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POPULAR Computing WEEKLY

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18-24 September 1986 Vol 5 No 38

SPECIAL supplement

The invasion of the games machines – p4

QL – LATEST DEVELOPMENTS

CST's Thor (see right) and Sandy's QLT machines compared

Plus QL news and reviews

SOFTWARE

PC games at an Amstrad price

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NEWS DESK

Atari launches its IBM compatibility chip

Settlement due in Amiga chip dispute

Action REFLEX

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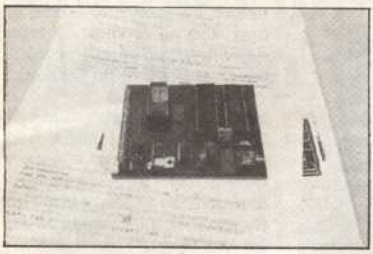

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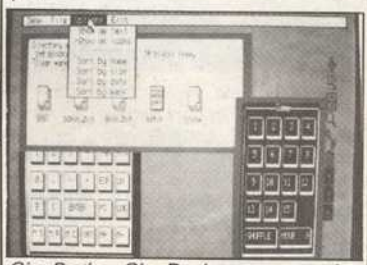

GigaBasic, GigaDesk: programming aids and Wimp systems.
Plus news of QL games, communications, joysticks, user groups, and more.

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ABC

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Accuracy *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Games machines are fighting back

GAMES machines, whether in the form of video consoles, or inexpensive computers primarily designed for games, are suddenly fashionable again.

Following the news that Ariolasoft is to import Sega's Master games console into the UK for Christmas (see *Popular Computing Weekly*, September 4), the toy giant Mattel has announced that it will launch the Japanese Nintendo games machine here too.

And even Memotech is getting in on the act, with the announcement of a sub-£100 cassette-based micro to rival Amstrad's Spectrum Plus 2, and the possibility of importing a Nintendo lookalike machine from Taiwan (see story below).

Mattel is importing and marketing Nintendo's Entertainment System (NES) in two different versions in Britain.

The standard package will comprise the NES console and game controller. A de luxe model will also be sold which also has a light gun controller and a robot to act as a second player. The gun and robot will also be available separately.

Ron Newbold of Mattel UK said, "There will be a library of 37 games initially for the machine. One series is for use with the robot, one specifically for the light gun, and then there is an action series, with games such as *Pinball*. We'll also have sports games and arcade classics, such as *Donkey Kong* and the *Super Mario Brothers*."

All games will be on cartridge. Prices for the systems have yet to be finalised but will probably be around the £150 mark.

Atari shows IBM chip

ATARI demonstrated its IBM co-processor at the recent Personal Computer World show, but there is still no definite release date for the UK.

The co-processor comprises the Intel 8088 chip and 512K Ram, and attaches to Atari's ST machine via the direct memory access port. Atari demonstrated the unit in a prototype casing similar to its hard disc units, but it will appear in custom made units when released.

On its stand, Atari demonstrated IBM PC software, such as *Multiplan, Lotus 1-2-3* and *Flight Simulator 2* running on the 1040 ST.

The US price for the unit will be around $200, which translates to about £135.

A spokesman for Atari said, "We are expecting the co-processor to arrive in UK in either October or November – certainly some time this autumn."

Memotech dips under £100 with MTX Mk 2 launch

MEMOTECH is developing a new games micro, to be called the MTX Mk 2. It is apparently being developed in response to requests for a low-cost tape-based system.

The Mk 2 will have 256K Ram, 16K video Ram, and the package will include a six-pack of cassette games, although specific titles have yet to be decided.

The new machine will be compatible with the MTX 512, and can be upgraded to the new Memotech CP/M system. It will have a composite TV port and cassette port, but no monitor or tape deck is included in the price which is likely to be £99.95.

The machine is due to be launched this month, and will be marketed and supported by a new company, Centaur Computer Services, co-founded by Keith Hook of Syntaxsoft, ex-Imagine director Mark Butler, and Ken Simmonds of Kerian Software.

Keith Hook told *Popular Computing Weekly*, "We have been talking to the Tandy network of dealers about stocking the Mk 2 and they have been very positive."

Centaur is also casting an eye at the games console market, and is considering importing a Taiwanese Nintendo lookalike to sell in the UK at around £50. No firm arrangements have yet been made, however.

PC accounting

INTUITIVE Systems claims that "it is as if the PC 1512 was built especially for *Intuitive-Solution*."

Intuitive-Solution is an applications development environment for PCs which takes advantage of the Amstrad PC's mouse and standard graphics screens.

So enthused is Intuitive Systems by the PC 1512's launch that it is producing specific applications for use with *Intuitive-Solution*. First off is *Intuitive Cash Book Accounting System*, which costs £99 (plus Vat).

Details from Intuitive Systems, Wye Lodge, 6 High Street, Stevenage, Herts. Tel: 0438 317966.

Laskys to sell support service

HIGH street retailer Laskys is to sell a hotline support service for new computer users for £39.99 for a three month subscription. The package is being operated by the Interlex software group, and operates six days a week, 9am–9pm weekdays and 9am–1pm on Saturday.

The service is likely to be particularly attractive for purchasers of cheaper computers that don't come with a great deal of technical support as standard.

Details from Laskys, Hardman House, The Hyde, Hendon, London NW9 6JJ. (01-200 0444).

SEPTEMBER

26–28 September

Electron and BBC Micro User Show

UMIST, Manchester

Details: Software, hardware and peripherals for BBC machines.

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

Organiser: Database Exhibitions, 061-456 8835.

OCTOBER

3–5 October

The Amstrad Computer Show

Novotel, London

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

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

Organiser: Database Exhibitions, 061-456 8835.

30–31 October

Hampshire Computer Fair

Guildhall, Southampton

Details: Business computers.

Price: Free entry by business registration.

Organiser: Testwood Exhibitions, 0703 31557.

NOVEMBER

7–9 November

Electron and BBC Micro User Show

New Horticultural Hall, Greycoat Street, London SW1

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

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

Organiser: Database Exhibitions, 061-456 8835.

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

Amiga chip suit comes to trial

THE dispute between Atari and Commodore over the Amiga's custom chips is due to come to trial in the American courts at the beginning of November.

Atari originally paid Amiga, before it was bought by Commodore, to acquire the rights to three custom chips Amiga was developing to be used in forthcoming Atari machines.

Amiga developed the chips, now known as Agnes, Denise and Paula, and built into the Amiga A1000 machine, but apparently then repaid Atari its money. Amiga was subsequently bought by Commodore, which went on to develop and sell Amiga's A1000 with the three custom chips in it.

Atari, by now under Jack Tramiel's leadership, filed a lawsuit claiming that the contract was not properly terminated.

Speaking for Atari in Sunnyvale, California, Claud Mahum said, "I am really not willing to comment at all on the case: We have a very good case, but our attorneys have advised us not to comment."

Jay Miner, head of the Amiga team, told *Popular Computing Weekly*, "My opinion is that it's just harassment by Atari. I'm sure Atari will lose, so I don't know if there will be an appeal or not, but Atari seems to think the chips belong to them somehow."

Jack Tramiel, head of Atari

The Darlings: Jim, David and Richard

The Darlings set up independent label

THIS week sees the announcement of a new budget software label which aims to release 50 titles by Christmas and capture a 10% overall market share of this time next year.

Named Code Masters, the label has a strong budget background, headed by Jim Daling, once MD of AI Products, the company that was responsible for the writing of all Mastertronic titles until the end of last year.

Spearheading the programming team are his two sons, Richard and David Darling. Their most recent releases have included *The Last V8*, which launched Mastertronic's MAD range, and *Master of Magic*, in careers that have sold well over a million games to date.

All Codemasters product is planned to retail at £1.99, right in Mastertronic's established territory, although Jim Darling anticipates that his sales would largely stem from an overall increase in budget sales (increasing from the present 40% to around 60%) rather than cutting into the existing budget market, even though the games will be sold through similar channels.

"We're not having a go at Mastertronic," he emphasised. "We'll be producing good quality product by programmers with a reputation."

More details on Code Masters' products in Software Hotlines.

Anco goes for US licences

ANCO has signed a licensing deal with US software company Artworx for the 16-bit rights to its current catalogue. Previous Artworx product for 8-bit machines has been released in the UK by US Gold.

Artworx has produced *Strip Poker*, *Bridge 4,0* and *Golf* which Anco will be releasing for the Atari ST and IBM PCs and compatibles this autumn.

This marks a diversification for Anco away from games for the lower costing machines.

"We are leaving the popular home computing market and moving towards the IBM, STs, and Amiga's – but very slowly," said Anco's Anil Gupta. "I think we will definitely see a big upsurge here in 1987, and of course, they are marvellous machines."

Anco's prices for Artworx product will be around £20, and the first Artworx titles are being released this month.

New Commodore micro previews at Comdex?

IT now looks as though Commodore US will preview the next addition to the Amiga family at Comdex, the prestigious American show which begins on November 9.

The machine is a more sophisticated version of the Amiga, and is currently known as the Ranger. It is based on the Motorola 68020 chip, a development from the 68000 used in the current Amiga. The new machine also incorporates a 20Mb hard disc as standard.

It is expected that this new machine will appear at around the same price as the Amiga is now, around $1200, with a possible price cut on the current model.

Clive Smith of Commodore US declined to comment on the possibility of the new machine appearing in November. "I'm not even sure Commodore will be at Comdex. We don't comment on unannounced machines. I have read the rumours about it as well but I cannot say anything. The Amiga was always intended to be a family machine, so there will be more appearing in the future."

It is not at all clear whether these machines will be sold in the UK. Chris Kaday, Commodore's UK General Manager, said, "As far as we're concerned there will be no new Amigas this side of Christmas. After that, I don't know.

"In the UK, we'll take anything that they make in the States, but I don't know of anything at the moment."

There have been no further developments regarding the possible launch of a 'cut-down' Amiga in Britain, at a price to rival Atari's STs. Chris Kaday was remaining tight-lipped on the subject.

Amstrad joins satellite TV consortium

AMSTRAD is diversifying into the satellite TV field with the announcement that the consumer electronics company has joined a consortium which includes Virgin, Anglia and Granada TV and Financial Times publisher Pearson to set up a satellite TV network.

Amstrad chairman Alan Sugar has said he intends to produce a £99 satellite TV dish by the 1990s.

Gauntlet vs Dauntless dispute

A DISPUTE over the rights to US Gold's forthcoming *Gauntlet*, and *Dauntless* from Electric Dreams has been resolved 'amicably', according to Electric Dreams' managing director, Rod Cousens.

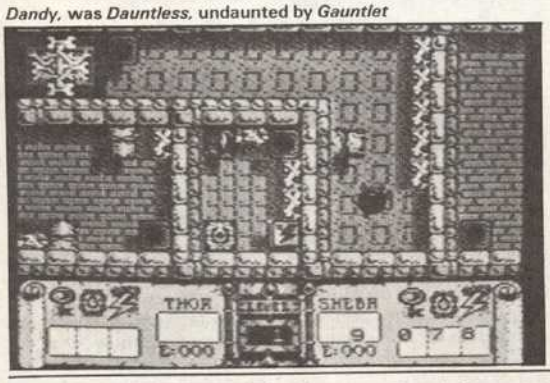
The noticeable similarity between the two titles is because they are licensed from related titles.

"I licensed the home computer rights to *Dandy*, an arcade game originally from Atari," explained Rod Cousens.

US Gold has the rights to *Gauntlet*, the arcade game which is a derivative of the original *Dandy*.

"We have come to an arrangement which allows the publication of both games, and ours will now be called *Dandy*" Cousens went on. He appears unworried by the competition between the two titles. "US Gold has the arcade endorsement, but we have put a considerable amount of programming time into ours."

Dandy*, was *Dauntless*, undaunted by *Gauntlet



Konami to go it alone

KONAMI, the Japanese arcade game publisher, whose games have previously been licensed to Imagine Software in the UK, will shortly be launching games under its own name.

Arcade originals *Jail Break*, *Nemesis*, *Super Basketball* and *Iron Horse* will be available for C64, Spectrum, Amstrad and MSX in the next few months. After that, Konami plans to convert the coin-op title *Salamander* for these machines for early 1987.

DR books

DIGITAL Research is to make its first foray into the book publishing market, with titles on using its DOS Plus and Gem operating system products, both of which are bundled with the Amstrad PC 1512.

The books are being released to coincide with the appearance of the Amstrad PCs in the shops and, therefore, should be available now.

The three books in the series are *Using DOS Plus on the Amstrad PC* (£9.95 paperback, £12.95 hardback), *Using Gem on the Amstrad PC*, and *Business Presentation Graphics on the Amstrad PC* (both £12.95 paperback, £15.95 hardback). All titles have been published in conjuction with Glentop Publishers.

Further details from Digital Research on 0635 35304.

USG hiccups

IN our show report last week, there were some hiccups over our descriptions of US Gold's forthcoming titles.

Gauntlet will also be appearing for the MSX, but an Amiga version has not yet been finalised; Epyx did not produce *Pole Position*, but it has produced *Super Cycle*, and *Acrojet* is more of an aerobatic decathlon simulation than a simple flight simulator.

Apologies and all that.

Software Hotlines

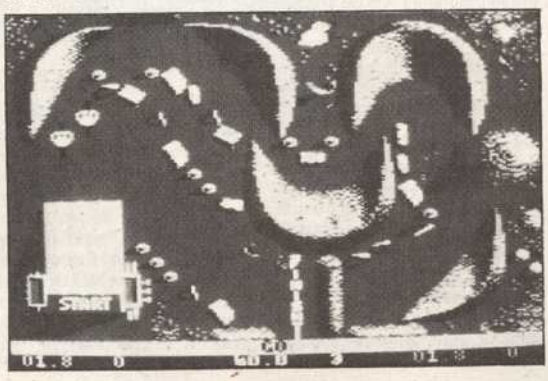
Richard and David Darling have started a new budget label called **Code Masters**, in conjunction with their father, Jim (see news story).

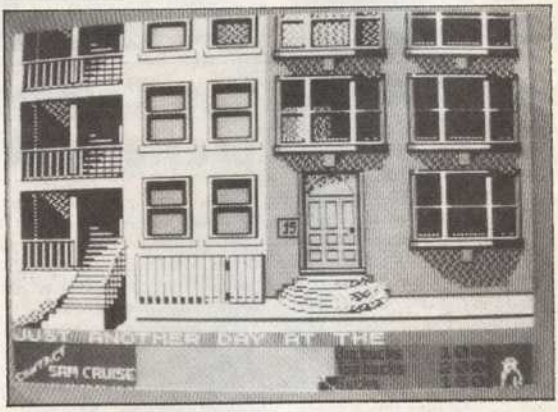
The lablel will cover the Spectrum, Commodore 64 & 16, Amstrad CPCs, Atari 8-Bit and Electron machines, and possibly the Atari ST.

The eagle-eyed may have noticed them recruiting talent at the *PCW* show under the banner of Digital Computers. Sources indicate they were "inundated with programs," and with big money at stake and potential sales of 100,000 plus for a successful budget title, it is rumoured that several well known names have been making enquiries.

The first 12 titles will be launched at the end of September; four on Spectrum, four on C64, two on Amstrad CPC and two on C16.

These include two follow-ups – *BMX Simulator* (sequel to *BMX Racers* – see below) and *The Last V8 II* plus *Terracognita*, written by Steven Curtis, author of Mastertronic's *Nonterraqueous*. More details as they're beamed through.





Anyway, I was sitting in the closet the landlord says is my office, waiting for the phone to ring. Which was something like a drunk waiting for a rabbi to turn water into wine since the company had cut us off last fall.

Then this guy sticks his head round the door. Short guy, 'round five seven, 150 pounds, puffy face. Double glazing salesman? Or maybe in PR. "You in?" he says. In? With this suit, I hadn't been in for twenty years.

"Siddown," I nodded to a chair, and narrowed my eyes. He looked scared.

"I got deez pictures – a nu game from Microsphere 'bout private investigation in the 1940s stateside. Called *Contact Sam Cruise*."

"Geddoutta here ya bum," I drawled. "My name's Marlow and the *Popular* office is next door."

John Cook

Universal discs for the 8256

SILICON Systems has launched the Uniface, a universal disc interface for the Amstrad 8256. It allows any BBC or Shugart standard drive to be connected to the machine, and costs £59.95. The company is also now selling a silicon disc and print spooler system for the 6128, price £19.99, and the Amdrive 3 inch add-on drive for the CPC series at £89.95. A 16K sideways Ram, allowing users to shadow Rom code to and from disc, is also to be launched in October at £39.95.

Details from Silicon Systems, 43 Elsinore Road, Old Trafford, Manchester M16 0WG (Tel 061-848 8959/ 9233).

Secret's out

ST BRIDE'S School is set to convert *The Secret of St Bride's* to both the Amstrad CPCs and PCW machines, to be published by Audiogenic.

Its latest title is *Bugsy*, which will be published by CRL at £7.95 on most machine formats.

PCW – more games announced

MORE games for the Amstrad PCW machines are on their way, this time courtesy of the ironically named CPC Minehead.

CPC, a business software publisher, is setting up a label, PCW Soft, to produce an initial range of four titles.

Merchant is a trading game for two to six players; *Fantasy Quest* is a D & D type game: *Mountain Leader* has you organising a climbing expedition, and *Speculators* gives two to six players the chance to become millionaires (within the confines of the program).

All will cost £9.95 each or £35 for all four brought as a set.

CPC can be contacted for details at 4 The Parade, Minehead, Somerset TA24 5UF. Tel: 0643 4851.

PCW – more games ▶

Improve your connections

TYPRO is offering a customisation service for people with connection problems. The company will alter its standard products to suit particular needs, even for single orders, and also runs a hotline service to advise on connection difficulties. Prices for interfaces and switches start at £59.95.

Details from Typro, 30 Campkin Road, Cambridge CB4 2NG. Tel: 0223 322394.

Cheap PC networking

MICROMODS' DeskLAN is a cheap PC network. A two-machine network costs £399, while six machines can be linked for £1,599. It will operate with any PCDOS or MSDOS based system, and according to MicroMods is particularly suited to cheaper PCs such as the Amstrads.

Details from MicroMods, 8 Regent Street, Long Eaton, Nottingham NG10 1JX (Tel 0602 724264).

Still in the running

Two more science fiction movie stills to identify this week in *Popular's* blockbuster competition.

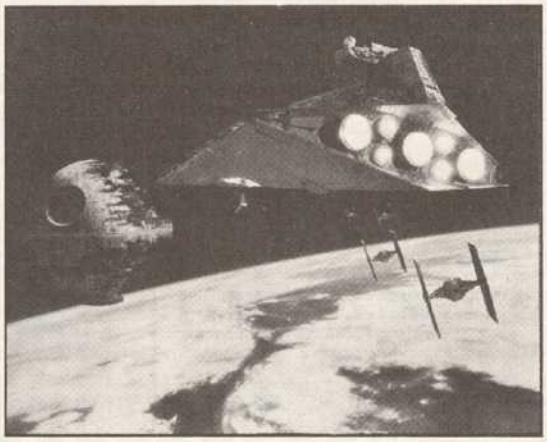
Remember, the prizes are really worth going for – five Spectrum Plus 2s for the five main winners, then ten Star Micronix STX-80 printers for the next best, and 50 Mastertronic Magnum joysticks for the runners-up.

But don't send us anything yet – there are four more stills yet to come, plus all the details on how to enter.

If these pictures have got you stumped, don't despair. We may be dropping the odd clue in the final week. Meanwhile, keep this page safe.

Photo 3 – Below – in which film does this man float?

Photo 4 – Right – do you recognise these spaceships?



Letters

Star Letter

Going Crackers II

After reading your review of The Cracker II in *Popular Computing Weekly*, September 4, I remembered I had seen the program reviewed before in the magazine.

I also had a feeling that the first review was very similar to the one I had just read, and after rummaging through my back issues, I found the first Cracker II review in the *Popular* Supplement, July 24.

My suspicions were proved correct. Both times the reviewer was Tony Kendle, and the reviews were, with a few very minor differences, identical.

Reviewing software twice, especially when it costs about £50, seems an excellent idea, giving prospective purchasers two opinions before parting with their money.

However, as you said in your reply to David Egdoll (Letters, September 4), "reviews are essentially subjective", there seems little point in getting the same person to review a program twice.

Stephen Vysny
Fife

Whoops! Actually, we're really trying to emulate The Guardian, which on September 11 managed to print the same letter twice on the one page.

Dare to help!

HELP! HELP! HELP! HELP! HELP! HELP! HELP! HELP! HELP! HELP!

Owing to a little misunderstanding between ourselves and our duplicators, there is a discrepancy between the Amstrad disc loading instructions on the *Dan Dare* inlay and disc label and what you must type into the computer!

Instead of *Run"Disc, Dan Dare* requires | CPM (the | (or bar) is achieved by pressing *Shift* and @).

Patricia Mitchell
Virgin Games
Portobello Road
London

Total agreement

How I agree with your reader Mr Dabner about the Oric Atmos. I too searched everywhere for the Atmos and finally found them on sale in Curry's at about £60 each. I tried out five of them, but they all had bugs and I reluctantly gave the idea up. Yet while I had the computer I was impressed by the keyboard which is still far better than any other on the market. The commands were good (when they worked) and the size very acceptable.

What I still dream of is a Little Oric Atmos with a disc drive and a small printer.

– continued page 10 –

Printer experiments

Thank you for publishing my last letter to your magazine.

Recently I was experimenting with my C64 and printer. The enclosed subroutine is the result of my efforts. The subroutine allows the user to print in correspondence quality text using an ordinary dot matrix printer such as an MPS 801 and MPS 803, both of which have been available for prices as low as 60 pounds in recent weeks.

The routine works by printing the string PR$ twice. Firstly, the line spacing is set to the smallest increment possible, then the string is printed once. The line increment is then set to the default setting by printing chr$(36) in line 1030 of the subroutine. PR$ is then printed again, giving the appearance of correspondence quality print. Used in conjunction with my Star SG-10C printer it provides a useful supplement to both draft and NLQ typefaces, as it is 50% faster than NLQ printing, yet much nicer looking than the draft mode.

This routine could be adapted to work with any computer in conjunction with any printer which has variable line spacing that is software controlled.

```
900 REM CORRESPONDENCE PRINT
BY A.J.B.
1000 OPEN1,4,7:OPEN2,4,6
1010 PRINT#2,CHR$(1)
1020 PRINT#1,PR$
1030 PRINT#2,CHR$(36)
1040 PRINT#1,PR$
1050 CLOSE1:CLOSE2
READY
```

Andrew Bowman
Drymen
Glasgow

Puzzle

Puzzle No 225

"How much was that bike?", enquired Ben as he admired his pal's shining new bicycle.

"Well", replied Jamie, "Take the price of the bike in pounds and pence, and reverse the order of the two digits in the pounds value. Now exchange the pounds value for the pence and the pence value for the pounds.

"The amount that you now have," continued Jamie, "is just £5 *less* than twice the price of the bike."

Ben was duly mystified, but eventually managed to work it out.

How much was Jamie's new bike?

Solution to Puzzle No 220

Answer

The trick will work equally well with packs having 32, 33, 36, 37, 48 or 49 cards (as well as with a full pack of 52 cards).

Solution

The program carries out the trick in exactly the same way as described. The cards in the pack are held in the string *Pack$*, each card's order being denoted by characters with Ascii values in the range 32 upwards (depending on the size of the pack).

These cards are dealt into two piles as represented by strings *C$* and *D$* (remember, the order of the cards is reversed at each deal). The dealer's pack *(D$)* is then re-dealt until a single card remains.

The original position of this card is given by the value *Asc(D$)-31*.

By testing packs of different sizes, those in which the final card started originally at position 22, are found.

Winner of Puzzle No 220

The winner this week is Henry Lovett-Turner of Barnes, London who will be receiving £10. The closing date for puzzle 225 is October 7.

```
>
  10 PACK$=""
  20 M=22
  30 FOR N=1 TO M
  40 PACK$=PACK$+CHR$(N+31)
  50 NEXT N
  60 C$="":D$=""
  70 L=LEN(PACK$)
  80 FOR N=1 TO L
  90 Z$=MID$(PACK$,N,1)
 100 IF N/2<>INT(N/2)THEN C$=Z$+C$ ELSE D$=Z$+D$
 110 NEXT N
 120 IF LEN(D$)=1 THEN 150
 130 PACK$=D$
 140 GOTO 60
 150 IF ASC(D$)-31=22 THEN PRINT"Pack size ";M;"
has card at position ";ASC(D$)-31
 160 PACK$="":M=M+1
 170 IF M>52 THEN STOP
 180 GOTO 30
```

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PCW/10/86

– continued from page 8 –

Surely not too much to ask in these days. Can I find one? No, yet I am still convinced it was one of the best micros made.

There is a real market for people like me who don't want to play games on computers and don't want to pay the earth for a small word processor.

Brian W Haines
London NW1

A nice language, that

I agree that Basic should be structured but it needs a bit of help. What really needs improving is the editor provided for Basic in most micros. It is all very well to use an editor like Metacomco's ED but a dedicated Basic editor which enables editing by procedure or function would be very useful. Also, things like cut and paste or copy would be very good.

With respect to recent advances in hardware, and the possibility of Basic coping with things like 'Manic Miner' type games, this brings up the question of hardware support. The Sinclair QL's Basic is easier to add than most but it is not fast. For Basic to cope with 'Manic Miner', a few extra commands for sprite handling and some faster processors (transporters are fast but I don't think we'll have a DEFine PROCedure in a home computer machine code for a while yet) and decent support chips (e.g. Amiga).

Basic is a nice language but it can be a nightmare.

Tund

"Still going for the one box concept, I see"

A hard day's Knight

The *Popular* vs *Colossus* chess tournament rolls on, with the second moves by both sides now complete.

In Game One (see table of moves below if you haven't been following our progress), most *Popular* entrants plumped for moving the knight out, from b8 to c6. This has been duly entered into the game and *Colossus* has replied with **3** B f1-c6.

In Game 2, *Popular* is playing white, and **2** N g1-f3 proved the most popular move. *Colossus* has countered that one with **2** . . . N b8-c6.

Obviously, we're still at opening book stages at the moment. Some people are suggesting some fairly radical moves, but it's the more conventional ones that are gaining more votes at the moment. Come the middle game, this will doubtless change, and the more adventurous and imaginative suggestions will hold sway.

The game so far

Game One

1	P e2-e4	P e7-e5
2	N g1-f3	N b8-c6
3	B f1-c6	?

Game Two

1	P e2-e4	P c7-c5
2	N g1-f3	N b8-c6
3	?	

Popular readers play Black in Game One and White in Game Two. Let us have your suggestions for *Popular's* next moves in place of *?* in each case.

Suggested moves should be sent to *Popular* Chess, Unit 11 South Block, The Maltings, Sawbridgeworth, Herts, CM21 9PG, by September 24. *Colossus* will respond to the move suggested by most entrants.

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Music to the QL user's ears

Leon Heller discovers new musical potential in the QL with ABC Elektronic's device

Although the QL has a sound capability, which may be used from Superbasic via the *Beep* command, it is very rudimentary, and quite difficult to use effectively for generating music and games sound effects. Sinclair itself seemed to be aware of the problems, as it stated in the User Guide that "The Superbasic *Beep* command is best used experimentally rather than syntactically"!

ABC Elektronic is a German company which has been involved with the QL for over two years. It was the first company to sell a mouse for the QL, for use with Giga Basic, and the Qsound/Qprint board is their second piece of hardware.

The Qsound/Qprint consists of a small board which plugs into the QL expansion port at the left of the machine. It uses the ubiquitous General Instrument AY-3-8910 sound processor, which is also used on the Amstrad CPC464 and the Atari ST machines, as well as MSX computers. The chip generates square waveforms which don't sound all that pleasant to a musical ear, but since one has amplitude and envelope control of the three channels available, and various types of white noise can be mixed with the output, a wide range of sound effects and quite passable music may be produced.

To the programmer, the sound chip looks like 13 registers, and is programmed by loading various values into these registers. Also on the board is an Eprom containing the software drivers for the sound chip. The AY-3-8910 also contains a parallel I/O port, which is not utilised on most other systems that use the chip, but is used to provide a Centronics parallel printer port on the Qsound/Qprint. Software drivers are also provided for this port, in the on-board Eprom. A standard 3.5mm jack socket is fitted so that the sound generated may be passed through an amplifier/loudspeaker system (provided by the user).

The code in the on-board Eprom adds an impressive number of keywords to Superbasic for controlling all the functions of the sound chip, including operation of the parallel printer port. Starting with the printer port, a new device named *Par* is available. With a Centronics compatible printer connected to the interface, typing

```
OPEN#3, PAR
PRINT#3, "FRED"
CLOSE#3
```

should output the string *Fred* to the printer. Part of the QL Ram may be allocated as buffer for a print spooler, by using, say,

```
OPEN#3,PAR_16
```

to allocate 16 blocks of 512 bytes of memory for a spooler. Large files may now be sent to the printer, and normal operation of the QL continued, whilst the file is printed out as a "background" task. Some other very useful options are provided.

> *"ABC has made a very nice job of the software, making it easy for even an inexperienced user to get some useful effects"*

Data to be sent to the sound chip is queued (a facility provided by QDOS), and output under interrupt control, so the QL can get on with something else whilst a whole string of commands is sent to the sound generator.

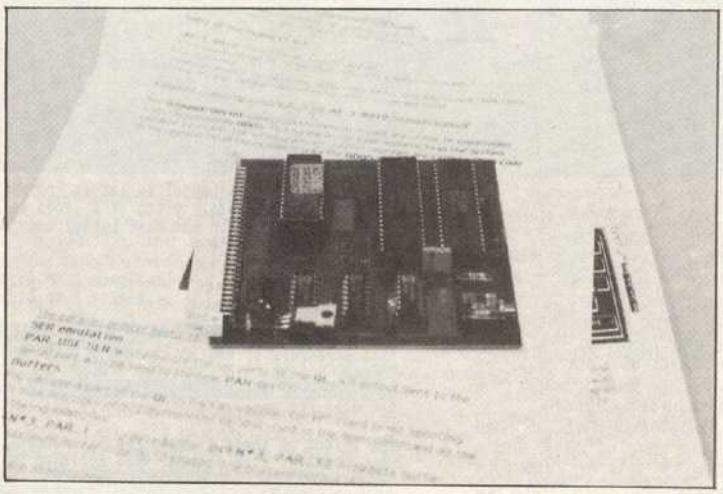
30 new Superbasic keywords are provided for control of the sound facilities and the parallel port. I can only mention a few of the more interesting ones. *Explode* generates the sound of an explosion; *Hold* stops all interrupt sound lists; *List_Ay* sends values to the registers of the sound chip; *Peek_Ay* reads the sound chip register contents; *Play* puts a string of notes into one of the sound channel; *Release* causes sound lists to be played.

The AY-3-8910 is quite a difficult chip to program (I put one on my old Tandy some years ago, and found it quite tricky to make it do what I wanted), but ABC has made a very nice job of the software, making it easy for even an inexperienced user to get some useful effects provided he or she has a reasonable command of Superbasic.

A small A5 booklet is provided comprising 22 pages. The first section (two pages) is devoted to the parallel printer interface, and the remainder deals with the sound facilities provided. All the additional keywords provided are described briefly. The assembler programmer will find a very detailed description of how to access the sound chip functions, documented in a similar manner to the *Sinclair Technical Manual*. A few examples should have been provided, but the manual is otherwise quite good.

The price of £69.95 (plus Vat) seems a little high, but if you want to produce excellent sound effects for games, or reasonable quality music, on your QL, this is the only way to do it. The onboard software seems excellent, and the parallel printer port and spooler functions are a very useful bonus.

Product: QSound/QPrint board **Micro:** Sinclair QL **Price:** £69.95 + VAT **Suppliers:** Digital Precision, 222 The Avenue, London E4 9SE. 01-527 5493. Leon Heller, 65 Flanders Mansions, Flanders Road, London W4 1NF. 01-994 7976



Lernloco – a bit too simplistic

Lernloco is a tutorial package on disc on the intricacies of *Locoscript*. It aims to take the user through all *Locoscript*'s features and the short cuts which certain keys can provide.

As such, it is not laid out in the way that the manual takes you through. Where the Amstrad manual starts with writing a letter, tidying it up, printing it out (with a lot of going off at tangents on the way), *Lernloco* is rather more concerned with the codes (italic, bold text, etc) and specific PCW keypresses for finding your way around in the early stages.

As such, it is extremely thorough, dealing with details such as line pitch variation, exchanging and finding and all the *Alt*, *Shift* and *Doc/Page* combinations almost within the first half hour you'll spend with the package.

This leads me to suspect it is meant not so much for the complete *Locoscript* beginner, but for someone who has mastered simple letter writing, and has given up on the manual. Even so, all the basic information about making back-up discs, and proceeding from the disc management screen into documents is in there as well.

Later sections describe the mysteries of headers, footers, pagination (including the legendary page numbering conundrum), making labels, and saving blocks and phrases. It's a pretty exhaustive guide.

Like all these text tutorials on disc, one wonders whether it would have been just as effective as a booklet – or book in this case. *Lernloco* asks you to print out most of the tutorials, and refer to them while using the PCW in its various test sections. It also invites you to make on-screen alterations to the *Lernloco* text itself, which goes some way to justify putting it all on disc.

My main criticism has nothing to do with *Lernloco's* content but the style in which it's written, and to some extent the presentation.

Considering that *Lernloco* comprises about 150K of text to read, there is only so much of this 'Let's Learn *Locoscript* with the Mr Men' style that one can take. Has Minerva done some market research which suggests that the majority of 8256/8512 buyers are under ten, I wonder?

The presentation on screen uses as many sub-layouts, varying pitch widths, and as much emboldening, underlining, reverse video and italicisation as it can, all within each 'page'. This makes it quite difficult to read on screen at times, even if it does provide a practical example of the many presentation options available. The printed out versions are easier on the eye, if not particularly cohesive in appearance, but I still feel that someone has gone somewhat over the top.

However, for anyone who is wondering just exactly what all those keys on the right hand side of the 8256 do, or who would love to get heavily into sub-layouts and varied editing, *Lernloco* provides a clear practical guide.

Christina Erskine

Program *Lernloco* **Micro** PCW 8256/8512 **Price** £29.95 **Supplier** Minerva Systems, 69 Sidwell Street, Exeter, Devon, EX4 6PH

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The Printer Spooler is one of the most useful utilites as it enables you to carry on working when your machine is churning out a large document and would otherwise be rendered unusable until the document had nearly all been printed.

After running the program you are asked for the size of spooler that you require, having to choose from 16K, 32K, 48K or 64K. Once picked it's simply a matter of clicking on the Install box onscreen.

Next in the value stakes is the Ram disc program. This, of course, reserves part of the memory and uses it as a psuedo disc drive to save and load data faster and more reliably than the real thing (although all data must be physically saved before the machine is turned off).

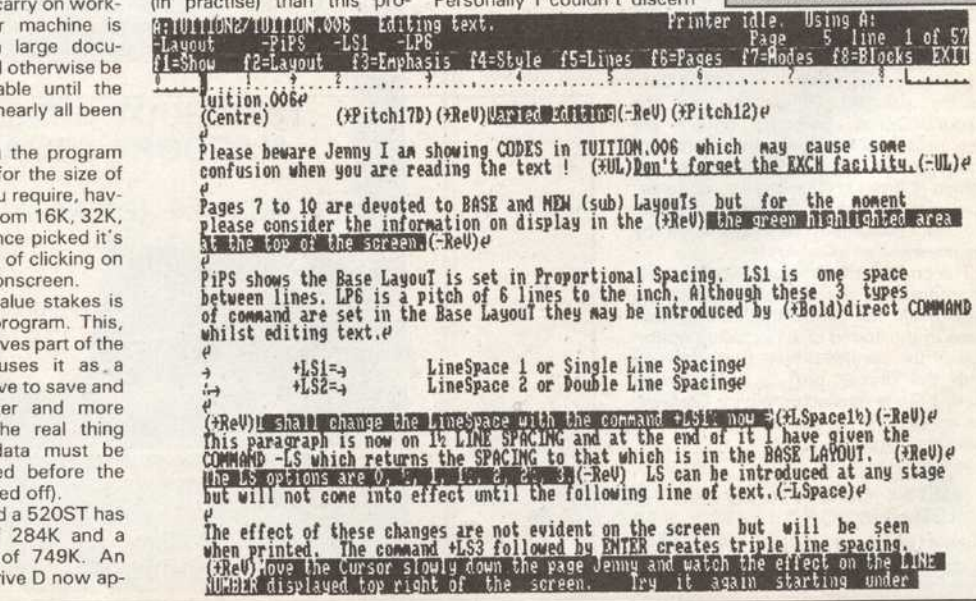
Once installed a 520ST has a Ram disc of 284K and a 1040ST, one of 749K. An icon labelled Drive D now appears on the desk top and is available for use.

Of less use is the Diskcopy program which offers a copy or format and copy option. If the disc you're copying is unprotected then you may as well do it from the desk top as it's much simpler and quicker (in practise) than this program. As far as making back-up copies of protected discs goes – the program failed to copy the two discs it was tried on.

Disk Utilities offers very little that is new, apart from the ability to rename discs after they've been formatted. Personally I couldn't discern anything here that isn't possible from the desk top.

Duncan Evans

Program *ST Toolkit* **Micro** Atari ST **Price** £29.95 **Supplier** Robtek Ltd, Unit 4, Isleworth Complex, St Johns Road, Isleworth, Middlesex.



It's the sound of freedom

John Lettice reviews games for PCs from MicroProse and Activision

When you hear a McDonnell Douglas F15 screaming overhead do you think to yourself, that's the sound of freedom? If you found yourself at the controls of one, would you pop over to Tripoli and turn Colonel Gaddafi's tent into a large crater?

If your answer to either of these questions is no, clearly you've got The Wrong Stuff, and as a potential agent of International Communism shouldn't be allowed near MicroProse's *F15 Strike Eagle*. Pity really, because it's one of the classier programs we're likely to see running on the Amstrad PC this autumn.

One of the nicer things about Amstrad's latest launch is that it should allow people in the UK to get their hands on some of the best of US software at reasonable prices. UK software houses are scrambling to sign up licensing deals for PC programs, and even now there are a few programs around that will help you get the flavour of what's in store. Back to *Strike Eagle,* which is a highly polished combat simulation, running to two kinds of air-to-air missile, electronic counter measures and such frills as drop tanks and a head-up display.

There are seven scenarios of progressive difficulty in all, starting with the notorious Libyan mission (written before the more recent real thing) and then Egypt, Syria and Vietnam to Iran. The structure of each is the same – you begin flying towards the target, and on the way cope with missiles from the air and the ground plus enemy aircraft.

The display is convincing, and there are enough compromises with the arcade to make play fast and addictive. MicroProse's political outlook may be, er, interesting, but no way is the company getting this one back off me . . .

Gamestar's *Championship Golf,* being released here by Activision, suffers initially if you compare it to *Leaderboard*, as the IBM's display can't rival the ST's (or, arguably, the Commodore 64's). But you'll find it's trickier and possibly more accurate than *Leaderboard.*

The version reviewed here is *Pebble Beach,* and try as I may, I still haven't managed to get round in anything better than 60 over par. The initial play screen is split between a plan view of the hole and a perspective view from your position. You swivel yourself round with the function keys to get the best shot angle, then move on to club selection.

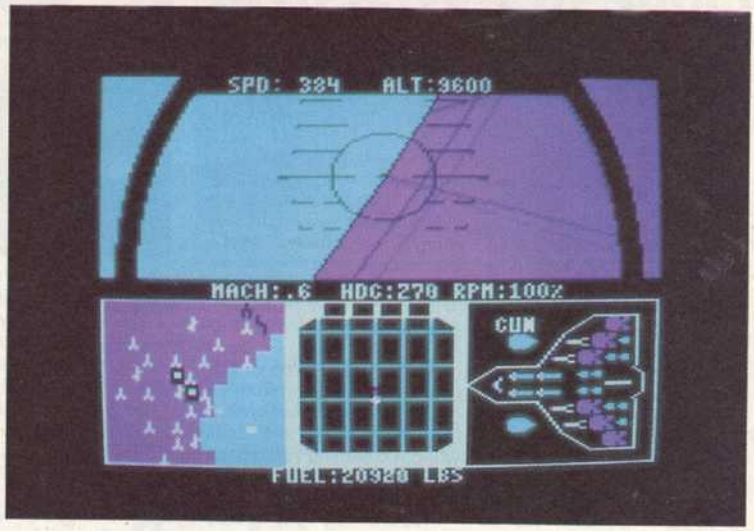
Once you've done this you can adjust your stance, then control is by keyboard, which governs whether you use wrist action, body action or both.

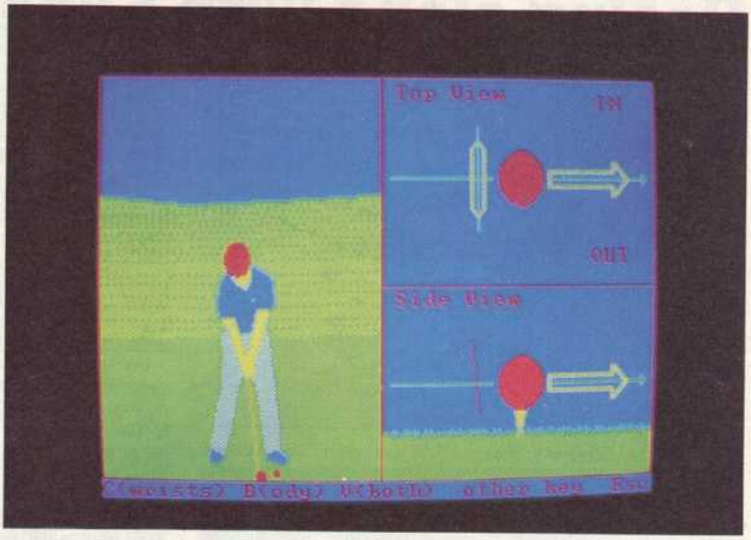
I'd like to see a mouse facility for the game, but apart from that it's great stuff, and hours of entertainment.

Back to MicroProse, which with *Hellcat Ace* seems intent on proving that not all its products are terrific. The script is war in the Pacific, the screen display is simple, and neither your aircraft or the opposition's behave as the real thing should. For example, if you turn towards an opposing fighter it will often sit at the same point on your screen while you are turning before appearing suddenly in your rear-view mirror. Too suddenly.

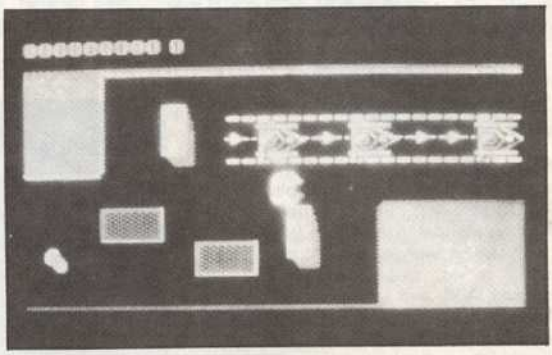
There's a caveat that relates to all of the above if you're planning to buy an Amstrad PC. For a start, if you have a monochrome monitor none of the games will run. Secondly, the PC's display is actually quite limited in terms of the combinations of colours you can show at any one time, and the use of mice on the machine is quite a recent phenomenon. The Amstrad PC has a more sophisticated display in terms of the colours it can show, and has a mouse as standard, but most of the existing US product won't take account of this.

Now what the importers should do is include a couple of patches that will allow mice to be used, and one that will allow programs to take advantage of the Amstrad's extra colour.





A trying Uridium clone in Psycastria



Uridium clones seem to be coming out almost by the dozen lately, so it was only a matter of time before there appeared one for the BBC and Electron: here it is, *Psycastria* from Audiogenic.

Written in Mode 1 on a reduced screen (saving a bit of memory) the action is smooth, horizontal scrolling over an obstacle-strewn futuristic technoscape. The four colour display is quite effective, spoilt only by the ship changing colour when moving over some of the backgrounds. Sloppy.

Controls are simple left/right, up/down, fire and the choice of joystick or keyboard is there – although we all recommend keyboard here, rather than the flabby response given by the analogue joystick.

Although the game draws heavily upon *Uridium* for inspiration, the actual task in hand is different, and considerably more difficult. As you fly along you must destroy 10 energy pods on each level – this is quite a task even assuming you can identify them (it took a call to Audiogenic to sort this out) placed as they are in niches between structures that need the co-ordination of a mega-being from the 9th Dimension to swoop into, fire, and swoop out again without creaming your spacecraft up against a wall. That is, *Psycastria* is difficult.

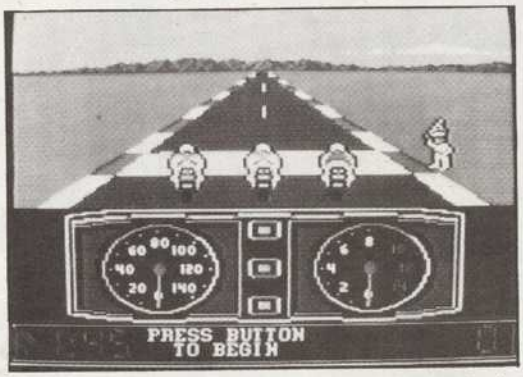
This choreography of mayhem all carried on with above average zzppangs and ppows (which can be turned off if necessary) and a host of alien nasties which only travel in straight lines, to begin with.

Being the only program of this type presently available on the BBC, it is certainly worth getting hold of if you are an arcade fan – but I can't help thinking that with a little more effort, this would have been an excellent game, rather than simply a competent one.

Popular Appeal ♦♦♦
John Cook

Program *Psycastria* **Micro** BBC B/Electron **Price** £7.95 (tape) £11.95 (disc) **Supplier** Audiogenic, PO Box 88, Reading, Berkshire RG7 4AA.

Racing along with Super Cycle...



From the company that brought you *Pole Position* and *Pole Position II* now comes another classic racing game – *Super Cycle*.

It's on with the leathers (choice of style and colour natch), kick start the motor and you're off. Slot it into first, push the revs into the red, then it's through the gears (three only), leaning the bike left and right through the curves as the track (and many other riders) come hurtling towards you.

There's no doubt about it, *Super Cycle* is fun. Immensely playable, it's the sort of game that you can just pick up the joystick and enjoy from the word go, yet on the harder levels is fairly challenging. Not without it's faults, however.

Unlike that cracker of a game *Pole Position II*, there is no two-player option – strictly you against the computer here, which is a great pity. If you complete the course within the allotted time limit, a new one automatically loads from tape which slows down the action considerably. No high score table either.

Even so, *Super Cycle* is slick, loud and fast – but if you already have *Speed King* for instance – it's a fact that although this particular Epyx epic has considerably more polish, the game play is essentially pretty similar.

The decision as to whether you want to pay for a graphically enhanced version is up to you.

Popular Appeal ♦♦♦♦
John Cook

Program *Super Cycle* **Micro** Commodore 64 **Price** £9.95 **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

...and gliding with the Rider

All the thrills of hang-gliding with none of the broken legs are offered by *Glider Rider*. Couple this with an opportunity to indulge in a little sabotage and destruction, some great graphics and a superb soundtrack – on the Spectrum! – and you get the best game Quicksilva has released for ages.

The Ultimate-style, single-colour, 3D perspective graphics illustrate a heavily fortified island complex, along around which you, the intrepid commando, must travel by motorbike. Finding a slope to launch from allows you to take to the air in a dinky hang-glider, dropping bombs on the enemy.

Pop-up status windows keep you informed of your progress, while on the 128K version an astonishing soundtrack featuring sampled sounds as well as chip-generated music keeps the action moving.

Popular Appeal ♦♦♦♦
Chris Jenkins

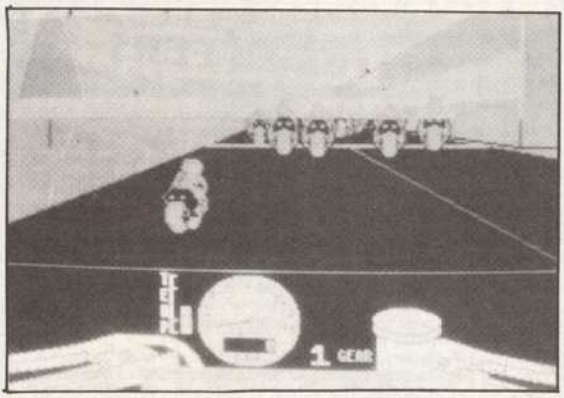
Program *Glider Rider* **Micro** Spectrum **Price** £8.95 **Supplier** Quicksilva, Argus Press Software, Victory House, Leicester Place, London WC2.

The spectrum of racing

TT Racer is that long awaited title from Digital Integration – more than 18 months in the writing – so I was hoping for something extra special. Was this finally going to be a *Revs* for the Spectrum? Reluctantly, I have to say a firm no.

There is no doubt that DI has taken meticulous care over writing this one – it has more options than you'll find traded on a busy day at the Stock Exchange, and the unique feature of being able to network up to seven Spectrums together (via Interface 1) to race against each other. But did it ever feel like riding a motorbike, let alone racing a 500cc machine? Was I ever caught leaning into corners, joysticks in sweating hand, eyes glued on the monitor? Did I ever feel I was actually out there on the tarmac of beloved Silverstone? Not once.

"Unbelievably realistic," is the quote used on the inlay from Paul Lewis, fully paid-up member of the Suzuki team. I simply can't agree. If a complete novice doesn't crash once on his first time out with throttle wide open all the way, there is something very wrong, no matter how *technically* realistic this simulation is. But on the other hand, if it's trying to be a pure race game, it's just not good enough in terms of graphics and illusion of speed.



Still, it is a fact that there are relatively few race games for the Spectrum, and *TT Racer* is far from being a dodo. But it's not up to DI's usual high standard of simulation and it won't impress your Commodore owning friends that have just come off that adrenalin high of *Super Cycle*.

Popular Appeal ♦♦♦
John Cook

Program *TT Racer* **Micro** Spectrum **Price** £9.95 **Supplier** Digital Integration, Watchmoor Trade Centre, Watchmoor Road, Camberley, Surrey GU15 3AJ.

Bug-Byte's leap in the dark

Okay, so budget label programs don't usually score on originality. Price and entertainment value are the main considerations here so it's unfortunate that *Leaaper* from Bug-Byte fails on both of these counts as well.

The basic premise of the game is that you must guide your splodge called Leaper to the top of the screen by jumping through holes in platforms that glide above his head. Yawn.

To liven up the proceedings, albeit infinitesimally, there are six varieties of unfriendly splodges, all out to send you back to the beginning of the game (and you can't get more unfriendly than that). Bigger yawn.

The graphics are lousy (the black background not helping matters), and the animation is just as unimpressive. For nigh on three pounds this game is still overpriced and can basically be considered as a blank cassette if purchased. Eyes droop, yawns again.

There you have it, all the intellectual challenge of death and about as exciting. Zzzzzzz . . .

Popular Appeal ♦
Duncan Evans

Program *Leaper* **Micro** Atari 8-bit range **Price** £2.99 **Supplier** Bug-Byte, Liberty House, 222 Regent Street, London W1R 7DB.

The return of the space turkey

Back in the mists of time (circa '83) programs like *Galaxibirds* could command a price of eight quid or so. Nowadays they are fated to spend their short lives on a budget label retailing for the bank breaking sum of £1.99.

Yes, it's one of those space games involving move, shoot, move and shoot again. This time the foe are not aliens of a green persuasion but are turkeys with a lemming like desire to end up at Kentucky's.

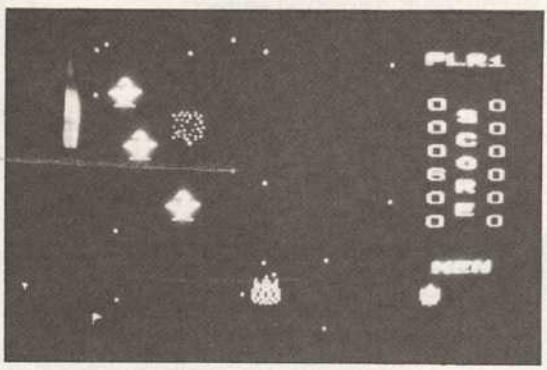
The graphics are pretty standard for this type of game, the turkeys being smoothly animated. After each wave there's a different breed of turkey.

The title page has a nice line in caustic comment, sending up the game itself, amongst other things.

If you want to kill, kill and kill again, you can't go far wrong with *Galaxibirds*.

Popular Appeal ♦♦♦
Duncan Evans

Program *Galaxibirds* **Micro** C64 **Price £1.99** **Supplier** Firebird, 74–76 New Oxford Street, London WC1.



A bunch of turkeys from Firebird

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The action at Olympia

Tony Kendle with all that's new in arcade games from the Personal Computer World show last week

The big news last week was of course the PCW show at Olympia where software companies traditionally show all the best of their products which they have been preparing for the Christmas market.

This year's show struck me as the best for some time – fewer mega-hyped games but generally much higher overall standard – and there was quite a few excellent releases due in the shops over the next month or so.

I won't talk too much about *Fist II* from Melbourne House or the superb *Faster Than Light* games from Gargoyle, such as the *Xevious* clone *Light Force*, as they were covered in *Popular* in quite a lot of depth.

Ariolasoft had their usual range of interesting new products, including a follow up to *Floyd the Droid*, but it all was eclipsed by the Amiga version of *Marble Madness* which was everything you dreamt it would be.

On the whole though the ST put on a stronger show – a wide range of graphically superb, if unoriginal, games were on display including *Karate* and lots of shoot-ups from *Paradox;* Rainbird had some impressive demos of its forthcoming *Starglider* which looked like a mega version of *Dark Star*.

Possibly best of all was the ST *Mercenary* which looked like it would live up to all expectations. Excellent news is that Amstrad and Spectrum versions are well underway.

Making its appearance at long last was Ocean's *Street Hawk* and it looked worth the wait – a top down view of a 3D car and motorcycle chase.

Another excellent car game from them is *Nightmare Rally* and *Parallax* is a *Uridium*-like space game.

Also a bit like *Uridium* is Martech's *WAR* and of course it was difficult to miss its new judo game *Uchi Mata* with Brian Jacks on hand throwing people around the stand.

The best *Uridium* style game though was *Uridium* itself – out on the Spectrum from Hewson and looking superb. Another interesting release is *Firelord* from Steve Crow of *Starquake* fame which has his own *Ultimate*-plus graphic style.

Hewson's Commodore follow up to *Uridium* was there in the form of *Alleykat*.

Electric Dreams had a very strong display with an excellent official version of *Tempest* running on the Amstrad CPC's. Promised highlights that I didn't get to see were *Dauntless,* the game of *Aliens* and conversions of the Atari classic *Star Raiders* – possibly the greatest cult game of all time I can't guess why it took so long to think of putting it on other machines.

As well as the official US Gold *Gauntlet* there were also marked similarities between this, Gremlin's *Way of the Tiger 2* and Firebird's high quality Amstrad version of *Druid*.

Current US Gold favourites of mine are *Beyond Forbidden Forest,* a follow up to the super creepy 'shoot the monsters' game – and the awesome latest in the *Ultima* series (although not really an arcade game).

Firebird's *Elite*-challenger *Cholo* looked confusing enough for me to believe it really could take on its predecessor and *Sentinel* is of course being raved over by our own John Cook but I was also taken by a cute Spectrum game *The Ghost of Claymorgue Castle*.

The other big hit is of course Don Priestley's *Trapdoor* game from Piranha – marvellous atmosphere and superb graphics for the Spectrum version, don't miss it. The new Piranha label looks to be very strong, with other interesting releases, *Rogue Trooper* and *Nosferatu,* being programmed by Design Design which certainly knows how to write good arcade games.

Gremlin had a fast and furious ball bouncing game, like a 3D *Bounder* in some ways but the ground moves like a huge conveyor belt rather than the ball, which was called *Trailblazer*. There was talk of an Amstrad PCW version of *Bounder* although it wasn't on show.

Star of the show for me though was probably Digital Integration's *Tomahawk* on the Amstrad PCW – so unexpected and so well done it knocks *Batman* off its perch as the best thing seen on a green screen. Also on show at long last was *TT Racer* on the Spectrum which looks like several other motorcycle games but plays superbly.

I'm sure we'll be hearing a lot more about most of these games in future columns.

Charts

Top Twenty

1	(–)	Super Cycle	Epyx/US Gold
2	(15)	Dan Dare	Virgin Games
3	(8)	Dragon's Lair	Software Projects
4	(1)	Speed King	Mastertronic
5	(–)	Go for Gold	Americana
6	(2)	Thrust	Firebird/Superior
7	(7)	Kane	Mastertronic
8	(3)	Ghosts and Goblins	Elite
9	(9)	Knight Rider	Ocean
10	(4)	ACE	Cascade
11	(5)	Ninja Master	Firebird
12	(10)	Ninja	Mastertronic
13	(14)	Hole in One	Mastertronic
14	(–)	Bump Set Spike	Mastertronic
15	(–)	Kai Temple	Mastertronic
16	(16)	Kick Start	Mastertronic
17	(–)	War Hawk	Firebird
18	(–)	Nightmare Rally	Ocean
19	(13)	Molecule Man	Mastertronic
20	(6)	Green Beret	Imagine

Figures compiled by Gallup/Microscope

Adventures at the Olympia

Tony Bridge brings tidings of great adventure games from the recent Personal Computer World Show in London

There are many computer shows around now, most of which cater for a particular model of home micro: but probably the most respected and most attended is the *Personal Computer World* show in London, which manages to cover every computer in both games and business software. The Grand Elf braved the crowds to bring you the news of the latest adventures from the cream of the software houses.

First of all let me banish those cherished thoughts you may have that text adventures are still up there in the forefront of computer entertainment; the flavour of the year is arcade conversions, and this was evident at the show from the multitude of arcade machines dotted around the stands.

Despite being just about the oldest enthusiast this side of the counter, the Elf could be found breaking joysticks along with the best of them, though the chap who was rapidly approaching a score of seven million on a gyrating *Space Harrier* machine put my feeble efforts very sharply into perspective, I'm afraid!

I had to admire the courage of those software houses who were displaying machines like *Gauntlet* against their conversions – in this case, crowds of players clustered around the arcade version, zapping away furiously in a concerted effort against the Troll armies and flocks of ghastly ghosts, with the fantastic graphics and the attendant thumps, sampled groans and screams and digitised commentary all going to make a sensory experience secondly only to one.

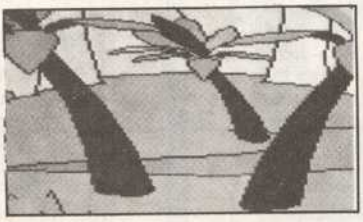
Set against all this is the micro conversion, with a couple of squeaks and a pharrp. Hardly the same, is it? But still, it'll be a great hit, because who can afford to keep feeding in all those ten pences?

What all this means is that most of the larger companies are concentrating their efforts on these arcade conversions rather than adventures. Of the adventures to be seen, most were for exotic machines like the Macintosh and ST.

For example, Mirrorsoft has several American games coming up, all making use of the hi-res screens of the newer machines, though "coming soon" is *Icon John* for the Amstrad CPC series, which as you'd expect is icon-driven. Haven't seen it, but the picture looks nice.

One of the few mainstream adventures on show was *Hacker II* from Activision. *Hacker I* is not one of my favourite programs, but the new game seems to be very much more interesting, with nice graphics enhancing an investigative romp through a previously impenetrable Soviet facility in Siberia.

It will be available for all the American machines to start with followed by the Amstrad and Sinclair ranges "soon". Encouraged by the success of such programs as *Mindshadow* and *Borrowed Time,* Activision has just formed a new label, Advents. The aim of this is fairly obvious – it is "dedicated to the publication of high level graphic/text adventure programs." For all the usual micros, the first titles will include *Chicago, The Sokentooth Affair* and *Traitor;* the first of these, which has been written by the Ram Jam Corporation, known for *Valkyrie 17* and *Terrors of Trantoss.*



You'll have gathered from the title that the adventure puts you in the shoes of a gangland hood, thirsty for revenge against the thugs who double-crossed you and landed you in jail. Ram Jam has used their in-house adventure creator, *The Biro* – this allows for intelligent characters, flexible responses and tricky puzzles.

Some months ago, I talked with Ram Jam about this utility, and it said then that it was willing to share the program with other major software houses, though it would not be going on general release as a *Quill*-type offering.

Talking of adventure creators, I was looking forward to seeing that from The Edge, which is (according to The Edge of course) going to rival anything written by Infocom, but haven't we heard that before? It wasn't anywhere to be seen, so we must wait; I'm sure it's "coming soon".

The fruitful collaboration between Level 9 and Mosaic Publishing continues with *The Archers,* a look behind the scenes of that most enduring soap opera, and previewed at the show. The game puts you in the editor's chair from where you must take all the decisions regarding plot decisions for the main characters. For all you Archer fans who have been waiting with bated breath for just such an announcement, now is the hour!

Meanwhile, the Level 9 museum brought a few nostalgic tears to the adventurer's eye, with ancient ads and cassette inlays as well as screen shots from those old games. Did you know that Level 9 once challenged the arcades with their version of *Space Invaders?* Nothing new, though, except for some stunning digitised pictures on the Amiga to show everyone that Level 9 can dish up the graphics with the best of them (they're just having a bit of trouble incorporating them into the adventures).

The Rainbird stand was also of interest to an adventurer, showing the Level 9 trilogy, *Jewels of Darkness,* though I'm sure you know about that already, along with more versions of *The Pawn* from Magnetic Scrolls. Anita Sinclair, authoress of this most wonderful game tried to explain the trapdoor joke to the Elf (which joke, she tells me, is completely transparent to everyone else in adventuredom), but I'm afraid that he *still* fails to see why a programming fault should be such an obvious and endearing hoot!

From *Jewels of Darkness*

Lord of the Rings part 1 on Commodore 64. How do I get over the last bridge without being captured? Dale Hobson, Broadmeadows, Lambrook Road, Shepton Beauchamp, Ilminster, Somerset TA19 0NA.

Zok's Kingdom (Curse of the Werewolf) on Vic 20. I can't get past the room of pits, and can't wake the girl. Also I have not discovered all command words. Robert Turner, 24 Harvest Road, Denmead, Portsmouth, Hants, PO7 6LD.

The Pawn of Atari ST. How do I move the boulders? What item does the guru want? Nigel Morse, 11 Green Leafe Avenue, Wheatley Hills, Doncaster, DN2 5RG.

Hampstead on Commodore 64. I've visited Chubbie's mansion and been knighted – now what? Shelley Baron, 1A Wayside Avenue, Bushey Heath, Herts, WD2 3SH (01-950 9320).

Mercenary on Commodore 64. What do I do with coffin? I've done all the rest, my score – 1604000. Arthur, P.O. Box 48, Derby DE6 6QP.

I have completed the following (and offer help on) – Jewels of Babylon, Heroes of Karn, Message from Andromeda, Red Moon. Send SAE to Christopher Eng, 14 Amner Road, London SW11 6AA.

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.....

Sphinx Adventure on Electron. How do I get across the lake? Where can I get the boat? How do I get past the canyon? Carl Hetherington, 29 Upper Packington Road, Ashby-de-la-Zouch, Leicestershire LE6 5ED.

Aquanaut 471 on Dragon. Cannot you find way to wear helmet or am I totally wrong? Colin Morrison, 1 Seabank, TJemimaville by Dingwall, Rossshire.

Supercom (Atlantis) on Spectrum. How do you get the third code for the armageddon computer? S. A. Harrison, 29 Buchanan Street, Stockton-on-Tees, Cleveland TS18 1WP.

Lord of the Rings on Spectrum. I am stuck in Lothlorien. Cannot cross river or climb tree. Jean Davis, 60 Arch, Kyprianos Avenue, Strovolos, Nicosia, Cyprus.

Elite on Spectrum+. Lenslok – how do I get into the game? Mr F. Dunbobbin, 12 Buttermore Avenue, Orford, Warrington, Cheshire WA2 0NJ.

Borrowed Time on Commodore 64. Which P.O. Box does key open? How to get paper from Leboks Fireplace? Combination for shed? S. Ronayne, 8 Turpin Court, North Arbury, Cambridge CB4 2RN.

Sinbad and the Golden Ship on Spectrum. Keep getting killed by skeleton or wizard. Kevin Kelly, 30 Poplar Place, Blantyre, Glasgow GT2 9QA.

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POPULAR Computing WEEKLY

SPECIAL supplement

1986 Sept 18–24

THE SINCLAIR QL

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VIII
Giga Basic and Giga Desk – making the most of the QL's operating system

X
Eye-Q, a graphics package worth seeing

A dead machine? Not if the QL's thousands of users here and overseas have anything to do with it.

The first affordable 68000-based micro refuses to lie down; apart from a continuing stream of software releases from third parties, manufacturers like CST and Sandy are further refining the QL with their ambitious repackaging and redesigning programs. In this supplement you'll be able to read about the CST Thor, on the market now, and Sandy's planned QLT; both QL-compatible while offering vastly improved specifications.

Communications, graphics, games, basic extensions, WIMP systems; they're all here to prove that the QL is still making quantum leaps even without Amstrad's support. It looks like the QL will be with us for some time to come.◀

Black is the colour

Icicle

Eidersoft's support for the QL is to develop into a continuing program of software and hardware production for the CST Thor system.

Ken Browning explained that Eidersoft, UK distributors of CST's Thor system, will be producing a number of products including a desktop publishing package suitable for use with a laser printer. The system will also be available for the expanded QL, and Eidersoft will be running a laser printing service for users who don't want to invest in an expensive printer.

Also on the way is ICICLE, a development of the popular ICE operating system which offers user-defined icon control from the Psion packages. Upgraded versions of QSpell and other Eidersoft programs are also being prepared for the Thor.

Other projects further in the future may include a serial/MIDI interface board, and a 68020 board which will give a 4-5 fold speed increase.

Eidersoft's QL/Thor support service already has 1200 members, indicating to Ken Browning a continuing enthusiasm for the machine and a sustained demand for product support.

Quanta

The QL users' group QUANTA made a strong appearance at the PCW Show, and is still recruiting new members. Membership is by subscription to the monthly newsletter, which contains a technical advice section, news, software reviews, programs, wants lists and classified ads.

The group maintains a large software library, and arranges workshops for members. Lists of members in a particular area, and membership details, are available from the membership secretary, Brian Pain, at 24 Oxford Street, Stony Stratford, Milton Keynes MK11 1JU.

QATS

QATS, the QL Applications Traffic Supervisor, is a utilities program developed by Gordon Henson of COPE. It's designed to reduce the number of keystrokes needed to perform task manipulation and housekeeping on the QL, and runs from inbuilt menus which can be tailored by the user.

For instance, using QATS you can define a menu called PSION which allows you to choose which of the Psion packages to boot. The appropriate program will then start up, and when you have finished your task will return you to the QATS menu.

Using a QL with expanded memory, it's possible to initiate and return from other EXECable jobs, use wildcard file

processing, fast copy files, delete files, format media, manage QL jobs, and display files alphabetically showing file sizes.

The full package consists of a hefty manual, two microdrive cartridges (which are unprotected and can be transferred to other media) and an EPROM which can save 16K of operating memory. Prices are £20 for the base system; £15 for the output control section alone; and £10 for the EPROM. All prices include p&p, VAT and media costs. The output control section alone is capable of print spooling, dividing unformatted files into pages with headings, printing lavels or mailing lists, and allowing for single sheet or continuous stationery.

For more details contact COPE, 3 Langham Mansions, Earls Court Square, London SW5 9UH.

DJW joystick

Games players will be pleased to see the arrival of a new and reasonably priced joystick for the QL. The DJW Joystick, at £6.99, has a large circular base with four suckers, a pistol-grip style handle, firing trigger and thumb button, and a long cable with a standard Telecom plug.

The DJW stick comes in two parts; the handle pulls out of the base for storage, and connects with a video-type plug.

DJW also manufactures HouseWife, a "domestic planning" program which includes a shopping list compiler and a cookery book. The shopping list allows you to compile, edit and print out lists of around 200 items, using a six-option menu, while the three-part cookery book (starters, main course and desserts) allows you to select a recipe, enter the number of people required, and display the ingredients and quantities required. In both cases the text can be printed out for future reference. Housewife costs just £4.99.

For more details contact DJW Software, 11 Pound Close, Bramley, Hants, RG26 5BL.

Q Flash

If you want to improve the performance of your microdrives, but can't afford to upgrade to floppy disks, TK Computerware's QFLASH might be the solution.

The QFLASH RAM-disk claims to be up to 12 times faster than other similar programs. It enables you to produce pull-down windows in Superbasic, create animation using LBYTES commands, load long machine code programs quickly, and multiply the speed of I/O intensive programs by up to 100 times. Using the optional Toolkit, you can also copy microdrives to RAM-disk in 7-14 seconds, rename microdrives, patch and repair damaged files and use RAM screen editors in hex and ASCII.

Ram Disk costs £13; Ram Toolkit £10; the set on microdrive is £19 and the set on EPROM is £21. For more details contact TK Computerware at Stone Street, Stanford, Nr Ashford, Kent, TN25 6DF. 030381-2052.

Toolkit 2

Care Electronics' QL Toolkit 2 is now on the market. An upgrade of the original Toolkit which was designed to overcome some of the shortcomings of the QL ROM, Toolkit 2 includes commands for file editing, directory control, file maintenance, superbasic expansions, display control, file copying, jobs control, character definition, memory management, error handling, network commands and microdrive handling among others. There are over 100 new commands overall.

The Toolkit 2 ROM was written by Tony Tebby of QJump. Also available from Care is a character font generator, which we'll be reviewing in a forthcoming issue. Contact Care at Unit 14, Peerglow Industrial Estate, Old's Approach, Tolpits Lane, Watford, Herts, WD1 8SR. 0923-777155.

Ambition

Quanta member Alexander Waye has devised a business orientated strategy game, Ambition, which he claims is both entertaining and educational (and also unique!)

Ambition was developed entirely on the QL, and is a four-player game based on land development and building opportunities. Each player starts with a £40,000 redundancy payment and a house worth £30,000. Play takes place on a town map divided into four sections, each of which is "home" for one player. A simulated dice throw determines the players' moves around the bboard, while a display at the top of the screen shows the date, move number, position, and sector of each player.

The game involves buying and selling building material, dealing with the planning department, hiring tradesmen, developing land and accumulating cash and stock. For more details of the game - which Alexander Waye is hoping to develop into a full commercial package - contact him via Quanta or enquire to Care Electronics at the address above.

Astracom 1000

The Astracom 1000 intelligent modem is now available with special QL software thrown in free. Suppliers Strong Computer Systems supply the modem, software and serial cable for £173.00 + VAT.

The Astracom 1000 features autodial, autoanswer, and printer control facilities. It covers all the standards necessary for European comms networks, and can be upgraded for use with American Bell standards.

The on-board processor handles all handshaking and buffering necessary for the QL, along with modem and printer functions for auto-dialling and auto-answer. Modes available include 300/300, 1200/75, 75/1200 and 1200/1200, but in auto-scan mode the modem will set its own baud rate by sensing the returned carrier tone.

Additionally, the A 1000 can perform equalisation to improve poor lines, use the centronics printer interface while on line, and generate even parity and local echo for half duplex communications.

The comms software for the QL includes a 40-column colour videotex emulator for Prestel, and a 40/80 column terminal for non-videotex services. A more advanced package called QTERM with XMODEM file transfer capability is on the way.

Contact Strong Computer Services at Bryn Cottage, Peniel, Carmarthen, Dyfed, SA32 7DJ. 0267-231246.

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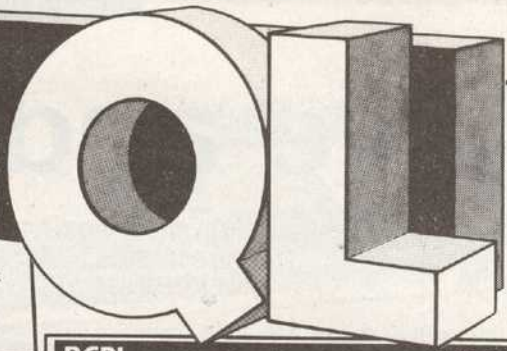

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Alive and leaping

LEON HELLER'S LOOK AT PLANS TO EXPAND THE QL FINDS CST AND SANDY WORKING ON EXCITING HARDWARE SYSTEMS

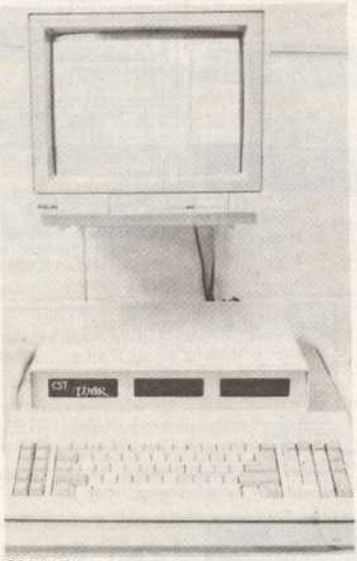
It appears that the QL as we know it is dead; Amstrad, who purchased the QL rights together with the Spectrum from Sinclair, seem determined to let the machine quietly fade away. However, there are around 90,000 enthusiastic users of the machine who might be unwilling to write off their investment in this excellent and under-rated machine, and would be interested in the proposed Thor upgrade announced by CST (to be marketed by Eidersoft in the UK and Dansoft on the continent), and the QL replacement presently being developed by Tony Tebby of QJUMP (he was largely responsible for the original QL design, and wrote the QDOS operating system) and Sandy (the people behind the excellent SuperQboard RAM expansion and disk interface). Users interested in upgrading their machine might find it difficult to decide which of these new machines to go for, so an attempt will be made to compare them on the basis of power, value for money, design, expansion capability, and compatibility with existing hardware and software.

CST is a small company based in Stevenage run by David and Vic Oliver, who have been involved with the QL since it first appeared, supplying a range of interfaces and expansion units. Prior to their involvement with the QL they worked on interfaces for the BBC micro, and did a lot of consultancy work for various companies, mainly in the Cambridge area.

Drives

The Thor is basically an upgrade of the standard QL machine. CST is taking standard QLs, removing the circuit board (the case, keyboard, power supply and Microdrives are discarded) and then mounting the QL board in a strong metal case, with a switch-mode power supply (very efficient and compact), a second board with 512K full-speed expansion memory (giving a total of 640K), disk interface, parallel printer port, one or two 3½" disk drives (floppy or Winchester), a mouse, and six sockets for up to 192 K of ROM (for a WIMP environment, ICE plus, or special purpose software).

A QL-compatible connector for a single peripheral connector (such as an EPROM programmer) is provided and an external four-slot card cage can be connected if the user requires more expansion capability.



CST's Thor QL-based system

The hard disk interface uses the SCSI (Small Computers Standard Interface) standard, and can therefore handle a total of eight devices, which don't have to be hard disks - CD-ROM drives, optical memories and tape streamers could also be connected via the SCSI port, or even other computers, for very high speed data transfer.

A high-quality PC-type separate keyboard is provided, with special driver software in ROM giving all the standard QL functions as well as additional keys for such functions as scrolling the screen, performing a screen dump, etc. Foreign character sets and keyboard configurations are available by changing the driver software.

A battery-backed real-time clock is provided, with new driver software in ROM allowing date-stamping of files - very useful when backing-up files on a hard disk, and a parallel printer port is provided with spooling software in ROM.

Since the Thor is based on the standard QL, there should be no problems when running any of the existing QL software. CST, Eidersoft and Dansoft have an agreement with Psion enabling them to bundle the full 68000 Xchange package (as on the One per Desk) comprising enhanced versions of Quill, Abacus, Archive and Easel with a user-friendly interface and a powerful Task-Sequencing Language (TSL). The Psion programs will offer full multi-tasking. Qjump's Toolkit II will be incorporated in ROM.

The standard Thor will eventually be capable of being upgraded to a full 32-bit supermicro, using the Motorola MC68020 processor, with an optional 68881 maths co-processor. A minimum of 1 Mbyte of RAM will be provided. The graphics will be enhanced, with true hardware windowing.

Prices for the various Thor configurations are as follows:-
With one 3½" drive; £599
With two 3½" drive; £699
With one 3½" drive and one 20Mb Winchester; £1399

Customers will be given an £80 trade-in allowance for their existing machine (provided the circuit board is unmodified). It might be possible to have one's existing 3½" drives incorporated, if they were originally supplied by CST, or they could be used as external drives, as the disk controller can handle up to four floppies.

The CST Thor in close-up

Qjump is a small company, formed by Tony Tebby a couple of years ago to develop and manufacture high quality QL software and hardware.

The Qjump monitor/debugger and toolkit are very highly regarded, and they also produce an excellent low-cost EPROM programmer for the QL. Jonathan Oakley recently joined Qjump. He worked with Tebby on the original QL.

Sandy are a small Milan-based company with a lot of experience of switch-mode power supply and multi-layer PCB design and manufacture.

The QLT (denoting Quality), instead of being an upgraded QL, is a completely re-designed machine, using the full 16/32 bit MC68000 processor as in the Atari and Amiga machines, giving a 3 to 10 times improvement in performance over the standard QL. The QL uses the "stripped-down" 8-bit bus MC68008. The machine does not yet exist, as Tony Tebby and Jonathan Oakley of Qjump are still working on the hardware and software design, so the following description might be subject to change!

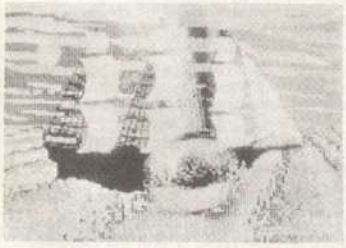
The machine will be housed in a low-profile metal case with a separate PC-compatible keyboard.

A minimum of 512K of RAM will be provided, expandable to 8Mbytes on the main board. A VME is fited for additional memory and I/O. The VME bus was developed by Motorola for their MC68000 family, and is something of an industry standard. VME-compatible cards tend to be rather expensive, however. A switch-mode power supply will be incorporated.

One or two $3\frac{1}{2}$" floppy disk drives will be included. One of the floppies may be replaced by a Winchester, using the SCSI interface, which may also be used to interface other high-speed devices.

An interrupt-driven parallel printer port and two interrupt-driven serial ports will be incorporated, as well as a mouse port and a joystick port.

A QL-compatible network facility with enhanced software will be fitted. An additional very high-speed synchronous serial port will give high-performance



A Thor graphics demo

communication with intelligent peripherals, making the machine ideal as the basis for sophisticated data logging applications and distributed processing, and a battery-backed real-time clock will give automatic date-stamping of files.

8-bit ROM cartridges and standard QL 8-bit peripheral cards may be fitted.

Enhanced graphics capability will be provided, with the existing 512 by 256 and 256 by 256 modes available, for existing QL software compatibility. The video controller circuitry will be in the form of a plug-in module, allowing a much more sophisticated graphics system to be added at a later date, for CAD/CAM applications, for instance.

Sandy's Q-XT gives just a taste of the planned QLT

A very flexible sound generation capability will be provided by a digital/analogue converter, which will be capable of high quality music synthesis and speech synthesis, with appropriate software. The Commodore Amiga and Apple Macintosh use this approach. A MIDI output will be incorporated, for controlling synthesisers and other electronic instruments.

Upgrade

The operating system will be completely re-written (avoiding any legal problems with Amstrad), and will be upwards compatible with QDOS, so most existing QL software should run without any problems.

Either an enhanced version of the SuperBASIC interpreter will be supplied in ROM, or SuperBASIC in the form of an incremental compiler (giving a substantial speed increase with easy debugging). ISAM file handling might be incorporated (like JETSAM in Amstrad Locomotive BASIC).

It is probable that the Psion Xchange package will be available as an optional extra.

A fully integrated mouse driven pointer, menu and window environment will be provided, with true windowing.

Since the QLT incorporates the VME bus, which supports multiple processors, it will be quite easy to upgrade the machine merely by plugging in an MC68020 VME card, with additional memory cards if required. The existing MC68000 processor would then handle all I/O for the new 32-bit processor, with both processors sharing common memory. Other processors (such as Transputers) could easily be added in the same way.

The target price for the QLT is £500 for the basic 512K machine with a single $3\frac{1}{2}$" drive. Adding another floppy disk drive or Winchester will cost about the same as with the Thor: say £100 for the second floppy and £800 for the Winchester. There is unlikely to be a trade-in allowance for an existing QL.

It might seem strange that the QLT, with a considerably better specification, is likely to be somewhat cheaper than the Thor, but it is based on a single circuit board, whereas the Thor has two circuit boards, resulting in additional hardware and assembly costs. The QL boards used in the Thor will also require testing, which has to be paid for.

My advice is that users with standard unexpanded QLs, who are thinking about upgrading their systems with additional memory and disk drives, should seriously consider ordering a Thor, as they will be getting what amounts to a brand new, considerably enhanced machine, with a full year's warranty, for little more than the cost of, say, a Sandy SuperQboard (additional 512K RAM, disk interface and parallel printer port) and twin disk drives with an Eidersoft mouse and ICE.

Expansion

Users, who like me, have already got a fully expanded machine, might be better off waiting for the QLT, as the CST Thor upgrade doesn't really add very much, apart from the software enhancements, and a neater looking package. In terms of functionality, the expanded standard QL is probably sufficiently powerful for most users at the present time. With its built-in VME bus and plug-in video circuitry the QLT offers much better expansion capabilities than the Thor, although these might be provided in the Thor with the MC68020 upgrade. The QLT would appear to be better for more advanced users who need the extra capability, and don't mind waiting a few months. ◀

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Windows on the QL

DIGITAL PRECISION'S LATEST QL RELEASES, GIGA BASIC AND GIGA DESK, OFFER EASIER PROGRAMMING AND WIMP FACILITIES. LEON HELLER REPORTS

Giga BASIC and Giga Desk are two programs supplied on Microdrive which enhance the standard SuperBASIC interpreter supplied with the QL, and provide a WIMP (Window, Icon, Mouse, Pointer) environment for the QL. The ABC mouse is required with Giga Desk, and would also be needed if you wanted to access the mouse control functions provided by Giga BASIC.

Documentation for both programs is in the form of an A5 30 page booklet.

Screen manipulation with Giga Basic

Giga BASIC adds over 70 extensions to SuperBASIC. Its functions can be split into the following categories:-

graphics
sprites and animation
numerical base conversions
full screen SuperBASIC editor
direct access to media
multi-tasking clocks
mouse-driven screen-oriented menus
pull-down menus
multi-tasking control commands
programmable function keys
other commands

There are far too many features to cover in this review, so I'll just discuss a few of the most interesting ones.

Several toolkit-type commands are provided for direct file access, such as GET, PUT, BPUT and BGET, SET_POINTER. Jobs may be deleted, suspended or activated from SuperBASIC. Software-generated sprites organised in a 32 by 20 matrix are available. Sprites may be defined for Mode 4 (four colours, high res.) or Mode 8 (8 colours, low res.).

Sprites may be moved around the screen, inverted and animated (set in motion automatically), and made to change direction when they reach the borders of the window, or appear at the other side (wrap-around), or killed when they reach a border. A function called COLLISION returns the sprite number if two sprites overlay one another, otherwise −1 is returned. The location of any sprite can be ascertained.

In conjunction with the ABC Mouse, very easy-to-use menus can be programmed. Sprites can be defined, and then used as icons, which can be pointed at using the mouse. Macintosh-style pull-down menus can be programmed using the MENU command.

The function keys, F1 to F5, may be programmed using the KEY command. For example,

KEY 1, 'LIST' & chr$(10)

would list a program whenever F1 is pressed.

A full-screen editor for SuperBASIC programs can be activated by typing

SCREEN#dev, linenr, tab

(default is SCREEN#1,1,3)

which invokes the screen editor and positions the cursor at the line assigned to linenr and with the horizontal step size assigned to tab. A full range of editing functions is provided - the cursor may be moved anywhere in the window with the arrow keys, characters deleted, the window paged up or down, etc. User-defined fonts may be selected with SETFONT.

Real windowing is supported - a window background may be saved in memory before writing to it, and the background restored after the window is closed.

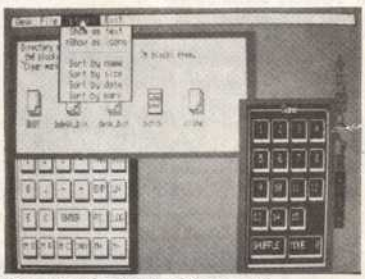
Giga Desk is rather confusingly referred to as EASE (Easily Applicable System Environment) in the manual. EASE overlays QDOS and allows the user to carry out all the functions of QDOS, such as file copying or executing programs, using symbols (icons) and the ABC mouse.

To get the most from EASE, a machine with expanded memory is required, otherwise, when a program is terminated, EASE will have to reload itself. EASE also works much faster on an expanded machine.

In operation, EASE is very easy (!) to use. A pointer is displayed on the screen, and may be moved with the mouse. Various icons or symbols are displayed (for instance, pictorial representations of Microdrives or disks), and operations may be performed by pointing at the appropriate icon using the mouse, and clicking the button on top of the mouse.

Some useful directory options are provided. Files may be sorted by size, by date and by mark. The first two options should be self-explanatory.

EASE uses real windows, as described in the section on Giga BASIC, and up to seven windows may be used. Windows may be scrolled and moved around the screen.



Giga Desk's WIMP environment

Pull-down menus à la Mac are provided (Digital Research were threatened with legal action by Apple for using this technique in their first version of GEM, and rapidly changed it. I haven't heard if Apple are making threatening noises about EASE).

Again, in common with the Mac, a built-in calculator is provided, with trig. functions, logs and memory.

A version of the well-known sliding block puzzle is provided, again in common with the Mac. I think this is a bit gimmicky.

EASE can be patched for use with most hardware configurations (floppy disks, Winchester disk, different printers, etc.). When EASE and the ABC mouse were first announced, several of the early customers were disappointed - the mice didn't seem very reliable, and there were problems with the software. These problems have now been overcome, and in the short time I had available for testing the system, it seemed to work very well. I've not yet had a chance to try the Eidersoft package, so I can't comment on how the ABC system compares with theirs, but Giga Desk (aka EASE) and the mouse appear to work very well, and are recommended if you want the added convenience and fun of a WIMP environment on your QL. ◀

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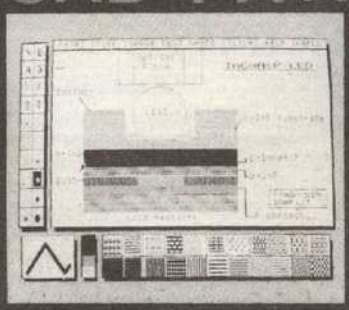

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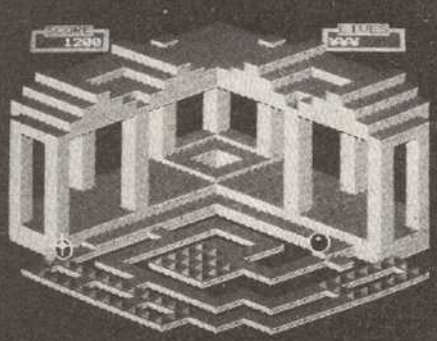

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An eye for QL graphics

JOHN TOROFEX ON THE GRAPHICS PACKAGE WHICH THREATENS TO OUTPERFORM ANYTHING ELSE ON THE QL

DP's **Eye-Q** is a graphics package intended for the production of artistic designs of any size on the QL screen. Designs may be saved to disk or Microdrive, for loading from SuperBASIC, or dumped to a suitable printer. An integral font editor allows different character fonts to be created, which may then be incorporated within the user's own programs.

Freddy Vaccha, the larger-than-life character who runs DP, tells me that Charles Southey, who developed Eye-Q, writes everything in assembler – he despises all high-level languages. Eye-Q is certainly very fast and slick in operation.

Freehand

The package is supplied on a single Microdrive cartridge, with 18 A4 pages of documentation, punched to fit the QL User Guide, or a suitable binder. The documentation is printed on red paper, to prevent it from being photocopied.

Backing up the package is made very easy by a nicely written clone program, which also configures the package for disk operation if required.

Eye-Q is loaded by a boot program on the cartridge or disk when the machine is reset. The program starts in what is termed 'Top Level', in which you can create freehand sketches with the cursor (a flashing dot). This type of cursor can be rather difficult to see, and I much prefer a cross type of cursor. A status window is displayed at the top of the screen giving information about the cursor position (X and Y co-ordinates), ink/paper colours, plotting mode, etc. The status window can be moved to the bottom of the screen or removed from the screen by pressing F2.

The rest of the screen is the work area, in which one's graphics are created. The area occupied by the status window is also part of the work area, and is re-displayed when the status window is moved. The cursor is moved using the arrow keys, and the movement accelerates when the key is held down for more than a second or so. The movement is very smooth and easy to control, and when the cursor hits the edge of the work area it stops. Diagonal movement of the cursor may be achieved by holding down two arrow keys at once, and the cursor may be moved in large increments by pressing the ALT key while pressing the arrow key. The cursor position in the status window is constantly updated as the cursor is moved.

With the program in 'SKIP' mode, as it is initially, the cursor doesn't do any drawing. To draw something, the program must be placed in 'SET' mode by pressing F1. Drawing may now be done in the current ink colour. Lines may be erased by pressing F1 again to put the program into 'ERASE' mode, and then drawing with the paper colour to erase the line as required. An additional drawing mode is 'XOR', selected by tapping F1 again. The mode is always indicated in the status window. Thick lines can be drawn, or large areas erased, by altering the cursor width, which is achieved by holding CTRL down and pressing the W key. The maximum cursor size is 32 pixels. The cursor may also be narrowed. Ink, paper and strip colours are easily changed.

Text is easily incorporated in your design simply by typing it in – it will be positioned starting at the cursor location. All the standard character sizes and spacings may be used, and these are easily selected.

Any enclosed are may be filled with colour, by moving the cursor into the area, and pressing F5. A menu will then be displayed, with a list of colours, allowing you to select which colours are to be treated as ink (boundary) and which are to be treated as paper (filled over) colours. This section of the manual is quite complex, and I think the user will need some experimentation to get the desired effect. The area fill function appears to be rather slow.

From the top level one may zoom in to enlarge any small detail of the screen, by pressing F4. The cursor may be moved to any part of the design, with the view displayed so that the cursor is always at the centre of the screen.

A large number of commands are provided via a command menu obtained by pressing F3 when at the top level. 'Rubber banding' may be selected, and this feature is operative when drawing circles/ellipses, lines/arcs and rectangles/blocks.

Storage

A files option is provided, so that your works of art may be saved to disk or Microdrive. Character fonts may be loaded and saved. Graphics are saved in compressed form, with a marked reduction in the storage required (each drawing would otherwise take 32K).

A demonstration picture is provided, and this may be loaded and worked on to get the hang of using this very powerful and complex package.

Up to now, the last word in graphics packages for the QL has probably been Talent's GraphiQL. Eye-Q has more features than GraphiQL, and is considerably easier to use, in my opinion. It is also about half the price. Like GraphiQL, one needs a considerable amount of artistic ability to get the most out of it, but it is capable of doing virtually everything the user wants, if he or she has the necessary skills. ◀

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Mystery Adventure Game

★★★★★ Review: 'Sinclair User' Sept '86

An urgent telegram, the anguished plea of an old friend and the chance to revisit your childhood home build up the Poe-like atmosphere.

It's an unusual adventure in both plot and execution. Motive, rather than monsters, makes up the game, which includes a novel use of window graphics.

Mortville Manor has a good smattering of characters, all of whom are relations of Julia, the friend who pleaded with you to come to the house, but was murdered before you got there.

The discussion mode lets you talk to the house guests, but the vocabulary is limited and your audience unresponsive if you don't ask the right questions. It's a hard slog but, coupled with the information gleaned from characters and the furnishings in their bedrooms, you'll suss out the masterly plot to usurp the family fortune and heritage. Edgar Allan Poe and the inhabitants of Usherland would be pleased with this plot.

Mortville Manor is a show house for the mystery contained in Pyramide's latest game. It contains all the elements for the solution of the puzzle but is not, literally, the scene of the crime.

The game pulls off a difficult conjuring trick. It has all the hallmarks of a classic who-dunnit but you must realise that the solution lies in how the characters live and react. Pyramide's adventure is for stickers who like a good mystery and are willing to play for months to get into the game.

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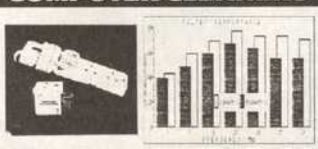

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QATS allows you to:

★ set up menus to run your own jobs (EXEC'able programs only)
★ rearrange the supplied menus and add your own to suit your own style of working
★ copy files quickly, selectively or not
★ delete files, selectively or not
★ control jobs running in the machine
★ multi-task your own programs (if EXEC'able) in any combinations subject to the size of your QL
★ start PSION jobs (expanded memory QL's only)
★ display paged directories showing filenames in alphabetical order with file sizes
★ use the sophisticated wild card file facility – essential for managing floppy and hard disks

OUTPUT CONTROL, the first of a series of extensions planned for running with QATS, is a printing package (with extended printer driver) which will:

★ print in the background while you do other work
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★ print mailing lists

QATS EPROM is also available. If the QATS EPROM is in the ROM slot at the back of your QL then you will save 16K of memory. However, if you want to use the ROM slot for something else QATS will automatically allow for its missing EPROM and load from backing storage.

QL is a trademark of Sinclair Research Ltd. PSION is a trade mark of PSION Ltd.

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Alternative communications

Philip Bridges G6DLJ looks at the latest communication trends in ham radio

We tend to think of micro computing communications as modems, telephone lines and rather higher than average phone bills; however, this is not always the case.

Computer modems talk to each other by sending conventional tones along a telephone line, a sound channel which carries sequences of hi and low tones.

Remember back in your youth when you connected two empty baked bean cans to a piece of string, pulled it tight and talked to your friend at the other end of it? Well daft though it sounds you could use those two baked beans cans as a link between modems as they would effectively act as phone line!

Therefore, most audio circuits will support the use of modems and computers. Radio hams make use of this facility by replacing the conventional telephone line with a two way radio circuit. On the popular VHF band (144MHz) error free two way data transmission is in daily use with a system called AX-25 packet radio which stems from existing 'handshake' principles. 'Handshake' means that a block of data (ie line of text or two) is sent to the receiving station who in turn issues an *OK I've got that, let me have the next message please.* If the transmitting station doesn't receive the OK message it resends it until it gets a reception verification before sending the next block.

This all takes place very quickly (typically over 100 characters per second) and because of the OK messages, 100% error free file transfer can be achieved. Of course the use of a radio link does give restrictions of range: the average VHF path is usually about 30–50 miles although greater distances can be obtained with more elaborate equipment.

To overcome problems of range, the AX-25 Packet radio system allows messages to 'hop' from station to station, in fact up to eight stations can be used in a daisy chain fashion to pass the message on with full error correcting all the way. One exciting extension of this process has been made by the recent launch of a satellite called JAS-1 which has an on-board memory capable of storing these messages and re-directing them as it orbits the earth.

A typical AX-25 Packet radio modem (a TNC, or Terminal Node Controller) performs more or less the same function as a telephone modem but has extra enhancements built in. For example it has a cpu and Ram which is capable of storing text and messages. It is designed to work on their own, the micro being used only to interrogate the contents of the Ram in the TNC. Connection to the micro is usually the standard RS232 set up with a simple bulletin board driver program (dumb terminal).

Each unit will also act as an intermediate station if requested to by another user and many will allow several conversations to take place almost simultaneously, thereby making maximum use of the limited amateur radio spectrum.

Packet radio is not used to save money on phone bills of course, the system is still in the experimental stage and is used to pass messages about amateur radio around the UK. Many other countries have allowed radio hams to make use of Packet radio so that shortly a world wide Packet radio network will come into being.

Much of the exploratory work being carried out by hams now may have commercial benefits and so generally official licensing bodies in many countries tend to encourage development of the system.

Packet radio in its fullest implementation is not yet permitted in the UK but discussions are taking place between the DTI and Radio Society of Great Britain to incorporate it into the UK amateur licence. Radio amateurs are often involved in emergency communications and of course Packet radio could be used very effectively under such circumstances.

There are many other ways in which micro computers can be used for communications. For example, most micros have a cassette port which itself is usually an efficient modem, and BBC owners have been plugging their machines into two way radio equipment for several years now sending mode seven screens, *Wordwise* files and programs with very encouraging results.

There are several organisations in the amateur radio fraternity which document these techniques widely (incidently, everyone is allowed to listen to amateur radio transmissions, not just hams!). It is also worth noting that you do not have to be a technical whizz to become a UK radio amateur, a serious interest in communications is usually enough to set you on the right track.

Further information can be obtained from the following:

Magazines

There are a few dedicated radio magazines on the market, and also some electronics magazines have good radio sections.

Ham Radio Today
Practical Wireless (personally recommended)
Everyday Electronics and EM (Also personally recommended)
Radio Communications Magazine
Amateur Radio

Addresses

Here are the addresses of most of the societies, etc, you may wish to contact:

AMRAC – T Trigell (G1JAF), Glenese, East Boldre, Brockenhurst, Hants SO42 7WD. Phil Bridges (secretary) Prestel mailbox: 703847754. Bulletin Board 0376–518818 300 baud.

BARTG – PO Box 3, Llandeilow, Wales SA19 6EW. Phone: 0558 822286

RAMTOP – c/o TRev, R P Butcher, Great Billing Rectory, Great Billing, Northants NN3 4ED.

RSGB – Lambda House, Cranborne Road, Potters Bar, Hertfordshire EN6 3JW. Phone: 0707 59015. Viewdata board: 0707 57477.

Hamnet – 0482 497150 300 baud.

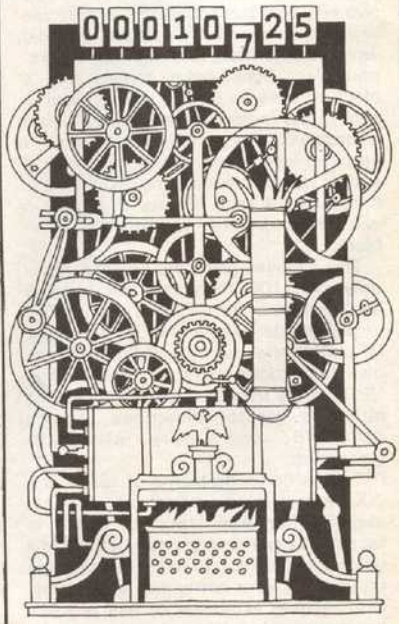
Mailbox 80 – 051 428 8924 1200 baud and 300 baud.

Furniture

by Richard and Jackie Gain

This week features the final part of this useful utility program which allows you to re-arrange your home until it looks more like a home and less like the inside of a junk shop.

```
4080 GO TO 4020
4099 REM MOVE FURNITURE
4100 IF F$(FC1,16)="*" THEN  LET S1=F(FC
1,1): LET S2=F(FC1,2): LET X=F(FC1,3): L
ET Y=F(FC1,4): GO TO 4130
4110 LET X=1: LET Y=174
4120 LET S1=F(FC1,1): LET S2=F(FC1,2): G
O SUB 4800
4130 PRINT #0;AT 0,0;"5,6,7,8=MOVE OBJEC
T 9=SET STEP=";STEP;"9=TURN 90 DEGREES
0=NEXT OBJECT"
4135 IF INKEY$<>"" THEN  GO TO 4135
4140 LET I$=INKEY$: IF I$="" THEN  GO TO
 4140
4150 IF I$="9" THEN  GO SUB 4900
4160 IF I$="0" THEN  GO TO 4300
4170 GO SUB 4800: REM REMOVE
4180 LET X=X+STEP*(I$="8" AND X+S1<256-S
TEP)-STEP*(I$="5" AND X>STEP-1)
4190 LET Y=Y+STEP*(I$="7" AND Y<176-STEP
)-STEP*(I$="6" AND Y-S2>STEP-1)
4200 GO SUB 4800: REM REDRAW
4210 IF I$="S" THEN  GO TO 4250
4220 GO TO 4140
4250 REM CHANGE STEP
4260 PRINT #0;AT 0,0;"ENTER NEW STEP SIZ
E (1 TO 8)    ";,
4270 LET I$=INKEY$: IF I$<"1" OR INKEY$>
"8" THEN  GO TO 4270
4280 LET STEP=VAL I$: GO TO 4130
4300 REM SET OBJECT
4310 LET F(FC1,1)=S1
4320 LET F(FC1,2)=S2
4330 LET F(FC1,3)=X
4340 LET F(FC1,4)=Y
4350 LET F$(FC1,16)="*"
4360 GO SUB 2500
4370 PRINT #0;AT 0,0;"PRESS C TO COPY TH
E SCREEN      PRESS F TO FINISH OR N FOR
 NEXT "
4375 IF INKEY$<>"" THEN  GO TO 4375
4380 IF INKEY$="" THEN  GO TO 4380
4390 IF INKEY$="C" THEN  COPY : FOR N=1
TO FC: LPRINT N;TAB 4;F$(N): NEXT N
4400 IF INKEY$="F" THEN  GO TO 1000
4410 GO TO 4020
4800 REM DRAW OBJECT
4810 OVER 1: PLOT X,Y
4820 DRAW S1,0: DRAW 0,-S2
4830 DRAW -S1,0: DRAW 0,S2-1
4840 OVER 0: RETURN
4900 REM TURN 90
4910 GO SUB 4800
4920 LET T$=S1
4930 LET S1=S2
4940 LET S2=T$
4950 LET X=1: LET Y=174
4960 GO SUB 4800
4970 RETURN
5000 REM SAVE DATA
5010 GO SUB 7000: IF SD=1 THEN  GO TO 55
00
5050 SAVE *"M";1;S$(1) DATA R()
5060 VERIFY *"M";1;S$(1) DATA R()
5070 SAVE *"M";1;S$(2) DATA F()
5080 VERIFY *"M";1;S$(2) DATA F()
5090 SAVE *"M";1;S$(3) DATA F$()
5100 VERIFY *"M";1;S$(3) DATA F$()
5110 GO TO 1000
5500 PRINT "PREPARE TAPE FOR SAVING"
5510 SAVE S$(1) DATA R()
5520 SAVE S$(2) DATA F()
5530 SAVE S$(3) DATA F$()
5540 GO TO 1000
6000 REM LOAD DATA
6010 GO SUB 7000: IF SD=1 THEN  GO TO 65
00
6020 LOAD *"M";1;S$(1) DATA R()
6030 LOAD *"M";1;S$(2) DATA F()
6040 LOAD *"M";1;S$(3) DATA F$()
6050 FOR N=1 TO 40: IF F(N,1)=0 THEN  LE
T FC=N-1: GO TO 6070
6060 NEXT N
6070 FOR N=1 TO 40: IF R(N,1)=0 AND R(N,
2)=0 THEN  LET S=N-1: GO TO 6090
6080 NEXT N
6090 GO TO 1000
6500 PRINT "PREPARE TAPE FOR LOADING & P
LAY"
6510 LOAD S$(1) DATA R()
6520 LOAD S$(2) DATA F()
6530 LOAD S$(3) DATA F$()
6540 GO TO 6050
7000 REM TAPE / MDRIVE
7010 CLS : LET SD=0
7020 PRINT #0;AT 0,0;"ARE YOU USING TAPE
 OR MICRODRIVEPRESS  T  OR  M "
7030 IF INKEY$="T" THEN  LET SD=1
7040 IF INKEY$="M" THEN  LET SD=2
7050 IF NOT SD THEN  GO TO 7030
7060 IF SD=2 THEN  CAT 1
7070 INPUT "ENTER FILENAME PLEASE";I$: I
F LEN I$>9 THEN  LET I$=I$( TO 9)
7080 FOR N=1 TO 3: LET S$(N)=I$+STR$ N:
NEXT N
7090 RETURN
8999 STOP
9000 ERASE "M";1;"FURNITURE": SAVE *"M";
1;"FURNITURE" LINE 1
9010 VERIFY *"M";1;"FURNITURE"
9020 STOP
9100 SAVE "FURNITURE" LINE 1
9110 PRINT "REWIND AND PLAY TO VERIFY"
9120 VERIFY "FURNITURE"
9130 STOP
```



Multi-Dump

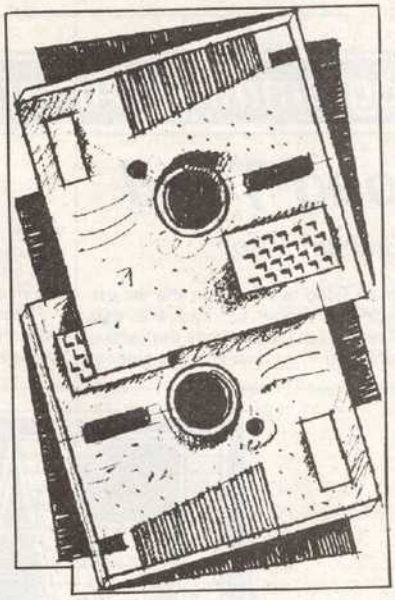
by D Farrow

This program will dump a multi-colour hi-res picture to the printer using various degrees of grey, ie, a true representation of the picture is printed.

The screen picture should be loaded into the computer at 8192-16191 ($2000-$3F3F) and then the program loaded and run. The shades of grey can be selected with the four function keys and when these are to your satisfaction the picture can be dumped by pressing the left arrow key.

To abort the dump, which takes about 13 minutes on the MPS801, press Run/Stop and Restore.

```
70 FORT=49152TO50104STEP2
80 READA:CO=CO+A
90 HI=INT(A/256):LO=A-HI*256
100 POKET,LO:POKET+1,HI
110 NEXTT
120 IFCO<>1664604STHENPRINT"ERROR IN DATA!":STOP
130 PRINT"DATA O.K.  SYS49152 TO DUMP"
140 END
150 :
200 DATA15273,4493,43472,36126,53272,55465,5773,43472
210 DATA36097,53280,8589,43472,36096,49383,425,59533
220 DATA43456,36098,49385,937,60045,6336,59566,48576
230 DATA49387,3881,2570,2570,58765,6336,59822,48576
240 DATA49387,58733,36288,49381,44568,49386,60349,36288
250 DATA49382,160,58797,39360,1024,153,39173,1536
260 DATA59545,44294,49382,153,39384,55552,153,39386
270 DATA56040,53448,44767,49383,60349,36288,53281,50597
280 DATA16585,64208,50597,1225,5104,1481,8688,1737
290 DATA12272,969,15856,14793,22000,33868,61120,49383
300 DATA59309,51648,53252,43323,36096,49383,57932,61120
310 DATA49384,59565,51648,53252,43305,36096,49384,57932
320 DATA61120,49385,59821,51648,53252,43287,36096,49385
330 DATA57932,61120,49386,60077,51648,53252,43269,36096
340 DATA49386,11084,53184,0,258,259,3087,19456
350 DATA49408,65535,65535,65535,65535,65535,65535,8192
360 DATA169,48416,43519,41476,40964,8447,65466,49184
370 DATA41727,8196,65481,4009,53792,43519,8205,65490
380 DATA53792,8447,65490,2217,53792,43519,36159,50059
390 DATA425,35981,43459,36096,50061,169,36749,36291
400 DATA50064,37261,36291,50066,169,36493,14531,35757
```



```
410 DATA60867,50062,34445,44483,50060,233,34701,6339
420 DATA34733,51651,53503,43272,36096,50058,13644,6338
430 DATA34477,10691,36350,50056,34733,10691,36097,50057
440 DATA44312,50056,1577,34189,14531,1705,34285,36291
450 DATA50053,44312,49406,64389,65453,34240,6396,36269
460 DATA19139,19018,33677,44227,50051,49288,61695,6161
470 DATA64421,16489,64389,64677,361,64645,19480,43578
480 DATA44312,50056,63529,34957,6339,64421,34925,34243
490 DATA42491,28156,50057,64645,44312,50061,1833,33677
500 DATA6339,64421,33645,34243,42491,27132,34048,6396
510 DATA34220,47555,50067,33933,6339,43384,34101,40961
520 DATA45312,11771,50052,35469,43459,34103,22529,44312
530 DATA50058,201,5872,457,4848,713,3824,969
540 DATA2880,19992,50058,35406,19651,49678,35500,47555
550 DATA49383,35469,44483,50058,457,3056,713,8432
560 DATA969,18672,56140,6338,36524,44483,50063,39545
570 DATA36291,50063,37037,31171,50082,37005,19651,49883
580 DATA44056,50062,37293,31171,50074,37261,44483,50066
590 DATA41593,36291,50066,44312,50063,43641,36291,50063
600 DATA37037,31171,50098,37005,19651,49883,44056,50062
610 DATA36781,31171,50074,36749,44483,50064,41593,36291
620 DATA50064,44312,50065,39545,36291,50065,37549,31171
630 DATA50082,37517,6339,36781,31171,50090,36749,44483
640 DATA50064,45689,36291,50064,44312,50065,43641,36291
650 DATA50065,37549,31171,50098,37517,61123,50062,36525
660 DATA51651,61447,19459,49485,11800,50063,36910,20163
670 DATA50063,11800,50065,37422,20163,50065,44056,50061
680 DATA37549,2499,39296,52736,37037,2499,39296,52992
690 DATA37293,2499,8320,65490,36781,2499,8320,65490
700 DATA36334,44483,50061,51401,1008,14924,43457,8205
```

Programming: C64

```
710 DATA65430,160,185,8393,65490,185,8399,65490
720 DATA49352,53448,43503,8205,65490,44344,50059,2025
730 DATA35725,44483,50060,233,35981,6339,36013,51651
740 DATA61695,19459,49461,4089,53792,43519,8196,65475
750 DATA52256,43519,36117,53272,51369,5772,43472,36123
760 DATA53265,864,1728,313,312,16128,33537,7
770 DATA0,768,3072,12288,49152,1025,16400,0
780 DATA0,0,0,1025,16400,2050,32800,0
790 DATA0,0,0,2050,32800

READY.
```

Programming: Amstrad 464

Road Toad

by Graham Tyson

Road Toad is based on the arcade game Frogger but varies in that once your frog reaches the central riverbank you must leap into the sidecar of the motorbike. Then jump onto the roof of the truck or car before trying to land on the bonus sections of the opposite riverbank.

The program is all machine code giving smooth and, on later levels, very fast animation. The listing is quite long and will be presented over three weeks. So, if you can't face the typing and want a cassette version with a title screen send £2 (no cheques so use recorded delivery) to Graham Tyson, 39 York House, Idlethorp-Way, Thorpe Edge, Bradford BD10 9ES.

```
100 CALL &BC02:CALL &BB4E:CLEAR:MODE 2:a
ddr=&7530
101 FOR lin=123 TO 480:tot=0
102   FOR n=0 TO 20
103     READ c$
104     datum=VAL("&"+c$)
105     POKE addr,datum
106     addr=addr+1
107     tot=tot+datum
108   NEXT n
109   READ check
110   IF check<>tot THEN 120
111 NEXT lin:FOR last=0 TO 4:READ c$:POK
E addr+last,VAL("&"+c$):NEXT last
112 CLS:LOCATE 1,3:PRINT "Machine code p
rogram generated at address:   30000"
113 LOCATE 1,8:PRINT "Set up your TAPE o
r DISC unit"
114 LOCATE 1,10:PRINT "Now type  ";CHR$(
34);"RUN 121";CHR$(34);"  [ENTER]"
115 LOCATE 1,12:PRINT "The machine code
program will be SAVEd as:";
116 PRINT "  ";CHR$(34);"ROADTOAD.BIN";C
HR$(34)
117 LOCATE 1,17:PRINT "To RUN from TAPE
or DISC just type:  ";
118 PRINT "RUN  ";CHR$(34);"ROADTOAD.BIN
";CHR$(34);CHR$(7)
119 WINDOW 1,80,20,25:END
120 CLS:LOCATE 24,8:PRINT "***  ERROR in
 line: ";lin;" ***":LOCATE 1,12:END
121 SAVE "roadtoad.bin",b,&7530,&1D63,&8
923:END
122 '
123 DATA C9,3A,75,00,00,00,00,00,00,00,3
E,01,21,67,75,CD,BF,BC,3E,02,21,  1367
124 DATA 68,75,CD,BF,BC,3E,01,21,72,75,C
D,BC,BC,C3,79,75,87,01,02,D0,07,  2502
125 DATA 00,0F,23,00,87,00,01,8C,0A,00,0
F,23,00,01,23,64,01,02,28,DC,01,  786
126 DATA 0F,FF,01,02,01,00,05,0F,FF,03,3
E,00,CD,35,BC,C5,3E,01,CD,35,BC,  1766
127 DATA C5,3E,02,CD,35,BC,C5,3E,03,CD,3
5,BC,C5,11,E8,75,CD,22,BD,3E,01,  2469
128 DATA CD,0E,BC,CD,47,7B,CD,19,BD,3E,0
3,C1,CD,32,BC,3E,02,C1,CD,32,BC,  2626
129 DATA 3E,01,C1,CD,32,BC,3E,00,C1,C5,C
D,32,BC,C1,CD,38,BC,06,05,C5,CD,  2649
130 DATA 6A,7C,C1,10,F9,CD,1B,BB,30,F2,F
E,F0,28,19,FE,0B,28,15,FE,F2,28,  2818
131 DATA 16,FE,08,28,12,FE,F3,28,13,FE,0
9,28,0F,C3,BF,75,14,14,CD,F0,76,  2322
132 DATA 18,D0,CD,6F,7A,18,CB,CD,4B,7A,1
8,C6,00,21,00,00,22,59,7F,22,5B,  1929
133 DATA 7F,22,5C,7F,2A,79,7F,7C,FE,27,3
8,16,20,05,7D,FE,10,38,0F,11,10,  1701
134 DATA 27,B7,ED,52,3A,59,7F,3C,32,59,7
F,18,E5,7C,FE,03,38,16,20,05,7D,  2015
135 DATA FE,E8,38,0F,11,E8,03,B7,ED,52,3
A,5A,7F,3C,32,5A,7F,18,E5,7C,FE,  2544
136 DATA 00,20,05,7D,FE,64,38,0F,11,64,0
0,B7,ED,52,3A,5B,7F,3C,32,5B,7F,  1810
137 DATA 18,E7,7D,FE,0A,38,0F,11,0A,00,B
7,ED,52,3A,5C,7F,3C,32,5C,7F,18,  1874
138 DATA EC,7D,32,5D,7F,C9,FE,00,28,16,F
E,07,30,12,47,21,7E,76,11,0E,00,  1854
```

```
139 DATA 19,10,FD,11,E0,76,01,0E,00,ED,B
0,C9,14,00,14,00,14,00,1E,00,28, 1412
140 DATA 00,14,00,14,00,1E,00,14,00,14,0
0,1E,00,28,00,14,00,14,00,28,00, 260
141 DATA 1E,00,14,00,1E,00,28,00,14,00,1
4,00,28,00,28,00,1E,00,1E,00,28, 340
142 DATA 00,14,00,14,00,28,00,28,00,28,0
0,28,00,28,00,28,00,1E,00,28,00, 350
143 DATA 28,00,28,00,28,00,50,00,3C,00,1
E,00,00,00,00,00,00,00,00,00,00, 290
144 DATA 00,00,00,00,00,00,00,00,3A,75,7F,F
E,0F,20,09,2A,E0,76,22,EE,76,C3, 1581
145 DATA 1E,79,FE,27,20,0F,3A,76,7F,FE,8
9,D0,2A,E2,76,22,EE,76,C3,1E,79, 2515
146 DATA FE,3F,20,0F,3A,76,7F,FE,99,D0,2
A,E4,76,22,EE,76,C3,1E,79,FE,57, 2747
147 DATA 20,0F,3A,76,7F,FE,A9,D0,2A,E6,7
6,22,EE,76,C3,1E,79,FE,6F,20,53, 2587
148 DATA 3A,5E,7F,FE,03,30,32,3A,5F,7F,C
6,02,47,3A,74,7F,B8,30,03,48,47, 1864
149 DATA 79,90,FE,03,30,1E,CD,93,7A,2A,9
B,7E,11,02,00,19,22,76,7F,CD,A0, 2085
150 DATA 7A,3E,96,32,75,7F,2A,E3,76,22,E
E,76,C3,57,79,3A,75,7F,C6,18,32, 2387
151 DATA 75,7F,CD,93,7A,2A,76,7F,11,EF,0
0,37,ED,52,22,76,7F,C3,6F,79,FE, 2595
152 DATA 96,20,5C,3A,5F,7F,FE,02,D8,CD,9
3,7A,3E,AF,32,75,7F,2A,76,7F,3A, 2376
153 DATA 5E,7F,FE,0E,30,0C,11,A0,00,B7,E
D,52,22,76,7F,C3,6F,79,FE,10,28, 2244
154 DATA 0D,47,3E,10,90,47,37,11,FF,07,E
D,52,10,F8,11,F0,00,A7,ED,52,22, 2071
155 DATA 76,7F,11,50,00,19,23,E7,FE,00,C
A,6F,79,23,E7,FE,00,CA,6F,79,CD, 2480
156 DATA A0,7A,2A,EA,76,22,EE,76,C3,57,7
9,FE,AF,C0,3A,76,7F,C6,0C,FE,45, 2926
157 DATA D0,3E,C7,32,75,7F,CD,93,7A,2A,7
6,7F,11,F0,00,AF,ED,52,22,76,7F, 2554
158 DATA 11,00,00,7D,FE,08,20,10,2A,76,7
F,11,10,04,0E,00,CD,47,BC,11,0A, 1281
159 DATA 00,18,3A,FE,1C,20,10,2A,76,7F,1
1,10,04,0E,00,CD,47,BC,11,14,00, 1251
160 DATA 18,26,FE,30,20,10,2A,76,7F,11,1
0,04,0E,00,CD,47,BC,11,28,00,18, 1295
161 DATA 12,FE,44,20,0E,2A,76,7F,11,10,0
4,0E,00,CD,47,BC,11,50,00,2A,EC, 1563
162 DATA 76,19,22,EE,76,CD,A0,7A,CD,57,7
9,06,64,CD,19,BD,10,FB,CD,93,7A, 2699
163 DATA CD,34,81,CD,BA,79,3A,F9,75,3C,3
2,F9,75,FE,02,20,0F,21,46,C6,22, 2436
164 DATA 69,7F,21,E0,80,22,71,7F,C3,E7,7
8,FE,03,20,0F,21,99,C5,22,67,7F, 2388
165 DATA 21,0A,81,22,6F,7F,C3,E7,78,FE,0
4,20,0F,21,66,C4,22,65,7F,21,E0, 2145
166 DATA 80,22,6D,7F,C3,E7,78,FE,05,20,0
F,21,F6,C0,22,63,7F,21,E0,80,22, 2400
167 DATA 6B,7F,C3,E7,78,FE,06,20,07,3E,0
2,32,62,7F,18,0B,3A,61,7F,FE,02, 1991
168 DATA 38,04,3D,32,61,7F,11,62,02,21,D
4,00,CD,C0,BB,3A,F9,75,FE,64,38, 2175
169 DATA 05,3E,63,32,F9,75,16,00,FE,0A,3
8,05,D6,0A,14,18,F7,D5,D6,F6,CD, 2306
170 DATA FC,BB,11,E0,FF,21,00,00,CD,C3,B
B,D1,7A,C6,F6,CD,FC,BB,C9,3A,75, 3350
171 DATA 7F,C6,18,32,75,7F,CD,93,7A,2A,7
6,7F,11,EF,00,37,ED,52,22,76,7F, 2313
172 DATA 11,00,08,19,23,E7,FE,00,28,30,2
3,E7,FE,00,28,2A,CD,A0,7A,3A,75, 1922
173 DATA 7F,FE,6F,20,08,3A,76,7F,D6,70,3
2,74,7F,21,55,75,CD,AA,BC,ED,5B, 2580
174 DATA EE,76,2A,79,7F,19,22,79,7F,CD,F
A,75,CD,3D,7F,C9,CD,A0,7A,21,5E, 2739
175 DATA 75,CD,AA,BC,06,0A,CD,19,BD,10,F
B,CD,93,7A,2A,76,7F,06,04,CD,29, 2399
176 DATA BC,10,FB,2B,2B,E5,CD,2F,7A,06,3
2,CD,19,BD,10,FB,E1,CD,2F,7A,06, 2491
177 DATA 02,11,70,C7,CD,CA,82,3A,78,7F,3
D,FE,00,28,21,32,78,7F,FE,02,20, 2145
178 DATA 06,21,7C,C7,CD,85,7F,3E,26,32,7
4,7F,3E,0F,32,75,7F,21,56,C7,22, 1943
179 DATA 76,7F,CD,85,7F,C9,E1,ED,5B,79,7
F,3A,39,75,BA,38,08,20,18,3A,38, 2364
180 DATA 75,BB,30,12,ED,53,38,75,21,59,7
F,11,33,75,01,05,00,ED,B0,CD,5A, 2011
181 DATA 7C,21,54,C5,11,10,48,0E,00,CD,4
7,BC,11,F0,00,21,76,00,CD,EA,BB, 2055
182 DATA 06,0A,21,22,7A,E5,C5,7E,CD,FC,B
B,C1,E1,23,10,F5,06,96,CD,19,BD, 2690
183 DATA CD,09,BB,10,F8,C9,47,41,4D,45,2
0,20,4F,56,45,52,CD,19,BD,DD,21, 2201
184 DATA EB,82,06,18,C5,E5,06,08,E7,DD,A
E,00,77,23,DD,23,10,F6,E1,CD,26, 2601
185 DATA BC,C1,10,EB,C9,3A,75,7F,FE,0F,2
8,04,FE,6F,20,18,3A,74,7F,FE,48, 2496
186 DATA 30,11,3C,32,74,7F,CD,93,7A,2A,7
6,7F,23,22,76,7F,CD,A0,7A,C9,3A, 2239
187 DATA 75,7F,FE,0F,28,04,FE,6F,20,18,3
A,74,7F,FE,05,38,11,3D,32,74,7F, 1965
188 DATA CD,93,7A,2A,76,7F,2B,22,76,7F,C
D,A0,7A,C9,21,DC,7F,ED,5B,76,7F, 2724
189 DATA 06,01,CD,5D,82,C9,2A,76,7F,CD,8
5,7F,C9,7E,42,42,46,46,46,7E,00, 2183
190 DATA 18,08,08,08,08,1C,1C,00,7E,02,0
2,7E,40,40,7E,00,7C,04,04,7E,06, 886
191 DATA 06,7E,00,40,40,40,60,62,7E,02,0
0,7E,42,40,7E,06,46,7E,00,7C,44, 1422
192 DATA 40,7E,42,42,7E,00,7E,42,04,18,3
0,60,40,00,3C,24,24,7E,42,42,7E, 1392
193 DATA 00,7E,42,42,7E,06,06,06,00,00,0
0,00,00,00,00,00,00,00,00,00,00, 402
194 DATA 00,00,00,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00, 0
195 DATA 00,00,00,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00, 0
196 DATA 00,00,00,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00, 0
197 DATA 00,00,00,00,00,11,F6,00,21,F7,7
A,CD,AB,BB,21,A7,7A,11,08,00,06, 1581
198 DATA 0A,3E,F6,F5,C5,D5,E5,CD,A8,BB,E
1,D1,19,C1,F1,3C,10,F1,3E,03,CD, 3242
199 DATA DE,BB,AF,CD,59,BC,CD,7A,7D,CD,7
D,82,CD,F5,81,CD,B0,81,CD,8E,81, 3543
200 DATA CD,61,81,CD,34,81,3E,01,CD,71,7
6,21,77,C7,CD,85,7F,21,7C,C7,CD, 2693
201 DATA 85,7F,CD,E7,78,3E,03,CD,DE,BB,1
1,09,00,21,18,00,CD,C0,BB,11,DE, 2401
202 DATA 00,21,00,00,CD,F9,BB,11,00,00,2
1,EC,FF,CD,F9,BB,11,22,FF,21,00, 2195
203 DATA 00,CD,F9,BB,11,00,00,21,14,00,C
D,F9,BB,11,C8,01,21,D8,00,CD,C0, 2216
204 DATA BB,CD,E7,7B,11,09,00,21,D8,00,C
D,C0,BB,CD,E7,7B,18,25,11,AE,00, 2416
205 DATA 21,00,00,CD,F9,BB,11,00,00,21,E
C,FF,CD,F9,BB,11,52,FF,21,00,00, 2243
206 DATA CD,F9,BB,11,00,00,21,14,00,CD,F
9,BB,C9,11,0D,00,21,D4,00,CD,C0, 2225
207 DATA BB,3E,48,CD,FC,BB,3E,49,CD,FC,B
B,11,0D,00,21,15,00,CD,C0,BB,06, 2418
208 DATA 05,21,7B,7F,7E,C5,E5,CD,FC,BB,E
1,23,C1,10,F5,11,CE,01,21,D4,00, 2667
209 DATA CD,C0,BB,06,05,21,80,7F,7E,C5,E
5,CD,FC,BB,E1,23,C1,10,F5,CD,3D, 3059
210 DATA 7F,2A,76,7F,CD,85,7F,11,64,00,2
1,D4,00,CD,C0,BB,21,33,75,CD,49, 2304
211 DATA 7F,C9,3A,73,7F,FE,00,CA,40,7D,F
E,01,CA,0A,7D,FE,02,28,58,FE,03, 2506
212 DATA 28,39,3A,75,7F,FE,27,20,1F,2A,6
9,7F,11,44,C6,B7,ED,52,EB,2A,76, 2209
213 DATA 7F,B7,ED,52,22,76,7F,7D,FE,44,3
0,07,11,48,00,19,22,76,7F,3A,73, 1976
214 DATA 7F,AF,32,73,7F,2A,69,7F,DD,2A,7
1,7F,CD,19,BD,DD,E9,3A,73,7F,3C, 2604
215 DATA 32,73,7F,CD,EC,7D,3A,75,7F,FE,9
6,C0,2A,9B,7E,11,02,00,19,22,76, 2275
216 DATA 7F,C9,3A,75,7F,FE,3F,20,20,ED,5
B,67,7F,21,9B,C5,A7,ED,52,EB,2A, 2717
217 DATA 76,7F,19,22,76,7F,7D,FE,9C,38,0
9,11,48,00,AF,ED,52,22,76,7F,3A, 2069
218 DATA 73,7F,3C,32,73,7F,2A,67,7F,DD,2
A,6F,7F,DD,E9,3A,75,7F,FE,57,20, 2496
219 DATA 1F,2A,65,7F,11,64,C4,B7,ED,52,E
B,2A,76,7F,B7,ED,52,22,76,7F,7D, 2544
220 DATA FE,64,30,07,11,48,00,19,22,76,7
F,3A,73,7F,3C,32,73,7F,2A,65,7F, 1724
221 DATA DD,2A,6D,7F,DD,E9,3A,75,7F,FE,A
F,20,23,2A,63,7F,11,F4,C0,B7,ED, 2892
222 DATA 52,EB,2A,76,7F,B7,ED,52,22,76,7
F,7D,FE,F4,30,0B,FE,40,38,07,11, 2465
223 DATA 48,00,19,22,76,7F,3A,73,7F,3C,3
2,73,7F,2A,63,7F,DD,2A,6B,7F,DD, 2014
224 DATA E9,21,80,C2,22,9B,7E,21,00,00,2
2,59,7F,22,5B,7F,22,5D,7F,26,10, 1746
225 DATA 22,5F,7F,3E,10,32,61,7F,3E,01,3
2,62,7F,21,F5,C0,22,63,7F,21,65, 1810
226 DATA C4,22,65,7F,21,9A,C5,22,67,7F,2
1,45,C6,22,69,7F,21,9C,80,22,6B, 2130
227 DATA 7F,21,9C,80,22,6D,7F,21,BE,80,2
2,6F,7F,21,9C,80,22,71,7F,3E,0F, 2005
228 DATA 32,75,7F,3E,26,32,74,7F,21,56,C
7,22,76,7F,3E,03,32,78,7F,21,00, 1679
229 DATA 00,22,79,7F,3E,01,32,F9,75,C9,2
A,9B,7E,11,9D,7E,06,10,C5,01,0A, 1815
230 DATA 00,ED,B0,01,F6,07,09,3E,BF,BC,3
8,04,01,50,C0,09,C1,10,EA,2A,9B, 2099
231 DATA 7E,11,10,0A,0E,00,CD,47,BC,2A,9
B,7E,3A,5F,7F,FE,46,30,0E,57,3A, 1781
232 DATA 62,7F,5F,82,32,5F,7F,16,00,19,1
8,08,AF,32,5F,7F,11,BA,FF,19,3A, 1789
```

MemEdit

by Alastair Scott

MemEdit allows you to inspect and change, if possible, any part of the Amstrad Rom or Ram.

When run you are prompted for a start address (in hex) between zero and FFFF. Depending on the address various options become available.

0-3FFF Ram or Basic Rom. If Ram is chosen MemEdit starts at &170. Don't change any values here – you could crash the computer.

4000-BFFF Ram

C000-FFFF 0 = Basic Rom
7 = CP/M or Disc Rom
Any other numbers if you have external Roms fitted.

You should now see a page of 128 bytes and their Ascii equivalents. The arrow keys are used to move the inverse cursor around.

Copy changes the byte at the current address.

S inserts a string (typed from keyboard).

E moves display onto next page.

```
30 ON BREAK GOSUB 1180
40 ON ERROR GOTO 1200
50 GOSUB 1010
60 GOSUB 890
70 WHILE TIME
80 GOSUB 720
90 WHILE NOT endflag
100 GOSUB 580
110 GOSUB 150
120 WEND
130 WEND
140 ' Cursor movements
150 x=1:y=1
160 IF NOT change THEN 450
170 CLS#5:PRINT#5,"Arrow keys  COPY chan
ge  E end  S string";
180 WHILE INKEY(58) AND INKEY(9) AND INK
EY(60)
190 ad=FNaddr:GOSUB 540
200 PEN#2,0:PAPER #2,2:LOCATE#2,x,y:PRIN
T#2,HEX$(by,2)
210 dx=0:dy=0:CALL &BB18
220 dy=(NOT INKEY(0))-(NOT INKEY(2))
230 dx=(NOT INKEY(8))-(NOT INKEY(1))
240 PEN #2,2:PAPER #2,0:LOCATE#2,x,y:PRI
NT#2,HEX$(by,2)
250 x=x+3*dx:y=y+dy
260 IF x<1 THEN x=1 ELSE IF x>22 THEN x=
22
270 IF y<1 THEN y=1 ELSE IF y>16 THEN y=
16
280 WEND
290 IF NOT INKEY(58) THEN 450
300 IF NOT INKEY (9) THEN 370
310 ' String into memory
320 SOUND 1,150:CLS#5:INPUT#5,"String";s
$
330 FOR a=1 TO LEN(s$):POKE ad+a-1,ASC(M
ID$(s$,a,1)):NEXT
340 GOSUB 580
350 GOTO 170
360 ' Hex entry
370 SOUND 1,150:CLS#5:PRINT#5,SPC(9)"Ent
er 2-digit hex byte"
380 hx$="":FOR a=1 TO 2:GOSUB 510:hx$=hx
$+k$:NEXT
390 LOCATE#2,x,y:PRINT#2,hx$
400 POKE FNaddr,VAL("&"+hx$)
410 LOCATE#3,x\3+1,y:PRINT#3,CHR$(1)CHR$
(PEEK(FNaddr))
420 WHILE INKEY$<>"":WEND
430 GOTO 170
440 ' Keys for new addresses
450 SOUND 1,100:CLS#5:PRINT#5,SPC(4)"A n
ew address  N next  P previous"
460 k$="":WHILE INSTR(" ANP",k$)<2:k$=UP
PER$(INKEY$):WEND
470 IF k$="N" THEN start=start+&80:RETUR
N
480 IF k$="P" THEN start=start-&80:RETUR
N
490 endflag=-1:RETURN
500 ' Press valid hex digit
510 k$="":WHILE INSTR(" 0123456789ABCDEF
",k$)<2:k$=UPPER$(INKEY$):WEND
520 SOUND 1,50:RETURN
530 ' Get byte from RAM or ROM
540 IF rom=&FF THEN by=PEEK(ad):RETURN
550 IF rom=&FE THEN CALL &B475,@by,ad:RE
TURN
560 CALL &B459,ad,@by,rom:RETURN
570 ' Print 128 bytes with ASCII
580 st=start:co=0
590 FOR a=1 TO 5:CLS#a:NEXT
600 PEN 1:LOCATE 11,1:PRINT"CONTENTS OF
";:IF rom=&FF THEN PRINT"RAM" ELSE PRINT
"ROM &"HEX$(rom,2)
610 WHILE co<128
620 ad=st+co
630 IF co MOD 8=0 THEN PRINT#1,HEX$(ad,4
)
640 GOSUB 540
650 PRINT#2,HEX$(by,2)" ";
660 PRINT#3,CHR$(1)CHR$(by);
670 co=co+1
680 IF st+co=65536 THEN st+co=0
690 WEND
700 RETURN
710  Choose addresses and ROMs
720 CLS:endflag=0:change=0:by=0:rom=-1:s
tart$=""
730 WHILE start$=""
740 CLS#4:INPUT#4,"Start address &",star
t$
750 WEND
760 start=VAL("&"+start$)
770 IF start<0 THEN start=65536+start
780 IF start<49152 THEN rom=&FF:GOTO 820
790 WHILE rom<0 OR rom>251
800 CLS#4:INPUT#4,"Which ROM? (0-251) ",
rom
810 WEND
820 IF start>16383 THEN 860
830 CLS#4:PRINT#4,"ROM or RAM? [O/A]"
840 r$="":WHILE r$<>"O" AND r$<>"A":r$=U
PPER$(INKEY$):WEND
850 SOUND 1,50:IF r$="O" THEN rom=&FE
860 CLS:change=(rom=&FF)
870 RETURN
880 ' List all active ROMs
890 bas=0:by=0
900 CLS:PEN 2:PRINT"  LIST OF ROMS":PRI
NT:PRINT:PEN 1
910 FOR a=0 TO 251:CALL &B448,@by,a
920 IF NOT bas THEN PRINT"  0 Basic onbo
ard ROM":PRINT:bas=-1
930 IF by<>&80 THEN PRINT USING"### ";a;
940 IF by=0 THEN PRINT"Foreground ROM"
950 IF by=1 THEN PRINT"Background ROM"
960 IF by=3 THEN PRINT"Extension  ROM"
970 NEXT
980 PEN 3:PRINT:PRINT:PRINT"  Press any
 key"
990 CALL &BB18:SOUND 1,50:RETURN
1000 ' Initialise
1010 DEFINT b-z:DEFREAL a,l,s
1020 PEN 1:MODE 1:BORDER 0:INK 0,0:INK 1
,26:INK 2,15:INK 3,6
1030 WINDOW#1,2,6,4,20:WINDOW#2,7,30,4,2
0
1040 WINDOW#3,31,38,4,20:WINDOW#4,1,40,2
,2
1050 WINDOW#5,1,40,23,23
1060 FOR a=1 TO 3:PEN#a,a:NEXT:PAPER#2,0
1070 DEF FNaddr=start+x\3+8*(y-1):cs=0
1080 FOR a=&B448 TO &B48D:READ n$:POKE a
,VAL("&"+n$):cs=cs+PEEK(a):NEXT
1090 IF cs<>7654 THEN PRINT CHR$(7)"ERRO
R IN MACHINE CODE DATA!":END
1100 DATA DD,4E,00,CD,15,B9,DD,6E,02,DD,
66,03
1110 DATA 77,23,36,00,C9,DD,4E,00,CD,0F,
B9,C5
1120 DATA dD,6E,04,DD,66,05,7E,DD,6E,02,
DD,66
1130 DATA 03,77,23,36,00,C1,C3,18,B9,CD,
06,B9
1140 DATA F5,DD,6E,00,DD,66,01,7E,DD,6E,
02,DD
1150 DATA 66,03,77,23,36,00,F1,C3,0C,B9
1160 RETURN
1170 ' ESC pressed
1180 MODE 1:PEN 1:CALL &BC02:END
1190 ' Input error trap
1200 CLS:PEN 1:SOUND 1,200
1210 IF ERR<>13 AND ERR<>6 THEN PRINT#4,
"Error"ERR"in line"ERR:END
1220 IF ERR=13 THEN PRINT#4,"Not a valid
 hex number!" ELSE IF ERR=6 THEN PRINT#4
,"Too big a number!"
1230 FOR z=1 TO 3000:NEXT
1240 RESUME 720
```

Screen Copy

by Darryn Lavery

The following C64 program takes a copy of the hi-res screen that resides at locations 8192–16191 and places it in the 8k *Ram* underneath the Basic *Rom*. The copy of the screen can later be called up.

To copy the screen enter *Sys 49152* and to recall it enter *Sys 49187*.

```
5 REM HI-RES SCREEN COPY BY D.LAVERY
10 SUM=0
20 FORT=1TO72
30 READ DA
40 POKE 49151+T,DA
50 SUM=SUM+DA
60 NEXT
70 IF SUM<>12222 THEN PRINT"CHECKSUM ERROR!":END
80 END
100 DATA 198,1,132,251,132,253,160,32,132,252,160,160,132,254,162,32
110 DATA 160,0,177,251,145,253,200,208,249,230,252,230,254,202,208,242
120 DATA 230,1,96,198,1,160,0,132,251,132,253,160,32,132,252,160
130 DATA 160,132,254,162,32,160,0,177,253,145,251,200,208,249,230,252
140 DATA 230,254,202,208,242,230,1,96
```

Cursor

by Paul Lambert

This routine for the C64 allows the user to position the cursor anywhere on the screen. Once the program has been run it can be used by entering *Sys 49152 (x position, y position)*.

The position of the cursor can also be read by using *Peek 679* and *680* for the x and y co-ordinates respectively.

```
10 A=0
20 READ B:POKE 49152+A,B
30 A=A+1:IFB=0THEN END
40 GOTO20
50 DATA 32,250,174,32,158,183
60 DATA 142,167,2,32,253,174
70 DATA32,158,183,142,168,2
80 DATA32,247,174,24,172,167
90 DATA2,174,168,2,32,240
100 DATA255,96,0
READY.
```

Multisize Print

by Robert Murray

The following subroutine for the Spectrum allows the printing of text of any width and height.

The variable *h* contains the height, *b* the width and *a$* the text.

If the routine is incorporated into a program of your own it should be called with *Gosub 9300*.

```
  10 LET h=3
  20 LET b=5
  30 LET a$="Text"
9300 PRINT AT 0,0; INK 7;a$
9310 LET q=0: LET w=0: FOR y=167 TO 175
9320 FOR x=0 TO 63
9330 LET p=POINT (x,y)
9340 IF p=1 THEN  PLOT w,q: FOR a=q TO q
+h: PLOT w,a: DRAW b,0: NEXT a
9350 LET w=w+b
9360 NEXT x
9370 LET w=0: LET q=q+h: NEXT y
9380 RETURN
```

We want your programs!!

Yes, this is your chance to get rich and famous. Well, famous anyway, as *Popular Computing Weekly* is looking for contributions to the Programming pages.

What sort of thing are we looking for? You name it – anything original from games to utilities, applications and the like, written in Basic, machine code or anything else you can think of.

Programs for any computer will be considered, not just the old faithfuls (Spectrum, Amstrad, QL, Commodore, etc), so send those listings in. What we need is a working copy of the program on tape or disc, plus an accompanying article or documentation that you would anticipate going with the piece, normally not over 2000 words.

Alternatively, send in your short programs to the Bytes and Pieces page – what could be easier?

In return, we'll pay the princely sum of £25/page for the main programming pages and £5 for each Bytes & Pieces contribution we publish. Plus the fact that your name will be indelibly carved in the *Popular* Programming Hall of Fame till time immemorial. What more could any true programmer ask?

Just send your masterpieces in to **Duncan Evans, Technical Editor, Popular Computing Weekly, 12–13 Little Newport St, London WC2 7PP** and he'll assess them post haste.

With Kenn Garroch

Elite commands

M Smith, of Balham, London SW12, writes:

Q I have recently upgraded my Amstrad version of *Elite* from cassette to disc. Is it possible to use my old commanders with the disc version?

A Unfortunately no, the commander loader was re-written for the disc version and hence the format it is stored in is different and so unrecognisable to the software. You'll have to start zapping and trading all over again.

Shedding light

David H Welch of Teignmouth, in South Devon, writes:

Q I would like to connect my Amstrad CTM640 colour monitor to the Commodore 128, I realise that they are almost compatible except for one little thing. One has a pin called Lum (presumably for luminescence) and the other has a pin called Inten (presumably for intensity). Please tell me how I can connect them or if I can buy an interface.

A Unfortunately, the Amstrad monitor, and the 128's colour output are not compatible. The Amstrad is built to take RGB, three signals which control each of the three colour guns inside the monitor. The C128 on the other hand, puts out composite video, a single coded signal composed of the three colours mixed together. The Lum signal is used to control the overall brightness of a pixel, and the Chroma to control the colour. Unless you can get a gadget for decoding these into RGB (I don't know of one), there is no way that you are going to get the C128 working with the Amstrad colour monitor.

Ram accessibility

A Manorly, of Poole, in Dorset, writes:

Q I have a Commodore 64 and would like to be able to access all of the 64K of Ram. Could you tell me how this is done?

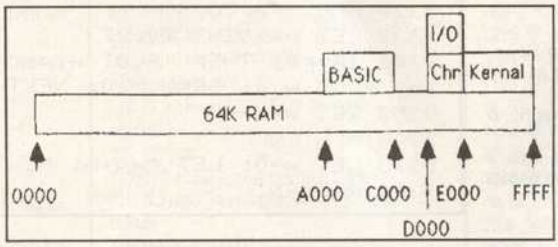
A The C64 uses a technique called 'bank switching' to manage its memory layout. Internally there are three Roms, the kernal containing the operating system routines, the character Rom defining the standard character set, and Basic. There is also a section of memory dedicated to input/output (I/O) hardware access.

Underlying all of these is Ram which can be switched in or out with the 6510s I/O register at memory locations 0 and 1. Location 0 is the data direction register for the port at location 1. Only bits 0, 1, and 2 of the port control the memory allocation, the rest are used for the tape control. The lower bits must be set to output to control the memory, so Poke 0,7 sets to the DDR to output on bits 0, 1 and 2.

These bits are known as Loram, Hiram and Charen respectively, they control the memory according to the following truth table:

Loram	Hiram	Charen	Ram config
0	0	0	64K Ram
0	0	1	64K Ram
0	1	0	Chr and kernal
0	1	1	Basic, Chr, and kernal
1	0	0	64K Ram
0	0	1	I/O
1	1	0	I/O and kernal
1	1	1	Basic, I/O, and kernal

Note that where not stated, the rest of the memory is Ram (see diagram).



Confused by choice

S Wright, from Aberystwyth, in Dyfed, writes:

Q I intend to buy a computer but am a bit confused as to which to choose between the Amstrad, the Commodore, or the newer Spectrum Plus 2. Could you tell me the differences between the various machines and which one is the best buy?

A Which computer you choose depends on what you want to use it for, playing games, word processing (business use), or programming. Of the three you have selected, the best machine for games is probably the Commodore 64 with the Spectrum Plus 2 a close second. There are hundreds of games available for these machines with more being released every day. In general, the quality of those on the Commodore are superior.

For business and programming, the Amstrad is the better bet. It has a better keyboard and better built-in Basic than either of the other two. I presume you would be looking at the 6128 model which has a fair amount of business software available.

To sum up, the Commodore 64 is the best games machine to buy, the Amstrad 6128 the best business/programming system. Bear in mind that you might get fed up with playing games and want to use the machine for something else.

Piqued by Pip

Tony Baker, of Fareham, in Hants, writes:

Q I have recently experienced a problem using the utility CP/M program *Pip.Com* on my Amstrad 6128. To copy the file *Test.Bin*, I would normally load *Pip* and then use **B:=A:Test.Bin*, but I am now getting the error message *File does not exist*. However, if I use **B:=A:*.Bin* then the *Test.Bin* is copied without problems. Having used the latter method, I find that I can then make another copy using the original method which would not work previously.

Would you please explain the problem, as I have never had this trouble before?

A Curious: at first sight, this appears to be a glitch in the disc directory but if, as you say, the file reappears after copying it, there is something very odd going on. It could be that the disc was not seated properly the first time, or that there is a fault on the disc in the directory tracks.

It is unlikely that there is anything wrong with *Pip* since it copied the ambiguous file name. The best thing to do is copy everything from the disc, re-format it, and then put everything back. Alternatively, copy all the files you have created to another disc, re-format the dodgy one, and then re-create the system files from the master disc.

If the problem persists, send the machine back to the manufacturer and tell them that the disc drive is playing up.

How to become a musical editor

Mark Jenkins looks at the new Atari package from Kuma

Sorry to keep returning to the Atari 5201/1040ST micros, which are obviously a bit on the expensive side, but these machines are the best bet musically at the moment once you've exhausted the possibilities of the Commodore 64, BBC or whatever.

Obviously the musical advantages of the Ataris are, a) a reasonable sound chip, b) built-in Midi for control of professional synthesisers, and, c) great operating speed, efficiency and memory capacity.

Kuma's new music package *K-Minstrel* makes use of all these facts, offering three channels of composition and playback on the computer alone, or four, eight, 12 or 16-channel playback via Midi. As we've discussed before, getting into Midi isn't all that expensive now – Casio's CZ-101 synth is available at around £190 second-hand and offers eight-note chords of four single notes played with different sounds simultaneously.

In four-channel mode, *K-Minstrel* stores 3200 chords and it's possible to program slurs, triplets, accelerandos and crescendos (changes in speed and volume), so it's quite a powerful package with or without Midi.

The package consists of a single disc and a slim booklet which describes the system as a 'musical display editor'. The basic display is a double musical stave, and the pull-down options are *Desk, Music* (*Play, New, Load, Save, Quit*), *Sequence* (*Play, Start, End, Copy, Delete, Move, Merge* and *Save*), *Chord* (*Play, Delete, Insert, Mark*), *Select* (*Channel, Volume, Tempo, Tempo No, Attack, Decay, Sustain*), and *Options* (*Change Key, Change Name, Transpose, Metronome, Print Pages*).

Medium resolution is used so all the text is a little skinny, but the screen display is very clear and at the bottom of the screen there's a choice of note lengths, rest lengths and tempo which allow you to insert your own notes using the mouse.

The demo pieces include a bit of Handel, *The Entertainer, Land Of Hope and Glory* and much more, and you can alter the sounds used by the computer using

> *"Medium resolution is used so all the text is a little skinny, but the screen display is very clear and at the bottom of the screen there's a choice of note lengths, rest lengths and tempo"*

the *Select* page. Each voice is represented in notes of a different colour to aid in composition, and you can enter either single notes or whole chords.

The page number of each screen is indicated as the composition plays and you can load a sequence from disc to insert it after a section you've already completed. You can enter a title for the composition using *Change Name*, select a new key signature with *Transpose* and produce a metronome click if desired.

An Epson-compatible dot matrix printer will transfer your completed composition to paper and, as we've mentioned, you can change tempo (accelerando) during the course of a piece, adjust volume (crescendo) and insert fast triplet notes in place of existing pairs of notes.

Unfortunately the manual has nothing to say about the Midi facilities of the package, so we'll experiment with them in time for our music supplement in a couple of weeks.

K-Minstrel is £29.95 and more information is available from Jon Day at Kuma Computers Ltd, 12 Horseshoe Park, Pangbourne, Berks. Tel: 07357 4335.

Just space for a quick letter from Paul Mitchell of Cardiff. Paul wants to know if there's a good multi-voice editor package out there which will allow people like himself to learn the basics of music using a micro, without necessarily needing Midi compatibility.

K-Minstrel, in fact, looks like being a good bet here, although you don't mention what micro you're using at the moment. Certainly it will allow you to enter notes or chords in three or more voices and play back your compositions to check your phrasing, but on the other hand, it doesn't actually offer you any help in learning music.

The Advanced Music System on the BBC, C64 and Amstrad machines is in very much the same position, and there is one good tutorial course for micros, the *Colleen Music Compendium*, which teaches you the basics but doesn't really let you enter music to check it out afterwards.

On the C64 and Apple there's Activision's *Music Construction Set* which may answer your prayers, and if you do want to get into Midi there are always the Steinberg packages, which allow you to enter music from a keyboard and then see it transcribed so you know what you've done and can check it for mistakes. But if you do have any queries of this nature in future, it helps if you let us know which micro you're budgeting for!

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.

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The Computer Chess Championships

Martyn Bryant reports on the 1986 World Computer Chess Championships

Martyn Bryant

Kasparov v Karpov may be the talk of the human chess world at the moment but two months ago in West Germany, 23 programs pitted silicon brain against silicon brain for the title of World Computer Chess Champion. No player interviews, no colour coded yogurts, no para-psychologists – just good honest chess, ranging from, "Oh God, that's hopeless" to "truly sensational".

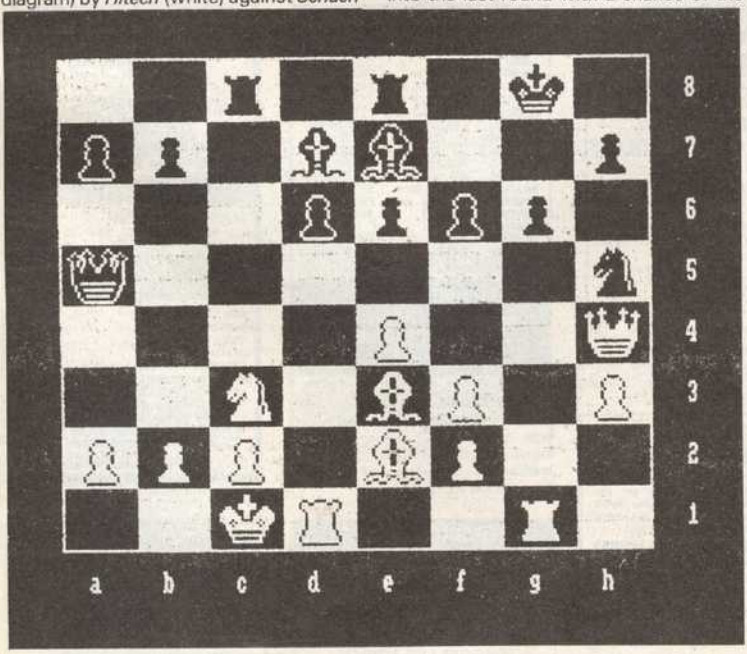
The contestants ranged from the micro-based newcomers to the 'old-hands' with their Cray XMP super computers. The hardware, in the main, behaved well with only a few chips getting hot under the collar and any problems were handled sportingly by the human operators. The average strength of the programs was down a bit this year due to the absence of ex-world champions *Belle, Chaos* and *Nuchess* but the very best programs played some gems with the latest micro contenders performing creditably against their giant cousins.

For those of you who may doubt the ability of the best programs, feast your eyes on the following gem in round 2 (see diagram) by *Hitech* (white) against *Schach 2.7* (black) at the end of which *Hitech* announced a mate in 8! (Tournament Director Mike Valvo and Grandmaster Ulastimil Hort didn't even believe it!).

Now, how would you judge this position? Both sides have chances. Do they? Well let's see – the play went **20** Be2-b5 Bd7×b5 **21** Qh4×h5 Pg6-g5 (needed to avoid **22** Rg1×g6! leading to mate, eg, Ph7×g6 **23** Qh5×g6+ etc).

What do you think? White has manoeuvred nicely to increase its King-side attack – but what now? I know you're all looking for the stunning sacrifice but even if you've guessed the right one, can you explain it to completion? Well *Hitech* could. It played **22** Be3×g5! *Schach 2.7* wasn't totally convinced so played on for a couple of moves **22** . . . Pf6×g5 **23** Rg1×g5+ Kh8-g8 (not Be7×g5 **24** Qh5×g5+, which also leads to mate) **24** Rd1-g1 Resigns. Black has no adequate reply to the mating threat of Qh5×h7+.

The finish of the five-round Swiss-style tournament was surely the most exciting ever, with four programs going into the last round with a chance of the championship, and three of them being tipped as winners in the last few hours. In the end four programs were tied on four points each and the Buchholz system was used to break the tie giving the final result of 1st, *Cray Blitz*, 2nd *Hitech*, 3rd *Bebe* and 4th *Phoenix*.



Cray Blitz is the first computer chess program ever to retain its world crown (contested every three years), but the general consensus at the tournament was that *Hitech* had played the best chess and achieved the highest tournament performance rating of 2302. *Hitech* runs on specially built chess hardware and its 600K program can search an awesome 175,000 positions per second. *Hitech* is now about the 200th ranked US player with a rating of 2352. It has never lost to a play rated below 2250.

I'll try to answer all your questions so that all computer chess enthusiasts can benefit. If you really need a personal reply then please enclose an sae. The questions below seem to be the most commonly asked from our first mailbag:

1. How are two chess programs played against each other?

First load up both programs in their respective computers. Then get one program to make the first move for white. When it has done this, type its move into the second program. When it then replies for black, type that move back into the first program and so on.

2. What literature is there for people beginning to program computer chess?

Try *Computer Chess* (Newborn, Academic Press), *Chess & Computers* (Levy, Computer Science Press) or *The Machine Plays Chess* (Bell, Pergamon).

3. Is Basic fast enough to write a chess program in?

I'm afraid not. Chess programs rely on great speed to achieve their playing strength. The best programs are written in assembly language which is hundreds of times faster than Basic. You can use a compiler to turn high level languages into assembly language but even then it would still be perhaps ten times slower, depending on the efficiency of the compiler.

The *Popular* vs *Colossus* game is making steady progress – check this week's Letters page for the game so far and the latest moves for you to enter.

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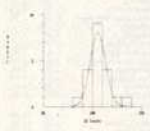

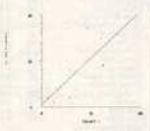

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SPECTRUM 48K, DK tronics keyboard, joystick interface, joystick, ZX printer plus three rolls, lots of software, worth £400, sell the lot £60. Call: Andy after 5pm on 01-886 7043.

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CGP115 colour printer, Dragon interface cable, RS232/centronics compatible. Plus paper, manual, box £70 o.n.o. Tel: 061-748 9339 (evenings).

THE-FIX gives Q-series Quills five new actions; Parse, Wait, Add, Sub, Perform comes with example adventure, £4.50. Kelsoft (PCW2), 28 Queen Street, Stamford, Lincolnshire PE3 1QS.

ATARI-ST public domain disks full of utilities, games, lang's, etc. S.A.E. Lists + St-club infopak. St-club, (PCW 186), P.O. Box 20, Hertford SG13 8NN.

ENTERPRISE 128, interface 720K disc drive, utilities, games, runs cp/m, wordstar, supercalc 2, dbase 2, plus much more as new boxed. Tel: 01-385 5024. Silly money £275.

SPECTRUM PLUS with power unit, interface one, ram turbo, datacorder, two Quickshot II joysticks, hands on eight module basic programming course, £85 the lot. Tel: Paul Herd 0259 61034.

New Releases

Pick of the week

John Cook looks through this week's new arrivals

Atari

Program *Preppie* **Type** Arcade **Micro** Atari XL/XE **Price** £2.99 **Supplier** Americana Software, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Program *Silent Service* **Type** Simulation **Micro** Atari XE/XL **Price** £9.95 (tape), £14.95 (disc) **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Atari ST

Program *Golf* **Type** Strategy **Micro** Atari ST **Price** £19.95 **Supplier** Anco, 35 West Hill, Darford, Kent DA1 2EL.

Program *Silent Service* **Type** Simulation **Micro** Atari ST **Price** £24.95 **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Amstrad CPC

Program *Return to Oz* **Type** Adventure **Micro** Amstrad CPC **Price** £9.95 **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Program *Big League Soccer* **Type** Strategy **Micro** Amstrad CPC **Price** £12.95 **Supplier** Viper Software, 36 Old Quarry Close, Rubery.

Program *Rebel Planet* **Type** Adventure **Micro** Amstrad CPC **Price** £9.95 **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Commodore 64

Program *Conan* **Type** Arcade **Micro** Commodore 64 **Price** £2.99 **Supplier** Americana Software, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Program *Olympic Skier* **Type** Arcade **Micro** Commodore 64 **Price** £2.99 **Supplier** Americana Software, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

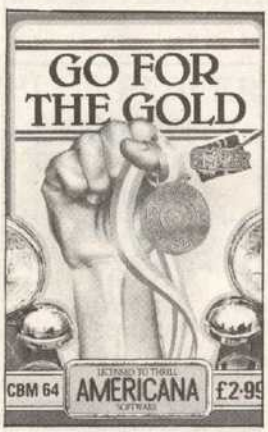
Program *Blinker-64* **Type** Utility **Micro** Commodore 64 **Price** £29.90 **Supplier** Information Developments Ltd, 24 Deerings Road, Reigate, Surrey RH2 0PN.

Program *Go for Gold* **Type** Arcade **Micro** CBM 64 **Price** £2.99 **Supplier** Americana Software, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Go for Gold is what budget software should be all about. It's fast and fun and is sure to be a big hit with Commodore sports fans.

The events are a good mixture of joystick bashers (the good old 100 metres dash) and those like the weightlifting which require quite a touch to succeed in.

The graphics are bright, with large, bold sprites representing the on-screen characters and up to six people can play, with each taking turns to perform (except the racing, where you can play against one other).



Frills include speech from time to time – and although *Go for Gold* isn't as polished as *Summer Games*, for instance, for the money it goes straight to the top of the rostrum.

Program *Revolution* **Type** Arcade/Puzzle **Micro** Amstrad CPC/Spectrum **Price** £9.95 **Supplier** Vortex, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

When you see magazines listing the major UK software houses, Vortex is a name that somehow doesn't seem to crop up. But when you think about it, for a great many years, these guys have come up with some consistently excellent games. The *Android* games, great in their time, then *Tornado Low Level, Highway Encounter* and its sequel . . . all stuff you could really get your teeth into. Well, they've done it again with *Revolution*.

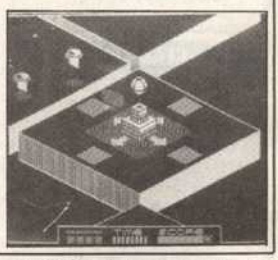
Using the same minimal graphic style of *Encounter, Revolution* is a totally original arcade/puzzle that has an atmosphere all of its own and will keep you glued to the monitor for hours.

The concept is simple. You control a bouncing ball on a platform of tiles, each grided tile taking up about one screen (between the tiles on one level there is a void from which there is no return).

On each level, there are four puzzles to be solved – puzzles that look pretty simple. They consist of two blocks somewhere on the tile – all you have to do is touch one of them (which obligingly changes colour) and now must touch the other within short time, otherwise the first block returns to its former state. Easy.

Add some beautifully designed nasties buzzing to and fro plus assorted unexpected surprises (I won't spoil the fun), and in reality, it's not as easy as you think.

Massively addictive, this is another work of programming genius from Vortex's Costa Panayi. Out soon on Spectrum and Amstrad CPC, it's simply a must.



Program *Room 10* **Type** Arcade **Micro** Commodore 64 **Price** £9.95 **Supplier** CRL Group, 9 Kings Yard, Carpenters Road, London E15.

One day, you know, mankind will live and work among the stars – and naturally, in between toiling in the airless wastes and eating his reconstituted Big Mac – he will want to invent new and exciting recreations, as (let's face it), "I spy with my little eye, something beginning with S," would be one of those things that started to get on your nerves after a little while, wouldn't it? At least, that's the rationale behind *Room 10*, from the CRL stable.

Gal Corp (Chairman, Sir A Sugar IV, probably) have invented several entertainments to pass the time in low gravity, the most popular being in Room 10 of the leisure complex. It's called 3D Pong . . . ohoops . . . no it isn't, sorry, it's actually called glyding, very sensibly actually, because . . . um . . . because? Oh, who knows? Maybe you have to be wearing thermals to play it or something.

No, don't titter, because despite being, in effect, a three dimensional version of that earliest of home video games, Pong *Room 10* is great. The display consists of two independent screens, one on top of the other, each showing a perspective view from the opposing end of the oblong box that is the court.

You control a bat that you can manoeuvre about the far wall, and the idea is to bounce a ball past your distant opponent. They try to prevent this by putting their bat in the way, and long tension filled rallies often ensue. You know – just like it used to in 'you-know-what'.

What ever way you look at it, this is Pong 1986 style and it's fabby. The Amstrad version has been out for a while; now play it on Spectrum and Commodore.

All have one/two player options, and if you're trying to hammer the computer, you

can play on several levels of difficulty. While the Spectrum version is probably the fastest, on Commodore you have the advantage of being able to play two-player, both with joysticks – which is advisable, as the Restore key hasn't been disabled. Naughty.

In any case, *Room 10* is well worth looking at, if only to see how far the video game has come in a decade. Try it.

Spectrum

Program *Fortran Compiler* **Type** Utility **Micro** Spectrum **Price** £15.00 **Supplier** Mira Software, 24 Home Close, Kibworth, Leics LE8 0JT.

Program *Skyplot* **Type** Educational **Micro** Spectrum **Price** £10.00 **Supplier** Mira Software, 24 Home Close, Kibworth, Leics LE8 0JT.

Program *Chess* **Type** Strategy **Micro** Spectrum **Price** £2.99 **Supplier** Elite Systems, Anchor House, Anchor Road, Aldridge, Walsall WS9 8PW.

Program *Ole Toro* **Type** Arcade **Micro** Spectrum **Price** £2.99 **Supplier** Americana Software, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Program *Timetrax* **Type** Arcade/Adventure **Micro** Spectrum **Price** £9.95 **Supplier** Mind Games, Victory House, Leicester Place, London WC2.

Sweden 1 – England 0 . . . what a fiasco – on top of that hugely ordinary performance over in the New World earlier in the year. Depressing, isn't it? And things aren't any better when it comes to computer simulations.

Although *Football Manager* is probably one of the biggest selling games in the UK, just like the England midfield, it is seriously flawed and showing its age.

The match highlights look a bit silly now, but the major flaw has got to be the lack of tactics available to the manager.

What if it's the last match of the season and you only need one point? What about if you need three points and what to go for an all out attack? Can't be done. Using actual footballing tactics, such as playing all out defence or even the bringing on of substitutes, cannot be done.

Not that *Football Manager* is a bad game. Only several years on, you'd hope for something a little more realistic.

Well now there is another football simulation, from Viper Software, and it's called *Big League Soccer*. And it contains none of the above improvements.

Apart from being disc-based and having slightly better match graphics, for me there were no significant differences from Amstrad-based *Football Manager*. Boo. Hiss. Starts slow handclap.

There is only one solution. Sack Ray Wilkins, bring me Bobby Robson's head on a plate and someone teach Brian Clough how to program in Z80.

Program *Thingy and the Doodahs* **Type** Arcade **Micro** Spectrum **Price** £2.99 **Supplier** Americana Software, Unit 2/3 Holford Way, Holford, Birmingham B6 7AX.

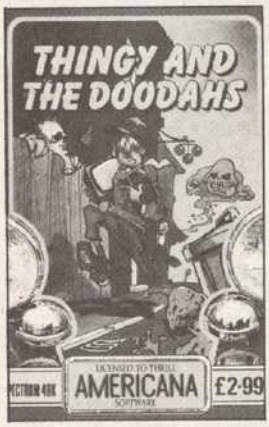
Americana, you might have noticed, is the US Gold attempt to get into budget software – and it's fair to say that the output from the label has been patchy.

Take *Thingy and the Doodahs* for instance. *Thingy* is a collect and dodge game of a fair size (over 200 rooms it says) that looks a bit dated. The idea is that you must collect at least 60 pound coins from the house and then go to the computer shop to buy a new Spectrum – seeing as you just broke your old one.

In each room there are single colour, two frame animated sprites walking to and fro, sometimes chasing you – which you must avoid as you move from screen to screen in your quest for loot. Not very fast, not very original, not very inspiring, not very anything really.

Now no-one would be complaining about this if it was going for the standard budget £1.99 (not much anyway) as *Thingy* would pass away a wet Sunday afternoon at a push. But Americana are asking you to part company with £2.99 for re-living those heady days of 1984.

For that money in the budget market nowadays you could get yourself a David



Jones game, complete with drop down menus, Magic Knight and gung-ho slick arcade action. Or a re-issued oldie, such as that classic, *Schooldaze*.

Thingy just isn't worth that extra quid, and although there are some excellent little games in the Americana range, it's crazy that the price a particular program is sold at doesn't reflect the quality.

Program *Animator 1* **Type** Utility **Micro** Spectrum **Price** £9.95 **Supplier** Softcat Micro Supplies, PO Box 79, Macclesfield, Cheshire SK10 3NP.

Animator 1 has been out for a fair while now, but has recently been redesigned and in the words of Softcat "tidied up" so it's well worth another look.

What do you get for your tenner? Basically, it's a screen designer, sprite designer and animator, print utility and character designer all in one, with an extra program to print your masterpieces out up to 69 feet by 60 feet – assuming you can afford the printer paper.

There's no doubt that there is a hell of a lot crammed into this package – but the bad news is that you might find it a little bit inaccessible to start with. No drop down menus or icons here so don't expect to be able to get down to work straight away.

The program is also a little too fragile – at one point I broke out of it completely, which didn't inspire confidence. Imagine that happening during a particularly frantic spell of artistic inspiration?

But in its favour, *Animator 1* does have a wide variety of uses. Where else would you get a reasonable art program, a primitive print shop and a font designer (to name but three) for this kind of money – plus the facility for designing

and animating sprites?

It's compatible with microdrives or Opus disc and Softcat offer technical support for programmers who need more information about using *Animator 1* as a development system, or people who have non-standard interface/printer combinations.

I'd say that considering the range of its applications, *Animator 1* is a good deal – if you're willing to put in some effort getting the most from it and don't mind a few rough edges.

Joyce versus Joyce

My father is investigating the possibility of buying an Amstrad PCW 'Joyce'. By a coincidence my father's secretary is also called Joyce, so I have been wondering how the two Joyces might compare, should they meet.

At present, office reports are usually produced by typing from hand-written notes, usually handed directly to Joyce (the secretary). Typing takes up most of Joyce's time but it is not the most important part of her work. She prepares and files statistical information, handles quite a bit of accounting and she runs the office.

My father and Joyce, therefore, represent a team. He is the expert in his particular field and she is the expert in hers, which is administration. Should Joyce (the PCW) ever join the team then Joyce (the secretary) can expect significant changes to her job.

Conventional thinking would place the word processor on Joyce's desk to replace the typewriter, but nothing could be more inefficient. Reports would still be hand-written and then typed, so there would be no saving of time. Joyce might type faster with the PCW, but she already types quickly with few mistakes. In any event, correcting spelling mistakes is not word processing.

However, if Joyce (the word processor) is placed on my father's desk then an enormous improvement can be expected. Reports would be typed directly into the machine and properly word processed: paragraphs would be shunted around, sentences reworked and spelling corrected, just as with a hand-written draft.

An extra bonus could be gained from keeping a stock of template reports so that repetitive passages need only be typed once and then amended as required.

Ultimately, Joyce (the secretary) could say goodbye to her typewriter and concentrate on office management. Better still, she could get her own micro and computerise the office systems.

People trained as typists might see this as a threat to their jobs. However, the total number of jobs in a firm might not change much, but the type of jobs would alter.

Firstly, everyone from the chairman down would need to be able to type in order to use the computing power now essential in modern business. This offers current secretaries a temporary advantage over most junior managers for the management jobs of the future.

Secondly, the typing pool would become unnecessary. This is nothing to mourn, for there is no glamour or excitement in a typist's work.

Typing also offers few opportunities for advancement. However, even with word processors, managers still require personal assistants who would be destined to become managers in their turn.

Secretarial posts would, therefore, tend to be filled by ambitious people who would become managers; a more interesting prospect than a lifetime behind a typewriter.

Although this bright future appears to be new, it is, a return to the time before the invention of the typewriter and before the terms 'secretary' and 'typist' became confused. A secretary was a confidant and personal assistant, relied upon to relieve the burdens of administration and to offer timely advice. This is why senior politicians, even now, are called secretaries. The secretary of state for war was never called upon to do the army's typing.

It was the typewriter which changed the role of the secretary. When typed correspondence became the norm, typing fell naturally into the domain of the office administrator, the secretary. Managers could not spare the time firstly to learn the skill of touch typing.

Because typing took up so much of the secretary's time the role of office administrator was gradually lost and 'typist' and 'secretary' became almost synonymous.

By drafting and preparing documents in one process, the desk top computer will change all that and there is a chance that the secretary's role will return to its former importance. That is, if the two Joyces can be kept apart.

Mike Lloyd

NEXT WEEK

Hardware

The Comx PL-80 low-cost four colour printer/plotter is compatible with Commodores and PCs – which means Amstrad, these days. We take a look at its performance, and its price – it's under £200.

Plus the Fantastick 2 joystick – ergonomically designed and suitable for left or right-handed players. How does it compare with the competition?

Atari ST – Fast Basic

ST Basic has come in for a fair bit of criticism, and now Computer Concepts has come up with an alternative – *Fast Basic,* a Rom-based program for all Atari STs. Duncan Evans investigates.

Name that film

Our exciting autumn competition reaches its third part with two more science fiction film stills for you to identify.

ATARI ST

Power Without The Price!

520ST PACKAGES

The 520ST-M keyboard costs only £348.96 (+VAT=£399) and includes an RF modulator and cable, allowing you to connect it to an ordinary domestic TV set. The keyboard is supplied with 512K RAM, a mouse and a free set of 3½" disks containing applications software. For a limited period from August 11th 1986, we have some special packs offering combinations of the 520ST-M keyboard with a ½ Mbyte SF354 Atari disk drive and an Atari monitor (either the Mono SM124, or Colour CM8512). These packages offer up to £200 extra discount on a system, if purchased from Silica, they also come with our free 'ST STARTER KIT'. All of the pack prices shown in the chart include VAT.

UPGRADE TO 1024K RAM

We are pleased to be able to offer a 1Mbyte upgrade on the standard 520ST keyboard to increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT=£100). Any of the five packs can be upgraded to 1Mbyte for only £100. The 1Mbyte ST offers a low price alternative to the 1040, but also gives you the benefit of an RF modulator (not normally fitted on the 1040).

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	Printer (SMM804)	£199	Printer (SMM804)	£199
	Normal Price	£1045	*Normal Price*	£1195
	Discount	£200	*Discount*	£200
	Pack Price	£845	**Pack Price**	£995

FREE SOFTWARE

When you buy a 520 or 1040 ST computer keyboard from Silica Shop, you will receive a large and varied software package free of charge. This package consists of twelve programs. Wherever you purchase your Atari ST computer, you should receive the first six software titles as standard. However, if you purchase your ST from Silica, you will also receive a further six extra titles, giving you a total of twelve. All ST's now have TOS/GEM already installed on ROM, so the list of free software you should receive is as follows:

1) GEM - *DR Desktop environment with WIMP (fitted in ROM)*
2) TOS - *Tramiel Operating System (fitted in ROM)*
3) 1st WORD - *Word Processor by GST (using GEM*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) NEOCHROME - *A powerful colour paint and graphics package (only useable with colour systems)*

If you purchase your ST from Silica, not only will you receive the standard six pieces of software as listed above, but we will also give you the following six additional programs FREE OF CHARGE:

7) MEGAROIDS - *Asteroids type game by Megamax*
8) DOODLE - *Simple paint/doodle drawing package (works on mono or colour systems)*
9) CP/M EMULATOR - *Allows use of DR's Z80 CP/M software to run on the ST range*
10) CP/M UTILITIES - *Various utilities to use with CP/M*
11) DEMONSTRATION & PUBLIC DOMAIN SOFTWARE - *Various games, demos and accessories*
12) CARDS - *A unique set of card games from Microdeal*

These additional free software titles are all part of the FREE Silica 'ST STARTER KIT', return the coupon below for further details

FOUR FREE MANUALS

In addition to the free software which will be given to you when you buy your ST from Silica, you will receive four free manuals:

1) **ST OWNERS MANUAL (80 pages):** *Easy access to the information you require to unpack, set-up and become familiar with the ST.*
2) **ST BASIC SOURCE BOOK & TUTORIAL (240 pages):** *Gives you the information to exceed your current programming expertise.*
3) **ATARI LOGO SOURCE BOOK (77 pages):** *A source book for Logo, showing how to use the language in the GEM environment.*
4) **1st WORD MANUAL (48 pages):** *Instructions for 1st Word.*

ST NEWSLETTER

8 PAGES OF INFORMATION TO HELP YOU TO DECIDE
RETURN THE COUPON FOR A FREE COPY

1040ST-F

For the businessman and the more serious home user, there is the 1040ST-F with 1026K RAM. This can be used in a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F keyboard with integral 1Mb disk drive costs only £699 (+VAT=£803.85). As the 1040ST-F was manufactured solely with business use in mind, it does not come with an RF modulator for use with a domestic TV. Instead, it requires a monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040 Keyboard Without Monitor - £699 (+VAT= £803.85)
1040 Keyboard + High res mono monitor - £799 (+VAT= £918.85)
1040 Keyboard + Low res colour monitor - £899 (+VAT=£1033.85)
1040 Keyboard + Med res colour monitor - £999 (+VAT=£1148.85)

The 1040ST-F includes 1Mbyte of RAM as well as a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead. The 1040ST-F is supplied with a set of software disks as well as our own FREE Silica 'ST STARTER PACK'. Call into your nearest branch of Silica Shop for a demonstration.

1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
117 Orpington High Street, Orpington, Kent, BR6 0LG
Lion House (1st floor), 227 Tottenham Court Rd, London, W1
Selfridges (1st floor), Oxford Street, London, W1A 1AB

£699

REDUCED PRICES

Atari's ST personal computers are now firmly established both in the USA and Europe. The main attraction of the ST range is the value for money which these computers represent, giving both private and business users a powerful asset at a very modest price. There are now several ST packages available from Silica at a reduced price, further enhancing the Atari 'Value for Money' reputation. In addition, we are giving away a FREE Silica 'ST STARTER KIT' with every 520 or 1040 ST purchased at Silica Shop. These offers will only be available for a limited period and commence on 11/8/86.

POWER FOR BUSINESS

The list below shows some of the new business products which have been recently launched for the Atari ST range. It gives an indication of the ST's potential to business buyers looking to install a powerful, low-cost system:

CP/M EMULATOR
20Mbyte HARD DISK
LOTUS 123™ CLONE
dBASE III CLONE
IBM COMPATIBILITY
VT100 EMULATOR
MICROSOFT WRITE
dBASE II

Any ST computer will provide its user with a very powerful asset, utilising a vast range of applications, particularly in the business world. Many software companies have been quick to recognise it for its business potential, and have produced programs for the ST which harness this potential. In addition, there are several peripheral and hardware products becoming available to add to the ST's 'Power For Business'. Software now available includes dBMan, a dBASE III clone as well as H&D Base, a dBASE II clone. In fact, First Software have now launched Ashdon Tate's original dBASE II program for the ST. In addition, PC Intercomm is a VT100 emulator which enables you to use any ST keyboard as a terminal connected to a mainframe or mini. Other programs include a powerful accounts package by Cashlink and a Lotus 1-2-3™ clone called VIP Professional. Microsoft have announced that their powerful word processor 'Microsoft Write' will soon be available for the ST. Many packages are available for very specific market applications including a powerful CAD (Computer Aided Design) program called Easy Draw from Migraph. In addition, there is an engineering tool called PC Board Designer by Abacus Software which will enable the user to design printed circuit boards. For further details of how the ST can help in your business, return the coupon below. We will be pleased to send you our latest newsletter and price list.

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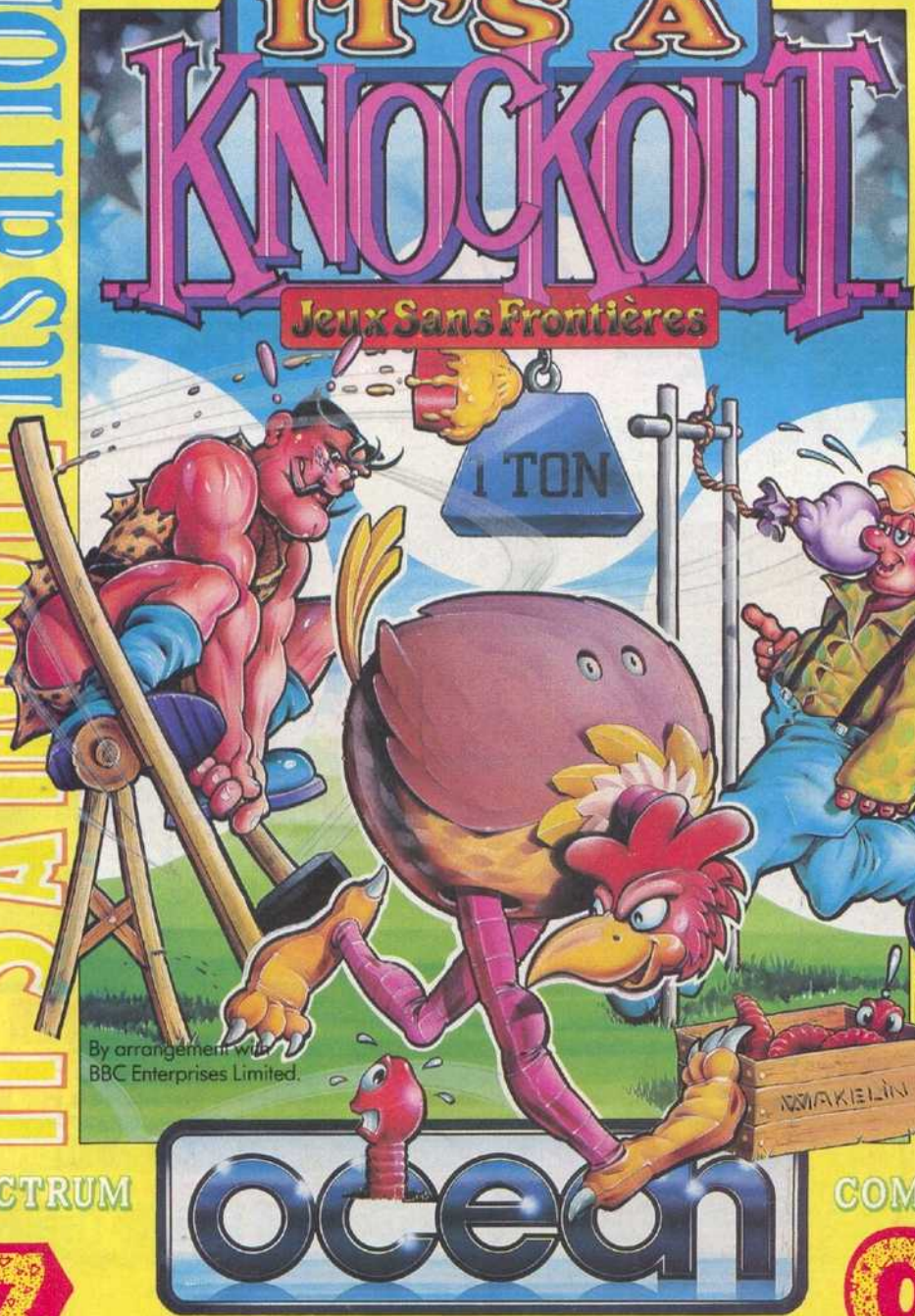

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