40p EVERY WEEK · No 104 · MAR 23 1985

PERSONAL Computer NEWS

40p EVERY WEEK

THE HACKER

THE PRACTICAL GUIDE TO COMMUNICATIONS

FROM AN ENGLISH SUBURBAN BEDROOM, IN THE ELECTRONIC LANGUAGE OF COMPUTERS, A HAGGARD FIGURE MAKES CONTACT...

...WITH A MANHATTAN OFFICE.

Please Enter Password

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64 MACHINE-CODE SPRITES

HOT STUFF ON SPECTRUM DISKS

QL MICRODRIVES MASTERED

OSBORNE'S BUSINESS LATEST

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The Hacker's Handbook 9

Hackers, once simply computer enthusiasts, are now tarred with the brush of illegality. However, computer communications is an enjoyable and rewarding pastime in its legitimate form. This week we offer the first of two extracts from The Hacker's Handbook, which will give you some idea of what you can do with do with your micro, a modem and a telephone.

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MONITOR

Dragon back with a Flex of muscles

The Dragon is back in the UK — but it has left its Mettoy toytown image far behind. The new exclusive distributor in the UK, Compusense, is promoting the Dragon 64 with disk drives as an entry level Flex or OS9 machine.

Since the collapse of Dragon Data last year the Dragon range has been re-born in Spain through a company called Eurohard. Largely owned by the Spanish Government, Eurohard has put Dragon machines back into production and plans new systems. But the original Dragon, the 32, has been pronounced dead, and the image of the Dragons returning to the UK is going to change wholesale.

'We'll try to support the 32 as far as we can,' said Tadeus Opyrchal, director of Compusense. But he stressed that the 32 has almost no future as far as developments from the manufacturer are concerned, and that the Dragon name will come to stand for a quite different type of system.

'We will aim for semi-professional users with the 64 and disk drives,' he said. 'One of the areas where the 6809 processor is particularly strong is in technical and scientific use — a 64 with drives will do the same job as a much larger machine.'

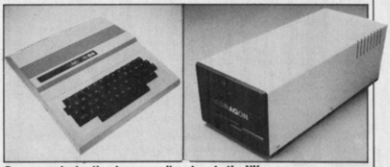
Compusense is a software house specialising in the Flex operating system, a kind of cut-down Unix for 8-bit micros. Its Dragon package, a 64 with disks, OS9, and accounts software, will cost between £600 and £700. Compusense aims to offer this with Flex as well.

'In the long term, we're here to keep Eurohard's and Dragon's presence in the UK,' said Opyrchal. That could mean that when new systems start to roll off the Spanish company's production line there will be a natural route for them to the UK. A revamped 64, the D200, is due to be shown at the forthcoming 6809 show, and later in the year a 128K machine should follow.

Eurohard, which bought the rights to the Dragon systems (issue 74) last autumn, also has a networking system operating in Spain. It even holds an MSX licence, but Opyrchal sees no future in bringing a Spanish MSX machine to the UK.

'We're taking things as they come,' he said. 'We see the Dragon as a low-cost entry level Flex machine.'

Compusense isn't committed to sell Dragons in quantity, but Opyrchal waxes evangelical on the subject of the system. He also claims to have ground concessions out of Eurohard on prices, saying that the machines' prices on the continent are about twice as high as the price tags he'll attach.



Dragon — ringing the changes on its return to the UK.

SMC puts mouse in Commodore wainscot

Mice-loving Commodore 64 users need wait no longer, Wimps are here for their machines.

SMC supplies is producing a mouse package, including a graphics system, a sprite and character designer, and interface routines for your own programs.

The price is £59.95 and the system is also available for the BBC Micro in competition with the AMX. It should be in the high street shops within three to four weeks.

For people with QLs and Amstrads, the same system should be ready in 3 months.

On both the BBC and Commodore 64, the facilities include different brush sizes, air brush, rubber banding, triangles, circles, boxes, fills, screen save, and screen dumps for most Centronics printers. Other packages include a sprite designer and a character definer, both of which can be incorporated in your own programs.

SMC says that the mouse can be used instead of a joystick within most games, but since the system is digital (via the user port), an analogue software driver will be needed for the BBC Micro.

MONITOR

IN BRIEF

Apple has fallen foul of the Acorn Syndrome — too many systems chasing too few buyers. It will close down its US and Cork factories for a week in the spring, and analysts predict that its sales will show a 35 per cent drop on last quarter's figures. Slow sales of the Macintosh may be to blame, but Apple says that the Apple II line has been sluggish as well.

The Kennedy Space Centre in Florida will be the destination for the winners of a Microvitec competition. The Cub maker is sponsoring the first prize of a five-day visit to the US, including a space shuttle launch (weather permitting). Details from Microvitec on 0274-390011.

Cumana is branching out into software. The disk supplier has signed a deal with Microwave Systems of the US to distribute OS-9/68000, the version of OS-9 for machines based on 68000 processors. That means a possible new option for the Sinclair QL, among other machines.

Printer/plotters for £400 are on offer from educational software specialist Bizzel Computers (095389 592). The units have built-in parallel and RS 232C interfaces and are available with sample programs featured in the instruction booklet.

Egged on by the success of Chuckie Egg, A&F Software will release Chuckie Egg II with the sub-title Choccy Egg in time for Easter. The game has more than 100 screens from which you have to pick up the ingredients of chocolate and components for toys. The Spectrum version will be first out at £6.90, to be followed by Amstrad and Commodore 64 versions.

Death Star Interceptor on the Spectrum was launched last week by System 3 Software at £7.95. 'It's so good it makes the Commodore version almost embarrassing,' said a System 3 spokesman. Some would say the Commodore version already was.

Microsoft has cut its prices by 30 per cent for users in education. Products like *Word*, *Multiplan*, Basic and many others will cost roughly a third less to users in schools and colleges across the spectrum. Hardware in the shape of MacEnhancer (issue 103) is also included, as are books from Microsoft Press. The race to get equipment into schools is hotting up, with hardware, software, peripherals and book suppliers all involved.

Opus adopts Wren in Prism break-up

The break-up of the Prism group continued last week with the Wren portable micro dropping into the hands of Opus.

Opus, which launched the Discovery disk drive for the Spectrum last month, specialises in peripherals for home micros. But the Wren isn't expected to be a cuckoo in its nest. 'We're moving into business systems with the acquisition of the Wren,' said a spokesman.

'We've got ourselves into a good position in the BBC and Spectrum markets, and business there is going along quite nicely — we felt the Wren wouldn't overstretch us,' he added. Opus is reported to have paid £200,000 for rights to the machine, but the company wouldn't confirm this beyond commenting that it was a good time to buy.

Users looking to Opus for continuing support will have to wait until the company decides how it will deal with the machine. 'We're sitting down and discussing long and hard a plan for Wren Computers for 1985 and 1986,' the spokesman said.

The Wren follows Prism's communications products into new ownership (issue 103). Launched originally as a 64K machine, it now forms a range with various memory options.

Prism Wren — finding a new home under the wing of Opus.

Byte Drive maker follows Oric under

Dragged down by the fall of Oric, ITL Kathmill has also folded.

ITL supplied the Byte Drive 500 disk system for the Oric micros. The unit appeared well before Oric itself could offer disks for its machines and it attracted several favourable reviews, but ITL was never able to free itself from dependency on Oric by adapting the Byte Drives for other systems.

Earlier this year ITL planned a flotation on the Stock Exchange but, due to lack of confidence by its brokers and Acorn's problems, Oric's collapse and Sinclair's on/off flotation, it fell through.

ITL is reputedly owed more than £100,000 by Oric Products and had trouble with its suppliers as a result of a severe cash-flow crisis. Matters came to a head with a crash on February 20, 1985. There will be a creditors meeting on March 18 to appoint a liquidator and give notification of some official back-up.

Astrosyn, the holding company of ITL, says that any users who have recently sent machines for repair and have not heard anything should be helped fairly soon. The back-up, if any, will be supplied by Roland Beaumont who is taking over this side of affairs for the company. Details of this will not be available until the creditors meeting.

The demise of ITL appears to have been almost wholly caused by Oric going under. The Byte Drive 500 was ITL's only major product although it has had long existing plans for similar devices on the Spectrum, BBC and Commodore 64.

Microsoft gives Mac colour hard copy

Colour on the Macintosh? Not this year, say Apple mandarins — but a small Kent company has beaten them to it.

Microspot of Maidstone (0622-858753) has released MacPlot for the Mac. You won't see much colour on the screen but if you want hard copy brightened up a shade, MacPlot takes care of the plotter output.

The program is designed to work with MacDraw, MacProject, Chart and others, using a range of plotters on A3 or A4 paper. When you load MacPlot you're asked to assign pens on the plotter (maximum 30 pens) to lines on the screen. The program will also shrink, enlarge or rotate the artwork.

It costs £99 — contact Microspot for details or supplies.

MacPlot — a touch of colour.

Sinclair aims to make a mint with wafers

Sinclair intends to produce a 7Mb version of its Wafer Scale Integration silicon disk (issue 103) next year.

This year's model will have only 0.5Mb of storage, and production will be contracted out to other manufacturers, but the projected 7Mb disk is to be built in a completely new £50 million factory.

Sinclair has teamed up with Robb Wilmot, chairman of ICL, whose first job will be to raise the £50 million in the City. Sinclair has already made a £1 million investment in R&D, and holds a number of patents that will be crucial to the project.

So while Sinclair's financial commitment is minimal, the project, should it succeed, could prove to be a goldmine for Sir Clive. The fact that a whole new plant is needed to build the second version of the disk tends to confirm speculation that the 0.5Mb version is relatively low tech. And as Sinclair is announcing the super chip project now, it can be assumed that WSI Mark One works to his satisfaction, and is on schedule for release later this year.

WITCH AT THE PALACE — Palace Software has put the finishing touches to Cauldron, its first production of the year, and the game should be in the shops in late April or early May. For the Commodore 64 and Spectrum, it will cost £7.99.

MONITOR

Aces low — but Boldfield plays on

The last remaining Jupiter Ace micros are on sale at the never-to-be-repeated price of £35 — and you'll get a 16K expansion, software and a year's guarantee thrown in.

But that won't be the end of the Ace if Boldfield Computing, the Battersea Dogs Home of the micro business, has anything to do with it. Boldfield took the Ace under its wing when Jupiter Cantab folded (issue 50) and it has been the rallying point for support ever since.

In its 1985 catalogue it offers games, utilities and business software; 16K and 48K RAM-packs; peripherals including an add-on keyboard, a ZX adaptor kit, and a sound box; and interfaces.

This is only half the story — the rest of the catalogue is given over to Boldfield's other products, business micros from Kaypro and Sperry. But the Ace isn't a poor relation at Boldfield — the company has opened a special showroom devoted to it.

The last stocks will probably last two months, Boldfield's Peter Downham said. 'We've got full service capability and stocks that will last for years — we'll continue as long as the interest is there,' he promised.

He estimates that there are around 10,000 Aces in the UK. 'We have the facilities to make more but it's unlikely that we would. At the prices we're charging we'd barely cover component costs,' he said.

British micro makers mobilise against IBM

There's a David and Goliath confrontation looming in the UK micro business as the British Micro Manufacturers Group (BMMG) takes on IBM.

'In a year or two's time, in the absence of co-operation in our industry, we could end up with IBM writing the rule book,' said BMMG director general David Broad. The style of business systems available could be determined by the giant US-based multinational, with disastrous effects not only on independent UK micro makers but also on the choice on offer to users.

The BMMG is asking for Government funding to the tune of about £250,000 to develop a local area network standard (for different types of equipment to be connected) independent of the commercial influence of IBM.

The Group might find an ally in Digital Research, which is trying to undermine IBM's domination of personal computing with its plans for Concurrent DOS-286. This operating system (issue 96) aims to open up the business by making IBM applications software available to any system based on the 80286.

Broad commented: 'There is a growing realisation that independent manufacturers have to co-operate, and users are also increasingly well aware of the issues. We're willing to embark on discussions with anyone.'

Any interconnection standard would have to take notice of the International Standards Organisation's work on networks in general, known as Open Systems Interconnection. This has support around the world from governments and procurement agencies.

ACT sets its sights across the channel

UK micro makers are winning unlikely footholds abroad while the UK scene struggles out of the doldrums.

ACT has emerged as a strong candidate for a large education deal in France, and Memotech has caught the eye of micro fanciers in the Soviet Union. ACT, still hopeful of persuading the BBC that it needs at least one UK micro to put its name to, is a front-runner in France for a contract that looked certain to go to a native French manufacturer.

HARD CENTRE — Here's your first look at the new ACT Apricots (issue 103), the fruit with the hard-disk centre. The three models launched earlier this month are the Xi10S, Xi20, and Xi20S, and each includes at least 512K of RAM with 10Mb or 20Mb of hard disk storage to go with 720K floppies. Built around an 8086, they are compatible with the previous Apricots. The systems start at £3,295 and deliveries are due to begin in mid-April. The launch is timed to cash in on IBM's problems with its top-end PC, the AT (Advanced Technology). IBM stoutly denies any problem, but industry analysts differ.

HOMEFRONT

Hacking — a threat or a red herring?

Once upon a time, when the world was a simpler, more innocent place, a hacker was someone who played golf badly. The threat to society was limited to low-flying golf balls going out of bounds near the main road.

Now, according to some, the fabric of western civilisation lies in jeopardy. A small number of computer users armed with some software, a little black box called a modem, and enough ingenuity may bring about the collapse of financial, commercial and government institutions.

Sadly, these prophets of doom are a little short of evidence. The bulk of computer crime is straightforward fraud and embezzlement. Hacking doesn't enter the picture. The documented cases of hacking are less damaging: the break-in of Prince Philip's Prestel mailbox, a bunch of New York schoolkids who tried to order a case of Pepsi without paying, and the American group who went joy-riding through the computers of various US universities and NASA.

Of course, the doomsayers point out, the potential for damage is immense, which raises three interesting possibilities. First, hacking is a very limited pastime and those indulging in it are such good chaps they're not hurting anyone. Second, hacking is widespread and extremely damaging but the victims aren't telling anyone they've been got at.

The third, and most likely possibility, is that hacking is limited but causes some serious damage while the victims pretend it didn't.

And there's the rub. If anyone hopes for the hacking threat — both real and potential — to be taken seriously, those who have been hacked will have to come clean; and act.

It may be commercially damaging to admit publically to a breach of security but the alternative is continued uncertainty about the scale of the problem. The Pepsi incident is a great deal more serious than is obvious at first. A company named Canada Cement LaFarge had one fifth of its data wiped by the hackers blundering through the files. The search for the culprits and re-entering the data finally cost more than $250,000. The hackers were found but not prosecuted.

Until companies and governments own up to breaches of security and act against the perpetrators, no action will be taken, thus allowing the real threat to continue.

The danger does not lie in mischievous individuals breaking into mailboxes or the incidental damage to files. The opportunities open to criminal and terrorist groups are exactly the same as those available to a 16-year-old with £200-worth of computer comms equipment.

It would be easy to deride those who worry about hacking. A former IBM security chief rated hacking as only 3 per cent of the total threat to computer installations, way behind operator error, deliberate damage by employees and natural disaster.

On the other hand, it would be easier still to call for a blanket ban on the individual ownership of the necessary equipment. This would, however, hurt the innocent as computer communication has many valid, interesting and enjoyable uses (hence our 'hacking' feature this week).

Cars kill people but society has evolved rules, regulations and attitudes to cope with it. We will have to do the same with computer security.

No-one should doubt the ability of any government to deal with the problems. The illegal use of citizens' band radio — arguably of far less concern — was dealt with swiftly and effectively.

One solution may be a requirement for modem owners to obtain a licence for their equipment in the manner of cars, television and ham radios. This could have beneficial side effects if some of the money generated were diverted back into the pockets of the computer industry.

However, before we start considering bureaucratic involvement, we ought to establish the scale of the problem. Hackers themselves are the least reliable source of information as they have a vested interest in either exaggerating or playing down their exploits.

It is the victims — if there are any — who must honestly answer the question: 'Have you been hacked lately?'

Peter Worlock

MONITOR

Spectrums to acquire an artist's touch

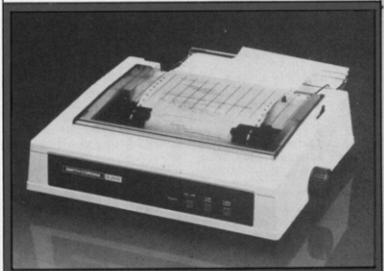
'This is why Leonardo's late. It (Creative Sparks) saw this and it went away to re-write its own.'

Even allowing for friendly rivalry and artistic licence, Tim Langdell of Softek could have a point. Softek's The Artist, due for release any time now, is an astonishing piece of work. The race to turn a humble Spectrum into a Macintosh clone could be over when The Artist reaches the shops, and at a humble £9.95 nobody will have to start an 'Our kids can't wait' campaign à la Apple.

The Artist is a design package along the lines of MacPaint, with plenty of scope to incorporate and manipulate text. Langdell says that it was begun 18 months ago, before anyone involved had seen a Macintosh — but the result is very similar in many respects.

It is driven by menus at the foot of the screen rather than the pull-down type, and it uses a straightforward cursor rather than icons. But there is a Mac-type choice of brushes and patterns, and the cut-and-paste facility looks better than the Mac's.

You can design on a number of different scales, from the grid for character generation to the full screen with zoom and stepping functions. Text can be located from any pixel point. and 64 columns are another option. The Fill function is startlingly fast.



CORONA JEWELS — Increasing the pressure on Epson, and preparing for the introduction of new models, Smith-Corona has cut the prices of four of its printers by up to 17 per cent. The D200 (pictured) comes down from £420 to £350, the D300 is down by a similar proportion, and the D100 falls from £249 to £220. Smith-Corona's Fastest 80, the closest the company gets to a genuine home printer, is cut by 13 per cent to £170. The company is keeping quiet about the new models on the way, but they will be on view at the Hannover Fair next month. We'll keep you posted from Hannover.

Budget games emerge from Atlantis Gold

At the budget end of the software business there's a kind of levelling going on, as the pioneers of pocket-money games raise their sights.

Atlantis (01-354 1437) is the latest to take the sticky backing off a new label, Atlantis Gold. This will go on to games that cost a princely £2.99. Like Mastertronic and Firebird, Atlantis now has two distinct ranges of games where the cheap and cheerful sub-£2 titles are supplemented by higher quality specimens at only slightly higher prices.

The first three Atlantis Gold titles are Velnor's Lair for the 64, Self-Destruct for the 48K Spectrum, and the topical Nicotine Nightmare — today (Wednesday) is national no smoking day — also for the Spectrum.

Back at the £1.99 level, Atlantis also has El Dorado for the Spectrum, and Death Race and Super Break-out for the Vic 20.

This last title runs on the unexpanded Vic.

Atlantis Gold — cASHing in.

VIEW FROM JAPAN

Toshiba turns to Sord-swallowing

What do micro manufacturers have in common with Save the Whale campaigners? Answer: the Japanese are the bogeymen in both cases.

The age of Moby Dick is long since gone, and these days it's the Americans who get particularly agitated about Japanese whaling. We imagine there's a touch of envy or sour grapes about their attitude, but there's more than spite involved when a federal judge orders the US Government to take economic sanctions against Japan on the issue, as happened in Washington recently.

Oddly enough, the Japanese computer business is dominated by whales, and here it's the minnows that need protection. Toshiba, trawling along in that accidentally predatory fashion that whales have when they open their mouths, swallowed Sord last week. It bought about 38 per cent of the company and it aims to go eventually to more than 50 per cent.

When you cut a whale up, different parts can be put to different purposes — a bit of scrimshaw jewellery here, a can of oil there, cosmetics, leather-treatment and even tasty morsels both here and there. So it is with Japan's computer giants — cut up Toshiba and you'll find all sorts of products, and Toshiba is one of the less diversified of the computer giants.

Sord's problem was that it was completely undiversified and lacked the resources to support the operations that make the bigger companies virtually self-sufficient. They make their own chips, for example, and this capacity shields them from the ups and downs of the semiconductor manufacturing industry. Sord obviously recognise this weakness in its own make-up because it planned to build a chip-making facility from the proceeds of a public share issue last year. But the share issue had to be called off not once but twice, as the first signs of basic weakness began to show through the plaster.

Sord was founded in 1970 by Takayoshi Shiina. In a country famous for microelectronic wizardry it broke a lot of new ground in the microcomputer business, and it also made a notable contribution to the case for the defence of Japan's software producers. 'Very clever with hardware, but they can't write software,' people used to say about us. Sord came up with Pips, a kind of multi-purpose operating system and applications developer intended for first-time users. Unfortunately, the rest of the world was using CP/M, and Pips left a little too much to the imagination for many first-time users' tastes.

The name of the product is an indication how Sord thought of itself. Surrounded by diverse corporations with computer operations that ran alongside ceramics, musical keyboards, industrial machinery and the rest, Sord specialised in personal computers — it saw itself as the Japanese Apple.

In fact, its approach to computing was probably more structured than Apple's. It has machines in the 8, 16 and 16/32-bit areas. It has laphelds, stand-alone desktops, and multi-terminal systems. Pips runs across the range.

Like Apple, it grew very quickly; its best year was 1980-1981, when its sales doubled. In late 1983 it claimed to be the fastest growing company in Japan. From there, there's only one road to take — downhill.

Even Apple has joined the crowd ganging up against it. Sord relied on the personal computer business for about 85 per cent of its income, but the competition from IBM, NEC, Fujitsu, Sanyo, and latterly Apple through the agency of Canon proved increasingly stiff.

Shares issued privately fell in an Acorn-like spiral, to the point where buyers couldn't be found at any price. There were rumours of difficulties last year, and earlier this year more rumours linked Sord with Sanyo as a possible buyer.

The deal with Toshiba is described as 'a comprehensive tie-up to include co-operation on technology, marketing and manufacturing'. Takayoshi Shiina will stay as chief executive, and Sord will be able to use Toshiba's marketing and distribution network. Its existing products will be sold and supported under the new regime.

Toshiba, for its part, expects the tie-up with Sord to be the model for a new type of Japanese company.

A new type of company, or perhaps just an even larger whale; and one that the Americans may have to scrape the rust off their harpoons to deal with some time soon. ***Stanley Ng***

ROUTINE ENQUIRIES

Consult the experts with your problems by writing to Routine Enquiries, *PCN*, Evelyn House, 62 Oxford Street, London W1A 2HG.

Spot-the-difference puzzle in Flexitext

Q In issue 102 you published a Spectrum program called Flexitext. However, I was extremely disappointed as I find it impossible to distinguish between the number 1 and lower case l.

Other members of my club have the same problem. Can you let us know which is which?

J McNeill,
Strathclyde.

A The variable name 'l' only occurs in lines such as LET l = number, with the exception of line 9060 where it crops up in the statement . . . j=4)+v*l).

Would-be contributors of programs should note that use of lower case L and the letter O should be avoided because of confusion with the numbers one and zero.

Transatlantic voltage converter?

Q I am an American currently residing in Britain. I am thinking of purchasing a portable computer while I am over here. Unfortunately, the one I have my eye on does not have a 110V option and only runs on 240V. Is there any way that I could modify my machine so that I can use it in the US? If not, I also have a voltage converter that allows me to use American products in Britain; would it be possible to modify this in any way so that I could use it in the US?

D Netherton,
London W1.

A There are two options open to you: the first is to contact the manufacturer of the machine and see if they can provide a power supply that has a voltage selector switch on it. Many portable computers already have this facility so you may be in luck.

It is also possible to buy a voltage converter that changes the US 110V into 240V. You say you already have one that allows you to run American equipment over here — purchasing a new one will be far easier than converting this, and you should be able to find a converter easily while you're over here.

Once you have the correct voltage, you should have no problems running the machine in the US unless it uses a television for its display. Since the US TV standard and the British standard are very different you would not be able to use the machine without making quite a few changes to the inside of it.

School project may be left up a gumtree

Q As part of my school technology course I am required to research, design and construct a device of my own choice. The one I've chosen is the Koalapad and I need the address of the producers. Can you assist?

Kevin Robertson,
Luton, Beds.

A The Koalapad, although distributed in the UK by Audiogenic, is manufactured by Koala Technologies in California. You can write to them at 3100 Patrick Henry Drive, Santa Clara, California, USA.

Don't be too disappointed if the material they send you isn't as helpful as you might wish. It's unlikely that they'd give you a full technical specification of the product, although you might get lucky.

Which colour monitor for my 64?

Q I am going to buy a colour monitor for my Commodore 64. There are four models available locally: Commodore 1701, Fidelity CM14, Microvitec 452 and Hantarex 900d. The difference in price is almost insignificant, so which will give me the best picture? Will I have compatibility problems if I use a light pen on anything other than the 1701?

Joseph Gatt,
Zebbug, Malta.

A It's difficult for us to answer this — and it ought to be easy for you to do so. Just go and have a look. We haven't seen the Hantarex, we've had a Fidelity monitor for some time and it works fine although we have found that it doesn't match the Commodore 1701 for picture quality.

Make sure the Microvitec is compatible with the 64 — most (though not all) Microvitecs use RGB input which the 64 doesn't provide, but if it is compatible then we'd suggest you look closely at the Microvitec and the 1701.

Regarding light pens, you should have no trouble whatsoever, although you'll almost certainly have to fiddle with brightness and contrast controls for perfect results.

CHARTS

GAMES

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

SPECTRUM

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

COMMODORE

TW	TITLE	PRICE
1	Ghostbusters	£10.90
2	Softaid	£4.99
3	Impossible Mission	£9.95
4	Daley's Decathlon	£7.90
5	Frak!	£7.90
6	Slap Shot	£8.95
7	Gryphon	£7.95
8	Emerald Isle	£6.95
9	Pole Position	£9.95
10	Lords of Midnight	£9.95

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TW	MACHINE	PRICE
1	Spectrum	£129
2	CBM 64	£199
3	Electron	£129
4	Amstrad	£349
5	BBC B	£399
6	Atari 800XL	£125
7	CBM 16	£140
8	MSX (series)	£250
9	Memotech	£250
10	Einstein	£500

ABOVE £1,000

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2	ACT Apricot	£1,760
3	Compaq	£1,795
4	Olivetti M24	£1,595
5	DEC Rainbow	£2,359
6	Ericcson PC	£2,095
7	Macintosh	£1,795
8	Wang Professional	£3,076
9	Televideo TS 1603	£2,640
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 14**. 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 RAM©, who can be contacted on 01-892 6596.

RANDOM ACCESS

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Amsoft points on disk drive review

I must put the record straight over a few of the points raised in your otherwise excellent review of our DDI-1 disk drive.

Details of CP/M, will be covered in a manual currently in preparation. We felt it best to provide a single source for all the definitive information, while covering the essential points in the user manual. This policy has been universally applauded as it applies to the CPC464 User Instructions and Firmware Manual.

The 'unlikely event' of distributors making software available on 3in Amstrad format has already happened. Since last year Timatic Systems of Fareham has offered its whole catalogue of classic CP/M software; three specialist software houses offer their wares on the format and Amsoft itself has published around ten low-cost business applications, including the famous Quest (Padmede) accounts packages.

Although AMSDOS is fundamentally a sequential filing system, (the serious user must surely turn to CP/M), the ability to have both an output and an input file open at once means that a single data file can be updated even though it is bigger than the available RAM, contrary to your statement in the review. This is, however, as you correctly point out, a trifle tedious.

Luckily it is very easy to split one large data file into many small sections (2K to 4K) and open, close, read, update and even sort these small sections individually at a reasonable speed, hiding the splitting process from the programmer, who thinks he is dealing with one long, random access, file.

If any of your readers are interested in the Basic to do this, Amsoft has an applications note available.

R Perry, Technical manager, Amsoft, 169 Kings Road, Brentwood, Essex.

No Memotech means fewer readers . . .

Whenever I have looked through *PCN* in the newsagents, I have been disappointed to find that you do not appear to have any coverage of one of the best machines on the market. In my opinion it is even better than the Spectrum and Atari in the home end of the market, and superior to the Apple IIe, the Commodore and many other 8-bit machines in the business area.

I have used the Apple IIe and the Commodore for business and I have now spent over £1,500 on my selection of hardware and software. The choice, needless to say, was none of the above machines, but a Memotech RS 128 with twin disk drives, printer equivalent to an Epson MX80 and monochrome screen, all as a bundle from Memotech.

The machine is supplied with an excellent word processor and spreadsheet. It is capable of operating what appear to be many of the normal industry standard CP/M programs. The drives can be configured to emulate a number of other machines, including IBM PC and Kaypro.

As the machines in the Memotech series become more and more popular the potential readership will grow.

If you are not featuring the machine in your magazine you will lose out on the number of readers. I would therefore strongly recommend that you start to feature this machine.

C Greenway, Chipping Norton, Oxon.

. . . and here's a case in point

I have today cancelled my standing order at my local newsagent for *PCN* because there has been no coverage of my machine, a Memotech MTX 512.

When you start to support what is probably the best home micro produced in thiscountry I will buy your magazine again.

F Light, Poole, Dorset.

Keep your eyes peeled — we'll have something of interest very soon — Ed.

New QL software is a joy to behold

I was delighted to receive the replacement QL software on February 27, and I am enthralled with the improvements to *Quill* in particular. It is now a joy to use *Quill*, and as I use it continually, that makes life very much easier. Psion ought to be congratulated on its improvements.

The ease with which the copy command can now be used, together with the erase command, using normal techniques for moving the cursor quickly, such as (shift) and (up or down arrow) to move a whole paragraph has really speeded up and improved the software. If there has been a mistake it is always possible to use the (left arrow) or even (shift) and (left arrow) to move a whole word back.

The only slight bug that I have so far found (apart from an error in the replacement pages of the user manual) related to printing a single, or the last page. The last line is sent to the printer buffer but isn't printed unless the printer is made manually to discharge its buffer by, for instance, executing a form or line feed (Epson RX80).

May I congratulate Sinclair for getting its act together for once.

The Hon W Spens Bridgwater, Somerset.

Amstrad CPC464 — from being left out . . .

So Amstrad owners are left in the cold? (issue 101). Not likely! Most of them are huddled in a cosy corner with a copy of *PCN* drooling over their machines and cackling over the fate of Dragon/Oric/Lynx owners.

The CPC464 must be the first machine to have sold in such vast numbers in such a short time *and* have such a heap of respectable titles available.

So please David Montgomery, be satisfied with your lot (even if it includes the tacky Arnold series). The Amstrad is a new micro, so for the sake of decency you'll just have to wait a few more nanoseconds for the blockbuster that will make Spectrum owners eat their Kempstons.

R Phillips, Aberdare, Mid Glamorgan.

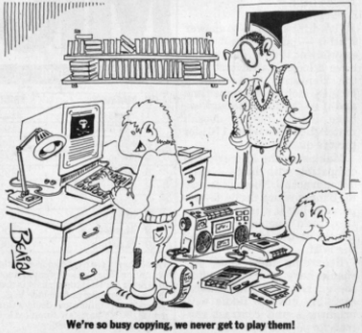
The Amstrad is looking good — but so did the Oric in its day — Ed.

. . . its owners are sitting pretty

David Montgomery said (issue 101) the Amstrad may go the same way as the Lynx, Dragon, and Oric if it does not get some good games software. I must agree with him to some extent but there is some excellent software available for the CPC464. Superb games like Dark Star, Sorcery, Defend Or Die, Pyjamarama and the Interceptor adventures to name but a few.

It looks as though the Amstrad is the third force in the UK micro scene at the moment and some people expect it to jump into second place later this year. As for going the way of the Dragon and the Lynx — I doubt it.

David Baxter, Amsclub, Carluke, Lanarkshire.



We're so busy copying, we never get to play them!

MICROWAVES

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

Discover your Mode on the BBC

With some Beeb programs, it is useful to know which screen mode the computer is in. The following function should reveal all:

```
10 DEFFNM
20 LOCAL A%
30 A%=135
40 =(USR(&FFF4)AND&FF0000)DIV&10000
```

Also, many more screen colours for a pretty display are possible with the short procedure below. It can produce coloured backgrounds of non-standard colours in Mode 1. It fills the screen with a 'hatched' user defined graphic. The colour mix is defined with the two arguments C1 ad C2.

The demo program shows the full range of colours available to you.

Jonathan Temple, Beeston, Nottingham.

```
10MODE 1
20 FOR S=0 TO 7
30 FOR T=0 TO 7
40 PROCFILL(S,T)
50 A=INKEY(200)
60 NEXT:NEXT
70 END
1000 DEFPROCFILL(C1,C2)
1010 VDU 23,224,&AA,&55,&AA,
     &55,&AA,&55,&AA,&55
1020 VDU 17,C1,17,C2+128,30
1030 FOR Y%=1 TO 31-
1040 PRINT STRING$(40,CHR$ 224);
1050 NEXT
1060 ENDPROC
```

Atmos simulated ZAP changes volume

One problem on the Oric Atmos is the difficulty in changing the volume of the ZAP. This routine simulates the ZAP and allows volume change.

The program works on the Oric 1 if you change line 80 to #20,#6C,#FA and line 120 and 140 to #20,#35,#F5. The volume can be controlled by poking #42D with a value between 0 and 15.

Duncan Bett, Wiveliscombe, Taunton.

```
20 FOR N=#400 TO #432
30 READ A:POKE N,A:NEXT
40 DOKE #2F5,#400
60 DATA #A2,#25,#A0,#04
80 DATA #20,#86,#FA
100 DATA #A9,0,#AA,#BA,#48,#A9,0
120 DATA #20,#90,#F5
130 DATA #A2,0,#CA,#D0,#FD,#68,
#AA,#E8,#E0,#70,#D0,#ED,#A9,8,#A2,0
140 DATA #20,#90,#F5
150 DATA #60
200 FOR N=0 TO 15:POKE #42D,N:CALL #400:NEXT
210 FOR N=15 TO 0 STEP -1:POKE #42D,N
CALL #400:NEXT
```

Hires screen dumps for 1520 plotter

Hires screen dumps are possible on a 1520 plotter, with this routine, using a Vic 20 and super expander. It should also work with a Commodore 64 and Simon's Basic if it has the RDOT function or something similar to test whether a point is on or off.

Simon Mills, London SW12.

```
63010 FOR Y=6 TO 1023 STEP 6
63020 FOR X=6 TO 1023 STEP 6
63030 IF RDOT(X,Y)<>1 AND F=0 THEN F=1:SX=X:SY=Y
63040 IF RDOT(X,Y)=1 AND F=1 THEN F=0:GOSUB 63200
63050 NEXT
63060 IF F=1 THEN GOSUB 63200:F=0
63070 NEXT
63080 END
63200 OPEN 1,6,1:PRINT#1,"M",SX/3,-SY/3
63210 PRINT#1,"D",X/3,-Y/3:CLOSE1:RETURN
```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HACKER'S HANDBOOK

Exclusive to PCN — extracts from *The Hacker's Handbook*, by Hugo Cornwall, published this week. Revealed in two parts are the secrets and know-how of the experts of computer communications.

You will find few products on the market labelled 'for hackers'; you must select those items that appear to have 'legitimate' but interesting functions and see if they can be bent to the hacker's purposes.

Almost any popular micro will do; hacking does not call upon enormous reserves of computer power. Nearly everything you hack will come to you in alphanumeric form, not graphics. The computer you already have will almost certainly have the essential qualities. However the very cheapest micros, like the ZX81, while usable, require much more work on the part of the operator/hacker, and give him far less in the way of instant facilities.

Most professional data services assume the user is viewing on an 80 column screen; ideally the hacker's computer should be capable of doing that as well, otherwise the display will be full of awkward line breaks. Terminal emulator software (see below) can sometimes provide a 'fix'.

One or two disk drives are pretty helpful, because you will want to be able to save the results of your network adventures as quickly and efficiently as possible. Most terminal emulators use the computer's free memory (*ie* all that is not required to support the operating system and the emulator software itself) as store for the received data, but once the buffer is full, you will begin to lose the earliest items. You can, of course, try to save to cassette, but normally that is a slow and tedious process.

An alternative storage method is to save to a printer, printing the received data stream not only to the computer screen, but also on a dot matrix printer. However, most of the more popular (and cheaper) printers do not work sufficiently fast. You may find you lose characters at the beginning of each line. Moreover, if you print everything in real time, you'll include all your mistakes, false starts etc, and in the process use masses of paper. So, if you can save to disk regularly, you can review each hack afterwards at your leisure and, using a screen editor or word processor, save or print out only those items of real interest.

Serial ports

The computer must have a serial port, either called that or marked RS232C (or its slight variant RS423), or V24, which is the official designator of RS232C used outside the US, though not often seen on micros.

The very cheapest micros, such as the ZX81, Spectrum, or Vic 20, do not have RS232C ports, though add-on boards are available. Some of the older personal computers, like the Apple or the Pet, were also originally sold without serial ports, though standard boards are now available.

Some RS232C implementations on micro or add-on boards are there simply to support printers with serial interfaces, but they can often be modified to talk into modems. The critical two lines are those serving pins 2 and 3.

- A computer serving a modem needs a cable in which Pin 2 on the computer is linked to Pin 2 on the modem
- A computer serving a printer, etc needs a cable in which Pin 3 on the computer is linked to Pin 2 on the printer and Pin 3 on the printer is linked to Pin 2 on the computer
- If two computers are linked together directly, without a modem, then Pin 2 on computer A must be linked to Pin 3 on computer B and Pin 3 on computer B linked to Pin 2 on computer A.

One difficulty that frequently arises with newer or portable computers is that some manufacturers have abandoned the traditional 25-way D-connector, largely on the grounds of bulk, cost and redundancy. Some European computer and peripheral companies favour connectors based on the DIN series (invented in Germany), while others use D-connectors with fewer pin outs. *There is no standardization.* Even if you see two physically similar connectors on two devices, regard them with suspicion. In each case, you must determine the equivalents of: characters leaving computer (Pin 2); characters arriving at computer (Pin 3); and signal ground (Pin 7).

You can usually set the speed of the port from the computer's operating system and/or from Basic. There is no standard way of doing this; you must check your handbook and manuals. Most RS232C ports can handle the following speeds: 75, 110, 300, 600, 1200, 2400, 4800, 9600, and sometimes 50 and 19200 baud as well. These speeds are selectable in hardware by appropriate wiring of a chip called a baud-rate generator. Many modern computers let you select speed in hardware by means of a DIL switch.

The higher speeds are used either for driving printers or for direct computer-to-computer or computer-to-peripheral connections. The normal maximum speed for transmitting along phone lines is 1200 baud.

Terminal emulators

We all need a quest in life. Sometimes I think mine is to search for the perfect software package to make micros talk to the outside world. As in all such quests, the goal is occasionally approached but never reached, if only because the process of the quest causes one to redefine what one is looking for.

These items of software are sometimes called communications packages, or asynchronous comms packages, and sometimes terminal emulators, on the grounds that the software can make the micro appear to be a variety of different computer terminals.

10 ►

◀ 9

Until recently, most on-line computer services assumed that they were being examined through dumb terminals — simply a keyboard and a screen, with no attendant processing or storage power (except perhaps a printer).

With the arrival of PCs all this is slowly changing, so that the remote computer has to do no more than provide relatively raw data and all the formatting and on-screen presentation is done by the user's own computer. Terminal emulator software is a sort of half-way house between dumb terminals and personal computers with considerable local processing power.

Many slight variants on the dumb computer terminal exist — hence the availability of terminal emulators to provide, in one software package, a way of mimicking all the popular types.

Basic software to get a computer to talk through its RS232C port, and to take in data sent to it, is trivial. What the hacker needs is software that will make the computer assume a number of different personalities upon command, store data as it is collected, and print it out.

Two philosophies of presenting such software to the user exist: first, one which gives the naive user a simple menu which says, in effect, 'press a key to connect to database' and then performs everything smoothly, without distracting menus. Such programs need an install procedure, which requires some knowledge, but most ordinary users never see this. As a hacker you will want the precise opposite.

The second approach to terminal emulator software allows you to reconfigure your computer as you go — there is plenty of on-screen help in the form of menus allowing you to turn on and off local echo, set parity bits, show non-visible control codes and so on.

In a typical hack, you may have only vague information about the target computer, and much of the fun is seeing how quickly you can work out what the remote computer wants to 'see' — and how to make your machine respond.

Given the number of popular computers on the market, and the number of terminal emulators for each one, it is difficult to make a series of specific recommendations. What follows therefore, is a list of the sort of facilities you should look for:

On-line help You must be able to change the software characteristics while on-line and be able to call up help menus instantly.

Text buffer The received data should be capable of going into the computer's free memory automatically so that you can view it later off-line.

Half/full duplex (echo on/off) Most remote services use an echoing protocol: when the user sends a character to the host computer, the host immediately sends back the same character to the user's computer, by way of confirmation.

Data format/parity setting In a typical asynchronous protocol, each character is surrounded by bits to show when it starts, when it ends, and to signify whether a checksum performed on its binary equivalent comes out even or odd. The character itself is described, typically, in seven bits and the other bits, state, stop and parity, bringing the number up to ten.

However, this is merely one very common form, and many systems use subtle variants — the ideal terminal emulator software will let you try out these variants while you are still on line. See Table 1 for typical variant.

Table 1

Word length	Parity	No stop bits
7	even	2
7	odd	2
7	even	1
7	odd	1
8	none	2
8	none	1
8	even	1
8	odd	1

Show control characters This software switch displays characters not normally part of the text that is meant to be read.

Macros This is the US term, now rapidly being adopted in the UK, for the preformatting of a log-on procedure, passwords etc.

Auto-dial Some modems contain programmable auto-diallers so that frequently-called services can be dialled from a single keyboard command.

Format screen Most professional on-line and time-share services assume an 80 column screen. The format screen option in terminal emulators may allow you to change the regular text display on your micro.

File protocols When computers are sending large files to each other, a further layer of protocol, beyond that defining individual letters, is necessary.

EOB/ACK The sending computer divides its file into blocks (of any convenient length); after each block is sent, an EOB (End of Block) character is sent. The user's computer must then respond with an ACK (Acknowledge) character.

File transmission All terminal emulators assume you will want to send, as well as receive, text files. Thus, in addition to the protocol settings already mentioned, there may be additional ones for that purpose.

Specific terminal emulation Some software has preformatted sets of characteristics to mimic popular commercial dumb terminals.

Baudot characters The Baudot code, or International Telegraphic Code No 2, is the 5-bit code used in telex and telegraphy.

Viewdata emulation This gives you the full, or almost full, graphics and text characters of UK standard viewdata.

Modems

Modem is a contraction of modulator-demodulator. A modem taking instructions from a computer (pin 2 on RS232C) converts the binary 0s and 1s into specific single tones, according to which standard is being used. In RS232C/V24, binary 0 (ON) appears as positive volts and binary 1 (OFF) appears as negative volts.

The tones are then fed, either acoustically via the telephone mouthpiece into the telephone line, or electrically, by generating the electrical equivalent direct onto the line. This is the modulating process.

In the demodulating stage, the equipment sits on the phone line, listening for occurrences of preselected tones (again according to whichever 'standard' is in operation) and, when it hears one, delivers a binary 0 or binary 1 in the form of positive or negative voltage pulses into pin 3 of the computer's serial port.

This explanation holds true for modems operating at up to 1200 baud; above this speed, the modem must be able to originate tones, and detect them according to *phase* as well. But since higher-speed working is unusual in dial-up ports — the hacker's special interest — we can leave this matter to one side.

The modem is a relatively simple bit of kit: on the transmit side it consists of a series of oscillators acting as tone generators, and on receive has a series of narrow band-pass filters.

Designers of modems must ensure that unwanted tones do not leak into the telephone line (exchanges and amplifiers used by telephone companies are sometimes remotely controlled by the injection of specific tones) and also that, on the receive side, only the distinct tones used for communications are 'interpreted' into binary 0s or 1s.

The other engineering requirements are that unwanted electrical currents do not wander down the telephone cable (to the possible risk of phone company employees) or back into the user's computer.

Until relatively recently, the only UK source of low-speed modems was British Telecom. The situation is much easier now, but de-regulation of 'telephone line attachments', which include modems, is still so recent that the ordinary customer can easily become confused. Moreover, modems offering exactly the same service can vary in price by over 300 per cent.

At 300 baud, you have the option of using direct-connect modems which are hard-wired into the telephone line, an easy enough exercise, or using an acoustic coupler in which you place the telephone hand-set.

Acoustic couplers are inherently prone to interference from room-noise, but are useful for quick lash-ups and portable operation. Many acoustic couplers operate only in originate mode, not in answer.

At higher speeds acoustic coupling is not recommended, though a 75/1200 acoustic coupler produced in association with the Prestel Micronet service is not too bad, and is now exchanged on the second-hand market very cheaply indeed.

I prefer modems that have proper status lights — power on, line seized, transmit and receive indicators. Hackers need to know what is going on.

Table 2 below shows all but two of the types of service you are likely to come across; V-designators are the world-wide 'official' names given by the CCITT; Bell-designators are the US names.

The two exceptions are: V22, 1200 baud full duplex, two wire; Bell 212A, the US equivalent. These services use phase modulation as well as tone.

British Telecom markets the UK services under the name of Datel.

BT's methods of connecting modems to the line are either to hard-wire the junction box (the two outer-wires are the ones you usually need) — a 4-ring plug and associated socket (type 95A) for most modems, a 5-ring plug and associated socket (type 96A) for Prestel applications (note that the fifth ring isn't used) — and, for all new equipment, a modular jack called type 600.

Building a modem is now largely a question of adding a few peripheral components, some switches and indicator lights, and a box. In deciding which 'world standard' modem to purchase, hackers should consider the following features:

Status lights You need to be able to see what is happening on the line.

Hardware/software switching Cheaper versions merely give you a switch on the front enabling you to change speeds, originate or answer mode and CCITT or Bell tones. More expensive ones feature firmware which allows your computer to send specially formatted instructions to change speed under program control. However, to make full use of this facility, you may need to write (or modify) your terminal emulator.

Auto-dial A pulse dialler and associated firmware are included in some more expensive models. You should ascertain whether the auto-dialler operates on the telephone system you intend to hook the modem up to. You will of course need software in your micro to address the firmware in the modem, and the software has to be part of your terminal emulator, otherwise you gain nothing in convenience.

D25 connector This is the official 'approved' RS232C/V24 physical connection — useful from the point of view of easy hook-up.

Next week: Targets for Hackers

Table 2

Service Designator	Speed	Duplex	Transmit 0	Transmit 1	Receive 0	Receive 1	Answer
V21 orig	300*	full	1180	980	1850	1650	—
V21 ans	300*	full	1850	1650	1180	980	2100
V23 (1)	600	half	1700	1300	1700	1300	2100
V23 (2)	1200	f/h†	2100	1300	2100	1300	2100
V23 back	75	f/h†	450	390	450	390	—
Bell 103 orig	300*	full	1070	1270	2025	2225	—
Bell 103 ans	300*	full	2025	2225	1070	1270	2225
Bell 202	1200	half	2200	1200	2200	1200	2025

*any speed up to 300 baud can also include 75 and 110 baud services
†service can either be half-duplex at 1200 baud or asymmetrical full duplex, with 75 baud originate and 1200 baud receive (commonly used as viewdata user) or 1200 transmit and 75 receive (viewdata host)

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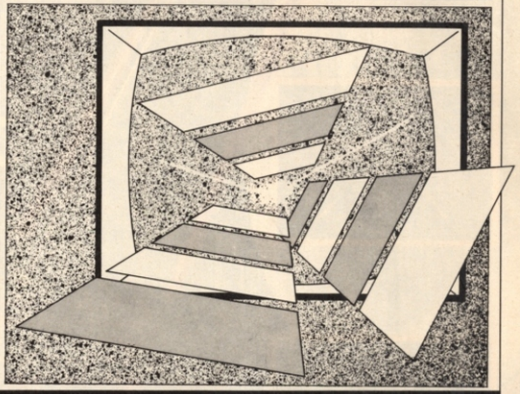
SPRITE CONTROL

Your sprites are organised for faster, more efficient use with Jonathan Whitchley's routines.

Setting up and controlling sprites on the Commodore 64 needn't be difficult: it's quite possible to write routines that ease your load considerably.

The code presented here gives you the facility to set up all the sprite information in one go without a lot of peeks and pokes. It is considerably faster and more convenient than normal Basic. You may specify as few or as many parameters as you wish, as by default the others remain unchanged. This helps to avoid dealing with a large number of parameters when you want to change just a few.



In use

The command lets you specify:

1. Which sprite you are setting up (1-8)
2. Its x-position on the screen (0-511)
3. Its y-position on the screen (0-255)
4. The sprite colour (0-15)
5. The address of the sprite data (0-65535)
6. Expanded or unexpanded horizontally (0-1)

Listing 1

```
10 REM ********************************
20 REM * THIS ROUTINE WILL SAVE THE    *
30 REM * PROGRAM ONTO DISK OR TAPE.    *
40 REM ********************************
50 FORT=52992TO53247:READTX:POKET,TX:NEX
TT
60 DATA 32,211,207,176,8,136,144,3,76,0,
207,152
70 DATA 44,165,175,41,7,133,175,32,211,2
07,176,18
80 DATA 41,1,72,165,175,10,170,152,157,0
,208,104
90 DATA 168,162,16,32,181,207,32,211,207
,176,8,165
100 DATA 175,10,170,152,157,1,208,32,211
,207,176,6
110 DATA152,164,175,153,39,208,32,211,20
7,176,43,132
120 DATA 174,170,173,0,221,73,255,106,10
6,106,41,192
130 DATA 133,177,173,24,208,41,24,74,74,
105,3,101
140 DATA 177,133,177,169,248,133,176,138
,6,174,42,6
150 DATA 174,42,164,175,145,176,32,211,2
07,176,5,162
160 DATA 29,32,181,207,32,211,207,176,5,
162,23,32
170 DATA 181,207,32,211,207,176,5,162,27
,32,181,207
180 DATA 32,211,207,176,5,162,28,32,181,
207,32,211
190 DATA 207,176,10,162,30,32,181,207,16
9,4,141,25
200 DATA 208,32,211,207,176,36,162,31,16
9,2,141,25
210 DATA 208,192,0,8,169,1,164,175,240,4
,10,136
220 DATA 208,252,40,208,7,73,255,61,0,20
8,176,3
230 DATA 29,0,208,157,0,208,96,32,121,0,
201,44
240 DATA 240,24,201,59,208,17,32,242,207
,176,12,120
250 DATA 162,21,236,18,208,144,251,32,18
1,207,88,104
260 DATA 104,96,32,115,0,32,138,173,70,1
02,8,32
270 DATA 247,183,40,96
280 REM********************************
290 REM* THIS ROUTINE WILL SAVE THE    *
300 REM* PROGRAM ONTO DISK OR TAPE.    *
310 REM* IF YOU ARE USING TAPE THEN    *
320 REM* CHANGE DEVICE TO 1.           *
330 REM* YOU CAN USE THIS TO SAVE      *
340 REM* YOUR OWN MACHINE CODE         *
350 REM* PROGRAMS BY CHANGING :        *
360 REM*      SA=START ADDRESS .       *
370 REM*      ES=END ADDRESS + 1       *
380 REM*      NAME$=SAVE TITLE         *
390 REM********************************
400 DEVICE=8:SA=52992:EA=53248:NAME$="UT
ILITY"
410 PER$=" RECORDER":DEV$="TAPE":IF DEVI
CE=8THENPER$=" DRIVE":DEV$="DISK"
420 LO(1)=INT(SA/256):LO(0)=SA-256*LO(1)
:HI(1)=INT(EA/256):HI(0)=EA-256*HI(1)
430 SYS 57812NAME$,DEV,1:FORT=0TO1:POKE1
93+T,LO(T):POKE174+T,HI(T):NEXTT
440 PRINT"[CLEAR][DOWN]PUT THE "DEV$" YO
U WANT TO [RVSON]RECORD ONTO[RVSOFF] IN
THE "DEVICE$PERIPHERAL$
450 PRINT"[DOWN]PRESS ANY KEY WHEN YOU'R
E READY":POKE 198,0:WAIT198,1:GETA$:POKE
53269,0
460 PRINT"[DOWN]OK"CHR$(13)"[DOWN]COPYIN
G TO "DEV$:SYS62957:PRINT"[DOWN]COPY COM
PLETE."
```

7 Expanded or unexpanded vertically (0-1)
8 Which has priority, screen text or sprite (0-1)
9 High-resolution or multi-colour mode (0-1)
10 Detect sprite collisions (0-1)
11 Detect sprite data collisions (0-1)

You can also specify whether you want to turn the sprite on or off, or simply set up the information ready to switch on the sprite later in your program.

The command syntax is: SYS 53000, a,b,c,d,e, etc, and up to 12 parameters may be given.

You don't have to enter all 12 parameters as whatever you specify is used to update the sprite information. For example, you could write SYS 53000, a,b which leaves the sprite information c to k unchanged. If, at the end of the string of parameters, you place a ;1 the sprite is switched on. If you put a ;0 the sprite is turned off. If you don't put a ; the sprite information is updated, but no attempt is made to turn the sprite on or off.

Here are some examples:

SYS 53000,2, 300,126;1 sprite No 2 is moved to position 300,126 and turned on.

SYS 53000,4,80, 90,1 sprite No 4 is moved to position 80,90. Sprite colour is white. If the sprite is off, it's left off: if on, it's left on.

SYS 53000,7, 60,50,5,960,1, 0,0,1;1 sprite No 7 is moved to 60,50. It is colour 5 (green) and the sprite data starts from address 960. The sprite is expanded horizontally but not vertically. The sprite appears behind any screen text and in multi-colour mode. The sprite will be switched on.

10 FOR K=30 TO 100 sprite No 1 moves across the screen

20 SYS 53000, 1,K,2.2*K;1 33 NEXT K the equation y=2.2*K

SYS 53000;0 turns off the previously specific sprite

(The parameters may be any expression).

The parameters must go in the order a,b,c etc. This could be awkward if you wanted to change one of the later parameters and leave the others unchanged. If you give the value − 1 to a parameter, the command skips on to the next one, leaving the original value unaltered.

SYS 53000,1, -1,100,3,896, -1,1 this leaves the x position unchanged, but moves the sprite to the y position 100, changes the colour to cyan and to the sprite data stored at 896. The sprite is expanded vertically.

Handy points

The SYS 53000 command may be used directly or in a program.

The sprite data pointer is calculated from the parameter e. This parameter may be either the sprite data address in memory (0-65535) or the relative address (0-16384) from the base bank address. The SYS 53000 command finds the current address of the screen each time, so the correct sprite pointer is calculated and located correctly, no matter which bank or relative screen position you may change to. The address of the sprite data should be a multiple of 64; if you give any other value, the address is rounded down to the nearest value.

The sprite is turned on in the time when the raster display is off-screen. This gets rid of the annoying jerky sprite movement that you usually see when moving sprites from Basic.

The collision parameters j and k set up the appropriate register and clear it from any previous collisions. You need only to peek the appropriate bits in register $D019 to find out if a subsequent collision occurs.

All parameters are calculated in modulo arithmetic. For example, if you specify a colour of 16, it wraps around to colour 0; if you specify a y position of 256, it will read as position 1. Parameters f onwards should be -1, 0 or 1. However, any negative number > -65536 is read as -1, any positive number < 65536 is read as 1.

For parameters f to k:

f 0 = unexpanded
g 0 = unexpanded
h 0 = sprite overlays text
i 0 = high-resolution
j 0 = collision is not detected
k 0 = collision is not detected

The SYS 53000 command changes the particular sprite information without affecting any of the other sprites.

If you are in bank 3, don't put your screen at $CC00; keep your sprite data at > $E000 (dec 57344) or < $cf00 (dec 52992). The video controller reads the sprite data happily from the RAM under the ROM.

If you wish to load in this utility program from your own program, the first few lines of Basic should be along the lines:

```
10 IF FLG THEN 30
20 FLG=1:DEV%=PEEK(186):LB=PEEK(45):HB=
   PEEK(46):LOAD"UTILITY",DEV%,1
30 POKE 45,LB:POKE 46,HB:CLR
40 REM your program starts here.
```

If you are using tape, save your own program and then the utility program immediately after. It makes life easier.

Getting started

Type in Program 1, then make sure your tape recorder or disk drive is connected and the routine will save automatically. Your sprite routine should now be ready to be called from within your own programs. If you want a demonstration, type in Program 2. It will call on you to load your saved program, and will then produce the demonstration.

Listing 2

```
100 REM*********************************
110 REM* DEMO PROG FOR SPRITE PROGRAM *
120 REM*********************************
130 REM
140 REM*********************************
150 REM* LOAD IN UTILITY ?             *
160 REM* USE THESE NEXT FEW LINES IN   *
170 REM* ANY PROGRAM THAT USES THIS    *
180 REM* PROGRAM.                      *
190 REM*********************************
200 IF FLG THEN 220
210 FLG=1:DEV%=PEEK(186):LB=PEEK(45):HB=
PEEK(46):LOAD"UTILITY",DEV%,1
220 POKE 45,LB:POKE 46,HB:CLR
230 REM START OF YOUR PROGRAM
240 REM READ IN SPRITE DATA
250 FOR  I=0 TO 62
260 READ A
270 POKE 192*64+I,A
280 NEXT I
290 REM DATA FOR ELEPHANT STORED AT
300 REM 92*64 ONWARDS IE 12288
310 DATA 0,0,0,0,0,0,0
320 DATA 0,0,0,0,0,0
330 DATA 7,255,192,127,255,192
340 DATA 251,255,224,249,255,240
350 DATA 252,255,248,190,127,252
360 DATA 255,127,252,255,127,244
370 DATA 255,127,244,248,127,247
380 DATA 254,255,240,255,255,240
390 DATA 156,0,112,156,0,112
400 DATA 156,0,112,156,0,112
410 DATA 216,0,112
420 REM PUT ELEPHANT ON SCREEN
430 PRINT"[CLEAR]"
440 LET C=0
450 SYS 53000,8,320,200,C,12288,1,1:1
460 SYS 53000,1,320,100,11,12288,1,1:1
470 SYS 53000,2,200,100,11,12288,1,1:1
480 FOR X=320 TO 1 STEP -3
490 LET C=C+1:IF C=16 THEN C=0
500 SYS 53000,8,X,200,C:1
510 SYS 53000,1,320-X,100:1
520 SYS 53000,2,200,X,14:1
530 NEXT X
540 GOTO 480
```

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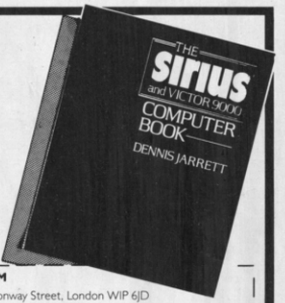

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MICRODRIVE MASTERY

Getting in a mess with your Microdrives? Gavin Monk's menu driven utility — published this week and next — will help sort you out.

Listing 1

```
25000 set_up_date
25010 call_type=0
25020 menu
25030 IF call_type=1:STOP
25040 REMark ******************************************************************
25050 DEFine PROCedure rename_file
25060   LOCal no_of_files,k,file_name$,new_file_name$,miss,from_drive,drive_no
25070   CLS:AT 1,12:UNDER 1:PRINT'RENAME FILE':UNDER 0
25080   get_drive_no:from_drive=drive_no
25090   AT 2,1:PRINT'Drive no ';from_drive;'  Temp storage:';get_drive_no
25100   dir_to_files$ from_drive
25110   select_files 'R'
25120   FOR k=1 TO no_of_files
25130     IF selected$(k)='R'
25140       file_name$=files$(k)
25150       miss=0
25160       REPeat new_name_loop
25170         CLS:AT 1,12:UNDER 1:PRINT'RENAME FILE':UNDER 0
25180         PRINT\\'  Drive No. ';from_drive
25190         PRINT\'  Old File Name...';file_name$
25200         INPUT\'  New File Name...';new_file_name$
25210         IF NOT ' ' INSTR new_file_name$ AND NOT(file_name$==new_file_name$
):EXIT new_name_loop
25220         AT 8,17:PRINT FILL$(' ',20):AT 8,17
25230       END REPeat new_name_loop
25240       IF LEN(new_file_name$)<3 OR
25250         IF file_on_drive(from_drive,new_file_name$)
25260           AT 14,2:FLASH 1:PRINT'FILE ALREADY EXISTS - REPLACE Y/N';:FLASH 0
25270           AT 14,2
25280           REPeat wait
25290             IF INKEY$='y':DELETE 'mdv'&from_drive$&'_'&new_file_name$:EXIT
 wait
25300             IF INKEY$='n':miss=1:EXIT wait
25310           END REPeat wait
25320           PRINT FILL$(' ',33)
25330         END IF
25340         IF NOT miss
25350           COPY 'mdv'&from_drive$&'_'&file_name$ TO 'mdv'&drive_no$&'_'&new_f
ile_name$
25360           DELETE 'mdv'&from_drive$&'_'&file_name$
25370           IF from_drive<>drive_no
25380             COPY 'mdv'&drive_no$&'_'&new_file_name$ TO 'mdv'&from_drive$&'_'
&new_file_name$
25390             DELETE 'mdv'&drive_no$&'_'&new_file_name$
25400           END IF
25410         END IF
25420       END IF
25430     END IF
25440   END FOR k
25450 END DEFine rename_file
25460 DEFine PROCedure print_file
25470   CLS:AT 1,12:UNDER 1:PRINT'PRINT FILE(S)':UNDER 0
25480   get_drive_no
25490   dir_to_files$ drive_no
25500   select_files 'P'
25510   PRINT\'  Now printing from drive ';drive_no
25520   FOR i=1 TO no_of_files
25530     IF selected$(i)='P'
25540       AT 10,5:PRINT files$(i);FILL$(' ',20)
25550       llist files$(i),drive_no
25560     END IF
25570   END FOR i
25580 END DEFine PRINT
25590 DEFine PROCedure merge_error
25600   CLS:AT 1,12:UNDER 1:PRINT 'MERGE A FILE':UNDER 0
25610   PRINT\\' The merge option can only be  used  if this utility is evoked b
y using  GOTO 25000 or RUN 25000.'
25620   PRINT\\'Press any key to return to the Menu.
25630   PAUSE 500
25640 END DEFine merge_error
25650 REMark ******************************************************************
25660 DEFine PROCedure load_file
25670  CLS:UNDER 1:AT 1,12:PRINT'LOAD A FILE':UNDER 0
25680   get_drive_no:dir_to_files$ drive_no:select_files 'L'
25690   FOR i=1 TO no_of_files:IF selected$(i)='L':PRINT'Loading ';files$(i);' f
rom drive'!drive_no:LRUN 'mdv'&drive_no$&'_'&files$(i)
25700 END DEFine load_file
25710 DEFine PROCedure delete_file
25720   CLS:AT 1,10:UNDER 1:PRINT'DELETE FILE(S)':UNDER 0
25730   get_drive_no
25740   dir_to_files$ drive_no
25750   select_files 'D'
25760   CLS:AT 1,10:UNDER 1:PRINT'DELETE FILE(S)':UNDER 0
25770   PRINT \'  Now deleting from drive'!drive_no
```

Now that Sinclair has dropped the price of Microdrive cartridges from £4.95 to £1.99, both QL and Spectrum owners can use them in the way that they were intended — as a cheap and efficient storage medium. QL users should find more software appearing at very reasonable prices soon.

The first sign has come from Hisoft (which is best known for its Z80 machine code programs) with the release of MonQL, a full 68000 disassembler/debugger retailing at only £19.95.

However, as the QL has no cassette port, all the files and programs must be stored on Microdrives. After a few hours use, you will be left with files scattered on several cartridges.

On a more expensive micro, such as an IBM PC, it would take very little time to delete unwanted files, rename files, backup files etc. But because of the way QL Microdrives have to be accessed from SuperBasic, the process can take some time on the QL. The aim of this program is to provide a menu driven utility which will help tidy up Microdrive cartridges after a heavy day's use.

How it works

Because QDOS is a multi-tasking operating system it can control the Microdrives while SuperBasic is still running. However QDOS, as yet, contains no error trapping so when a drive error occurs the user is returned to SuperBasic with one of 21 error messages. Why the QL has only 21 remains a mystery to me. Even the Spectrum with Interface 1 attached has 48.

Using Microdrives on the QL does have other problems. If more than 20 files are on a single cartridge, then the directory will overflow the screen, meaning that files cannot easily be renamed, and cartridges cannot be backed up in one go.

QL Microdrive Master solves these problems and also gives you several other features, such as:

1 Setting of the time and date with full error trapping

2 Multiple formatting of cartridges with an added safety trap

3 Loading of a program from a full directory of a cartridge

4 Merging of a programm from a full directory

5 Saving of a program with error trapping on the file name. If the file already exists, replacing it with the new file

6 Multiple deletion of files by selecting from a full directory of the cartridge; all files containing a given string, *ie* all files containing '_bas'., or both *ie* the files 'demo1','demo2', and all files containing '_bas'

7 Multiple renaming of files. If the new name exists, then option to replace it with the new file

8 Multiple printing of files with dated titles selected as in 6

9 Backing up of files with the following options: a whole cartridge; selected files;

optional or compulsory overwrite of namesakes
All these features include the option to select the drive number, from 1 to 8.

Using the program

Type in the program and save it onto Microdrive cartridge by typing SAVE mdv1_Mdv_Master_bas (ENTER). Now run the program. First you will be prompted to input the date in the format DDMMYY and then the time in the format HHMMSS. If you have input an invalid date or time, say a date of 290285, then you will be told so and prompted for it again. Once the date and time have been input correctly the QL's clock will be set and the file 'last_date_dat' will be saved onto mdv1.

The next time it is loaded, this will give defaults for the date and time prompts. For example, if you entered a date of 010185 and a time of 105800, these values would be used as the defaults the next time and Enter can be pressed to accept them.

Once the date has been set you are presented with the main menu with the following options:

1 Format a cartridge
This allows you to format a cartridge between one and four times. You will first be prompted for the drive number, then the cartridge name, and finally the number of format times. After entering this data you will be asked to press both CTRL and ENTER to format the cartridge or ESC to return to the main menu.

2 Load a file
Using this option will remove the Microdrive Master program from the QL and load the required program and then run it. Selection of the required file is via the selection screen.

3 Save a file
Save a program that has been developed after Microdrive Master was loaded. Microdrive Master will not be saved with the program and the program should only use line numbers between 1 and 24999. If the file that you specified already exists on the cartridge, then you will be given the option to replace it with a new file or return to the main menu.

4 Merge a file
Similar to load option except that Microdrive Master will remain in memory and the requested program will not be run on loading. The program shouldn't contain line numbers greater than 24999. After it has been merged you will be returned to the main menu.

5 Delete file(s)
By using the selection screen, any number of files on a cartridge can be deleted in one go.

6 Print file(s)
As option 5, except that files will be printed instead of deleted. The printer should be attached to the first serial port.

7 Backup a cartridge
Selecting this option leads to another menu with four options on it. The first allows you to backup a whole cartridge in one go, the second asks you to select which files you require to be backed up, the third turns auto overwrite on or off, and the fourth allows you to change the source and destination drive numbers. If file to be backed up already exists on the destination cartridge it will overwrite it, if auto overwrite is on, or ask if you want it overwritten if it is off.

8 Rename file(s)
This requires some temporary cartridge space and you will be prompted to enter the drive number for this temporary storage. It can be the same drive that contains the file to be renamed, but for large files a different drive number should be entered. The files to be renamed are selected via the selection screen and you will be prompted for the new file names as they are renamed. If a file with the new name already exists on the drive then the option to replace it will be given.

The selection screen
Any number of files can be selected from those displayed on the screen. The files are displayed in three columns and the selection mode is indicated in the top right hand corner of the window. To select a file or several files, the following procedure should be followed:

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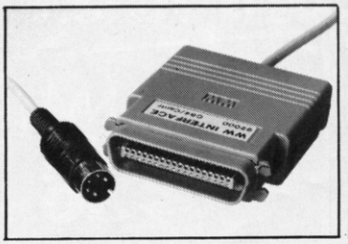

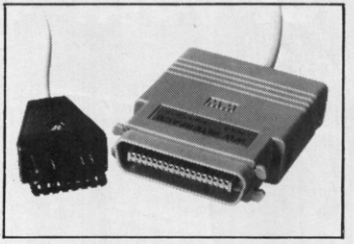

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2 Press the letter key indicated by the mode.
3 Select further files by repeating the process.
4 If required, press F2 to select a file group. Files already selected by using **1** and **2** will be included in with this file group.
5 Press Enter.
Note: if you are using the load or merge options, only one file can be selected and this will be loaded or merged as soon as it is selected.

How it works

When the program is first run, the QL will look on mdv1_ for a file named 'last_date_dat'. If this is found, the values contained in it will be used to provide the defaults for the date and time input screen. If it is not found, the defaults will be the same as the date currently set up.

Once the date and time have been input the values are checked to make sure that they are valid and the QL's clock is set. A file containing this date is now added to mdv1_ or updated if it already exists. The heart of the program is the main menu and from this all of the other procedures are called by using the select statement.

Procedures and functions

1 dir_to_ files$ (drive_no)
This reads a directory from (drive_no) and stores the cartridge name in cart_name, the cartridge space in cart_space, the file names in files$, and the number of files in no_of_files.
2 file_on_drive (drive_no, file_name)
This first calls dir_to_files$ and then looks through files$ to see if file_name is on the drive. If it is, 1 is returned, otherwise 0 is.
3 get_drive_no
Prompts the user to enter a drive number between 1 and 8.
4 get_file_name
Prompts the user to enter a file name.
5 get_drives
Calls get_drive_no twice to get two different drive numbers which are returned as from_drive and to_drive.
6 display_files
Displays the file names held in files$ in three columns on the screen.
7 select_files (mode$)
Allows the user to select files from those displayed by display_files. A select statement is used to detect which keys have been pressed. selected$ will be returned containing an index to the selected file names.
8 back_up (all)
If all=1 then a whole cartridge will be backed up; otherwise, only the files selected.
9 back_up_cart (from_drive,to_drive,overwrite)
Displays the backup options and allows the user to select the required ones and then calls back_up.
10 merge_error
Certain restrictions exist on the use of merge and if it's used at the wrong time the error message 'Not Implemented' will be displayed by QDOS. This procedure tells you if merge can not be used.
11 llist (file_name$,drive_no)
Prints the file name and date to the printer followed by the file from the drive.
12 title
Prints the title in the top window.
13 menu
Displays the main menu.
14 set_up_date
Checks to see if the QL's clock has been set and if it has not calls get_new_date.
15 get_new_date
Prompts the user to set up the date.
16 check_date and check_time (string)
These two functions check that the date or time in string is a valid one. The format used is set at DDMMYY and HHMMSS. If the date/time is invalid, then 0 will be returned, otherwise a 1.
17 rename_file, print_file, load_file, delete_file, save_file
These allow the user to select which file(s) are to be operated on and carries out the operation.
18 format_cart
Formats a given cartridge a number times between 1 and 4.

Listing (cont)

```
25780   FOR i=1 TO no_of_files
25790     IF selected$(i)='D'
25800       AT 10,5:PRINT files$(i);FILL$(' ',20)
25810       DELETE 'mdv'&drive_no&'_'&files$(i)
25820     END IF
25830   END FOR i
25840 END DEFine DELETE
25850 DEFine PROCedure save_file
25860   CLS:AT 1,12:UNDER 1:PRINT'SAVE A FILE':UNDER 0
25870   get_drive_no:get_file_name
25880   IF LEN(file_name$)<>0
25890     IF file_on_drive (drive_no,file_name$)
25900       AT 14,2:FLASH 1:PRINT'FILE ALREADY EXISTS - REPLACE Y/N':FLASH 0:AT
14,2
25910       REPeat wait
25920         IF INKEY$='y':PRINT'Now updating ';file_name$;' on drive'!drive_no
:FILL$(' ',20):DELETE 'mdv'&drive_no&'_'&file_name$:SAVE 'mdv'&drive_no&'_'&file
_name$ TO 24999:EXIT wait
25930         IF INKEY$='n':EXIT wait
25940       END REPeat wait
25950     ELSE
25960       AT 14,2:PRINT'Now saving'!file_name$!'on drive'!drive_no:SAVE 'mdv'&
drive_no&'_'&file_name$ TO 24999
25970     END IF
25980   END IF
25990 END DEFine save_file
26000 DEFine PROCedure get_file_name
26010   AT 5,0:INPUT' File Name.....';file_name$
26020   IF ' ' INSTR file_name$:AT 5,14:PRINT FILL$(' ',15):GO TO 26010
26030 END DEFine get_file_name
26040 DEFine PROCedure back_up(all)
26050   dir_to_files$ from_drive
26060   drive_no=from_drive
26070   IF NOT all:select_files 'C':ELSE :selected$=FILL$('C',51)
26080   CLS:AT 1,9:UNDER 1:PRINT'BACKUP A CARTRIDGE':UNDER 0
26090   PRINT \' Backing up from drive ';from_drive;' to drive ';to_drive
26100   FOR i=1 TO no_of_files
26110     IF selected$(i)='C'
26120       miss=0:AT 5,4:PRINT FILL$(' ',31):AT 5,4:PRINT 'File Name: ';files$(
i)
26130       IF NOT overwrite
26140         IF file_on_drive (to_drive,files$(i))
26150           AT 14,2:FLASH 1:PRINT 'FILE ALREADY EXISTS - REPLACE Y/N':FLASH
0
26160           AT 14,2
26170           REPeat wait
26180             IF INKEY$='y':DELETE 'mdv'&to_drive&'_'&files$(i):EXIT wait
26190             IF INKEY$='n':miss=1:EXIT wait
26200           END REPeat wait
26210           PRINT FILL$(' ',33)
26220         END IF
26230       ELSE
26240         DELETE 'mdv'&to_drive&'_'&files$(i)
```

Improvements

Put the files $ array into order, as the QL (unlike the Spectrum) does not sort the Microdrive directories into alphabetical order. The speed of backup can be improved by storing the list of files on the destination cartridge in a different array to files$.

This can be checked to see if the file to be backed up already exists on the destination cartridge. Because file_on_drive doesn't have to be called for every different file name, this speeds up the process. Add the following lines:

```
26042 dim new_files$(51,32)
26044 dir_to_files$ to_drive
26046 for i=1 to no_of_files:
        new_files$(i)=files$(i)
24048   no_of_files_on_
        destination=no_of_files
30000   def proc files_on_
        destination (file_names$)
30010   local found,i
30020   found=0
30030   for i=1 to no_of_files
        _on_destination
30040   if new_files$(i)==
        file_name$):found=1
30050   next i
30060   return found
30070   end def file_on _destination
        change line 26140 to
26140 if file_on_destination
        files$(i)        Continued next week
```

EXPRESS DELIVERY

The Express, also known as the Osborne 4, has some attractive features but it's priced too high to tempt potential buyers away from the likes of the Kaypro or Apricot, argues Peter Worlock.

The computer industry has come a long way since the Osborne 1. Osborne itself has been, gone and come back again, the machines themselves have physically shrunk to the size of Data General's The One, while the transportable group offers Compaqs et al, with hard disks and IBM compatibility.

Now Osborne is back with a machine, variously called the Osborne 4 and the Express, which drops cleanly into the middle of the market, both in features and pricing.

The Express is definitely transportable, weighing less than the Compaq but still heavy.

Features

The major hardware features are a 7in amber screen, twin double-sided, double density drives giving 400K storage per disk, 64K RAM and serial and parallel output ports.

The Express is solidly built of plastic with the keyboard hinged to the unit, providing a front cover when the machine is packed up for moving. When fully dropped down, the keyboard levers the main unit up, tilting the screen to a better angle. The screen itself is readable, providing a steady display without the irritating ghosting that some models have.

A separate cover at the back reveals the power socket and connectors, together with the on/off switch and hard-reset button, and screen contrast control. The cooling fan also resides here and this proved to be the only source of complaint in the hardware. It sounds like a jet engine warming up. When using the Express at home you should count on being banished to the bedroom by TV watchers and music lovers alike.

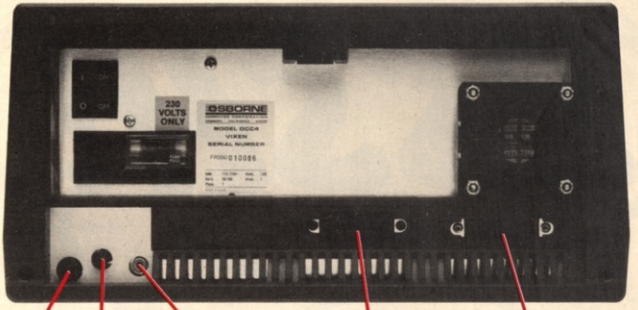
The operating system is bog standard CP/M 2.2 although Osborne has thrown in a couple of extras which make it marginally more pleasant to use.

Software

Software bundling is all the rage with hardware manufacturers these days and Osborne is no exception. Indeed, it is

The keyboard is a lid in transit and a means to a good viewing angle in use.

The Express uses standard 5.25in disks in twin 400K, double-sided, double density drives.



the free software that makes up much of the appeal of this machine. In addition to the standard attractions of word processing (*Wordstar 3.3*) and spreadsheet (*Supercalc 2*), the Express comes with *Mailmerge* for *Wordstar*; *MBasic*; *Osboard*, an in-house graphics program; *Turnkey*, a menu program; and, the star of the show, *Media Master*.

Media Master is one of the best reasons for buying the Express. It will allow you to read data disks from more than a dozen other systems including IBM PCs and compatibles, Tandy, Xerox, DEC, Cromemco and Kaypro. This is an outstanding facility that every manufacturer could profitably imitate.

Documentation

The documentation is the other major strong point of the system. Osborne's motto here seems to be 'Better too much than too little'. Consequently you should find everything you need to know in the four manuals that accompany the machine.

The main one (oddly named Volume 2) is the General Information and CP/M guide, which covers setting up the system, introduction to the hardware and software, and a complete guide to CP/M.

Volume 1 is an Introduction to Personal Computing, a useful thing to include but probably of least use to potential buyers of the machine.

Volume 3 is a massive tome containing complete documentation to *Wordstar* and *Supercalc*, while Volume 4 is a programmer's guide to *MBasic* and the *Osboard* graphics package. The connection is logical since *Osboard* graphics can be incorporated into your own Basic or assembly language programs.

All of the guides are straight dot-matrix output, but the content is superb, complete with indices and several useful appendices.

In use

Setting up the machine is simplicity itself: unlatch the front cover/keyboard and pull it down, remove the back cover, plug in the power cord, and switch on. Away you go.

With the use of *Turnkey*, just put a disk in the drive and you're presented with a menu of all program files on the disk. Alternatively, you can configure any program to autostart so, for example, you can go straight into *Wordstar* on power-up.

Keyboards are very much a matter of personal preference, but this one has no major faults that I could find. Action is light and positive although I would have preferred a detachable version.

The number and arrow keys are software definable from the Set-up Menu which avoids one source of unpleasantness in CP/M. CP/M uses CTRL and K, J, H, L for cursor control, while *Wordstar* uses CTRL E, X, S and D. You can define the keyboard arrow keys to conform to either version, or set up the numbers to perform strings of functions at the press of CTRL and the number of your choice.

Connecting peripherals is straightforward, thanks to copious notes in the documentation detailing pin outs for both serial and parallel ports.

Verdict

As CP/M systems go, the Express is hard to fault. The hardware is neat and well built; the bundled software is a real bargain compared to some of the less useful packages on offer elsewhere, although Osborne could profitably throw in a database too. If it replaces that fan with a quieter model, the package will be near flawless.

But (and you knew there'd be a catch) the pricing is really out of order. At £1,275 the Osborne is £300 more expensive than the comparable twin-disk, CP/M system from Kaypro, and also dangerously close to the cost of ACT's outstanding Apricot which offers some IBM compatibility and 16-bit power in addition to its 256K RAM and twin disk drives.

Although the bundled software is worth a great deal (how much depends on what your major use will be), it certainly isn't worth as much as you will be paying. In short, Osborne should look to trim at least £200 off the price if it hopes to sell the machine in significant numbers.

SPECIFICATIONS

Machine	Osborne 4
Price	£1,275 plus VAT
Processor	Z80A
RAM	64K
Storage	Twin 400K, double-sided, double density drives
Display	7in amber monitor, 80×24 text screen, 160×48 block graphics
Interfaces	RS232 serial, parallel printer, external video output
Software	Wordstar, Supercalc, MBasic, Osboard graphics, Turnkey menu system, Media Master disk format utility
Distributor	Future Management 0908-615274

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DUNGEON

CUTTHROAT BUSINESS

There's a nautical note to Bob Chappell's musings this week as he tackles deep-sea deadlies in his search for hidden treasure.

Sunken treasure, deep-sea diving, a shady bunch of cohorts, Davy Jones' Locker, and all things nautical and nefarious. These are the staple ingredients of *Cutthroats*, the latest text adventure from the Infocom stable.

The adventure is available, on disk only, for a number of machines including Atari, Apple and Commodore 64. It was written by Michael Berlyn, author of two other superb Infocom adventures, *Suspended* and *Infidel*. If you've sampled either, you'll know you're in for a real treat when you play this latest in the Tale of Adventure series.

Dead giveaway

You're a daring deep-sea diver, holed up on Hardscrabble Island, and an historical book on shipwrecks has been placed in your safekeeping by an old shipmate. Life is cheap, skullduggery is the main course on the menu, and your pal is not long for this world. He's murdered within minutes of leaving you. A miserable end for him but possibly wealth untold for you since the loaned book contains a map showing newly discovered locations of treasure-laden wrecks.

With the aid of the book, equipment, various shady characters and a goodly dollop of derring-do, you are out to salvage treasure from a shipwreck on the ocean bed. One clever wrinkle to this tale is that there are four differently located wrecks. You only have to find one but every time you play, the wreck is randomly determined by the game.

There's a tavern

The action proper starts at the Red Boar Inn. A hastily scrawled note has been slipped under your door. The note, signed by 'Johnny', offers the prospect of a big deal if you make a rendezvous with him at 8.30 in The Shanty. Who could resist such an assignation?

The Shanty, a place of refreshment, is down near the wharf. If you expect this quaintly named quayside cafe to be a tourist halt with chintz tablecloths, afternoon tea and buttered scones and a string quartet playing Victor Sylvester, you've bought the wrong adventure.

High society

The Shanty is no place to take your granny for a cup of Earl Grey and a cucumber sandwich. It's a scruffy tavern whose customers are unsavoury enough to bring a tear of nostalgia to the one eye of Long John himself.

Take Pete the Rat, for example. He got his name while serving as cook on a far-east voyage. When the food ran out, he did his best to keep the crew supplied with fresh meat. No wonder why they threw him off at the next port of call.

Then there's the Weasel, a small greasy man with shifty eyes who picks his teeth with a nasty looking knife. For the price of a noggin, he'd sell his own granny, never mind yours.

Polly gone

Hobbling up and down the bar is a parrot with an eye-patch and a wooden leg. The locals consider the parrot to be insane. Engage it in conversation and you'll wonder whether it's you that has a marble or two adrift. For me, the parrot's choice of words instantly conjured up irrepressible images of WC Fields and Wimpy (from the Popeye cartoon saga). Polly is apt to comment: 'After due consideration, I find myself in an embarrassing position. I would gladly except a hard biscuit today if you would accept payment on Tuesday.'

Close shave

You should realise by now that recovery of the treasure trove is going to be no piece of cake. But it's all great fun and the adventure is guaranteed to provide you with plenty of pleasure along the way to snaffling the treasure or getting your throat cut, whichever comes first.

All the excellent Infocom features are present: sophistication, full sentence parser; stimulating puzzles; immaculate, detailed prose; nicely-worked plot; multiple routes to a successful conclusion. And it all hangs together so beautifully.

No doubt about it, *Cutthroats* is yet another successful adventure in a long line of triumphs for Infocom. Long may it continue, says I.

What larks

And now for something completely different. *Return of the Joystick* is a text and graphics adventure for 48K Spectrum owners. It's different for two reasons. First, it has a daft plot and second, it has lots of in-jokes to entertain computer-game buffs.

While much of the humour is a mite childish, it's great fun coming upon well-known characters and spotting spoofs of popular games.

The game (constructed with the aid of Gilsoft's *Quill* and *Illustrator*) is set around the twelfth ZX Microfair and involves you in a barmy search for a joystick. Walk east from King's Cross station and you end up in Moscow's Red Square.

A bonus on the reverse side of the cassette is an introductory program followed by a clutch of excellent spoof screen title-pages including The Gobbit and Lords of Daylight. They really do look like the originals. My personal favourite was Chub-lock, showing the famous detective with thumb in mouth.

All good, clean fun. The game is £4.95 (£6.95 on Microdrive cartridge), and available from Delta 4 Software, The Shieling, New Road, Swanmore, Hants SO3 2PE.

WELCOME DISCOVERY

More facilities is the attraction of this device — the catch is that it costs more too. But it's worth paying extra, says Stuart Cooke.

The Sinclair Spectrum has never suffered from shortage of add-ons — in fact, if anything it suffers from a surplus of peripherals. One of the latest fads in add-ons for the machine is fast/mass storage devices, ranging from Microdrives to the more expensive floppy disks. One of the latest disk systems is the Discovery 1 from Opus.

The Discovery is supplied as either a single or dual 3.5in system in a smart looking metal case. The Spectrum sits on a metal base and plugs into the edge connector on the unit, with only a single screw to hold it. The unit features a joystick port, parallel printer connector and video socket, as well as the usual through connector for other add-ons.

In use

Setting up couldn't be simpler — just screw it onto the main unit. The Spectrum power supply is no longer needed, as the Discovery powers the micro. Its supply is built into the drive and has a moulded plug on the end for connecting it into the mains.

To get a picture from your Spectrum, you may want to plug it into a television Unfortunately the back of the disk drive obstructs the TV socket on the computer, making it a tight squeeze. The same applies to the cassette leads, as their sockets are also obscured.

To be fair, the leads do fit but a lot of strain is put on the connectors. At the rear of the machine is a video socket, which allows you to plug your Spectrum into a composite video monitor.

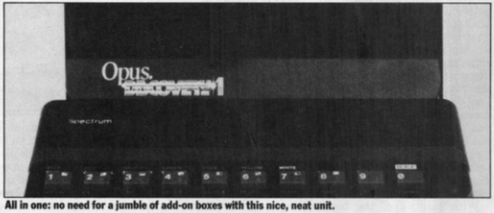
The right-hand side of the disk drive holds all the interfaces. The plug for the joystick is the standard 9-pin Atari style, which means that almost every commercial joystick can be used. Before you load up a program however, you must remember to turn it on — rather annoying when you've just spent five minutes loading a program only to find that the joystick will not function.

The FORMAT command turns the joystick on and off and is read by use of the IN 31 instruction. Quite by chance, this happens to be the same as the Kempston joystick interface.

Next to the joystick connector is a parallel printer connector. Unfortunately, this is not a standard socket but an edge connector, which means that you will have to buy a special cable. A diagram of the connector is given in the manual so that you can make your own or find one easily. This port not only allows you to send data out to a parallel printer; it also reads data from the port, so you could connect your Spectrum to another machine or any other device with a parallel port.

Finally, the standard Spectrum edge connector allows you to connect other Spectrum peripherals without having to disconnect the drive.

The disk drive uses the increasingly popular 3.5in disks. Control is by means of the same commands as the Sinclair Microdrives. In fact, the only differences are that some of the commands have been extended to make use of the greater facilities offered by the Discovery.



All in one: no need for a jumble of add-on boxes with this nice, neat unit.

If you have ever used a Microdrive you will feel at home with the Discovery. Programs that have a Microdrive option can be easily transferred onto the disk drive from tape. Tasword was transferred, following the instructions in the manual and the disk drive's increased speed, plus the ability to use the Spectrum with a monitor improved its performance.

Not only can you load and save programs to the drive but as with Microdrives, you can use it for file handling. A file can be OPENed to disk and data stored in it in a sequential format *ie* one character after another.

The problem with this method of file handling is that if you wish to find a sequence of characters stored in the middle of the file, you have to read every character till you find the one you want.

However, the Discovery does allow you to set up random access files, enabling you to read from any point in the file and make any alterations without having to read in the file. You must specify the length of every record that you are going to use and the length of the file, so the disk drive knows how much space it should allocate to your file. For example, using the command OPEN #5, "m";1;"fred" RND 10,10 would allocate the file fred ten records of ten characters. There's however a special format for setting up random access files — OPEN #5, "m";1;"fred" RND 10, –1 which would allocate half of the available disk space to the file fred allowing ten characters per entry.

Moving the pointer around a file is also extremely easy. An expansion to the POINT command, POINT #5,10 moves the pointer to the tenth record in the file associated with stream 5. This facility enables you to set up a database, and make any changes when needed without worrying about memory.

A RAM disk facility has also been provided. This allows you to use an area of the Spectrum's memory as if it was a disk drive. Access to smaller files is extremely fast, as the operating system doesn't have to look on the disk for the programs. To use the RAM disk, you must lower RAMtop on the Spectrum to its new value with the normal CLEAR command and then FORMAT the reserved RAM by calling it device number 5 in a FORMAT statement.

The operating system is also completely compatible with tape. When you add a Microdrive to a Spectrum, a fair amount of the available memory is set aside by the Interface 1 for the Microdrive maps and system variables. The Discovery 1 appears to use none of the Spectrum's RAM. Commercial software should run with the drive present.

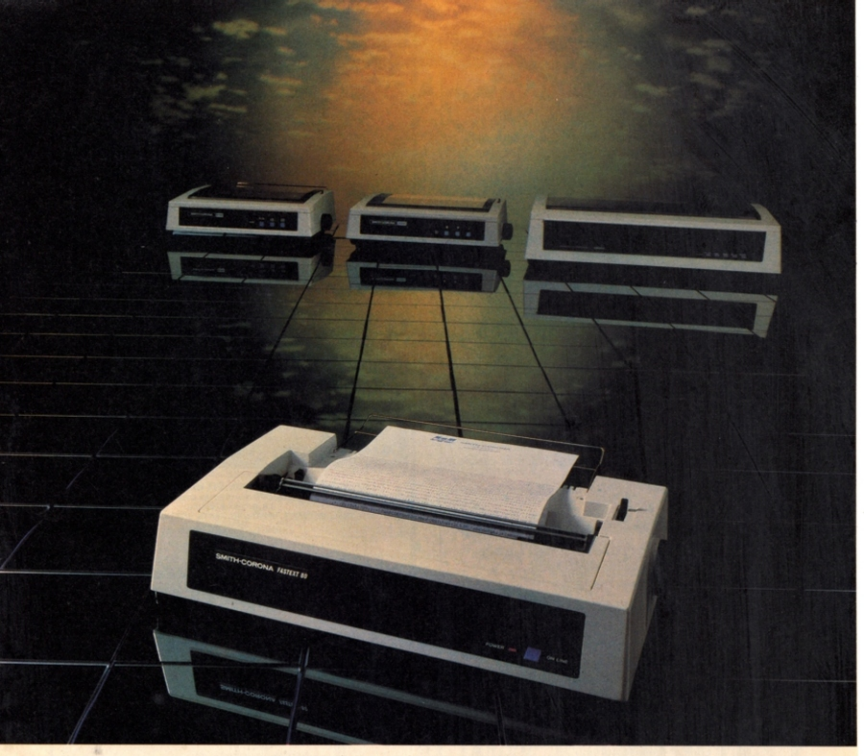
Verdict

The Opus Discovery 1 is certainly one of the best add-ons around for the Spectrum and does the jobs usually achieved by adding several boxes onto it.

REPORT CARD: 1 TO 5

Features	●●●●●
Documentation	●●●
Performance	●●●●
Overall value	●●●●

Name Discovery 1 **Price** 199.95 **Storage** 180K formatted **Manufacturer** Opus Supplies **Outlets** Boots.



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- Popular Computing Weekly 7/3/85

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PCN2

SOFTWARE PRE-VIEW

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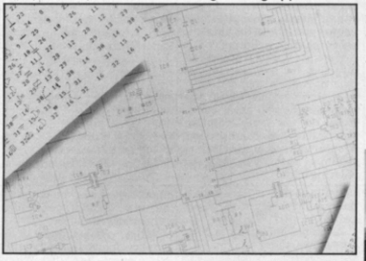

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GAMEPLAY

COMMODORE 64

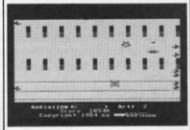
PASTFINDER

Archaeology isn't the most promising idea for an arcade game — but digging up bits of pottery was never anything like the activities you face in *Pastfinder*.

This latest offering from Activision is an action-packed, science fiction shoot-'em-up which raises the standards of 64 graphics yet again. The animation and backgrounds are nothing short of brilliant.

You are at the controls of a Leeper, a spinning, bounding vehicle equipped with a number of tools not usually associated with the search for the past: lasers, anti-radiation protection and anti-missile gizmos.

The scenario puts you on the surface of a strange planet. You must seek out ancient artifacts



and deliver them to a number of bases scattered around the surface.

At the beginning you see only a small portion of the territory on a separate map screen. As you explore, more of the map is revealed.

Hindering your efforts is a collection of not very sociable types who will go to great lengths to end your interest in the past, present and future. Moving walls, aerial mines, enemy ships that either fire at you or simply attempt to ram you are just some of the hazards, not to mention radiation.

Having selected a promising direction for exploration you must navigate a short section. If you survive and reach the opposite side you get a bonus based on how little radiation you've absorbed. There are lots of opportunities to score points — almost as many as the ways of losing a life.

The game scenario is interesting and extremely well thought out, but the great part is the graphics, which are projected from above and behind your Leeper (a bit like *Pole Position*). You manoeuvre through a scrolling landscape, judging the view by the shadows cast by the objects.

In later sections the hazards come thick and fast, in solid, brightly coloured displays.

If there's any justice this will be a massive success.

Peter Worlock

Rating 9/10
Price £9.99
Publisher Activision
01-486 7588

SPECTRUM

MOONCRESTA

Mooncresta on the Spectrum and Commodore 64 is almost exactly the same as Nichibutsu's *Mooncresta* which used to be — and perhaps still is — found in a number of British pubs. Incentive has produced a very good copy, with only a few of the later screens missing.

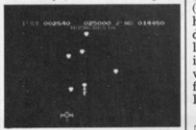
The quality of the graphics is very high and the sprites are almost perfect. The only exception is the meteors when they're moving at high speed (which they do with gusto).

For those of you who have never played, *Mooncresta* involves controlling a three-part spaceship, one section at a time. The controls are left, right and fire, with either one or two guns on each ship. The object is to kill the enemy ships that bounce around in front of you, tempting you to shoot them down.

Basically it's a shoot-'em-up, with multiple screens and different enemy designs, all on a background of sparkling stars. The difference between this and other similar games is the docking sequence.

At a certain point in the game, you get a chance to dock with the rest of your ship (if there's any of it left). The time taken to do this, if you succeed, defines the amount of bonus gained.

As is becoming the fashion these days, there is a competi-



tion — if you can get over 30,000 points, you get a message which you have to send to Incentive. This puts you in the draw to win an original *Mooncresta* machine, which would make a nice coffee table, if you dare give it room in your house.

Mooncresta is a game in the classic *Space Invaders* style (circa mid to late '70s). Why it hasn't been done to this standard on the Spectrum before is a little puzzling, but now it's here it ought to go down very well with the head bangers. Definitely a hit, but then maybe I'm a bit of sorehead.

Kenn Garroch

Rating 8/10
Price £6.95
Publisher Incentive
0734-591678

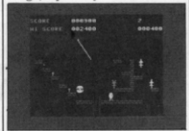
COMMODORE 64

DARK TOWER

Prince Harry has been turned into what looks like an egg on legs and is trapped in the 28 screens of the *Dark Tower*. To return to looking more like royalty and less like henfruit, Harry must poach jewels and take them to the guardian of the tower. Only then will he be permitted to enter the final chamber, crack the puzzle and so come out of his shell.

You might guess from the scenario that this was another platform and ladders game, and you'd be right. But despite the lack of originality, the game still manages to offer a fair measure of entertainment.

Players who rise to a challenge, especially when there's a



prize at stake, should particularly like it. The first 500 to complete the final puzzle will receive a free Melbourne House game.

Each screen has at least one exit and shows part of the tower, the main constituents being ladders, walls and ropes. Then, of course, there's the inevitable nasties; in this game they come rather more surreal than your common or garden brute. Flying crosses and flashing whatsits are the order of the day in the first few rooms.

Some paths are overhung with downward pointing arrows. As Harry passes under them, they descend a notch making return along the same way impossible. Should Harry fall from a height, be punctured by an arrow or struck by a whirling whatchamacalit, he immediately scrambles into a blob of strawberry jam.

The game is somewhat reminiscent of the *Hungry Horace* series, probably because of the pint-sized hero. The jolly theme tune is both original and catchy — it stays in your mind long after you've finished playing.

Although there's nothing new or startling about *Dark Tower* it does offer an enjoyable multi-screened challenge. Worth trying.

Bob Chappell

Rating 7/10
Price £7.95
Publisher Melbourne House 01-940 6064

AMSTRAD

OSPREY

Real bird-watchers are called twitchers. They wander the heaths and dunes of the country twitching, a convulsive movement that brings binoculars to their eyes at the same time as they cry: 'Good heavens, a bed-wracked shrike'.

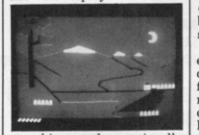
Ospreys don't like to be twitched. It disturbs them. It stops them making little ospreys, and usually sends them somewhere else next time they feel frisky.

Amsoft's game is new to the Amstrad but other micro users may have been persuaded by it since its launch last year to stop annoying ospreys, if they ever did. *Osprey* is intended to be educational.

Sadly, it seems certain to fail through dullness. Worthy, certainly, but so frustrating that you'll probably yearn for an anti-aircraft battery to pick off the swooping ospreys and bring the whole sorry saga to a quick end.

The strategic interest of the game lies in your use of wardens; it's the only area of decision-making. How many will you use to stop egg-snatchers? How many to patrol the area of the osprey's territory?

The scene of the action is simply drawn. Your wardens, take up their allotted positions and the ospreys flit about



squeeking and occasionally plunging into the loch. Two-dimensional cars arrive, sometimes honking their horns. Dog-like figures attempt to plunder the nest. Sometimes a warden scares them off, sometimes not. After a couple of minutes you're told how the season went, whether the osprey population rose or fell — but you aren't told why. Next season you try again.

There's no interaction and no explanation. Why do four wardens deter an egg thief, but not five? In short, *Osprey* is a rubout. If you twitch a copy, consider that it might best be left alone.

David Guest

Rating 4/10
Price £8.95 **Publisher** Amsoft
0277-230222

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GAMEPLAY

SPECTRUM

EVERYONE'S A WALLY

Wally strikes again. Mikro-Gen's really making its lovable character something of a cult hero. And even better, this game is very good indeed.

Wally is the foreman of the gang, comprising Wilma, Tom, Dick and Harry. You can't really count Herbert, Wally and Wilma's enfant terrible, because you can't control him. You can control any of the other characters on screen.

If you press a character's number when they're not visible, a message telling you where they are will come up. I've only ever seen this schizophrenic method used in one other game — *Operation Gremlin* on the Oric.

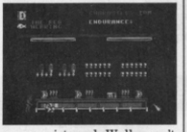
Just to complicate matters, characters can wander off and create mayhem.

The aim of the game is to collect the various parts of the bank safe combination so it can be opened and the gang paid their wages. The combination's scattered all round the town and the pieces have to be taken to the safe in the correct order.

But that's not all — there are various tasks to be done: mending the fountain, repairing the gas main and the like, and each character has different skills.

All the tasks need different tools and equipment, and like the combination, these are scattered around. What you're carrying is displayed at top left, together with a description to help you work out their use. 'The good insulator' and 'The fuse, blown', for example, are obviously items you want to get to Harry the hippy electrician.

The town is so well produced that at first you just wander about marvelling at the graphic detail. There are some minor attribute problems; Tom, for example, is surrounded by a



green mist and Wally can't walk past a wall without casting a yellow shadow.

Each building — bank, bakery, shipyard, railway station and many more — contains a different game scenario.

Each location may contain food, drink, part of the code and/or useful items. Characters eat and drink to stay alive.

You may find yourself in a simple but neatly done version of *Meteors* in which you have to move to the red box on the other side of the screen to get to your destination. And, of course, getting hit will sap your strength.

Lives left are marked by golden hearts at the top of the screen together with a twisted purple bar, a measure of endurance left for the current life. This decreases every time you're clumsy enough to let your ward get hit by flying nasties, bitten by snapping desks or bump into Herbert.

This is a cracker, Mikro-Gen is justified in calling this software 'sensational'.

Bryan Skinner

Price £9.95
Publisher Mikro-Gen 0344-427317

COMMODORE 64

SENTINEL

Sentinel, from US Gold, comes close to that all-time Atari classic *Star Raiders*.

It's your job to defend the planet Jaraloba which lies at the centre of a sixty quadrant stellar grid. Your screen serves as a window from your space craft's command deck. Two impressive laser cannons serve as your main weaponry, supplemented by protective shields and powerful proton helix charges. The latter are capable of blowing everything out of the immediate heavens.

At your command, the stellar grid comes up as an overlay showing the position of enemy

forces and friendly bases. A simple movement of the joystick causes you to warp off to any of the sectors.

While travelling through hyperspace, you must try to dodge meteor showers which otherwise damage your shields. They can be destroyed but it places huge demands on your precious energy banks.

Once through hyperspace, you're into battle with any alien forces in the vicinity. The short range scanner and tracking system are vital aids in the chase, the idea being to blast the enemy before they get too close to Jaraloba.

The three-dimensional perspective is effective enough but the enemy crafts are nothing sensational. The speed and responsiveness of the game are excellent and there are plenty of sirens, explosions and whooshing noises to flavour the battle.

Although it doesn't have the depth, variety or complexity of *Star Raiders*, *Sentinel* provides an enjoyable and noisy space shoot-out.

Bob Chappell

Rating 7/10
Price £9.95
Publisher US Gold 021-359 3020

AMSTRAD

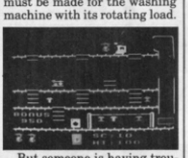
MR WONG'S LOOPY LAUNDRY

This may have nothing more dangerous than a steam iron, but it's a rather unusual one. In cahoots with a laundry bag and a string of soap bubbles, it sets out to make life miserable for Mr Wong, who is trying to earn an honest yen.

Everything takes place in a four storey laundry, with a number of items of rather angular clothing dotted about the place. The idea is to pick up each piece and take it to the top left of the screen, where it can be dropped down a laundry 'schute' (*sic*). You must avoid the advancing washday memorabilia, which take one of your three lives when touched.

Spraying the nasties with starch stops them for a time, but you must be very accurate, and you have only five shots. If you use them all, you can pick up a new box, when it appears at some inaccessible corner of the building.

The graphics are well drawn, although Mr Wong does an Egyptian shuffle rather than a walk, and a special mention must be made for the washing machine with its rotating load.



But someone is having trouble with their sprites. The items of clothing jerk along behind Mr Wong in a peculiar way, and the baddies frequently ignore a shower of starch in their path. Add to this an odd choice of control keys (four cursor arrows and copy).

The music is good and suitably oriental and you can turn the volume down.

The harder levels have more implements chasing you but attention wanders after a few washing cycles.

Simon Williams

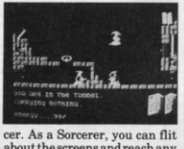
Rating 5/10
Price £8.95
Publisher Amsoft 0227-230222

AMSTRAD

SORCERY

The addictive *Sorcery* deserves the 'arcade adventure' tag more than most. Both in its original guise for the Commodore 64 and now in its enhanced form for the Amstrad CPC464, it is much closer to the type of problem that Crowther and Woods set in their *Colossal Cave*. Although a number of characters are still out to get you, they are more in the style of an annoying dwarf than a Pac-Man ghost.

As the last remaining Great Sorcerer, it is your duty to release your eight buddies who are held by the evil Necroman-



cer. As a Sorcerer, you can flit about the screens and reach any of the arched wooden doors that appear on each. That doesn't necessarily mean you can pass through them, of course. Some need keys or magic to open them, which they do with a very satisfying creak, and then you can move to another screen.

All the screens are drawn commendably fast, and anything that moves does so very smoothly. Each creature is animated and they certainly are a motley bunch.

When you come into contact with any monsters your energy is sapped. It starts at 99 per cent. Fortunately, sticking your feet in one of the two or three cauldrons about the place and/or useful items. Characters eat and drink to stay alive.

You may find yourself in a simple but neatly done version of *Meteors* in which you have to move to the red box on the other side of the screen to get to your destination. And, of course, getting hit will sap your strength.

Lives left are marked by golden hearts at the top of the screen together with a twisted purple bar, a measure of endurance left for the current life. This decreases every time you're clumsy enough to let your ward get hit by flying nasties, bitten by snapping desks or bump into Herbert.

This is a cracker, Mikro-Gen is justified in calling this software 'sensational'.

Bryan Skinner

Price £9.95
Publisher Mikro-Gen 0344-427317

Rating 7/10
Price £9.95
Publisher US Gold 021-359 3020

Rating 5/10
Price £8.95
Publisher Amsoft 0227-230222

Rating 9/10
Price £8.95 **Publisher** Virgin Games 01-727 8070

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SOFTWARE PRO-TEST: BBC

NEWIMAGE

Artsystematic stands out from the crowd of art packages for the Beeb, says Simon Williams.

There are many drawing and painting programs available for the BBC Micro, ranging from cheap and cheerful Basic offerings through to full-blown mouse-driven, icon-flashing mega-products, but *Artsystematic* provides one or two unexpected bonuses. If you know what you're doing, and can remember a lot of command keys, it could be just right.

Presentation

The package comes on cassette or disk with a 16 page, computer-printed A4 manual. This covers all the features of both the Designer and Loader programs, and offers some useful hints and tips. It could have been better laid out, however.

Both the documentation and the program itself assume you know quite a bit about your micro and programming. At one point the manual states 'For those of you who have managed to break into the program and wish to add your own routines, the variable m indicates . . .'. If I'm being provided with information to adapt the system to my own needs, why protect it in the first place.

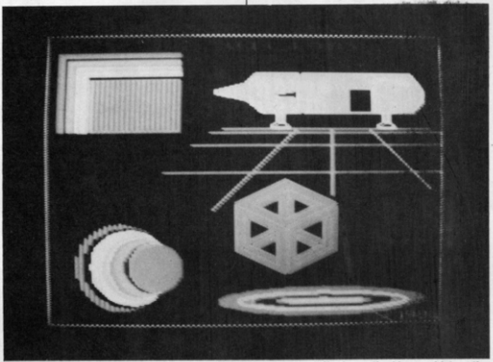
The Designer

The disk boots up to show a nicely drawn three-option menu. This was constructed using the system, and the demonstration screen shows a number of the other creations that can be achieved, including a nice sketch of a shuttlecraft from the film *V*.

The screen clears to a dotted cyan border with a command strip at the bottom and what appears to be a single, flashing cross-cursor in the centre. This is one of the first novelties of the program. There are two cursors, initially positioned one on top of the other, referred to as the master and slave.

Each cursor can be moved independently, using the arrow keys for the master and the /\, \/, and _ keys for the slave. This system works well, although it is still fairly easy to move the wrong cursor at a crucial moment. Each one normally moves one pixel at a time, but may be speeded up using the <SHIFT> key. Rubber banding is possible between the two cursors and makes things such as drawing enclosed areas within others much easier.

There are functions to rubber band a rectangle, and to draw circles and ellipses. These may be filled, either at the time of drawing or later. The Designer works in any graphics mode, and you can use any of the colours available within that mode. A shade option allows you to fill areas with a striped effect, but this relies on the computer's firmware by raising the first parameter in the GCOL statement above four. This can produce interesting effects.



Unexpected bonuses: both the Designer and the Loader programs offer innovative ideas and interesting features.

Other useful features include a perspective aid, and a grid which may be drawn on the screen to aid scale drawing. Text may also be positioned anywhere on the screen. Once complete, the screen may be saved directly to disk or cassette, although a Mode 1, 2 or 3 screen takes a while to save to tape.

All the functions of the Designer are controlled with a single key. Some of these are letter keys, largely chosen for their mnemonic values. Others are function keys. It might have been easier to use the program if all commands had been assigned to the red keys, and a key strip provided.

The Designer program is impressive. It would be interesting to use the program with a joystick option, perhaps switching with the fire button from master to slave cursors. Screens created with the Designer can be loaded from within any Basic program, so you could use Artsystematic, for instance, to produce a title screen for a game.

The Loader

The second, and more unusual, part of Artsystematic is a Loader program which allows you to load previously drawn screens from disk and display them in any order. You may specify a delay between them and can add an eye-catching special effect to each display.

Up to 30 different screens may be loaded into a 'cartridge' for display, though I wonder how you'd ever get 30 × 10K screens on one side of an Acorn-format disk. The cartridge is simply a convenient term for a DATA statement within the Loader program. To 'load up' the cartridge you are required to break into the program and edit the appropriate lines of Basic. This is a rather tatty way of doing the job. How much better to have offered a way of entering each screen name into a list within the Loader, which could then be saved separately and catalogued and edited at will.

However, the Loader system works very well, and can be used manually, almost like a slide projector. The system automatically switches between modes, using the first character of the screen's filename to determine which mode it should be in.

Verdict

The concept of Artsystematic is excellent, and the package offers a number of innovative ideas: the dual cursor, scaling grid and the 'slide' loader. But there's a certain raggedness in the way the program is put together: just a few improvements would turn a workable program into a very desirable one.

REPORT CARD: 1 TO 5

Features	●●●●
Documentation	●
Performance	●●●
Overall value	●●●

Name Artsystematic **System** BBC B **Price** £10 **Publisher** Tecnation, 0635-253588 **Format** cassette/disk **Other Versions** none **Language** machine code **Outlets** mail order

PCN Billboard

Commodore

VIC 20 original games. Bewitched, Metagalactic Llamas etc. £1.50 each. Tel: 074 571 2209 or write to Richard Evans, 17, Middle Lane, Denbigh, Clwyd LL16 3VW.

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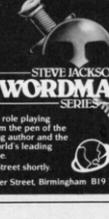

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QUIT

Since trading started again, Acorn's share price hasn't done badly — it has been dropping much more slowly than before suspension.

'What this means,' writes our financial correspondent Penny Wise (née Pincher) 'is that the City hasn't made its mind up. But one thing is for certain: at their present rate of decline, Acorn's shares will be worthless in 12 days' time.'

But whatever the City thinks, Acorn is hitting back. Last week it was announced that the BBC Micro would be going on sale in Latin America. The machine will be built in Mexico and sold there in a Spanish version. There will also be BBC invasions of Panama, Venezuela, and other countries in that neck of the woods.

To be sold in Mexico the machine has to be built there — it's a stipulation of the Mexican Government, to promote its own industry. But the BBC Micro won't have the field to itself; there's at least one other prominent supplier making and selling micros in Mexico, one that helped to boot Acorn out of the US by putting up such strong competition. It's called Manzana — which is the Spanish word for Apple.

What is it about cows? This is the question on everybody's lips in the wake of a record-breaking entry to our last Laughline competition (issue 100).

We were awash with bovine captions to the photo innocently supplied by Compaq. They ranged from the downright offensive ('. . . and we use the cow to print out *PCN* articles', from Nick of Beckenham who will be receiving a visit from the

boys) through distasteful references to artificial insemination, to the hi-tech jokes that milkmaids might tell each other.

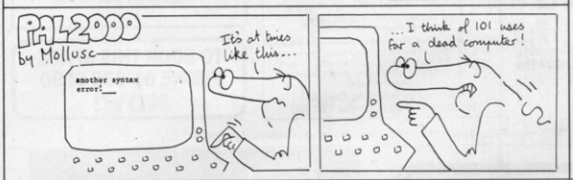
IBM cow-patibility was a popular theme, and the possibilities of udders were endless ('No, not that one — the udder floppy,' from David Currer of Farnham Royal). But in the end we went for the cuddly absurdity of Alexander Kells': 'It's very clever but I think we should have stuck with the mouse.'

Congratulations, Alexander, £20 will be on its way to you as soon as the pony express will permit.

You could have cut the tension with a knife as our Win a Metro competition was judged. Which reader of a VNU Business Publications magazine would step forward to win the star prize?

Proving that quality counts, it was a *PCN* reader, RG Smith of Portsmouth, whose entry impressed the judges the most. Identifying the machines was almost incidental — RG's pedigree was obvious from the way he/she completed the tie-breaker: 'I choose *Personal Computer News* because . . . the wit of its writing and criticism quite biting makes reading intriguing and learning exciting.'

Congratulations to RG and to all the runners-up, and thanks for entering to everybody else.



SYNTAX ERRORS

In issue 102's Microwaves, Stuart Moore's tip for calculating space in the BBC's buffer had a bracket missing. It should have read:

```
M=&B01:FOR N=0 TO 15:E=-(M?N>=E)
*M?N:
NEXT:PRINT\255—E) "bytes free"
```

In our review of the Yamaha MSX computer in issue 100 we accidently stated that the London Rock Shop was the dealer for the machines. In fact the shop is a retailer and the dealer is Yamaha on 0908-71771.

In our special feature on modems in issue 98 we gave an incorrect telephone number for Miracle Technology. The correct number is 0473-50304. We apologise to everyone concerned.

In Monitor, issue 102, we recklessley described disk drives for the QL as being ten a penny. This is what's known as artistic licence, or to put it another way, not quite true. In fact at that time the only disk units generally available, with the promise of immediate delivery and the option of paying by credit card, were those of CST, sold as the Computamate QDisk.

NEXT WEEK

Solder brigade

Stand by your workbenches as we open up the new *PCN* special feature, a guide to DIY that will build, week by week, into an almanac of practical projects. We start off with the equipment you'll need and a simple project.

PCN DATELINES

Event	Dates	Venue	Organisers
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 The London Computer Fair	April 9-20 April 18-20	Various Central Hall, Westminster	Contact Jim Lagden, 01-240 8206 Patricia Spilsbury 01-303 8849 Prestel page No. 81018
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
Saudicomputer 85 — Second Computer and Computer Graphics Show (Trade)	April 14-18	Riyadh Exhibition Centre, Saudi Arabia	Brendan Jennings, OES, 01-486 1951
Northern Computer Show (Trade only)	April 16-18	Belle Vue, Manchester	Reed Exhbns 01-643 8040
Computer Aided Production Management Exhibition	April 30-May 2	Wembley Conference Centre	David Houchin, 01-579 9411
Apple 85	May 9-11	Novatel Complex, Hammersmith, London	Pamela Goodwin, 061-480 7863
Micro City 85 (Trade)	May 14-16	Bristol Exhibition Complex	ASP 04427-73291
Business Computer Show	June 4-6	Earls Court, London	Read, 01-643 8040

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