K. Billington, of Leeds, writes:

Q I am having trouble loading UDGs into The Quill database. I've tried following the instructions sent to me by Gilsoft but, as a novice, I don't quite understand them. I've created the UDGs with ISP's character generator; is this file not compatible with The Quill? Also it says in The Quill manual that the UDG file only holds 168 bytes. Does

this mean that it will only accept 168 bytes?

A You should be okay. The file of UDGs created by the character generator should be loaded into The Quill using the Load data Database option on the menu. The Quill should be able to handle any standard file 0 of UDGs (which are all 168 bytes long, 21 characters of 8 bytes each).

If you continue to have problems then I suspect that the ISP file is in a non-standard format, which would be very surprising.

You could try loading the UDG file from a Basic program of your own and see if that works. One last thought: do you get the option of specifying the start address of the UDGs with the ISP program? You will need to match that with the address required by The Quill.

Load refusal

Mrs B A Norton, of BFPO 29, writes:

Q We have a Commodore 64 and as a family have enjoyed playing games and learning how to enter programs into the computer. Alas one thing we have not been able to find out is why two of our games, both by Mastertronic, refuse to load most of the time. I've even taken them back to the shop only to be very embarrassed that they load in the shop. The trouble is that they go so far and then stop with a *Break Error*. I have tried to find out what the cause is but with no result.

A As the tapes load in the shop I would guess that the problem is connected with the head alignment on the cassette recorder. This is actually a very common problem with Commodore cassette tapes and is of course extremely annoying. The only advice I can give you is to buy one of the many head alignment kits on the market - from Robcom, Interceptor, Challenge and so on - and use it to make sure that your deck is as well-aligned as the one in your shop.

Amstrad saver

Patrick Cunningham of Killeel, County Down, writes:

Q I have an Amstrad CPC464, but only sometimes will it Save programs on to tape. I do not want to send it back because my mother says that it would cost around £30 in transport costs. Please can you tell me how to fix it myself if that is possible.

A Don't panic, Patrick, I don't think that you will have to send the whole machine away. The problem would appear to be with the cassette recorder. If you bought the machine from a retailer and it is under guarantee then simply take it back to them for fixing and they will pay the transportation costs.

If it is out of guarantee then any reasonable hi-fi repair shop should be able to fix it for you. It is probably only a matter of aligning the recording heads correctly.

Spectrum languages

Martin Hendrick, of Telford, Shropshire, writes:

Q It is essential that I learn Cobol and Fortran as I wish to become a data processor/programmer. I own a 48k Spectrum and Microdrive. So: 1) are these languages available for the Spectrum? 2) if not are they available for any other micro? 3) are there any books on these subjects?

A Cobol and Fortran are not available on the Spectrum. They are, however, available on any micro that is capable of running CP/M. As you probably know there are a large number of these, the Amstrad CPC6128 and Commodore 128, for example, although they are somewhat more expensive than the Spectrum.

There are literally thousands of books on the subjects of Cobol and Fortran programming. Try a visit to your local public library,

which should have a reasonable selection.

One question for you... Cobol I can understand, but why Fortran? Fortran tends to be used in the scientific side of computing and not the commercial side. I would have thought that possibly Pascal would be the more useful language. And Pascal is in fact available for the Spectrum, the Hi-Soft Pascal compiler being about the best.

Software compatible

Keith Jones, of Crawley, Sussex, writes:

Q I recently purchased an Acorn Electron for the family and have a friend with a BBC. Although they are both 32K and use BBC Basic, the software tapes have a block. If we try to load them into each other's micros we have no success. Is there a way around this block or do the two machines need separate software?

A Yes, the two machines do need separate software. The Electron is not properly software compatible with the BBC B, at least not as far as packaged software is concerned.

Almost correct

C Harris, of Mablethorpe, Lincs, writes:

Q A friend of mine has told me that Dragon Basic and IBM PC Basic are the same. Is this true? Does this mean that I would be able to run my programs on an IBM PC?

A No. However, Dragon Basic is itself based on the Microsoft standard, as is the IBM PC. This means that your friend is almost right.

You will get problems with programs that directly call Rom based routines or utilise system variables. Graphics will also present difficulties. Also, the reverse is true; other micros which use Microsoft Basic can be adapted for the Dragon.

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Atari

1	(2)	Action Biker	(Mastertronic)	£1.99
2	(3)	Goonies	(US Gold)	£9.95
3	(1)	Mercenary	(Novagen)	£9.95
4	(9)	Fighter Pilot	(Digital Integration)	£9.95
5	(-)	Zorro	(US Gold)	£9.95
6	(4)	Spy Hunter	(US Gold)	£9.95
7	(5)	King Of The Ring	(Gremlin Graphics)	£9.95
8	(6)	Super Zaxxon	(US Gold)	£9.95
9	(-)	Air Wolf	(Elite)	£9.95
10	(-)	Jump Jet	(Anirog)	£9.95

BBC

1	(1)	Yie Ar Kung Fu	(Imagine)	£9.95
2	(2)	Way of the Exploding Fist	(Melbourne)	£9.95
3	(6)	Strike Force Harrier	(Mirrorsoft)	£9.95
4	(10)	Repton 2	(Superior)	£9.95
5	(3)	Dr Who and the Mines of		
6	(8)	Match Day	(Ocean)	£9.95
7	(-)	Nightshade	(Ultimate)	£9.95
8	(-)	Citadel	(Lothlorien)	£9.95
9	(-)	Speech	(Superior)	£9.95
10	(-)	Blockbusters	(Macsen)	£7.95

Commodore 64

1	(2)	Rambo	(Ocean)	£9.95
2	(1)	Commando	(Elite)	£9.95
3	(3)	Winter Games	(US Gold)	£9.95
4	(8)	Last V8	(Mastertronic)	£2.99
5	(7)	They Sold A Million	(Hit Squad)	£9.95
6	(-)	Summer Games 2	(Epyx/US Gold)	£9.95
7	(4)	Little Computer People	(Activision)	£9.95
8	(9)	Fight Night	(US Gold)	£9.95
9	(-)	Now Games 2	(Virgin)	£9.95
10	(-)	Kane	(Mastertronic)	£1.99

Spectrum

1	(9)	Winter Games	(US Gold)	£7.95
2	(1)	Rambo	(Ocean)	£7.95
3	(2)	Commando	(Elite)	£7.95
4	(3)	Yie Ar Kung Fu	(Imagine)	£7.95
5	(10)	Spellbound	(Mastertronic)	£2.99
6	(5)	Saboteur	(Durell)	£9.95
7	(4)	Elite	(Firebird)	£14.95
8	(-)	Transformers	(Ocean)	£6.95
9	(6)	Tomahawk	(Digital Integration)	£9.95
10	(-)	They Sold A Million	(Hit Squad)	£9.95

Top Twenty

1	(2)	Rambo (Spectrum/C64)	Ocean
2	(1)	Commando (Spectrum/C64)	Elite
3	(4)	Winter Games (Spectrum/C64/Amstrad)	US Gold
4	(3)	Yie Ar Kung Fu (Various)	Imagine
5	(5)	They Sold A Million (Spectrum/C64/Amstrad)	Hit Squad
6	(6)	Way Of The Exploding Fist (Amstrad/Various)	Melbourne House
7	(10)	Formula One Simulator (Spectrum/C64/Amstrad)	Mastertronic
8	(7)	Elite (Spectrum/C64/BBC)	Acornsoft/Firebird
9	(8)	Computer Hits 10 (Various)	Beau Jolly
10	(20)	Spellbound (Spectrum/Amstrad)	Mastertronic
11	(-)	Action Biker (Spectrum/C64/Atari)	Mastertronic
12	(9)	Transformers (Spectrum/C64/Amstrad)	Ocean
13	(13)	Saboteur (Spectrum)	Durell
14	(-)	BMX Racers (Spectrum/C64/C16)	Mastertronic
15	(-)	Finders Keepers (Spectrum/C64/Amstrad/MSX)	Mastertronic
16	(-)	Now Games 2 (Spectrum/C64)	Virgin
17	(-)	Zorro (Spectrum/C64/Amstrad/Atari)	US Gold
18	(11)	Gyroscope (Various)	Melbourne House
19	(-)	Arcade Hall of Fame (Spectrum/C64)	US Gold
20	(12)	Mercenary (C64/Atari)	Novagen

Figures compiled by Gallup/Microscope

Readers' Chart

No Readers Chart this week; we're still catching up from the break over Christmas. However, send your entries in for Week 59 below. Everything will be back to normal next week.

Now voting on week 59 - £25 to win

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

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

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

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

Voting for Week 59 closes at 2pm on Wednesday January 22 1986. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name My top 3: Voting Week 59
 Address 1.....
 2.....
 3.....

My phrase is:

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COUPON
2

New Releases

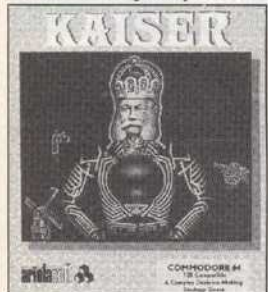
TEDIOUS

Kaiser is the latest Ariolasoft 'budget' disc game and proves to be a not particularly exciting version of *Kingdom*, a computer chestnut of venerable age.

The idea is for you to manipulate the state's finances and the affairs of the people so that your province grows and eventually you attain power over the whole country. Little surprise from the title that the whole thing is set in Germany.

In true *Kingdom* style, the basis for the whole game is the amount of grain that your country produces each year; from this come decisions on buying land, building grain mills, developing the army, rates of various kinds of taxation, the state of the populace and (maybe) your eventual domination and installation as *Kaiser*.

As a one player game, there is nothing to distinguish this from so many other similar games - the graphics are very simple, it has no real wit or style and is merely a relentless and quickly tedious



plod through endless figures. As a two player game things improve with the addition of the chance of making war on other players and generally behaving badly.

Unless you have an enthusiastic *Kingdom* loving friend I don't think you'll find *Kaiser* anything to invade Poland for.

Program *Kaiser*

Price £9.95

Micro Commodore 64

Supplier Ariolasoft
Asphalte House
Suite 105/106
Palace Street
London
SW1E 5HS

IMPRESSIVE

The *Toolbox 3 Drumkit* is a most impressive program which produces drum type sounds on the Amstrad. It is absolutely useless for practical purposes unless you are trying to produce music from old tins and dustbin lids (haven't thought of that one have you, Karlheinz?). Nevertheless, it's lots of fun to play around with and arguably might actually teach you a few things about rhythm.

You set up the number of beats before a repeat and then use a screen editing system to insert any of 14 different percussion sounds. You can construct up to ten sequences and splice these together for a complete 'song'. The system is fairly easy to use and aside from a range of preset sounds lets you construct three of your own sounds.

Pick of the week

LINE OF SIGHT



More from Mastertronic. Latest addition to the *MAD* series is *Master of Magic*. This program starts off with one clear and significant advantage - it has music by Rob Hubbard. When ever a game has music by Rob there is a tendency to forget the actual game play and write reams and reams about how unbelievable it is that he manages to make the Sid Chip sound like 12 DXT's using a mere three channels.

I shall try to avoid that, but the music on *Master of Magic* features some of the most incredible Hubbard effects yet.

The game, however, has merits of its own. It is, nominally, a form of Dungeons and Dragons in that you travel through caves collecting treasure and battling it out with a series of monsters using spells and blunt instruments. The presentation of the game is quite original and to a certain extent disguises the D and D origins.

The screen is divided into several windows - text information, an occasional visual representation of some objects or dead monster and command line and finally, in the top left hand corner, a simple scrolling map illustrating a small area of the caves. However you can only 'see' on the map what you could actual-

ly see if you were exploring the caves - a neat piece of programming replicates the idea of 'line of sight', thus, unless you explore thoroughly into every nook and cranny of each cave, you may miss an important exit.

All this for under £3, and then there's Rob Hubbard's fabulous music as well; I mean there's one section where you get what sounds like 12 instruments, all playing counterpoint over a chorus of... (*That's enough eulogising. Ed.*)

Program *Master of Magic*

Price £2.50

Micro Commodore 64

Supplier Mastertronic
Park Lorne
111 Park Road
London NW8

This Week

Program	Type	Micro	Price	Supplier	Relationships	Ed	BBC B	£17.20	BBC Soft
Laser Basic	Ut	Amstrad	£14.95	Ocean	Waves	Ed	BBC B	£17.20	BBC Soft
Locksmith	Ut	Amstrad	£17.95	Beebugsoft	Flyer Fox	Arc	Bug Byte	£2.95	Bug Byte
Rembrandt	Ut	Amstrad	£13.95	Beebugsoft	Big Mac	Arc	C16	£1.99	Mastertronic
Toolbox 3 Drumkit	Ulc	Amstrad	£5.50	Camel	Master of Magic	Ad	Commodore 64	£2.50	Mastertronic
Toolkit	Ut	Amstrad	£14.95	Beebugsoft	Elektraglide	Arc	Commodore 64	£8.95	English
Ultrabase	Ut	Amstrad	£14.95	Beebugsoft	Enigmaforce	Arc	Commodore 64	£9.95	Beyond
Newton and Shuttle	Ed	BBC	£23.00	BBC Soft	Kane	Arc	Commodore 64	£1.99	Mastertronic
Southern Belle	S	BBC	£7.95	Hewson	Quake Minus One	Arc	Commodore 64	£9.95	Beyond
Bonding	Ed	BBC B	£17.20	BBC Soft	Superman	Arc	Commodore 64	£9.95	Beyond
Ecology	Ed	BBC B	£23.00	BBC Soft	Uridium	Arc	Commodore 64	£8.95	Hewson
Electromagnetic Sp.	Ed	BBC B	£17.20	BBC Soft	Zzzz	Arc	Commodore 64	£1.99	Mastertronic
Electronics in Action	Ed	BBC B	£17.20	BBC Soft	Harvey Smith Show	Arc	MSX	£9.95	Software Projec
Polymers	Ed	BBC B	£23.00	BBC Soft	QL Classic Adventure	Ad	QL	£9.95	Sinclair
					QL Paint	Ut	QL	£24.95	Sinclair

This user define section is very impressive; envelope shapes are displayed and altered according to your instructions - seeing this visual representation of your sound helps a great deal - and it is possible to create a host of different boinnngs, thwacks and differently pitched dust-bin lids.

Cheap and fun, of no practical use, but who cares?

Program *Toolbox 3 Drunkit*
Price £5.50
Micro Amstrad
Supplier Camel Micros
 Wellpark
 Willeys Avenue
 Exeter

FUTURISTIC

Zoids are another one of those futuristic battle toys that dominated the toy industry last year. With Transformers - the other futuristic toy - already in computer game form it's not surprising that

Zoids should also find their way onto the micro. What is surprising is that it should be very good indeed and quite original.

The game is an icon driven wargame; there are plenty of animated graphics for those that require them - battles, scrolling maps, missile attacks but the skill of the game is mainly strategic. The task is to find and collect the pieces of the master blue zoid Zoidzilla - the pieces are located in six city zones belonging to the generally unpleasant red zoids.

Collecting the pieces involves searching a landscape positively littered with nasty red zoids of every kind, doing frequent battle, ordering missile attacks from base and blasting assorted city domes, power plants and other strategic installations.

A clever, well presented game, perhaps a shock to those expecting a more conventional arcade program but devious and challenging.

Program *Zoids*
Price £7.95
Micro Spectrum
Supplier Martech
 Martech House
 Bay Terrace
 Pevensey Bay
 East Sussex
 BN24 6EE

NOTE VALUE

There are quite a few programs around which aim to teach music at some level or other via the computer. Music is, at least in part, very well

suited to a computer tutorial approach - there is much drill and repetition (what note is that? what key is this?) and graphics and sound mean that concepts can be illustrated with practical examples.

The surprising thing is that most computer music programs aim for so little, beyond teaching the note values and the names of the notes. The exception to this is an excellent program, available on several micros, called *Music Teacher*.

Not only is this a more extensive and ambitious tutorial than most of the other music programs it is also better presented. A case in point: when describing how keys flow from one another in the 'circle of fifths', how the circle works is explained by actually drawing a circle using the note names extending up from the stave.

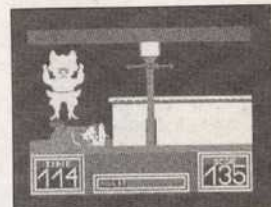
Using the program thoroughly will not only teach note names and values, it will teach key signatures, and all kinds of scales, quick note recognition and some work on intervals. The program claims it covers material up to grade five - I'd say that was stretching it a bit, but certainly it should have a fair degree of long term use.

Program *Music Teacher*
Price £12 cassette, £15 disc (£16 BBC)
Micro Amstrad, Spectrum, BBC
Supplier Childsplay
 Software
 2 Southview Drive
 Uckfield
 Sussex

STUNNING

Here come DK Tronics again, in the latest release to derive from the company tie up with Thames Television, *Benny Hill's Madcap Chase*. Now I have to say that this was not a concept that thrilled me.

In fact, *Benny Hill's Madcap Chase* is a very clever program. The graphics routines from *Popeye* have been refined to give large expressive graphics with no sign of



attribute problems whatsoever. Visually the game is stunning - watch out for when Benny gets stomped on by an outraged housewife as an example of excellent animation.

The problem with the program is the gameplay. There is essentially one plot repeated three times. The paucity of plot means limited long-term entertainment which is a shame because there is some excellent programming.

Program *Benny's Hill's Madcap Chase*
Price £8.95
Micro Spectrum
Supplier DK Tronics
 Englands Lane
 Gorleston
 Norfolk NR31 6BE



This Week

Desert Rats	S	Spectrum	£9.95	CCS
Laser Basic	Ut	Spectrum	£14.95	Ocean
Spectrum Jungle Kit	Ut	Spectrum	£3.99	Cheetah

Key: Ad - adventure S - strategy-simulation
 Arc - arcade Ut - Utility Ed - education

BBC Soft, 35 Marylebone High Street, London W1M 4AA, 01 580 5577. Beebugsoft, PO Box 50, St Albans, Herts AL1 1EX, 0727 40303. Beyond, Lector Court, 153 Farringdon Road, London EC1R

3AD, 01 837 2899. Bug Byte, Mulberry House, Canning Place, Liverpool, L1 8JB, 051 709 7071. CCS, 14 Langton Way, London SE3 7TL. Camel, Wellpark, Willeys Ave, Exeter EX2 8BE, 0392 211892. English, Box 43, Manchester M60 3AD, 061 835 1358. Hewson, 7 Graham Close, Blewbury, Oxon OX11 9QE, 0235 832939. Mastertronic, Park Lorne, 111 Park Road, London NW8 7JL, 01 402 3316. Ocen, 6 Central Street, Manchester M2 5NS, 061 832 6633. Sinclair, Stanhope Road, Camberley Surrey GU15 3PS, 0276 686100. Software Projec, Bearbrand Complex, Allerton Road, Woolton, Liverpool L25 7SF, 051 428 9393.

Thinking process

The recent launch - in the press, not into space! - of the British Aerospace Space Shuttle "Hotel" project, said it will be piloted by Artificial Intelligence.

Artificial Intelligence or AI is a growing field. In this article I shall attempt to explain some of the key ideas of Artificial Intelligence work and try to show its fascination.

Expert Systems are the translation into machine form of the thinking or actions of a human expert. The simplest form of these is the machine robot which can copy the actions of the human worker who programmes it by carrying out the required action.

More complicated systems exist which are capable of taking the place of a doctor or medical specialist and are able to diagnose illness as well as the human expert they are based on.

Expert systems are designed in two parts. The first is a *database* or memory for facts. The second is a set of *heuristics* or rules for handling that data and providing an outcome. This style of program can solve complex problems by reducing them to smaller problems.

Modelling Approaches attempt to echo in machine form human thinking processes. The ultimate aim may be to develop machine systems which can carry out humanlike activities, hearing, seeing, remembering, solving simple problems and learning.

This work has one key theme called *Inference*, and the easiest way to explain this idea is to give a simple example.

What is the fourth item in this list? L M N O P Q. That is easy - it is the letter "O".

OK now what is the fourth item in this list? 3 2 1 0 1 2. Again easy - the number of zero.

Now what is the fourth item in this list? 2 N 1 O P 1 Q 2. It depends what you are looking for - if you look for a zero you can find one, and if you look for a "O" you can also find one. The written symbol in both cases is exactly the same!

Humans are very good at this inference of meaning from surrounding context. Computers are not and this is the charm of AI.

This kind of *pattern matching* can be explained using an example drawn from Language Understanding Programs. The first

program, to provide a model of conversation, the classic Eliza, takes the input from the user and tries to find a pattern in data to match to it. Then it provides a response to suit.

Eliza works in an empty pattern matching way; it seeks key words in the input and when it matches a group of words such as "I like X", it infers that the next word is of interest to the user and grabs hold of it to use to make him speak again.

This system has been combined with a simple memory. This holds a "script" or a list of the things that happen in a simple everyday event like visiting a café.

The script allows the computer program to use context to infer meaning from the situation. If the customer orders "tortellini" it will assume that this strange set of letters are a foodstuff and the usual set of rules for food apply. If the program is asked "Did the customer eat the tortellini?" It will think through the script and notice that "tortellini" was ordered. In a café people order food and then they eat it. So the program realizes that this is a food which was eaten and answers "Yes".

There is a word that is the terror of AI workers: "it"! Just think for a moment about these sentences and note how the meaning of "it" changes:

- I went down the road. It went on for miles.
- I went down the road. It was raining.
- I went down the road. It was a badly needed pint.

The meaning of "it" in each case is different. This *bridging process* is handled by *demons* in the program. These little beasts look out for their special words in the input and when an "it" comes up the first meaning tried is that of the nearest demon. In a. "it" is the road that goes on for miles. In b. the road demon would be tried but it would report "sorry roads don't rain! - rain is weather - try the weather demon!" In c. The demons would report back "pint - that's drink! Try the drink demon - the drink demon would then report - "have a pint" - must be a pub!"

The world of AI is very young and the way in which I have handled the ideas above would bring tears to the eyes of the researchers who took years to work them out. I must make it clear that this article can give no more than the flavour of AI.

John Feeley

Puzzle No 191

The current copy of the 'Dawbury Chronicle' contains a photograph taken in the lounge bar of the 'Dog & Puddle' showing a magnificent pile of pennies collected for charity by the regulars of this establishment. The target is for £1000 and the sum so far collected is within a hundred pounds of the target figure.

At the time that the photograph was taken there was an exact number of pounds present, and young Pythagoras Perkins, the landlord's son, worked out that there were also the precise number of pennies that could be arranged in a perfect triangular arrangement.

How much had been collected when the photograph was taken?

Solution to Puzzle No 186

There are four sets of figures which fit the alphametic: 36465 + 89781 = 106246 38487 + 89661 = 128048 58287 + 80641 = 138928 63732 + 39841 = 103573 69298 + 90431 = 159729 85254 + 50671 = 135925

```

10 LET T=1
20 FOR N=0 TO 9
30 IF N#1 THEN GOTO 300
40 LET E=H+1
50 IF E#19 THEN E=0
60 IF E#T THEN GOTO 300
70 FOR H=0 TO 9
80 IF H#N OR H#E OR H#T THEN GOTO 300
90 LET V=E*H
100 IF N#19 THEN LET V#H+1
110 IF V#9 THEN LET V#V-10
120 IF V#N OR V#E OR V#H OR V#T THEN GOTO 300
130 FOR G=0 TO 9
140 IF G#N OR G#E OR G#H OR G#V OR G#T THEN GOTO 300
150 LET L=V*G
160 IF (E#H#N)+(H#E#T)#9 THEN LET L#L+1
170 IF L#9 THEN LET L#L-10
180 IF L#N OR L#E OR L#H OR L#V OR L#T THEN GOTO 300
190 IF (V#H#E#R#N)+(G#H#N#H#T)#999 THEN LET I#I ELSE I#I+9
200 IF I#N OR I#E OR I#H OR I#V OR I#G OR I#L THEN GOTO 300
210 FOR S=0 TO 9
220 IF S#N OR S#E OR S#H OR S#V OR S#G OR S#T OR S#L OR S#I THEN GOTO 300
230 LET B=S#E
240 IF (E#H#N#V#H#E#R#H#N)+(I#V#G#G#H#H#H#H#T)#99999 THEN LET S#S+1
250 IF S#9 THEN S#9-10
260 IF B#45-(S#E#V#H#H#G#H#L#L) THEN PRINT "15;E;V;E;N;I"
PRINT "1;I;G;H;T;P;R;I;N"
PRINT "1;S;E;L;E;C;T;I;O;N"
270 NEXT S
280 NEXT G
290 NEXT H
300 NEXT N

```

The program uses a series of *For/Next* loops to generate combinations of digits, the remaining digits being found by direct calculation (for example, if values are taken for N and T then the value of E can be found immediately from the units column of the alphametic). Also, by inspection we can save time as the value of T can only be 1, and also the value of I must be either 0 or 9.

Winner of Puzzle 186

The winner (who was the only entrant to generate all six!) is M W Peters of Spetsbury, Dorset, who will receive £10.

The Hackers



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