40p EVERY WEEK · No 103 · MAR 16 1985

PERSONAL Computer NEWS

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PICTURE POWER ON 64 · APPLE · ATARI

GET INTO GRAPHICS

QL SPIROGRAPH
Run rings round your Sinclair

BBC GRADUATES
Torch adds on IBM compatibility

FELT-TIP QUILL
Gilsoft's Illustrator checked for style

MUSICAL ACORN
Music 500 raises the BBC's tone

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MONITOR

Prism spots ray of hope on horizon

Prism's orphaned VTX5000 modem is on its way to a foster home at Modem House, but the long-term future of this award-winning unit is still in doubt.

All the king's horses and all the king's men couldn't put Prism together again, and the official receiver Steven Adamson of accountant Arthur Young is still in negotiation with various parties to find buyers for parts of the defunct Prism (issue 98).

Modem House will be selling the VTX5000 and other products from Prism's stock of communications devices. 'We're after purchasing the name and the rights to manufacture,' said Modem House director Keith Rose. 'We hope to work alongside OE Ltd,' he added — OEL designed and manufactured the units for Prism. But OEL replied: 'At the moment we have no comment.' OEL has recently set up its own dealer and distributor network.

Those rights are still the subject of discussions with the receiver, as are the futures of other Prism products — the Wren portable micro, for example, and the Androbot robots. A spokesman for the receiver said that there had been the possibility of a management buy-out of rights to the Wren, 'but that's now looking pretty doubtful'. Thorn-EMI is rumoured to be showing an interest but this has not been confirmed.

The VTX5000, named, Peripheral of the Year in 1984's British Microcomputer Awards, and communications Micropacks for BBC, Commodore, Apple, ACT and IBM systems, will go into Modem House's catalogue with the promise of full support. 'We hope to be able to draw from stock solutions for any home micro,' said Rose.

To get the ball rolling, Modem House plans to discount ex-Prism products. The VTX5000 should be available at £49.95; 'there will be discounts across the range but prices may change,' said Rose. But the Prism name may disappear from the UK scene — 'We're not sure,' he said. 'We'd certainly retain it for overseas use.'

Modem House is launching another promotion on one of its own products. For a limited period its BABT-approved acoustic coupler will cost £39.95, while stocks last.

Rose commented that he saw only a limited future for the acoustic coupler type of device, but by contrast he stressed that Modem House was committed to the Prism modems and that it wants to reach a position where it can guarantee future supplies.

Sir Clive Sinclair — this is your life!

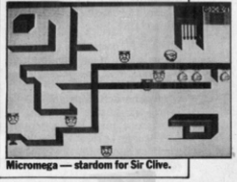
Arise, Dame Commander Clive. Yes, that star of stage, screen, radio and Cambridge public house is now immortalised in Micromega's latest Spectrum game, A Day In The Life.

Your task is to guide a familiar bearded and balding head through some 28 screens of daily life, winding up at Buck House and the royal blade.

At the time of the press launch Sir Clive had not been told of his new stardom, but he'll receive a free copy. Micromega has taken legal advice over the launch, and considers itself to be on safe ground, with the game in the same league as cartoons and caricatures.

At one point a pub brawl was considered, but was felt to be too close to the bone, and the inclusion of the character of Sir Clive, 'the man who put the C in computing' is seen as 'a respectful dedication to the man who gave us a new industry'.

To be released on March 18, the game will cost £6.95 and marks a departure from Micromega's 'Black Leather' games such as Death Chase and Full Throttle. It's also the first commercial product for Stephen Redman, the programmer.



Micromega — stardom for Sir Clive.

MONITOR

IN BRIEF

US Gold is panning for members for its newly launched users group, the US Gold Club. For £9.99 plus 75p postage you'll qualify for various offers, from badges to discounts on software. There is also Gold Bulletin, a newsletter covering the company and its products. Contact Louise Jones on 021-359 3020.

ACT has beefed up its Apricot range in an attempt to get a foot in the door before deliveries of IBM's AT start to flow. The three new models, ranging in price from £3,295 to £4,295, should be available from next month.

The company that claimed the first UK Unix micro, Cifer Systems, is in the wars again only nine months after a previous reorganisation. Cifer has declared 88 redundancies and it intends to concentrate on its terminal business.

Microsoft's answer to be integrated software merchants came out last week in the form of a bundle of existing programs. Word, File, Multiplan and Chart together will cost you £595, £120 less than if you bought them separately, but only until the end of the month.

Peachtree Software has gone the way of all fleshy fruit, sold off by its parent company MSA to Plusmark Business Systems. In the deal provision has been made to ensure continued support for Peachtree users and dealers, and Plusmark will take over marketing Peachtree's products in the UK.

Aquarius, the micro that time forgot, is the subject of a price cut from the official owners club Aquarius User. For £3.50 you can pick up any one of 22 games (who said there was no software for it?). Aquarius User is on 01-930 1612.

Welwyn has carried the Currah battle into new territory with its launch of a Y cable adaptor for the Commodore 64. The £3.99 adaptor will let you use a monitor and Currah Speech 64 unit at the same time. It's available by mail order from Welwyn in Bedlington, Northumberland.

IBM and PC compatible users can bring a bit of colour to their monitors with a new card from Persona UK. The ComTronics card generates four colours in high resolution and 16 in medium; it also has a printer port and an optional piggyback memory expansion module and costs £430.

Wimps prepare to go on the warpath

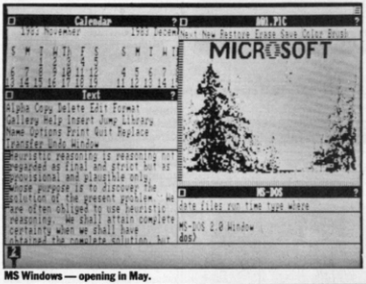
The wimps are headed for a big show-down this May, if Digital Research and Microsoft are to be believed.

Senior wimp (Windowing Integrated Mouse Program) Microsoft Windows is now, after a gestation period an African elephant would baulk at, finished, and is scheduled to hit the streets in late May/early June. DR's GEM, according to vice president Paul Bailey, is running on the Atari 130ST and 520ST machines, which are promised for May.

Versions of MS Windows have been around for more than a year now, but the final specification wasn't ready until the middle of last month. According to Microsoft, it will run with all existing applications software.

GEM will differ from Windows in that it will run on 68000 machines as well as on the Intel family. Normally the 68000 version will run alongside CP/M-68K, but in the case of the Ataris it has been interfaced with a modified version of 68K to form the TOS (Tramiel Operating System).

In theory GEM could run on the QL, but Sinclair isn't interested at the moment, partially because it takes up too much memory, and partially because Sir Clive was long voiced doubts about DR's and Atari's ability to deliver the goods before the end of the year.



MS Windows — opening in May.

Sinclair reveals QL's inner secrets

The road to software stardom on the QL, previously restricted to established software houses, is now open to everyone — everyone who can spare £14.95 for the QL Technical Guide, that is.

The guide is designed to be used in tandem with a 68000 reference manual, and is intended to tell programmers what to do and not to do.

The guide documents the QL's system routines and gives details on the areas of memory that hardware and software can safely use. In the case of software it provides information on the routes your programs should take to avoid clashing with future products and hints on doing business with Sinclair.

Buyer sought for Express package

The turmoil in the software distribution business is likely to continue for the rest of the year, and some software houses could go under in the shake-out.

That's the view of the Guild of Software Distributors in the wake of the collapse of Express Marketing. 'I think it will take this year to shrink numbers to the level suitable to the market,' said Clive Digby-Jones of Websters. Steve Rutherford, of John Menzies' supplier Tiger predicted: 'Most of the distributors handling multiple accounts are going to survive, but the independents are going through hard times.'

The GSD has ten members but Digby-Jones, its secretary, said that there are about 80 distribution companies operating in the software field.

The result for software buyers will be an interruption to supplies that could turn out to be permanent in some cases. Express supplied the Co-op and Granada, neither of which are likely to go out of business through the problems of a supplier — but some of the software producers distributed by Express could be vulnerable.

Eleventh hour attempts to rescue Express were still being made last week, with the company looking for a buyer.

FOREVER AMBER — Philips, the Dutch electronics giant, has released a new range of monitors for home and business computer users. Starting at around £92 for the medium resolution green or amber screen model (pictured above), the range goes up to the CT 2007 medium resolution with colour plus sound for £274. This model has three input: composite video, linear RGB, RF PAL. The pricing compares closely with similar models. The JVC Hi-res colour monitor is £299, although this does not have sound. The Fidelity CM14, at around £235, does have sound and is very similar to the CT2007. There are a number of converted TVs around — Microvitec does one, the 1431 at £239. The other Philips monochrome monitors are slightly more expensive than the competition. You pays yer money and takes yer choice.

MONITOR

Sinclair heads up silicon alley

Sinclair's £300 silicon disk for the QL is in its final testing stages, and according to director of engineering Hugo Davenport it will be in the shops later this year.

Davenport won't give details of how the drive operates, but he expects it to work at second prototype stage, and as chip manufacture is generally plagued by a high failure rate at the beginning of runs, the device must be relatively simple to produce.

The simplest and most expensive way to produce a drive of this sort would be to make up the promised 0.5Mb using CMOS RAM chips. Chips are normally produced in large sheets, then cut up and individually tested. Both these stages add to production cost. Cutting out larger sections would make for less damage, and a built-in self-test facility to sort out faulty chips might cut costs further. But unless Sinclair has cornered a large supply of incredibly cheap chips this method would still be too expensive.

There are some alternatives. Silicon is produced in disk shapes, and until recently around 3.5in was the largest disk that could be produced. Chip manufacturers have been concentrating on putting more and more components on silicon. This is what generates high failure rates, and larger, more economical disks of silicon (more chips on the, less silicon wasted) can now theoretically be produced.

So, what if Sinclair has access to a supply of cheap 3.5in disks of silicon, and intends to put fairly primitive circuitry on them? The failure rate would be low, and if the silicon was cheap enough, the memory could be built up by sandwiching them.

Another alternative would be to use thin film circuitry on sheets of glass, putting the chips directly onto this, but sheets of glass don't have to be round.

According to Sir Clive, the Spectrum-based portable is liable to incorporate the silicon disks, but other news about the machine is difficult to come by. Hugo Davenport says that it will be a true lap portable (*ie* it won't fall off your lap when you fold the screen out) with desktop power, and Sir Clive claims it will include a development of the flat screen TV.

This is trickier than it sounds, as the current model relies on bending the tube to take up less space. The larger the screen, the more the tube has to bend. Sinclair, however, is confident the problems can be solved.

■ The new JS ROM for the QL (not yet in the shops) differs from the JM version in two respects. It includes a WHEN ERR construct that is equivalent to ON ERROR GOTO, but Sinclair doesn't intend to document this at the moment, because if you make an error in the error-trapping routine it will continue to call itself forever.

The other difference involves the formatting routine for the Microdrives. This has been improved, and when combined with a little care over the order in which files are saved on the Microdrive, speeds loading considerably.

MAC-PACK — Hardware from Microsoft sounds about as likely an software from Microhard, but that is what the company famous for MSDOS, PCDOS and MSX is now producing. The MacEnhancer is a hardware add-on for the Mac that allows you to use IBM compatible printers and, according to Microsoft, almost any peripheral that uses an RS232, Centronics or RS422 (Mac standard) interface. It'll cost around £250, and for this you get a box that fools the Mac into thinking it has an Apple Imagewriter printer connected. It has two IBM standard serial ports, one IBM standard parallel, and one Mac standard serial. It doesn't interfere with the Mac's spare ports, so theoretically you can run five peripheral devices at once. Microsoft can be found on 07535-62643.

VIEW FROM THE US

Yuppies, the users the US loves to hate

There has been a lot of concern in the US lately about 'where the computer age is taking us.'

Much of the discussion consists of broad declarations that, as usual, the country is going to the dogs because of pesky computers. It might equally be said that the country is going to the Yuppies who use computers a lot and render almost everybody else speechless with anger.

It has at last been realised that only about one third of the populace is at all interested in computers, and most of them are office workers — young, urban and professional. The US is an office-driven country now, and thus office concerns have become the national norm. Everybody else resents this bitterly. A great amount of energy has gone into abusing the office-going Yuppies lately. In fact the professional Yuppies are the least popular sub-group to appear here since the punks of the late seventies.

Ordinary folk get really exercised by the sight of all that talented youth living free and easy on large salaries and little responsibility. Of course, it doesn't help when Yuppies are interviewed next to their personal computers in their designer-chic apartments in ex-rundown slums saying unfortunate things like: 'I find life is a series of rewards'. But the Yuppies have the power of the office behind them, and plenty of credit.

One of the current fads is the Computer Back, which puts the weight on the knees rather than the small of the back. Oddly enough, it has no back.

In this context it is interesting to note that more than 20 states are preparing special legislation to cover computer sufferers at the office who have raised a din of woe — eye-strain, 55 per cent; back pain, 43 per cent; headaches, 30 per cent; shoulder, 25 per cent; and neck, 15 per cent.

Meanwhile old-fashioned user-friendliness is being transformed into 'softer softwares' with added artificial intelligence. This year a lot of vertical market software is expected to be sold by mail order to all kinds of numerically small but dedicated groups like baseball managers and Florida citrus growers, a shrinking group.

This summer will also see the introduction of the first voice-activated computer for word processing. IBM is said to be hard at work on its own model, which has caused much media excitement.

You always wanted to write but never mastered a typewriter or legible script? Hey, no problem, just slip in the Expert Literature Disk and select your favourite style: perhaps the exultant machismo of Mailer? the surreal sophistication of Pynchon? the eerie eclecticism of William Burroughs? At every step of the way the software will be helping you 'write', without keyboards or any idea of grammar, syntax, spelling or even logic.

Certainly on New York's publishing row they view the future slush pile of such submissions with foreboding. Visions of truckloads of historical fantasy trilogies arriving with the mail sets them licking their lips noisily in their Third Avenue towers.

A computer that can read, and software that can reject fantasy trilogies — now there's an investment.

But the Yuppies aren't the only people who know how to use computers. From the far west comes worrying news of the racist right. A computer network has been set up called the Aryan Liberty Net by the Aryan Nations, an Idaho-based group with growing popularity among white prison inmates.

Recently a splinter group calling itself the 'order' or 'Bruderschweigen' has been committing armed robberies and murdering outspoken anti-racists. Small cliques of heavily armed Aryans can now be found in many western cities.

Their computer net was set up by Lewis Bean, a Dallas-based Klansman, to link the Aryans with older groups like the Klu Klux Klan. There are exotic passwords to gain access to a bulletin board which describes itself as a 'pro-American, pro-white, anti-communist network of true believers who serve the one and only God — Jesus the Christ'.

Typical bulletins include lists of enemies, congratulations to assassins, and inspirational messages like: 'The older and less active spokesmen for the fold and faith are being replaced by the young lions! These have no time for pamphlets and speeches. They are the armed party which is being born out of the inability of white male youth to be heard.'

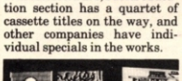
Chris Rowley

MONITOR

Software Sparks begin to fly

Forget the cinema, there are enough forthcoming attractions on the way from the software suppliers to keep you out of those smoke-filled fleapits for months.

Creative Sparks, the software arm of Thorn-EMI, is moving into budget software with games at £2.50 each. It's called the Sparklers range. Activision's spring collection includes games for the Spectrum, Commodore 64, and Amstrad. The BBC has axed Basicode telesoftware, but its education section has a quartet of cassette titles on the way, and other companies have individual specials in the works.



Knight cap: MicroClassic's move.

The first Creative Sparks Sparklers are due to appear in April. They'll include games for the 48K Spectrum, the 64, the hardy perennial Vic 20 and other machines. 'Low price does not need to mean low quality,' said software manager Sandy Mackenzie.

Activision is looking to UK and European sources to expand its range, and it intends to translate more of its US-sourced material to the Spectrum, Amstrad, and MSX micros. The Music Studio is to be released for these machines; in its C64 manifestation it will cost £14.99 on cassette. Other opening titles are Master of the Lamp, Web Dimension, Pastfinder, Rock'n Bolt, The Tracer Sanction, and Mindshadow.

For the BBC Micro and the Electron, BBC Publications will launch four maths-related programs this month. Co-ordinate Jigsaw is a pattern selection game, Symmetry Patterns encourages creative drawing, The Two Dice Race Game deals with probability, and The Colouring Puzzle involves shapes.

Media events like Give My Regards to Broad Street (Argus) and The Rocky Horror Show (CRL) are due later this month for the Spectrum and the 64 respectively.

Finally, coming later rather than soon is the Chess Game from MicroClassic. For the 64, this is an arcade game inspired by chess but not restricted by it. MicroClassic expects to launch it in May or June to sell at £7.95.

Mastertronic moves into distribution

Budget games specialist Mastertronic is branching into distribution, with some harsh words for the present crop of software distributors.

With the exception of Websters, Mastertronic's spokesman said that the company felt the distributors were letting the consumers down. Its own venture is called Shuttlesoft, and it will concentrate on the low cost software produced by Mastertronic and Firebird. 'We feel they're the best two companies,' said the spokesman generously.

MORROW'S WORLD — The quality of an electroluminescent display with the low cost and power consumption of an LCD sounds like a fairy story but Morrow of California claims to have done it on its Pivot portable. The company isn't giving much away about how it has produced its display, but chairman George Morrow says that it added lighting and contrast enhancements to existing display technologies. The Pivots with the new display cost only $100 more than the LCD-equipped originals that were launched in the US last May. A 256K model with twin floppies, MSDOS 2.11, and a 16 line display costs $2,995. For information on UK availability contact Midlectron on 0332-385311.

HOMEFRONT

Keeping Acorn at an arm's length

'It's going to be hard work to build the company up,' said Dr Alex Reid of Acorn ten days ago, and nobody would want to argue with him.

Dr Reid was talking to a group of journalists about the plans to re-construct Acorn, but he began by looking back and pinpointing the leaks that caused Acorn to founder. There were three, he said; the US adventure that didn't come off, the Christmas stock that didn't sell, and the projects undertaken in 1984 that spread the company's resources too thin.

Still in the numbers racket, he went on to say that Acorn identified four key strengths and two 'danger areas' in planning the company's re-structuring. The strengths are in technology, the top end of home computers, scientific applications, and education. The danger areas are 'IBM PC land' and the bottom end of the home market.

So far, so good. It looks particularly promising that the strengths outnumber the danger areas. If Acorn succeeds in staying away from IBM PC land and the capricious games market, all should be well, and to the four-leafed clover of its own strengths it can now add Olivetti's marketing muscle.

But the reconstruction can't begin from a position of strength. Acorn's last financial results to December 30, 1984 showed a loss of £10.9 million. At the same time it owed its bankers and its suppliers £47.7 million. Even after the rights issue at 8 pence a share, Acorn will owe its bankers £3.4 million.

The banks and the suppliers are being patient, giving Acorn a chance to develop its strengths and find an even keel again. But the company's future will depend on its being able to produce and sell products, and when he spoke about products Dr Reid seemed to be offering little apart from more of the same.

He spoke about an improved version of the BBC 'later in the year' as part of Acorn's plans for new products in 1985.

'On the Electron, we've made it a better bargain,' he said. 'It was always conceived as a modular machine with capacity for expansion.' He was adamant on the Electron's future, and declared: 'We have no intention whatsoever of withdrawing from the home computer market, nor does Olivetti. We intend to concentrate on good quality products with upwards extensions.' For example, the Plus 3 microfloppy unit.

But Olivetti can't withdraw from the home market because it isn't in it. Dr Reid later said that the Olivetti connection isn't expected to be too relevant to the consumer section of Acorn's business. So what's left except Acorn selling BBCs and Electrons in much the same way as before?

When the Electron came down to £129 several dealers told *PCN* that they felt it could sell very well at that price. One or two said that they couldn't make money on it, whether it sold or not. One sighed heavily and lamented: 'I wish they'd dropped the price before Christmas and then spent £4.5 million advertising it.'

If Olivetti starts to push the BBC machine into foreign education establishments there could be rich pickings ahead — but foreign governments tend to favour native suppliers, something that the BBC ought to be considering.

Meanwhile Acorn will have to change the way it sees the Electron. At the moment it seems to view the machine in isolation, a £129 micro in a category of its own. This may be quite true, but the facts of life are that other micros in the same price bracket will provide the comparisons as far as potential buyers are concerned and the results to date speak for themselves.

In this and other areas Acorn seems committed to create new markets when it talks about building on its strengths. For example, the home computer market from which it has no intention of withdrawing is not the high volume games business that is usually considered as home computing. Then there are forthcoming products like the Communicator and the video-disk unit; if you're first in the field you might make a killing, but there are risks involved too in breaking new ground.

At the moment Dr Reid says the relationship with Olivetti is 'an arm's length' one. It will be interesting to see how much time passes before Olivetti decides to move closer and exert a little more control. **David Guest**

CHARTS

GAMES

TW	LW	TITLE	PUBLISHER	MACHINE	PRICE
1	—	Softaid	Softaid	SP, C64	£4.99
2	2	Alien 8	Ultimate	SP	£9.95
3	1	Ghostbusters	Activision	SP,C64	£10.00
4	3	Technician Ted	Hewson	SP	£5.95
5	5	Match Day	Ocean	SP	£6.90
6	7	D T's Decathlon	Ocean	SP,C64	£6.90
7	4	Raid over Moscow	US Gold	SP,C64	£9.95
8	10	Zaxxon	US Gold	SP,C64,AT	£9.95
9	11	Blockbusters	Macsen	SP,C64,AC	£7.95
10	6	Impossible Mission	CBS/Epxy	C64	£9.95
11	14	Castle Quest	Micropower	C64,AC	£12.95
12	15	Knight Lore	Ultimate	SP	£9.95
13	—	Everyone's a Wally	Mikro-Gen	SP	£9.95
14	8	Brian Bloodaxe	Edge	SP	£7.95
15	19	Elite	Acornsoft	AC	£15.00
16	18	Star Strike 3D	Real Time	SP	£5.95
17	9	Monty is Innocent	Gremlin	SP	£6.95
18	—	Emerald Isle	Level 9	Various	£6.95
19	13	Frak!	Aardvark	C64,AC	£7.90
20	16	Blue Max	US Gold	SP,C64	£9.95

SPECTRUM

TW	TITLE	PRICE
1	Softaid	£4.99
2	Alien 8	£9.95
3	Ghostbusters	£9.95
4	Technician Ted	£5.95
5	Match Day	£6.90
6	Raid over Moscow	£9.95
7	Knight Lore	£9.95
8	Everyone's a Wally	£9.95
9	Brian Bloodaxe	£7.95
10	Zaxxon	£9.95

COMMODORE

TW	TITLE	PRICE
1	Ghostbusters	£10.90
2	Impossible Mission	£9.95
3	Frak!	£8.95
4	Lords of Midnight	£9.95
5	DT's Decathlon	£7.90
6	Past Finder	£9.99
7	Gryphon	£7.95
8	Spy Hunter	£9.95
9	Zaxxon	£9.95
10	Slap Shot	£8.95

MICROS

BELOW £1,000

TW	MACHINE	PRICE
1	Spectrum	£129
2	CBM 64	£199
3	Amstrad	£349
4	BBC B	£350
5	Atari 800XL	£129
6	CBM16	£99
7	Electron	£129
8	MSX — Various	£250
9	CBM Plus 4	£150
10	Sinclair	£399

ABOVE £1,000

TW	MACHINE	PRICE
1	IBM PC/XT	£2,349
2	ACT Apricot	£1,760
3	Compaq	£1,795
4	DEC Rainbow	£2,359
5	Wang Professional	£3,076
6	Olivetti M24	£1,595
7	Ericcson PC	£2,095
8	Televideo 1605	£2,640
9	Macintosh	£1,795
10	Columbia PC	£2,065

These charts are compiled from both independent and multiple sources across the nation. They reflect what's happening in high streets during the week up to **March 7**. The games chart is updated every week. The prices quoted are for the no-frills model and include VAT. Information for the top-selling micros is culled from retailers and dealers throughout the country and is updated every month. PCN Charts are compiled exclusively for us by KAM/C, who can be contacted on 01-892 6596.

MICROTIME INTERNATIONAL LIMITED

106A BEDFORD RD, WOOTTON, BEDS MK43 9JB
Telephone (0234) 767758/766351

NEC PC-8201A

From Tokai Create
PASOCALC — ROM based spreadsheet (NEC) £80

From A.M.P. Incorporated
Forth £90
The Journalist – Unique text formatter with graphic layout display £65

From Travelling Software Inc.
Travelling Writer – acclaimed word processor £50
Time Manager – time costing for professionals £55
Appointment Manager – calendars & appointments £50
Sales Manager – sales activity/customer notes £55
Expense Manager – full expense accounting £55
Project Manager – budgets/actuals/costs/activities £60
T-Base – the ultimate relational database system £90
T-Backup – advanced tape filing utility £25
IDEA! — the revolutionary outline processor £75

From Chattanooga Systems
Autopen – full featured word processor £30
Autopen N&A – as above with name/address options £40
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TV programmes simply lack byte

Makers of computer-based television programmes should take a good look at the computer magazine shelves before they attempt to unleash their efforts on us.

The BBC's vain attempt, Micro Live, is the most miserable, pathetic attempt so far, with awful presenters making it a fifth-rate Tomorrow's World.

Even Channel Four's offering, 4 Computer Buffs, is lacking in bite.

They seem determined to avoid many of the popular activities such as programming and . . . games. Oh sorry! A dirty word. . .

The Commodore 64 and Spectrum are ignored on Micro Live in favour of numerous plugs for the BBC Micro. And 4 Computer Buffs seems obsessed with the idea that all we want is free software.

Producers want either a programme so serious that it ignores home computing entirely or so silly that it goes over the top. At least 4 Computer Buffs still has time to pick up; in the meantime we can only hope that a sort of televised *PCN* isn't far away.

Andrew Clarke,
Baddesley Ensor, Warks.

The best games were on Atari micros first

I have been driven to write by your attitude to the range of software available for Atari micros.

My main point of frustration is the way in which you review certain games for the Commodore 64, (namely US titles imported into the UK by US Gold, Ariolasoft etc), praising them for their slick graphics, excellent sound and other features.

Does nobody realise that these are clones from original games which have been available for many months, even years, on the Atari micros?

Another point of frustration is the way everyone seems to rave about the the games-playing ability of other computers. Let's face it, the Atari does things which *no* other computer can. For example, true four-part harmony (due to the sound chip's ability to produce pure notes on anyone of its four channels), and have you seen some of those colour scrolls?

Carl Van-Geersdaele,
London SW19.

Sounds all right if you want a Barber Shop Quartet. But we've got nothing against the Atari machines — it's just that we review new games for the 64 as new games for the 64 — Ed.

Lament for Oric but users soldier on

I have watched the demise of Oric Products International, with a certain amount of dismay since I own a 48K Atmos. I'm sure most readers will agree that it is sad to see the failure of British-based manufacturers of quality home micros.

The specification of the Atmos is easily a match for the Spectrum; Oric's extended Microsoft Basic is superior to Spectrum Basic; and far superior to the very primitive Basic supplied with the Commodore 64.

When the price of the Atmos fell to £150 it was excellent value; now that it costs £79.99 (including a free ten-pack of software) it is magnificent value.

The real reason for the failure of the Atmos must be put down to insufficient software support.

However, I see no reason why Oric owners should take these setbacks lying down. I would like to set up an independent user group to look after our interests, if there is sufficient interest among other users.

Anyone interested should write to me at the address below. Those wanting a reply, please enclose a sae.

Gary Ramsay,
1 Kingsway Crescent,
Burnage, Manchester

Byte Drive 500 software exchange

Like the Oric owner in issue 100, I bought an ITL Kathmill Byte Drive 500 disk system, mainly on the strength of the rave review it received in *PCN*. Unlike him, however, I have had no regrets.

In my view the system is vastly superior to the Oric Microdisc, in that it provides not only disk commands but also many enhancements to the Basic, including windows, abbreviated command options and the ability to enter keywords in upper or lower case.

I feel that the software industry has committed a grave oversight in not producing anything compatible with this system. Owners have had to rely entirely on their own creative abilities for software.

In a bid to rectify this, I would be willing to start up a small-scale software exchange scheme for Byte Drive disk programs. Any *PCN* readers wanting further details should send me an sae.

Jeremy P Hibbins,
97 Almners Road, Lyne,
Chertsey, Surrey KT16 0BH

Well, the name had to come up sometime, I suppose.

Packing up for a stunning adventure

We would like to make an appeal through the pages of your magazine.

Adventure-Zone recently launched a competition with a £1,000 cash prize, for the best adventure submitted. We have already been buried under a huge pile of programs.

But we would now ask that everyone who intends to send in an entry to please:

- Wrap your disks and cassettes in a padded envelope, and send all instructions, etc *in the same package*
- Label all instructions, maps, cassettes, etc clearly with your name and address.

And could we make it totally clear that we accept programs from anyone — be they programmers from other companies, reviewers or the general public.

Simon Martin Clarke,
Adventure-Zone Software,
Harpenden, Herts.

100 Best Buys missed out the Lynx

How I laughed and laughed at all those Spectrum and Commodore entries in your 100 Best Buys (issue 100).

Now it's your turn. I have a 96K Lynx and I think it should have had a mention. Not just for what it's got — fast, efficient, up-to-date Basic, built-in machine code monitor, superb keyboard etc, but also for the lack of such frills as firmware sprites, ADSR sound or Basic interrupt commands which must be provided by software. All the facilities, in fact, to encourage the average hobbyist to get down to some serious programming.

I've begun to understand machine code by seeing, through the monitor, how Forth is implemented — it could have been Logo, Lisp or Pascal. Fascinating.

Software support? Quite a lot, but you have to join one of the Lynx user groups to find out about it.

I suspect most Lynx owners are more into programming, for which it's the ideal tool. The Lynx was my Best Buy. Pathetic isn't it?

A Shaw,
Southampton.

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More resolution on the Enterprise

Q I have been hearing a lot about the graphic capabilities of the Enterprise. In particular I have heard that it is possible to increase the vertical resolution of the computer by using a method known as interlacing. Is this true?
C J Helland,
Southport, Merseyside.

A Yes, it is possible to increase the resolution of the Enterprise by this method, though there are limitations.

The picture that your computer produces on the screen is made up of a number of lines. Obviously there is a gap between lines that is not generally noticeable. The Enterprise can fill in these gaps with new data — this is called interlacing.

Enterprise supplies a program on the demonstration tape that rewrites some of the graphics software inside the machine allowing you to make use of this increase in resolution.

However, the screen must have a long persistence. If it hasn't, then the old data will disappear from the screen before the new data is displayed, causing the display to flicker.

Little to choose between MSX micros

Q The MSX computers all appear to be very much the same. How do you choose which one to buy? Can you give a comparison of the machines available?
M A Adams,
Yatton, Bristol.

A A comparison would be a very good idea but unfortunately most of the machines are functionally identical.

So the grounds on which you'd compare them would be unusual to say the least. The amount of user memory does vary across the range but MSX Basic is constant, the specification of the graphics chip doesn't alter, and some of the other common grounds for comparison don't apply.

Price might be a good starting point. At the moment the Goldstar is still the cheapest MSX machine in the UK, closely followed by the Toshiba. Unfortunately a price comparison wouldn't be valid for very long after it was printed because prices are what the manufacturers term 'fluid'.

Or you might look at the way different manufacturers have given their MSX systems an individual emphasis — Yamaha with its musical talents, for example.

Others have come up with their own little gadgets — as in the case of Sony with its provision for battery backed-up RAM cartridges. But it's difficult to compare these types of attachments directly, and since they are outside (or over and above) the MSX standard, the standard software won't make any use of them.

Making the right monitor connection

Q I'd like to know if any UK company manufactures an RGB interface for the Sinclair Spectrum. I've just sold my Oric 1 and intend to purchase a Spectrum, Interface 1 and Microdrive, and as I haven't sold my Microvitec 1431 MS I'd like to use it with the Spectrum.
Christopher Carauna,
Malta.

A You can get a number of RGB interfaces for the Spectrum, the cheapest being the one from Adapt Electronics, 20 Starling Close, Buckhurst Hill, Essex (01-504 2840) which costs £29.95. This takes the BBC standard cable, so if you connect a BBC to your Microvitec you can also connect your Spectrum.

Losing control over Spectrum interface

Q At Christmas, Santa supplied me with *Practical Robotics and Interfacing for the Spectrum*. Having constructed quite a few bits and pieces for my Spectrum over the last interface using a Z80 PIO as detailed in the book.

Now in February, a shadow of my former self, I still don't have a working interface. So:

1. **Is there any difference between my Spectrum (which is an early issue two) and later models in terms of I/O ports?**
2. **Are there any commercial interfaces of the 16-bit I/O type available?**
3. **Could you put me in touch with someone who could help me?**

Mark Dunham,
Hull.

A The answers are Yes, No, and Don't Know respectively.

Yes, there is a difference in that issue two Spectrums didn't have the video line connected into the edge connector. You'll have to perform a small piece of internal surgery to make the upgrade — or you could invest in the Opus Discovery disk unit, which does it for you in a manner of speaking.

No, we don't know of any commercially available interfaces of the sort you mention. Presumably you mean a unit that gives you 16 individual lines to be activated by an on/off status switch. We'll throw that one open . . . .

And the same applies to your third question. If anyone out there specialises in this kind of microsurgery, write in and we'll forward your letters.

Seeing double with my Seikosha printer

Q I'm using a Seikosha GP80A printer with my Amstrad CPC 464. The pairing works well, except for a recurrent problem with line spacing — I can't get the printer to stop giving me double line spacing.

I've tried to suppress the carriage return/linefeed with the WIDTH 255 command but that doesn't work.
Ian Mackinson,
Stranraer.

A There's a career waiting for you in journalism, where double-line spacing is insisted upon. But if you're using the printer for listings we can see that your paper bill could be very nasty.

The problem you're getting sounds like a genuine glitch — *ie* a mysterious occurrence that science can't adequately explain yet. The extra line may be caused by the CPC 464 sending a line feed/carriage return even though it's not supposed to, or it could be something to do with the connection.

If one of the pins is pulled too low — grounded — the automatic line-feed facility of the Seikosha could be turned on. The pin that carries this signal is usually number 14 — you could try cutting the wire, but check which one it is in the printer manual first. It will be called AUTO FEED XT. Make sure that you still have the eight data lines, strobe, ACK and grounds lines connected.

If this doesn't work there is another line worth keeping open — to Amstrad on 0277-228888.

Driving home the point about disks

Q I've been using a BBC B and a printer quite happily for six months and am thinking about the next step.

Can you tell me whether the advantages of disk drives are sufficient to justify the cost? And is there anything to be said for going the whole hog and buying a pair, rather than just one?
J Hogg,
Gateshead.

A You don't say what you're doing with the micro but the chances are that disks will help. There's a kind of indolence curve in microcomputing — cassettes on the nursery slopes are the best way known of persuading you of the advantages of a disk drive, and one disk drive will quickly suggest to you that two would be more than twice as good.

The most obvious advantage of disks is speed. But disks aren't just faster than tapes; they're more reliable and much more convenient. Disks give you almost instant access to material anywhere on the media; information and programs are held in separately named files, so you can go to the one you want without searching and winding through a battery of tapes.

Disks also give you random access to the contents of a file, so a program can read the bits it needs as it reads them into RAM.

By this means you can store larger files on disk than the BBC's memory will accommodate — address lists up to the size of a disk, for example, or word processing documents that are many pages long.

In other words, a disk drive is essential to get any serious performance out of a computer.

As for two drives, you may be able to take advantage of economies of scale — with the first you'll buy the interface, and the second one could look significantly cheaper. There are other benefits to a two-disk system.

When you're programming you can put the program disk in one drive and keep utilties and programming aids in the other.

MICROWAVES

Send your hints and tips to Microwaves, *PCN* 62 Oxford Street, London W1A 2HG.

Beeb Modes swap won't clear screen

In the middle of writing a Beeb game, I wanted to switch from Mode 2 to Mode 7 and back, without clearing the screen.

After rooting around inside the OS 1.2 ROM, I found the routine which executes the Mode instruction at &CB1D.

Between &CB1D and &CBEF, the routine sets up the operating system variables and the 6845 chip for the required mode (mode number in the accumulator). At &CBF0, the screen is cleared.

To change screen modes without clearing the screen, the whole routine is transferred from ROM to RAM and modified slightly

When switching to Mode 7, a bit of the screen is corrupted at the bottom of Mode 2. To cater for this, the section of memory is saved away at &2B00 to &2F00. The routine works for modes 0, 1 and 2, which use the same amount of space.

When the demo is run, press a key to flip between Modes 2 and 7 without clearing the screen.

Andrew Smith,
Milton Keynes, Bucks.

```
10FOR Z%=0 TO &D2
20Z%?&2F00=Z%?&CB1D
30NEXT Z%
40?&2FD3=&60
50VDU 22,0
60FOR C%=1 TO 15:GCOL3,C%:PLOT 8
5,RND(1280),RND(1024):NEXT C%
70GCOL0,8:PRINTTAB(2,10);"MODE 2
GRAPHICS !"
80A$=GET$
90FOR Z%=0 TO &3FC STEP 4
100Z%!&2B00=Z%!&7C00
110NEXT Z%
120VDU 22,7
130PRINTTAB(12,8);CHR$(136);CHR$(
131);"MODE 7 TEXT !!"
140A$=GET$
150A%=0:CALL &2F00
160FOR Z%=0 TO &3FC STEP 4
170Z%!&7C00=Z%!&2B00
180NEXT
190GOTO 80
```

Prompt removal from Commodore 64 INPUT

Many ways have been suggested for removing the "?" prompt from the INPUT statement on the Commodore 64. Some involve rewriting the ROM, others opening channels from the keyboard for input. Easiest is a variation on the latter using a zero page memory location. For instance:

```
10 POKE 19,1
20 INPUT "ENTER X";X
30 POKE 19,0
```

Note that location 19 must have its contents restored.

Some other tips are: the RUN/STOP key can be turned off using POKE 788,52. Unfortunately, the jiffy clock is also turned off. The RESTORE key can be disabled with POKE 808,234, and finally, the LIST command can be disabled with POKE 744,0. Now it will list only line numbers, but using other values than 0 yields other results (the normal value is 26).

John Hainsworth,
Elland, W Yorks.

Fragrant solution to sticky problem

The paper used by the Sinclair ZX printer can become covered in unsightly thumb prints, even with a minimum amount of handling.

Place the listing on a table, with weights to hold down the ends. Then spray it with hairspray from an aerosol can (choose a nice fragrance) using light, even strokes.

The listing is now protected from normal handling and is more readable from reducing the paper's shiny finish.

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Lincoln, Lincs.

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ART STUDIO

Without doubt, graphics is the single most exciting application for home computers — whether in serious work like computer aided design, pure entertainment like graphical adventure games, or in the more traditional 'artistic' sense. Here we look at using graphics on three systems — Apple, Atari and Commodore — but the techniques and ideas apply to virtually every computer on the market. All you need is a colour display, the appropriate software and a little imagination, says Helena Siedlecka.

Colourful touch

Koala Technologies has incorporated many features of the excellent Gibson Light Pen into a full colour system for the Commodore, but substituting a touch tablet for the light pen. This is a welcome adaptation as drawing straight onto a bright monitor gives me sore eyes, and I'm suspicious about Gamma rays.

Like the Gibson, this system is best used for constructing and designing simple shapes. It is neat, robust and reliable, and ideal as an introduction to computer graphics for anyone, even the very young.

The system runs almost entirely from the touch tablet, and commands are given either by pressing a point (ball-point, or pencil, for instance) on the pad, or clicking one of the black buttons on the pad, and following an arrow cursor on the screen.

I could do without the constant clicking from the tiny 8in by 6in pad, which makes my own graphics tablet feel like a football field, but full marks for the simple, clear menus and easy command structure, which almost make the manual superfluous. More manufacturers should follow this example.

The outstanding feature is the range of easy-to-look-at colours. Two palettes are offered — one comprising 16 basic colours, a pleasant range of pastels, and a second palette made up of the same colours seen through a mesh of the colour currently in use. There are 128 possible pattern combinations, which means 128 more colours effectively, though the resolution of the patterned colours is much lower.

You can make up endless kaleidoscope patterns with the Mirror mode, which gives four-way mirror images. Used with circles, boxes and lines, or freehand drawing, attractive patterns can be achieved very quickly.

I experimented with freehand drawing, but found this rather frustrating for precise work. The resolution is low, so individual dots are too big and difficult to control, and the lines come out looking 'stepped'.

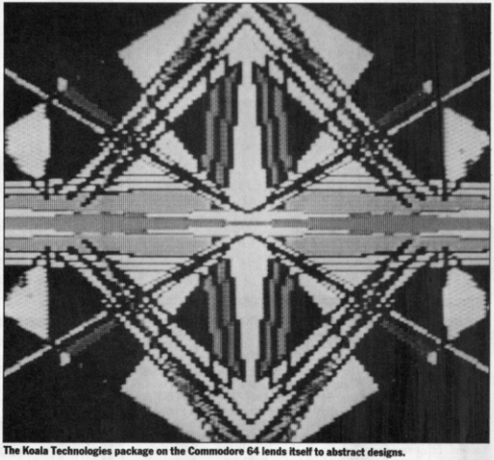
A much better idea is to let the machine do the work for you, and stick to using the predefined circles, lines and boxes. The package lends itself to simple chunky designs in the Art Deco style, with its heavy borders and typically pastel colours as in the sunrise scene pictured on page 11. A black or dark background brings out the brightness.

A variety of brush-shapes is provided: double and treble slanted dots, useful for bordering, and five-dot brushes, useful for texturing, squares and slant lines. Lines can be 'rubber banded' around the screen, set to whatever length you want and tranplanted elsewhere on the screen. Line width can be thick or thin, depending on the size of the brush.

Constructing a design with circles and lines is a messy business, and the screen soon turns into a welter of unwanted lines and arcs. These can be eliminated most easily using Zoom, and erasing in the background colour. It is vital that all gaps are closed before you use the double-quick Fill routine, if you want to avoid leakages.

One point to remember about the colours is that if you fill adjacent areas with several different pattern colours, funny things may start to happen. The borders sometimes blur, and odd pixels of colours you don't want pop out of nowhere.

This may be a limitation of the 65-66 graphics chip used in the Commodore which possibly has trouble handling more than a certain number of colours in close proximity, it may also be the software, but the best way round this is to use pattern-colours selectively, or fill by hand, although that takes time.



The Koala Technologies package on the Commodore 64 lends itself to abstract designs.

Two drawing screens are available, so you can store your picture on one screen and flip to the other while you experiment. This first screen can also be used as a doodle pad or shelf for ideas and details of pictures, which can be saved for future use, or 'framed' and planted back into the main picture.

This system is not a serious proposition for a working graphics artist, because the resolution is too limited. But the range of colours, overall efficiency and ease of use make this an appealing package for beginners.

Tiger drawn with V-Paint and Analog card on the Apple.

A flying fish, in one of several colour variations (Atari).

Personal touch

For these 'personality pictures' I took advantage of an advanced graphics chip produced by NEC, which is employed in such machines as the NEC APC, NCR Decision Mate V and, in this case, on an Apple-compatible board from Number Nine Systems of Boston, Mass. A similar product is also available for PC compatibles.

This system isn't cheap, but it performs like a pro — especially with the extended colour module. Commodore's new machine is due out next year, and promises similar graphic capabilities, at considerably less cost. It looks as though more graphics of even greater sophistication are in the offing.

This type of hardware can be set up in several ways, for handling tasks as different as medical imaging, computer aided design and typesetting. I used V-Paint, from Visual Data Enterprises of California, an essentially illustrative software package.

This system is based around the Apple Graphics Tablet and pen. The tablet, 15in by 15in, is built to last. The pen has the same feel and weight as a rather fat ballpoint pen and glides comfortably over the replaceable plastic overlay — fixed at four corners so you can slide sheets underneath it, and printed with a good grid for precise work.

The tablet is sensitive to the pen's retractable head, and all drawing operations and screen commands are controlled by the pen pressing on various parts

The same picture, lacking green.

Our friend the tiger again, in blue only.

An Art Deco sunrise scene, on the Commodore.

Sad eyes look very blue on the Atari.

P is for princess on the Atari.

Indian rug design, on the Commodore.

Japanese girl, with a pale cream background, painted on the Apple.

Using New V-Paint and an Analog card on the Apple, a David Bowie portrait.

15►

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◀11

of the tablet, leaving you free to concentrate on the drawing screen. This means the computer doesn't interfere unduly with the process of drawing and painting.

The two pictures drawn on the Apple and shown on page 11 were based on photographs, a well-known technique used to produce super-real artwork.

It is particularly appropriate for modern graphics because it is fast, effective and there is no shortage of source material. Skimming through several random images is also a good way of stimulating the imagination.

The source for the Bowie picture was a portrait photo that caught my eye in a record store, and the Japanese girl came from the pages of a women's magazine. You can also make a montage of multiple images.

Once I'd chosen my picture sources, I traced a careful outline onto a tablet-sized piece of tracing paper, with the image positioned carefully. The tracing can be transferred to the screen easily by fixing it to the tablet and tracing again.

Next, add colour, texture and detail to the bare bones of your picture. There are many approaches. You can splash in the main areas of colour, and then tackle the detail, as I did with the picture of the Japanese girl. This is a quick way of structuring colour and shape in the picture as a whole.

With the Bowie picture, on the other hand, I worked on the detail first, adding colour later. I did not have to worry about scaling the drawing up or down from the original photograph. I traced off a basic outline, and filled in the rest by eye.

Sketch lines, or a very small brush in black, white and grey are useful for shadows and highlights. To help you with detailed work, there are four levels of zoom available at the press of the pen which allows you to alter the picture dot by dot. It's remarkable how much difference a couple of dots can make.

Also, the use of different brush sizes and shapes enables a variety of textures and hence darker or lighter colour. For instance, in the original photo, the Japanese girl's hat shows various shades of red, from shocking pink, muted with dark red and dark purple. Since a computer isn't tied to one colour scheme, you can alter these, but even so, the essential texture must be retained. In this case the granular effect of the silk was produced using a small brush to break up and blur together the various tones, then airbrushing over a darker tone to blend the colours further.

The Japanese girl's face is masklike and very well lit, so shadowing is minimal and flat colour will do. Bowie's face, on the other hand, has much more detail. Putting in shadows and highlights involved working over the whole area in airbrush using white, greys and black. 'Airbrush' is a variable-sized brush which sprinkles random dots over the surface, softening hard edges and toning down brighter colours.

You can set any size of box, arc or circle and use it either as 'filled' or 'empty' brush.

A small box is useful for a good sharp edge, and a very small circle used as a brush is uncannily similar to a 3D one for streaky, irregular edges, and fluffy cloudlike texture (like the grey shadows on the girl's face and arms).

Areas can be filled with colour automatically, an absorbing process to watch — the paint appears to ripple like a liquid as it fills the screen. This is painfully slow, however, and best reserved for filling confined areas and complicated patterns where you are liable to make mistakes by hand. For large areas a big brush will cover the ground much more efficiently.

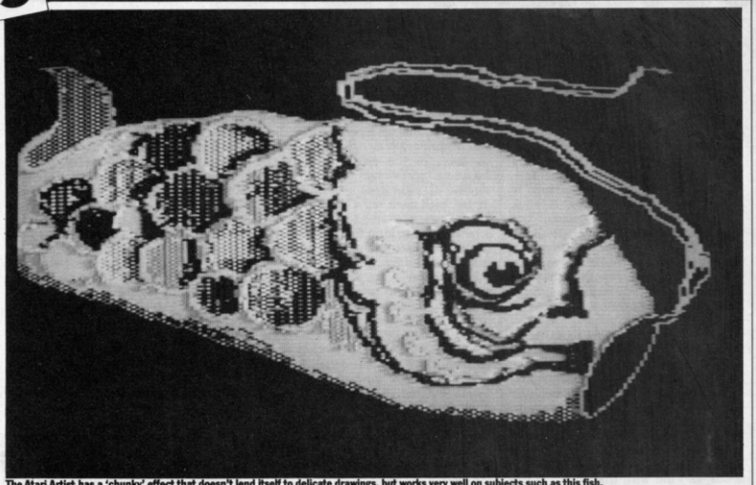
These pre-defined shapes can be set to the size you need, and include box, arc, circle and lines. I made use of circle and lines to draw the details — like the fan and the frames decorating the wall behind the Japanese girl. The adjustable circles and parallel lines are perfect for constructing designs, letters, logos, borders, and any regular patterns.

The old (1983) version of V-Paint has a palette of 16 colours — most of which are not nice to look at. For someone who finds these colours restrictive, Number 9 Systems now offers a special piece of hardware — an Analog Module — to go with the 1984 software, which increases the colour choice to any 16 of 4096 colours.

The wider choice of colours seems to raise the resolution — the eye does not see any more dots, but the increased range of colour tone allows for soft shading and greater depth. The eye tends to fill in the difference or blend two colours if they are sufficiently close together.

In the examples provided, I have used palettes from both the old and the new V-Paint (plus Analog Module) for the same pictures. Some use V-Paint colours — and the effect can be rather glaring, while others use the extended palette which allows for much softer shading and subtler colours.

16▶



The Atari Artist has a 'chunky' effect that doesn't lend itself to delicate drawings, but works very well on subjects such as this fish.

◄15

Rainbow room

Atari Artist also offers 16 colours, but each colour features a choice of eight different shades of intensity, making a grand total of 128. They even roll around the screen in a dazzling rainbow-like effect.

Atari Artist comes with a touch tablet and pen, and plugs into any Atari machine. The touch tablet is small, with a drawing area of 6in by 4in, and covered with a plastic overlay for protection — useful if you want to trace anything to reproduce on the screen.

The surface of the tablet is very sensitive to pressure so remember to keep the pen at right angles to the tablet and try not to touch the drawing surface. The result is that drawing for long periods gives you artist's cramp. A bigger tablet would probably make life easier.

The Atari has a dot resolution of 320 by 192, so very delicate or detailed drawing is not possible. The familiar 'stepping' effect can be seen — especially in circles and other curved shapes. This chunkiness is offset by the range and number of colours which can be used for shade and tone and for softening hard edges.

For the Atari pictures, I started drawing in black and white using the smallest brush. Circles formed the scales and eyes on the fish (above and page 11).

Using 'mirror' mode which can be set to draw horizontal, vertical or all-direction reflections enabled me to draw both eyes at once.

RESOLUTION TABLE

How do you evaluate a graphics system for overall picture quality? Some machines offer high resolution (the number of dots on the screen) and few colours, while others have many colours and medium or low resolution.

Without even looking at a system, you can work out an overall figure or quotient from the basic information. Although this quotient is an arbitrary figure, it places a machine somewhere on a scale of visual accuracy.

If you multiply the number of horizontal pixels by vertical pixels by the number of colours, and multiply that by the number of grey levels (often there is just one), you will get an overall quotient. This figure will be large, but divide it by 10,000 to scale it down.

The formula looks like this:
(width in pixels × height in pixels × colours × grey levels) ÷ 10,000 = Q

Apple Lo-Res	3.07
Spectrum	3.93
BBC Teletext	4.09
Apple 2x Lores	6.14
HP(86A)	13.05
Apple Hi-Res	16.12
BBC Mode 5	16.38
BBC Mode 4	16.38
Atari	24.57
Lisa	28.51
Sirius	32.00
BBC Mode 0	32.76
BBC Mode 1	32.76
BBC Mode 2	32.76
Vic 20	44.49
MSX machines	78.64
Tandy	78.64
Dragon	78.64
Sord/CGLM5	78.64
Texas 9918 VDP	78.64
Apple 2x Hires	86.01
Commodore 64	102.40
IBM (colour)	102.40
Apple III	172.03
DEC Rainbow	368.64
NEC 7220 VDP	389.12
Telidon	419.43
TV screen	43,443,840
Paper and ink	308,000,000
Human eye	16,777,216,000,000

You can draw as well as 'fill' with the ready-made patterns. These are fine-to-coarse grained, light to dark, and provide texture and colour variety to otherwise flat areas of colour. They are best used in small quantities for detailed shadows on the face. Used in large areas, such as the background, they can become rather boring.

My favourite Atari special effect is the 'rainbow', which turns any one of the set colours to a rainbow, rolling continuously from top to bottom of the screen. However, the effect can be vivid so it is best used in small doses.

The main drawback is that although you can see all 128 colours on the menu screens, when working on the screen with Atari Artist you can only have four to draw and paint with.

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ARCHON is brilliant. There's something in it for all games addicts; arcade, adventure and strategy are all here. My only complaint is that it's best played against a human opponent – the computer's just too good and you can't give it a handicap.

Bryan Skinner
Personal Computer News

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GRADUATE DEGREE

Does the Graduate make the grade? Kenn Garroch turns his BBC Micro into a small PC compatible system, although with some differences and it still comes to less cash than the competition.

First announced some months ago, the Graduate was designed as an IBM compatible add-on for the BBC Micro. This was well in line with Torch's philosophy to concentrate on business computers. Torch originally obtained the machine from a company called Data Technologies. But how does it measure up?

First impressions

The Graduate arrived in a medium-sized cardboard box which, when opened, revealed a medium-sized oblong grey and fawn box that looked not unlike the original Graduate I had seen in the advertisements six months ago. The software bundled with the machine consists of an MSDOS system, a GDFS, and two Xchange disks.

Connecting it is simplicity itself, just a matter of plugging the ribbon cable into the 1MHz bus on the BBC, and plugging in the mains supply.

Turning on the BBC, monitor, Graduate, and inserting the system disk (MSDOS 2.11) eventually produces a click, a whirr, and the start-up routine for MSDOS, with its stateside time and data routines.

In use

From here on, however, the system seemed to go downhill. Typing DIR produced a directory, with a screen update that was tortuously slow. Torch subsequently revealed that this has been improved. The BBC 32-line screen is cut down to the IBM's 26 and the screen update processing appears to be done through the 1MHz bus by the Graduate.

The biggest drawback of the system is that all input/output, except for the disks, goes through the 1MHz bus and not the Tube.

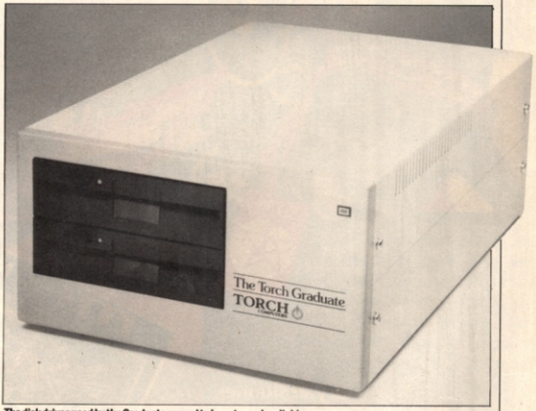
I tried to see how IBM compatible the Graduate was. The main test was to try to run the Microsoft *Flight Simulator*. It got as far asking what kind of monitor was to be used, then hung. Oh well, I suppose if it had run, I'd only have spent far too much time playing it.

Other IBM programs tried were *Easywriter*, which worked, *Lotus 1-2-3* which also ran, *dBASE III* which didn't, Concurrent CP/M which also didn't, and Microsoft's *Word*, which did, sort of.

The bundled Xchange software ran well most of the time, but it had a tendency to crash at odd moments.

The size of MSDOS, the operating system that comes with the machine, is revealed by using CHKDSK. Internally, the Graduate has 262144 bytes, with 3622496 bytes on each disk. Because it's version 2.11, MSDOS has the facility for tree structured files and directories, all of which functioned perfectly.

What is not available directly is any access to the output processor, namely the BBC. This is a great pity, especially since it is available on most other Torch machines. Access would make it possible to use *FX and VDU commands to modify the system, but you can't have everything with semi-IBMability.



The disk drives used by the Graduate proved to be extremely reliable.

The GDFS disk is used to set up the system as a BBC but allows the Graduate's disks to be used. The whole system is booted as before but with the GDFS disk in the Graduate's top drive. After debating what to do, the Graduate boots up the BBC as a BBC but with the GDFS system installed.

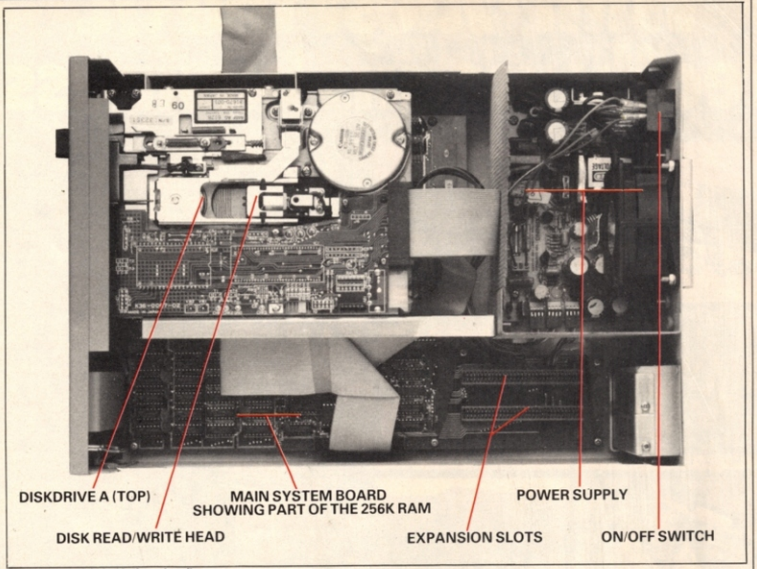
To get it moving, *GDFS is used. If you have an Acorn DFS then *DISK puts you into this and allows the normal disk system and drives to be used. Unfortunately, there is no way of transferring Graduate IBM files from, or to, Acorn format disks, as the GDFS format is not readable from MSDOS.

The GDFS (version 1.0) disk, provided with the system, uses a cut-down version of the Acorn's disk operating system and Acorn format 40 track disks. There are a couple of extras here with *FORMAT and *VERIFY being included instead of *DUMP, *WIPE, *ACCESS, *COPY, *DESTROY, *RENAME, and *LIST. Some of these come up with the message 'Not implemeted', others rush off to the disk to see if they are * commands, while still others give you the error message if you have not entered them correctly, and when you correct them, tell you they are not implemented. Neat, huh?

Also not implemented from Basic are all of the random access file commands (OPENUP/OUT). This is rather an appalling omission on Torch's part as it means that the BBC Micro, unless it has an Acorn DFS with interface and drives, cannot cope with any serious Basic programs.

If you intend to run any of the Acorn games using the Graduate as a disk drive, then forget it. *Elite*, and most of the other recent Acornsoft games use the DFS and built-in disk system directly, so auto book is pretty well impossible.

On the plus side, the directory and information listings are of a slightly different format, depending on the current screen mode. The Format and Verify commands are a great deal faster than most I've seen so far (about eight seconds), perhaps due to the WD1770 disk controller. Unfortunately, the Backup and Compact commands can be



Space is pretty tight inside the main unit.

very slow, depending upon how much work has to be done.

A great deal of this disk processing appears to be done within the Graduate itself. For instance, loading a graphics screen into Mode 2 makes the system access the Graduate's disk which whirrs and whirrs. Disk access then stops and the screen is speedily updated via the 1MHz bus.

To boot up the BBC as a BBC only with the Graduate hooked up, requires no disks in the Grad's drives. Pressing Break causes the system to sit and think a little and eventually it comes up as a standard BBC.

The problem here is that every time Break is pressed, the BBC goes to the Graduate for a while to consider whether to be a BBC or not. If you have a sideways ROM that requires Break B (Basic), or an auto book disk that requires shift Break, the result is long delays. Apart from this, the only difference to the BBC is the fact the FRED and JIM (&FC00 to &FDFF) areas of memory hold the Graduate's interface system instead of &FF (nothing connected).

Documentation

The manual supplied with the system consisted of a Microsoft MSDOS manual, an Xchange quick reference guide, and a 42 page manual covering hooking up the BBC and the differences between the Graduate's and IBM's keyboards.

The former is the standard manual, with a few bits missing, *ie* DEBUG, EXEFIX, CONFIG, LOCATE, and LOGIN. The second covers using MSDOS and seems to be aimed at someone who doesn't want to use the machine for anything other than running dedicated software or attempting to use it as a BBC disk drive.

Verdict

Overall, the Graduate is a pleb of a machine to use and work with. If you have used an IBM, or one of its compatible brethren, then you will probably find the Grad rather slow. The software supplied is not the best — in fact the Grad will not run many of the better packages currently available for the IBM and compatibles.

Personally, I would not give it desk space. In fact, it joins Mrs T in not getting an honorary degree and will need to do a lot more revision before it can even sit the exams again.

Points of comparison

The whole Graduate system, including monitor, printer, and BBC is around £1,900. This compares quite favourably with the opposition: the Olivetti M24 at around £2,600, the ITT Xtra at about £2,550, and the IBM PC at approximately £2,600. But further differences between the Grad and the others are:

- It is not wholly software compatible
- The keyboard is restricted to a BBC type
- It is generally slower.

These are mainly due to Torch having to get it working with the BBC Micro.

SPECIFICATIONS

Processor	8088
ROM	16K
RAM	256K
OS	MSDOS 2.11
Software	MSDOS system plus extensions, Psion Xchange, GDFS Acorn DOS
Price	£1149.99
Distributor	Torch 0223-841000

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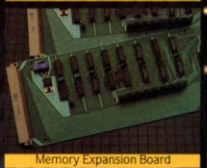

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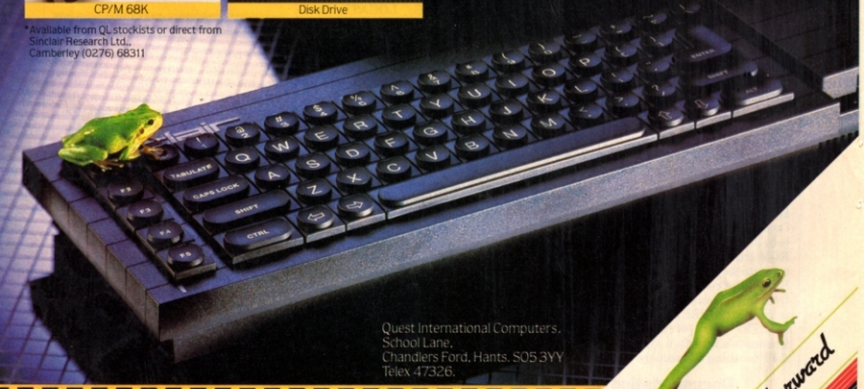

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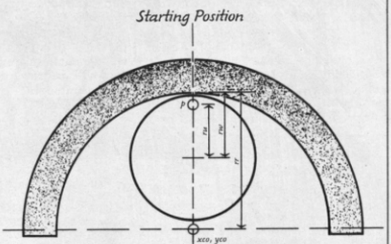
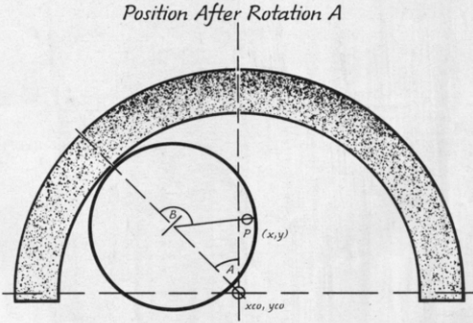
WHEELS WITHIN WHEELS

The ring's the thing in this circular listing from James Lucy.



p – Pen Position
rw – Radius of Wheel
xco, yco – Coordinates
rr – Radius of Outer Ring (ANNULUS)
ru – Drawing Radius used of Pattern Centre



$x = xco - (rr - rrw)\ SIN(A) + ru\ SIN(B)$

$y = yco + (rr - rw)\ COS(A) + ru\ COS(B)$ and $B = \frac{rr}{rw} \times A$

FIGURE 1

Fascinating patterns produced by a wheel revolving inside a ring, technically known as hypocycloidal curves, can be obtained with this listing. A wide range of sizes of both the ring and wheel can be used — the resulting patterns are most unexpected and interesting.

They can be superimposed on each other, drawn in three different colours and located anywhere on the screen. Save them to Microdrive and recall them later for your own enjoyment.

The program works by inputting the specifications of the pattern to be drawn in a series of statements and then passing these to the main drawing procedure. An instruction screen with a demonstration is provided.

Program notes

Line 150 sets up the windows. The values suit a monitor — television users should change the window width to 470 at 30,10.

Line 200 calls the instruction procedure, which in turn calls the demonstration. The remainder of the main program to line 580 obtains the parameters of the required pattern.

Input for the various parameters is checked using PROCedure checknum (line 710). Checknum is called with four parameters: k$ is the string to be checked as a number, defval is the default value to be used if just Enter is pressed, minval is the minimum allowable value to which all lower values will be set and maxval is similar for maximum values.

The procedure, as it stands, will only accept positive integer values but if required line 790 could be modified to accept one (and only one) decimal point and minus sign in the string k$. Line 870 calls procedures okay and yugh which make appropriate noises depending on the acceptability of the input.

The main drawing procedure, drawsp, is an interesting exercise in trigonometry. The derivation of the equations is explained in Figure 1. The procedure appears to be written rather clumsily, with a good deal of subsidiary calculation being done beforehand and the main REPEAT loop crammed on one line. However the procedure in its finished form runs about 15 per cent faster than the first version, which was written in a more conventional way.

The most important factor in the speed is the step size for angle, variable d. This is the amount by which the angle A in Figure 1 increases between each small part of the pattern being drawn. It is set in line 660 to PI/30, which is the largest value to give an acceptably smooth result.

Much larger values for d, *eg* PI/5, will give a very jagged curve, which can be quite attractive. An interesting experiment would be to add an input for jaggedness. A line similar to 460 would do, lines 520 and 600 would need an extra parameter jagged and d in line 660 could become PI/jagged.

Another point to note is that the pattern is drawn using the LINE command. Initially a series of points were plotted using POINT but this proved very slow. The LINE command is much faster and of course a curve is just a large number of short straight lines.

The last two procedures, save_screen and load_screen, use Microdrives to save a pattern or to load a previously created one at the start of the program.

22 ►

OUTPUT: QL

Only three screens may be stored on a cartridge because of the amount of memory needed to map the screen.

The process is remarkably fast, considering 32768 bytes are being transferred, but once the window size has been decided it is only necessary to save the window area. The whole screen is saved in the listing to allow for different window sizes. No attempt has been made to check the validity of the file names, so be careful — if you type an invalid file name while trying to save a masterpiece, type RUN 530.

A demonstration and instructions are provided. It is possible to press Enter throughout in answer to the prompts but you will be rewarded with a black three-pointed star — that's what you get for being lazy.

Any pattern will continue to draw until a key is pressed — note that the key may have to be held down for a moment rather than just tapped. You will then be asked if you want to draw a new pattern, which may be superimposed on the existing screen or draw on a clean screen.

If you do not want another pattern, you may save the screen produced to Microdrive. When typing in the program enter all £ signs as # (hashes).

LISTING

```
100 REMark ****************
110 REMark QL SPIRODRAW
120 REMark (C) JANUARY 1985, JAMES LUCY
130 REMark ****************
140 REMark SET UP WINDOWS:USE SMALLER
WINDOWS FOR UNMODIFIED TV
150 MODE 4:WINDOW #1,490,200,20,10:WINDOW
#0,490,46,20,210:BORDER #1,5,0,6:BORDER
#0,5,0,6
160 PAPER #1,4:PAPER #0,7:CLS #0:CLS
#1:CSIZE #0,2,0:INK 0:INK #0,0:col=0
170 REMark PRINT HEADINGS
180 CSIZE 3,1:AT 0,8:UNDER 1:PRINT"QL
SPIRODRAW":UNDER 0
190 CSIZE 2,0:AT 5,2:PRINT "Do you
require instructions ? (y/n) "
200 a$=INKEY$(-1):CLS :IF a$="Y" OR
a$="y":instructions:PAUSE:CLS
210 REMark LOAD PREVIOUSLY RECORDED
SCREEN
220 PRINT #0,"          Load a screen ?
(y/n) "!:a$=INKEY$(-1)
230 IF a$="Y" OR a$="y":load_screen
240 CLS #0
250 REPeat main_loop
260 REMark GET PARAMETERS OF CURVE
270 PRINT #0,"x-coord of pattern
centre?(0-180) ";
280 INPUT #0,x$:checknum
x$,90,0,180:PRINT#0:IF notnum=0 THEN
xco=k:ELSE GO TO 270
290 PRINT #0,"y-coord of pattern
centre?(0-100) ";
300 INPUT #0,y$:checknum
y$,50,0,100:PRINT#0:IF notnum=0 THEN
yco=k:ELSE GO TO 290
310 PRINT #0," Pattern colour ? (Red,
Black, White)"
320 REPeat patt_col
330 INPUT #0," Type 'r', 'b' or 'w'
";col$
340 coll$=col$&" "
350 coll=CODE(coll$)
360 SELect ON coll
370 ON coll=32:col=0:ok
380 ON coll=114:col=2:ok
390 ON coll=82 :col=2:ok
400 ON coll=66 :col=0:ok
410 ON coll=98 :col=0:ok
420 ON coll=87:col=7:ok
430 ON coll=119:col=7:ok
440 ON coll=REMAINDER :yugh:END REPeat
patt_col
450 END SELect
460 CLS #0:INPUT #0," Radius of ring?(5
to 100) ";rr$:checknum
rr$,50,5,100:PRINT#0:IF notnum=0 THEN
rr=k:ELSE GO TO 460
470 INPUT #0," Radius of wheel?(1 to
100) ";rw$:checknum
rw$,25,1,100:PRINT#0:IF notnum=0 THEN
rw=k:ELSE GO TO 470
480 INPUT #0," Radius on wheel you wish
to use? ";ru$:checknum
ru$,rw,1,100:PRINT#0:IF notnum=0 THEN
ru=k:ELSE GO TO 480
490 INK #0,4:PRINT #0,"          Press any
key to draw":INK #0,0
500 PAUSE
510 REMark CALL MAIN DRAWING PROCEDURE
520 drawsp xco,yco,rr,rw,ru,col
530 CLS #0:INPUT #0,"     Another pattern
? (y/n)";p$
540 IF p$="n"OR p$="N" THEN
save_screen:CLS#0:CLS:STOP
550 CLS #0:INPUT #0," Superimposed or new
pattern ? (s/n)";q$
560 IF q$="n"OR q$="N":CLS
570 CLS #0
580 END REPeat main_loop
590 REMark ****************
600 DEFine PROCedure
drawsp(xco,yco,ring,wheel,ru,col)
610 REMark MAIN DRAWING PROCEDURE
620 LOCal a,b,c,d
630 CLS#0:PRINT #0,"     Press any key to
stop drawing"
640 INK col
650 LINE xco,yco+ru-wheel+ring
660 a=0:b=ring-wheel:c=ring/wheel:d=PI/30
670 REPeat
loop:x=xco-b*SIN(a)+ru*SIN(c*a):y=yco+b*
COS(a)+ru*COS(c*a):LINE TO
x,y:a=a+d:s$=INKEY$:IF s$<>"" THEN EXIT
loop:END REPeat loop
680 END DEFine drawsp
690 REMark ****************
700 REMark ****************
710 DEFine PROCedure checknum
(k$,defval,minval,maxval)
720 REMark THIS IS A USEFUL PROCEDURE FOR
USE IN MANY PROGRAMS
730 LOCal a
740 notnum=0
750 IF k$=""
760 k$=defval:PRINT #0,k$
770 ELSE
780 FOR a=1 TO LEN(k$)
790 IF CODE(k$(a))<48 OR CODE(k$(a))>57
THEN notnum=1:a=LEN(k$)+1
800 END FOR a
810 END IF
820 IF notnum=0
830 k=k$
840 IF k<minval THEN k=minval:PRINT #0,
"(";minval;")"
850 IF k>maxval THEN k=maxval:PRINT
#0,"(";maxval;")"
860 END IF
870 IF notnum=0:ok:ELSE yugh
880 END DEFine
890 REMark ****************
900 REMark ****************
910 DEFine PROCedure instructions
920 AT 5,1:PRINT"Would you like a
demonstration ? (y/n)"
930 d$=INKEY$(-1):IF d$="y" OR
d$="Y":CLS:demo
940 AT 2,3:PRINT" This program produces
patterns generated by a wheel revolving
inside a ring. ";
950 PRINT "the ring and wheel sizes
and the position of the pattern on the
screen are specified at the start of
the program.";
960 PRINT" The colour of the pattern can
be red, white or black. Patterns can
be superimposed on previous
patterns.";
970 PRINT " The choice of wheel sizes is
wide and a drawing radius larger than
the wheel radius may be used. ";
980 PRINT"  Default values will be used
if 'ENTER' is pressed in answer to the
prompts."
990 PRINT"  You may save screens and
reload them when required"
1000 AT 18,0:INK 7:PRINT"          Press any
key to continue":INK 0
1010 END DEFine
1020 REMark ****************
1030 REMark ****************
1040 DEFine PROCedure demo
1050 REMark PERFORMS THE DEMONSTRATION AT
THE START
1060 LOCal a,d,r:a=0:d=PI/30
1070 FILL 1:INK 2:CIRCLE 85,50,56:FILL
0:INK 4:FILL 1:CIRCLE 85,50,51:FILL 0:INK
7:CIRCLE 85,50,56.5:CIRCLE 85,50,50.5:INK
0
1080 CSIZE 3,1:AT 7,0:PRINT"DEMO":CSIZE
2,0
1090 REPeat loop
1100 x=85-25*SIN(a)
1110 y=50+25*COS(a)
1120 xp=x+25*SIN(2*a)
1130 yp=y+25*COS(2*a)
1140 CIRCLE x,y,25
1150 INK 7:CIRCLE xp,yp,1
1160 LINE x,y TO xp,yp
1170 INK 4:CIRCLE x,y,25:LINE x,y TO
xp,yp:INK 0
1180 a=a+d
1190 IF a>2*PI THEN EXIT loop
1200 END REPeat loop
1210 PAUSE 50
1220 BEEP 500,50:CLS
1230 END DEFine
1240 REMark ****************
1250 REMark ****************
1260 DEFine PROCedure ok
1270 BEEP 1000,0
1280 END DEFine
1290 REMark ****************
1300 REMark ****************
1310 DEFine PROCedure yugh
1320 BEEP 10000,200,100,3,5,3,3,10
1330 END DEFine
1340 REMark ****************
1350 DEFine PROCedure save_screen
1360 CLS#0
1370 PRINT #0,"     Save this pattern ?
(y/n) ";
1380 INPUT #0,sv$
1390 IF sv$="y" OR sv$="Y"
1400 CLS#0:PRINT #0," Type filename (e.g
'mdvl_picture')"
1410 INPUT #0,"       ";filename$
1420 CLS #0
1430 SBYTES filename$,131072,32768
1440 END IF
1450 END DEFine
1460 REMark ****************
1470 DEFine PROCedure load_screen
1480 PAPER 0:CLS:PAPER 4
1490 CLS #0
1500 PRINT #0," File to be loaded ?
(e.g.mdvl_picture)";INPUT #0,"
";filename$
1510 LBYTES filename$,131072
1520 END DEFine
1530 REMark ****************
```

Samleco DX 85

The lowest cost, most versatile high speed Dot Matrix Printer yet.

You told us what you wanted so we went ahead and did it.

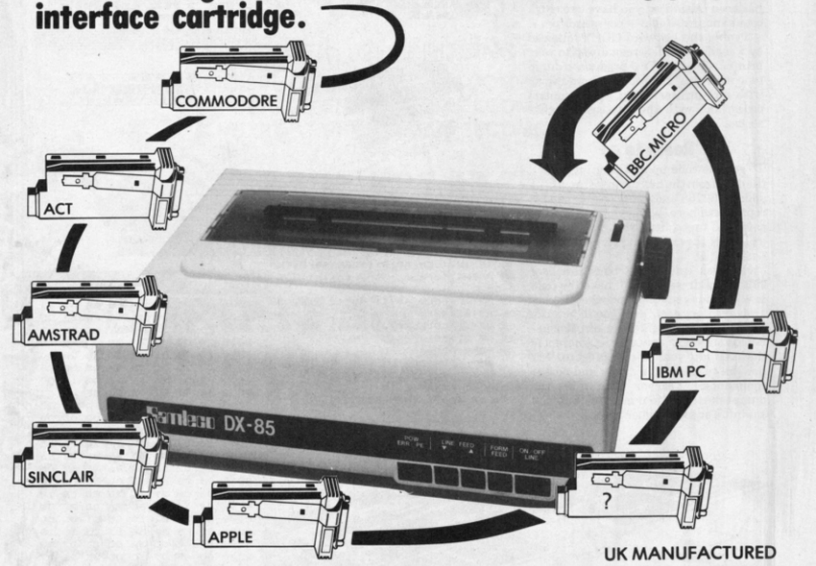
Features include:

★ Automatic paper loading ★ Epson compatibility ★ Range of languages ★ Normal, condensed and double width characters ★ Full graphics ★ Interchangeable plug-in interfaces to suit all micros ★ IBM PC Compatible version ★ Combined friction and adjustable pin feed ★ Suitable for all commercial and business applications ★ Can connect to most computers ★ Robust construction ★ Latest technology ★ Ribbon cartridge or spools.

Specification:

Speed: 120 cps, bi-directional, short line seeking. Columns: 80 to 136, (at 17 cpi). Matrix: 9 x 9. Character set: Full 96 ch ASCII with 11 language variants. Graphics: Unidirectional, bit image. Forms handling: Forward/reverse with programmable line spacing. Interfaces: Centronics parallel, RS 232 serial, Commodore. Size: Width 370mm, Depth 280mm, Height 130mm, Weight 6kg.

Suitable for direct connection to all leading PCs and Business micros using plug-in interface cartridge.



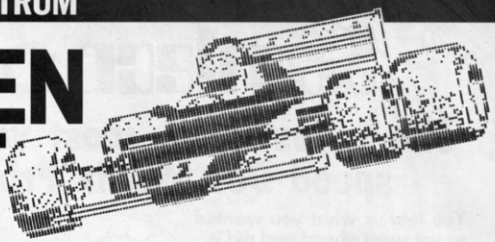
UK MANUFACTURED

Someone had to do it...

Samleco Ltd

9 Fairacres Ind. Est., Dedworth Road, Windsor, Berks SL4 4LE, England.
Tel: Windsor (07535) 54717/8. Telex: 838791.

SCREEN PRINT



Screen dumps via the RS232 port on Interface 1, thanks to Marcus Gibbs.

The RS232 interface on Sinclair's Interface 1 is fairly good, for printers at least, but it's not possible to use it for screen dumps without a fair bit of work. This is partly compensated for by the facility to add commands to Basic, courtesy of the Interface 1 ROM; the following machine code routine gives you two new Basic commands that send a copy of the screen to a printer through the RS232 port.

The code is just 212 bytes long and fully relocatable. It should not, however, be loaded into the printer buffer as the routine uses the buffer. When the code has been initialised you have two extra commands available — COPY and COPY #.

Typing the keyword COPY followed by $ sends a small screen dump to your printer, while COPY # produces a dump twice this size. The routine should work with any printer using Epson control codes, and with the low cost Brother series.

Ready to go

To get the code up and running, enter the data from the hex listing, starting at address 32768 and using the hexloader reproduced here. When you've finished, save to tape/Microdrive using SAVE "COPY"CODE 32768,213 OR SAVE""m";1;"COPY"CODE 32768,213.

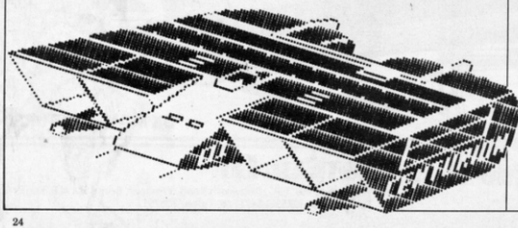
Now you can load it back into any suitable address in RAM. Load the code to 45000, for example, and when loaded RANDOMIZE USR 45000, and you'll get the report OK. Now enter as direct commands OPEN# 3,"b":FORMAT "b";"x where x is the baud rate your printer is set to. You now have use of the COPY $ and COPY # commands. At lower baud rates the dump takes about four minutes, but only a minute or so at higher speeds.

Hexloader

```
10 REM caps input only
20 INPUT "Start address";ADD
30 INPUT "Enter code";A$
40 IF INT(LEN A$/2)<>LEN A$/2 TH
EN PRINT "Error - try again":GOT
O 30
50 LET A=CODE A$(1)-48-(7 AND CO
DE A$(1)>58)
60 LET B=CODE A$(2)-48-(7 AND CO
DE A$(2)>58)
70 POKE ADD,A*16+B
80 LET ADD=ADD+1
90 PRINT A$( TO 2);" ";
100 LET A$=A$(3 TO )
110 IF A$="" THEN GOTO 30
120 GOTO 50
```

Hex dump

```
8000 21 0D 00 09 E5 CF 31 E1
8008 22 B7 5C C9 00 FE 31 C2
8010 F0 01 3E 4B 32 0C 80 D7
8018 20 00 FE 23 28 0A FE 24
8020 C2 F0 01 3E 4C 32 0C 80
8028 D7 20 00 CD B7 05 3E 03
8030 D7 01 16 3E 1B D7 10 00
8038 3E 41 D7 10 00 3E 04 D7
8040 10 00 3E 0D D7 10 00 3E
8048 0A D7 10 00 06 00 0E 00
8050 DD 21 00 5B 79 CB 3F 6F
8058 78 E6 30 0F 67 78 E6 0E
8060 07 07 07 07 B5 6F 78 E6
8068 01 07 07 B4 F6 40 67 C5
8070 06 08 E5 16 00 3E 08 4E
8078 58 CB 39 1D 20 FB CB 12
8080 24 3D 20 F3 7A DD 77 00
8088 DD 23 E1 10 E5 C1 0C 0C
8090 79 FE 40 38 B5 C5 3E 1B
8098 D7 10 00 3A 0C 80 D7 10
80A0 00 AF D7 10 00 3E 01 D7
80A8 10 00 21 00 5B 06 00 7E
80B0 D7 10 00 23 10 F9 3E 0D
80B8 D7 10 00 3E 0A D7 10 00
80C0 C1 04 04 78 FE 30 38 86
80C8 3E 1B D7 10 00 3E 32 D7
80D0 10 00 C3 C1 05 00 00 00
```



QL NEWS

News from the world of Sinclair QL computing.

The communications explosion takes shape!

Communications are now the most exciting, essential part of any computer.

In the past six months alone, over 150,000 modems have been sold in the UK.

Now, the QL's own communications explosion is taking shape ... and it has the potential to make more of communications than any other micro!

Read on and discover exciting new ways to use your QL ... with the QL modem ... telephony unit ... and powerful interface options.

Nº2

DAVID KARLIN

Why Q COM is everything you could wish for in communications.

The QL is now communicating – via Q COM! This exciting three-part peripheral presents QL users with a multitude of ways to exploit the world of communications.

Once connected to the QL, Q COM allows you to access the considerable number of phone-in databases, such as Prestel and QNet.

Q COM enables you to communicate with other computer users. Its facilities include electronic mail, data transfer from Microdrives and bulletin boards.

Through it you can link your QL to larger minicomputers. Q COM has full capability in this area, and allows the QL to talk to powerful mainframes.

Q COM's automatic dialling and call acceptance facilities, together with the storage of messages from other modems, will revolutionise the way you use your telephone.

The next few pages of QL News tell you much more.

It's enough for me to say here that with the QL and Q COM, you'll be exploring new openings in communications for some time to come!

David Karlin

David Karlin,
Chief Design Engineer.

The Q COM package
Three special parts to stack!

QL communications interface

This multi-speed interface contains the sophisticated software used to set up QL communications – and to control the Q CALL and Q MOD units.

Q CON also comes complete with Microdrive-based software. This enables the QL to link to larger computers using VT100 and viewdata protocols.

The software will also run *any* standard modem – connected via Q CON's built-in RS-232-C port.

Most importantly, Q CON allows the QL to transmit and receive at rates switchable from 75 to 9600 baud (encompassing the widely-used 75/1200 Prestel rates, and 1200/1200 half duplex rates for user-to-user exchange).

Q CON is specially styled to suit your QL – with similar fluting and ribs – and forms the base module of a vertical-stacking system.

It's supplied with full instructions, software on Microdrive cartridge, and connecting leads.

QL auto dial/answer unit

Q CALL gives every QL user something out of the ordinary.

It's a module which links directly to your telephone, and allows auto-dialling at the push of a single key. In the same way, it will permit incoming calls to be accepted automatically . . . and even trigger pre-programmed activity from the QL!

Q CALL is the central unit of the package. It plugs directly into Q CON – so there are no connecting cables to worry about.

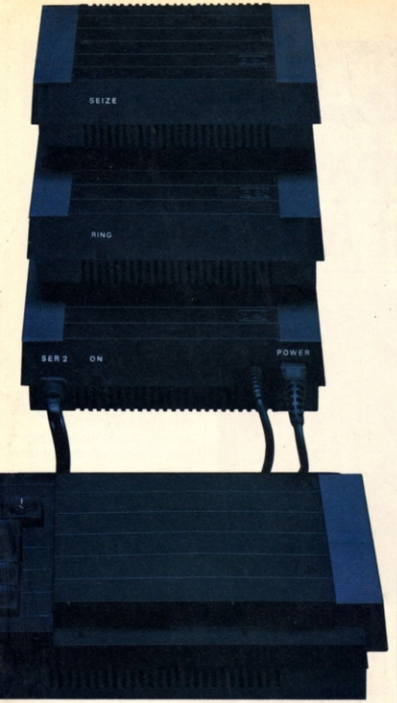
QL modem

Q MOD has all the powerful facilities expected of a modem, in a neat and simple unit.

It uses either V23 75/1200 or 1200/1200 baud rates, for Prestel, Micronet 800 and all the viewdata services described alongside.

It also incorporates a telephone extension socket for manual dialling.

Q MOD is the top unit of



Q COM, and comes with a 9' built-in telephone cable.

Q COM allows you to store hundreds of personal or business numbers.

You can store lengthy passwords and account numbers – and recall them – at the touch of a single key.

And any information that's sent to you from other modem-owners can be gathered and stored on Microdrive cartridge, or incorporated into your QL Quill documents!

The QL hooked on voice and data

The QL can now act as your personal address book and telephone operator!

Exploring the world of QNet, Prestel, Micronet and more!

Thousands of QL users already enjoy the excitement of linking to a nationwide mainframe.

Q COM turns your QL into an intelligent terminal, allowing you to access many thousands of pages of information, software and communications facilities.

The services brought to you through Prestel can include Micronet 800, Viewfax 258 and QNet, the new QL database.

Membership of QNet will bring you free software, QL news and features, and all the wide-ranging services of viewdata!

If armchair shopping is more your style, that's easy too. It's often possible to place a direct order using your QL! For dedicated QL owners, there's a daily selection of software reviews, chart toppers... and all the facts and figures you need to make buying peripherals simple.

With Q COM you can also 'download' software from the system directly into your QL and either use it immediately, or store it on Microdrive cartridge.

In fact the only problem you'll face with a viewdata service is finding enough time to explore its many features!

You can find out how to join QNet by phoning 01-278 3143.

News... information... banking services and QNet. And only a fraction of the QL's new viewdata capability.

QL meets the mainframes!

The QCON unit of Q COM turns your QL into a VT100 terminal, providing instant access to in-house computing services, both mainframe and mini.

Whether you are using your QL at home or at work, Q COM gives you access to electronic bulletin boards which provide help and advice 24 hours a day. You can leave messages or notices for friends or business contacts and even hold live discussions with them.

Additional benefits for the QL business user include easy access of in-house company software, and the interrogation of other data bases around the country.

There's also the opportunity of linking to British Telecom Gold – the widely-publicised and popular messaging service.

sinclair

QL Hardware

Microdrive cartridge price cut to only £1.99!

Sinclair Microdrive cartridges – up to 100K of programs and data on a medium so compact you can pop it into your pocket.

On February 1, the cost of Microdrive cartridges came down from £4.95 to £1.99 each.

Microdrive cartridges are the QL's own unique storage medium. Each stores up to 100K of information (that's 40 pages of A4 text), on a cartridge no bigger than a book of matches!

Over 500,000 cartridges are now being used throughout Britain.

You can store up to 50 different data files per cartridge, identified by titles of your own choice.

And QL Microdrives themselves are standard equipment on the new ICL One Per Desk micro, and British Telecom's new Merlin Tonto.

IEEE-488... the instrument connection

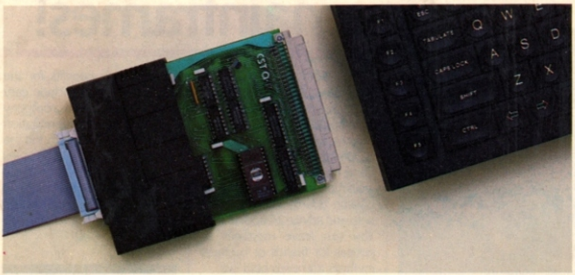
IEEE-488 is the interface standard set by the Institute of Electronic and Electrical Engineers for instrumentation control.

IEEE-488 – or General Purpose Instrumentation Bus – is a parallel interface specifically designed for high speed data transfer between a number of different types of device.

It is commonly used for controlling instrumentation via a computer, allowing the creation of laboratory data acquisition systems, industrial control schemes, etc.

The QL now has a fully-fledged IEEE-488 interface from CST. It plugs neatly into the QL's RAM expansion port, and can control up to 16 instruments simultaneously.

It's available from CST on (0223) 323302.



An IEEE-488 interface slips discreetly into place.

New inter... 3½" or 5¼"

With new Q-Disk, you can transform the QL into a powerful small business system – comprising QL, monitor, disk interface, twin disk drives and printer.

Q-Disk upgrades the QL to disk storage. Fitting easily into the QL's left hand RAM expansion port, without the need for a special expansion box, it contains a Western Digital disk controller chip. Software is held in an on-board EPROM (so little of the QL's RAM is used).

Plug in Q-Disk, and the QL accepts one or two disk drives, sized 3 in, 3½ in, 5¼ in, either 40 or 80 track, single or double-sided. Even when two drives are used, they can be different types!

Q-Disk offers up to 1.6 Mbytes of quick, reliable storage with a compatible disk drive.

It's made by Computamate, who also offer a full range of

QL to link students

Strathclyde University, in Glasgow, plans to have a campus network of 7,000 QLs linked to a central VAX minicomputer.

That's one QL for every student . . . a major investment project in a university which is now a leading centre for artificial intelligence work.

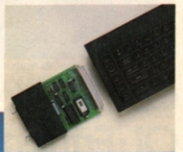
Sinclair is giving support worth £250,000 to the project. And it's likely that QL users everywhere will benefit – the students plan to develop AI programs to run on the QL!

The QL has impressed Prof. James Alty of the University's Computer Science Department, who says *'only the QL could offer the computing power, range of applications, and above all the portability, at a realistic price.'*

face to connect 3½" disk drives

complimentary QL disk drives.

To contact Computamate, phone (0782) 811711.



Single disk unit fitted with 5¼ inch drives and *(inset)* the Q-Disk controller.

The QL's high-tech spec

Dimensions
138 x 46 x 472mm
(5⅜" x 1¼" x 18¼")

Weight
1388 gms (3.055 lbs)

RAM
Massive 128K standard RAM, externally expandable to 640K. Extra RAM is available in 64K, 128K, 256K and 512K units, from third-party suppliers.

ROM
48K, containing Sinclair SuperBASIC and the Sinclair Qdos operating system.

CPU
Motorola 68008 (running at 7.5 MHz) for all principal functions. (Architecturally, the 68008 is a 32-bit processor with an eight-bit data bus. One megabyte of non-segmented address space is available.)

In addition, an Intel 8049 controls the keyboard, generates the sound, and acts as an RS-232-C receiver.

Operating system
Qdos (developed by Sinclair Research) is a single-user multitasking, time-sliced system using Sinclair SuperBASIC as a command language with display handling for multiple screen windows; and device-independent input-output.

Language
Sinclair SuperBASIC, with the advantages of procedure structuring; extendability (including syntax); interpretation speed independent of program size; clean machine code interface; operating system facilities accessible from SuperBASIC; equal capability for strings and arrays; and full error-handling facilities.

Microdrives
The QL incorporates twin QL Microdrives, each with a minimum 100K capacity, 3.5 seconds average access time. Typical loading rate of machine code programs is 2-3K per second.

Video
High resolution graphics capability with colour or monochrome monitor (or TV) in two modes – 512 x 256 pixels (four colours available) and 256 x 256 pixels (eight colours available). Normal character display format of up to 85 x 25 with choice of character sets available (TV format of up to 40 to 60 columns depending on the software).

Keyboard
Full-size, 65-key QWERTY keyboard featuring a space bar, left- and right-hand shift keys, five function keys and four cursor control keys. The keyboard can be angled by means of detachable feet.

Expansion
Excluding RGB monitor, power socket and TV port, eight peripheral/expansion ports are provided – one internal expansion, one Microdrive expansion, one ROM cartridge, two serial and two control channels, and the local area network.

Serial
Two standard RS-232-C communications interfaces for printers, modems, etc. Transmission at rates from 75-19200 baud or full duplex transmit/receive at seven rates up to 9600 baud.

LAN
For up to 64 QL computers. Data transmission over the net can be achieved at 100K baud.

Power supply
9V DC at 1.8A, 15.6V AC at 0.2A.

Joysticks
Provision for one or two devices for games or cursor control.

Applications Software
QL Quill – word processor
QL Abacus – spreadsheet
QL Easel – graphics
QL Archive – database
All four packages supplied with the QL.

Price
£399 including VAT. QL programs, full A4 manual, power supply, 4 blank cartridges and free Helpline service.

sinclair

QL Software

Updated versions of Psion software now available!

QL Abacus, Archive, Easel and Quill are the four Psion programs supplied with every QL. They're now converted to 100% machine code, and as a result they load from Microdrive cartridge much faster.

The overlays present in Version One software have been removed, resulting in noticably quicker on-screen performance.

With the compactness of machine code, there's a big saving in QL memory too – all four programs now cope with larger, more professional applications!

Version Two software is now supplied with every new QL. Existing QLUB members – see back page.

QL·Quill

QL Quill makes it easy to type in, correct and store your letters, memos and reports.

No training is needed – a beginner can be using QL Quill for word-processing within minutes!

QL Quill has the facilities of professional word processing packages: including word wrap, search and replace, justification, page headers and footers.

QL·Abacus

QL Abacus is a powerful, yet easy-to-use spreadsheet.

The program allows you to manipulate the contents of whole rows and columns by the names you assign them. There's no need to depend on confusing letters and numbers.

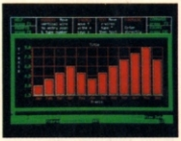
QL Abacus also incorporates a range of functions which let you carry out rapid 'what if' analyses on your data.

QL·Easel

QL Easel allows you to create graphs, bar charts and pie charts – at the touch of a key.

The program handles anything from lines and shaded curves to overlapping or stacked bars.

QL Easel designs and scales automatically or under your control. Text can be added and altered as simply as data.



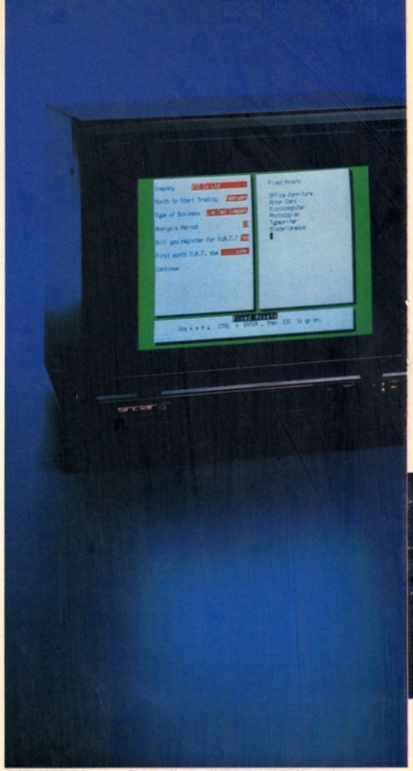
QL·Archive

QL Archive is a sophisticated, powerful database program.

It includes a screen editor which allows you to design your own screen and format your reports, and a procedure editor which lets you tailor QL Archive to your own requirements.

QL Archive is ideal for all database uses, yet it's powerful enough to be used by many software houses to generate specific database applications.

Non-members of QLUB can purchase new versions of the above software for £15 per title, or £50 for all four programs. Phone (0276) 686100 for details.



(Left to right) QL Entrepreneur, QL Project Planner and QL Decision Maker from Sinclair.

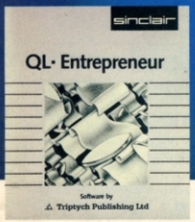
Coming soon- QL·Entrepreneur, QL·Project Planner, QL·Decision Maker!

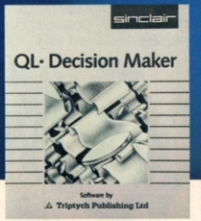
Three new QL business programs – with a difference!

QL Entrepreneur, QL Project Planner and QL Decision Maker train you to apply new and exciting management skills – through original and powerful means!

An interactive teaching program gives you a thorough and enjoyable understanding of each subject – backed by a text-book and 'self-test' facilities - and an applications program helps you to use your new expertise for specific problems and projects.

All three titles will increase your understanding and extend your control – making involved subjects easy, stimulating and useful!





QL·Entrepreneur

QL Entrepreneur is an essential program for anyone preparing to start a new business – whatever it may be!

It uses a 'question and answer' format to help you build a workable business plan.

With the input you give, it works out the break-even point of the business; the first 18 months' cash flow, the type of finance needed; the year end Balance Sheet and Profit and Loss accounts . . . and more!

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HEROES' REINKARNATION

The hero returns in the second installment of interceptor's Karn series, but some of the pizzazz has gone out of the puzzles, says Bob Chappell.

Fans of *Heroes of Karn* should be pleased to hear of its sequel, *Empire of Karn*, whose style stays pretty faithful to the original's. The program, from Interceptor, runs on the Commodore 64 and costs £7.

Empire follows the current fashion for blending graphics and text. Each location is presented pictorially in the top half of the screen when you first arrive. Thereafter, the picture disappears but can be recalled easily. The graphics are fair, and swiftly drawn but add little to the game itself.

Brief encounter

The text is spartan, merely a terse description (two short sentences at most) and a list of any objects. In fact, the music that flares up at the beginning and at certain points thereafter is definitely the best feature.

What made the original *Heroes of Karn* so successful was the volume of puzzles to be solved. In *Empire*, this element is sadly lacking. In fact, I managed to score over 70 per cent quickly, and with little imaginative effort. Whether the tough stuff has been saved for last remains to be seen.

Shipping list

A sword was waiting right at the starting gate but a magical force prevented me from taking it. An inventory (LIST is the unconventional command used in this game) revealed that Darin, one of the heroes from the previous adventure, was with me. If I was too weedy to take the sword, Darin certainly wasn't.

I grabbed myself a nearby plank and tinderbox, and clambered aboard a conveniently moored ship. A wedged chest, powder keg, bottle of rum, date (edible) and a cat were obviously going to come in handy but where was the trusty lantern? You *always* find a lamp of some sort early on, so where was it? Aha! Way up in the crow's nest. Drat! It was nailed to the mast and no amount of pulling, pushing, kicking or swearing would budge it.

After one or two unsuccessful launches, I piloted the ship to a sandy beach and thence to a desert. Not far away was a bazaar which housed, among its shops and stalls, a weaver, fortune teller, apothecary and belligerent widow. A nomad's tent was home for one Krizcokz the minstrel — the music in the game was supplied by Chris Cox.

A trapdoor and a crack in a pyramid presented problems, as did a snake in a basket. But even without cracking those or extracting any joy from the weaver, apothecary and fortune teller, my score indicated that I was almost three-quarters of the way through.

Wipe out

I didn't much like the Save routine either. If you opt to save a game straight to disk (which you can do only by first quitting the game), you can't name the saved file. This means that any previously saved game will automatically be overwritten. Tough luck if you've saved yourself in a room with no way out — you'll just have to start again from scratch.

The only way round this is to tie up several of your disks in a grandfather, father, son type rotation.

Empire of Karn simply isn't as nourishing as its predecessor. The few exceptions to the general mundaneness of the puzzles just prove the rule. It's mostly a question of trudging around collecting bits and pieces, and no atmosphere prevails, mainly due to the impoverished text. Enjoyable enough in it's own right but I think *Karn* fans will be disappointed.

Heroes return

A Spectrum version of *Heroes of Karn*, for £5.50, has also been released by Interceptor, with an Amstrad version imminent. The number of graphically depicted locations is restricted on the Spectrum, but those that remain are far, far superior in quality to those on the 64, thanks to the efforts of graphics designer Terry Greer. The pictures are pleasing to the eye and definitely add to the adventure. Terry Greer also did the excellent graphics for Interceptor's earlier *Jewels of Babylon*.

The command format has been tidied up, too. Instead of LIST, good old I (for inventory) is back, and you can address Darin directly.

Heroes of Karn can still be confidently recommended, with its bags of puzzles spread evenly throughout. Shame the music's gone but the improved command analyser and the superb graphics more than make up for the loss.

Cheap thrill

Just room for a brief mention of *Se-kaa of Assiah*, a text and graphics adventure from Mastervision. This is a two-part 48K Spectrum adventure, all on the one cassette, featuring over 170 instantly illustrated locations.

Many of the graphics are similar and simple, but colourful and effective, particularly those inside the castle where flickering torches deck the walls.

Your mission as Se-Kaa is twofold. You must discover the whereabouts, within the Castle of the Dead, of three great artifacts and restore them to their rightful resting places.

Although the adventure breaks no new ground and is fairly straightforward, it only costs £2.99, so must be considered a bargain. ■

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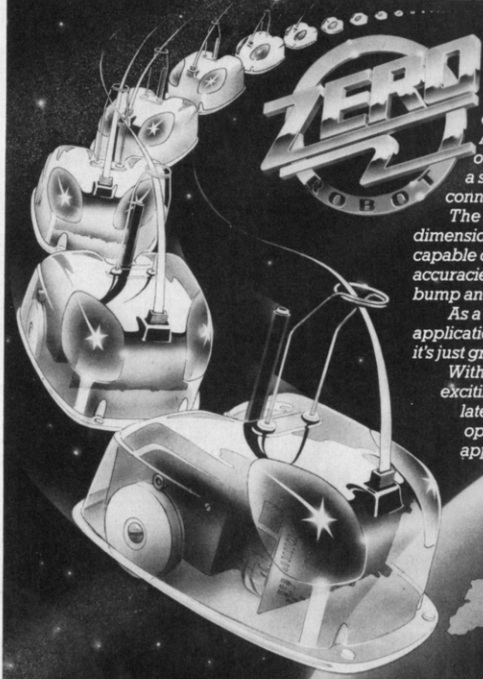
The Zero 2 Robot has arrived. It's the first truly micro robotic system available and remarkably it costs less than £100.



Controlled electronically through a cable from your computer, it is equipped with wheels, pen, line follower and two tone horn. It will connect easily with the Spectrum, BBC B, Acorn, Commodore 64 and all other personal computers with a standard 'D' type RS 232 connector.

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MUSICAL BOX

The Music 500 offers ample scope for budding composers, says Kenn Garroch. The only drawback is the poor documentation.

The difference between this add-on music synthesiser for the BBC Micro and other systems is that all the sounds are available via a programming language called AMPLE (Advanced Music Processing Language, etc). The Music 500 has no musical keyboard yet but there are rumours that one is imminent.

First impressions

The 500 arrives as a smallish oblong box with a 'Music 500' logo on the front; the mains lead and socket for connection to an amplifier are on the back. Also included are a disk or cassette of examples and a manual. The amplifier connection is a 5-pin DIN socket, and the first hitch is that nowhere in the manual does it say which connection goes where. Blithely the manual says your dealer will provide the appropriate cable. A little tinkering revealed the following connections looking into the socket:

```
chn1 out . . . □     □ . . . unused
chn2 out . . . □     □ . . . unused
earth . . . □
```

The output impedence is around 1k ohm, so channels one and two go into the left and right inputs of the Tape or Aux inputs on the amp. In my case they went into an equaliser before the amp because this was the only input available (it also improved the sound quality).

The next trick was to get some sound out of the system and, dutifully following the meagre examples in the manual, I got a peep out of it. As things were a bit hard going, I decided to play with the examples that come with the system. These range from a rather brilliant version of the Maple Leaf Rag, to the backing track for a Frankie song. It was at this point that the Music 500 showed that it had something to offer as a quality synthesiser.

In use

Programming in Ample is not as easy as it looks because the commands are very Forth-like, *ie* the parameter comes before the command, not after as would be more usual. This can cause some confusion at first. After fiddling for a bit, I discovered the SCAN command. This allows tones and voices to be set up by a sort of mix and match method. For instance, loading in a set of preset sounds with "preset1" LOAD RUN and entering SCAN WAVE CΛ allows Cs to be played in all the various waveforms currently available.

The selection is performed with the use of a predefined keypad that makes SCAN produce different numbers in steps of + or − 1, 10, and 100. In fact, the waveforms can be defined by specifying the amplitude of any of up to 16 harmonics, giving great flexibility in the sounds available.

White noise can be generated by setting up two wave shapes with random harmonics and using the ring modulator to produce the sum and difference of the two. Up to 13 wave shapes can be stored in memory at any one time, although it is possible to have as many predefined shapes as necessary, simply by defining a wave modifier sequence and using this with WMOD.

Most of the commands in Ample can be strung together and assigned to a string, for example:

"scale" [0:CEDFGABCΛ]

Entering scale at any point then executes the contents and, in this case, plays a scale.

Other definitions available to alter the sound are AENV to set up amplitude envelopes (full ADSR) and PENV for pitch envelopes. The scan command can be used with either of these to allow you to tailor the sound without having to work out what is needed beforehand.

Once the desired sound is set up, playing monophonic tunes is straightforward. The colon is used to select the octave, and the notes are defined either by their letters, or with PITCH. With letters, capitals take you up *ie* 'CDE', and lower case takes you down 'edc'. Rests can be included by means of the character and the length of the note (ignoring the envelope) is specified with a comma, *eg* 48, CΛ. The up arrow character 'Λ' turns the note off when it has finished playing.

Playing polyphonically is a little more difficult and either brackets, or the PLAY construction can be used. The latter is more complex but it does produce far superior results.

There are far more commands and constructions (IF . . . THEN, repeat loops etc) than can be covered here. There are facilities for number crunching and string handling, all of which are more than would normally be needed to produce excellent results.

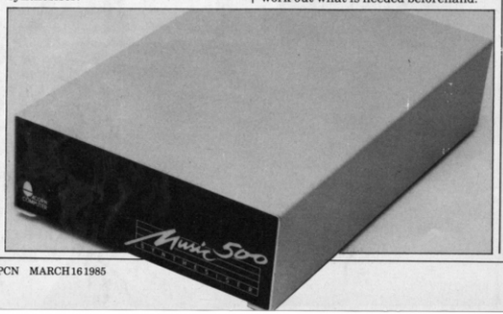
Documentation

The manual consists of 142 pages of dot matrix text. It is brief and lacks the examples to cover so complex a language as Ample. All the commands are covered, but for someone with no programming experience, especially in Forth, there is nowhere near enough information.

The worst part of the whole Music 500 system is the documentation. Hybrid blames Acorn for the production and says there is very little it can do about it (shame, shame). It does, however, give scope for the computer book publishers to produce something a little more effective.

Verdict

Overall, I was very impressed with the capabilities of the Music 500. There were a few problems getting started but these were almost totally due to the documentation. Another moan is that there is no earphone socket built in. Without much extra on the price-tag, it would have been a big advantage. With better documentation and a keyboard, this system could well be a winner.



REPORT CARD: 1 TO 5

Features	●●●●●
Documentation	●●
Performance	●●●●●
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We have overcome this problem in two ways. Firstly we have included the most commonly requested additions and improvements. A number of new editing features and a few more embedded commands have been added.

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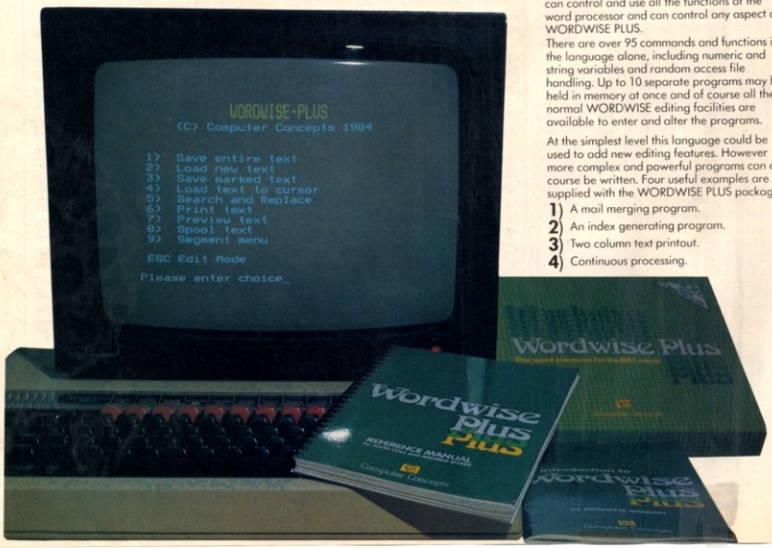
The language itself has been designed, like WORDWISE, to be simple to use and understand. Many of the commands look and act like BASIC commands and so will be familiar to many users. However the language can control and use all the functions of the word processor and can control any aspect of WORDWISE PLUS.

There are over 95 commands and functions in the language alone, including numeric and string variables and random access file handling. Up to 10 separate programs may be held in memory at once and of course all the normal WORDWISE editing facilities are available to enter and alter the programs.

At the simplest level this language could be used to add new editing features. However more complex and powerful programs can of course be written. Four useful examples are supplied with the WORDWISE PLUS package.

1) A mail merging program.
2) An index generating program.
3) Two column text printout.
4) Continuous processing.



...Must Be A Plus

Word Processing With Wordwise

All the advantages of a ROM—instantly available. One command and your BBC machine becomes a powerful word processing system.

Fast and very simple to use.

The more complex commands are menu driven, enabling those totally unfamiliar with this software to use these more powerful features straightaway.

The function keys are used to full effect with a keystrip clearly showing each function.

Block copies and moves. It is possible to mark any part of your text, this marked section may be instantly moved or copied to any other part of your text. This cut and paste type of operation is a vital part of all word processing operations and with WORDWISE it is simplicity itself.

Automatic headings, footings and page numbering. When printing a document many pages long it is possible to have WORDWISE number the pages for you and put any heading or footing line on each page.

Unique word counting feature. Ideal for journalists, it constantly displays the current number of words typed. It also allows word counting for specific sections of a document.

Works with all filing systems, such as DISC., CASSETTE., and the new ADFS. Works with any printer that works with the BBC machine (most do) and is able to access the special features of any printer (italic, subscripts, etc.). There is no need to buy additional printer driver programs.

Here are a few of the things that have been said about WORDWISE.

"WORDWISE offers an extremely user friendly program . . . it would make an excellent choice for someone rather apprehensive about word processing."
. . . E & CM

"WORDWISE has won a devoted fan club because of its flexibility and ease of use."
. . . Practical Computing

"On the whole WORDWISE is an excellent wordprocessor . . .WORDWISE is thoroughly recommended."
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"WORDWISE is straightforward, friendly and excellent value."
. . . Practical Computing

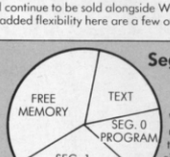
". . . it is ideal for the home hobbiest and small businessman."
. . . A & B Computing

Word Processing with Wordwise Plus

WORDWISE PLUS still has WORDWISE as its core therefore it is still very user friendly and retains all the features that made WORDWISE the most popular word processor. It now has many new additions making this the most flexible word processor yet.

WORDWISE will continue to be sold alongside WORDWISE PLUS. For those more specialised users who require the added flexibility here are a few of the new features.

Segments



When using WORDWISE PLUS, the BBC's memory is divided between your text and up to 10 'segments'. Each segment may contain either a program or just normal text. It is therefore possible to store and edit up to 11 separate documents in memory, or 1 document and 10 programs, or any mixture.

Often when writing letter or articles it is useful to keep a notepad, outlining what you intend to write. In WORDWISE PLUS one of the segments could be reserved for an electronic notepad. It would be a simple matter to switch your 'notepad' and your main document with just a single key press.

Some of the New Editing, Embedded Commands and Wordwise Extensions

WORDWISE PLUS works with the 6502 2nd processor. This allows more text to be stored in memory and 80 column previewing no matter how full memory is.

New embedded command FI will fully indent text against the right margin.

New commands for underlining and bold printing. The bold and underline effects are shown on screen—and it is a simple matter to configure these features for any printer.

Saving and loading of text is now up to 10 times faster on disc, and now the computer gives the user a warning if a document is going to be overwritten on the disc or in memory.

There is now a working filename—i.e. WORDWISE remembers the name of the current document being worked on.

New command deletes markers automatically.

It is now possible to print or preview a file directly from disc without having to load it first.

New embedded command 'PS' allows strings to be inserted into the text when it is printed.

New embedded command 'PF' will read a document from file when printing and interpret any embedded command in that file.

Improved search and replace facilities now include wild-cards.

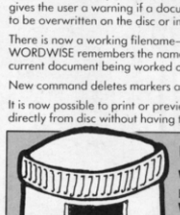
Example Programs Supplied With Wordwise Plus

1) A mail merging program that allows names and addresses to be added to a standard letter. This is a relatively easy job with this language.

2) An index generating program. This finds keywords and generates a separate index listing the word and the page numbers where the keywords occurred.

3) Two column printout. This program will print your text in two columns across the page.

4) Continuous processing. This enables the disc user to process and edit extremely large documents spread over several files as if it were one continuous document in memory.



Upgrades

WORDWISE PLUS for only **£21+VAT**

Existing users of WORDWISE can upgrade to **WORDWISE PLUS** for **£21+VAT (£24.15)**. We are only able to offer this service through ourselves at the address below. Please return the old WORDWISE package complete with chip (suitably protected for postage) and the manual with your cheque or P.O. or quote your Access or Barclaycard number. We will then send you the complete new package.

In The Near Future

HI-WORDWISE for 2nd processors that allows even more user memory, supplied on disc for less than £5 to WORDWISE PLUS owner.

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Both WORDWISE and WORDWISE PLUS are available from all good computer dealers. Alternatively you can obtain these directly from Computer Concepts.

WORDWISE PLUS £49+VAT (£56.35)
WORDWISE £39+VAT (£44.85)

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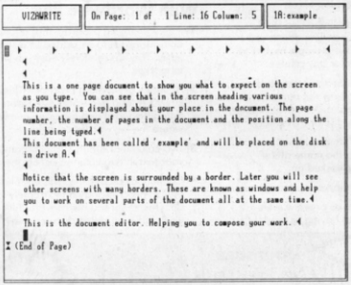
Document statistics, how many words you've typed, VIZAWRITE shows you – instantly.

VIZAWRITE is so easy to use, THE TIMES featured it again and again in no less than three separate articles on word processing for newcomers.

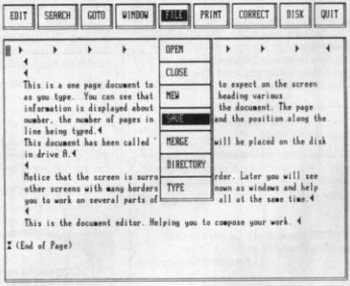
We've even included some of the latest software 'fashions', such as WINDOWS to view several documents at once, such as PULL DOWN MENUS that assist command selection, such as on-screen HELP if you can't find the manual!!... and much more.

Over the page we have listed each and practically all of VIZAWRITE's powerful layout and filing commands.

Remember that VIZAWRITE has achieved an ease of use that you won't find in any specification. It's intuitive, simple and fast.



The Document Editor Screen



The Command Menu

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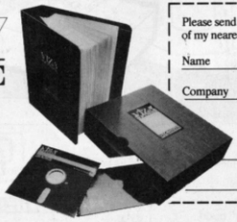

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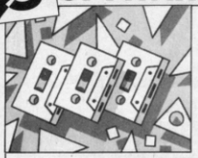
SOFTWARE PRE-VIEW



We check out the latest contenders on the software market, and cast an eye to the future. Don't forget, if you want your company's package to be included on this page, send your latest releases to Bryan Skinner, *PCN*, 62 Oxford Street, London W1A 2HG, along with prices and 'phone numbers.

AMSTRAD

Amstrad adventure players should consider *The Hobbit*. It was among the very first illustrated adventures and remains a classic. It was also one of the first to give characters a life of their own, whom you can ask for advice and help.

Smugglers Cove is also an illustrated adventure, but its phrase analyser is a bit limited.

Brawn Free, as you might guess from the title, is riddled with humour. And as you might guess from its price (£2), it's an introduction to adventuring. Your aim is to get Johnny Blackwater in a position to buy a bottle of Patent Medicine for Granny, and the game is set in the Wild West with locations such as OK Corral and Tombstone.

Moon Buggy, Anirog's version of the arcade machine, has not been implemented very well. You drive a lunar vehicle over rough terrain, and blast boulders out of your way, exchange fire with rocket ships and jump craters. It's a bit slow, though the graphics are smooth and colourful.

If you're plagued by loading problems, *Azimuth 3000* could be your saving because even if it sounds like a game, it's a tape utility which allows you to check the azimuth setting of your tape deck. A special screwdriver is included as well as a test program.

Moon Buggy	**£7.95**	**Anirog 0322-92513**
The Hobbit	**£14.95**	**Melbourne House 01-940 6064**
Brawn Free	**£2.00**	**Nemesis 0933-623967**
Smugglers Cove	**£5.50**	**Camel Micros 0392-211892**
Azimuth 3000	**£8.99**	**Interceptor 07356-71145**

COMMODORE 16

Petch	**£6.95**	**Anirog 0322-92513**
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Cuthbert & The Tombs of Doom	**£6.95**	**Microdeal 0726-73456**

COMMODORE 64

Owners of the 64 get a treat this week. *The Tracer Sanction* and *Mind Shadow* from Activision are disk-only illustrated adventures. The games look and feel similar, but they're both pretty good, with colourful, detailed graphics and different characteristics. Each offers a sneak preview of the other and both contain a tutorial mode on the flip side of the disk. *The Tracer Sanction* puts you in the role of an agent of the Stellar Intelligence agency, whose first mission is to seek and capture The Wing, the galaxy's public enemy number one. *Mindshadow* dumps you on a desert island — your task is to discover your identity — an unusual twist.

If you've seen *Tir Na Nog* on the Spectrum you've probably had an order in for the 64 version for months. And you won't be disappointed at the end of the wait. It plays just like the original, but the graphics, movement and sound are better. You'll be delighted by the depiction of the Celtic hero Cuchulainn as he roams the land of youth (the Celtic other world). You help him locate and unite the fragments of the seal of Calum to drive out the forces of darkness.

Two utilities this week, both good packages. The *Forth+* from Melbourne House is originally from Abersoft, whose Spectrum version was well received. The plus in the title is because a number of graphics and sound routines have been included in the basic vocabulary. There are colour and sprite commands and an unusual feature is a RAM disk which reserves 11K of memory for Forth program pages.

Anirog's *Sprite Machine 64* lets you define and store up to 336 of the little beasts, with control of up to eight. It's just a sprite editor at heart and it'll be interesting to see how it compares with Mirrorsoft's (the best we've yet seen) — watch these pages for a full review.

US Gold continues its relentless importing of the best from the US. *Up 'n' Down* was a rave in the arcades and the micro version is a good implementation. Bally Midway's machine puts you in the driver's seat as a granny caught up in freeway traffic; not easy but possibly not as sophisticated as we've come to expect from 64 games.

Buck Rogers is a bit of a disappointment. For a start there's a lot missing — none of the trench stuff, to mention just one omission and the graphics are chunky, if colourful.

The Tracer Sanction	**£19.99**	**Activision 0628-75171**
Mindshadow	**£19.99**	**Activision 0628-75171**
Tir Na Nog	**£9.95**	**Gargoyle Games (Dudley) 238777**
Forth+	**£14.95**	**Melbourne House 01-940 6064**
Sprite Machine	**£9.95**	**Anirog 0322-92513**
Airwolf	**£7.95**	**Elite Systems 0922-611215**
Pole Position	**£9.95**	**US Gold 021-359 3020**
Buck Rogers	**£9.95**	**US Gold 021-520 7591**
Quasimodo	**£9.95**	**US Gold 021-520 7591**
Conan	**£14.95**	**US Gold 021-520 7591**
Up 'n' Down	**£9.95**	**US Gold 021-520 7591**

SPECTRUM

So what are you waiting for? Get out there and grab a copy of *Dragontorc*. If you enjoyed *Avalon*, you'll love this. Maroc's still there, in an even better game. For a start there's more to do and discover, and characters have personalities and emotions. How you treat them affects their future behaviour — cruelty to one can earn you mass hatred from the rest of the type. Drawing from mythology, you're faced with the task of stopping Morag the Shapeshifter from reactivating the Dragontorc; you must also rescue your old tutor Merlyn from Morag's clutches. Simply brilliant.

Okay, so we're a bit late with *Everyone's A Wally*, but it's too good to miss out. It's unusual in that you can control any of the characters when they're on the screen. The only other game I've ever seen like this was *Operation Gremlin* on the Oric.

Foreman Wally's team must finish a number of tasks around the town. The graphics are a delight — just strolling past the bakers or the Red Lion almost justifies buying the game. There are attribute problems to be sure, but the graphics are so colourful and detailed that you can easily forgive that.

Gremlin quickly followed the success of its Monty Mole game by introducing Sam Stoat. Now, in *Sam Stoat Safebreaker*, he's on the prowl for a diamond to make his day. Down Gremlin Road he encounters gnomes, policemen, vampires and all sorts of anti-stoat nasties. There are four houses to raid, each with 20 screens. Sound and graphics are nothing special, but it's an amusing and tricky little number.

Lightmagic is a very nice graphics package with five screen modes, brushes of variable width and pattern, enlarge/reduce, cut and paste screen areas, a UDG editor and a detailed 38-page manual. It looks a very comprehensive package, and we'll review it fully soon.

Car Cure offers vehicle diagnostic and maintenance information, but as with all such attempts is limited by the nature of the medium. Any manual offers far more information and you can use it while you're working on the car.

Dragontorc of Avalon	**£7.95**	**Hewson 0235-832939**
Everyone's A Wally	**£9.95**	**Micro-Gen 0344-427317**
Light Magic	**£14.95**	**New Generation 0225-316924**
Sam Stoat	**£6.95**	**Gremlin Graphics 0742-753423**
Car Cure	**£9.95**	**Simtron 0342-28188**
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48K SPECTRUM
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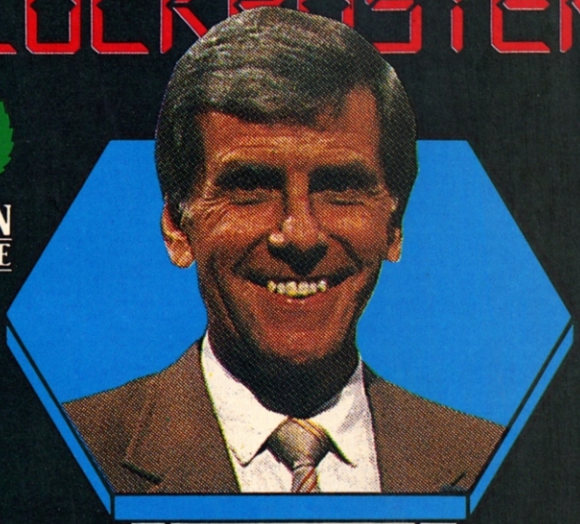

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COMMODORE 64

GRYPHON

STAR GAME

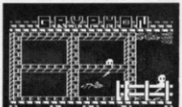
I don't normally talk to myself but when the title screen and credits for *Gryphon* came up, I caught myself saying 'Wow!' But then Tony Crowther games have that effect on lots of people, and this is his latest.

From screen shots I'd seen, the game looked fairly tame — but it's about as tame as a Bengal tiger. The credits weave their way through a landscape that's layered to give a 3D effect, with trees, fences and brick buildings in a beautiful range of colours.

The music is impressive too, and I was content to watch the words for a while just to appreciate the sounds and silk-smooth scrolling. The game is Currah Speech compatible, but not having such a unit I can't tell you whether there's a cry of 'Gryphon-Busters' as well.

In this game it's the Gryphon that does the busting. The game starts in the mystical woods, and you naturally control the Gryphon, which looks like it's strayed out of a Babycham advert until you press the Fire button when it shows it could out-spit a llama at fifty paces. It's just as well, because the mystical woods are haunted by a variety of creatures, beginning with plain old spooky ghosts on level one.

Gryphon's way out of the woods lies across several screens to the right, but it's a tunnel over poisonous waters — take the waters and it's one



dead Gryphon. He (or she — Gryphon-sexing was never my strong point in biology) has to lay stepping stones over the water by transporting gold bars one at a time from a pile on the left of the woods.

The Gryphon can either walk or fly, but in order to take off it must get up a little speed on the ground first — there's another patch of poisonous water close to the start, you can't afford to hang about.

Once in the air it's all hands on the joystick (or keyboard, but I don't recommend it) to zap the ghosties and weave your way through the woods to the escape tunnel.

The spooks have a nasty habit of lurking behind the brickwork of the derelict buildings you have to fly through on the way, so keep firing before you try to pass behind them yourself. Creatures also lurk behind the foliage in the trees, though you can nearly always spot them because they move about so much.

Getting through the woods to the escape route isn't easy, and will test your joystick skills, not to mention your eardrums if you turn the sound up. One problem is that you have to try to keep flying, as once you're down on the ground it can be tricky to get a clear run to get up in the air again with all these white-sheeted creatures fluttering about. The best results I got, oddly enough, with the Kempston joystick borrowed from my Spectrum, after varying degrees of success with a couple of different Commodore kinds.

Once across the screens you carefully approach the tunnel and drop the gold bar to make the first stepping stone, then you have to get back and repeat the process another five times. All this on just three lives. That man Crowther's a sadist.

Pick up the second bar and the ghosts turn into what seem to be large black tennis balls, then level three is chomping skulls, followed by two more levels of funny little robotic creatures.

After a few days' fairly regular playing I've managed to transport five bars, not enough to get me into the Surreal Cities of the second stage, let alone the final Deadly Darklands.

Losing a life isn't too bad: at least you can admire the colour changes (the background goes blood red), and by hitting Run/Stop and Fire button you can be into a new game instantly.

With a high-score table, bonus lives, pause features and general all-round compulsion, Crowther has struck again. The blast-'em-up approach might prove repetitive in the long-run, but meanwhile grab yourself a Gryphon and discover that nothing sparkles like a Crowther game. **Mike Gerrard**

Price £7.95 **Publisher** Quicksilva 0202-891744

BBC/ELECTRON

SIM

Apparently this game is an 'animated graphic adventure'. In other words, an arcade game. *Sim* doesn't need any over-blown phrases because it's an excellent game.

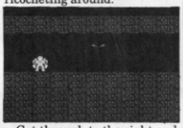
You control our hero, Hercules K Orangebottom, in *Jet-pac* fashion using only the keyboard, though you are allowed to choose your own control keys at the start.

One of the first things you'll notice is the jolly jaunty sing-along a-BBC tune, though after 20 minutes or so I was praying for a Music off option. The first scene looks deceptively idyllic, with Hercules on the ground, a bright blue sky marked only by a couple of clouds floating by, and even a smiling sun.

Then you realise the sun's suddenly locked in on you, so you'd better move fast. Move off the screen to the left to enter the adjacent one from the right, and here are more clouds and another sun buzzing in your direction, but also a tunnel leading down. Sadly the tunnel entrance is guarded by a rabbit.

As well as the ten Simarils you have to collect there are other objects scattered around the interconnecting screens, so let's hope for a carrot.

Zipping up and right there's another tunnel entrance, but a door in it closes as soon as you enter the screen, so descend to the screen below and here another tunnel starts, guarded only by a slowly moving meanie. In we nip, under the meanie in the next screen, and reach a larger cavern, populated by two bouncing meanies and a Channel 4 symbol ricocheting around.



Get through to the right and eureka, our first Simaril, though I've found no way of getting it without sacrificing one of my three lives to the lightning bolt that zig-zags after you when you enter. Nor can I weave my way past the three flitting objects in the screen below the Channel 4 room. After one hour I had a single Simaril and nowhere to put it.

Apart from the relentless music, the game's great fun, and in some ways is like an adventure, coaxing you a little bit further along with each play. Collision detection could be better, but at least it teaches you to keep well out of the way of the nasties — and I haven't even come across the starfish, the radioactive seaweed or the carrot yet. I'd rate *Sim* about 17-carat. Not quite top notch but almost. **Mike Gerrard**

Rating 8/10
Price £7.95 **Publisher** Viper 01-560 4191

COMMODORE 64

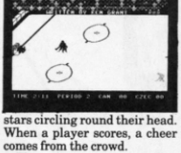
SLAPSHOT

Sports simulations are now an established part of games software. Anirog's *Slapshot* is the latest, and very good it is too.

Playing against one player only, you can take the part of any of the six international teams that competed in the 1984 Canada Cup Series.

The game is quite like *International Soccer*, *ie* you control whichever player of your team is nearest the puck. The players' movements are a delight to watch.

Players may move left/right and up/down, and diagonal movement is also possible. Bodychecks dump the tackled player onto the ice and down he/she goes, complete with



stars circling round their head. When a player scores, a cheer comes from the crowd.

The aim is to score as often as possible in the three time each period, the teams switch ends. Puck control has been given as much attention as player movement; to shoot you hold down fire, longer for a harder shot.

Rapid pressing gives some tricky 'stick handling', useful for confusing a potential tackler. You can play rough, but repeated tackling of the same player, or tackling a player not in possession of the puck may result in a roughing penalty against you. In this case there's a face-off in your end.

The screen display is a bit simple, but there's not a lot you can do with a sheet of ice and a stand of spectators. Sound is limited, but good — at kickoff a voice shouts 'Charge', and a goal gets 'He scored!'. The tenor of the voice is very similar to that used in *Ghostbusters* — does the 64 have its own vocal characteristics?

With a pause mode, three speeds of play and the immense detail this one should score highly. My only gripe is that you can't play against the computer. **Jrian Skinner**

Rating 9/10
Price £8.95 **Publisher** Anirog 0322-92513

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GAMEPLAY

AMSTRAD

STOCKMARKET

Can you make a million by taking on the stock market with a £1,000 stake? That's the challenge of *Stockmarket* from Amsoft, and it's as compulsive and as well-executed a game as you're likely to find this side of Wall Street.

At first sight the four commodities you're given to trade in don't seem to promise enough variety — but a deck of cards only has four suits and there the variety is infinite. *Stockmarket* turns out the same way.

Your monitor becomes a stockbroker's terminal with a well drawn acoustic coupler, winking Data and Online LEDs, and a teleprinter which chatters its news flashes across the foot of the screen.

You watch the prices of lead, zinc, tin and gold rise and fall in response to market activity and you try to buy cheap and sell at a higher price.

The game is at its best with more than one player — as many as six can take part. More players mean more market activity, but the movements of the share prices are only the foreground; in the background, revealed by the news flashes, there are bonus issues, Inland Revenue swoops, interest rate changes, takeovers, bank failures and other developments that can be good, bad or disastrous for your portfolio.

The only shortcomings of the game are easily tolerated. There's no means of comparing portfolio values as you go along; the game ends abruptly when one player reaches £1 million's worth of shares and cash. Nor can you pay off a bank overdraft at will — once you've incurred it, buying on margin, you're stuck with it for ten rounds at the mercy of the prevailing interest rates.

Even so, it's a game that will keep you entertained for hours at a time. When you've finished you'll find a strong temptation to start again — or to try the real thing.

David Guest

Rating 8/10
Price £8.95 **Publisher** Amsoft 0277-230222

COMMODORE 64

BRIDGE PLAYER II

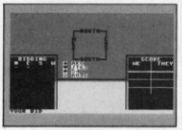
Bridge is a quiet, civilised game — but its vocabulary betrays the latent violence that skulks in parlours and lounges all over the country. Contracts, for example, and vulnerable. Clubs speak for themselves.

Sagittarian Software has produced a faithful version of the game, with the violence appropriately suppressed — even the cut is missing from the cut and thrust, since the cards are shuffled and dealt electronically.

The screen gives you a green baize table, with boxes to hold the score-card and a record of the bidding. You play South, bidding in abbreviations with only your hand on view. If you play the contract, North (as dummy) reveals his hand, and the game proceeds in the usual way with the computer playing East and West.

The program tries to be educational. During bidding you can analyse each bid, and after a contract you can review all the hands. The record of the bidding is useful but promotes laziness — with this crucial item displayed for you, your memory takes a holiday and you forget to keep count during the play.

Minor irritations are that the computer doesn't permit cheating and that it won't recognise a lay-down — each hand must be played to the bitter end. There



are also the nagging suspicions that North, your partner, is unnecessarily timid, and that East and West are feeble bidders. *Bridge Player II* doesn't encourage impetuous play.

But it recognises the usual protocols and can be relied on to play rationally. It is no substitute for the real thing, but when you can't find three like-minded individuals it passes the time and it might also improve your game in a negative, cautious way.

But for absolute beginners it is too sterile. Find some friends and learn with real cards

David Guest

Rating 7/10
Price £9.95 **Publisher** CP Software 0423 57089

AMSTRAD

DEFEND OR DIE

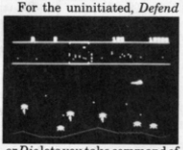
The Amstrad is finally coming out of its childhood years and has earned its long trousers.

Defend or Die from Alligata is a version of the famed *Planetoid* from Acornsoft, which itself is a version of the arcade game *Defender*.

The similarity between this version and Acornsoft's is so great that anyone who has played it on a BBC will be able to play it on the Arstrad (all sprites, scores, tactics and keyboard controls are the same).

Having said this, I still think it's a brilliant game and one which I have and will keep going back to on the BBC and now the Amstrad.

For the uninitiated, *Defend*



or Die lets you take command of a ship equipped with a laser and some smart bombs. The scenario is a scrolling landscape inhabited by little men who bob around waiting for you to save them from the ubiquitous invading aliens.

On the first level all you have to do is shoot-em-up, the aliens not the men, although the latter do deserve it at times. Later levels bring extras — such as Bombers, Swarmers, and Pods — all of which must be cleared.

As a shoot-em-up game this one is fast and furious and in some ways slightly more difficult than the Beeb version. The sprites sometimes leave a lot to be desired as they tend to disappear, especially when saving freed men from the dreaded invaders. The swarmers and the mutants could have been a little faster. They were sometimes far too easy to kill and no competition for a seasoned planetoider.

Other problems were the acceleration, which isn't smooth, and the screen handling which occasionally leaves stray bits of junk around the screen. The explosions are great, though a few screen flashes could have been included.

Having seen his game on the Amstrad, I can't help but hope that Alligata will produce *Meteors* and *Starcom*.

Kenn Garroch

Rating 7/10
Price £7.95 **Publisher** Alligata Software 0742-755796

SPECTRUM

TOY BIZARRE

Activision stands to lose its reputation for excellent Commodore software if it releases many games as appalling as *Toy Bizarre*. We're back on the platform theme again, with you needing just three keys to control the left-right-jump movements of Merton the Maintenance Man, though you can use Kempston, Interface II or cursor-controlled joysticks.

Merton works in a toy factory, comprising four levels, some of which have valves. Balloons fill up at the valves, then float to the top of the screen, and it's your job to pop them, with each screen setting you a certain number of balloons to get before you progress to the next one. The balloons you miss turn into slowly descending helicopters which you must evade. You're also hiding from hopping Hilda, who tries to deprive you of one of your four lives.

So far, so straightforward if a little silly, but there are several things wrong with this game. Let's say the sound is poor, to begin with, and let's say the graphics are even poorer. The figures are done on large blocks, so they obliterate anything they pass before, and there seem to be only two different positions for each to try to

indicate movement. Colours also spread from one object to another, the response to the keyboard controls is slow (the character can hop along a few paces before turning) and the collision detection is terrible — at one stage my character moved along directly on top of the Hilda character for several seconds before the program woke up and thought 'Ah-ho, a collision . . . aren't I supposed to do something about this?' All you need to do about *Toy Bizzare* is forget it.

Mike Gerrard

Rating 2/10
Price £7.99 **Publisher** Activision 0628-75171

SOFTWARE PRO-TEST: SPECTRUM

ONE PICTURE'S WORTH

If one picture is really worth a thousand words, then adventure writers had better get their hands on *The Illustrator*, Gilsoft's follow-up to *The Quill*, says Mike Gerrard.

Plain speaking isn't enough — at least, that seems to be the sentiment behind Gilsoft's supplement to its smash hit adventure generator, *The Quill*. The starting point for many a popular adventure now has another string to its bow, *The Illustrator*. Spectrum adventure writers — and probably others soon — can illustrate their tangled web of clues.

Gilsoft calls it an 'add-on' because you use it in conjunction with *The Quill*. You just load the text database into *The Illustrator* to produce graphics, reload the text database (which now takes in the whole database by over-writing *The Illustrator's* main program), and finish by saving your completed graphics adventure. *The Illustrator* needs to read only the first few bytes to extract the information it requires.

Documentation

The packaging is certainly well done; the quill image on the cover is now filled with a red dragon, a castle, treasure, and so on, and the tape comes in a sturdy plastic wallet, complete with a 28-page instruction booklet. This takes the same format as *The Quill*, where the first half is a practical introduction, and the second a description of the interpreter plus a summary of the commands.

In use

As with *The Quill*, you're faced initially with a main menu, this time comprising eight options plus return to Basic. Where possible, the same single-letter instructions have been carried over from *The Quill*, such as Z to return you to the main menu. One option is the current total of bytes spare — almost 25K when the interpreter is empty. The trade-off between words and drawn locations is up to you. A reasonably detailed graphics screen takes up about 300/400 bytes, so for the most pictures and fewest words, you're talking about an adventure with 70-75 illustrated locations, and roughly 5K for the text database.

You can always simplify your graphics or make use of *The Illustrator's* subroutines which allow you to store and call up items you want to use again, such as doors, windows, flying ducks or whatever. These can be tucked away in any of the 255 location numbers that are not allocated in the adventure proper.

The remaining menu headings are to load the text database, save, verify and load the graphics database you're working on, save the adventure when finished and the two 'working' options for graphics and the graphics start table. This allows you to set up and amend the location number and paper and ink colours for each of your creations.

The Illustrator can be used in conjunction with The Quill to add a graphic touch to your adventures.

On to the graphics themselves. A sub-menu allows you to insert, amend and print a picture to screen or printer, as well as telling you the size in bytes of your various artistic endeavours. These are created using two cursors, the Base Cursor (BC) and the Rubber Cursor (RC), both of which start at the x, y position of 0,0 making them overlap onto the four corners of the screen.

The RC is moved about using the eight keys surrounding the S key and the only drawback to this is that you can accidentally hit the F key which fills the screen. This is a nuisance not a disaster, as each command can be deleted. The cursor moves one pixel at a time but can be speeded up to eight pixels at a time using the Shift key plus a direction key. Regular shaped objects such as doors and windows can be drawn quickly using this method.

A useful tool is the checker-board grid which can be over-printed and removed from the screen using the Y key. It is divided into squares of eight pixels and helps considerably when trying to line things up, though complicated drawings should be mapped out beforehand.

The x and y co-ordinates of the RC are given in the bottom left corner of the screen and change when the cursor moves. The drawing screen also tells you the location number, the ink and paper colours and whether the settings for flash, bright, inverse and over are on or off. You're also told if 'freehand' mode is engaged or not. With the RC in position you have various options: L will draw a line between BC and RC and move BC to RC's position, M creates a blank move by simply shifting BC.

The trickiest command to master was the PLOT command. This is needed because all instructions entered are relative to the original 0,0 position of the BC. As long as you're entering one continuous drawing without blank moves everything is fine, but if you begin a new section of the drawing by executing a blank move, you must enter a PLOT command which establishes a new absolute position for the BC. If you don't do this, the various elements in the final printed picture will not position themselves where you draw them but where they would have been in relation to the original BC position.

The graphics commands for each picture are stored in one long string, reasonably called a drawstring, and you can skip back and forth through this when editing. The S (for Start) key presents you with your original blank screen and each press of the N (Next) key prints the next command, while the 9 key moves you back by one command. Shift plus N deletes the next command and Shift plus zero deletes the previous command.

One drawback to the drawstring is that you can only edit one command at a time, and it's impossible to edit blocks. There were times during my experimentation when the picture got out of control, and I would have liked to step

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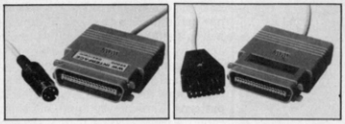
Interface-Problems ? ? ?



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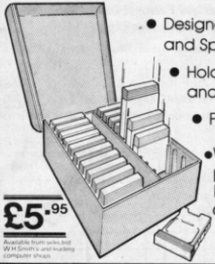

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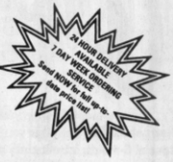

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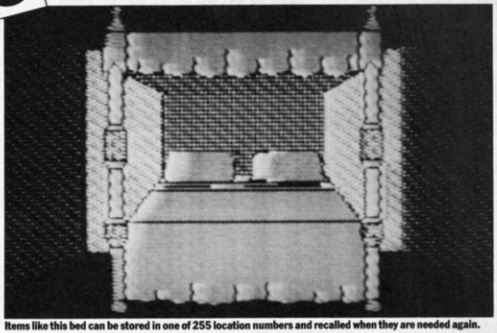

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◀ 48

through to the point I was pleased with, then remove all subsequent commands. To do this you have to continually press the N key. If you edit from the end using the Shift plus zero option, the picture is redrawn each time. The PLOT command also means you have to take great care when removing or inserting details.

The instructions with *The Illustrator* don't seem as thorough as those with *The Quill*, which some might see as a blessing. The subroutines, for instance, are explained by way of illustration, with a painting being called up and printed on a wall, but you're not told how to position the subroutine drawings accurately.

These routines are useful, however, and the drawings can be scaled on a range from 0 to 7 with subroutines able to call subroutines to the tenth degree. Unfortunately you can't use freehand drawing in subroutines as this will not be altered for scale.

Whether you want to use freehand mode is up to you. It's valuable to have it available but it consumes memory like mad and of course is difficult to edit as it has to be done a pixel at a time. It's helpful for drawing figures and numbers and any fiddly bits, but if you can do the drawing in lines then you should.

The final major facility is the ability to shade any area with a range of 256 patterns. The variety available should cater for most people's tastes. For those broader brushstrokes for larger landscapes and skies you can BLOCK and FILL to your Spectrum's content.

Verdict

The Illustrator has its quirks, and like *The Quill* it will be tricky to master. It didn't strike me as having been done with quite enough thoroughness and it would have been better if you could put graphics and text together in split-screen format, but these are really only minor quibbles. Owners of *The Quill* won't be disappointed with Gilsoft's latest.

REPORT CARD: 1 TO 5

Features	●●●●
Documentation	●●●●
Performance	●●●●●
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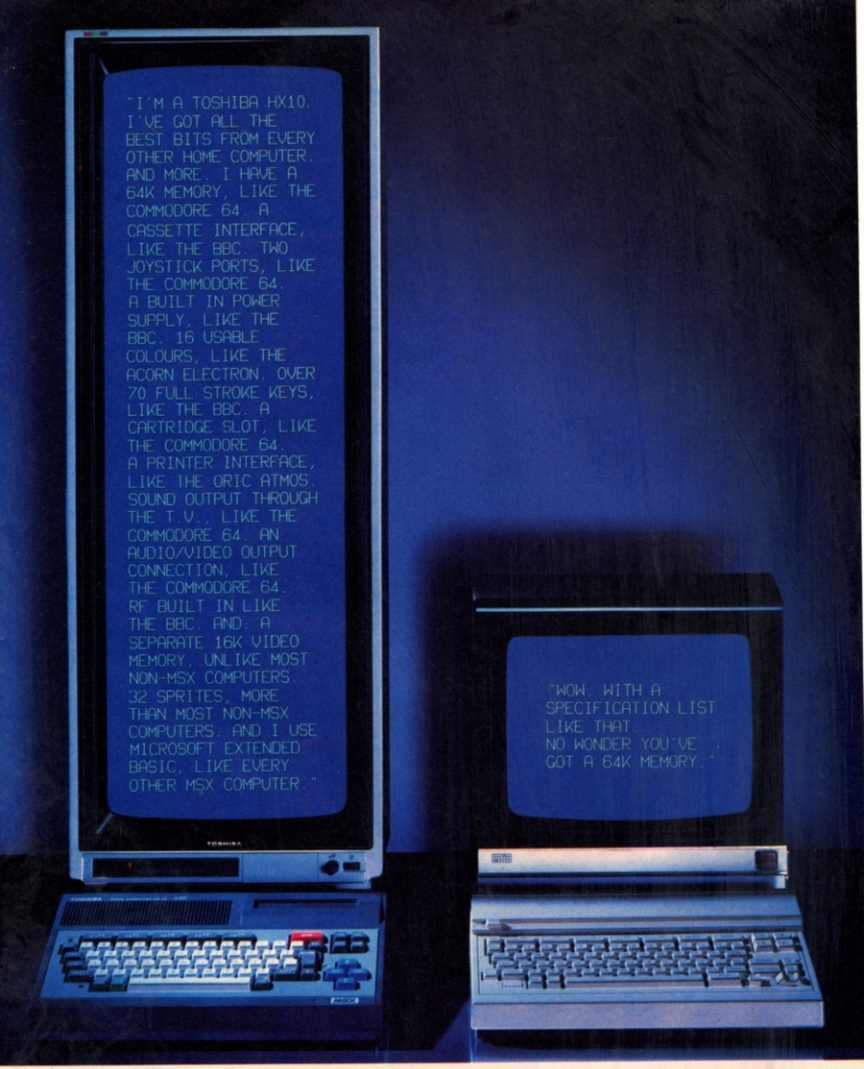

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QUIT

There was a flurry of excitement in the normally calm *PCN* office last week when we heard that Jack Tramiel was going to come and head Atari Europe, leaving the US operation in the hands of one of his sons.

This was shortly after we'd heard that devilish Continentals were flooding over here on cross-Channel ferries in search of Electrons at rock bottom prices.

Short of hiring a helicopter we couldn't check out the Electron rumour but it was the work of seconds to raise Atari UK on the telephone and ask about the glad news. 'It's news to me,' said Simon Westbrook, md in the UK. After a pause he added: 'It'll be news to Massimo Rosi as well.' Signor Rosi is European marketing manager.

But Messrs Westbrook and Rosi shouldn't be complacent — Americans do these things differently.

Some years ago an American-owned systems company in Twickenham hit hard times. Sales were sluggish and competition intense. A neighbour recounted what happened: 'Everything seemed normal until one morning two characters with crewcuts turned up in a taxi. The To Let sign went up outside the offices an hour later.'

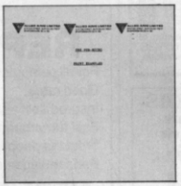
Two examples of technology in action from last week: a word processor that operates like a typewriter and electronic mail that doesn't need a computer.

The word processor is called Word-Bird and runs on the Apricot. 'The text on the screen appears exactly as it will look on paper,' cries designer Leabus happily.

The computer-free electronic mail comes from Cable and Wireless in a service called Dial-A-Gram. What it boils down to is a switchboard service which falls back on first class post if the recipient of the message hasn't had the foresight to get a terminal. Isn't progress a funny thing?

But you can't take anything for granted in this business. In the world of mainframes, people still talk about EDP — Electronic Data Processing. This is presumably to distinguish it from hydraulic, manual and oil-fired data processing.

The Allied Aims Pub Micro (pictured) was launched last week for licensed victuallers around the country. To judge from one of the sheets of paper in the kit handed out to journalists, the micro could also come in handy in another line of work — espionage.



SYNTAX ERRORS

In issue 100 we reported that Nordic Keyboards had gone under. But Nordic is alive and well on 051-606 9300; it is Turngrade Electronics, a former co-owner of Nordic, that has gone out of business. Nor did Nordic ever employ ex-Fuller man Roy Backhouse, as we said. Nordic has supported Fuller products, sometimes free of charge, since its inception — our apologies to the company.

Our review of Protek modems (issue 98) said 'unlike other acoustic couplers, the connection between ear and mouthpiece is flexible.' Sendata has asked us to point out that its range offers this feature too.

Nemesis Software has withdrawn its latest Amstrad adventure, Angelique — A Grief Encounter. The game should re-appear in April.

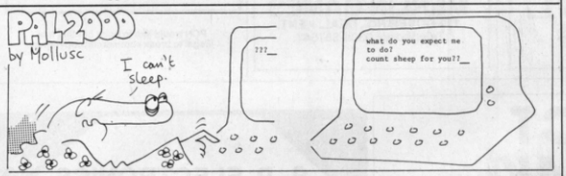
Flight Simulator, published by Myrddin Software for the Amstrad, is largely machine code, not just Basic as we stated in issue 101.

In Microwaves, issue 100, 3D characters from the Amstrad, line 5040 should be line 5050, and line 5040 should read:

```
5040 PLOT -2,-2,2
```

There should be semi-colons after each of the variables, text$. Lines 5030 and 5050 should read:

```
5030 MOVE xp%,yp%=PRINT text$;
5050 MOVE xp%+4,yp%-2=PRINT text$
```



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Personal Computer Show	March 21-24	Amsterdam, Holland	RAI Gebouw BV, Europaplein 2, 1078 GZ Amsterdam
COMDEX/WINTER	March 21-24	Anaheim, USA	Interface Group, 300 First Avenue, Needham, Mass 02194 (617) 4496600
COMDEX/JAPAN	March 26-28	Harumi Centre, Tokyo	Interface Group, 300 First Avenue, Needham, Mass 02194 (617) 4496600
Info 85	March 26-28	Olympia, London	BED, 01-647 1001
6809 Colour Show	March 30-31	Royal Horticultural Hall, London SW1	Computer Marketplace, 01-930 1612
Softcon	March 31-Apr 3	Georgia World Congress Center, Atlanta	Northeast Expositions, US 617-739 2000
London Festival of Computing	April 9-20	Various	Contact Jim Lagden, 01-240 8206 Prestel page No. 81018
(Festival Fair)	April 18-20	Central Hall, Westminster	
Computer Assisted Learning Exhbn	April 11-13	East Midlands Conference Centre, Nottingham	Dr Phillips, Shell Centre for Mathematical Education, Univ of Nottingham, Notts NG7 2RD
Northern Computer Show (Trade only)	April 16-18	Belle Vue, Manchester	Reed Exhbns 01-643 8040

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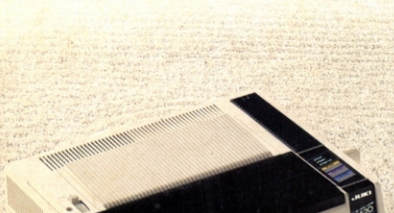

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