40p EVERY WEEK · No 100 · FEB 23 1985

PERSONAL Computer NEWS

ATARI REVEALS U.K. PLANS - p1

100 BEST BUYS

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GRAPHICAL 64
Make more of Commodore graphics

AMSTRAD ASSEMBLY
Get to grips with machine code

SPECTRUM ATTR
Dazzling displays at your command

MSX MUSIC
Yamaha's tuneful micro reviewed

100th ISSUE featuring
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AMSTRAD ACORN
APPLE EPSON BROTHER
ULTIMATE US GOLD OASIS
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GOLD EDITION
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MONITOR

Atari guns open up on all fronts

Atari's spring offensive with micros, peripherals and software is set to turn your ideas about micro ownership on their head. Whatever system you have, Jack Tramiel will have something for you.

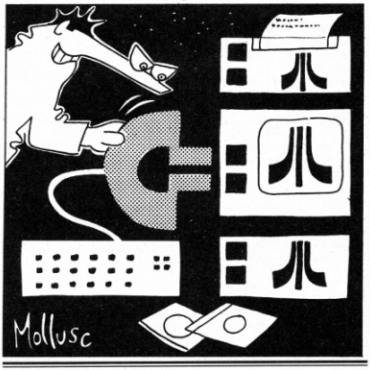
There were hints of Atari's plans at the Las Vegas CES extravaganza last month (issue 95), when Atari found time amid the ST and XE launches to show off three very cheap printers. These units, it said, would be compatible with Apple and IBM systems — but Atari isn't drawing the line at printers.

The $100 500K disk drive it launched at the CES will be available to Commodore 64 and Apple owners. The $400 15Mb device due later in the year will also be versatile, with interfaces to take it outside the Atari fold of cpus.

On the software front Atari is planning to convert its products for an ever-growing number of formats — what price Pole Position on the QL or the Macintosh? New products will get the same treatment. 'It will have to be good stuff, the cream,' said Atari UK's Rob Harding last week. In the case of new products Atari hopes to launch versions for other machines simultaneously with its own.

Much of the impetus behind these plans has come from the company's new European resources group, acting in concert with Atarisoft. With this European emphasis it's appropriate that Atari's big push will start at the Hannover Fair in April — at Hannover there will be the European launch of the Jacintosh ST machines, a preview of the 32032-based family, peripherals including the printers and disk unit from Las Vegas, and an expected 100 items of software. The STs are due in the shops in June.

The bulk of this software will be serious applications.



Sinclair hedges on QL ROM upgrade

Just when you thought it was safe to consider the QL as complete comes a whiff of a new version of the ROM.

A spokesman for Sinclair was unable to confirm the existence of version JS. Nor was he able to comment on the possibility that it adds 25 new keywords to Superbasic. 'It's news to me,' he said.

Previous QL ROMs appeared fitfully under such descriptions as FB, PM, AH and JM. The last two were production versions of QDOS, 1.02 and 1.03 respectively. JS is thought to be version 1.10 of the QDOS line.

Unconfirmed sources say that JS includes the procedures REPORT and TRA, and 23 functions apparently dedicated to error-trapping. The construct WHEN is implemented in this version to be used in conjunction with the keyword ERR and the new functions.

Sinclair could offer no indication of when a revised user guide might be available. But then, it was denying the existence of the Spectrum Plus 48 hours before it launched it.

MONITOR

IN BRIEF

Auction fans can look forward to a new season of computer sales from Crocker Computer Auctions (01-387 5838) beginning on February 21 at the Bonnington Hotel, Southampton Row, London WC1, from 6.00pm. During the day you'll be able to view machinery ranging from a Burroughs mainframe to a Vic 20. For real dinosaurs you should go to the Natural History Museum.

Sharp MZ700 owners now have the chance to join a users club organised in the UK by Solo Software (0905-58351). Membership costs £18 a year, but it will qualify you for discounts on software and peripherals, and Solo is giving away the cassette game Fortune Teller to new members. There is also a bi-monthly magazine.

Activision too is active on the user group front. The first edition of 1985 of its Software Club News has just come out, free to anybody who writes or phones the company on 01-486 7588.

Apple is the biggest supplier of micros to schools and colleges in the US, and its UK chief David Hancock is aiming to repeat the feat in the UK. With Government aid to schools dwindling, he's announced that Apple micros will be available to UK schools at half the usual price. Software is included in the offer, and Apple will also run summer training courses for teachers.

ACT's bid to compete with IBM and Apple has led it into alliances with eight leading software suppliers, among them Digital Research, Lotus, and Ashton-Tate. The main aim is to make sure that popular software is as readily available on the Apricot range as on any other system.

Some old micros never die; they don't even fade away, and some of them become more attractive as time goes on. The Vic 20, for example. It may not get much new software but the price of the existing programs comes on down. The word processor from Atlantic Software, Totl. Text. 2.0, is now down to £7 from £14 — it lets you use virtually any printer with an expanded Vic.

Attentions Scots readers! Nick Rosser of Lanarkshire has set up a bulletin board called Sabbs (Scottish Atari Bulletin Board Service) on 0698-884804. It runs 24 hours a day at 300 baud on an Atari 800XL.

Golden silence surrounds Acorn

If silence is golden, Acorn should make record profits this year. The stricken BBC Micro maker is doing a very passable impression of a submarine with all systems shut down, so that the people with the depth charges won't pick it up on their headsets.

But City analysts predict that Acorn will record a loss, and its continued silence only creates a vacuum for rumours and speculation to fill. The company is talking to its suppliers and is continuing to trade normally on a day-to-day basis, but there has been no hint as to the progress of the financial reorganisation it spoke of two weeks ago (issue 99).

At its current share price it would take about £32 million to buy all outstanding Acorn shares. There are companies in the UK with that kind of money, but City sources suggest that, on one hand, Acorn isn't looking for a takeover and on the other, nobody would want all the company.

If Acorn is split into three or four parts an auction might develop over its education business but there could be squabbling over its research and development facilities. The upshot for users is likely to be that the BBC Micro will continue to be supported, but that future expansion of the system would be left to independent suppliers.

The Electron is on much thinner ice. Rumours of its death may be greatly exaggerated, but the vultures are already gathering.

The BBC itself is apparently too busy buying dire American television series to give much thought to the fate of the micro that bears its name. 'No comment,' the corporation declared.

As *PCN* went to press no Acorn executives were available, no statement was forthcoming, and share trading was still suspended. The suspension could last three or four years in theory — don't hold your breath.

Silver Avenger in wings from Timex

More news of the Timex Sinclair 2068, the computer they couldn't kill. The 2068 was Timex's version of the Spectrum, produced under licence by Timex in the US from autumn 1983 to spring 1984. Timex was one of the manufacturers driven out of the US micro market by price cutting.

Since then, apart from guest appearances in bargain basements in the States, and perplexing rumours that someone, somewhere, was still building the thing, all has been silence — until now. Timex Portugal, which brought you the Timex disk system for the Spectrum, now intends to relaunch the machine, with some amendments.

The new variant will be Europeanised, so that it will run standard Spectrum software (Timex, for reasons best known to itself, originally made the 2068 incompatible with the Spectrum) and a cartridge slot adaptor is to be included to allow it to run Interface 2 ROM cartridges.

The 2068, or the Silver Avenger as it should now be called, was sleek looking beast, about the dimensions of a QL, incorporating cartridge slot and video output. As a machine it was miles better than the Spectrum, and it still arguably outclasses the Spectrum Plus. This should give it a certain hold on the market as a kind of Rolls Royce Spectrum.

But there may be one problem. Sinclair's licensing deal with Timex, which is apparently still in force, gave Timex the rights for the US, and Sinclair the rights to Europe — with one exception, Portugal. So Timex Portugal can sell the beast in Portugal and the US, but not in Europe. Expect to see them pouring across the border to Spain real soon now.

Laureate rises from Lynx's ashes

The new owners of the phantasmagorical Lynx micro are looking to business users for its future, but the original machine might find a new home abroad.

Anston Technology picked up the rights to the whole Lynx range (issue 92) but it has decided to spring only the 128K model on the suspecting UK market. The 48K and 96K machines are the subject of talks between Anston and potential agents in foreign countries: 'I can't enlarge on that at the moment,' said a spokesman.

Production levels for the 128K Lynx, known as the Laureate, are being planned now, but Anston has some stocks to sell and some disk units on the shelves.

The company is currently assembling a catalogue for the 128K machine. Its first step has been to cut the price — the Laureate is down to £299 from £399. But the most interesting item on the way is a 1Mb disk drive which, with a controller, is due to cost £269.

'We're optimistic but cautious,' said the spokesman. The grounds for optimism, he said, were that 'We feel there is a niche in the market for a serious machine of this type.'

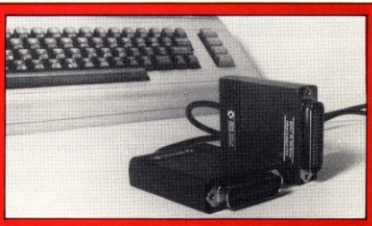
IBM bucks price trend on big models

IBM has bucked the price-cutting trend by increasing the cost of its PC XT and AT systems.

The original PC is untouched, but the hard disk version (XT) and the 80286 souped-up AT go up by six and nine per cent respectively.

The rise in price of the AT won't cause much immediate concern — IBM is still dogged by component shortages.

IBM would not explain the reasons for the price rises beyond saying that they were the result of cost considerations applied to particular products. The details must remain a mystery. But the exchange rate, with the pound struggling against the dollar, is only partially responsible.



ZERO HOUR — Commodore computers are notoriously sniffy about the printers they'll consort with. But you can side-step their objections to popular parallel printers with the Zero Interface — just the job if you want to use a Brother, Star, or Juki, for instance. The plug-in device connects to the serial port and needs neither printer cable nor power supply. There's also a handy optional 16K printer buffer. For more details about the £42.95 interface, contact Zero Electronics on 0493-842023.

Microfair rolls in the face of foul weather

As the cold wind of recession tightened its grip on the home micro market, the setting of the recent ZX Microfair was all too apt. The sight of Alexandra Pavilion, parked alongside the burnt-out and boarded-up hulk of Alexandra Palace, perched on a snow-covered hill somewhere in north London, was enough to give your correspondent terminal imagery.

Fortunately, the scene inside the pavilion didn't altogether confirm initial prejudices. The cold meant the Fair got off to a late start, with both exhibitors and visitors held up by the snow, but by late morning trade was pretty much as brisk as it has been at previous shows.

There was little in the way of innovation but anyone with an eye for a bargain could have taken advantage of quite a few special offers. Software was heavily discounted and one exceedingly disgruntled dealer was offering Electrons for £120 and an Oric Atmos for £59. The Atmos shifted after about three hours, but there didn't seem to be any takers for the Electrons which, according to the dealer, had cost him £150 and certainly wouldn't be gracing his product range in the foreseeable future.

Of the few launches at the show, the MDS disk drives for the QL were among the more interesting. The interface for these incorporates extra memory and a Centronics interface, and 1Mb of memory on a 5.25in disk can't be bad.

For the hacker, the Specnet software for use with the Prism VTX5000 was also of interest. This allows VTX users to access bulletin boards and is available from the ubiquitous Steven Adams, 1 Leswin Road, London N16, price £5.95.

Apart from that, the number of exhibitees toting dk'Tronics keyboards had grown again — we'd say it's currently around 5 per cent of all those visiting the exhibition. Try for 10 per cent next time round?

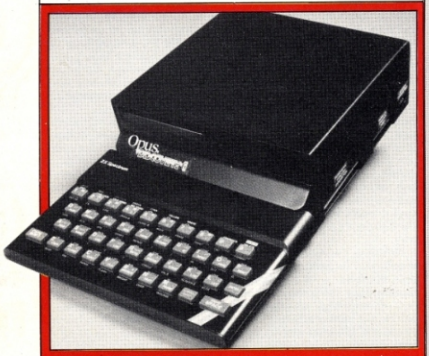
Caption competition winners announced

More winners in the on-going story of *PCN* competitions. In the latest we offered three Timex disk systems for Spectrum owners. We asked you to complete the sentence: 'My Spectrum needs a Timex disk drive because . . .'

W J Griffiths, of Poole in Dorset, struck a Spooneristic note with 'I'd be nailing my bytes instead of biting my nails'. An overweight Ewan Duncan, of Dundee, scored with 'My dietitian said I have to cut out snacks between programs'.

Our third winner was the purely mercenary Steve Tupper, of Cardiff, who offered: 'I haven't got a Spectrum but my wife says I can have one if I win a disk drive.'

Congratulations to all three; the prizes will be sent out shortly. Runners-up prizes of Spectrum keyboard overlays are also on their way.



MINIMUM OPUS — The peripherals market is alive with disk drives for the Spectrum with SPDOS, Cumana and Timex. This version from Opus Supplies is to be known as the Discovery 1 and, according to Opus, is the first of a new generation of drives for the Spectrum (plus and minus). Costing under £200, it features a single 3.5in disk, a Centronics port, joystick interface, monitor output and a built in power supply. It will be available through Boots which will also be supplying its own range of software for the system.

Overhead cams and Cambs overheads

Last week, with spectacularly bad timing, a report was published on the Cambridge Phenomenon, the happy story of how a quiet market town is leading Britain out of the doldrums towards a bright new tomorrow.

We shouldn't write the sunrise industries off yet, but they're going through a bad patch at the moment. If the worst comes to the worst Cambridge can probably turn to sales of new and used cars to keep the local economy ticking over.

For example: as the receiver picked over Oric's bones two weeks ago we tried to contact Barry Muncaster, Oric boss and managing director of its former backer Edenspring Investments. We were told that Mr Muncaster could not be reached as he was en route from his Ely home in a Mercedes.

The important thing to note here is that Barry Muncaster still had a Mercedes at his disposal at this crucial moment in Oric's history. No need for him to cry: 'My kingdom for a horse.'

Another Cambridge man with ears on his mind is Chris Curry of Acorn. He may be wondering this week how long he will be able to keep the Lotus 7, the Rolls-Royce Phantom, and the classic Ford sedan that his garage shelters. Belts are being tightened all round. Fan belts could be included.

Sir Clive, of course, has more cars than he knows what to do with. They're hurtling off a production line in South Wales at a rate of knots. He'll be keen to get rid of as many as he possibly can.

It's odd that cars should figure so prominently when what's supposed to be happening is a shake-out of the microcomputer industry. But they give the shake-out that personal touch, and serve as a reminder that while companies may get shaken out individuals usually get shaken straight back in again.

A recent example was Alan Timpany. He was in charge of the Tycom Corporation, which went out of business last summer only to be bought by an outfit called Firefalcon. Firefalcon's efforts to keep Tycom products alive were headed by Alan Timpany.

It's a bit like those quaint weather indicators. When the sun shines, Heidi emerges from the door on the right. But as dark clouds gather she stealthily retires and little Hans turns up on the left, glowering. Heidi won't be seen again until the sun breaks through.

Or, depending on your point of view, it's more like the fiendish promise of Fu Manchu as one of his devilish schemes goes on to the rocks: 'The world shall hear from me again!' And sure enough, it will.

But a kind of natural selection operates. It may be down to talent, personality, or just luck, but some individuals get shaken in and fall on their feet. In this game survival isn't for the fittest, it's for the also-rans. The fittest thrive.

More cases: Bruce Everiss, once operations director of Imagine, is now managing director of Tansoft, so far not affected by the Oric debacle. Roy Backhouse, whose brainchild was the Fuller FDS keyboard, found gainful employment at Nordic Keyboards when Fuller went under. Nordic has now followed it. Steve Currah of Microspeech fame has jumped into the arms of Welwyn Circuits in the wake of Currah Computer Components' collapse, but it is dk'Tronics that has bought the rights to the Currah products.

And different cases: *PCN* received a stream of letters from people who had sent money to Fuller and had seen nothing in return. More recently, a Consumer Protection department in Ayrshire has been trying to help a young Oric owner with a long-standing grievance against the company that will probably never be settled now. You may be certain that these cases represent the tip of an iceberg.

If someone has devised and produced a good product, has delivered it on time, and has paid suppliers promptly before going out of business through ill luck, we should clap them on the back, commiserate, and hope to see them back in business quickly. (It is beside the point to explore the possibility that no company ever founders through ill luck alone.)

But when Fu Manchu goes up in a puff of volcanic dust uttering muted threats we should bid him good riddance. Nobody needs him. He just gives Chinamen everywhere a bad name.

David Guest

MONITOR

OCS compiles a confident come-back

As gloom spreads through the micro business, Oxford Computer Systems (OCS) is a little ray of hope coming back from the brink if not the grave.

'We didn't go under, we just went quiet for a while,' said managing director Alan Jones. OCS ceased trading last summer but after an injection of venture capital it is looking forward to a prosperous future. 'It's entirely intact, and work continued — we didn't lose anybody,' said Jones.

OCS is a systems software company whose main asset now is its compiler generation technology, previewed in *PCN* issue 64. It used to concentrate on Commodore machines but the new OCS has broadened its scope.

'We've a strong research and development base and we can create compilers very quickly,' said Jones, referring to its metacompilers. 'What would have taken maybe two man years is now down to three or four months. We can target various machines very quickly.'

The company is currently advertising a Pascal compiler that conforms to the International Standards Organisation's yardstick. Disk-based versions for the BBC micro and the Commodore 64 cost £49.95, and thanks to the metacompilers a version for the Spectrum should be available from April.

OCS will also have a Basic compiler ready for the Spectrum next month. Jones is confident about the future of the company and plays down the extent of the cash flow problems it hit last year. The money put into the company to revitalise it approached £200,000, and Jones said it had been spent mainly on research and development.

Bigger screen for smaller terminal

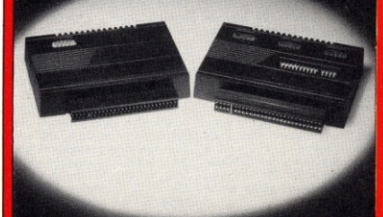
A forerunner of the Tandy 100/NEC 8201 style of lapheld micro has been upgraded to give you a larger LCD screen to work on.

Microscribe's 300 has eight lines of 40 characters, four times the display space of the earlier model. The device has 32K storage, extensive provision for communications and text editing software. It is essentially a portable terminal but has several features that might appeal to the lapheld brigade.

Price isn't one of those features. The 300 costs £475 and the 10K version checks in at £415.

Microscribe — portable editing.

But the Microscribe devices aim to do a specific job — the preparation of written material regardless of location. Their features reflect this, and the devices aren't likely to suffer from the identity crisis that affects the more versatile lapholds.



PLUS JOY — Kempston launches a new series of joysticks and interfaces at the LET show in London this week, and frustrated Spectrum Plus owners who've found that their old joysticks won't plug into the new box without additional cabling should be particularly pleased. The standard interface has been re-designed for the Plus and a model called the Pro Joystick interface will fit either Spectrum or Spectrum Plus. Sinclair's upgrade promised that existing Sinclair add-ons would be accepted by the Plus, but it didn't mention third-party suppliers' equipment — Kempston has reacted quickly.

VIEW FROM JAPAN

Techno-stressers of the World Unite!

In the US there's a Clash of Titans brewing between Atari and Commodore. In the UK companies are going out of business faster than you can count them. But in Japan, it's business as usual if the local papers are to be believed.

A recent sampling included a report that the Government is planning inspection standards for computers. I took this to be aimed directly at me — I've lately developed an obsession to possess a Macintosh and plan to bring one back with me from a trip to Hawaii, since the price in Japan is exorbitant.

That news alarmed me, but upon recovering from my fear I read past the headline and discovered that the inspections aren't a customs matter but for on-line systems etc.

It seems that only 10 per cent of organisational computer users in Japan (the banks, mainly) have any kind of security inspections. Now I'm worried about whether or not my money would be safer in a sock.

Another recent article dealt with the question of computer-related imports, another subject close to my heart. It seems that Japan imported some 484 computer-related items in 1984, a 63 per cent increase over the previous year. If I get my Mac will it be 485 in '85?

Actually the number refers to categories rather than units, and the surprising news was that in the area of high technology Japan had a $455 million deficit. I hope they're not counting on MSX to turn those numbers round, but you can bet that it won't be too long before the figures start going the other way.

Not that the manufacturers should just be looking at overseas markets — in the latest figures (May 1983), only 3.1 per cent of junior high schools, 56.4 per cent of senior schools, four per cent of libraries and 6.7 per cent of museums were equipped with computers.

It may be a while before those numbers change, since the education ministry and others have yet to make up their minds on whether computers should be 'positively introduced for education', and if so how they can be used for educational purposes. To train MSX salesmen for the export drive, perhaps?

But the article that really made me think dealt with the rapid spread of techno-stress, the inability of workers to adapt to new technology. The worst cases include passing out at the keyboard (I did that not too long ago and put it down to the bottle of port I had drunk), mental stress from the inability to adjust to the transition from abacus to computer — this is the land of the pocket calculator — and finally the sinister but distressing problem of users who get so involved with their computers that they lose touch with other people, and thereby hangs a tale.

When the article appeared, three of us were testing a fourth's phone-answering technique. Mr I/O relates to his computer the way most people relate to their spouses or lovers; so bad is it, that you can phone and be told that your call will be returned later, and all the while you can hear the steady clack of the keyboard in the background. The return call never comes. In a generous spirit of friendship we decided to test the relative importance of computers and humans by letting him call us first.

The first of our threesome got a call after two weeks. He was about to leave on holiday for the US, and Mr I/O wanted to know whether he might have time to look up some software he could use.

I waited a mere six weeks — the call came from the airport, and there being no computer handy, Mr I/O needed help to kill the two hours before the departure of his flight for Hong Kong. His concern was whether or not I would be interested in some pirated software.

The third friend is still waiting. He has a very good understanding of dBase II and sooner or later he'll get a call, not that he particularly cares any more. But when I mentioned that I'd probably write up my little experiment in the column he suggested that I include a plea to all out-of-touch techno-stressers to get in touch with Mr I/O.

I hesitate to suggest that the easiest way would be to use a modem — that way you're guaranteed to find him at home, and you've got a better chance of an answer.

Besides, it may be that I'm the one out of step in this saga. Techno-stress may not be a malignant tumour attacking the very fibre of society — it might be the next step forward on the evolutionary ladder. Or perhaps computers are . . .

Serge Powell

CHARTS

GAMES

TW	LW	TITLE	PUBLISHER	MACHINE	PRICE
1	1	Ghostbusters	Activision	SP,C64	£9.95
2	3	DT'sDecathlon	Ocean	SP,C64	£7.90
3	2	Match Day	Ocean	SP	£6.90
4	7	Technician Ted	Hewson	SP	£5.95
5	10	Zaxxon	US Gold	SP,C64,AT	£9.95
6	8	Impossible Mission	CBS/Epyx	SP	£9.95
7	5	Blockbusters	Macsen	Various	£7.95
8	6	Airwolf	Elite	SP	£7.95
9	—	Brian Bloodaxe	Edge	SP	£7.95
10	18	Hunchback II	Ocean	SP,C64	£6.95
11	4	Elite	Acornsoft	AC	£15.00
12	13	Monty is Innocent	Gremlin	SP	£6.95
13	11	Knight Lore	Ultimate	SP	£9.95
14	12	Star Strike 3D	Real Time	SP	£5.95
15	15	Frak!	Aardvark	C64,AC	£7.99
16	—	Battle for Norm'dy	US Gold	C64,AT	£9.95
17	9	Select 1	Computer Rec	SP,C64	£12.49
18	—	Booty	Firebird	SP,C64	£2.50
19	14	Blue Max	US Gold	SP,C64	£9.95
20	17	SkoolDaze	MicroSphere	SP	£5.95

SPECTRUM

TW	TITLE	PRICE
1	Ghostbusters	£9.95
2	Match Day	£6.90
3	Technician Ted	£5.95
4	Zaxxon	£9.95
5	Airwolf	£7.95
6	Brian Bloodaxe	£7.95
7	Monty is Innocent	£6.95
8	DT's Decathlon	£6.90
9	Knight Lore	£9.95
10	Star Strike 3D	£5.95

COMMODORE

TW	TITLE	PRICE
1	Ghostbusters	£10.95
2	Impossible Mission	£9.95
3	Frak!	£7.90
4	Hunchback II	£7.95
5	Battle for Normandy	£9.95
6	Blockbusters	£7.95
7	Select 1	£12.49
8	DT's Decathlon	£7.90
9	Bruce Lee	£9.95
10	Intl Football	£14.95

MICROS

BELOW £1,000

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	CBM16	£140
8	MSX (series)	£250
9	Memotech	£250
10	Einstein	£500

ABOVE £1,000

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

These charts are compiled from both independent and multiple sources across the nation. They reflect what's happening in high streets during the week up to February 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/C, who can be contacted on 01-892 6596.

NEW GAMES FOR THE AMSTRAD!

TIME BOMB
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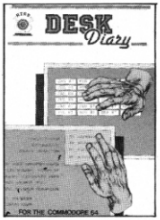

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Byte Drive 500 — 'I've had a rough deal'

I purchased a Byte Drive 500 on the strength of reviews in *PCN*. I ordered the system from an advertiser in the magazine, Tyrell Computer Systems, and waited several weeks. After telephoning the company twice I at last received the system in late May 1984.

I then found several bugs and malfunctions and promptly phoned Tyrell only to be told there was 'nobody here that can answer your query at the moment, please call back'. I then wrote to Tyrell on September 29, and also wrote to ITL and *PCN* at the same time. Tyrell didn't reply, so I sent it my system components. I am still awaiting their return.

I've since contacted ITL Kathmill directly and was promised action and, at the very least, a replacement operational system. I have since telephoned ITL on three occasions, only to be told that it is waiting a new batch of cables in order to fulfill my requrest.

Today I'm writing again to ITL Kathmill, to get this matter sorted out. I feel I've had a rough deal and request your help.

S Wright,
Clacton, Essex.

ITL tells us it is attempting to sort things out with Tyrell — you haven't been forgotten, but you obviously have grounds for complaint — Ed.

Guess who hasn't delivered the goods?

Sinclair is at it again. On January 8, a woman from Sinclair telephoned to say that the program I'd been waiting for and specifically bought the QL for (Cash Trader) was now ready. I sent a cheque on the same day.

On February 6, the 28 days being up, I rang Camberley, only to be told that there's a delay and Sinclair doesn't expect to ship any before the beginning of March. I have had no written apology for the delay.

The woman who told me that the program was ready on January 8 was obviously not telling the truth and Sinclair has even begun to advertise this non-available product in various magazines through its advertisement QL News.

How much longer is Sinclair going to continue treating customers in this cavalier fashion? Why should I as a very small business have to supply a large company like Sinclair with £70 which could have been earning interest for at least two months?

I am decidedly unhappy and am beginning to wish that I'd invested slightly more money in a more established business computer. Perhaps my invoices would now be in some kind of order instead of languishing in a cardboard box.

W C Whistance,
Surbiton, Surrey.

Brother goes for £ of Oric's flesh

Your correspondents who have experienced difficulties in linking their micros to a Brother printer have only just started to have fun if my recent experience with an Oric and a Brother M-1009 is anything to judge by.

Having got the two to talk to one another the next question is: how can I make them print all those lovely characters shown in the manual? Even more, can I persuade them to print a £ sign?

Various character sets are available and are selected as follows by the settings of the dip switch 2. With the switches set as supplied *ie* 2-3 and 2-6 are on, you get a Spanish character set. Changing 2-6 to off provides a German character set, and switching 2-2 on gives a French one.

That should make our friends in the EEC happy, but I want a £ sign! Switch 2-3 to off and see what happens — an American set (if all other switches are returned to the factory setting).

But . . . set switch 2-2 on and what do we get? Magic, a character set with a £ sign in it. It even corresponds on the Oric keyboard to the crosshatch (shifted 3).

All of the above, while not unreasonable, is very far removed from the manual's description of its alternate character sets, as is the statement that the alternate sets can also be soft-selected by sending Esc 6 and Esc 7 to the printer. These commands are simply ignored.

And how about the special graphics characters? There are no instructions on how to get those printed. Trying the obvious — sending all character codes from 0 to 255 to the printer — results in italic characters for codes 128 to 255 corresponding to all the printable characters with codes 0 to 127. But I could not persuade the graphic characters to appear.

All in all . . . nice printer, shame about the manual.

A R Harford,
Chesterfield, Derbys.

How Interceptor re-aligned my 64

One of the most common and frustrating faults with the Commodore 64 system is loading problems with the C2N tape deck. Users frequently find that a tape will not load on their own system but will on someone else's.

The reason for this is that the tape deck is set up in production to accommodate a data transfer rate of 300 baud, but currently much of the software is designed to run at 1200 or even 3000 baud and at this rate the alignment angle of the head to the tape is critical if a clear signal is to be transferred to the computer.

I solved this problem by using the newly developed Azimuth Head Alignment Tape marketed by Interceptor Micros. The process can be done in a matter of minutes. A superb game on the reverse side of the tape loads at 3000 baud and gives a final accuracy check.

Michael A Jay,
Solihull, West Midlands.

Well, it had to happen eventually.

Minor black spot on Blackwood review

You recently published a pleasing review of our latest adventure, The Wise and Fool of Arnold Blackwood.

Mike Gerrard's reviews are always candid and fair and his overall view was good. However, one point he mentioned may lead to the view that there is an insoluble problem in the adventure.

The response by Mexican Pete could be expected after examining Pete and discovering — 'he's none too bright!' The input should be a standard Y or N as is consistent with other (Y/N) inputs in the program. The 'deal' is thus affected.

The screen display photograph showing an input of PICK UP SPADE (three words) is not consistent with the two word type input used and explained within the program. GET or TAK SPA as is usual would effect the transfer.

Better still, the special one word input to 'get' any item by just naming it would suffice *ie* SPA or SPADE performs GET SPADE.

We have one of our regular customers to thank for pointing out that the review, while essentially fair, may indicate a fault in the program, when this is not the case.

Otherwise, three cheers for Mike Gerrard, who has given time to our programs and found them worthy of praise.

Colin F. Harris,
Nemesis, Kettering.

ROUTINE ENQUIRIES

Suffering from circuit crunch or data dyslexia? Want some sound advice on speech synthesis or the best type of printer? Then consult the experts. But remember, no SAEs, 'cos we can't reply personally. Address your queries to Routine Enquiries, *PCN*, Evelyn House, 62 Oxford Street, London W1A 2HG.

Your Epson printer needs proper control

Q Recently I bought an Epson P40 thermal printer which I have connected to my Spectrum via the RS232 port on Interface 1. The curious thing is that the printer prints in condensed mode by giving it the command LPRINT CHR$ (15), a code not used by the Spectrum. The printer doesn't work when given the command LPRINT CHR$ (27) which is also not used by the Spectrum.
Paul Berry,
Birkirkara, Malta.

A You're obviously rather confused about the way you can control your printer. LPRINT directs what follows to your Epson, and CHR$ (15) is the standard Epson code for condensed mode. LPRINT CHR$ (18) cancels condensed mode.

CHR$ (27) is the ESCAPE code, and it must be used in conjunction with other characters or codes to achieve the desired effect. For example, ESCAPE A — LPRINT CHR$(27);CHR$(65); — followed by a further argument allows you to change the spacing between lines.

You'll find a full list of control codes and how to use them in your Epson manual. The only thing to watch is which channel you use for communicating with the printer. The text channel, the obvious choice, won't work since Interface 1 will intercept your control codes. You have to use the binary channel instead.

Twin problems of Commodore drives

Q In a recent copy of *PCN* (issue 97) I was interested to read about business applications for the Commodore 64 and would certainly agree that it is capable of doing a good job. But when I bought my set-up I was advised to get two disk drives and the arguments seemed sensible.

However, I have not yet been able to figure out what to do with the second drive and nowhere can I find any advice on this. Would you tell me how to use the second drive before I throw it on the scrap heap?
M Timmer,
Bury St Edmunds, Suffolk.

A If the software you have doesn't ask whether you're using two drives, you can take it for granted that it won't support two.

You're then faced with two choices: first, buy a collection of new software that does support two drives; second, accept the limitations and use the second drive for other purposes.

The second choice would help in things like backing up your files or (dare we say it?) you could write your own software to do at least some of the jobs you require.

In order to use two drives you need to change the device number of the second from 8 to 9. You could get your dealer to do this in hardware, or the demo disk that comes free with every 1541 contains a short program that will do the job temporarily.

A change of accent in word processing

Q I'd like some advice on suitable computer hardware (and possibly also software) for my needs. I wish to do word processing, including languages other than English, and also to use a database program which will allow a good deal of cross-indexing. At present I have a Brother EP44 typewriter which I got because it can provide many accented letters, and it has, of course, an RS232 connection.

This made me think that the Sinclair QL with its Quill and Abacus programs and its RS232 ports would suit me, but I have read so many letters about QL users' problems connecting Brother printers that I am now doubtful. And now I am concerned about how any microcomputer could instruct the EP44 to print the accents I need.

The Brother handbook is clear except when it comes to the technicalities of the letter codes, which I just do not understand. Is it possible to program a micro to send these codes?
Robert MacAndrew,
Isle of Wight.

A The codes section in your Brother manual is actually a lot less complicated than it seems. Most computers have ASCII codes assigned to their character sets, and printing these characters out is just a matter of sending that code to the printer. So typing LPRINT CHR$(65) prints the letter A on your printer.

In order to do this with the accented letters on your EP44 you'd have to consult your manual, look up the right codes, and get it to print the relevant letter when the right keys were pressed, effectively adding another shift. You can get it to print the characters but, you're effectively talking about patching a routine into a commercial program if you want to use it from within a word processor or database. This isn't liable to be easy.

The logical alternative is to get yourself a printer that allows you to switch into alternative character sets.

As far as the micro is concerned it shouldn't actually make a lot of difference.

Short cut to print full program length

Q Last year I bought a TP1 printer and Euroelectronics II interface and cable. I am very satisfied with one exception: I cannot Llist satisfactorily a line of length greater than the print line set on the TP1.

I am told by the Smith-Corona distributors that it is not possible to do this, but feel there must be a way of sending a linefeed/carriage return following a count of the characters printed. Any suggestions or am I an optimist?
J E Gilroy,
Aldbrough, Hull.

A If your dealer says no, who are we to contradict? We can, therefore, offer two alternative suggestions. First, it might be possible to write a machine code patch that will intercept the output to the printer and insert an LF/CR at the appropriate point. You might like to try it — we wouldn't.

The second choice, which we heartily recommend, is splitting your program lines into shorter lengths. Apart from solving your printer problem, you'll also find your programs are easier to read.

Another option to Commodore's Plus/4

Q Could you please tell me what Commodore plans to do with its new micro, the Commodore Plus /4? I was on the verge of buying this machine when I read an article in another magazine saying Commodore is thinking of dropping it. Is it worth buying?
T Simcox,
Allenton, Derby.

A Our honest opinion, Commodore's tender feelings to one side, is no, it isn't worth buying. When it was announced at the end of last year, the machine seemed OK, but with nothing outstanding to recommend it.

Since then, its position looks even weaker, especially with the announcement of the Commodore 128.

Since you don't say what you're thinking of using the machine for, it's difficult to point you in another direction but the obvious choice is still the Commodore 64, closely followed by the Amstrad. You might also think about the Memotech, although software support is still thin. The QL is another contender but at a considerably higher price.

Getting down to business with a BBC

Q I own a BBC micro and, after reading about the advertised products for the BBC, I arrived at the conclusion that, with certain upgrades (*eg* HDP68K, Skywave Forth), new channels of real time processing and multi-tasking are possible.

Incidentally, my family's company would like to exploit these features in real time processing and multitasking, with respect to stock control, cash flow analysis, sales ledger, accounts etc. If this application is possible, what hardware can I use?

Secondly, I have heard that other firms use Unix for the same purpose. Is Torch's HDP68K Unix III system another alternative?
K M Wong,
Liverpool.

A The main problem with the above systems is that both require fairly advanced programming skills.

With the Torch Unix system, the programming language you will need is either Basic or Pascal, both of which are extras if, indeed, they are available.

Another problem is speed. The BBC is a fairly fast machine but if it is trying to multi-task Forth, it will slow down quite a lot, depending on how many jobs it is running at once. The Unix system was originally very slow with its multi-tasking but has since been improved. However, there is little business software for it.

The best solution would be to get a more dedicated business machine such as an IBM PC or lookalike, which has all the required software available.

MICROWAVES

Send your hints and tips to Microwaves, *PCN* 62 Oxford Street, London W1A 2HG. We pay £10 for every one printed and £50 for the Microwave of the month

Another option on BBC integers

A Microwave in issue 97 showed how to clear the integer variables on the BBC/Electron computers. My routine does the same but is executed using the *CODE or *LINE command. Run the program and press Break to point the user vector (&200) to the clear code at &70. Entering *CODE or *LINE at any time then clears the integer variables A% to Z%.

H M Hoffman,
London E9.

```
10 *KEY 10 ?&200=&70:?&201=0:M!L
20 P%=&70:[OPT 3
30 LDX #104:LDA #0
40 .LOOP STA &403,X
50 DEX:BNE LOOP:RTS:]
60 PRINT "NOW PRESS BREAK"
```

3D characters from the Amstrad

Anyone with an Amstrad CPC464 who has admired the 3D characters of the Apple Mac will be able to produce a similar effect with this program.

The subroutine at line 5000 does the printing; the variables xp%, yp%, and text$ must be set up before calling it. The first two specify the screen position of the top left hand corner, and the characters to be printed go into text$.

The ink must be set carefully. Pen 2 is best in a dark colour, and pen 3 in a light colour. A nice effect can be obtained with the following:

```
30 INK 2,0,26: INK 3,26,0
```

Nigel Mellor,
Oaks, Huddersfield.

```
10 MODE 0
20 INK 0,13:INK 1,0
30 INK 2,0:INK 3,26
40 BORDER 13
50 xp%=0:yp%=300
60 text$="3D Character routine"
70 GOSUB 5000
80 STOP
5000 PRINT CHR$(23)+CHR$(3)
5010 TAG
5020 PLOT -2,-2,3
5030 MOVE xp%,yp%:PRINT text$
5040 MOVE xp%+4,yp%-2:PRINT text$
5060 TAGOFF
5070 PRINT CHR$(23)+CHR$(0)
5080 RETURN
```

More Modes from your memory

The following program allows an extra screen Mode (8?) to be created, with 10 columns by 16 rows and the full 16 colours, all in the memory space of a Mode 5 screen. It will also work on a BBC model A.

Michael Warriner,
Shipston on Stour, Warks.

```
  10 MODE 5
  20DIM S% 100
  30PROCASSEM
  40CALL S%
  50CLS:MOVE 0,0:DRAW 640,512:DRAW 1279
,0
  60PRINT TAB(1,2);:A$="HI THERE"
  70FOR T%=1 TO LEN(A$)
  80 COLOUR T%
  90PRINT LEFT$(A$,T%)
 100NEXT:END
 110DEFPROCASSEM
 120FOR I=0 TO 2 STEP 2
 130P%=S%
 140[ OPT I
 150LDA £154:LDX£224:JSR &FFF4:LDA £&F:
STA &360:LDA £&20:STA &34F:LDA £&1:STA &
361:LDA £&55:STA &363:LDA £&AA:STA &362:
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 160NEXT
 170ENDPROC
>
```


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FLASHY ROUTINE

Trip the light fantastic with this attribute toolkit. The machine code routines give you pulsating screen effects, courtesy of A Daines.

Ever wanted to flash a screen of text up, fast as lightning? Or selectively change background colours instantly? Here is a set of ten machine code subroutines which can do that and much more — a complete attribute toolkit.

Any one of the ten routines can operate in one of four user definable windows, stored in memory or a fifth POKEd in when required. The ten routines, numbered 0 to 9, are as follows:

0 Takes a number from address 60003 and searches through the paper colours in the specified window until it is found, when it is replaced by the colour held at address 60004

1 Similar to routine 0. Takes a number from address 60003 but searches for it in the ink colours in the window. On finding it, the colour at 60004 is put in its place

2 Performs a universal ink change (the new ink colour is stored at 60004)

3 Same as routine 2 but for paper, not ink

4 Invert. Swaps the paper for the ink colours, effectively inverting the screen

5 'Pulses' the ink colour (useful in games)

Routines 6 to 9 are scrolls — up, down, left and right — and are not wrap-around. The blank lines left at the top of the screen after a down scroll, at the right of the screen after a left scroll, or at the left of the screen after a right scroll, are made to have the current ink, paper, flash and bright valves.

Type in each routine. Start by entering Listing 1, then, after typing RUN, save the code using: SAVE"ATTOOL"CODE60000,490. A small demonstration program listing

Listing 1

```
  1 CLS
  2 FOR n=60022 TO 60037: READ
a: POKE n,a: NEXT n
  3 DATA 1,2,10,18,12,1,10,23,0
,21,11,11,13,25,7,6
 10 PLOT 16,167: DRAW 144,0: DR
AW 0,-79: DRAW -144,0: DRAW 0,79
: PRINT AT 1,1;"0"
 20 PLOT 8,79: DRAW 183,0: DRAW
 0,-79: DRAW -183,0: DRAW 0,79:
PRINT AT 12,0;"1"
 30 PLOT 168,175: DRAW 87,0: DR
AW 0,-87: DRAW -87,0: DRAW 0,87:
 PRINT AT 0,20;"2"
 40 PLOT 200,71: DRAW 48,0: DRA
W 0,-56: DRAW -48,0: DRAW 0,56:
PRINT AT 13,31;"3"
 50 FOR n=0 TO 21
 60 IF n>0 AND n<11 THEN FOR m=
2 TO 19: PRINT AT n,m; PAPER RND
*6; OVER 1;" ": NEXT m
 70 IF n>=0 AND n<11 THEN FOR m
=21 TO 31: PRINT AT n,m; PAPER R
ND*6; OVER 1;" ": NEXT m
 80 IF n>11 THEN FOR m=1 TO 23:
 PRINT AT n,m; PAPER RND*6; OVER
 1;" ": NEXT m
 90 IF n>12 AND n<20 THEN FOR m
=25 TO 30: PRINT AT n,m; PAPER R
ND*6; OVER 1;" ": NEXT m
 100 NEXT n
 110 INPUT "Enter Window require
d (0-3) ";w: IF w<0 OR w>3 THEN
BEEP .1,-5: GO TO 110
 120 POKE 60009,w
 130 INPUT "Enter routine needed
 (0-9) ";r: IF r>9 OR r<0 THEN B
EEP .1,-5: GO TO 130
 140 POKE 60002,r
 150 IF r=0 OR r=1 THEN INPUT "E
nter col. to look for (0-7) ";a:
 POKE 60003,a: IF a<0 OR a>7 THE
N BEEP .1,-5: GO TO 150
 160 IF r>=0 AND r<4 THEN INPUT
"Enter col. to replace (0-7) ";b
: POKE 60004,b: IF b<0 OR b>7 TH
EN BEEP .1,-5: GO TO 160
 170 INPUT "Are you sure ?(Y/N)-
->"; LINE a$: IF a$<>"y" AND a$<
>"n" THEN BEEP .1,-5: GO TO 170
 180 IF a$="n" THEN GO TO 110
 190 RANDOMIZE USR 60000: GO TO
110
```

Listing 2

```
210 FOR NO=60000 TO 60446
20 READ A:POKE NO,A
30 NEXT NO
40 STOP
100 DATA 24,36,0,0,0,0,0,0
110 DATA 0,0,213,234,232,234,222
,244
120 DATA 244,234,1,235,22,235,0,
0
130 DATA 0,0,0,0,0,0,0,0
140 DATA 0,0,0,0,0,0,58,234
150 DATA 234,254,4,196,9,236,33,
234
160 DATA 234,58,98,234,214,6,210
,235
170 DATA 235,175,58,98,234,23,13
3,94
180 DATA 94,35,86,237,83,199,234
,101
190 DATA 101,234,95,22,0,33,32,2
05
200 DATA 205,169,48,58,102,234,1
7,88
210 DATA 88,131,95,25,58,103,234
,197
220 DATA 197,58,104,234,229,71,2
05,0
230 DATA 0,35,16,250,225,17,32,2
```

has been included to allow you to test out the routines.

60002	routine number (0-9)
60003	colour reference A (0-7)
60004	colour reference B (0-7)
60005	X coordinate of the top left corner of window 4
60006	Y coordinate of the top left corner of window 4
60007	height of window 4
60008	length of window 4
60009	window number (0-4)
60022-60025	data for window 0, height, length, etc
60026-60029	data for window 1, height, length, etc
60030-60033	data for window 2, height, length, etc
60034-60037	data for window 3, height, length, etc

Note that the machine code does not contain any error checks so be sensible with the values POKEd, *ie* don't try to scroll a window with a height of 0 and a length of 130 right or you may crash the system.

If you wish to scroll a window 5 high and 13 long to the left with its top left corner at 3 down and 7 across, then use the following:

```
10 POKE 60002,8
20 POKE 60005,3:POKE 60006,7
30 POKE 60007,5:POKE 60008,13
40 POKE 60009,4
50 RANDOMIZE USR 60000
```

By the way, any routine you are using is first POKEd in 60002 and a RANDOMIZED USR 60000 instruction is executed.

To invert the whole screen, use:

```
10 POKE 60002,4
20 POKE 60005,0:POKE 60006,0
30 POKE 60007,24:POKE 60008,32
40 RANDOMIZE USR 60000
```

Before running, type LIST:LIST:LIST:GOTO 10. This puts some data on the screen to invert.

I would be happy to answer any queries about my routines. Send them to: A Daines, 9 Fairfield Road, Bungay, Suffolk, enclosing a sae.

```
5
240 DATA 25,193,16,236,201,126,2
30,79
250 DATA 79,58,99,234,185,192,12
6,248
260 DATA 248,79,58,100,234,129,1
19,126
270 DATA 126,230,56,31,31,31,79,
99
280 DATA 99,234,185,192,126,230,
199,58
290 DATA 58,100,234,23,23,23,129
,201
300 DATA 201,126,230,7,23,23,23,
126
310 DATA 126,230,56,31,31,31,129
,126
320 DATA 126,230,192,129,119,201
,126,7
330 DATA 7,60,203,159,79,126,230
,129
340 DATA 129,119,201,81,235,118,
235,235
350 DATA 235,217,235,23,33,35,23
5,111
360 DATA 111,94,35,86,237,83,78,
58
370 DATA 58,101,234,111,38,0,17,
0
380 DATA 0,205,169,48,17,0,88,10
2
390 DATA 102,234,131,95,25,205,0
,201
400 DATA 201,58,103,234,61,71,19
7,17
410 DATA 17,32,0,25,209,229,58,2
34
420 DATA 234,79,6,0,237,176,225,
16
430 DATA 16,236,58,104,234,71,58
,92
440 DATA 92,119,35,16,252,201,58
,234
450 DATA 234,61,229,193,111,38,0
,32
460 DATA 32,0,205,169,48,9,58,23
4
470 DATA 234,61,71,197,229,17,32
,237
480 DATA 237,82,209,229,58,104,2
34,6
490 DATA 6,0,237,176,225,193,16,
24
500 DATA 24,200,58,103,234,71,19
7,229
510 DATA 229,209,35,58,104,234,6
1,6
520 DATA 6,0,237,176,225,17,32,2
5
530 DATA 25,193,16,234,58,104,23
4,95
540 DATA 95,22,0,25,17,32,0,82
550 DATA 82,58,103,234,71,58,141
,17
560 DATA 17,32,0,119,237,82,16,2
01
570 DATA 201,58,104,234,61,79,6,
9
580 DATA 9,58,103,234,71,197,229
,209
590 DATA 209,43,58,104,234,61,79
,0
600 DATA 0,237,184,225,17,32,0,1
93
610 DATA 193,16,234,17,32,0,237,
58
620 DATA 58,104,234,61,95,22,0,1
90
630 DATA 190,175,58,105,234,23,2
3,22
640 DATA 22,0,33,118,234,25,17,2
34
650 DATA 234,1,4,0,237,176,201,0
```

UNCOMMON CHORDS

Yamaha has invested its MSX computer with sophisticated synthesiser capabilities. Francis Jago flexes his fingers to measure up the success of the venture and rules the sound waves.

The irony of MSX micros is that they have a tendency to forget the compatibility standard on which they are based by having extra hard/software usable only with a particular make, in order to establish identity in the marketplace. Yamaha has courted this trend by producing a standard MSX micro, the CX5M, with built in polyphonic synthesis, and peripherals such as the YK-01 musical keyboard which works with the Yamaha machine only.

First impressions

The Yamaha is a 64K computer which seems to be ample to make use of most of the synthesiser's capabilities, as well as running all the available games. It is the synthesiser, though, which puts the price of the CX5 up from the average MSX price of £200-£250 to the more specialist price of £449; and the one function that puts this synthesiser in the value-for-money class is its capability of FM Digital Synthesis.

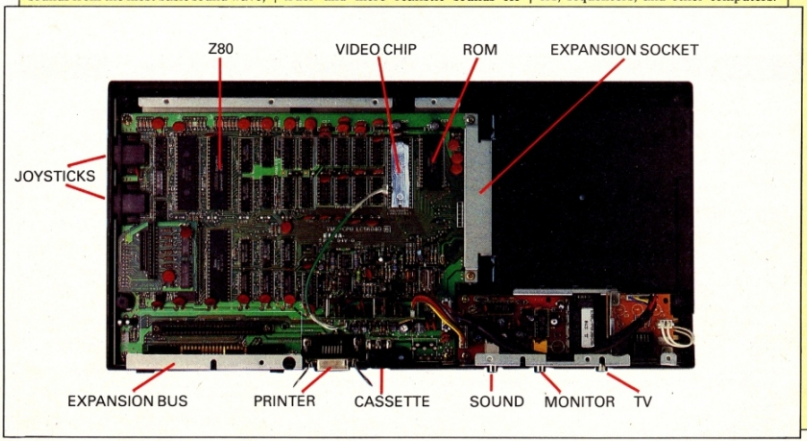
This function builds up complicated sounds from the most basic sound wave, sine. Each sine wave is generated by either an operator, which modifies the pitch at speed, or a carrier, which produces the sounds. By using this method rather than the more conventional filtered sounds, the DX series of synthesisers and the CX5 achieve much truer and more realistic sounds for instruments such as piano and organ.

The problem with this way of producing sounds is its complexity; this is where the CX5 comes into its own allowing you, when using the FM voicing program, to view and alter the waveforms on-screen.

The synthesiser section of the CX5 is, put simply, a DX9 synthesiser, reduced a little. It allows a choice of 43 voices varying from Funky Bass to the unusable and inexplicable Ambulance. These sounds are all made up of waveforms, and using the FM Voicing Program each sound can be altered to specific requirements using varying quantities of attack, decay, sustain and release, all being numbers used to create envelopes. The DX9, and hence the CX5, can have up to eight notes played at once.

One of the machine's most interesting interfaces is still the MIDI (Musical Instrument Digital Interface), intended to be a serial interface capable of controlling drum machines, synthesisers, sequencers, and other computers.

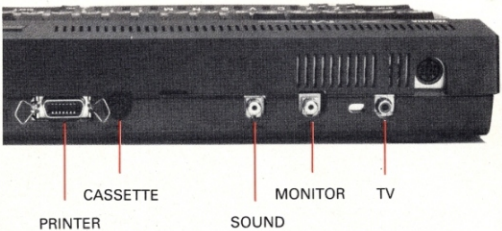
Built-in polyphonic synthesis and a musical keyboard makes an innovative combination of computer and synthesiser.



This means that you can store your music using the computer and then attach it to a larger synthesiser and let the computer control it, producing a range of interesting results.

As an MSX computer the Yamaha CX5 is pretty standard. It uses a standard Z80 processor, 64K RAM, 16K VRAM, and 32K ROM. It has 16 colours and a screen resolution of 256 × 192. Unlike most other MSX computers, the Yamaha does not have a built-in power supply, and, although one is provided, it is annoyingly large and heavy. However, one of the nicest features was the excellent moving keyboard. At a time when more and more disappointing keyboards are spoiling otherwise good computers, it was refreshing to find one so good.

The CX5 has a good selection of expansion sockets including RF, printer, two joystick ports, and all the other standard ones. It also has an expansion port, capable of being used either for a peripheral such as a disk drive or, with a £19 adaptor, as another cartridge slot.



In use

One of the nicest features about the MSX standard is that once you know a little Microsoft Basic (even the non-extended version), you can program any MSX computer. This knowledge, together with the keyboard, immediately inspires confidence in the machine, and although you do have all the extra sound functions, you do not have to use them (indeed, as far as I know there are unlikely to be any games using these extra functions in the forseeable future, unless Yamaha sees fit to write some).

The problem for this would be that officially they would not be MSX standard, as no other MSX computer could produce all the extra sounds. Happily, though, this does not detract at all from the Yamaha's performance, as for £36 you can buy a cartridge called FM Music Macro. This allows you to take complete control over the synthesiser's capabilities from Basic, without the need for an external musical keyboard.

The Music Macro operates from Basic using the CALL command, and although it takes up nearly 12K of user memory, it still leaves a useful 19K. Although plugged in, the Music Macro still needs activating. To do this you need to CALL INIT; as you might expect this initialises the program. The next command you have to use is one to choose the instrument with which you want to play your tune; this is the CALL INST (n) command, with n being a number from 1 to 43.

Once these two parameters have been chosen, you are in the position to commence playback. To create even the simplest piece of music, two more commands are needed: CALL PHRASE () and CALL PLAY (). The first chooses both which of the eight tracks of music should be used, and what notes should be used. The notes are chosen using musical notation varying from A to G.

The PLAY command starts playback, specifying which track is to be played and confirms that instrument choice. To access more than one octave you simply type "o2" before the notes you wish to be of a different octave.

Here's a demonstration program which illustrates the basic commands by playing two octaves as a scale up and then down on a trumpet on track one.

```
10 CALL INIT
20 CALL INST(3)
30 CALLPHASE (1, "o1cdefgabo2cdefg-
abagfedco1bagfedc")
40 CALL PLAY (3,1)
```

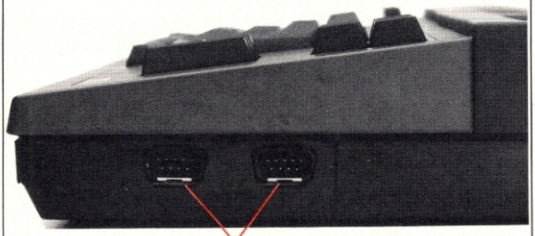
While not complicated, this illustrates the ease with which the Music Macro allows you to program the synthesiser's functions from Basic.

Once a main tune has been programmed you have a choice of six backing rhythms including disco, swing and rock. These are all rudimentary and the sounds are reminiscent of the early Casio VL-Tones — (surprising, as Yahama produces some excellent drum machines). The best feature of the RHYTHM command is that, used in conjunction with the PATTERN command, you can define your own drum beats, using the provided percussion sounds.

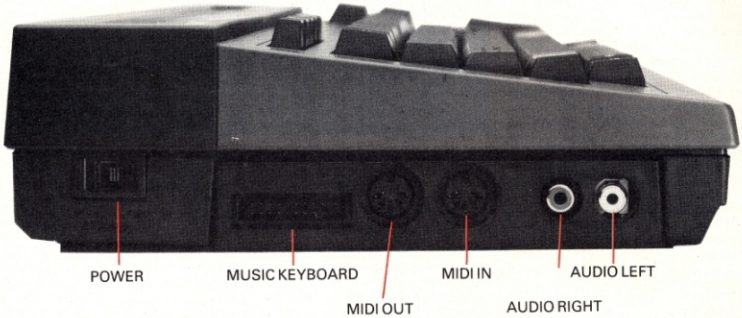
Included in the Music Macro is an LFO (Low Frequency Oscillator) command. This detailed command allows you to change the waveform shapes to produce tremolo and vibrato within easily controllable parameters. One of the nicest features of the Music Macro is the inclusion, at the back of the manual, of a memory map showing which parts of memory the Music Macro uses.

For the true musician the most useful program would probably be the FM Music Composer. This allows you to compose using normal musical notation as if you were writing a musical score. Then, if needed, dump it on a printer, which saves time writing it out. You can use all eight available tracks, although if you want to use a section of three-note chords this would take up three tracks.

When using the Music Composer you can only enter in step-time, *ie* you cannot play a tune normally then examine and change it on screen. You must enter each note, having chosen the tempo, sound, and type of note required. Musicians to whom the ability to read music is not essential find this way of inputting music difficult and extremely tiresome.



HARDWARE PRO-TEST: YAMAHA CX5M



One of the worst points of the Composer is not being able to enter chords directly. First, you must tell the computer how many notes the chord is going to be, then you enter them, note by note. That said, studio owners or professional composers might find this acceptable, though the lack of a disk drive, as yet, would probably put them off.

The last piece of software I used was the DX7 voicing program. This is for use by a CX5 owner who also has a Yamaha DX7 synthesiser. Using the MIDI interface you can control all the parameters of the synthesiser from the computer. The main advantage is that you have a full colour, large screen display of the parameters you are altering. The waves are displayed and altered using the cursor keys of the CX5.

Overall, the CX5 is a 'schizophrenic' computer. It's difficult to decide whether it is an MSX computer with an elaborate sound system; or a DX9 synthesiser, slightly modified, with a built-in computer to aid the production of music. In Yamaha's mind the latter seems to be true; it is not promoting the CX5 itself, but leaving it to individual dealers. This suggests Yamaha is doing as little as possible and leaving all the selling to the dealers, whom Yamaha has trained.

Documentation

Although the review Yamaha did not come with a general manual of any sort, the four packages each had long, detailed and generally good manuals. I was promised that all purchasers of a CX5 would have a manual forwarded to them as soon as possible. The manuals with the software were all neatly laid out, and though they were all in black and white they were produced to a high standard and with detailed graphics.

The only noticeable absences were an index, and, more importantly, no detail of any of the varied error commands. This apart, even the expected Japanese non-sensical misprints were limited to three or four a chapter. The best feature of the manuals, which made up for the lack of an index, was that each command was listed alphabetically. As would be expected this only occurred in two out of the four manuals.

Verdict

Buy a Yamaha CX5, and you get the computer only; no keyboard, no music program, and for the moment no manual. To get the system up and running as a synthesiser you need to buy at the absolute minimum one program, at £36, and to reap any of the benefits of the Yamaha as a musical instrument you also need one of the two keyboards; the smaller is £85, the full-size is £165.

So far, there are four official pieces of software that use the CX5's music capabilities (all at £36), one of which only works in conjunction with a £1,200 Yamaha DX7 synthesiser, and is therefore unlikely to be used by anyone who is interested in the CX5's computing capabilities.

Obviously, considering a dedicated DX9 synthesiser is £900, even with a large keyboard and all the software the CX5 adds up to only £758, so it still represents value for money; but for the average micro user it would be difficult to justify £500 purely to satisfy some primitive musical urges. Then again, for anyone interested both in music and micros the CX5 could represent the perfect compromise.

The only real problem with the Yamaha as a musical instrument is the software: as yet, none of it utilises the full facilities of the synthesiser, the biggest oversight being the lack of a real-time music editor. To do this from the Macro Basic would not be too difficult, so anyone with a good knowledge of MSX Basic could probably write their own software. On the other hand it would be a pity if this innovative combination of computer and synthesiser was overlooked by all the independent software houses.

SPECIFICATIONS

Price	£449 (Computer only)
System	Yamaha CX5M
Processor	Z80
ROM	32K
RAM	64K+16K VRAM
Screen Resolution	40 characters by 24 lines, 256 × 192 graphics
Keyboard	74 keys, fully moving
Interfaces	Cartridge, expansion, joysticks, parallel printer, RGB monitor MIDI
Operating system	MSX
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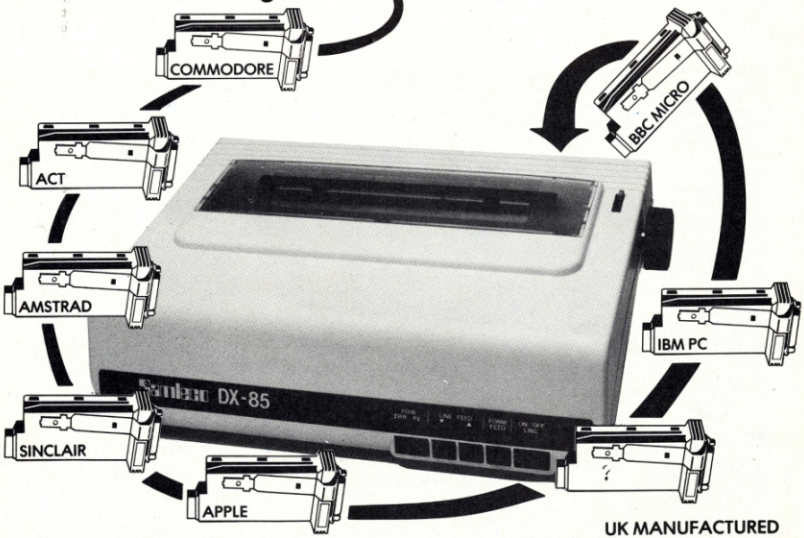

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CHARACTER REFERENCE

First claw back the unholy amount of memory swallowed up by User Defined Graphics: then settle back and appreciate the benefits with Richard Keeble's program.

Graphics on the Commodore 64 are very adaptable, but many of the programs published in books and magazines that allow UDGs to be changed easily suffer from the same drawback — the new character set data is usually placed at 12288, right in the middle of the space allocated for Basic programs.

This means that only 10K of memory is left for Basic programs, even less if you use sprites as well.

How can this be overcome? The Programmer's Reference Guide explains at great length about the Vic II chip's four banks of 16K memory, only one of which can be seen at a time.

The problem with changing the video bank is that other items have to change with it. For example the screen memory location must be changed, thus altering all of the normal POKES to screen, and the screen editor has to be told where the screen is.

Also, the video bank expects character data to be stored in the area it is 'looking at'. This means you have to move the memory location of your newly created characters. These problems do not seem very large until you start to work on them.

One solution is to embed a lot of DATA statements at the beginning of the program. These are ignored by the program once it is running, and character data can overwrite them. The difficulty is finding out how many lines of DATA to enter. By far the simplest way of getting around this problem would be to move Basic out of the way. Unfortunately, the guide doesn't state whether this is possible.

However, in the memory map at the back of the guide, can be found locations 43 and 44 — a 16-bit register containing a pointer for the start address of Basic text.

If new values are POKED here, then the program will start 'higher up' in the memory. This is certainly easier than entering lines and lines of DATA statements.

The command to move Basic should be entered in direct mode, before typing in your program:

POKE 43,1:POKE 44,64:POKE16384,0: CLR:NEW

Type a program into the computer, and save it. Every time that program is loaded, this set of POKES should be entered first.

Having gone to all of this trouble to produce UDGs, learn to exploit them to the full. For instance, it is possible to produce animation simply by altering character data.

The program demonstrates this in two ways. First, by going into multi-colour mode, and changing the three colour registers. By placing the three characters in rectangles, an effect similar to the launch tube on Battlestar Galactica can be produced.

The other demonstration is of happy and sad faces. Changing each individual face in Basic would take ages, but by only changing one item of data, you can produce an effect that is normally achieved this quickly in machine code only.

Listing

```
9 REM***SWITCH IN NEW CHARACTERS***
10 POKE56334,PEEK(56334)AND254
20 POKE1,PEEK(1)AND251
30 FORN=0TO1023:POKE12288+N,PEEK(53248+N
);NEXT
40 POKE1,PEEK(1)OR4
50 POKE56334,PEEK(56334)OR1
60 POKE53272,(PEEK(53272)AND240)+12
69 REM***CHANGE CHARACTERS***
70 FORC=65TO67:READ CHAR
80 FORN=0TO7:POKE(12288+N+(C*8)),CHAR:NE
XTN
90 NEXTC
100 FORC=68TO69
102 FORN=0TO7:READCHAR:POKE(12288+N+(C*8
)),CHAR:NEXTN
104 NEXTC
110 FORC=0TO3
112 FORN=0TO7:READCHAR:POKE(49152+N+(C*8
)),CHAR:NEXTN:NEXTC
119 REM***END OF CHARACTER CHANGES ***
120 PRINT""
122 PRINT"WHICH DEMONSTRATION ?"
124 PRINT"1 CHANGING COLOURS"
126 INPUT"2 SMILING FACES";A$
128 IFA$=""THEN 128
130 IFA$="1"THEN GOSUB 140
132 IFA$="2"THEN GOSUB 600
134 IFA$<>"1"ORA$<>"2"THENGOTO120
136 GOTO120
140 PRINT""
150 POKE53270,PEEK(53270)OR16:REM MULTI-
COLOUR MODE
160 POKE53281,0:REM BACKGROUND 0
165 POKE53282,1:REM BACKGROUND 1
170 POKE53283,2:REM BACKGROUND 2
190 FORX=0TO7
200 FORN=0TO39:PRINT"A";:NEXT:REM PRINT
"[SHIFT/A]"
210 FORN=0TO39:PRINT"B";:NEXT:REM PRINT
"[SHIFT/B]"
220 FORN=0TO39:PRINT"C";:NEXT:REM PRINT
"[SHIFT/C]"
230 NEXT
499 REM *** CYCLE THROUGH COLOURS ***
500 FORX=0TO12
510 POKE53281,X
520 POKE53282,X+1
530 POKE53283,X+2
550 FORCO=0TO500:NEXT
560 NEXT
570 POKE53270,PEEK(53270)AND239
580 POKE53281,0
590 RETURN
599 REM *** SMILING FACES ***
600 PRINT CHR$(147)
602 POKE53281,0
605 POKE53270,PEEK(53270)AND239
608 FORX=0TO12
610 FORN=0TO19:PRINT"DE";:NEXTN:REM PRIN
T"[SHIFT/D] AND [SHIFT/E]"
620 FORN=0TO19:PRINT"FG";:NEXTN:REM PRIN
T"[SHIFT/F] AND [SHIFT/G]"
700 FORN=0TO7:POKE12848+N,PEEK(49152+N)
710 POKE12856+N,PEEK(49160+N):NEXTN
715 FORN=0TO100:NEXT
720 FORN=0TO7:POKE12848+N,PEEK(49168+N)
730 POKE12856+N,PEEK(49176+N):NEXTN
735 FORN=0TO100:NEXT
738 NEXT
740 RETURN
999 REM*** CHARACTER DATA ***
1000 DATA170,85,255
1010 DATA0,3,7,15,31,25,57,63
1020 DATA0,192,224,240,248,152,156,252
1030 DATA63,51,25,28,14,7,3,0
1040 DATA252,204,152,56,112,224,192,0
1050 DATA60,57,19,23,15,7,3,0
1060 DATA60,156,200,232,240,224,192,0
```

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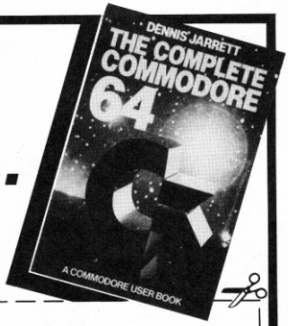

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CENTENARY SELECTION

To celebrate the 100th issue of Personal Computer News, we've put together a list of the best in personal computing — our Hundred Best Buys.

They range from a £5 gadget for the Spectrum, to a £2,000 business system and cover just about everything in between — computers, peripherals, software and books — representing what we think is the best the industry has to offer.

You'll probably agree with many of our choices, and certainly disagree with some. Well, we can be big about it. Let us know what you think and we'll publish your best suggestions. Until then, here's ours. (They're not in any order of merit).

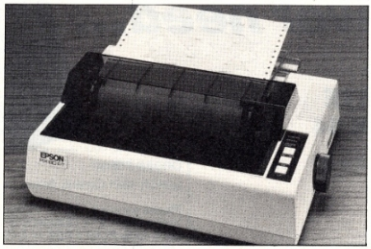
Hardware

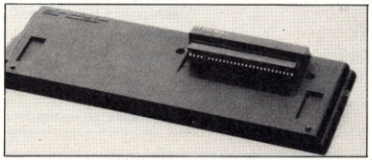
1 Sinclair Spectrum
2 Commodore 64
3 Acorn BBC Model B
4 Amstrad CPC 464
5 Yamaha CX5 MSX system
6 Apple Macintosh
7 Apricot F1e
8 Tandy Model 100/NEC 8201a lap-held
9 Compaq IBM-compatible portable
10 Kaypro 10 portable CP/M system

Peripherals

11 Any Epson printer, but especially the RX80F/T
12 The AMX Mouse, from Advanced Memory Systems, for the BBC Micro
13 Spectravideo's Quickshot joystick
14 Penman plotter — the best buy in plotters for BBC, Apple and IBM
15 Demon modem — formerly called the Unicom, offers outstanding value
16 Kempston Competition Pro joystick for the Spectrum
17 Seikosha colour printer — the best value of any of the multi-colour printers
18 Prism VTX 5000 modem — the cheapest way to get your Spectrum into communication
19 Brother EP44 printer — outstanding value
20 Rotronics Wafadrive — one of the nicest presents for your Spectrum
21 Miracle Technology's WS2000 modem — does just about everything at a sensible price
22 Sinclair's Interface 1 — opens up the Spectrum to a range of modems and printers

23 The RAM Turbo joystick
24 Transform's add-on keyboard for the Spectrum — the best we've seen
25 Microvitec CUB monitors — if your micro has RGB output you can't beat them





26 Torch ZEP pack for the BBC Micro — twin disks, a Z80, and CP/M compatibility
27 Audiogenic's Koala Pad — one of the best graphics systems for the Commodore 64
28 Micro Peripherals' CPP-40 printer/plotter — the ubiquitous 4-pen job, best value in low-cost printers
29 Star Gemini 10x printer — Epson-compatible dot matrix
30 Wico's joysticks and tracker ball — rugged, high quality games controllers
31 Currah's Microspeech synthesiser — Currah is no longer with us, but its range of speech synthesisers for Spectrum and Commodore remain
32 TEC's on/off switch for the Spectrum — simply brilliant
33 Acorn's Bitstik for the BBC — the ultimate low-cost graphics system
34 Sendata 700B modem — a battery-powered, acoustic modem
35 Cumana disk drives — disk options for BBC, Dragon, Oric and Spectrum
36 Indus GT disk drive for Atari — an essential buy for serious users

Software

37 Acornsoft's *Elite* — any BBC or Electron owner who hasn't bought it is suffering from creeping braindeath

38 Kuma's *BC Basic* — there are lots of extended Basics for the 64; this is the best

39 Lotus's *Symphony* — the last word (for the moment) in integrated software, for serious business types only

40 Acornsoft's *Pascal for the BBC Micro* — excellent implementation

41 CBS' *Impossible Mission* — not impossible but the graphics and sound are unbelievably good. Commodore 64 only

42 *Flight Simulator II* from SubLogic — the last word in flight simulators for lucky owners of Commodore 64s, Ataris and Apples

43 Acornsoft's *Lisp* — another good language implementation for BBC owners

44 Design Design's *Dark Star* — Spectrum only, ace Star Wars-type shoot 'em up

45 Inkwell's *Flexidraw* — light pen and software for the 64, the biz for serious graphics

46 Oasis Software's *White Lightning* — if you want to write games on the Spectrum or 64 you need this

47 Statesoft's *Boulder Dash* — graphics aren't wonderful, sound isn't either — just an amazingly good game

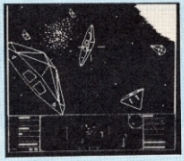
48 Tasman's *Tasword II* — word processor that should be the first buy for Spectrum owners

49 Computer Concepts' *Wordwise* — see 48, for BBC owners

50 Addictive Games' *Football Manager* — not the first management simulation but the best

51 Commodore's *International Soccer* — off the bench and into action with the greatest sports arcade game

52 Psion's *Flight Simulator II* — best of the bunch for Spectrum owners



53 US Gold's *Combat Leader* — tank simulation arcade/strategy game for the 64. The ed's absolute, all-time favourite

54 Atarisoft's *Pole Position* — full throttle burnout for would-be racing drivers on Spectrum, 64, Atari, BBC

55 Ashton-Tate's *dBase III* — another serious one, a database so powerful it's almost a full-blown language in its own right

56 Micro Power's *Basic Extension ROM* — a bundle of goodies for BBC programmers

57 Interceptor Micro's *Ultrabasic* for the 64 — superb value for those who can't afford BC Basic

58 *Musicalc* for the 64 — last word in music programming

59 Island Logic's *The Music System* — as 58 but for the BBC

60 Ultimate's *Knight Lore* essential playing for Spectrum owners

61 Sierra On-Line's *Homeword* — really easy but powerful word processor for 64 and Apple

62 Telos' *Filevision* — Macintosh only, what happens when a brilliant idea meets a superb machine

63 Psion's *Chess* — there isn't much QL software around but this would grace any collection

64 Commodore's *Logo* — almost worth buying a 64 just to get it

65 Infocom's *Zork* trilogy — you don't know what adventure is until you've played them, available for 64, Apple, Atari, IBM, CP/M 66

66 Gilsoft's *Quill* — write your own adventures on Spectrum and 64

67 Level 9's *Colossal Adventure* — essential for non-Zorking Spectrum, BBC, Amstrad, Oric, Dragon and Memotech owners

68 Infocom's *Hitch-Hiker's Guide to the Galaxy* — life, the universe and everything

69 Beyond's *Lords of Midnight* — not so much a game, more a way of losing sleep

70 Games Workshop's *Battle Cars* — blood on the highway for Spectrum owners

71 Commodore's *Omega Race* — the Vic 20's finest hour

72 Acornsoft's *Meteors — Asteroids* lives

73 Hisoft's *C* — the trendiest language in computing, now on your Spectrum

74 *Master* — the ultimate programmer's aid for the Commodore 64. Distributed by Calco

75 *White Knight Mk 12* from BBC Software — on the Beeb, might just possibly be the most powerful chess program available

76 Gargoyle's Games' *Tir Na Nog* — high-brow graphic adventure on the Spectrum

77 Hewson's *Avalon* — the best of the so-called 'graphics adventures' for the Spectrum

78 US Gold's *Stellar 7* — great 3D graphics in this Battle Zone clone for the 64

79 Vizasoft's *Vizawrite* — word processors are a matter of taste but this one has a lot of friends on the 64

80 AVS's *System 15000* — unique adventure on a computer hacking theme

81 US Gold's *Beach Head* — possibly the biggest selling 64 game ever and justifiably so. Also on Spectrum and Atari

82 CDS's *Colossus Chess* — get it for your 64 but don't expect to win

83 Micromega's *Codename MAT* — zap, crackle and pop on the Spectrum

84 Psion's *Archive* — part of the bundled software with the QL, it shows what the QL will do when asked nicely

85 Beyond's *Mychess* — another for the 64 with a dazzling array of options. Excellent choice for beginners

86 Creative Spark's *Macbeth* — 'adventure of the year' according to *PCN*'s dungeonmaster Bob Chappell. 'Nuff said?

87 Acornsoft's *Spitfire* — tally ho Ginger, reach for the Beeb

88 Digital Integration's *Fighter Pilot* — not the best flight simulator but a great way of destroying things with wings

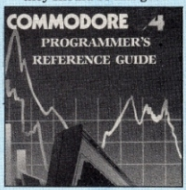
89 Micro Power's *Castle Quest* — graphic adventure for BBC only: just go and buy it

90 Microsphere's *Skool Daze* — one of the funniest games ever

Books and stuff

91 *Complete MSX Programmer's Reference Guide*, published by Melbourne House — all computer books should be this good

92 *Commodore 64 Programmer's Reference Guide*, published by Commodore — if they can't be as good as 91, they should be this good



93 *Amstrad Firmware Manual* — everything you wanted to know etc

94 Inmac catalogue — first source for cables, disks, desks, boxes, gizmos and neat little doohickeys

95 Maplin catalogue — the real thing for hardware freaks

96 *Soul of a New Machine*, by Tracy Kidder, published by Allen Lane — the inside story of the making of a computer

97 *The Mighty Micro*, by Christopher Evans, published by Hodder and Stoughton — remains the best insight into computers and society

98 *Computer Wimp*, by John Bear, published by Hutchinson — the funniest insight into computers and society

99 Micronet — the best way to run up appalling phone bills

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A MUSICAL NOTE

It may not be Frankie Goes to Hollywood, but this tune from JS Bach, translated into the language your Amstrad speaks by Nigel Hester, illustrates the extent of your machine's musical talents. And the techniques used can be easily adapted to other famous songs.

Your Amstrad may be a lot more musical than you think. The program here, Gavotte, displays the machine's ability to produce three channel sound. The tune in question is by J S Bach, and while I appreciate that many readers won't be classical music lovers, the program does show how superbly the Amstrad can handle quite complicated three part harmony.

Perhaps more importantly the program shows how easily music can be written, without getting involved with ON SQ GOSUB, etc.

The program sounds good through the computer on its own but the results are quite stunning when played through a stereo system.

The techniques involved in writing three part music on the Amstrad are quite simple using this method:

FOR N=1 to x	where x = the number of notes
READ C1,C2,C4	where c will represent the frequency of the note as contained in the DATA for each channel
SOUND 1,C1,Y: SOUND 2,C2,Y: SOUND 4,C4,Y	where y is the duration of each note
DATA	consisting of the frequencies of the notes

Each line of DATA in the program represents half a bar of music.

To keep the program simple, I have not used volume and tone envelopes (ENV & ENT). These, of course, could be specified to further improve the musical quality.

The music was written from a piano manuscript and is in two parts with each part repeated. The listing shows these two parts as two blocks of DATA with a repeat loop.

The duration of the note in the SOUND command corresponds to the shortest note found within the bars of music.

The number '0' in the DATA signifies a rest, so that ideally that particular channel remains silent. However, although a note is not sounded there is an audible click. Therefore, if you are writing music which contains a lot of rests, it is preferable to replace 0 with 1 (a very high pitched inaudible note).

How it works

40–270	Set up data for first half of music with one repeat loop
280–680	Set up data for second half of music with one repeat loop
690–720	Set up end display
730	Sets up screen for initial displays
740–860	Set up three time delays to synchronize the opening titles with a simple 'fanfare'

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ROMSWITCH

Listing

```
10 REM GAVOTTE
20 CLS:GOSUB 730
30 SEB=0
40 FOR SEB=0 TO 2
50 FOR N=1 TO 64
60 READ C1,C2,C4
70 SOUND 1,C1,20:SOUND 2,C2,20:SOUND 4,C
4,20
80 DATA 127,213,638,127,213,638,159,253,
319,159,253,319
90 DATA 213,284,338,213,284,338,190,284,
676,169,284,676
100 DATA 159,253,758,159,253,758,190,319
,379,190,319,379
110 DATA 253,338,426,253,338,426,253,338
,851,253,338,851
120 DATA 190,319,956,190,319,956,239,284
,478,239,284,478
130 DATA 284,338,426,284,338,426,253,0,5
68,239,0,568
140 DATA 213,284,676,253,284,676,239,0,8
51,284,0,851
150 DATA 239,319,638,253,319,638,284,0,8
51,319,0,851
160 DATA 127,213,1276,127,213,851,159,25
3,758,159,253,676
170 DATA 190,225,638,190,225,568,190,225
,638,169,213,676
180 DATA 159,190,758,159,190,851,190,225
,758,190,225,676
190 DATA 225,284,638,225,284,568,213,284
,506,190,284,451
200 DATA 169,284,426,213,284,426,159,284
,451,190,284,451
210 DATA 169,284,506,213,284,506,142,213
,676,142,213,638
220 DATA 159,213,568,169,213,568,190,225
,1136,169,225,1136
230 DATA 213,213,851,213,213,851,213,213
,851,213,213,851
240 NEXT N
250 SEB=SEB+1
260 IF SEB=1 THEN RESTORE 80:NEXT SEB:GO
TO 40
270 IF SEB=2 GOTO 280
280 BACH=0
290 FOR BACH=0 TO 2
300 FOR M=1 TO 128
310 READ C1,C2,C4
320 SOUND 1,C1,20:SOUND 2,C2,20:SOUND 4,
C4,20
330 DATA 284,338,426,284,338,426,213,338
,568,213,338,568
340 DATA 169,284,638,169,284,676,169,284
,758,169,284,851
350 DATA 159,0,568,169,0,568,190,0,478,2
13,0,478
360 DATA 159,213,506,159,213,478,213,213
,506,213,213,568
370 DATA 127,213,638,127,213,568,159,253
,506,159,253,638
380 DATA 190,319,478,190,319,426,169,284
,478,159,253,506
390 DATA 142,239,568,142,239,506,169,284
,478,169,284,568
400 DATA 201,338,506,201,338,506,201,338
,1012,201,338,1012
410 DATA 253,253,0,225,253,0,201,338,0,1
90,338,0
420 DATA 169,0,402,159,0,402,169,0,402,1
90,0,379
430 DATA 201,0,338,190,0,338,169,0,402,1
59,0,402
440 DATA 142,0,506,127,0,506,142,0,506,1
59,0,451
450 DATA 169,0,402,159,0,402,142,0,506,1
27,0,506
460 DATA 119,0,638,142,0,676,127,0,638,1
27,0,568
470 DATA 190,319,506,190,319,506,169,284
,1012,201,284,1012
480 DATA 190,319,758,190,319,758,190,319
,1012,190,319,1012
490 DATA 253,319,1517,253,319,1351,190,2
53,1276,190,253,1136
500 DATA 159,213,1012,159,213,956,159,21
3,851,159,213,758
510 DATA 239,0,716,253,0,638,284,0,568,3
19,0,506
520 DATA 179,0,478,213,0,426,190,0,478,1
90,0,506
530 DATA 338,0,568,319,0,638,284,0,676,2
53,0,758
540 DATA 239,0,851,284,0,956,253,0,1012,
239,0,1136
550 DATA 213,0,1276,239,0,1136,213,0,101
2,190,0,956
560 DATA 284,338,851,284,338,1136,284,33
8,1351,284,338,1136
570 DATA 119,142,1703,119,142,1517,142,2
13,1351,142,213,1276
580 DATA 169,239,1136,169,239,1012,169,2
39,1136,159,239,1276
590 DATA 142,239,1351,142,239,1276,169,2
84,1136,169,284,1012
600 DATA 213,338,956,213,338,851,213,338
,956,190,338,1012
610 DATA 169,239,1136,159,239,1012,142,2
39,956,169,239,851
620 DATA 159,253,758,190,253,758,142,239
,956,142,239,956
630 DATA 169,284,851,169,284,851,169,284
,1703,159,284,1703
640 DATA 159,253,1276,159,253,1276,159,2
53,1276,159,253,1276
650 NEXT M
660 BACH=BACH+1
670 IF BACH=1 THEN RESTORE 330:NEXT BACH
:GOTO 290
680 IF BACH=2 GOTO 690
690 CLS £1: CLS £2
700 CLS £3::LOCATE 5,15:PRINT"**********
**":LOCATE 5,16:PRINT"*            *":LOCA
TE 5,17:PRINT"*  FINIS.  *"
710 LOCATE 5,18:PRINT"*            *":LOCA
TE 5,19:PRINT"************"
720 GOTO 720
730 INK 0,10:BORDER 10:INK 1,1:INK 2,6:I
NK 3,0:MODE 0
740 FOR D=1 TO 2000:NEXT D:SOUND 1,638,2
00:SOUND 2,478,200:SOUND 4,378,200
750 WINDOW £1,2,19,3,8:PEN 1:LOCATE 3,4:
PRINT"Johann Sebastian":LOCATE 9,7:PRINT
"BACH"
760 FOR D=1 TO 2000:NEXT D:SOUND 1,716,2
00:SOUND 2,319,200:SOUND 4,253,200
770 WINDOW £2,6,14,10,11:PEN 2:LOCATE 7,
10:PRINT"presents"
780 FOR D=1 TO 2000:NEXT D:SOUND 1,956,2
00:SOUND 2,239,200:SOUND 4,190,200
790 WINDOW £3,5,14,16,18
800 PEN 1:LOCATE 5,15:PRINT"************
"
810 LOCATE 5,16:PRINT"*            *"
820 LOCATE 5,17:PRINT"* GAVOTTE.  *"
830 LOCATE 5,18:PRINT"*            *"
840 LOCATE 5,19:PRINT"************"
850 FOR D=1 TO 2000:NEXT D
860 RETURN
```

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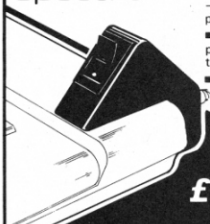

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```
10 MEMORY HIMEM-10
20 start=HIMEM+1
30 |ASSEMBLE,start
40 'get start
50 'limit &FFFF
60 'ORG start
70 'CP 10:SCF:RET Z
80 'RST 1,&B7F2
90 'ORG &BD2B
100'JP start
110'END
```

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DUNGEON

SLURRY TALE

Some adventures will never win the championship cup, but they still stand to reach the top of the second division. Mike Gerrard trains the spotlight on a few.

In the couple of months prior to Christmas there seemed to be one excellent adventure released every week — try not to solve them too quickly, as we're probably in for a quiet few weeks with just the occasional gem standing out.

Commodore 64 fans could try *Country Quest*, in one location of which you'll actually find a C64 and a TV set, though whether you later find a copy of *Country Quest* to play on it, I didn't discover.

From Wye Valley Software (05446-202) at £6.95, it is a text-based adventure that takes place while you're on holiday in a country cottage somewhere in Herefordshire. Being an adventurer, you've naturally chosen a cottage with a story attached to it — the owner of the nearby farm died leaving plenty of money but no relatives, and the money's never been found.

Nosing around the first few rooms uncovers a suit, some food and the aforementioned computer and TV, though as there seems to be no power they're not much good to you.

Out in the farmyard you have to be careful when approaching the slurry pit of rather revolting colour (a slurry with a tinge on top), and your milking skills might be put to the test, too.

The responses in this game are incredibly quick and the atmosphere convincing, although I didn't care for the many sudden deaths that occur without giving you a chance to save your position. An above-average adventure, but only just.

Sandy shore

The Sandman Cometh, a two-part Spectrum adventure at £10.95 from Star Dreams (17 Barn Close, Seaford, Sussex BN25 3EW) rates about the same. I didn't get off to the best start, reading drivel such as 'Welcome to probably the most unusual adventure you'll ever embark on. Your mission is to find the Hourglass of Infinity and by so doing to conquer your dreams. It is said that dreams are as important as reality, for there is but one reality and there are many myriads of dreams.'

As a myriad means a vast number, I'm not sure about many myriads, and there are spelling mistakes galore, such as when you go 'passed doors' instead of past them, and the authors can't even get the name of one of their inspirations correct: 'Apologies to Herman Hess,' they say. As his name is spelt Hesse, they ought to be apologising.

Still, the game itself proved intriguing, and there's a weekend in Paris up for grabs as a prize. All locations have graphics, and you must pay close attention to these as they sometimes depict things you're not told are there.

Your initial task, for example, which takes you out of the first two self-enclosed locations, requires you to spot a particular object and do something with it. That leads you through to an endless corridor of doors, any one of which you can go through.

The first leads to a fairground, with a shooting gallery and a ride on the Ghost Train to Transylvania. Here my progress was halted by a wall of water. I found a lifejacket beyond the second door, but it disappeared in a puff of smoke when I touched it. The third door conceals a gunslinger (the gun at the shooting gallery is unfortunately chained up), while the fourth is a locked cell where you have only a few moves before expiring — or rather, before waking up, which is how it ends.

Magic touch

I've only just scratched the surface of this adventure in an initial couple of sessions, and I'd like it more if it weren't for the pathetic attempts at humour. Best adventure this week is undoubtedly *The Magic Sword*, though, despite the fact that it only took me half an hour to solve it. That's no great boast as it is intended for very young children, who should get great pleasure from the enjoyable fairy story of the Princess, and the Prince who gets turned into a frog by the wicked witch.

The cassette comes with a full-colour storybook that sets up the adventure before asking you to solve it. Commands are entered by single key presses such as S for South, G for Get, R for Record, and so on, and this Record (save) feature even reminds you to unplug the EAR connection on the Spectrum version.

The Spectrum tape has a Commodore 64 version on the other side, and the BBC/Electron versions also come on the same tape, all available from Database Publications at 68 Chester Road, Hazel Grove, Stockport SK7 5NY. Graphics are rather crudely done, but I'd recommend this for children at the learning-to-read stage.

Shrinking feeling

Finally this week there's even something for Dragon owners, so they won't feel left out, although there are versions for most machines of *The Shrunken Scientist* (£5.95 from Quickbeam Software, 67 Old Nazeing Road, Broxbourne, Herts EN10 6RN).

You know what it's about from the title, but how to overcome the problem of being only one inch high? You got yourself into the mess, and to get out you must somehow reach the lab table and eat the crystals that you know are there. This involves carting about bits of walnut shell, darning needles, rusty screws and any other debris you can find lying around your filthy laboratory.

At the same time you must do battle with ants, spiders, frogs and larger enemies: my first death was at the hands, or rather the beak, of a raven, and I'm currently trying to cross a busy main road.

A nice teasing adventure, where you have to try to figure out if the tree you come across is actually a chair leg, in the hope that this gives you some inspiration as to what to do next.

No outstanding titles this time round, but good second division stuff, if you want a change from the likes of *Sherlock* and Scott Adams.

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SOFTWARE PRE-VIEW

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

AMSTRAD

Not much to write home about this week. But if you wanted to, you could use *Mini Office*, which offers word processing, database and spreadsheet facilities at a ridiculously low price. Each package is a bit limited, but it's great for starters.

Kuma's *Music Composer* is competent enough, allows you to enter sequences of up to 1000 notes, play them at various tempos, alter the key etc, but only makes use of one of the three voices — you'd probably do better to look for a listing in a magazine.

Camel's *Toolbox* provides simple graphics, sprite design (with Basic interfacing) and a ROM/RAM monitor, a bargain at £4.95.

Spook Loot	**£7.99**	**Andtronic 0245-50211**
Music Composer	**£9.95**	**Kuma 07357-4335**
Chopper Squad	**£6.00**	**Interceptor 07356-71145**
Battle for Midway	**£9.95**	**PSS 0203-667556**
Morris	**£6.00**	**Automata 0705-735242**
Stockmarket	**£8.95**	**Amsoft 0277-230222**
Mini Office	**£5.95**	**Database 061-456 8383**
Toolbox	**£4.95**	**Camel 0392-211892**

BBC

Would you pay over £30 for a simple version of Logo, without list handling? Well, don't buy *Picture Logic*, 'cos that's all it is.

Picture Logic	**£32.10**	**Addison Wesley 0734-794000**
Typing Tutor	**£12.95**	**Willow Software 0934-834056**
SIM	**£7.95**	**CSM 01-560 4191**

COMMODORE 64

I wish Activision would be more consistent. I haven't been excited by any of its products to date, but that could change with *Pastfinder*. The game features some of the best graphics I've seen on a home micro — programmers shouldn't be allowed to work that hard. The game is extremely well-thought out and very difficult. A full review will appear soon.

Pastfinder	**£9.99**	**Activision 0628-75171**
Time Search	**£7.95**	**Ducksoft 01-485 3484**
Castle Dracula	**£7.95**	**Ducksoft 01-485 3484**
Colossal Cave	**£7.95**	**Ducksoft 01-485 3484**
Character & Sprite Editor	**£12.95**	**Ducksoft 01-485 3484**
Deus ex Machina	**£15.00**	**Automata 0705-735242**

SPECTRUM

Psychedelia isn't a game, it's a personal light show. You move the joystick in time to music to create patterns on the screen. Whatever turns you on. . .

Of most interest this week is Automata's bargain pack, featuring *Crusoe*, *Piromania*, *Olympimania*, *Dartz* and six of Automata's best sellers. Why it wasn't released before Christmas?

Psychedelia	**£6.00**	**Llamasoft 07356-4478**
10 Pack	**£10.00**	**Automata 0705-735242**
Toy Bizarre	**£7.99**	**Activision 0628-75171**
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GETTING SERIOUS

Serious programming is within the grasp of Amstrad owners, says Simon Williams.

The Amstrad CPC464 is fast attracting 'serious' software to make use of its powers, especially as a programmer's machine. Hisoft's *Devpac* has already appeared, and although it's a pretty comprehensive beast, it's not the most user-friendly of programs to work with; but now two alternative offerings have appeared: *Zen*, from Kuma, and *ADE*, from Arnor software, both worth taking a look at.

Art of Zen

Zen incorporates an assembler, disassembler and monitor, and will therefore allow you to enter Z80 op-codes, assemble your machine code program, and check it over by disassembling sections or altering bytes in memory directly. The program is supplied on cassette with a 92 page manual, 82 of which are taken up with a disassembly of the package itself. The text of the manual is of dot-matrix origin, and is set very small. It covers the features of the package adequately, but you will certainly need to know what you're doing to use it well.

To run the program you first have to reserve an area of RAM using 'MEMORY 16383', load the cassette, and then enter *Zen* by 'CALL 16384'. It's a shame a Basic loader couldn't have been used to make it easier. The package normally runs in Mode 1, and doesn't use colour.

In use

Whenever the '<ZENL>' prompt is displayed, you can enter lines of source code or manipulate the text file in any way you see fit, assemble it, disassemble it (producing a properly annotated listing), zap lines out of it or call any of the other functions of the package. You can do just about anything you might like to with the piece of code under development, but it is not easy.

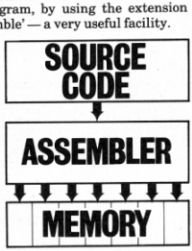
For a start, all entry must be made with CAPS LOCK set. If the micro's Basic doesn't distinguish between cases, why should an assembler? To edit the text file, which is automatically numbered by *Zen*, you have to use the 'Target' command (all *Zen* commands use just the initial letter) to move to the right line and then the 'New' command which displays it with the cursor at the end of the line.

The only way to modify it is to delete back to the error and retype. Deletion also starts from the current line, so to delete lines 10 to 15 you would need to type T10 <ENTER> Z5 <ENTER>. Why not the far more familiar form Z10-15?

ADE aid

Arnor's package is less comprehensive than *Zen* in that it doesn't include a monitor or the ability to alter individual bytes of memory; what it does do however, is to provide a good selection of assembler commands, and a full screen editor to manipulate the text file.

Ade will operate in either Mode 1 or Mode 2, and in the former makes use of colours to distinguish between headings and different sections of code. It also offers the facility to include sections of assembler source code within a Basic program, by using the extension '/assemble' — a very useful facility.



The Arnor package comes on cassette with an accompanying manual. Again, the print is small, but is off a daisywheel printer, and is more readable than *Zen*'s. As well as detailing the commands within the package, it devotes a couple of pages to describing the combined use of assembler and Basic by using a worked example. At a meagre 12 pages, it could have been more detailed.

In use

On loading the cassette you are first asked if you want to load the editor as well as the assembler, and also how much memory you want to reserve for machine code.

The rest of the program then loads and presents the main menu. This offers options to enter the editor, begin an assembly or disassembly, list a section of memory to screen or printer, switch in upper or lower ROMs or return to Basic. Getting back from Basic simply requires the '/MENU' command.

The edit menu covers the major functions of the editor such as loading, saving and printing text files, and finding and replacing text within the source code.

The full-screen editor operates much like a simple word processor, allowing code to be typed in line by line, and amended by moving the cursor with the arrow keys to the required point and inserting or overtyping. Two markers are available, and, when set, they define a block of code which may then be moved, copied or deleted. More than one instruction may be entered per line, as long as each statement is separated by a colon.

When it comes to assembling the code, several assembler options are offered, including conditional assembly. Error reporting is straightforward, and it's good to see proper error messages, rather than reference numbers being displayed.

Verdict

It may seem pedantic to comment on faults in the presentation of a comprehensive package like *Zen*, but there is no reason to make a difficult subject like machine code programming more awkward to grasp by producing a programming tool which is unfriendly to use. The user, especially the machine-code programmer, has a right to expect the same kind of help as would be give by the editor of a high-level language.

The Arnor system is the best editor/assembler to be released for the Amstrad so far. It may not have all the facilities of the Hisoft or Kuma products, but it is written especially for the 464, and tries to make good use of the machine's features.

The easy to use combination of Basic and machine code is a very valuable bonus. It's a shame, though, the manual isn't more detailed.

REPORT CARD: 1 TO 5

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

Name Zen Assembler **System** Amstrad CPC464 **Price** £19.95 **Publisher** Kuma, 07357 4335 **Format** cassette **Other Versions** numerous **Language** m/c **Outlets** mail order.

REPORT CARD: 1 TO 5

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

Name Arnor ADE **System** Amstrad CPC464 **Price** £11.95 **Publisher** Arnor, PO Box 169, London SE25 **Format** cassette **Other Versions** none **Language** m/c **Outlets** mail order.

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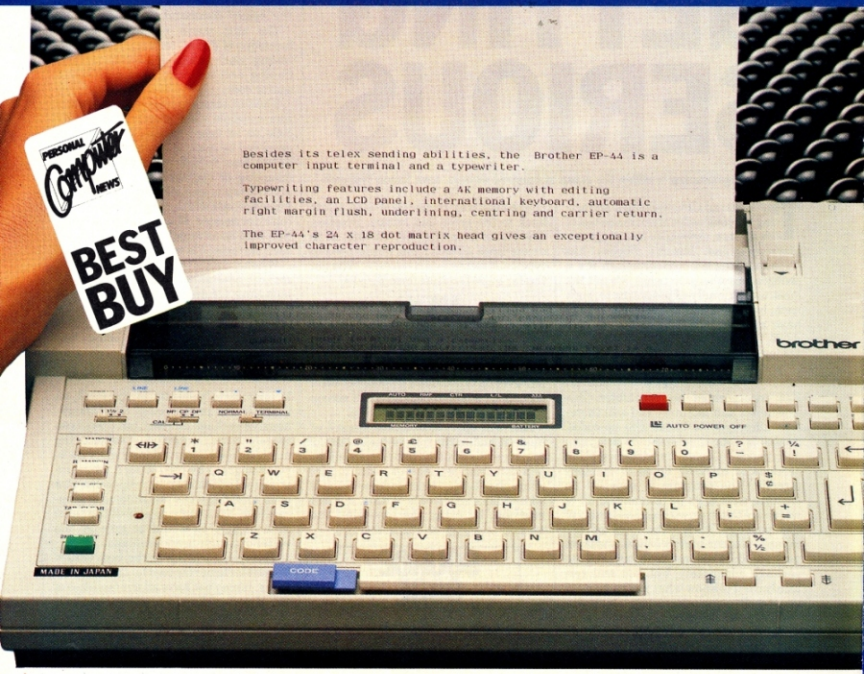

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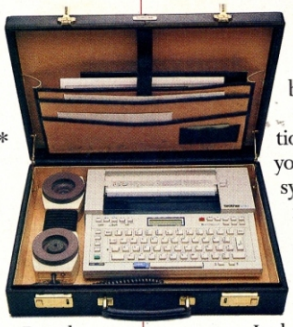

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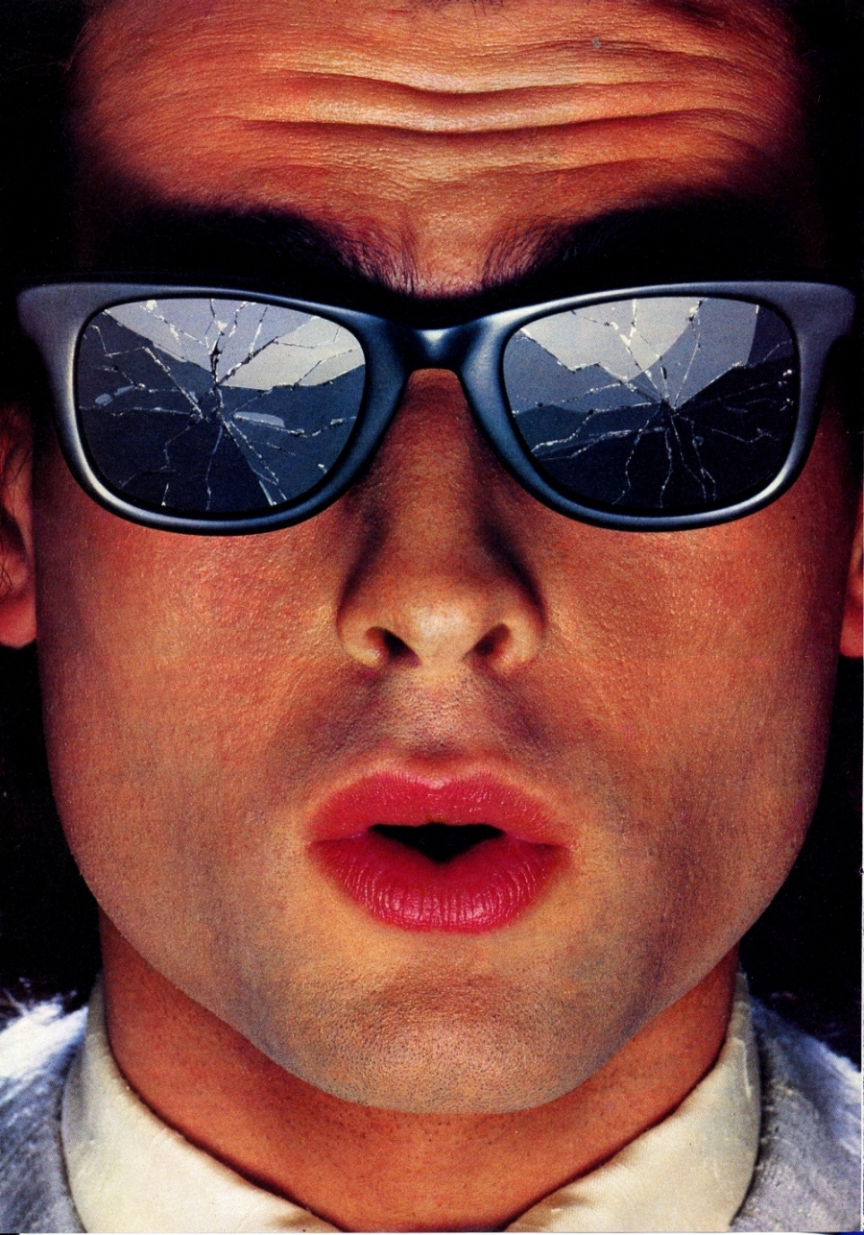

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GAMEPLAY

COMMODORE 64

JUNGLE QUEST

In the steamy African jungle you are Jungle Jim — a hunky Tarzan-like figure — out to rescue the beautiful Jane. Local cannibals want to cook Jane for Sunday lunch, and our hero must stop this villainy.

There are five screens. In the first stage, Jim is on the run. He races through the jungle undergrowth with a lion roaring close behind, snapping at his loincloth. The adrenalin level leaps when unfriendly tribesmen hurl blue spears (very difficult to see) which Jim can only duck

or leap. Unfortunately for our hero, the lion doesn't seem to be affected by the spears. After overcoming these trivial difficulties, Jim swings over a swamp infested with man-eating plants and hungry lions.

The third stage can be found in any Tarzan film. Armed only with a dagger, the fearless rescuer swims a river replete with evil-looking crocodiles and that's no easy feat. I only wish Jungle Jim could yell and beat his chest.

Now, if you've got any of your three lives left, you guide Jim as he climbs the mountain — dodging falling rocks with each step.

On the final screen, Jim rescues Jane as she dangles over the witch doctor's cooking pot.

The graphics are good, but the animation could be better. The tune which accompanies the action sequences — *The Rivers of Babylon* — is great at first, but soon wears a bit thin. *Jungle Quest* is fun, but I doubt if I'd miss my favourite television programme to play it.

Tom Hussey

Rating 7/10
Price £7.95
Publisher Solar Software
061-761 1770

SPECTRUM

AUTOMAN

Automan is a two-part arcade game based round TV's holographic hero, though like the main character it's more show than substance. Not that it's bad, but it looks like the urgency to get the game out got the better of its quality — more time and care, and this could have been much better.

It's basically two games: one a 3D car chase like all those ground-level versions of *Pac-Man* we've seen; the other a rather poor multi-screen platforms and ladders game.

The Megacity where you operate is under threat from a villain known as The Lizzard, who has a nasty tendency to scatter bombs around the city. The evidence against him, in the form of various letter Es, is hidden beneath the city in the platform game. You have to do the usual jumping around, climbing ladders, avoiding weird creatures, and amass the evidence.

The game is badly designed, the collision detection is appalling, with the character you control (keyboard or joystick) no more than a matchstick man. The other graphics are pretty dismal too, and the loud

clip-clop of the character's feet bears no resemblance to the pin-creature on screen.

The chase round the streets can be very fast-moving, and as it's not a regular grid layout you have to turn all the time, but the monotony of the background inhibits any interest. You're also playing against the clock.

So with only a so-so platform game, and problems with the program (which crashed on me twice and froze the screen), *Automan*'s quite a disappointment.

Mike Gerrard

Rating 6/10
Price £9.50
Publisher Bug-Byte
051-709 7071

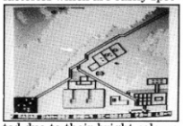
COMMODORE 64

RAID ON BUNGELING BAY

Here you are, in the heart of enemy country, strapped into the pilot's seat of a helicopter. Your mission is to destroy all enemy armaments factories, which are scattered over numerous islands. Your only weapons are a number of bombs and your machine gun. Once you've used them it's back to your aircraft carrier to refuel and restock.

The action ranges over a large area. The display scrolls as you move around, bringing more islands into view. A small, long range scanner at the bottom of the screen allows you to see what's coming up before you see it beneath you.

Most of the islands have factories which are easily spot-



ted due to their bright colours and billowing smoke. Your aim is to drop your payload on them and blow them sky-high. Unfortunately, it's possible you don't carry enough bombs to obliterate the target so you must fly back to your carrier and restock, and return to the factory and finish it off before it can be rebuilt. When a factory's near destruction it stops producing smoke.

Obviously, life isn't going to be that easy. First, the helicopter isn't too easy to control. The sea is patrolled by ships which take a pot shot at you, given half a chance. On the islands are numerous tanks and gun emplacements which try to knock you out of the sky. Of course, you can drop bombs on them, but don't forget you need most of what you are carrying to destroy the factories.

Don't think you've got away with nobbling the factory: a wave of bombers and fighters not only come after you for revenge, but also attempt to sink your aircraft carrier. This means you won't be able to refuel or restock with bombs.

After the aircraft the guided missiles come into play. These weave around the screen, following you everywhere.

Certainly not a game to get out for just a few minutes. Graphics, sound and the mission will keep you hooked.

Stuart Cooke

Rating 9/10
Price £9.95
Publisher Ariolasoft
01-834 8507

SPECTRUM

SUPERCHESS 3.5

CP Software's new chess program is a vast improvement in power, speed and facilities over its earlier 3.0 version.

The main display is split in two with pertinent data on the left, the board on the right. As well as displaying its move in standard algebraic notation, the program also provides the following information as it searches: its best move found so far; a points evaluation based on material gained or lost and the general position of the pieces (a plus indicates that the program believes itself to be ahead, a minus that it is losing; number of nodes (lines of play) searched; play (moves per side) depth reached; current best line of play, showing its best moves and the expected consequential moves, down to the level of play reached in the search.

In addition, there are clocks for both players, recording both the total elapsed time and the time taken for the current move. The display also shows the total number of moves and the program's time limit.

While this information is all grist to the mill, what a pity the program hasn't provided the option to suppress the best line of play data. This is effectively a hint as to your next move, so whether you want a hint or not, you've got one. All this data tends to make the left side a little cluttered so that when the program displays its selected move, you must search the rest of the stuff for it.

The time limit for the computer's response can be set at anything from 5-999 seconds or

you can let it match your own speed. There's an excellent problem-solving mode (mate in up to four moves) which displays all mates, not just the first it finds. Other facilities let you: set up board positions, change the colours of the board and pieces, list the last 62 moves, play black or white (and invert the board) and save the program and current game to Microdrive. It plays to a good standard and is likely to be the best chess program you'll find for the Spectrum.

With its many features and fast play, *Superchess 3.5* is an excellent chess program and can be confidently recommended to all Spectrum owning lovers of the Royal Game.

Bob Chappell

Rating 8/10
Price £9.95
Publisher Deep Thought — (Distributor CP Software)
0423-57089

BBC

CASTLE QUEST

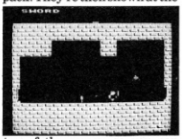
STAR GAME

If it weren't for *Elite*, *Castle Quest* would be the best game for the BBC. As it is, it's the best arcade game — but it's also an excellent adventure. Programmer Tony Sothcott has managed to blend the crucial elements of both to come up with something really special.

The scenario is a wizard's castle and your task is to find his treasure. In your travels you'll come across trolls, fire-imps, the wicked witch and giant spiders. If you range far enough afield, you'll also come across a ruby, a bucket, an aqualung and other items which you'll need.

The action takes place on a colourful platforms and ladders framework, but even here there are clever bits — long passages with windows, behind which you can see the hero as he moves along. And the ladders are wide enough so you don't have to fiddle about before climbing.

As with adventures you can pick up objects you pass over, and store them in your back-pack. They're then shown at the



top of the screen so you can retrieve them when necessary. Pressing 'I' once provides information about what you're carrying (usually pretty obvious), the second press shows your score and the third resumes the game. Your score picks up the more you explore and of course there are bonus points for finishing.

But it's the action and the problems that will keep you coming back to *Castle Quest* time and time again. Without giving too much away I can reveal that if you get thrown in jail (which you almost certainly will), you have to make the guard come in to get out.

There is a way to get the torch on the wall, which you'll need, and don't forget to pick up the stool on your way out, which you have to time rather carefully because of the other guard.

But escaping from prison is one of the easier tasks. Passing the spider (which you have to do to get the sword) requires acute observation and lateral thinking. You'll need more than one torch as well. By the way, there's more than one killer arachnid at large.

The graphics are very good, but the sound's a bit limited. All you get is a tinkling noise as the hero walk or jumps about, with various whistles and other sounds as things happen. Mind you, I suspect there isn't a spare byte of the Beeb's RAM left, and we should be grateful for any sound at all.

The left-right scrolling is very smooth indeed and there are commands to move the hero to the left or right of the screen. This is necessary sometimes because you need to see where you're going in order to time dashes or leaps for freedom. However, the vertical scrolling is a bit jumpy at the top.

All in all, this is one of the most enjoyable games I've played for a long time. The action's good enough to satisfy the hardened arcade freak, and the problems will keep many a keen adventurer guessing for hours.

If you have a BBC, buy it tomorrow. If you haven't, join me in writing to Micro Power demanding a 64, or Spectrum version.

Bryan Skinner

Price £12.95
Publisher Micro Power 0532-458800

COMMODORE 64

BLOCKBUSTERS

It's time to get the old grey matter working again. Based on the TV series of the same name, *Blockbusters* is a two-player quiz game that sets out to show if you're a walking encyclopaedia or just a dumb-dumb.

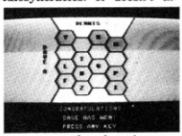
For those who haven't seen the program, the game takes place on a four by four grid of hexagons. One player plays down the grid and the other across it, each trying to be the first to connect up a row of hexagons.

Kicking off, a hexagon is chosen at random and a general knowledge question comes up at the bottom of the screen. The first player to press his or her button (A or the = keys) gets to answer. The answer always begins with the letter shown in the hexagon.

If you give the correct answer, the hexagon changes to your colour and you get to choose the next one. If you're wrong, the other player gets a chance to answer. There's a time limit involved and the game makes some allowance for mis-spelled answers.

Question sets are loaded in from tape as required. There are nine levels of play — the questions are the same but the time limit gets shorter.

The game has one or two idiosyncracies. It doesn't al-



ways erase the player's name when overwriting it with the opponent's. If you give no response (by pressing Return only) to a question, the game responds with 'Almost! Try again', and you get another chance.

There are bags of questions. They can be supplemented by purchasing a follow-up program (Questionmaster £5.95) which even lets you generate your own questions.

Blockbusters is great fun, with just the right element of strategy and competitiveness to keep you interested.

Bob Chappell

Rating 8/10
Price £6.95
Publisher Macsen Software, Carmarthen

COMMODORE 64

CARRY ON LAUGHING

A multi-sheet platform game with some neat original touches *Carry On Laughing* has you playing the role of a caretaker in St Hexadecimal's, a school for demented programmers.

Each screen represents a room in the school. The caretaker, dressed in green and looking more like a dandy out of Dickens, has to visit each room to collect up books and remove the graffiti from the walls.

You start in the Dining Hall where a deadly jam roll

machine has gone haywire. A steep slide proves impossible to climb up but is a fast way to get back down in a hurry. Seated around the hall are a number of schoolboys — their tables make ideal landing spots.

On the walls are a number of chalk crosses — you turn these to ticks by passing over them. The only way you can reach some of the less accessible crosses is by hitching a lift on a passing bubble. Falling too far or getting hit by one of the rolling jam puds loses a life.

Once the job is done, exits will appear and the caretaker can progress to one of the other eight rooms. These are the biology, chemistry and physics labs, computer room (this looks like a pirate ship!), music room recreation room, clock room and rugby field.

An enjoyable enough game which rings some changes on what is otherwise a well-worn format.

Bob Chappell

Rating 7/10
Price £7.95
Publisher Live Wire 061-834 4233

SPECTRUM

AFGHAN ATTACK

After the controversy over *Raid Over Moscow* I felt similar reservations when loading up *Afghan Attack*, a two-part *Quilled* adventure about the Soviet invasion of Afghanistan.

The scenario is trouble on the Afghanistan-Pakistan border; you're the Commanding Officer for 50 British paratroopers and five officers sent in to sort it out. Reach the end of part one and you'll get a code number allowing you to start part two. An initial program loads the instructions, forgetting to tell you to stop your tape recorder, which is typical of the program's slack approach.

You begin by descending in a Lynx helicopter, to be greeted by your men who are already present and who, you are told, salute you and depart. Try to go west and you get the confusing response that the men refuse to

proceed, and the computer doesn't blame them. But didn't they just leave? The flippant approach to the subject shows if you try to move in a direction for which there's no exit: 'Ooch!! Sorry! Wrong direction'.

If you're going to write an adventure, do it properly.

Mike Gerrard

Rating 3/10
Price £9.99 **Publisher** Southern Software 0705-374349

PCN Billboard

Sinclair

Spectrum 48K software, Psast, Sorcerers Castle, Laser Snaker, Barmy Burgers, Oracles Cave, Dragons Bane — all £2 each, from T. Stiles, 20 Montfort Road, Romsey, Hants.

Wanted — Spectrum PSU in perfect condition. Must be silent. (Mine keeps the house awake). Tel: Nick on High Wycombe (0494) 35484 evenings or weekends.

Wanted ZX printer + spare rolls paper. Write to Stanley McKeown, 17 Erne Hill Parade, Belfast BT14 8FR. Tel: 0232-718395.

ZX81 computer, good condition with leads and manual plus some games, £12. Tel: Southend 204313, plus wanted Atari 400 for under £30.

Case for ZX81. "Custom" type with space for PSU RAM pack, printer, tape recorder etc. Cost £40, will sell for £22. Tel: 041-959 6125.

Wanted Spectrum 48K, fair price offered if in good condition. Tel: Keith on Coventry 414213.

48K Spectrum, keyboard interface, Interface-1, + 2 Microdrives, I/O ports, Kempston-E Interface, tape controller, two recorders, £300 ono. Write N Day, 3 Upper Church St, Bath.

80M Spectrum, Ricoll keyboard with interface and reset switch, Interface-1 + Microdrive, recorder. £280 ono. Also much software and books etc. Tel: Martin, Bath 23304.

Spectrum 48K, boxed, joystick, interface, tape recorder, lots of S/W, magazines, cost £490, sell £200. Will sell separately. Tel: Waltham Cross 25776 after 4.30pm.

Wanted, ZX printer. Hobbit, Zaxxon, Atic Atac, Manic Miner, Tasword II, Galaxians, Defender, 3-D Tunnel for Spectrum 48K. Cheap, please. Iain Young, 51 Nelson St, Carlisle, Cumbria.

Spectrum 48K Alphacom printer, Sanyo recorder. Joystick + interface, lots of software, including Hobbit, Omnicalc Finance Manager. Boxed as new. Cost £300+, sell £190 ono. Tel: 06662-4382.

Spectrum 16K, ZX printer, paper, Sweet Talker, cassette recorder, carrying case, software, all leads and manuals. Excellent condition. £200 ono. Tel: 041-639 3281.

Spectrum 48K, reliable tape deck, Kempston Interface and joysticks + software and manuals. £150 ono. Tel: 01-550 6473.

Pascal for Spectrum. Never used, £15. Tel: 02403-28786.

Spectrum 48K + D'K Tronics keyboard + speech synthesiser + sound synthesiser + joystick interface + joystick + games. One month old. Tel: Brighton 592850.

48K Spectrum D'K Tronics keyboard, cassette deck + sound AMP, RAM, turbo joystick interface, joystick, ZX printer, ZX5 speech, approx £500 worth of games, £250. Tel: 0733-75110.

Sinclair QL Chess 1 Abacus/Easel for sale. All originals. Sensible offers to 021-558 9458. Buyer collect at 22 Ada Road, Smethwick, Warley, Birmingham.

QL penpal wanted. Any age. To exchange ideas/information & programs. Please write 44 Hawkwood Crescent, London E4 7PN.

48K Spectrum. Over 250 best selling titles to swap or sell. Please contact Nicholas Parker, 4 Orchard Bank, Draxton, Norwich, Norfolk.

To buy: Wafadrive for Spectrum, £50, would consider printer package as well. Tel: Gt Yarmouth 603965, must be in Norfolk/Suffolk.

48K Spectrum, Vox Box speech synthesiser/joystick interface; software including Valhalla, Pyjamarama, JSW, Scubadive, Atic Atac. 100 per cent reliable cassette recorder, magazines, book, £180 ono. Tel: Poole 679694.

Spectrum 48K Software. Jack and Beanstalk, Birds and Bees, Glug, Pyramid, Doomsday Castle, Jumbly, TLL — all £3 each from: T. Stiles, 20 Montfort Road, Romsey, Hants.

Irish Spectrum owners. I have over 250 titles including all the latest for sale/swap. Write to Brian O'Connor, 5 Almeida Tce, Kilmainham, Dublin 8.

Spectrum keyboard DK'tronics, 52 full-travel keys, cost £45, bargain £25, plus postage, easily fitted. Tel: 0752-335348 (Plymouth). Free magazines if you collect.

Spectrum 48K with some software. Sell for £75 ono or part exchange for working or non-working BBC Model A or B. Tel: Julian, Alloa (0259) 214071.

Spectrum games Microdrive as sold with expansion pack. Original with manual, £10. Tel: Mick 01-595 6451.

ZX81 16K computer, WH Smith data recorder, software, books, mags, worth over £100. All good condition, sell for £50. Tel: Paul 01-968 7954 7-9pm.

Sinclair printer and two rolls of paper, excellent condition (only three rolls ever used), original packing and power, £25. Bargain, owner upgrading to Epson. Tel: Ron 0533 676920 after 7pm.

Spectrum software, Pystron, Booty, Horace, Chequered Flag, Chess, Make A Chip. Swap all six for best joystick and interface. M. Locker, 8 Lockeys Tce, Whitby, North Yorkshire.

48K Spectrum, printer, paper, Kempston joystick, 30+ games, including K. Lore Carry Case, boxed, magazines, books, perfect condition, worth over £350, £200 ono, postage paid for. Tel: 0803-552166.

Spectrum software, JSW, Oilstrike, Moon Patrol, Return Eden, Kong 2, Ghostbusters, Peter-Pan, Rally Driver, Hunchback 2, Planet Patrol, Strangelove, H.E.R.O., P-Position. Tel: Steve 0703-767580.

Spectrum 48K Cheetah keyboard, Interface 1+ Microdrive, Currah Speech, joystick interface, data recorder, Alphacom printer, over £200 of software. Worth over £600, sell for £300. Tel 0634 811668, ask for Craig.

Spectrum software. All originals, including Pitfalls, Beamrider, Matchday, all £4. Send SAE to Sean Rice, 47 Priory Oak, Brackla, Bridgend, Mid Glam CF31 2HY.

Spectrum Software 130 top titles to swap or sell Cyclone, Starbike, etc. Send your list to Andy Webster, 30 Westbourne Gardens, Glasgow G12.

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Spectrum S/W, Pitfall 2, Space Shuttle (Activision), Doomdarks Revenge, Gift From Gods, Turmoil, Imrusta, Astronut, Treasure Island, Snowball, Weather Master, Flippit. Tel: Steve 0703 767580.

Peripherals

Rotronics, Wafadrive seeks new owner after Christmas. Qualifications: must have one hundred quid in the bank. Tel: Roland on 061-681 0506.

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Brother 4R-15 printer with spare daisy wheel and ribbons. Used at home only. Excellent condition. Serial RS23.2 interface. £275. Tel: Redditch 0527 60680.

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TRS-80 Model 1 48K, dual drive, video monitor, 300 baud modem, RS232, MDX-2 expansion interface, EPROM programmer, stacks of software. Could split, £500. Tel: 02302-4420.

Tandy TRS-80 colour computer 16K. All manuals and leads. Logo, joysticks, skiing cartridge. £100 of software. Accept £140. Tel: Bristol (0272) 514202 after 6pm.

TRS-80 printer for sale, model number TP-10, as new. £35 including paper. Tel: Craig 01-458 5465 after 7pm weekdays. Anytime weekends.

TRS-80 Model II, twin disk with TRS-80 printer, including software, £850 ono. Tel: John Robinson 061-728 2438.

Texas

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AMSTRAD ASSEMBLER

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QUIT

There are plenty of good reasons not to gloat when a computer manufacturer hits trouble, and several of the best are that users are left high and dry wondering where their next fix of after-sales service is coming from.

Picture the demoralisation of 20 BBC Micro users at the Moscow Education Institute. No sooner had they placed their order (January 31 was when Acorn announced it) than their supplier ran into all sorts of problems. At the time of writing it still hasn't run out of them.

The Russian educationalists won't have got their machines yet, of course, so maintenance won't be an immediate worry. But any engineering company looking covetously at the BBC user base with an eye on maintenance deals should bear in mind the kind of distances its boys might have to cover.

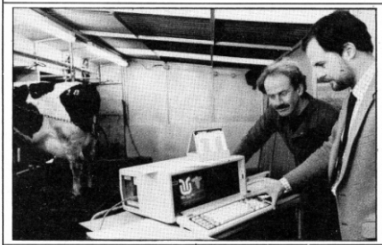
First there are the machines that Her Majesty presented to the people of India. Then there are the two or three that were sold in the US. BBC micros have also been spotted in Switzerland, Singapore, and Sydney.

An idea from C/WP might turn out to be relevant. Wittering on about the medical help that Chinese villagers get from 'Barefoot Doctors' it suggests a new breed of maintenance engineer for the IBM PC — the Barefoot Engineer.

These people get basic minimum training in fault-finding and first-aid, and then they're let loose.

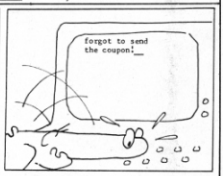
But there must be something in it. The US publishing company Chilton has just put out a book called How to Repair and Maintain Your IBM PC. 'Virtually all the work,' it says confidently, 'can be done using only a screwdriver, a multimeter and your fingers.'

With PC maintenance contracts at about eight per cent of purchase price that makes your fingers worth a tidy sum — get them insured immediately.



Sharp-eyed readers will spot that the machine in the foreground is a Compaq IBM-compatible portable, attracting the admiring attention of passers-by. The object in the background, for those of you born and bred in the city, is a cow with a detachable keyboard — look, you can see the cable.

Every now and then in our first 99 issues we've invited you to exercise your wit by suggesting captions or speech bubbles to go with daft pictures. Here's another to commemorate number 100. For the funniest lines from either man (or from the cow for that matter) we'll be glad to award £20. Get your entries in to *PCN* at 62 Oxford Street, London W1.



SYNTAX ERROR

In *PCN* issue 98 we had a slight printer glitch with the game Atak for the Spectrum, resulting in a DATA statement of 18400 in line 300. This should have read 184,200.

NEXT WEEK

Amstrad drive arrives
We Pro-Test the long-awaited Amstrad disk drive, which should prove to be of more than peripheral interest to CPC 464 owners.

Epson's new clothes
From a company called Talbot comes an Epson micro called the Dialtex-4, known in Japan as the PX-4 lap-held. Will it find a knee to sit on in the UK?

QL Quill pill
We present a QL routine that enables you to avoid any Microdrive 2 problems when you're using the Quill package.

IBM alert
Will the Electric Office software give your IBM PC a charge? Read all about it in our review.

64 buzzword
Buzzer 64 turns you into a fly searching for jam jars and sugar bowls. Massage your typing fingers and hack our listing in.

Gameplay
Archon is setting the Commodore world alight with its combination of brawn and brain — is it the game for you? Find out in our review.

Monitor
Our news coverage is your best chance of keeping up with an industry that changes faster than any other. Don't be left in the dark — read Monitor every week in *PCN*.

PCN DATELINES

Event	Dates	Venue	Organisers
Dauntsey's School Educational Software Fair	March 1-2	Dauntsey's School, W Lavington, Devizes, Wilts	Peter Harris, 038 081 2289-2325
Computer Conference and Exhibition — INTERFACE	March 4-7	Atlanta, USA	Interface Group, 300 First Avenue, Needham, Mass 02194 (617) 4496600
DEXPO Europe, 1985	March 6-8	Olympia 2, London	CGP 01-582 9256
Scottish Computer Show & Conference	March 12-14	Anderston Centre, Glasgow	Cahners Exhibitions, 01-891 5051
Personal Computer Show	March 13-16	Sydney, Australia	OES 01-486 1951
Personal Computer Show	March 21-24	Amsterdam, Holland	RAI Gebouw BV, Europaplein 2, 1078 GZ Amsterdam
COMDEX/WINTER	March 21-24	Anaheim, USA	Interface Group, 300 First Avenue, Needham, Mass 02194 (617) 4496600
COMDEX/JAPAN	March 26-28	Harumi Centre, Tokyo	Interface Group, 300 First Avenue, Needham, Mass 02194 (617) 4496600
Info 85	March 26-28	Olympia, London	BED, 01-647 1001
6809 Colour Show	March 30-31	Royal Horticultural Hall, London SW1	Computer Marketplace, 01-930 1612
Softcon	March 31-Apr 3	Georgia World Congress Center, Atlanta	Northeast Expositions, US 617-739 2000

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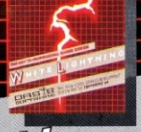
BASIC LIGHTNING



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