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NEW COMPUTER EXPRESS

BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY

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- Thalion games debut
- GFA compiler due

ST

- Midwinter preview
- DTP for kids
- Pirates hit Autoroute

PC

- Building a bargain
- WordPerfect 5.1
- Language learning

CPC

- Upgrades blocked
- Chase HQ reviewed

BBC

- Name that Soil!

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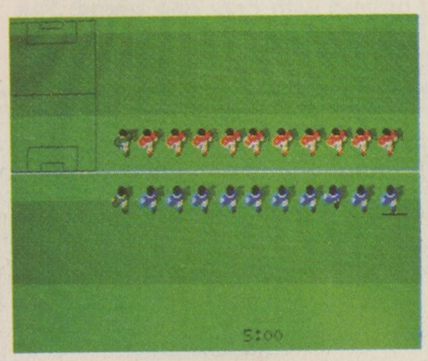
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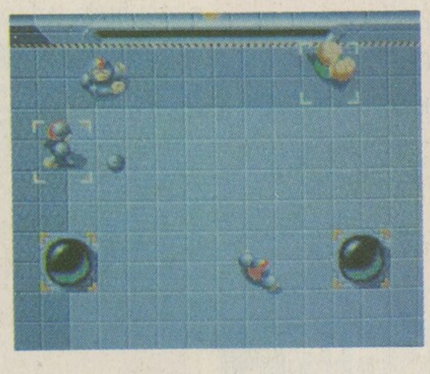
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GAMERS FACE STE MISERY









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Latest games console will arrive next week

UK AWAITS NEW SUPER PC ENGINE

The much vaunted PC Engine II , the-Super Grafx, will be generally available in the UK within the next week, *Express* can reveal.

British games console importers were last week racing to secure orders of the remarkable machine from Japan, where it is currently outselling even the Nintendo. European importers have been searching for PC Engine sources since the Grafx (pronounced 'graf-ex') was launched three weeks ago.

It is understood that technicians in Japan are already producing PAL versions of the machine which will work on British television sets. SCART versions which will work on standard computer monitors are more readily available.

The Grafx is the follow-up to the PC Engine which was launched by NEC in Japan three years ago. Then NEC, one of the world's largest electronics companies, decided that the British market was too small to make a launch worthwhile.

As a result grey importers have sprung up around the country over the past 12 months, and have created a healthy user base for the machine. Some estimates put that as high as 5,000.

The Super Grafx is being touted as the most impressive games machine in the world. It boasts 128 sprites and more than 4,000 colours. Sound capabilities have been drastically improved and the external styling of the machine is in keeping with its futuristic feel. It is nearly twice the size of the original Engine.

NEC has left the old 8-bit processor in the machine but has re-worked the custom-built video chip. This has the effect of offering blistering scrolling.



• Grafx: futuristic games machine due soon in this country

The PC Engine II will cost about £275 when it arrives here, but leading importers are confident that the high price will not deter dedicated gamers.

NEC has initially launched the machine with just one game – 3D shoot-'em-up *Battle Ace*. Given the machine's success more games are expected in the near future.

UK importer Ny Wong of Supervision told *Express*: "We're getting the first ones in England with only one game. But I think it will sell well – the graphics are so much nicer. But the machines are selling so well in Japan it is hard to get hold of them."

A spokesman for PC Engine supplier Mention said: "Its main competition will be the Sega Megadrive. But even for £250 to £300 the Grafx will do well. There are going to be a lot of people advertising availability straight away, but it's hard to know just how many will actually be around."■

• A full and exclusive review of the Grafx appears on page 49.



Show spotlights growth areas

Two of the most exciting areas of computing – networking and multimedia – are to be given their own halls at the forthcoming *Which Computer?* Show.

Despite years of relatively slow growth it is being predicted that the next four years will see a boom in networking.

Multimedia – the merging of computer, video and compact disc – is one of the more exciting developments and will prove attractive even to those visitors not enthralled by more businesslike affairs.

The *Which Computer?* Show will be held from April 24th to 27th at the National Exhibition Centre in Birmingham. For more details call 01-948 9841.■

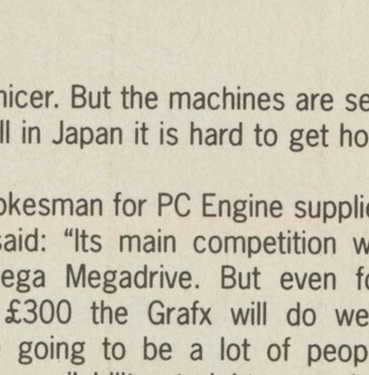
Getting the Willis

It's back. Ultra violence returns to your computer screen with the imminent launch of *Die Hard*.

Based on last year's hit movie starring Bruce Willis, the game includes lots of martial combat, blowing things up and shooting horrid terrorists and other unsavoury types.

There are also digitised images in the game culled from the movie, as well as 3D gameplay scenes. It's out this week on the PC with a C64 version due in March.

Call publisher Activision on 0734 311666.■

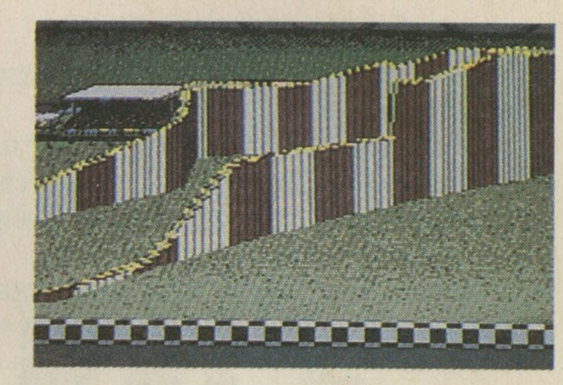


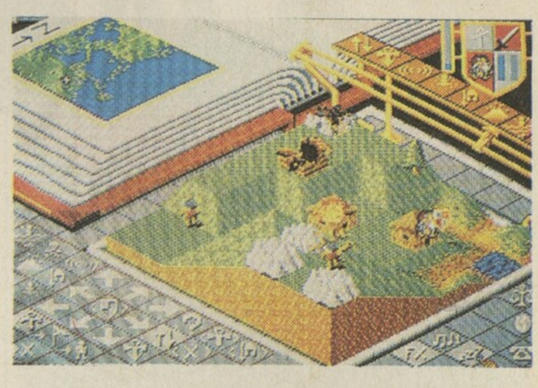


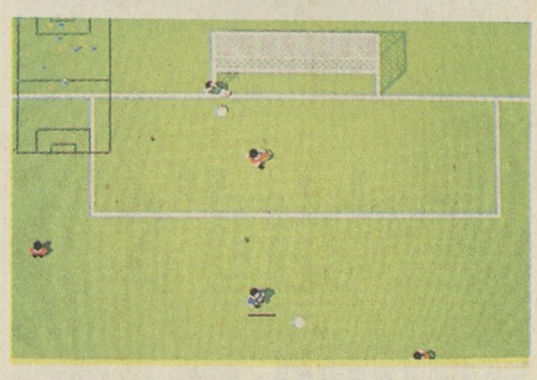
• Willis: computer shooting

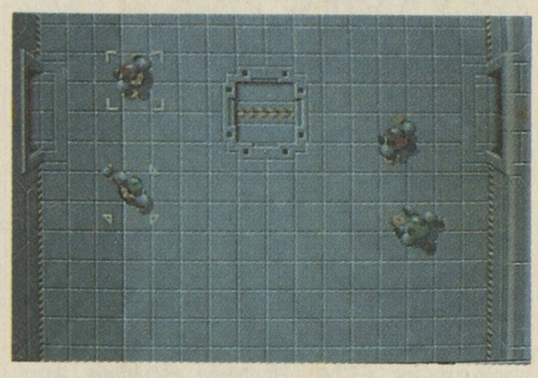
Atari under fire from publishers over STE incompatibility problems

TOP GAMES HIT BY ATARI UPGRADE









• *Big names in trouble on the STE: (from the top)* Stunt Car Racer, Populous, Kick Off *and* Speedball.

By COLIN CAMPBELL and MARK HIGHAM

Many of the best games of the past three years will not run on Atari's new STE.

Titles such as *Populous*, *Gunship*, *Kick Off*, *Speedball*, *Stunt Car Racer* and *Rik Dangerous* have been found to be incompatible with the new system and software publishers are frantically attempting to re-configure those games which will not run. Many have succeeded in releasing new 'STE-compatible' versions, but hundreds of thousands of old games are still in circulation.

Many of the publishers have criticized Atari's treatment of the upgrading process, particularly the firm's insistence that any such difficulties are the sole responsibility of the software house.

Within 24 hours of last week's *Express* exclusive warning of compatibility problems with some programs, it had emerged that more than a dozen top ST games will not run on the STE.

Atari has been forced to admit that an estimated one in twenty games won't run on the new machine. It has asked a leading distributor to compile a list of those titles which fail to load.

REWRITTEN

Software houses such as US Gold, Microprose, Electronic Arts, Digital Integration and Mirrorsoft have taken their games back to programmers and re-written those areas which snag on the STE.

Buyers are advised to look out for 'STE-compatible' stickers on games, or to consult their dealer. All the publishers say they will exchange old games for new versions, as they become available.

However, some publishers have decided to ignore the problem where it affects games which they consider to be too old to warrant a re-write. Mirrorsoft, for example, has decided not to change its *Speedball* game.

Other publishers have taken immediate action and have managed to make changes relatively quickly. US Gold has changed *Ghouls 'n' Ghosts* and *Strider*, both of which had been problematic, Ocean intercepted *New Zealand Story* and Anco whipped *Kick Off* into shape within days of locating the problem.

Microprose has already fixed *Mr. Heli*, *Rik Dangerous* and *3D Pool*. However, this will not affect those games which have already been bought by STE owners and those ST users hoping to upgrade in the future.

Martin Moth of Microprose commented: "The stupid thing about the STE is the amount of time we've been given by Atari. We couldn't foresee this coming because we didn't get our STE delivered early enough."

At Anco, Grace Sumner said: "It's not our fault. We weren't informed about the new machine in time. But if anyone has problems they can send the disk in and we'll change it within 24 hours." She added that this inconvenience would "probably cost us a lot of money".

Cathy Campos at Mirrorsoft said: "The hardware manufacturer should consult the software houses if there's a problem. For them to blame the programmers for games released before the launch of the STE is madness."

At EA's development department Joss Ellis explained: "We'll have a new version of *Populous* by the end of the month, and we'll make better use of the STE so it will look more like the Amiga version. Because of slight alterations in the disk speed of the STE, the protection fails and the game won't load."

EA says it will not change *Arctic Fox*, however, which has also been found to be incompatible.

Apart from commercial software, it is estimated by the ST Club that 60 per cent of colour public domain games will not run on the upgrade, and as many as 80 per cent of colour demos.

JUMPING IN

Atari's software development manager Bob Katz told *Express*: "We estimate that about five per cent of ST games won't run on the STE. That's about usual with an upgrade of any kind. This comes from programmers jumping in and expecting to find everything in the same place in the memory map as before." He said software publishers had been informed of developments in good time.

A spokesman for Atari said: "The STE is better value for money and a better machine. If a software house's product isn't compatible then the onus is on that publisher to do something about it."

• Meanwhile, Electronic Arts has run into trouble with its new release *Hound of the Shadow*.

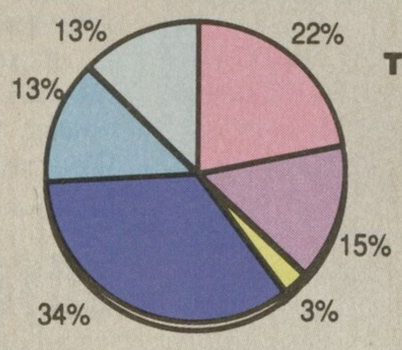
A bug in a number of copies of the machine has forced the company to ship out a new version of the promising ST game. According to the firm, people using STs which run the operating system TOS 1.09 will find that the game crashes during an early sequence.

According to EA's Leslie Mansford the bug causes the operating system to "grab too much from the memory too quickly." She added: "We don't think too many people have been affected but we're now shipping out a new version which will be fully compatible."■

Silencing the big guns of DTP

Low cost desktop publishing packages are finally breaking the traditional domination of high priced products such as *Ventura*, according to new market research.

In a report published last week by Wharton Information Services, the £150 package *Timeworks Publisher* took a 34 per cent share of the market by volume. It's the first time such big guns as *Ventura Publisher* and *PageMaker* have sold less than a budget package despite their relatively high retail prices.



SALES OF DTP SOFTWARE THROUGH DEALERS IN 1989

- Apple *PageMaker*
- DOS *PageMaker*
- Quark *Xpress*
- *Timeworks*
- *Ventura*
- Others

DATA: WHARTON INFORMATION SERVICES

Wharton estimates that during October 1989 DTP buyers spent £1.6 million on DTP software.

The market research firm spoke to nearly 200 dealers all over the country.

Apple *PageMaker* had 22 per cent of the market, DOS *PageMaker* 15 per cent, *Ventura Publisher* 13 per cent, *Quark Xpress* 3 per cent, *Timeworks Publisher* 34 per cent and all others combined 13 per cent.

In 1988, *PageMaker* and *Ventura* held a combined share of 100 per cent.

"People are starting to realise that just because a package is low cost that doesn't mean it's low quality," said researcher Andrea Wharton.

Timeworks Publisher is available for the PC and ST priced £129 and £99 including VAT. Publisher GST can be contacted on 0480 496789.■

Driving force

A remarkable new *Autoroute Plus* overlay has been launched to give PC-owning drivers even more travelling options.

The new module will allow you to choose a place you are visiting, pick a time range and specify the type of place you wish to see.

So, visitors to, say, Bristol, would be able to see all the places of historic interest within a one-hour drive. Or you can see where all the shopping precincts are within half an hour of your home.

The Drive Time Contours Module costs £249 with *AutoRoute Plus* itself being £299.

Publisher NextBase is also planning to launch a French version of *Autoroute Plus* for the PC. The price of *Autoroute* on the ST has dropped from £149 to £70 following a special offer cut to £49. Call 0784 460077.■

New show to offer bargains galore for all formats

A new computer show is being planned which the organisers say will appeal to hardened bargain hunters.

The first All Formats Computer Fare (*sic*) is due to be staged at London's New Horticultural Hall on February 10th. It is hoped that nearly 200 'box shifters' and dealers will be there to offer buyers post-Christmas bargains.

The idea behind this event has been compared to the old-style ZX Microfair where dealers of Speccy software and peripherals could sell their goods to eager users.

The organiser of the All Formats Show, Bruce Everiss, says that the theory is that every dealer pays for little more than a trestle table in the hall. By keeping overheads down the dealers can sell end-of-stock goods and more attractive goodies to those looking for a good buy.

"It's a bargain hunter's paradise," enthused Everiss. "When the Spectrum was at the height of its popularity the ZX Microfair was one of the best buying events in the country. We want to do the same thing for all the computer formats.

"Dealers are only being asked for £100 per stand so we think it will be easy to fill the place up. And they'll be keen to sell all that surplus stock left over from Christmas. There'll be bargains everywhere. A real bonanza."

The entrance fee is £3. Call 0225 447453 for more details of the show.



• *Firebird: no longer elite*

Firebird's wings clipped

Firebird, the familiar games label which has launched such great games as *Elite*, *Bubble Bobble* and *Sentinel* has been all but abandoned by owner Microprose.

In a major shake-up confirmed last week the firm has stated that Firebird games will now be a rarity. Over the past few months dozens of Firebird titles have been released including *Rik Dangerous* and *Quartz*.

Also, the six-month-old Microstatus label has been scrapped. The firm feels it performs much the same job as Rainbird but lacks brand loyalty among adventurers and strategists.

Microprose had been responsible for five labels – Rainbird, Firebird, Microstyle, Microstatus and Microprose. Last week a spokesman for the company told *Express*: "We felt that five was a bit much for anyone and there was a lot of overlapping. Now we want just Microprose for the military-type games, Microstyle for the big name games and Rainbird for the strategy titles."

Microstyle recently scored a number one hit with the fast driving game *Stunt Car Racer*.

The spokesman added: "Firebird tended to be regarded as a bit of a budget label, so we've decided to drastically reduce the number of games released under it. If something doesn't really make the grade for one of the other labels we might consider releasing it on Firebird, but for the moment, it's dormant."

Both Firebird and Rainbird were bought last summer from British Telecom for an undisclosed fee. However, the deal was struck shortly after the launch of Microstyle and Microstatus. The firm had already voiced fears that the similarities between the various labels would cause some confusion (*Express* 52).

Confusion as 6128 ROM sales are stopped

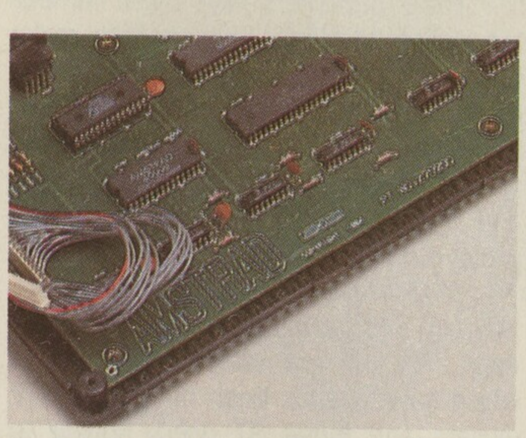
RIGHTS ROW HALTS CPC 464 UPGRADES

Owners of Amstrad CPC464 machines hoping to upgrade to a 6128 have been blocked by Amstrad and Locomotive Software.

Until recently it had been possible for 464 owners to upgrade to the more versatile and powerful 6128 by buying a simple ROM chip from Amstrad's returns department. Some third party dealers had latched onto this and were selling the device for as little as £20.

Unfortunately Locomotive, who wrote the operating system and the BASIC for the CPC, licences out the 6128 BASIC to Amstrad. Therefore it can claim a share of profits made from individual sales of any product which utilises its software technology.

Locomotive has blocked sales of the ROM until Amstrad can come to a "suitable royalty agreement".



• *Amstrad CPC: ROM upgrade path blocked*

Amstrad says it was not aware that the CPC ROMs were being sold as an upgrade. "There is no upgrade path for the 464 and there never has been," explained a spokesman for the company. "We were just supplying the ROMs as legitimate spare parts, we didn't know they were in fact being sold as an upgrade to the 464."

When asked if Amstrad would consider repackaging the ROMs and selling them to 464 owners, he said: "There's no provision for that in the licence [with Locomotive]. We don't feel that it's a clear upgrade. It's really not all that simple and so we've squashed it."

Now, anyone hoping to obtain such a ROM will have to send in their old faulty ROM to prove they are simply seeking to fix their machine rather than attempting an unofficial upgrade.

Locomotive's boss Howard Fisher told *Express* that he had sought to stop the sale of the ROMs but added that he would be prepared to see them made available to the public should Amstrad decide to negotiate. Locomotive and Amstrad share the rights on the ROMs.



• *A new computer system will increase safety standards on the tracks*

Computer to guard trains

A new computer system is being considered by British Rail which it is hoped will be able to avoid disasters such as the Clapham crash of December 1988.

The multi-million-pound system will automatically prevent trains from passing through signals if there is a possibility of clashing with another train. It will also be able to govern train speeds in particularly congested areas.

Variants on the system, known as Automatic Train Protection, are already used in France and West Germany. BR says it was considering computerising its system before the tragic Clapham crash which claimed 35 lives.

It will initially be tested on the Paddington to Bristol line.

Put a Tiger in your ST

A new music program for the ST has been launched for budding producers of 'professional' sounds.

***Tiger Cub* from Massachusetts-based Dr. T offers 12-track tape recorder style sequencing with real time graphic editing of notes. It also features loop recording, one step object-oriented editing and a built-in conductor track.**

It's available in the UK from MCM on 01-724 4104. An Amiga version is on the way. However, owners of both machines will need 1Mb of memory to run the program.

Sayonara Tosh

Toshiba says it is close to developing a word processor which can handle the complex Japanese language. It utilises neural technology and should be available in three years.

Written Japanese is a mixture of three alphabets and has not lent itself well to the word processing age.

MS-DOS for beginners

Mindscape, famous for its range of fantasy and strategy games for the PC, Apple Mac and Atari ST, has just launched a series of DOS-based utility products which the company views as its first step into the 'serious' PC world.

The series begins with three software packages designed very much with the novice DOS user in mind. *DS Tutor* is an interactive DOS teaching program which employs everyday language to explain the finer points of DOS command syntax. In conjunction with this tutor, users can have *DS Help* – a RAM-based help line – permanently in memory. Users encountering problems can extricate themselves by simply invoking the pop-up help screen.

DS Manager is a user interface for DOS, featuring password entry control, simplified access to applications and more. All three programs cost £29.99.

For slightly more advanced users there's *DS Optimize*, a utility designed to increase the performance of the hard disk; *DS Recover* which enables users to regain deleted files; *DS Backup Plus*, a data protection system rendering data held on hard disk completely secure; and *DS Squeeze*, an archiving and file compression utility designed to increase hard drive capacity by up to 75 per cent. The four advanced programs cost £49.99.

All Mindscape DOS utilities will work with any PC with 256K or more of RAM. For more information contact Mindscape on 044 486 545.

Wanted: Cyber businessmen

Britain's businesses are to rely heavily on a new breed of manager over the next few years – the computer literate manager.

According to the a British Computer Society report published last week, large companies will have to start recruiting and training people who know how to run computers as well as staff – called 'hybrid managers'.

The report criticises the attitude that decision makers should simply 'get by' with technology. It also points out that much progress can be made by merging 'visionary ideas' with an understanding of computers.

Tim Hackworth of the BCS said: "Those who combine business and technical skills can name their own price. If you are computer literate, you can improve your job prospects."

Sound idea

A new company has been set up to provide music and sound effects for computer games.

Sound Images is run by two former in-house software musicians who have set up the company using a grant from the Government's Enterprise Allowance Scheme. Tony Williams and Paul Tonge have worked for the likes of Psygnosis, Hewson, and Virgin in the past, but reckon they've got more to offer gamers by working on their own.

Ocean game was top seller says Gallup

CHASE HQ 'WAY AHEAD' IN XMAS CHART RACE

It now seems almost certain that *Chase HQ* was Britain's biggest selling game for the last Christmas of the 1980s.

Market research firm Gallup was last week collating all the figures from its extensive network of dealers. While the firm will not know the year's most important top 10 until some time this week, it has stated that Ocean's driving game is so far ahead that nothing can catch it.

"Barring a complete disaster, *Chase HQ* will stay at number one," said Gallup's Feargal Murray. "It looks like being another good Christmas for Ocean."

The only doubt now appears to be which game will take the number two spot. Most people's tip for the top, *Batman*, was just holding off *Ghostbusters II* for the week ending Friday December 22nd. Gallup says those two games will definitely take positions two and three.

Amazingly, the resurrected old favourite *Paperboy* has made it to a challenging fourth position while 1988's Christmas number one *Robocop* is at number six. *Operation Thunderbolt*, *Turbo Outrun*, *Untouchables*, *Hard Drivin'* and *Double Dragon II* are all jostling for favourable positions.

Gallup's chart is always about three weeks behind the buying week it reflects because of the time it takes to get all the information into its office. The games chart's Christmas number ones over the past three years have been *Robocop*, *Outrun*, and *Gauntlet*. The full top 10 will be in next week's *Express*.

Ocean's tally of five games in the top 10 reflects an extraordinary year for the company which dominated the charts during last year.



• Chase HQ: *winning streak*

We've made mistakes, says gloomy Olivetti

Italian PC manufacturer Olivetti has been forced to admit that it has been losing ground in the frantic race for computing success.

The firm says it will have to lay off 500 workers in five different European manufacturing plants over the next 12 months. This follows predictions that profits for 1989 will be poor.

Olivetti's managing director, Vittorio Cassoni, told Italian newspaper *La Stamp* that his company had failed to react to the "speed and depth" of developments in the computer market. He also admitted that competitors are causing the firm financial problems.



• *Olivetti PCS286: High hopes for 1990*

"Above all, there has been a spontaneous fall in prices caused by technology linked to competition," he said.

Prices of PCs, particularly 286 and 386 models, are sliding so rapidly that hardware manufacturers are being forced to re-appraise their position every few months. In order to compensate for sliced profit margins, jobs are being cut. It is widely expected that more PC manufacturers will be cutting back over the next year.

Cassoni claimed that internal reorganisation would mean a recovery for Olivetti this year. In the UK the firm is hoping to cash in on the low-cost power PC boom with its recently launched PCS286. That runs at 12MHz, comes with a twin floppy and costs £999.

Young lords it with Psion's mobile PC

Keen PC user Lord Young has moved into the portable age with the recently launched Psion Mobile Computer.

According to Psion's publicity people, the deputy chairman of the Conservative Party plans to write his memoirs using the A4 size machine. In the past Lord Young has taken a professional interest in the fortunes of British computer manufacturers such as Psion. As Secretary of State for Trade and Industry two years ago, he delivered a speech at the *Which Computer?* Show urging UK firms to keep abreast of new developments.

Prices for the Mobile MC200 start at £545 with PC-compatible versions costing £1,495. All are now available from branches of Dixons, Rymans and Wildings.

Meanwhile, Psion has announced a games bundle for the old Organiser II. It includes a number of card games, logic puzzles and an underwater combat affair and costs £29.95. Ring for more details on 01-723 9408.



• *Lord Young: portable drive*



• *Control your Amiga by thought*

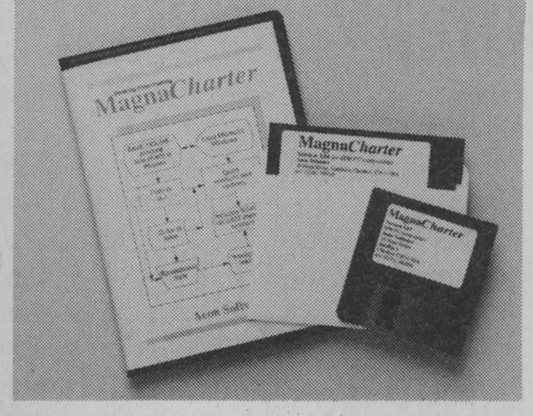
Brainwave on the Amiga

West German cyberfreak Bernhard von DeBricken is designing hardware for the Amiga whichhe hopes will one day allow users to control on-screen cursors and mouse pointers – with their minds.

This astonishing claim rests on von DeBricken's demonstration last week at the Chaos Computing Convention in Hamburg, where a headset device connected to an Amiga allowed users to alter colour cycling software by merely thinking about it. The headset system works on the principle of linking alpha waves produced by the human brain to digital signals readable by a computer.

At the moment the project is only in its infancy, but von DeBricken expects wire-free control of menu selections to be an everyday occurence by the end of the century.

Cyberspace here we come! ■



• **MagnaCharter:** *top of the charts?*

Go with the flow

PC owners hoping to get to grips with graphic organising will be pleased to learn of a new flow chart program.

***MagnaCharter* from Systemstar allows the user to divide the screen into separate column and row co-ordinates and then simply fit in the flowchart symbol. Intelligent links between the boxes are then drawn in automatically by the software.**

It costs £100 standalone or £110 for users with Microsoft Windows. More on 0992 500919. ■

Atari sets up boffins lab in Cambridge

Atari is planning to set up a 'boffins laboratory' in Cambridge, similar to that once administered there by Sinclair Research.

The firm is currently searching for suitable premises around the historic University town and an official announcement of the location is expected early next month.

A spokesman preferred not to comment on the matter, saying that details of the project had not yet been finalised.

Sir Clive Sinclair set up a similar brainstorming venture in the mid-1980s as an attempt at producing a practical technical think tank. ■

The latest Laser squad

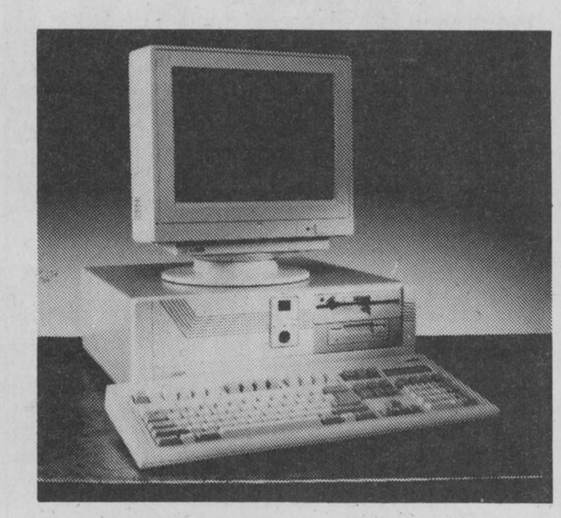
Laser Personal Computers has launched a complete range of PCs from a mid-range XT to a powerful tower 386 system.

The double-drive XT comes with a mono monitor and costs £750, the price rising to £1,360 for a high-resolution colour VGA system with 65Mb hard drive. There are also PS/2 Model 30-compatible expansion slots. The XT/3 is available with either 10 or 12MHz processor and the basic 640K RAM can be expanded to 1Mb on the motherboard or up to 12Mb via add-on cards.

There are also three AT-compatible 286 machines running at varying clock speeds – from 12MHz on the 286/2, to 16MHz on the 286/3 and a blistering 20MHz on the 286/4.

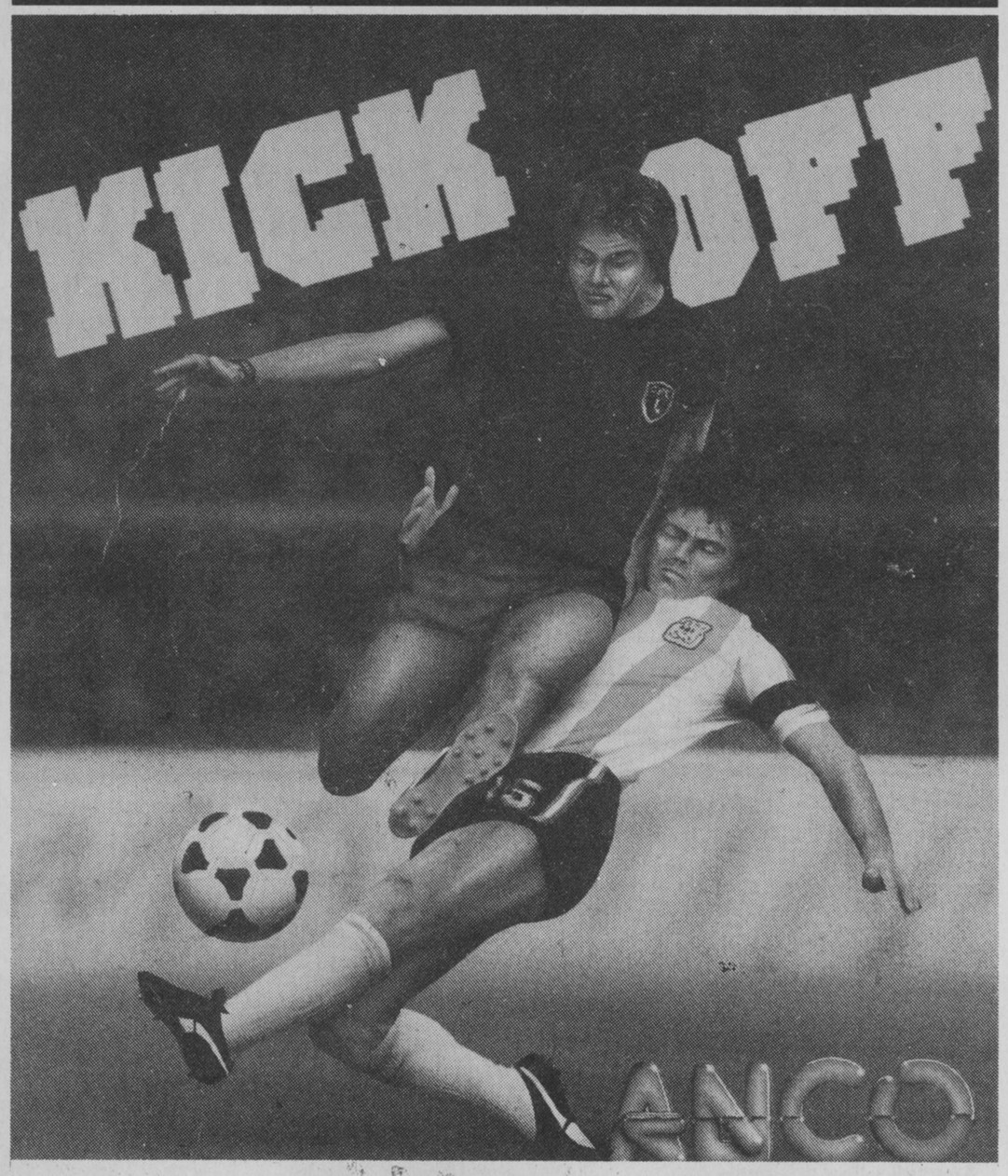
At the top of the range is the Laser 386 tower. It runs at 25MHz and come with 2Mb of RAM as standard. The basic model offers a 65Mb hard disk with a 14-inch flat mono screen. That costs £3,350, and other display options are available at an increased price.

Laser is also offering three desktop 386 machines, starting in price at £1,675 for a machine with a cut-down 386SX processor. ■



• *Laser XT: full range*

CPC'S LATEST KICK



• *CPC owners are to be treated to football hit Kick Off. The best game of last year will this week hit the shops for Amstrad's oldest machine, with all the speed and features which have already wowed ST, Amiga, PC and C64 owners. It costs £9.95 and £14.95 (disk). More from publisher Anco on 0322 92518.* ■

Pinball wizardry

Flips! There's a new pinball game about to be released by French software house Loriciel.

Called *Pinball Magic*, it includes most of the features which kept you enthralled in dingy arcade halls all those years ago. US Gold, which will publish the game in the UK, assures us that there is an 'authentic' tilt feature, dual flippers, loud sound effects and 12 'action-packed' levels.

It's all jolly good fun, and it's out this week on the ST, PC, Amiga and CPC. ■

PC1 in the club

A new user group has been formed for owners of the popular low-cost PC, the Olivetti PC1.

The curious-looking machine has thousands of users in the UK largely due to a strong presence in retail chains such as Dixons. According to founder member Mark Blackall the three-year-old PC1 "receives little coverage in the national computer press despite being an excellent machine in many respects".

Members can look forward to a monthly newsletter and a disk-based magazine. Call 0924 892106 for more details of the group. ■

EXPRESS

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ATARI printer cable	**£6.95**
ATARI dust cover	**£3.95**
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SPECTRUM

NEW CHEAPO

Gregory Loses His Clock is the highly dubious title of a new Mastertronic cheapo. It's the latest game from Don Priestly, a programmer who has attracted a cult following (the moonies at last glance), with some devious arcade adventures peopled by huge, colourful and decidedly un-Spectrummy looking graphics.

Gregory Loses His Clock continues the Priestly tradition with you trying to help the protagonist Gregory find the alarm clock that, as in most arcade adventures, has been split into lots of pieces and put in lots and lots of hard-to-find places.

I got stuck a bit too early on to find out if this is as hard to solve as Don's previous games but, as I've said already, graphically it certainly cuts the mustard. Well worth £2.99. Pity about the title really.

MIX IT UP

Mega Mix from Ocean, a compilation of only four games, provides quality, if not a great deal of quantity. But the good news is that the games in question still have a shiny gloss of newness about them, and unlike most compilation fodder, haven't been languishing in Ocean's cupboard under the stairs for aeons.

There's one dodgy title – *The Real Ghostbusters* – which, despite some passable cartoon-like graphics, isn't going to stimulate anyone's adrenal gland. Apart from this single draw-back, the compilation is top-hole entertainment from start to finish with: *Dragonninja*, a worthy and well respected member of the beat-'em-up community; *Barbarian II*, a superbly gory slash-'em-up which successfully builds on the original; and lastly, *Operation Wolf*, Ocean's spiffingly good head on shoot-'em-up.

All in all, a very reasonable, maybe even mega, mix, and one that's worth splashing out on if you don't own any of the three best titles.

POKE OR TWO

Faithful old regular Jon Rose has found a few spare seconds to come up with the following solitary Multiface poke. It's for US Gold's *Strider* which Jon reckons is 'rather good' and incidentally, looks like being the first ever game for the SAM Coupé.

Pokeing 39950,0 into your Multiface, or similar device, will give the usual benefit of infinite lives. It hasn't been tested on the 48K version, but Jon's pretty sure it'll work.

Additionally, Mr M Claverwell of Stoke-on-Trent has thrust a few of his favourite one liners on me. Try the following and prepare to be surprised, astounded and amazed all at the same time.

```
PLOT 70,70: DRAW 70,70,525
PLOT 70,70: DRAW 70,70,400
RANDOMIZE USR 1234
```

Normally this would have qualified it's author for a free gift of some description. Unfortunately, M made a few offensive Spectrumist jibes in his letter so he'll have to make do without.

Robin Alway

GET THOSE FINGERS READY – THE LISTING IS IN!

It seems centuries since I last gave you a listing to sprain your typing tendons on so here's an impressive one from Martin McKenzie, another of the talented multitude who put together the acclaimed *Enigma Tape* mag. It is long, but well worth the effort.

Once you've finished typing, run it, follow the on-screen instructions and play the cassette of your choice to oscillate the wiggly line in time to the music. Looks impressive – I promise. Huge thanks to Martin Mckenzie for sharing it with us.

```
1       REM1989 MARTIN McKENZIE OF ENIGMA TAPE MAGAZINE.
        SEND SAE TO 15 WESTFIELD RD, INVERURIE,ABERDEENSHIRE AB5 9YR
2       CLEAR 65535: BORDER 0: PAPER 0: INK 4: POKE23624,68:
         BRIGHT 1: CLS: LET m=32768: LET t=0
3       READ a: IF a=999 THEN GO TO 5
4.      LET t=t+a: POKE m,a: LET m=m+1: GO TO 3
5       IF t<>30548 THEN PRINT "ERROR IN DATA": STOP
6       PRINT "DATA OK"' '"PRESS SPACE TO EXIT"''"TO SAVE TYPE
         GO TO10"''"TO RUN TYPE RANDOMIZE USR 32768":STOP
10      SAVE "SYNC" CODE 32768,250: STOP
100     DATA 243,195,71,128,17,0,0,213,205,27
110     DATA 128,209,28,62,0,187,32,245,30,0.
120     DATA 20,62,192,186,32,237,201,122,167,31
130     DATA 55,31,167,31,170,230,248,170,103,123
140     DATA 7,7,7,170,230,199,170,7,7,111
150     DATA 123,230,7,238,7,135,135,135,198,194
160     DATA 50,66,128,22,0,203,250,126,170,119
170     DATA 201,33,64,156,34,226,128,33,64,158
180     DATA 34,228,128,33,64,156,34,230,128,33
190     DATA 64,156,34,232,128,62,255,50,234,128
200     DATA 22,96,30,0,219,254,203,119,32,8
210     DATA 62,191,186,40,8,20,24,5,175,186
220     DATA 40,1,21,28,213,205,27,128,209,62
230     DATA 127,219,254,230,1,254,0,202,240,1
240     DATA 42,232,128,237,75,228,128,229,183,237
250     DATA 66,225,204,212,128,237,75,228,128,11
260     DATA 11,229,183,237,66,225,204,235,128,114
270     DATA 35,115,35,34,232,128,58,234,128,254
280     DATA 0,32,177,42,230,128,237,75,228,128
```

PCW

FOUNT OF WISDOM

Whenever a good desktop publishing package comes out it is followed by a host of add-ons: fonts and clip art and the like. I must admit to being dubious about clip-art – somehow everything looks as as if it is made of Lego. Extra fonts, on the other hand, can be useful.

In fact Exemplar Design is bringing out a range of extra fonts for *Micro Design*, the DTP program that had everyone raving earlier this year. The new fonts, it is claimed, are clearer than the supplied ones and print out significantly better on the PCW printer.

The man behind it all is John Evans, who has produced well-thought-of add-ons for the DTP program *Stop Press*. The package costs £13.50, and details can be had from 0225 315131.

CORRUP;TIO36FFN

Has that vital disk become unrecognisable by *LocoScript* or CP/M?

Well, the January edition of *8000 Plus* has a feature on data recovery from corrupted disks, and one of the programs designed especially for tinkering with disks is Moonstone's new upgraded *Tool Kit*. It lets you examine corrupted disks bit by bit (almost literally) and copy out the undamaged chunks of a file to another disk.

The program costs £24.95, or £10 if you're upgrading: for more details, try phoning 041-941 3120.

GAME FOR A LAUGH

Gamesters can look forward to a games compilation from Artronic for the PCW. The three-game pack costs just £14.99 and includes *The Lost Legacy of Xim* (another of those adventures populated entirely by Scrabble words?) *A Simple Case of Espionage*, and *Sir Lancelot*.

GO FOR A DRIVE

A solution to the problem of transferring disks to and from a PC is to buy an external drive. 5.25-inch models have been around years, but only now does an option for 3.5-inch users appear.

Compact Micro of Bradford sells an easily fitted external B drive for your PCW (it literally slots into a plug inside your machine – no soldering or anything required). This will enable you to transfer data and text files (in simple ASCII form) by the easiest route possible – by taking the disk from the PCW and inserting it into the PC.

The disk costs £94.95 and Compact Micro can be reached on 0274 636652.

INSTANT TIP

Thifty? You might consider getting a 'card index' box from W H Smiths for just £2.99, which holds up to a dozen disks.

Basil Pigg

MSX

MSX2

The MSX 2+ range of computers have been much talked about in this column, and I have enthused over the graphics capability of these machines, which is far superior to any home computer on general sale in the U.K.

Now it seems these computers can be purchased in England, as MSX Central, a user group based in Coventry, is now dealing in MSX hardware, and is able to supply not only SX 2+ computers, but also 128k and 256, Ram packs, and lots more goodies including an MSX DIgitizer.

Before you all rush out and buy an MSX 2+ computer, I think I had better point out areas where the purchaser might encounter problems. Firstly, the computers, being designed for the Japanese market are 110 volt, and, therefore, a converter is needed to drop our 240 (ish) volts down to this level. Fortunately, MSX Central can supply such a beast.

The next problem is the RAM capability of these machines – this being only 64K of main RAM – which is barely adequate for a modern computer. Hence MSX central offers RAM packs.

And onto the price of these computers, and this, at around £450.00 would not be too outrageous, but add on the price of the extras needed and you are talking about £600.00. This is a lot of money, and as you also need a good monitor to make use of the very high resolution screens, the system is hardly cheap.

Another problem that I can forsee is the lack of true MSX 2+ software that utilises the graphics capability of these computers, although MSX Central can supply a couple of games that have been written just for the MSX 2+, *Laydock Last II*, *F1 Spirit 3D Special*, and *Starship Rendezvous*.

If you wish to know more about these computers, and also the range of hardware and software that MSX Central can supply, write to them at 14 The Wardens Avenue, Allesley Village, Coventry, Warwickshire CV5 9GJ – and don't forget the stamped addressed enevelope.

SOFTWARE SCENE

Alternative has just released *Punch and Judy* priced at £2.99. Also I see that a game called *Action Countdown* is available now, but I have no more details regarding this game other than its price – which is £9.99.

Blade Software tells me that *Lazer Squad*, its first MSX release, will be out in January, and will be followed a month later with the *Lords of Chaos*.

Additionally, Samdale Computers is selling *Treasures of Usas* by Konami for the give away price of £9.99. This game I recommend strongly.

You can contact Samdale Computers on 0621 742617, or alternatively, send mail orders to 14 Austral Way, Althorne, Essex CM3 6DN. Indeed, should you require more particulars in regards the excellent products at Samdale – check out Express Sales on page 40 below in this magazine.

Keith Neal

BBC

INTERFACIAL CORNUCOPIA

It's rare to see a BBC on TV these days, although it does still crop up occasionally as the little machine connected to banks of measuring instruments. Its popularity in this role is due to a set of interfaces that are matched by no other home computer.

Looking from the front there is a disk drive port, printer port, user port, 1MHz bus and the Tube. And along the back (of a Master) are the Econet port (optional), Audio out, Cassette port, RS423 interface, Analogue port (joystick) RGB out, Composite video and TV. That's a grand total of 13. But today I am going to concentrate on that jack of all trades – the RS423 serial port.

The BBC uses a chip called the 6850 ACIA for its serial communications. It is capable of baud rates between 75 and 19200, as opposed to the typical 1200 maximum offered by most modems. It is also capable of understanding eight different word types, and it can make use of the interrupts of the 6502 processor.

For those interested in writing their own communications program, the 6850 status register is at SHEILA &08. Additional uses for programming the serial port include multi-user games and driving serial printers. For example, it is not common knowledge that you can use a computer as a terminal to a PostScript printer!

NAME THAT SOIL

Q. What have gardeners, geographers and engineers got in common?

A. Interest in soil of course!

Did you know for example there are some 700 different soils in the U.K. alone, and in fact there is an organisation called the Soil Survey which is dedicated to the study of soil? (I don't wish to brag, but I did in fact know this particular tidbit of trivia).

To move on, CR Software has now brought out an educational package called *Name that Soil* aimed at budding soil scientists everywhere. The package sells for £30, and is a handy tool for professionals, but it can also be used in the classroom.

USE IMAGINATION!

Do you know what makes me really angry, though? People who ring up with some trivial problem.

You know what I mean: 'I've got your piece of software and it doesn't work...'. Seriously – there is an issue here: what do you do when something doesn't function as expected?

My advice would be to forego the distressed phone call for a more professional approach. Try to imagine that you are the programmer and that you've got to debug the program, which means preparing printouts, or screen dumps wherever possible.

A step by step description, not only of the events leading up to a program crash, but also of all the circumstances surrounding it is also useful. Indeed many bugs are difficult to track down, and so the more information you can give – the better. And finally, don't worry too much because there are far fewer really bad bugs than you think!

Andrew Brown

CPC

OCEAN'S TURBOCHARGED

Not content with bringing us *Batman – The Movie* and *The Untouchables* at Christmas, those lads at Ocean have turned out another blockbuster.

Chase HQ is a conversion of Taito's brilliant arcade original, and those inclined to dismiss it as yet another racing game probably haven't played it. The original is like a next generation *Outrun* – but fast!

Your aim, however, is not to avoid collisions but to arrange them – with one small proviso. You see it's not the ordinary upstanding citizens you want to T-bone off the road, but felonious baddies intent on escaping the law.

You play the part of a law enforcement officer driving a turbocharged Porsche (makes a change from an unmarked Cavalier!), who is sent on various perpetrator-chasing missions by the pouting Nancy at LA's Chase HQ.

Flashing light, er, flashing, you set off along the freeways, pursuing those perpetrators with a limited time in which to catch up with them. When (if) you do so, their car is marked with an arrow and you have to ram it into submission to make a successful arrest.

Once you have successfully apprehended your first villain, you're sent on another – tougher – mission. And so it goes until all five levels are completed.

All the way you're up against a pretty ferocious time limit, Sunday drivers who come out every day of the week, and an opponent who just doesn't know when to give in.

To help you along is a nice 'turbo boost' feature, which sends your Porsche rocketing off towards the horizon at a hell of a lick, but the effect is only temporary, and once switched in, the boost can't be switched off. Cut in the turbo heading into a bend and you're heading for an armco sandwich.

All very well in the arcades, of course, but the question has to be, can Ocean produce a playable game on the CPC? US Gold's *Turbo Outrun* generated as much excitement as a wet Wednesday in Scunthorpe, and the perspective and game style were similar...

Fear not. The Ocean programmers have done a fantastic job. Quite simply, there isn't another racing game on the CPC that combines the same sprite quality, roadside detail and sheer unadulterated speed of *Chase HQ*..

Not only that, *Chase HQ* has some quite remarkable sampled speech. Every time you start a mission a male voice chips in with 'Let's go, Mr Driver', or similar nonsense, while the only time the famed Nancy speaks to you is to inform you you've run out of time. By the way, in the game your name is Algernon, but don't spread that around if you want to retain any credibility as a Porsche-driving law enforcement officer.



• Chase HQ *is going to take some beating*

WELL CYBER!

Remember Mastertronic's brilliant budget game *One Man and his Droid*? That was the one where you had to guide your cybernetic sheepdog as he rounded up your robotic flock. Well in case you're still struggling, here are all the passwords:

Level 2 = Empire
Level 3 = Predatory
Level 4 = Ruminate
Level 5 = Ryegrass
Level 6 = Vacuum
Level 7 = Vampire
Level 8 = Ragout
Level 9 = Chain
Level 10 = Aasvogel
Level 11 = Blizzard
Level 12 = Cloche
Level 13 = Calendar
Level 14 = Ectoplasm
Level 15 = Ecology
Level 16 = Ferocious
Level 17 = Fetlock
Level 18 = Gooseberry
Level 19 = Gravitate
Level 20 = Up and away

So can we assume that *Chase HQ* gets the thumbs-up? You bet. For driving realism, *Hard Drivin'* is the one to go for, but for sheer arcade action, *Chase HQ* is going to take some beating...

NO DISCRIMINATION?

I've just received a letter from a Mr Clive Dearing of Worksop. He has the following to say about 464 owners...

"I am sick and tired of the CPC 464 and its tiny memory holding back CPC software producers. It must be obvious to everybody that the 6128 is a far superior machine.

"But as a programmer myself, I can easily understand how other programmers are reluctant to write specifically for the 6128 when they know there are so many 464s out there.

"Yet again, software is produced to the lowest common denominator, and all those people who buy a more powerful model, only reap half the benefits.

"What I suggest is this. The 464, with its puny tape loader (no disk drive!) should be taken off the shelves. Amstrad owes it to all its 6128 buyers to finally phase out this old machine.

"Secondly, magazines like *New Computer Express* should take the lead in promoting new and powerful software. Forget about the 464, it's had its day! You should be actively discouraging people from buying or supporting them. Only then will the 6128 get its rightful share of attention.

"Of course, people will complain that disk-based software is too expensive. Rubbish! If you want something badly enough you'll save up for it. That'll weed out all those dreadful 'shooting' games that journalists seem so fond of."

I've heard enough. I really think this guy means it. What do you think – should the 464 be phased out? In the meantime, I think I'll just get my tin helmet on...

Rod Lawton

YOUR FORMAT

Spectrum 8
PCW 8
MSX 8
BBC 9
CPC 9
Atari 8-bit 10
QL 10
Archimedes 10
C64 10
PC 12
ST 14
Amiga 16

QL

MISSING KEYS

If some of the keys stop working, the most likely cause is a faulty keyboard membrane. Quite often, the break in the membrane is where it plugs into one of the connectors on the main printed circuit board. It is worth checking for this, and, if a break is found in this position (usually where the membrane 'tail' has been creased), cutting off the last 5mm or so. This will often cure the problem, saving the cost of a new membrane (£5) if you fit it yourself, or a repair bill of £25 or more.

LANGUAGE TRAIN

BCPL, which stands for Basic Combined Programming Language, is in fact the precursor of C – BCPL begat B, which was transmogrified into C, via NB, for Not B! It bears no relation to BASIC, by the way.

BCPL was largely the work of one person – Prof. Martin Richards of the Computing Laboratory, Cambridge University. MetaComCo of Bristol then implemented BCPL on a number of systems and was able to port it to the QL quite quickly. In fact, it was the first high-level language to appear on the QL, apart from SuperBASIC, of course.

MetaComCo is better known for AmigaDOS, which was based on TRIPOS. TRIPOS was written in BCPL, and also emanated from Cambridge.

Like C, BCPL is a compiled language, and was intended for systems programming; writing operating systems, utilities and compilers. BCPL is a very simple, elegant language with only one data type, the word, and only one structure, the vector, which is like a single-dimensional array.

It is quite feasible to develop sizeable BCPL programs on an unexpanded QL, which is not the case with most other high-level languages. It is also a very 'portable' language, with implementations for the Beeb, PC and Archimedes.

Unfortunately, MetaComCo doesn't appear to be around any more, so you'll have to get a copy of BCPL second-hand, if you are interested.

CONSCIENCE MONEY

I have recently spoken with Tony Tebby of QJump about software piracy. He mentioned that an individual who had pirated copies of QJump software wrote in saying that he had become a 'born again Christian', and the anonymous gentleman enclosed a sum of money to salve his conscience.

Incidentally, I've just heard a rumour that Amstrad is taking an interest in the QL emulator for the Amiga. I find this just a bit strange, as a similar emulator for the Atari ST has been around for over a year now.

John Torofex

C64

HARDWARE FAILURE

What happens if the power supply goes, as some of them do seem to run at very high temperatures? Send £19.95 to Omnidale Supplies Ltd., 23 Curzon Street, Derby DE1 2ES – that's what. This fee includes post and packing, by the way.

Or if your C64 gives up the ghost, for a full repair for £25 try Midlands Computer Repair Services, Unit 1, The Old Dairy, Melton Mowbray, Leicestershire LE13 1NL. This also carries a 12-month extended warranty.

A GAME IN A POKE

If you own an Action Replay cartridge or any other that allows you to re-start a game without a SYS call, then read on. For infinite lives in all cases, we see that *Phobia* requires `POKE 5390,189`, *Last Ninja* needs `POKE 30855, 165`, *Road Runner* wants you to `POKE 43241,36`, while *Commando* insists that you `POKE 16432,96`. To have fun with *Operation Wolf*, you could `POKE 36007,165` for infinite time, or `POKE 34952,165` for infinite bombs, or `POKE 35107, 173` for infinite cartridges, or even `POKE 35103, 165` for infinite bullets. Thanks to Paul Brooke for that lot.

FORKED TONGUE

Fed up with BASIC being a bit slow? Confused by the mysteries of assembly language? Why not try another language, there are plenty available for the C64.

Forth seems to be the most popular alternative, with several versions out now and available. It was originally designed to control radio telescopes, and while most of you probably won't be doing that, you might enjoy programming with it instead. Adamsoft is the place to write to for £12.95s worth of Forth-64: 18 Norwich Avenue, Rochdale, Lancashire OL11 5JZ.

Pete Gerrard

INTERESTING LOCATIONS

Continuing our tour of some of the more interesting backwaters of the old C64, something else for you to PEEK into and POKE around with. In one of our earlier forays, I outlined a way of simulating a `LOCATE X, Y: PRINT "I'M HERE!"` sequence by using a couple of variables. But there is another way, if we look at the two locations `211` and `214`. Say we have the two co-ordinates `X=10` and `Y=14`, so we want to print something 10 positions in on the 14th line down. Well, how about `POKE 214, Y: POKE 211,X:PRINT "HELLO THERE!"` to make life a little easier for you.

XE

ANOTHER COMPETITION

After the super response to the last Antic's Roadshow competition, I've decided to hang the incredible expense and offer you the chance to win yet another breath-taking piece of software.

Last time flight simulator fans' dreams came true – this time it's the turn of the arcade players. The prize on offer is Atari's *Nucleus*, the all-action shoot-'em-up for one or two players which features smooth-scrolling, sexy sounds and more aliens than you can shake a stick at!

WINNING WAYS

The action of *Nucleus* takes place in the outer reaches of a far flung galaxy. War has been outlawed for many millions of years and so to settle disputes, opposing factions must resolve quarrels in a huge combat arena situated in an unstable area of the galaxy where innocent bystanders are safe from harm.

You have been placed in this combat arena, and must fight for your life and those of your fellows against a computer generated opponent. Pierce the opponents' armour and inject a nuclear satellite and you're well on the way to winning. But beware – it's not quite as easy as it sounds.

To enter the competition, simply answer the following question with an entry not later than the end of January. What substance is used to construct the semi-conducting chips inside your Atari XE? First one out of the hat in the first February issue wins.

Edmund Blake

ARCHIMEDES

THE NINETIES

What glories are the Nineties going to hold for Archimedes and its merry band of followers? As promising as the future has always been for our machine, it is now likely that software will start to flow.

I know we have to keep our ends up and maintain that there's stacks of the stuff out already, but when you take a close look at it, there are only a few worthy packages in each main category. In fact, there is an awful lot of dross on the market that only makes the grade because of the lack of competition.

RACY REDUCTIONS?

It could very well be that 1990 will see the dropping of Archimedes price levels, perhaps under pressure from Olivetti.

If this race towards the raciest reduction were to occur, the dribble of software starting to exploit the undoubted power of the machine, might at last gush from the orifices of the industry.



• Arc: price pressure from Olivetti

WHAT IF?

It would be good to see rivals to *1st Word Plus*, which is the only true Archimedes word processor – all the others are really spreadsheets, or have to run under emulators.

And as for databases – are there any serious challengers to the supremacy of Minerva's *Multistor?* Spreadsheets, too, come down to the selected few, namely *Pipedream 3* and *Logistix* – both are good – but two to choose from hardly makes for adequate option.

MORE ON SCREEN

Perhaps everybody does not yet know that you can change the display of file icons in a directory windows by selecting Display from the Filer menu – click Select within a window to call this up.

You can then choose Large icons, Small icons or Full info. Full info is perhaps the most useful for day to day work on the Arc. Give this a try – it could quite possibly make your computing endeavours an easier road to travel.

Bertrum Carrot

MAKE THE CHANGE TO ARC DISK FILING

For some people coming to the Archimedes from disk-based machines like the IBM-PC, the multitude of disk filing commands might prove confusing. Here's a quick reference guide to help you get more out RISCOS:

RISCOS	Meaning	MS-DOS
*ADFS	Select Advanced Disk Filing System	No equivalent
*Back	Swap to most recent prev directory	No equivalent
*Backup	Copies a complete disk to another	DISKCOPY
*Bye	Closes ADFS session	No equivalent
*CheckMap	Checks disk contents against dir	No equivalent
*Compact	Connects free space on L & D disks	Not needed
*Defect	Marks defects for avoidance	No equivalent
*Dismount	Closes open files on named disk	No equivalent
*Format	Sets up blank disk for storage	FORMAT
*Free	Displays unused disk space	CHKDSK
*Map	Displays disks free space map	No equivalent
*Mount	Prepares a disk for use	No equivalent
*NameDisc	Changes a disk's name	LABEL
*NoDir	Unsets the current directory	No equivalent
*NoLib	Unsets the library	Not needed
*NoURD	Unsets the User Root Directory	Not implemented
*Title	Sets current Dir title (as on BBC)	Not needed
*URD	Sets User Root Directory	Not implemented

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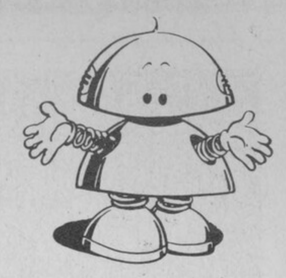
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MGT APOLOGISES



We're sorry! We know there were lots of you who expected to get the SAM Coupe' in time for Christmas. Here at MGT, we worked very hard to meet our deadlines - but we failed.

We'd always promised that we'd supply our existing customers first, and so we did, but we just couldn't build enough to get them into the shops as well.

We expect to catch up in January and over 150 patient (and long-suffering) dealers should have the Coupe' in the next 2 or 3 weeks.

To find out where and when to see the SAM Coupe' call our Customer Care department on 0792 - 791100. And for the latest SAM news, stay in touch with the hotline answerphone on 0792 - 791275.

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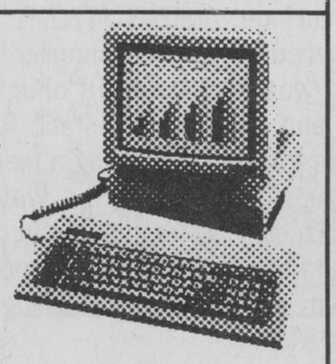
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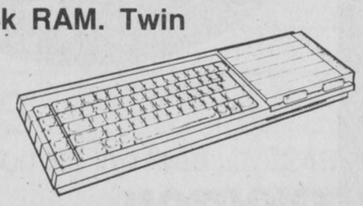
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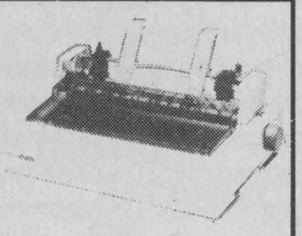
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PC PAINTBRUSH IV

A spate of new paint programs is welcoming in the new year. Along with *Deluxe Paint Enhanced* comes *PC Paintbrush*, the latest in the line from ZSoft, which has also recently produced a version for Windows.

Indeed, ZSoft has benefitted from the material support of Microsoft, because earlier versions of the *Paintbrush* program were bundled with the outstanding Microsoft mouse.

But ZSoft's *Version IV* is a much changed beast, with full 256-colour VGA support, graduated flood fill and the ability to handle more than one image at a time, overlaying one on the other if the need arises. Screen capture is included as are grey-scale facilities for touching up monochrome images. Images can also be zoomed up and edited on a split screen display.

All this looks pretty exciting, but it's probably fair to say that for most of us the new program is better suited to editing existing images than to creating original ones. *PC Paintbrush IV* is available in this country from Software Forward Ltd 0234 272474 for £99.95.

PIZAZZ TIP

If you use *Pizazz Plus*, the screen dumping utility (and you should), you may have noticed that some of your dumps come out of the printer with slight distortions of their pixels. This is probably because the ratio of screen pixel to printer pixel is not exact.

Pizazz Plus has two functions, round up and round down, which take care of this by altering the size of the printed image to an exact multiple of the screen, both horizontally and vertically. Using these two functions independently also allows you to change the aspect ratio of the dump, while still managing to keep the image exact.

PRINTER SWITCH MODE

You may remember a poser quoted in this column a couple of months ago. It concerned the use of applications such as GEM with a printer running through an electronic printer switch box. Under normal circumstances GEM checks the printer port once. If it doesn't see a printer on the end of it, as it won't if the switch box is scanning another port at that instant, it displays a 'Retry' box.

You can get round the problem by repeatedly retrying until the switch box happens to be scanning the right input, but it would be nice if there were a more elegant solution.

I thought I'd come across it the other day when I read of an obscure use of the MS-DOS MODE command. If you enter `MODE LPT1:,,P,` MODE installs part of itself permanently in memory (like a TSR) and will continuously retry should printing fail through a timeout error.

I installed this command in my GEM batch file with high hopes, but, alas, either GEM handles printer control itself or the error returned in the printer switch situation is not a timeout. This use of the MODE command may well be the bees-knees in other situations, though, so I pass it on for your consideration.

DO AS I SAY, NOT AS I DO

Last week I issued a warning on the use of labels with laser printers. Don't use ordinary labels with lasers, I said, or you risk damaging your laser.

Desperate for a few last Christmas card labels and without any of the trusty laser labels to hand, I thought I'd take fate by the throat, ignore my own advice, and slip a few through my LaserJet 2.

Sure enough, one of the labels wrapped itself around the selenium drum of the printer. I managed to peel the label off the drum, but it left a good part of the gum and unused toner stuck to its dull green surface.

Off I travelled to my local supplier with this tale of woe, from whom I bought a new drum and a can of anti-static foam cleaner. The good dealer, being a man of the most upstanding integrity, was at pains to disclaim all responsibility, but figuring that I had little to lose, I removed the old drum and set about cleaning off the label residue.

As a laser drum is light sensitive I sat down to work in darkest room in the house, a well-hidden small one with a lot of porcelain fitments.

The drum and toner cartridge on a Canon-based laser has a shutter which automatically closes over the drum to protect it from light and fingers. Fingers should never come into contact with the drum as grease will be transferred to it, damaging its charge retention.

I swung back the shutter and brought the damaged area of the drum into view by turning the helical gear at the end of the drum spindle. I then applied a film cleaner to a clean, lint-free wipe and rubbed gently over the mucky area. Several wipes later there was no gum or toner visible on the drum.

Replacing the cartridge in the laser and running a test print showed areas of the drum taking no static charge. Rather than the mucky splodges left by the label gum there were now blank areas on the printed sheet. I ran off another 10 prints and things gradually improved until at the end the print quality was up to par.

The moral of this happy tale is to practice what you preach, but also to go ahead and have a go, particularly when you have nothing to lose.

SHAREWARE SUPPLEMENT

Shareware Marketing has issued a supplement to its latest supplement of excellent public domain programs– again. Yet more shareware goodies are featured in its little white pages. Ring 0297 24092 for your copy.

Simon Williams

WORDPERFECT BITES THE BULLET

With *WordPerfect* 5.1, Wordperfect Corp has finally bitten the bullet and included a system of mouse-driven pull down menus to make life easier for novices and occasional users. This is a much improved product.

But do not fear, operations can, of course, still be directed from the keyboard via the [ALT] key alone or the [ALT][=] combination for those who are accustomed to the old environment but find themselves faced with the upgraded version.

Macros have been enhanced in 5.1, but again no need to worry – 5.0 macros will work unchanged. Additionally, there is a conversion utility for version 4.2 macros.

Further, using the hyphenation feature under 5.0 required you to buy a hyphenation dictionary; this reference source comes free with version 5.1, making the hyphenation much easier to use.

Printing many of the 1,500 screen characters was also problematical under 5.0 because this process relied on the character set of the printer you were using. Version 5.1, however, can print out anything it can show on supported printers with graphics capabilities.

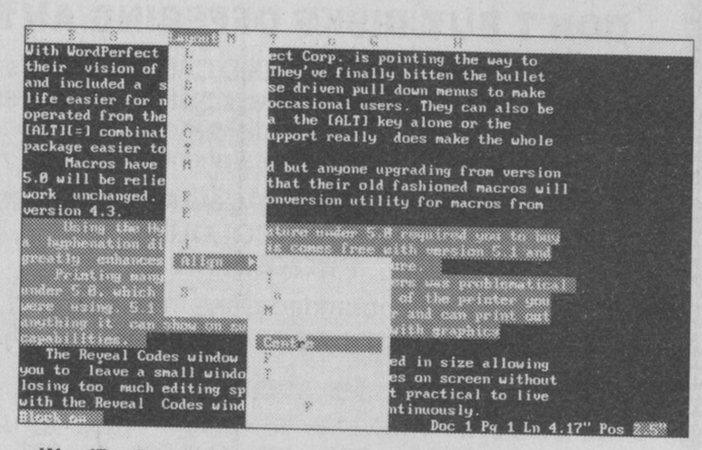
The reveal codes window, too, can be adjusted, allowing you to leave a small window for viewing codes on screen without losing much editing space – thereby also making it practical to leave the reveal codes window continuously operational.

WordPerfect 5.1 allows you to hot link *PlanPerfect*, *Lotus 1 2 3* and *Excel* spreadsheets to a *WordPerfect* document. Once set up, any changes in the spreadsheet will occur in the *WordPerfect* document as well.

A new table feature – impressive, easy to use and genuinely desirable – allows automatic construction of tables using the graphic box characters. Cells can have text and/or formulae inserted into them – including the ubiquitous merge codes for prompts.

In the end then, the price for all this extra power is that the program takes 4Mb of disk space and runs more slowly. The manual claims that it can be installed on any machine with two 720K disk drives – well, maybe this is the case, but perhaps it is overstating a little.

The new 5.1 is sold at a cost of £488. For more details, phone WordPerfect on 0932 850500.



• WordPerfect 5.1: *a new-look, friendlier environment*

A COMMANDER, A BROWN BAG AND A QUESTION



Norton Computing has brought out Version 3 of *The Norton Commander*, its 'front end' to MS-DOS. *The Norton Commander* (pictured above) is designed to provide insulation from the infamous clunkiness of the standard DOS prompt by putting to hand a series of utilities which ease all the standard operating system functions.

A direct competitor to Lotus' *Magellan* (reviewed in a previous issue of *Express*), *The Norton Commander* has been around for a while now, but Version 3 adds extra features, including *Commander Mail* and *Comander Link* – of special interest to comms users.

Indeed, PC users accustomed to Norton's better known products, such as *The Norton Utilities*, may be surprised to know that *The Norton Commander* is not aimed at the programmer as many earlier Norton packages have been.

Rather, *Commander* is an end user's tool – even if a certain amount of DOS knowledge will no doubt be advantageous.

At first glance then *Norton Commander* provides an excellent end user's environment. Indeed, it is particularly heartening to see mouse support on a product of this type.

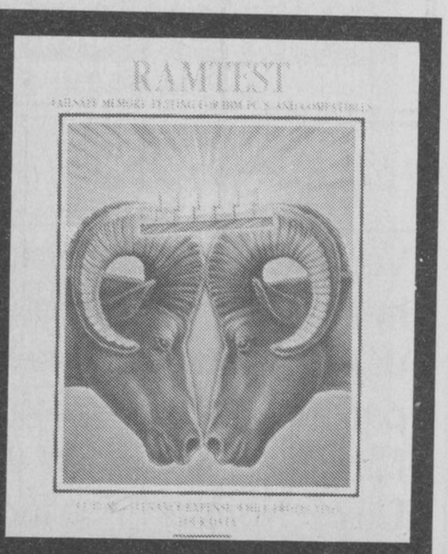
Back with the shareware world, though, you may have heard that Brown Bag Software (suppliers of the ground-breaking *PC Outline*, *Ramtest* – pictured to the right, *Homebase* and *Mindreader)* has closed its UK office. Rumours suggest a rift between the London-based staff and the Californian HQ is the cause.

Users of the company's prorams need not worry about being left out in the cold, however, as Steve Lee of Shareware Marketing (phone 0297 24088) has gone ahead to snap up the UK rights to the range.

Therefore, if you want to register a Brown Bag product, or are looking for some technical support if you already are a Brown Bag user, just get on the blower to the good people in Beer, Devon.

While we're on the subject of Brown Bag programs, is it possible that the revised version of *PC Outline*, which was expected to arrive in users' hands some time during the middle of last year has not yet made an appearance? If so, what is going on here?

Nobody seems to know anything about it, which (if it turns out as good as the original) is something of a shame.



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THE HOUNDS' CHARGE

It appears Electronic Arts is having problems with *Hound of Shadow* and has had to withdraw all ST copies. From what I've heard, there's a bug that causes the program to crash after a few minutes' worth of play.

Also, I have been told by observant readers who've returned their copies for replacements that the game is still on sale in the shops. This is a temporary problem – no doubt – but it's a pity, nonetheless, that such an excellent game should have run into difficulty.

IT'S IMAGIC

From Signa, and associated with the mighty *Calamus*, comes the rather splendid German program *Imagic*, with which you can create desktop video, animations, presentations, slide shows and a whole lot more.

Imagic is indeed an astonishing package – a superbly designed mouse-driven environment that gives easy access to advanced functions. It also includes *Denise*, a program that enables you to create and import picture files and link them into a presentation using various fades and graphic effects.

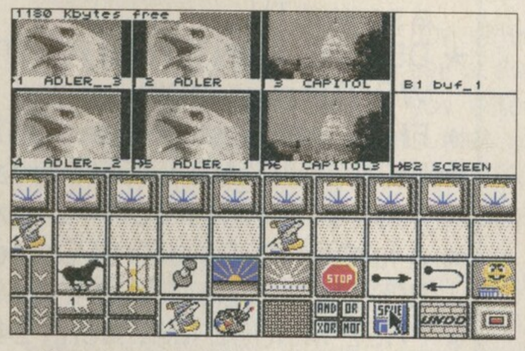
And there is a complete and rather wonderful built-in paint program that works in any resolution. Only trouble is that *Imagic* is not cheap – it costs £150, a hefty sum with which to experiment.

DON'T DESPAIR

However, there is a Public Domain demo version of *Imagic* issued by Signa with the save option disabled. But, unfortunately, the README file remains firmly untranslated from the German. So, if you're not bi-lingual...

Don't despair, though! The ever-ambitious South West Software Library has recently released a version with an English README file. "With a program like this," SWSL's Martyn Dryden points out, "you really need some assistance. Without help, you might be impressed, but you would be unlikely to access the demo animations included on the disk, let alone try out the built-in paint program or the animation features."

In truth, Martyn's README is not as complete as the README file on the original *Imagic*, but it is set up to allow use of the main features of the package – and it does seem the most worthy alternative to date.



• *Signa's extraordinary* Imagic: *now available in the public domain*

In summary then, the public domain demo version of *Imagic* – which requires a 1040 or more to run – is available for £3 from The South West Software Library, PO Box 562, Wimbourne, Dorset BH21 2YD. Tell 'em *Express* sent you.

THE EDITOR STRIKES BACK

Edward Penman, author of the *Dungeon Master Editor* distributed by Software Express, is currently putting the final touches to an editor for the sequel, *Chaos Strikes Back*. "The new game is a good deal tougher than *Dungeon Master*," he opines, "with a very tricky system that frequently drops you into other levels without telling you. You're really going to need the editor – I tell you!"

OK Penman, that's enough hype. Not that his product needs it: apparently, the *Dungeon Master Editor* is about to pass its 10,000th sale – a remarkable total, and considerably more than many games manage at that. So we will see what we will see about the sequel.

ST GAME of the WEEK

IRON LORD

UBI SOFT • £24.95



• Iron Lord: *addictive and challenging*

UBI Soft has been talking about *Iron Lord* for the last three years and in that time we've come to anticipate it as if it would be something of a programming miracle.

Early demos revealed much of the graphical action sequences, but the game has been hyped consistently as an adventure. So how does it succeed now that it is finally here?

The aim of *Iron Lord* is to assemble an army so you can battle against your evil uncle. Riding your character around on a horse, you select direction from a map, choosing to visit abbeys, castles or villages.

Exploring these various and sundry locations, you meet people who give you clues or who join your army. And along the way you encounter action sequences such as an archery game and a gambling hall. The larger the army you find, the greater your chances.

You then lead your army into the final battle, where you must fight up the map from the bottom of the screen at an army coming down from the north. This is a strategy element, played against the computer with each side moving six troops in alternation.

Win here and you're through to the labyrinth, where you must find the exit to six levels of the maze, which in themselves are absolutely littered with excellent arcade-style shoot-'em-up sequences.

In summary, brilliant graphics go without saying, but *Iron Lord* also has lasting appeal. It's a wonder: challenging and addictive.

PLAYING TIP

BATMAN

This week's tip comes from Richard Dudley in Derby. Type in the letters MAJ (JAM spelt backwards) when both Batman and the Joker appear on the screen. Keep each key held down for a while before moving to the next. Then keep pressing the J key until CHEAT MODE appears.

Now press F10 to advance through the levels.

MORE CHAOS

Incidentally, I've had a call from a somewhat disconcerted Pete Davies of Dorking, who was lucky enough to find *Chaos Strikes Back* in a Virgin megastore just before Christmas. So why is he not jumping for joy?

Well, he takes understandable exception to the fact that the packaging has on it that he needs to have *Dungeon Master* to use *Chaos Strikes Back* – which is patently untrue. Heaven knows what Mirrorsoft was thinking of: I can only express the fervent wish that the offending packaging is changed immediately.

PIRACY BAN BITES

'Well, it's not harming anyone, is it?' That's the usual argument used by those staunch few defenders of piracy. Until now it has been difficult to counter that claim, except to suggest in general terms that software prices have to take piracy into account.

Now there's some very tangible proof that piracy does harm ST users. NextBase, the people who gave the world the rather wonderful *Autoroute*, decided before Christmas to try an unusual experiment and lop a whacking great £100 off the £150 price.

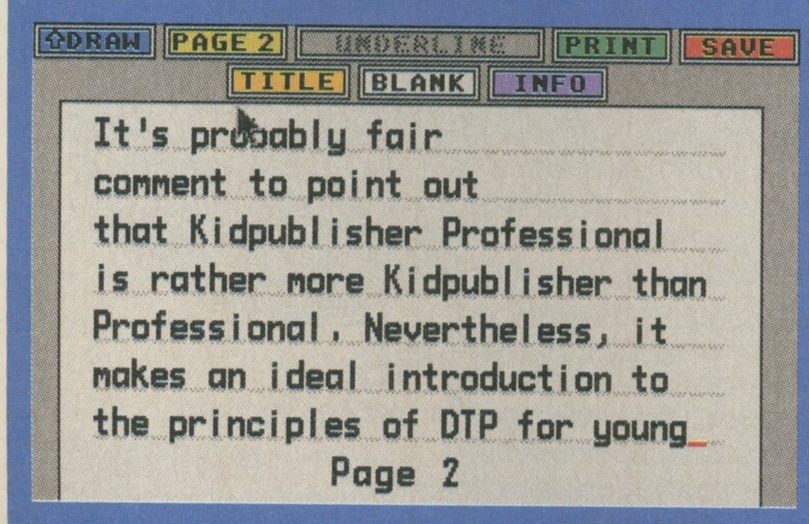
A bold move, and one which backfired badly. For so extensive is the piracy among ST users, claims NextBase, that it won't be trying anything like this again.

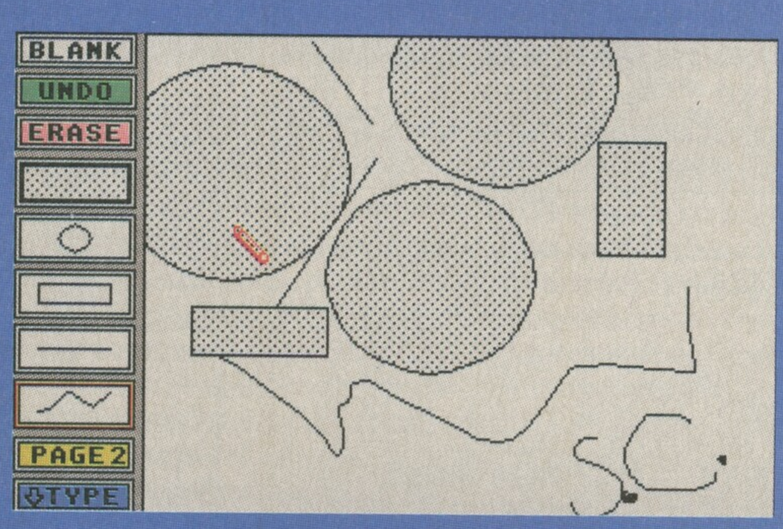
Indeed, the PC and some other formats will be getting enhanced and upgraded versions of *Autoroute* during 1990, and the ST won't. "We have no alternative," I was told, "but to consider the ST a dead market for us."

Next time a moron boasts to you about how many stolen software items he has in his collection, hit him for me – or if not for me for the good of the industry.

Steve Carey

LET THE KIDS HAVE A GO AT PUBLISHING THEIR OWN!





You may recall that a few issues ago in the ST column in *Express* I gave a brief mention to an American desktop publishing program for children called *Kidpublisher Professional*.

Well, I've recently received a demo version, and I can report that, while it's more Kidpublisher than Professional, it's an excellent and very well implemented program that would be ideal for children between the ages of – I've got to guess here – five and eleven.

The current version is written for the American keyboard, with the consequent irritating – but hardly critical – problems where £ signs and so on are concerned. The authors are at this moment working on a UK edition, which is expected to arrive in March or April.

Minimum requirements are a colour 520ST, and the PD version (print and save functions disabled) is available for $5 from DA Brunleve, PO Box 4195, Urbana, IL 61801-8820.

Incidentally, there is a fully functional version of the PD program from which *Kidpublisher Professional* was developed. Send £3 – the fee for non-members – to the public domain library at Softville, Unit 5, Stratfield Park, Elettra Ave, Waterlooville, Hampshire, PO7 7XN.

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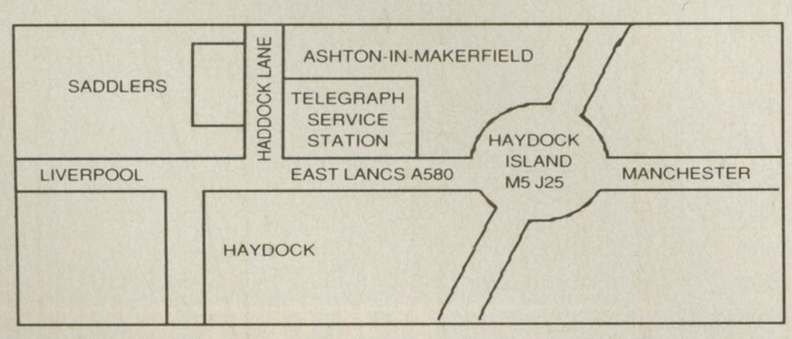
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AMIGA

NEWTEK UPDATE

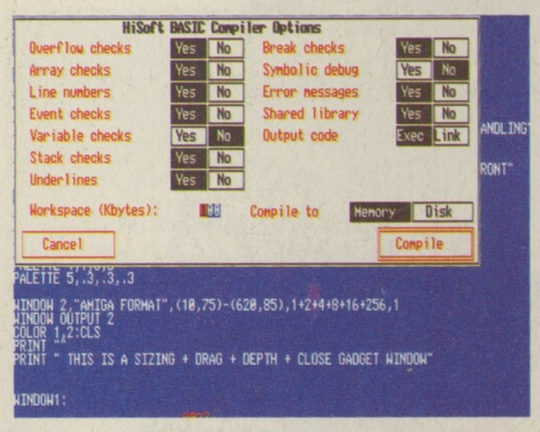
It's always nice when something that you predict comes true. And regular readers of *Express* may remember a recent news item regarding the release of NewTek's *Digi-View Gold 4*. This update is special because NewTek has finally cracked the 4,096 colours in high-resolution mode problem – NewTek called it 'Dynamic HiRes'.

The good reader will no doubt also remember that as soon as *Digi-View Gold 4* was announced, I predicted that NewTek would upgrade the *DigiPaint* system to take advantage of the new mode. Indeed, I recently phoned NewTek in the States to uncover more information. After an initial reaction of astonishment – 'How did you find out about that?' – NewTek confirmed that an upgraded version is being worked on. Alas, I could glean no further specifics.

Meanwhile, the PAL version of *Digi-View 4* started shipping on December 27, presumably making it available in Britain by the time you read this. Additionally, for those of you who already own *Digi-View*, *Digi-View 4* is a software-based enhancement and, therefore, upgrading will be a relatively cheap process. NewTek charges American users $24.95 for the new program.

HISOFT IN THE '90s

After a relatively quiet time, HiSoft has announced plans for the coming year. The good news is that the company intends to upgrade versions of the current catalogue in addition to floating the release of many new products.



• HiSoft BASIC – due for an upgrade

Now that *Devpac Professional* has been offered, HiSoft is beavering away on a major upgrade to the successful *Devpac 2* assembler system. According to David Link of HiSoft, *Devpac 3* (as it is to be called) will include many of the new features found in *Devpac Professional* as well as considerably increased performance. The bad news is that *Devpac 3* is still quite a way off – so don't hold your breath.

The incredibly popular – and justifiably so – HiSoft BASIC is also due for an upgrade within 1990. The foremost addition will be complete compatibility with Quick BASIC 4 on the PC, although other amendments are planned.

Also due for release within the next couple of weeks is HiSoft's *Extend* library for the existing version of HiSoft BASIC. *Extend* is a disk-based library that contains several routines for such tasks as loading and saving IFF files, using file requesters and so on.

Where new products are concerned, HiSoft has the Amiga version of the ST C interpreter due 'within the later part of 1990'. The product has been in the pipeline for a few months now, despite the continuing eager anticipation of Amiga programmers. And usually software-starved Pascal programmers will be pleased to hear that the world hasn't forgotten them – HiSoft also has a Pascal-compiler planned for release.

Most of the products mentioned are still some way off, so don't rush down to your local software stockist and demand your copy now, as he probably won't have a clue what you're on about. Should you require any preliminary details, however, contact HiSoft on 0525 718181.

GFA COMPILER IMMINENT

Yes, GFA owners, you haven't got long to wait now – the GFA BASIC compiler will be with you in a matter of days. I recently spoke to Les Player of GFA, who assured me that the unit would be ready for release early in January.

With the GFA compiler update, GFA BASIC has finally matured into a serious development system. How much for this gem? Well folks, you won't have to starve to be able to afford the asking price – as the GFA Compiler will set you back a paltry £29.95.

Even though we have finally recieved the compiler for GFA BASIC 3.041, the news is that this will soon be out of date, as GFA BASIC is to be upgraded to version 3.5 later this year. The new version includes 50 additional commands including complex matrix functions. Contact GFA on 0734 794941.

SNIPPETS...

Musicians on the bread line will be pleased to hear that Microlllusions has finally released the cut down version of the number one MIDI sequencer system, which we all know as *Music-X*.

Music-X Jnr includes most of the powerful editing and composition tools that made the original such a hit with musicians. The follow-on package costs £99.95 and is available from Micro-Illusions on 0480 496497.

THE RIGHT CROSS

DOS-2-DOS, one of the most useful Amiga programs of all time, has finally been toppled from its position as the ultimate file transfer utility, with the release of *Cross DOS* from Power Computing.

Unlike *DOS-2-DOS*, *Cross DOS* runs in the background and allows any Amiga program that operates under Exec to read and write files to AmigaDOS, MS-DOS and TOS (Atari ST), and format floppies using standard Amiga drives. By just referring to an Amiga drive using either DFn: or A:, any application can use the same drive to read and write a plethora of different formats.

CrossDOS is available from Power Computing, who can be contacted on 0234 273000. Look out for next week's Amiga column in *Express*, which should include a review of this package.

Jason Holborn

A FEWMEMORY MATTERS

Moving up to the Amiga from a machine such as the Commodore 64 can be a rather confusing experience. Programmers used to addressing every aspect of the machine using absolute addressing are suddenly confronted with a machine that contains seemingly no fixed addresses within the operating system.

In fact, the only fixed address within the Amiga operating system is at hex 04, which is the Exec base address – all other components of the operating system must be accessed by travelling through the operating system structures. However, many of you have written, requesting a memory map of our beloved machine. Well, my sole aim is to please, so here is the much-awaited aforementioned:

ADDRESS RANGE	DESCRIPTION
000000-07FFFF	CHIP RAM (512K)
080000-1FFFFF	ADDRESS COPY OF CHIP RAM
200000-9FFFFF	RAM EXPANSION SPACE (Up to 8Mb)
A00000-BFFFFF	CIAA AND CIAB
C00000-C7FFFF	CPU RAM (512K) 500 and 2000 only
C80000-DBFFFF	* RESERVED FOR FUTURE EXPANSION
DC0000-DEFFFF	BATTERY BACKED-UP CLOCK. 500 and 2000 only
DF0000-DFEFFF	* RESERVED FOR FUTURE EXPANSION
DFF000-DFFFFF	CUSTOM CHIPS
E00000-E7FFFF	* RESERVED FOR FUTURE EXPANSION
E80000-EFFFFF	EXPANSION SLOT DECODING
F00000-F7FFFF	* RESERVED FOR FUTURE EXPANSION
F80000-FBFFFF	ADDRESS COPY OF KICKSTART ROM (256K)
FC0000-FFFFFF	KICKSTART ROM (256K). Amiga 500 and 2000 only

AMIGA GAME of the WEEK

SEVEN GATES OF JAMBALA

Thalion • £24.99

At last year's PC Show newcomer German software company Thalion displayed its wares to the British public. Now *The Seven Gates of Jambala* makes a UK debut.

The story-line follows the travails of a young wizard's apprentice named Dravion, who has the reputation of being a troublemaker. He's always messing up his master's spells or causing mayhem with his own.

One day the master attempts the most powerful spell he's ever incanted when the rusty old lever upon which Dravion is leaning gives way, causing horrendous disaster.

The old master had often told Dravion of the strange and deadly realm of Jambala – a place where wizards are sent when they are troublesome, or wish to prove themselves in the world of Magic. Now the young student finds himself trapped in this other world as a punishment for the ruination he has caused. His only chance of escaping is to get through the exit gate in the seventh city, by finding the seven pieces of the missing treasure, the Great Wand.

Indeed, the basic description of *Seven Gates of Jambala* makes it sound fairly dull – but to be honest it's a lot more fun than it sounds. The gameplay combines platform action with puzzle elements in the form of hidden clues, which can only be obtained by bribing the right creatures. The graphics have been nicely drawn, and they evoke something of a mystic feel. And the haunting soundtrack adds to the magical atmosphere, although the spot effects are rather insipid.

In summary, the game isn't quite in the same league as the sorcery classic *Ghouls 'n' Ghosts*, but it does prove fun for a while and could please those of you with a passion for 'bounce-along' games.



• In the town before entering the caverns



• In the caverns and under way

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THE SHOPPING EXPRESS BUYER'S GUIDE TO 60 TOP GAMES

After you've done the day's database work or finally finished that wordy WP article, and you're looking for some fun, then the choice of games for your machine is enormous. Whether it's mindless violence or nail-biting strategy there's a whole world out there just waiting to be booted. This week, Express brings you the definitive guide to the top games on your machine to suit all tastes.

ST GAMES

The Atari ST remains the most popular of the 16-bit micros, and virtually all games are released with an ST version.

● CARRIER COMMAND

Rainbird 0666 504326
£24.99
Compelling strategic shoot-'em-up with you in charge of a 200mph aircraft carrier of the future attempting to take control of a vast volcanic archipelago. Fly jets and drive amphibious vehicles simultaneously while colonising the territory and supplies of the enemy

● STARGLIDER 2

Rainbird 0666 504326
£24.99
Solid 3D extravaganza which can be played either as shoot-'em-up or strategy with you looking for the parts to build a neutron bomb as you fly around an alien system encountering all manner of alien life. Features some of the best filled vector animation on any home micro.

● KICK OFF

Anco 0322 92513
£19.99
Excellent soccer-sim with furious, wellrad ball control putting it in a class of its own. Play against a friend or the computer in five levels of competence presented with opportunities to compete in The World Cup and practice the skills needed to beat all comers.

● DUNGEON MASTER

Mirrorsoft 01-928 1454
£24.99
Arguably the best graphic adventure to have appeared on any machine, *Dungeon Master* takes you into a catacombed world of adventure and peril. Fourteen levels of surprise and puzzles with only four companions to help you survive.

● XENON 2

Imageworks 01-928 1454
£24.99
Much hyped but nevertheless superb shoot-'em-up with the accent firmly on attack. Six levels of mutant aliens just dying to get taken out with you at the controls of a modular spacecraft with almost enough weaponry to drown out the sound of the Bomb The Bass soundtrack

● FALCON

Mirrorsoft 01-928 1454
£19.99
Superior F-16 flight sim, now with an additional mission disk, featuring multiviewpoint combat tasks with smooth graphics and superb control. Perhaps not a stickler for realism but immensely playable and nevertheless convincing

● PURPLE SATURN DAY

Infogrammes 01-364 0123
£19.99
Five in one strategic shoot-'em-up from the same stable as *Captain Blood* and exhibiting all the same French polish in the graphics and audio departments. Each of the five games would be worth almost twenty quid in their own right.

● VIRUS

Firebird 0666 504326
£19.99
First solid 3D game to really harness the power of the 68000 – smooth, fast scrolling shoot-'em-up with brilliant graphics in which you guide a hoverplane over a archipelago world being infested with pestilence by a variety of alien craft.

● BALANCE OF POWER

Mindscape 0444 86545
£24.99
Challenge your ST, or a friend, to global domination in the ultimate ST strategy game. A fascinating insight into geopolitics with you playing either the USA or USSR in a five year span of policy-making as you attempt to defeat your opponent without causing Armageddon.

● POPULOUS

Electronic Arts 0753 46465
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Unique microcosm of a variety of worlds in which you play God. You create the conditions for your minions to breed and colonise a staggering 999 worlds before your human or computer opponent does the same. Recently complemented by an additional disk of new worlds.

AMIGA GAMES

The Commodore Amiga is now recognised as the premier games machine, with truly addictive and visually stunning games abounding.

● F-18 INTERCEPTOR

ELECTRONIC ARTS 0753 46465
£24.95
This multi-view solid 3D combat simulator took Amiga owners by storm when it was first released in June 1988. The frame has still to be surpassed and we bet there are still players out her waiting to complete it from day one. Featuring devious missions, superbly animated graphics and stereo sound, it still remains the best flight sim on ANY machine.

● SUPER HANG ON

ELECTRIC DREAMS 0734 31666
£24.99
With brilliant stereo SFX and frantic racing action, this racing bike sim positively roars through the opposition – two or four wheeled. Impressive scenery on every stage and perfect pacing make for all the ingredients you're ever likely to need – that and excellent control

● PURPLE SATURN DAY

INFOGRAMMES
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Excellent five-in-one multi-format game that combines shoot-em-up fanatics with strategic gameplay. Featuring all the hallmarks of French graphics and sound we've come to expect from Infogrammes – the animations are well above average.

● VIRUS

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ACORN BBC B

The Beeb as it's affectionately known, enjoyed a moderate success amongst computer users during the boom years of home computing. Unfortunately, the machine was a little too expensive for the average home user and consequently, never quite achieved the sales the specifications demanded.

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AMIGA contacts to exchange software, demos, info (no games) long letters. Ian, 1 Pembroke Gardens, Hove, East Sussex BN3 5DY. Amiga Artist? Interested in Fanzine?

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BASIC L. Version written by University of Sheffield for teaching purposes. any info would be greatly appreciated. Write: A de Grey, 30 Stilecroft Gardens, North Wembley, Middx HA0 3HD.

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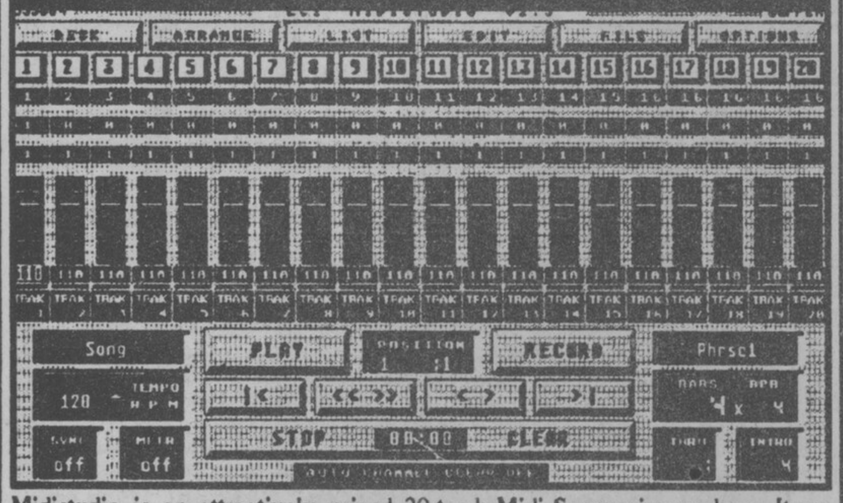
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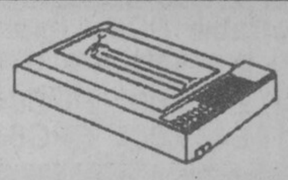
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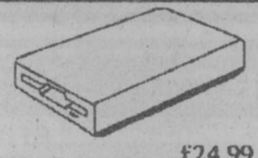
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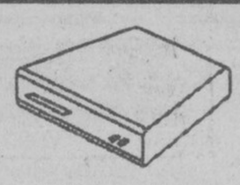
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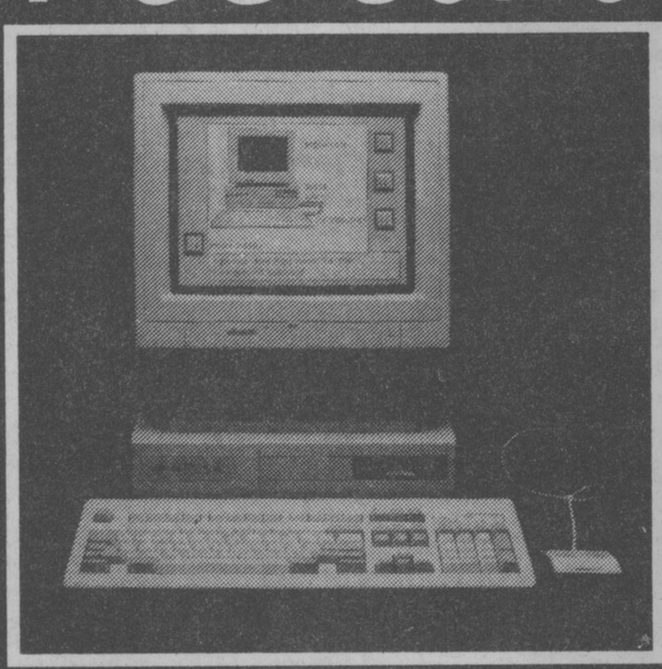
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PC100-8088 640K HD30	£659	£899
MINI-S 640K S/D	£479	£779
MINI-D 640K D/D	£499	£799
MINI-H 640K HD20	£899	£1199
AT286-10 640K S/D	£799	£1099
AT286-10 640K HD30	£1099	£1359
AT286-16 1MB S/D VGA		£1399
AT286-16 1MB HD40 VGA		£1759
AT386-16 1MB S/D	£1199	
AT386-16 1MB HD40	£1549	
AT386-20 4MB S/D VGA		£2229
AT386-20 4MB HD40 VGA		£2559
AT386-20 4MB HD80 VGA		£2999

SCHNEIDER

MODEL	MON	COL	EGA
EURO PC	£349	£489	
EURO AT 512K S/D	£675	£805	£890
EURO AT 512K D/D	£765	£895	£980
EURO AT 1MB S/D	£761	£891	£976
EURO AT 1MB D/D	£851	£981	£1066
EURO AT 512K H/D	£975	£1105	£1190
EURO AT 1MB H/D	£1061	£1191	£1276

Schneider Accessories

3.5" External Drive	£72
5.25" External Drive	£99
20Mb External Hard Disk	£269
40Mb External Hard Disk	£379
Monitor Stand	£14

All Schneider PC's & AT's include
Microsoft Works, DOS & Manuals
+ 12 months on-site warranty.

COMMODORE

MODEL	MON	COL	EGA
PC/XT COMPATIBLE			
PC10 III-S/D 640K	£444	£566	£687
PC10 III-D/D 640K	£497	£621	£746
PC10 Bundles inc. Framework, mouse & MPS 1230 Printer			
PC10-D/D	£740	£896	£1013
PC10-HD40MB	£896	£1013	£1130
PC20 III-HD 640K	£631	£749	£868
PC30-286HD 640K	£935	£1052	£1130
AT80286 COMPATIBLE - VGA'S			
PC40-40MB 1 MB	£1291	£1462	
PC40 + TAPE	£1559	£1759	

Includes 12 months on-site warranty

PORTABLES

MAKE	MODEL	PRICE
AMSTRAD + Phone	PPC512S	£360
AMSTRAD + Phone	PPC512D	£467
AMSTRAD + Phone	PPC640S	£445
AMSTRAD + Phone	PPC640D	£552
SHARP	4602	£863
SHARP	4641	£1463
SHARP	5541	£2330
SHARP	7221	£1699
SUPERSPORT	D/D	£977
SUPERSPORT 286	20MB	£2237
SUPERSPORT 286	40MB	£2657
TURBOSPORT 386	40MB	£2797
AKHTER 286-3200	20MB	£1695
SCHNEIDER	PC7640	£1418
SAMSUNG S5200	32MB-AT	£1693
VICTOR V286P	30MB	£2499

AMSTRAD

MODEL	MON	COL	EGA
PCW8256	£310		
PCW8512	£395		
PCW9512	£424		
PC1512SD	£360	£437	
PC1512DD	£437	£513	
PC1640SD	£451	£536	£621
PC1640DD	£512	£597	£682
PC1640HD	£682	£768	£853

	Mono	Col	12"	14"
PC1286SD	£750	£835	£920	£1005
PC1386SD	£1180	£1265	£1351	£1436
PC2086SD +SOFT	£531	£617	£702	£787
PC2086DD + SOFT	£595	£680	£765	£851
PC2086HD + SOFT	£765	£851	£936	£1021
PC2286DD	£851	£936	£1021	£1106
PC2286HD	£1021	£1106	£1191	£1276
PC2386HD	£1702	£1787	£1872	£1957

All genuine models not upgraded in any way

HYUNDAI

Note, Base units only.
Monitors are separate.

Model	Mono	Col	EGA	VGA
SUPER 16-TE PC/XT 640K 10Mhz Metal Case				
Super 16-TE S/D	£361	£361	£455	£511
Super 16-TE D/D	£430	£430	£524	£580
Super 16-TE HD30	£561	£561	£655	£711
286C 8/10MHZ 512K RAM				
286 S/D	£749	£749	£749	£859
286 HD30	£949	£949	£949	£1059
386SX 8/16 Mhz 1MB RAM				
386 S/D	£959	£959	£959	£1069
386 HD30	£1159	£1159	£1159	£1269
386C 8/20 Mhz No Wait States 1MB RAM VGA				
386C S/D	£1279	£1279	£1279	£1279
386C HD40	£1599	£1599	£1599	£1599

SAMSUNG

Model	Mono	CGA	EGA
All the following Systems are without Monitors. Please refer to monitor box.			
PC/XT			
SPC3000/1 S/D	£405	£405	
SPC3000/2 D/D	£473	£474	
SPC3000/3 HD20	£677	£677	
AT80286 10Mhz			
MFC6000/1 S/D	£812	£812	
MFC6000/2 S/D	£1015	£1015	
SPC6500/3 HD20	£1151	£1151	
AT80286 12Mhz 1MB VGA			
SPC6512/1 S/D	£1015	£1015	
SPC6512/3 HD20	£1219	£1219	
SPC6512/4 HD40	£1354	£1354	
AT80386 20Mhz 2MB EGA			
S800 D/D	£1693	£1693	£1693

All Samsung Computers include 12 months
on-site maintenance.

MITAC

Model	Mono	Col	EGA
88 512K	£586		
88 20MB HD	£790		£1102
1000L PS/2	£730	£930	VGA'S
1000L PS/2	£963	£1163	VGA'S
286SL HD20	£1030	£1209	£1332
286SL HD42	£1163	£1342	£1465
286V HD42	£1463	£1663	VGA'S
286V HD102	£1930	£2130	VGA'S
286VE HD42	£1596	£1796	VGA'S
286VE HD10	£2063	£2263	VGA'S
386 HD42	£2330	£2568	VGA'S
386 HD102	£2796	£3130	VGA'S

All MITAC Systems come complete with 12
Months on-site warranty.

VICTOR

MODEL	MON	COL	EGA	VGA
VPCIIC S/D	£949	£1149	£1399	£1449
VPCIIC D/D	£1099	£1299	£1549	£1599
VPCIIC HD30	£1499	£1699	£1949	£1999
V286C S/D	£999		£1299	£1499
V286C D/D	£1499		£1799	£1999
V286C HD30	£1999		£2299	£2499
V286C HD50	£2199		£2499	£2699
V286A HD30	£2099		£2549	£2599
V286A HD50	£2299		£2749	£2799
V286S HD50	£2499		£2949	£2999
V286S HD70	£2699		£3149	£3199
V386S HD50	£3299		£3749	£3799
V386S HD70	£3699		£4149	£4199
V386S HD110	£3899		£4349	£4399
V386S HD230	£5299		£5749	£5799
V386T HD70	£5999		£6449	£6499
V386T HD230	£7699		£8149	£8199
30MB ADD-PAK	£399			

MONITORS

MAKE	12" Mon	14" Mon	14" CGA	14" EGA	Mono VGA	Colour VGA	Multi Sync
PHILIPS	7502 £63	7713 £89	8833 £199	9093 £296	7749 £116	9609 £296	
	7513 £77		9043 £261	9043 £261		9809 £374	
	7913 £81		9053 £296	9053 £296			
SAMSUNG	2573 £76	4573 £85		4531 £299	2611 £85	4531 £299	4551 £397
AMSTRAD	12MD £119		14CD £199		12HRCD £294	14HRCD £383	
AKHTER	ACL12G £60	ACL14G £85	VISION £199	ACL-3 £259	ACL-VM £110	ACL-V £289	ACL-M £355
HITACHI						480 AUTO £358	

Notice: All Samsung Monitors come with
12 Months on-site maintenance

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MODEL	PRICE
ATARI 520ST-FK + Power Pack	£309
AMIGA 50 + BATMAN Pack	£318
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1MB External Disk Drive Atari	£71
42MB External Hard Disk both	£399
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Atari to Scart Monitor Cable	£7.69
Amiga Dustcovers	£4.95
Competition Pro Extra Joystick	£10.59
Philips CM8833 Colour/Stereo	£199
Atari SM124 High Res Mono	£115

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Model	Price
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Acco-in line 64K Buffer Par	£95
Logitech Serial Mouse + Software	£73
20Mb Hard Card 2 yr Warranty	£189
30Mb Hard Card 2 yr Warranty	£195
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3.5" 1.44Mb Floppy Drive	£69
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132 Col Printer Muffler	£53
80 col Desktop Printer Stand	£28
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Screen Filters	Call
Electric A4 Copy Holder	£94

NOVEL NETWORKS

NETWARE 386 V3.0	£4020
NETWARE SFT V2.15	£2596
NETWARE Advanced V2.15	£1660
NETWARE ELS LEV II V2.15	£864
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NE 2000 Ethernet Card	£286
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NE 1000 Compatible	£139
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COMMS Products	Call
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Sage Sterling Job Costing	£129
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STAR LC15	180/45	£249
STAR FR10 ★	300/76	£289
STAR FR15 ★	300/56	£379
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STAR LC24-10	200/67	£189
STAR LC24-15	200/67	£319
STAR XB24-10 ★	240/80	£375
STAR XB24-15 ★	240/80	£495
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STAR LASER 8 ★	8PPM	£1198
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KXP 1595	288/65	£309
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KXP 1124	192/63	£220
KXP 1540	288/65	£400
LASER PRINTERS		
KXP 4450 ★	11PPM	£1269

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9 PIN DOT MATRIX		
120D PAR	120/25	£102
120D SER	120/25	£119
180E PAR	175/30	£123
180E SER	175/30	£149
MSP15E	160/40	£164
MSP40	240/40	£199
MSP45	240/40	£239
MSP50	300/60	£285
MSP55	300/60	£399
24 PIN DOT MATRIX		
HQP 40	200/65	£259
SWIFT 24	160/60	£245
LASER PRINTERS		
OVERTURE 106	6PPM	£930
OVERTURE 112	12PPM	£1289

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MAKE	SPEED	PRICE
LX400	180/30	£130
LX850	240/48	£178
FX850	264/54	£351
FX1050	240/48	£293
EX800	300/60	£402
EX1000	300/60	£530
DFX5000	533/400	£1087
LQ400	180/60	£189
LQ550	180/60	£255
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LQ860	290/88	£499
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SQ850	600/198	£575
SQ2550	600/198	£863

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LASER JET IIP	4PPM	£879
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MODEL	SPEED	PRICE
DM100SPR	200/30	£123
DM105SPR Colour	200/30	£154
DM282	240/40	£216
DM282S	240/40	£245
DM292S 136 col	240/40	£307
DM250	240/60	£402
DM250L 136 col	240/60	£458
DM400 136 col	400/100	£867
DM704 136 col	400/100	£1053
DM309	360/66	£269
DM309L 136 col	360/66	£356
LASER PRINTERS		
PG 306 ★	6PPM	£899
PG 208 ★	8PPM	£1199
PG 303 ★ Postscript	8PPM	£2595

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MODEL	SPEED	PRICE
CANON LBP4	4PPM	£895
CANON LBP8 III	8PPM	£1390
CANON LBP8 IIIT	Dual Bin	£1815
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CANON IX-31F Scanner Int/face		£113
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MODEL	SPEED	PRICE
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MT905	6PPM	£889
SHARP JX-9300	6PPM	£1063
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KYOCERA F1200	10PPM	£2369
KYOCERA F2200S	10PPM	£2569
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ACL 135 10"	135/27	£119
ACL 480 10"	480/55	£299
ACL 700 15"	480/55	£399
18 PIN DOT MATRIX PRINTERS		
Hyundai 1810 10"	240/100	£229
Hyundai 1820 15"	240/100	£299

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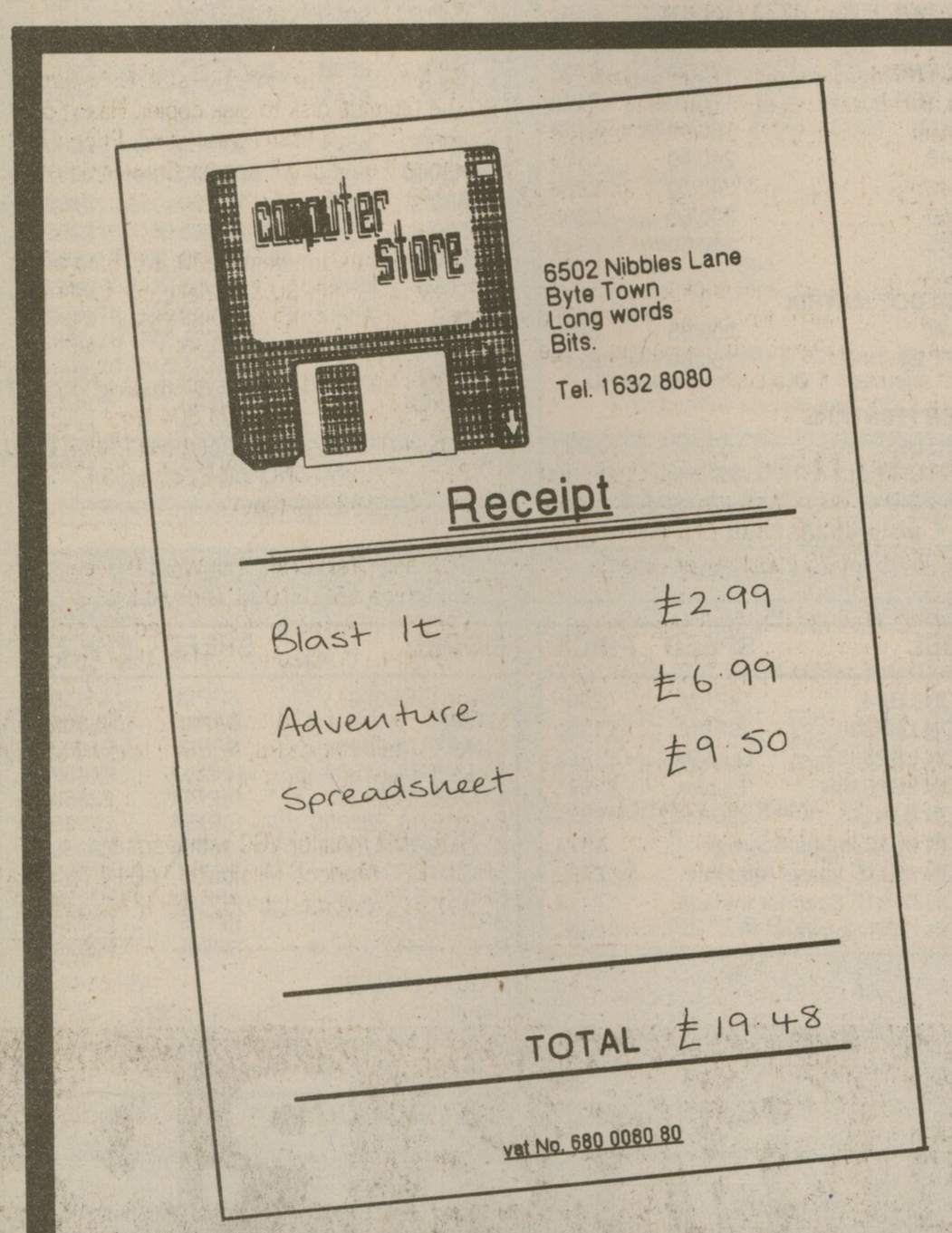
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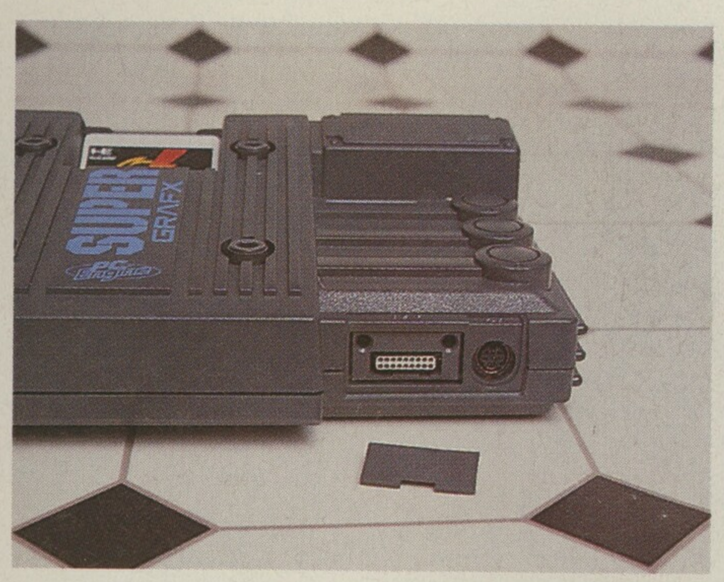
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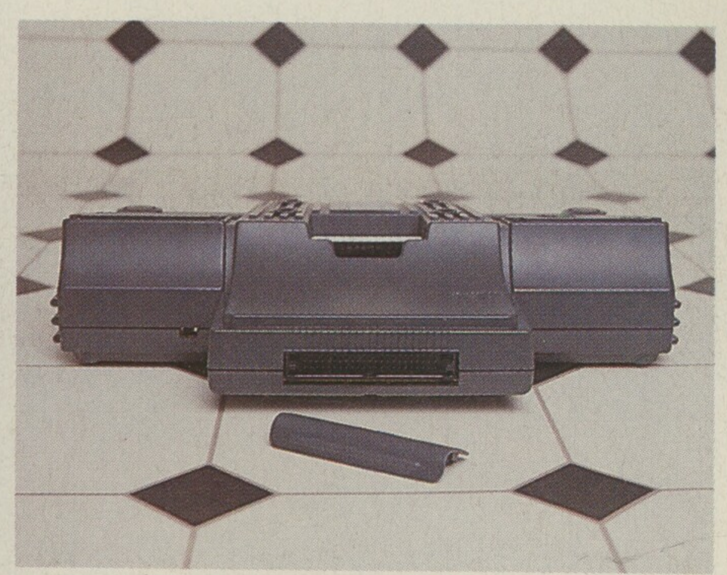
Despite never having been released in this country, the PC Engine has a growing reputation as a games machine. Now the PC Engine II has been launched in Japan, and Tony Takoushi brought the first model into the Express offices for a European exclusive review.



• Techno styling is the order of the day with the new PC Engine Super Grafx



• Sockets at the front cater for the the tiny but usable joypad and a mysterious 'S Expansion'



• The expansion bus on the back of the Engine allows add-ons like disk drives and keyboards to be added

THE ENGINE DRIVER

PC ENGINE SUPER GRAFX

NEC • NOT OFFICIALLY AVAILABLE, GREY IMPORTS AROUND £275

The original NEC PC Engine games console was unleashed onto the Japanese market in November 1986, and after ecstatic reviews in Europe NEC was swamped with calls for information on availability. It has become the number-one selling machine in Japan, beating even Nintendo in sales, though still with a long way to go to compete against the latter's huge established user base.

Now NEC has released its new model, and there are rumoured to be plans to release an authorised stripped down version of the original Engine in the US and possibly Europe late this year. So why has NEC released a new model when its current machine is riding so high?

The answer lies in the fact that Sega and Nintendo will shortly be releasing new 16-bit consoles, with far superior graphics, colour and sound capabilities. NEC has tried to get a foothold before the expected Nintendo invasion with the old PC Engine, and it is trying to keep up with the already launched Sega Megadrive (currently the number-one machine for 16-bit games) by promoting the PC Engine Super Grafx, as the new machine is called.

The Sega Megadrive is here and the standard of software is going through the roof, the Konix is still a dark horse pottering around the paddock and the Nintendo 16-bit (Super Famicom) is yet to be seen. In comparison, the new NEC machine looks good with its excellent sprite handling and extra colours, although it will be safest to reserve judgment until a few more games are available.

GRAFX POWER

The PC Engine Super Grafx is more than twice as large as the original PC Engine. It boasts double the sprite capacity (up from 64 to 128 sprites), better sound, more colours (around 4,000 to choose from) and it is compatible with the original model so you can slot in games from your old system. The machine is a very unusual shape that is more futuristic than functional – it is possibly best described as lookin like a computer component. The gamecards slot in from the top of the unit, facing towards you, and as with the original Engine the power slider bolts the card into place.

There are two ports – one on the back (the external bus, which appears to be incompatible with the original PC Engine's CD-ROM) and one on the front, mysteriously labelled 'S Expansion'. Whether this is for RGB output or a disk-drive/keyboard add-on remains to be seen.

Video output is via a composite lead, there is no RF output or standard TV output, and there is stereo sound with phonos for left and right channels. The joypad is almost the same as the original but has turbo buttons to save wear and tear on your poor old tendons.

The software is on memory cards as with the original, and they will have the same maximum capacity of around four megabytes.

EXPRESS VERDICT

The new model is visibly better, a quantum leap forward from the old Engine. It offers enough enhancements to lure owners of the old system to upgrade, even though it will cost around twice the price.

At the end of the day the same old 8-bit processor is in there but the custom video chip has been uprated and the software hurtles along with a significantly greater number of colours.

Costing around £180 in Japan it will probably sell for around £275 in the UK, after grey importers have hacked on a new power supply and video output.■

THE FIRST SHOOT-'EM-UP

One of the first games released for the new system is *Battle Ace*. This is a cross between *Galaxy Force* and *Afterburner* in which you control a fighter and have to rid the galaxy of evil aliens yet again. There are many planets to visit and even some space duels to fight. On booting the game you see a spaceship zipping along with a tasty starfield scrolling in the background and a planet screaming along underneath you. The 'Attract' mode also demos different levels from the game. On pressing RUN you are placed in a launch tunnel and as you zoom down it a small light appears and grows bigger as you are finally thrown out onto the first planet and into battle!

Your view is through a cockpit and you have a crosshair sight which allows you to tilt your machine up and down or left and right, with a 360-degree flip option. The speed of the rotation has to be seen to be believed, it really has eyeballs rolling.

In your cockpit there is a scanner showing aliens coming in from the front and rear and below you are clouds.

Button one on your joypad fires the machine guns and button two fires missiles. You can only fire missiles if your cross-sight has locked on to the aliens, who attack in patterns with deadly fast and accurate missiles. You can fly up over them or try to duck, and for those of you with an urge to surge you can do a 360-degree flip while zapping them with your machine guns or launching homing missiles.

The action goes from day to night and yet more aliens attack. You then have to battle your way through a storm, with lightning bolts sizzling down from the sky to the planet. You must avoid these as contact is fatal and you will lose one of your three lives. If you get through the storm, the mothership is waiting and its defence ships surround it and fire at you while you try to zap its power core. When this is destroyed you are shown the star system with planets rotating round to show your next battlegrounds.

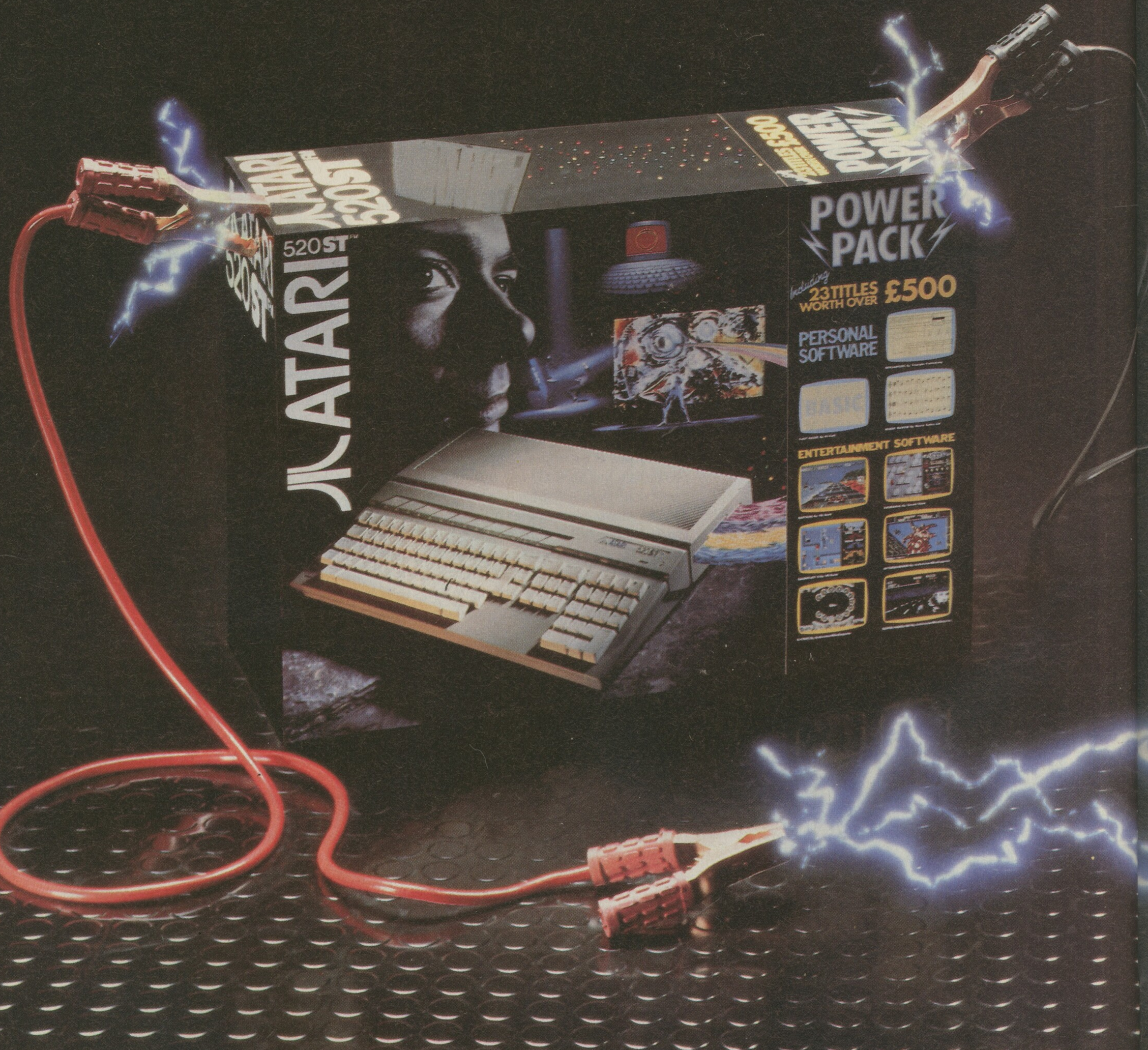
The other scenes have you in space battling an asteroid field. It is in 3D with the aliens hurtling around you, fully textured and rotating. There is also a space trench with you having to brave laser bars as you swing between levels and desert and lava planets, with jets of lava spewing up in fountains *à la Galaxy Force* as you dive between solid textured columns. Fortunately you get an extra life at 20,000 points. You will need it.



• Pursuing aliens across the galaxy in Battle Ace



• Later in the game you skim over the ocean of a planet



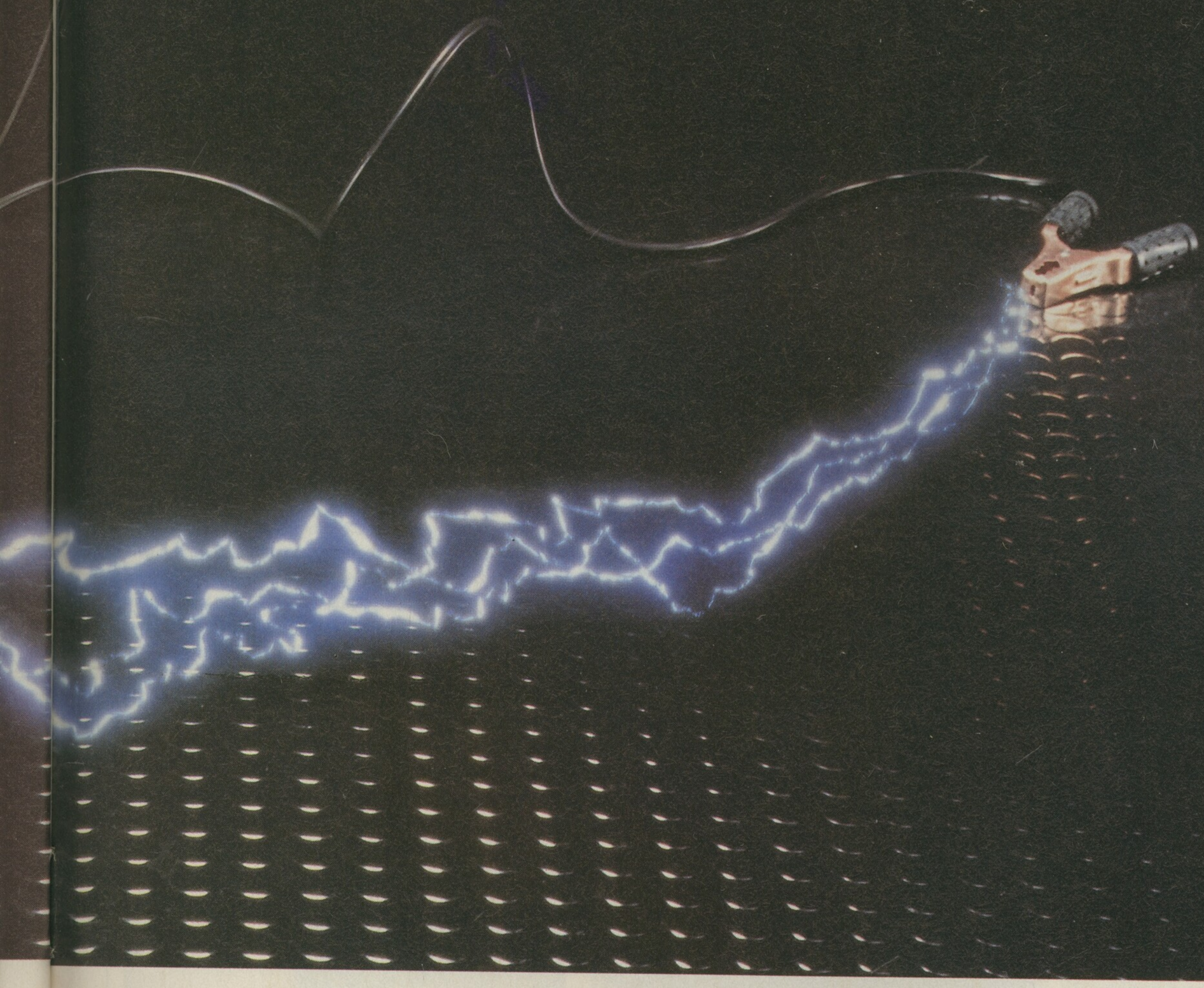


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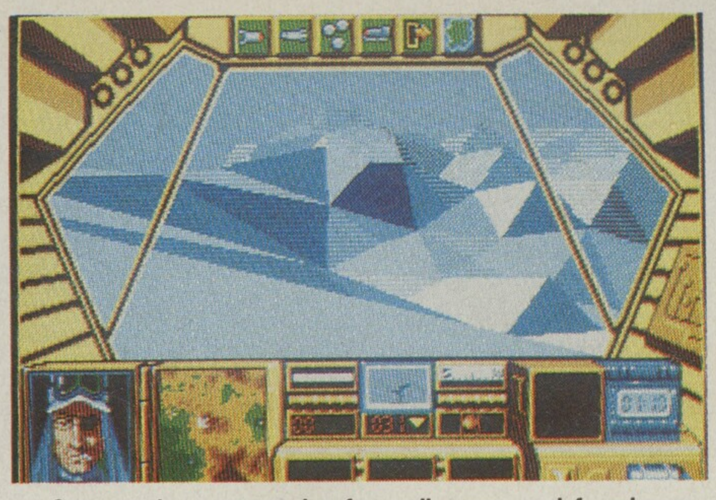
ATARI POWER PACK

ouse, Railway Terrace, Slough, Berkshire SL2 5BZ.

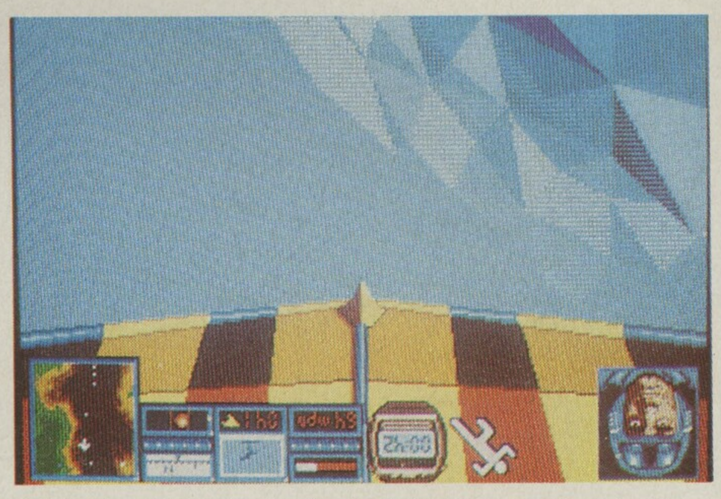
Fancy exploring a computer-generated world of fractal landscapes that stretches for 160,000 square miles? So did Andy Storer – so he took a pioneering stroll through Microprose's promising Midwinter...



• *The view through your goggles of the snow-covered fractal world of the Azores in fifty years' time!* Midwinter's *immense size and real-time action requires a lot of cross-country skiing*



• *Once you've contacted a few colleagues and found some supply depots you can continue your adventure in more comfort – via snow buggy*



• *For the ultimate in Arctic simulation, you can try your hand at hang-gliding – a sport that's bound to take more than a little practice at low temperatures*

MIDWINTER MAGIC

MIDWINTER

ST / AMIGA / PC • AVAILABLE MARCH • MICROPROSE
0666 504326

Last year's acquisition of the Telecomsoft labels gave military simulator specialist Microprose access to some of the best programmers in the country. The undisclosed sum involved enabled the American parent company to continue releasing top-notch software, but with a much wider appeal. This was due to the backlog of Telecom games included a host of projects commissioned by Rainbird – arguably Britain's most innovative software label. *Midwinter* is one of its first titles to live up to the quality we came to expect from Rainbird, and can surely be expected to sell well when it hits the streets in a month or two.

Concern with environmental issues being something of an interest now – never mind an overdue necessity – *Midwinter* is set on a group of snow-covered islands – the Azores! It's 50 years hence and the global climate has taken something of a battering. Yep, there's going to be a new Ice Age...

ZOOT AZORES!

Microprose programmers have spent six man-years researching and coding the product and have spoken to various climatic researchers in the course of the game's development. The growth in the polar ice caps will mean a drop in sea-levels and the consequent uncovering of vast areas of the ocean bed. With a certain increase in volcanic activity, areas near the junctions of continental plates will be the sites for new outcrops of land, particularly where some ground already existed by the sea. The islands of the Azores look like being the region of the world most likely to be affected. As such the micro-world has been coded as a faithful representation of the Azores when the next Ice Age occurs. The developers went so far as to visit the islands to aid the process of extending the present-day geography to that of one large snow-covered land mass.

All in all 11 programmers and researchers have worked on the project and the results speak for themselves. The key to the stunning landscapes and maps is the employment of fractal graphics, as pioneered and developed by the American mathematician Benoit Mandelbrot and his followers. But the graphics employ an extra quality to those found on existing fractal landscape generators available for 16-bit machines. The added dimension is light-sourced shading and the effect is to introduce convincing shadow and form to the landscape relief on show.

TRACK RECORD

The team behind the project, Maelstrom, have something of a unique track record in this department. After the success of *Lords of Midnight* and *Doomdark's Revenge* – which brought 48,000 viewpoints to a Spectrum game – Maelstrom's main programmer, Mike Singleton, went on to release *Whirligig*. Although disappointing in terms of gameplay, this solid 3D shoot-'em-up was the first game ever to employ objects that changed in appearance according to their position. A fixed light source created convincing shading and imbued subjects with a realism never previously encountered. In *Midwinter* the same method is used to even greater effect since objects in the distance become bluer and darker as they recede. The result is solid 3D realism. Obviously it also requires a fair bit of know-how to code such graphics to move at speed, but because the world is not randomly generated but pre-mapped according to the projected geography of the Azores, screen update times are minimised. In addition, because of pre-mapping, the 160,000 square mile play area can be accurate right down to a claimed 30cm!

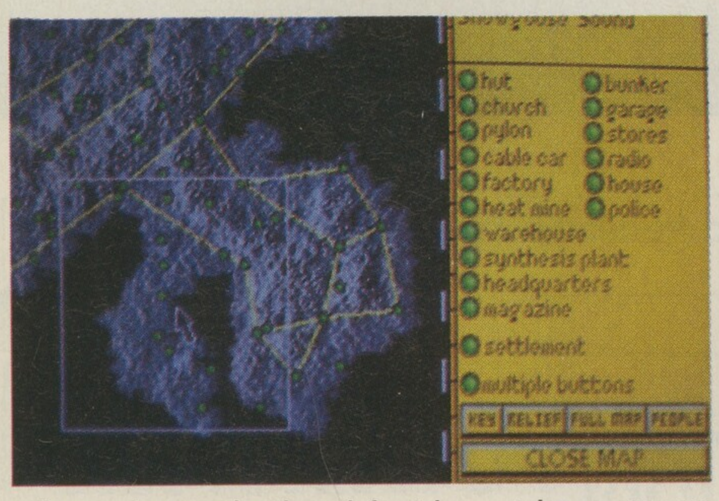
BUT WHAT OF GAMEPLAY?

As you might expect in a future scenario where climatic conditions have made even the hot-spot of the Azores freeze over, social conditions have also changed somewhat. Populations are local and organised in thinly-spread communities. The scattered villages of the new Azores have pooled resources to form the FVPF, the Free Villages Peace Force. The force comprises of 19 Peace Officers, each positioned at a Heat Mine. Up against you is the dictator of a group of other villages who's bent on dominating the entire region. Initially you take the role of the officer in charge of the FVPF and must travel across country to contact your colleagues. Your journey takes place in real-time and involves hang-gliding, driving snow-buggies, skiing and cable cars. Once you find a colleague you can also gain direct control of his actions and switch between characters at will.

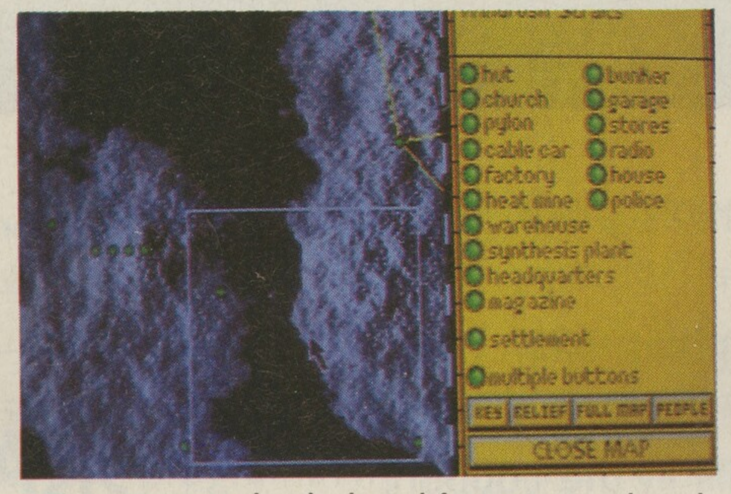
Altogether there are 32 interactive characters, each with a range of role-playing attributes. As such, the object of the game is to shoot, sabotage and out-manoeuvre enemy forces intent on capturing all of the Heat Mines while simultaneously attempting to capture their HQ.

It's the kind of race against time underpinning all classic strategy games.

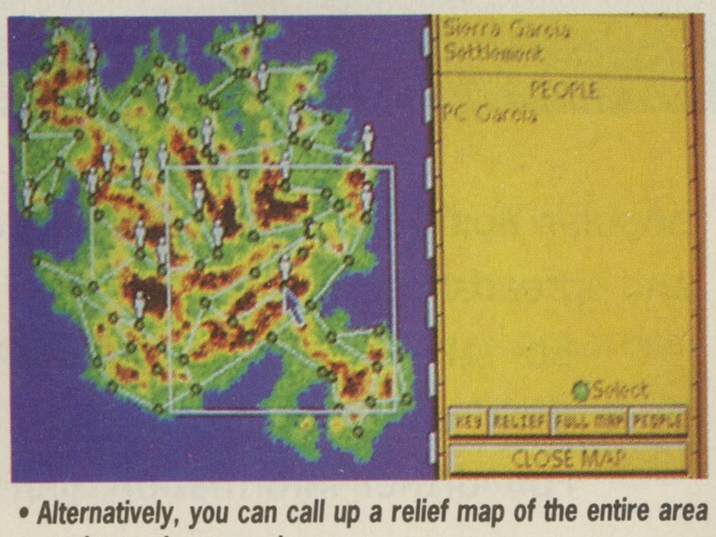
Midwinter will be released for the ST, PC and Amiga in early March and is expected to sell for around £30. With the game will be supplied a laminated wall map of the game-world and a 150-page manual. This will include sections on hang-gliding and skiing instruction, as the action elements in the game are faithful simulations of these activities and mastering them is essential to completing the task at hand. ■



• *Progressive zooming through fractal maps takes you to your first port of call*



• *These two maps show land-use, infrastructures and supply points. This is where you plan your routes*



• *Alternatively, you can call up a relief map of the entire area to assist you in your treks*



ACCENT ON LEARNING

The Businessman, the Traveller, the Operator, the Secretary, the Technician and the European. No, it's not some new film by Peter Greenaway but a set of language study aids, finds Andy Storer.

● EURO-SERIES

PC • £34.50 PER PROGRAM
TOPWARE • 01-228 0242

With 1992 just around the corner, a language other than English will be a distinct advantage whatever your field. By the end of the decade no doubt English will have finally become *the* international language to which all Europe subscribes, but in the meantime there's a lot to be gained from more than a mere smattering of a foreign language. Especially in business situations.

Topware's suite is geared towards those who wish to make a good impression without recourse to the limitations of night school, cassette courses or textbooks. Topware's approach is to present you with what is in essence a vocabulary crammer, the turgid structures of syntax and grammar being left well out of the way so the user can arm himself with essential key phrases to which he only need add the appropriate gestures. Each Euro-Series disk comes complete with 1,000 expressions in five languages – French, Italian, German, English and Spanish – on a range of subjects relating to its field. Thus the *Businessman* program concentrates on customs, taxes, purchases, payments, shipments and the like, while the *Operator* disk takes in programming, technology, applications, peripherals and so on. The range of expressions is not solely restricted to the program's specialism though – you can pick up enough of the more general phrases to get you through ordinary everyday situations from any of the different tutorials.

LEARNING TARGETS

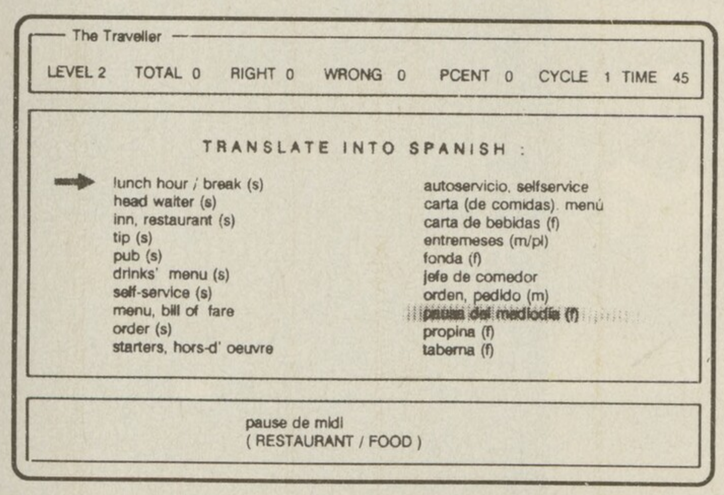
After you have chosen between the three levels of difficulty and specified a desired learning target, the program monitors your progress and tailors itself to your ability. The learning target is simply the number of questions per session you wish to answer. It is suggested beginners should attempt only nine questions a day while aficionados can start out at 75. Repetitions can be introduced to ensure good learning. Depending on the number and speed of your responses the program will ask you more difficult questions, saving your results to disk. So, if you don't use it for a while this will be taken into account when it is next booted up, and simpler questions will greet you until you get back up to speed again.

As the bulk of the learning process is arranged around highlighting menu bars, most operations are enabled by using just three keys – the up/down cursor and Enter keys.

One of the first menu items you need to confirm are the learning parameters. Here you need to to specify the source, target and assisting languages. Thus it's possible to be asked questions in German, answer them in French and, if and when the going gets rough, be given clues in Italian! However unless you're Swiss this won't often be the case – translating from English to one of the other four languages on hand is likely to be the usual configuration.

On beginning the learning routine you are presented with a screen of 10 nouns or phrases with 10 possible correspondences. You merely scroll the highlighted menu bar to what you believe to be the correct answer and your percentage score is updated accordingly. The level of difficulty changes in accordance with your percentage of correctly answered questions. If over 90 per cent of your answers are correct, more difficult questions will be posed, likewise if only 60 per cent or less of answers are correct the questions become easier.

The formula is very effective. In no time at all the grim task of learning a language becomes a challenge as the process takes on the air of a contest between you and the machine. This is compounded by the simplicity with which its possible to get any of the programs up and running – it's so easy to dive right in and attempt to give your PC another pasting.



• The learning screen. You have to indicate which of the translations in the right-hand column corresponds to the arrowed phrase in the left-hand column

SHARPEN RESPONSES

However, despite the addictiveness of the question and answer format, there's more to learning a language than simply remembering the correct responses to a number of fixed questions.

Thus Euro-Series gives you the opportunity to choose the number of times a question will be repeated to sharpen up your automatic responses. It also allows you to set the duration of learning sessions so as to benefit from the advantage of enjoying small doses instead of toiling for long periods, and finally, you can also determine the number of questions bombarding you per session. But perhaps the suite's most endearing feature is the specialisation of the tuition areas.

The accent is firmly on the application of language to suit your particular fields of interest rather than on a generalist overview of all a language's vocabulary. The result is a concentration on the phrases and words that matter – in buying a Euro-Series program you're not investing in superfluous details.

All this makes for a flexible learning package tailored to your personal needs and particularly ideally suited to laptop PC users wishing to maximise their 'wait-states' on trains and planes. ■

GO PROFESSIONAL

Another series of programs known as the Professional Series is also available from Topware. These 1.2Mb versions are intended for hard-disk users and feature colloquial language, synonyms, opposites and relational text learning. The series extends to Spanish, French, German and Italian. In addition the company is also producing do-it-yourself learning programs to enable teachers and employers to design their own specialised databases for testing and training pupils and staff.

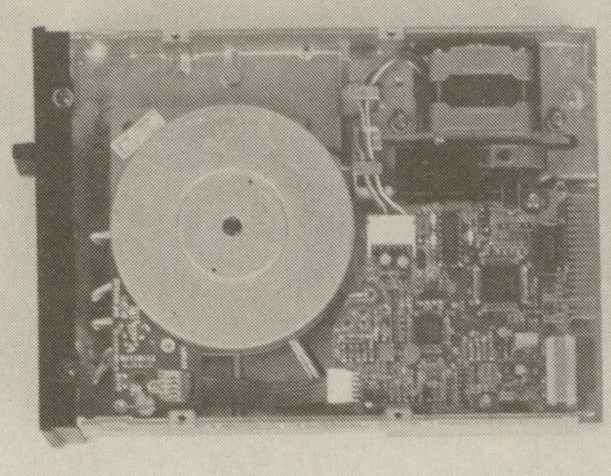
PUT TOGETHER YOUR O

By piecing together a PC from old computers, bargains and spare parts you can come up with a customised machine that will do exactly what you want – and you can save money. Steve Patient tells you how.

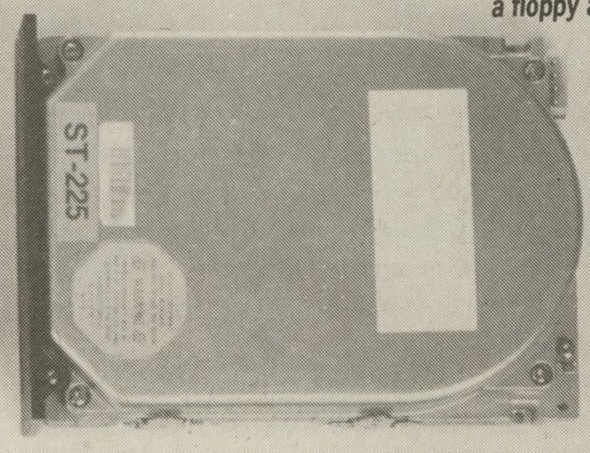
You can save money by lifting the lid on the PC – just as you can by lifting the bonnet on your car – but there are no guarantees that you will end up with a bargain. One of the risks when you become involved in computer hardware is that you become so enthusiastic about the mechanics of it all that you're forever saving up for this extra and and that go-faster stripe – striving to build the best machine on the block.

Consider also that building a PC completely from spare parts is never going to be cheaper than buying a similar machine complete, any more than you could build a Ford Sierra from catalogue parts and expect it to be cheaper than a complete car from a dealer. There is a markup on every part, extra handling and packaging and so on involved in dealing with a lot of little bits instead of one big bit. On the other hand, a car built from two or three write-offs might be good value for money, and kit cars have their attractions. Not least of these is having something constructed by your own hands to exactly your specification. But enough of these caveats – where are the money-saving opportunities?

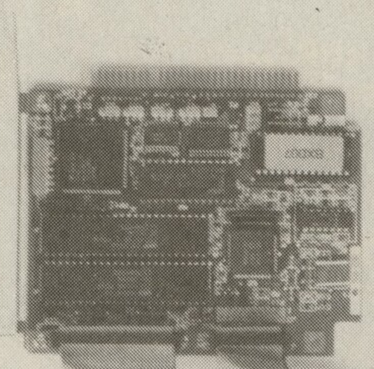
There are several ways for the less well-versed enthusiast to save money on PCs. Let's consider a few possible scenarios. The company you work for is upgrading the office XTs to ATs so that they can run the latest version of *WordPerfect* (rather than watching it walk). You might be able to pick up an old slow PC with no hard disk and a mono screen for under a hundred pounds. Buy it. Buy two of them. They can be easily upgraded for a fraction of the cost of a new machine.



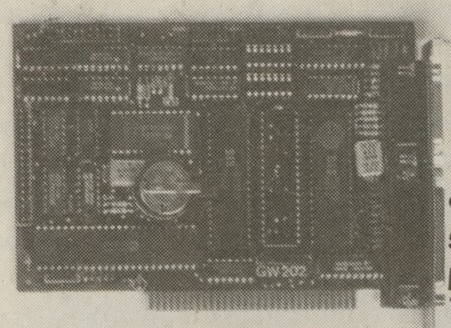
• A 5.25-inch floppy disk drive. An essential peripheral.



• A 20Mb hard disk. Once you've used one you will never want to see a floppy again.



• Disk controller card. Interfaces the disks to the computer.



• Combined clock, serial port and parallel port card. Tell the time and communicate with mice, modems and printers.

At computer auctions you will find that while complete systems go for around 75 per cent of the RRP, parts of systems go for much less. A box with no keyboard or monitor can often be had for a fraction of its value in spares. Similarly, as people's perceptions of the minimum requirement for a PC go up, the parts that don't fit that specification get harder to sel. But as a PC mechanic you will know exactly what you want your PC to do, and can buy parts according to need rather than fashion – cheaply.

Damaged stock is always a possibility. Plastic is very vulnerable to mechanical or heat damage. But let's be realistic about this, a monitor with the sides melted right down to slag can still be working perfectly well and last for years. If you're worried about electrocuting the children, build it into a mock Queen Anne cabinet.

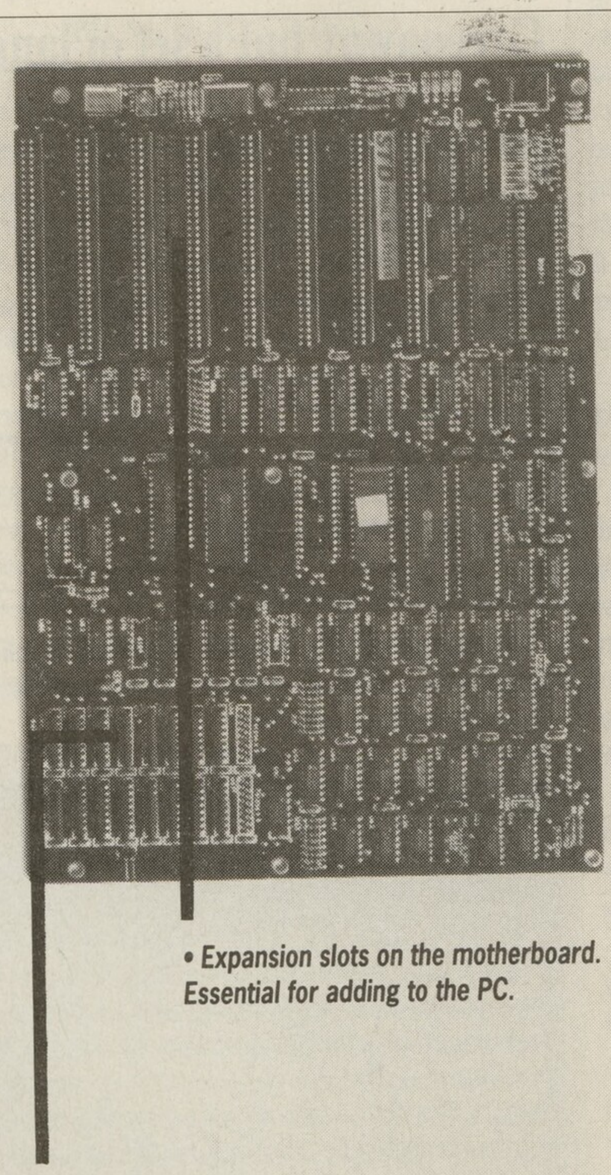
And what about other people's upgrades? When a dealer goes into an office suite and upgrades all the machines to colour, or from 20Mb to 40Mb hard disks, what happens to the bits that come out? Where do all the 360K drives go that were replaced by 1.2Mb drives? They go cheap is the answer, especially if you can get in before too many people realise the opportunity exists.

OPPORTUNITY KNOCKS

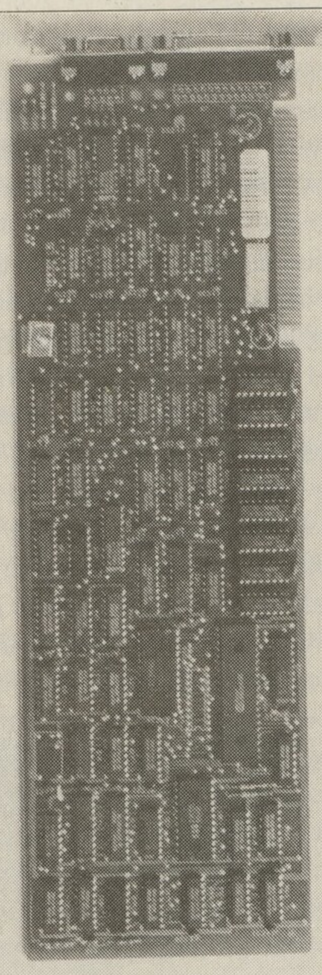
It may be that you had one really good opportunity and got hold of a particularly desirable part, perhaps a good colour monitor or a big, fast hard disk. You may not even have a PC in mind to put it into but when something like that cropped up, you sensibly jumped at it. The fact is that you can always get a really cheap, utterly basic (and probably unusable) PC suitable for upgrading.

A good source of these are companies that manufacture computers, obviously. They usually offer ludicrous terms to their employees and sell off stock at discounts as great as 50 per cent off the retail price. Assuming a bog-standard XT computer with a couple (or even one) floppy disk drive and a mono screen retails at around £400 pounds, you could possibly pick one up for a couple of hundred pounds just by knowing the right person – the one who can buy a computer on your behalf.

There's one other thing you need to know before you

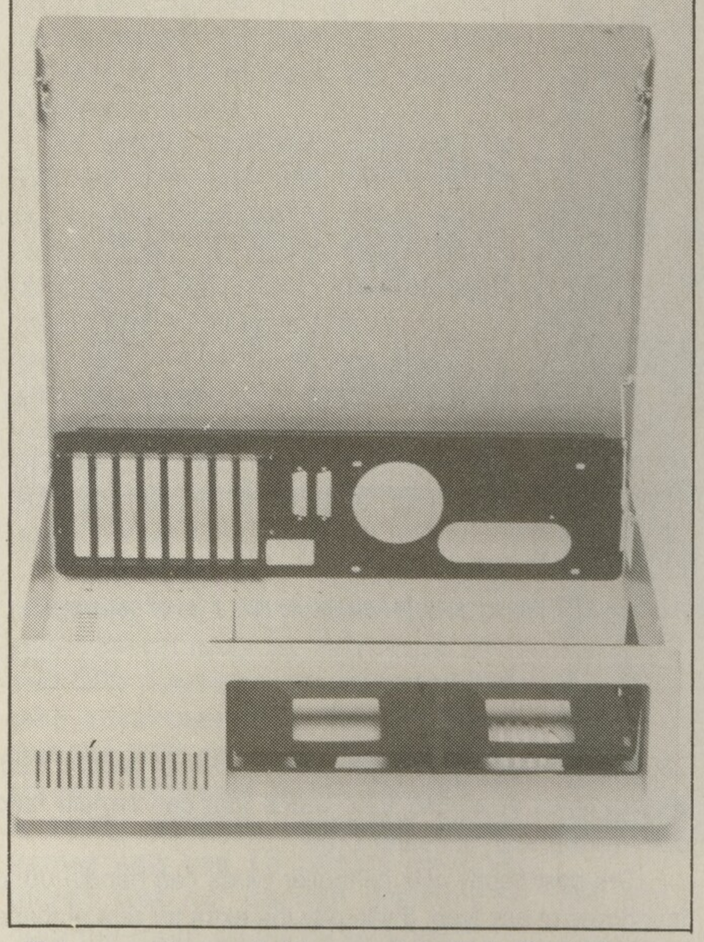


• Expansion slots on the motherboard. Essential for adding to the PC.



• Hercules graphics card. Allows you to use a cheap high-resolution monochrome monitor.

• RAM memory. Get at least 640K to be sure of running all programs.



• *Make sure the box is big enough to fit it all in! AT clones need a bigger box as the expansion cards are larger. Avoid customised smaller units.*

OWN PC

start hunting round the salesrooms – you won't get any support. Buy a part cheap and no-one is going to hold your hand while you try to find out how it works, or why this board won't work with that other drive.

Only those with complete confidence in their abilities should even consider buying parts with no documentation. Original manufacturers will not be interested in sorting you out and the people you bought from are unlikely to know as much as you. As always, real bargain hunters operate on their own.

Let's look at what you need to know to spot bargain parts. Firstly, what the parts are, then what they do and finally, how much you would expect to pay retail.

NEWS AT TEN

For the the do-it-yourselfer there are only two kinds of PC, the XT and the AT. The XT is the original PC while the AT is a faster machine (usually with hard disk) using a more powerful microprocessor. If you're going to get your hands dirty it's worth getting the originally specified full-size box for either of these two basic machines. The AT box is both wider and higher – mainly because add-in cards for an AT are higher (usually) than XT cards.

With a full-size box almost any kind of kit can be fitted, whereas if you go for a small footprint design you may well find that only one manufacturer's parts (like power supplies) will fit. Putting together PCs is helped by the way mass manufacturers have virtually standardised many parts. This has happened to such an extent that if you buy a box it will often have holes pre-drilled to match power supplies and disk drives from virtually anywhere. An AT or XT box will cost from £20 to £35 new – get a flip top box for easy access.

In the bottom of this box goes the computer itself, the motherboard. In the case of an XT this holds the 8088 microprocessor (or perhaps an 8086, V20 or V30 chip instead, which are all functionally identical if rather faster). Go for a 10MHz or faster board if possible. This will cost between £50 and £70 with no memory. XT boards run up to about 12MHz, while AT ones stretch to 16 or even 20MHz. Make sure memory for it is available from either ➤

ON THE VIDEO FRONT

Video adapter cards, which control a monitor, are frequently a major area of concern when it comes to upgrading a PC. There are currently four distinct 'standards' and some important variations within those standards. The most widely used video adapters are Hercules, CGA, EGA and VGA in increasing order of cost. It's important to note that this isn't to say that one is better than another, they all have specific strengths and weaknesses.

Most budget PCs are sold with either a Hercules or a Hercules-clone adapter board and a monochrome monitor (which can be white, amber or green). The boards cost about £45 and the monitor from £70 to around £100 depending on size and flexibility. At these prices most can handle not just Hercules signals but CGA and EGA as well, which will display in 16 shades of grey, amber or green. Believe it or not shades of one colour can actually be easier to use than real colour.

Colour monitors have three electron guns inside them, one each for red, green and blue. These fire electrons through a holed mask at phosphor dots on the screen. The distance apart of these holes gives the dot pitch – which is one of the most important things you need to know with a colour monitor.

Another thing to watch is scanning frequency. The higher the frequency the greater the number of lines the screen can display. A monitor capable of displaying the 200 lines of CGA will not let you display a higher resolution 350-line EGA display.

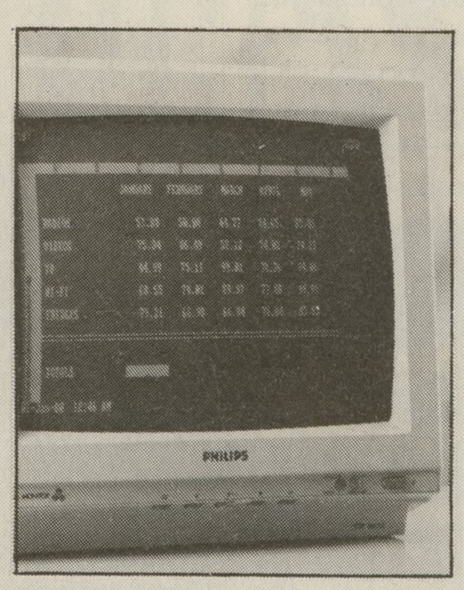
The third thing of note is the way the picture signals are sent. Hercules, CGA and EGA send TTL signals, which have distinct electronic levels: VGA sends analogue signals which can have an infinite range of electronic levels. The two monitor types are incompatible and can be damaged by the wrong kind of signal. Analogue VGA monitors have a 15-pin D-type connector instead of the usual 9-pin D-type to avoid connecting them up wrongly.

It is thus very important to get the correct monitor for your purposes – if you're offered a cheap monitor check that you can use it before buying.

If you plan to use your PC for business – word processing, spreadsheet or database work, then a Hercules-compatible monochrome monitor is a good buy – the text is extremely sharp and the display is fast. The whole thing is easy on the eye. A monitor that can cope with EGA (and hence with CGA) is an advantage since it will allow you to upgrade your display adapter as the opportunity arises without having to change the monitor.

Hercules is perfectly acceptable for DTP work. If you can only output to a laser printer or a dot-matrix printer – which is black and white – why confuse the issue with a colour screen?

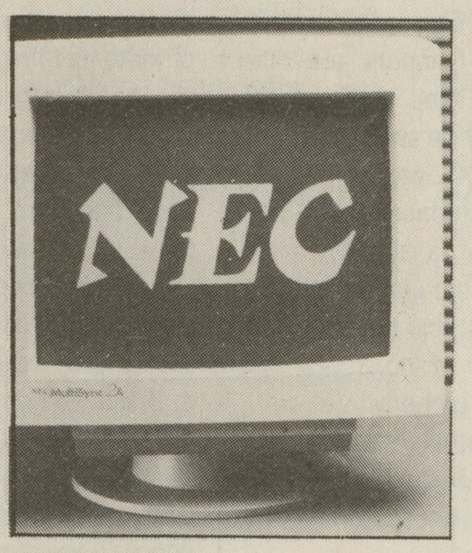
For games playing you will need CGA at least, and anyone being honest will admit that that's all CGA is good for. It gives 640 pixels wide by 200 lines deep. You get 16 colours in character mode and four in graphics mode. The on-screen characters are very ill-formed and working on it is tiring on the eyes. CGA has the advantage of being relatively cheap. A CGA card will set you back £30 to £40 new and a monitor to suit will cost around £180. The dot pitch will be very coarse at 0.52mm. If you want colour really badly you may not regret it; but it's unlikely. Hercules is much better.



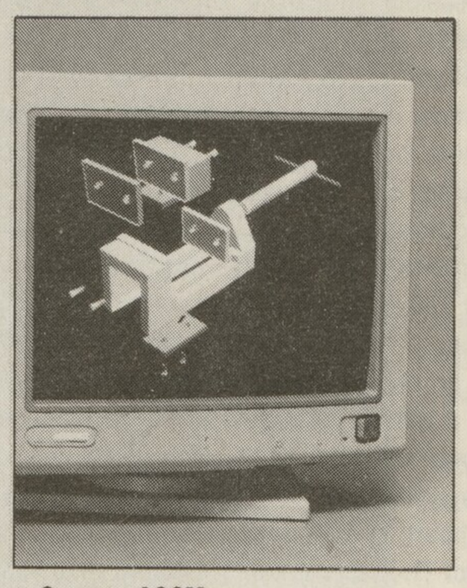
• *Philips CM 8833*



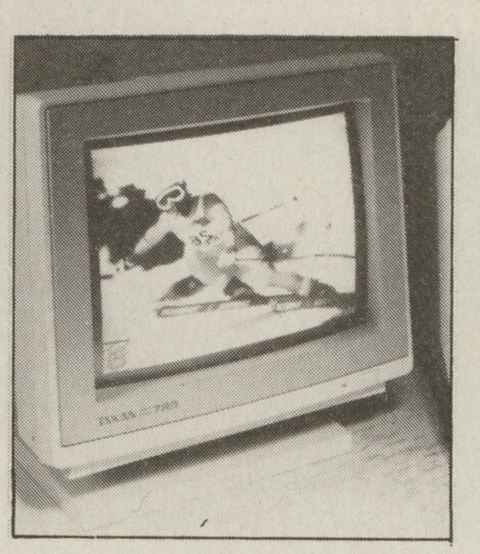
• *Taxan 770*



• *NEC Multisync 2A*



• *Compaq AGCM*



• *Taxan 785*

EGA is backwardly-compatible with CGA, so you can use it to play games on. It provides a display nominally as sharp as the Hercules – which is 720 pixels wide by 350 lines deep. EGA gives a maximum of 640 pixels wide by 350 lines deep and will display any 16 colours from a palette of 64 and can emulate previous IBM displays. An EGA card costs from £75 to £150 at the moment, the uncertainty on the price being due to its rapid replacement by VGA. Bargain hunters could find some EGA goodies over the next few months – keep your eyes open.

A monitor suitable for EGA will cost from £200 to over £400 depending on its abilities. You must have a minimum of 0.41mm dot pitch and preferably 0.31. With the smaller pitch the characters are nearly as well defined as with Hercules, and the display is suitable for continuous use. If you're offered a cheap EGA card check that it has at least 128K of RAM fitted or it won't work very well.

The next step up the upgrade path is to VGA, which offers 640 pixels across by 480 lines and can provide a superb, near-photographic 256 colour display (from a palette of 16.7 million). A monitor dot pitch of 0.31mm is acceptable but 0.29mm is preferable. A VGA card will cost around £160. The monitor will cost at least £200 and can go up to over £1,000 for a display exceeding the standard 640 by 480. It's easy to see why EGA is dying on the vine when both EGA and VGA cost about the same to produce.

Monochrome VGA is becoming a popular alternative to colour. Offering grey scale displays with very high resolution, they're pleasant to use and, at around £120, quite pleasant on the wallet to buy.

A lot of folk own Amstrad PC1512s and PC1640s: 1512 owners in particular are often interested in getting a better display. The only adapter they can use is Hercules, which has a different video memory address from the built-in CGA derivative. The CGA screen can't be turned off – the monitor contains the power supply – but the two don't interfere with each other.

Mono 1640s are Hercules compatible, but they can be upgraded to any screen you like since the built in graphics adapter can be disabled. Again, you will still need the original monitor for its power supply.

If you are offered any other graphics adapter card at a bargain basement price – one not on the list above – avoid it unless you really know what you're about.

These include manufacturer-specific cards that offer extended versions of the existing graphics standards, cards that didn't catch on, like the ill-fated InColor card, and cards designed to support odd monitors– which would involve you in trying to get hold of the the correct display.

The rule in the PC add-on card world is 'when in doubt, leave it out'.

the board supplier or some other named source as this is the trickiest part.

Memory type is important since it comes in so many different forms now. Occasionally boards will need traditional chips (with legs down both sides) but more often they need SIMMs (single in-line memory modules) with a single row of legs. Some boards need specific combinations of chips – check with the supplier. Memory prices vary widely but for a full 640K of 120ns (nanosecond) chips – don't buy anything slower for a 10MHz machine – expect to pay around £200. For an AT you will need 100ns RAM or even 80ns RAM. This will cost more.

You may be offered an older XT very cheaply because it only runs at 4.77MHz (the original IBM-specified speed). Depending on the price, buy it and fit a faster motherboard – older XTs are often very well built. But remember that you may not be able to use the existing RAM chips if they are too slow – check the numbers on the chips (the speed in nanoseconds is marked on top) and relace them with faster ones if necessary.

SALE OF THE CENTURY

Making use of existing add-in boards from an older machine is less problematical. On an XT all boards are expected to run at 4.77MHz. Whatever speed the main board runs at the speed of the bus (which carries the signals to the boards) is always set the same. If your bargain machine has a video adapter card, a floppy disk controller or a hard disk controller you will be able to use them all in the upgrade.

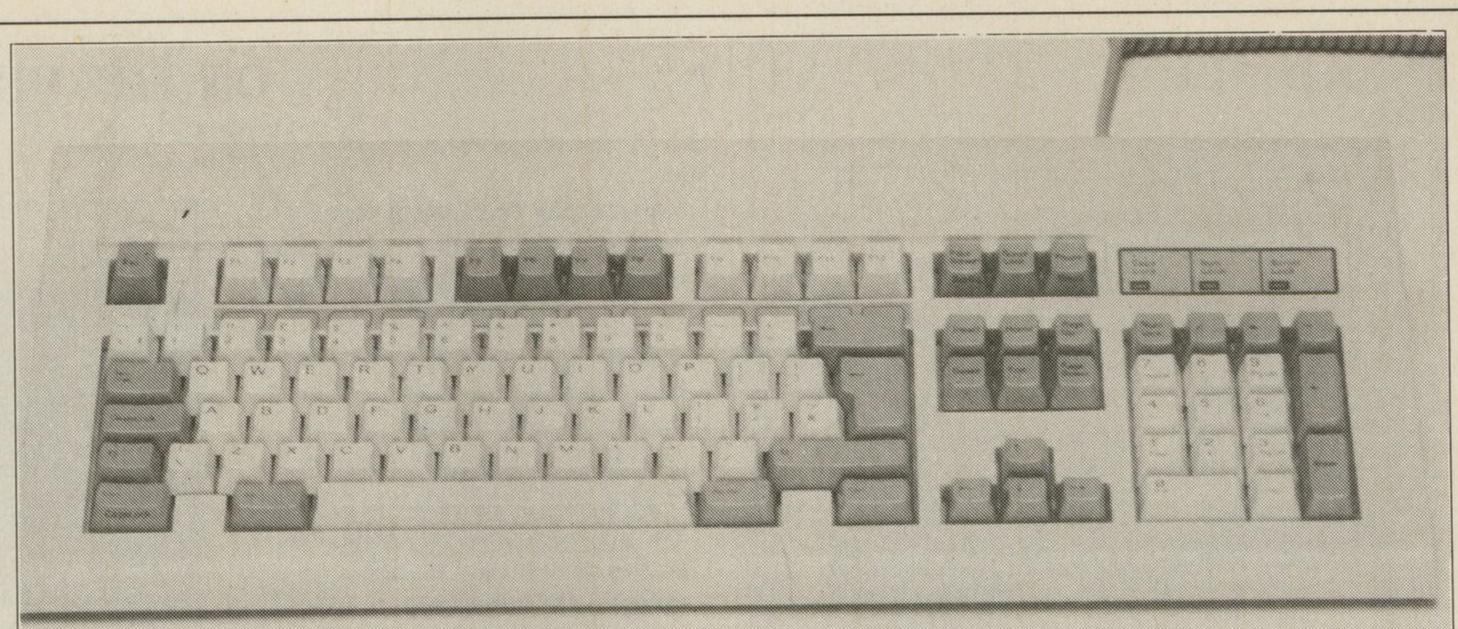
If you upgrade a machine all the way up to an AT specification you may have a few problems. On an AT the bus runs at 8MHz, and some older cards may not be rated to run that fast – though most modern cards will work perfectly well. The video adapter card will work, as will the floppy disk controller, but the hard disk card may not work without having jumpers on it reset (jumpers are little removable connectors on the board itself that act like switches – sometimes they may actually be switches).

The reason for this is that, on an AT, part of the program which controls the hard disk interface (the BIOS, which contains built-in operating code) is already in the motherboard AT BIOS – and it will get into conflict with the BIOS on the hard disk card. To prevent this the hard disk card BIOS must be disabled – it's one of those jobs that you need the card documentation to do properly.

The other cards that may give problems are serial input/output cards. It's probably best to budget for replacement – but luckily they are among the cheapest cards to buy – probably no more than £15 or so.

Some kind of input/output card is essential. If you are to use a mouse or a modem you will need a serial port – if you want both, two serial ports. A parallel port is necessary if you want to use a printer, as you almost certainly will. Another device which some motherboards lack is a real-time clock. These battery-backed-up devices do away with the annoying MS-DOS time and date prompts, and ensure that file date stamping is accurate. A combined serial, parallel and clock card should cost around £20, with a serial mouse setting you back another £40 or so.

If the old XT you're upgrading has an original 84-key keyboard then you can't carry on using it with an AT card fitted to your machine – you have to go to a 101- or 102-key keyboard. Keyboards come in two types – with the function keys to the left of the QWERTY part, and with the function keys on the top of the keyboard. The latter is the better as there are extra function keys to be used. To buy a keyboard is going to cost you at least £45 for a reasonable one. Don't skimp – you will learn to hate a bad keyboard.



• Some old PCs still have the original 84-key keyboard. The more modern 102-key version is needed to run a lot of software correctly, with its function keys and cursor controls.

EVER DECREASING CIRCLES

Disk drives come in two basic types, floppies and hard disks. Floppies come in two physical sizes, each of which has two different capacities. Hard disks come in an almost unlimited range of variations.

First the 5.25-inch size. Most bargain machines come with a single 360K floppy disk drive fitted, and in many ways this can be regarded as the lowest common denominator. They're often described as half-height devices (boxes are sometimes described as having room to fit two or three half-height devices).

A full-height device is 90mm high by 150mm wide which is the size of the original 360K dive. You'll find old 5.25-inch drives for sale at prices as low as £20, and if you have the room to fit them they're a bargain. Half-height 360K drives will set you back about £65, but beware of very cheap second-hand drives – they may already have reached the end of their useful life. Best sources for cheap drives are redundant drives from machines fitted with 1.2Mb 5.25-inch drives.

The 1.2Mb drives have more than three times the capacity of a 360K drive but need more expensive disks to work reliably (though they will read and write a 360K floppy). One of these drives will cost from £90, not a lot of difference but don't forget the controller card needed to run it – more on those in a moment.

The 3.5-inch disk size looks like becoming the standard for the Nineties, which will leave a lot of bargain 5.25-inch drives about. 3.5-inch drives are less expensive and the disks are sturdier. The drives are also a a lot smaller. They come with two capacities, either 720K or 1.44Mb. At the moment the 1.44Mb format uses very expensive media, so it's best avoided. You're unlikely to find any of these going really cheap, but then, a 720K drive costs only £60 new (a 1.44Mb one will set you back nearer to £90).

There are several things to watch out for when upgrading floppy disk drives. First of all, most controller boards support only two floppies, and budget machines often have boards that only handle 360K drives (cheap, though, at around £15). Controller boards for an XT that can handle 360K/720K floppy disk combinations start at around £20, all four types at around £30. Cards that can handle hard disks as well start at nearer £100.

The best floppy disk controller cards can handle up to four drives of any type. If you pay the extra for one of these you have the option of buying any drive that looks good, perhaps saving a great deal more money in the long run.

Watch out for machines running versions of DOS earlier than 3.3. These earlier versions of DOS don't support floppy disk drives larger than 1.2Mb without special device drivers installed.

BIG WORLD

Hard disks are perhaps the single most popular PC upgrade money can buy; which just goes to show how perceptive most PC users are. Going from floppy disks to hard disk is comparable to the change from tape-based machines to disk-based computers – it really is a whole new experience. On the down side it's very difficult to get a really cheap hard disk that's worth having.

The nearest thing to a standard hard disk on the XT is the 20Mb 65ms (65 millisecond access time) hard disk using the ST506 interface and the MFM data encoding technique. These can be bought either as a front-mounting disk with a card controller that fits in a slot or with the whole thing on an add-in card. As long as the card is firmly mounted it doesn't make a lot of difference which you choose – though some computers may be unhappy supplying all the power to the hard disk via the motherboard. The cost for either option is about £180.

Although – as discussed – most XT hard disks can be used in an AT, it's best to buy the drive designed for the job, it's less fuss. More important for compatibility is the question of RLL drives. These use a different controller card to encode information on the hard disk more compactly and efficiently.

Because the RLL encoding leaves less room for errors, a higher engineering standard is required. Using an RLL controller card with a standard drive will usually appear to work but will not be reliable – the error rate will be unacceptably high after only a short period of use. Only the manufacturer's documentation is a reliable guide to the suitability of a drive for RLL encoding.

On an AT the hard disk drive chosen should have an access time of 40ms or less or it will noticeably cut into the speed gain provided by the faster chip and bus.

One very worthwhile upgrade if you can afford a disk larger than 32Mb is to either DOS 4.0 or to Digital Research DR-DOS 3.41, both of which support hard disks larger than 32Mb in a single partition. Other DOS versions annoyingly make you split the disk into C: and D: drives.

BARGAIN SPOTTING

In the long run the only way to spot a PC bargain is to be on the look-out for it. You need to scour the small ads in the computer press – our own Shopping Express section is a good place to start. Alternatively show up at auctions where truly amazing deals can be had. Cultivate computer company employees with access to huge discount deals. But most importantly of all, learn your subject. Then you can see the bargain for what it is instantly.■

BEGINNERS' CORNER

Just as we would not expect someone who knew nothing about motor cars to build their own from a collection of write-offs, neither do we recommend complete novices to build their first computer using this feature alone – it is directed at current PC users who already understand something about the IBM-compatible's innards and *modus operandi*.

But for those many readers who are thinking about buying their first PC system but are baffled by talk of processors, buses, slots, display standards, clock speeds and the like, *Express* is preparing a whole series of features to help them understand PC-compatibles from scratch.

We will be examining the differences between the original IBM PC and all of the newer standards right up to the 33MHz 80386 systems and beyond; looking at which monitor you need to do the job; at expansion slots, why they may be important and how many you will need; at RAM, ROM, maths co-processors, disk drives, peripherals and lots more besides.

Most importantly, we will be helping you to avoid shelling out unnecessary amounts of hard-earned cash on more power than you really need by helping to identify your requirements so that you can read through reviews and advertisements, or visit showrooms, and pick exactly the computer you need at a price you can afford.

Prospective PC buyers – watch this space, starting next week...



EXPRESS MAiL

Britain's liveliest computing forum – packed with comment, controversy and conflict. Write and tell us what you think! Reach us at: *Express Mail, 30 Monmouth Street Bath BA1 2AP* Sorry, no personal replies, even with an sae. This week's answers by Andy Storer

STE fever

After reading all the adverse comments about the new STE, I have decided to put forward my views on the new machine.

In terms of sound quality, the STE is well-equipped, with stereo digitised sound for in-game music compared to the beeps produced by normal sound chips (the Amiga's included). For sound effects such as explosions and gunshots the STE uses the three voice YM2149, which excells at those sort of noises. The STE also has the same MIDI ports as the ST, which makes it the best micro for all-round sound.

Admittedly the 4,096 colour table will not be much use until applications such as *Spectrum 512* and GFA *Raytrace* are developed to take advantage of it. The argument that the STE only has 16 colours on screen compared to the Amiga's 32 is really pointless as most Amiga games only use 16 colours because there's just not enough memory to hold the more colourful screens.

In any case, it would be far simpler to change the pallette at various points on screen to get the extra colours, as this takes up less RAM. Both the STE and Amiga have hardware scrolling, but due to the way it is implemented on the STE it will be faster than the Amiga. For 3D graphics the ST has always been faster than the Amiga due to its 8MHz CPU against the Amiga's 7.14MHz CPU.

Incidentally, the Sinclair QL actually runs faster than the Amiga. Amiga owners can no longer claim that their micro is faster due to its blitter chip, as the STE has got its own, and it's fairly obvious that a 8MHz 68000 and blitter is faster than a 7.14MHz 68000 and blitter. The only advantage that the CBM machine has over the STE is its hardware sprites.

On the serious side of things, the STE is better supported than the Amiga, mainly due to its high-res monitor. The Amiga's multi-tasking OS is of no benefit, as proper multi-tasking requires several megabytes of RAM, and the top-of-the-range A2000 only comes with 1Mb – the same as a 1040 but about £600 more expensive.

In a true multi-tasking OS such as Unix, if one application crashes the others carry on working, but on the Amiga the whole system goes off to meditate in limbo. The STE's Desktop is a huge improvement on Workbench, and in 640 x 400 mode it looks even better than the Apple Mac's version.

One huge benefit of the ST range over other micros is that machines come supplied with up to 4Mb of RAM. With the ST range there is a clear upgrade path through the Mega series to the TT and UXE machines.

On the face of it, people should compare the ST range with the Macintosh range, as both are extremely versatile and capable machines, although the ST range costs much less.

The Amiga should be compared with machines such as the Sega Megdrive and the PC Engine, as it's no more than a toy games machine, although it is underpowered compared to the consoles.

Matthew Howkins, Leamington Spa, Warwicks.

And just when you thought you had seen the last of the debate, here it comes again! Whether a difference of 0.86MHz is really of any consequence is beside the point, since for all intents and purposes the STE has the same level of specification the Amiga had two years ago. 'Better late than never' might be the best comment with which to conclude, but there again 'Too little too late' might be a better one. Maybe Atari should have switched its STE R&D costs to bringing down the price of the TT – then it would have a real Amiga-beater on its hands.

Free PD

In *Express* issue 58 there is yet another letter complaining about the price of PD software. You wanted more, so here's one from a librarian.

If you have a Spectrum or a SAM (wishful thinking) then you don't have this problem. You have The Speccy Sector, the best free PD service for Spectrums and SAMs. The Speccy Sector can offer top quality PD software for nothing but the price of an envelope and some stamps. Need I say more?

I think that PD column is an excellent idea. Of course I realise that The Speccy Sector is not in the same league as professional PD services but it is one of the very few for the Spectrum and the SAM Coupé, and a PD column would alert many Spectrum owners to the benefits of The Speccy Sector.

Owen Brown, Chelmsford, Essex

Piracy 'worse than killing' and 'stealing from your own children'

I have had enough of this annoying subject of pirate software. I have been reading your magazine for a considerable time, and I wish a month would pass with out a least one letter from an ignorant person who is defending this crime – it's worse than killing.

A pirate is stealing a program, which is like taking a life out of the programmer. I should know, because I'm a student in computers myself. You sit for months slaving in front of a screen and on paper, trying to do a program which you think it would be useful to some person out there, trying to make it as good as possible, putting your life and soul into it so you can earn some money to feed yourself and your family (if you have one), and the next thing you know some fat bastard has copied it and started selling it for his own profits.

This sort of act makes you want to burst with anger, it's like someone stealing one of your own children. But people like that don't understand these things, they just want to get something for nothing.

I was reading a letter from a 'Mr Reluctant Pirate' in issue 59/60. I'm a student and I know for a fact that no student ever needed to buy a piece of software which is vital for the course, because the fact is that everything is provided for you by the educational institution you study in, therefore there is no need to copy software which you *think* you need for your course. I have never needed any software that costs £700, and as for games, if you can afford the computer you can afford the game. So stop using these petty excuses for a crime that kills the programing profession.

If this goes on any longer, a lot of programers – and I mean a lot, including myself – will stop producing quality software, or software altogether, and then you will not have any software to copy!

Take Denmark as an example – no software house is prepared to set-up shop there, so hardly any new software reaches them there. Why? Because of people like Mr Pirate. As for backup copies, I'm all for that; I think a person who bought a program has the right to have a backup copy for his own personal use.

I think people should stop saying that piracy is OK. In my view pirates are criminals like any other, and they should be locked away.

Z Dabbas, Gillingham, Kent

Piracy and theft are always going to exist whatever the product. Judging by the increasing numbers of prisoners in our jails it would seem even harsh sentences are no real deterrent to criminal activity – somebody's always going to believe they can get away with it.

What programmers should do to safeguard all their hard work is to make sure they have solid protection devices. Personally, I can see no reason why games and serious software shouldn't all have the kind of 'key-word' protection you need to refer to a manual for.

In the meantime, it's up to users to Just Say No to pirated copies. There's not a lot else that can be done.

Cunning linguists

With reference to the letter in Issue 59/60 headed 'Different Worlds revealed by a mouse' I would like to point out a few inaccuracies on the part of both 'parties'.

First of all, the differences of Hindi and Urdu are far greater than just having different scripts. For a start Hindi (pure Hindi, not the casual blabber that is) has its roots on Prakmit and Sanskript while Urdu has its roots in Persian and hence not only do their vocabularies vary a great deal, but so do their sentence structures. I should know since one of the A-levels I'm studing is Hindi.

Now about the question of the 'naksha' meaning 'world' in Hindi – there's no such word in Hindi (incidentally in Hindi the words for 'world' are lok, prithvi, janani, etc), not even in casual Hindi. However, the word naksha (correctly spelt naqsha) is derived from the Persian word for imprinted, stamp or map.

Incidentally, Hindi for 'map' is 'disha-patr'.

D S Singh, Ispwich, Suffolk

TECH TIPS



Personal computer problems? Uncle Tech Tip is your man. Write with the agonising details to Tech Tips, Beauford Court, 30 Monmouth Street, Bath BA1 2AP. Don't forget to tell him which machine you own, as the sorriest story wins a software prize

HELP! Drive trio

I've recently bought an Atari 520STFM complete with two drives and a monochrome monitor. I'm very pleased with this set up, but I would like to add more drive space. The two floppy drives I already have only provide 1.5Mb formatted. I can't afford a hard drive just yet, so I decided to add a third floppy drive. However, when I consulted the manual I found that even if there was a third drive socket (which there isn't!), the ST would be unable to control this third drive anyway.

Is this true, or is it somehow possible to connect a third drive to my Atari ST?
D. Bend, Taplow, Bucks.

The Atari ST is equipped with sockets to control two floppy disk drives and it was never intended that the machine should be connected to more than this number. You can however, connect a third device if you use one of the commercially available drive cable splitters. One of the best of these is that marketed by Club 68000 Ltd. The company has a device which facilitates the connection of up to three drives, and you can choose any of them at the flick of a switch. The device splitter costs £49.95 and is available from Club 68000 Ltd, Suite 1, Wickham House, 2 Upper Teddington Road, Kingston, Surrey KT1 4DD.

HELP! Amiga comms

Can I connect my newly-acquired Psion Organiser XP to my existing Commodore Amiga 500 computer? I would like to be able to transfer word processor and other files between the two machines but, try as I might, I have been unsuccessful in my attempts to achieve this. I have checked the physical links between the serial ports and they seem to be OK.

Can you make a suggestion as to what might be wrong. Is it me, the hardware or the software?
Andrew Button, Norwich, Norfolk.

If you've checked the physical connections and they appear to be in working order then the fault almost certainly lies in the software. Communications programs are notoriously difficult to configure the first time you use them.

If you already have some comms software for the Amiga then here's what to do. Connect the two computers via the datalink cable supplied with the Psion Organiser. Boot up the Organiser's comms program and the comms software you are using with the Amiga.

If you don't have any comms software do not buy commercial offerings. There's a huge range of good stuff in the public domain, all available for the price of a disk and copying. Phone Softville on 0705 266509 for a catalogue.

Boot up the Amiga software and set a baud rate of 1200, no parity. Configure the Psion software to equivalent specifications, set one machine to transmit the other to receive and Bob's your Aunt's live-in lover, you should have two communicating computers. If you have any further problems try contacting Psion on 01-723 9408.

TIP Sound Spectrum

I am the proud owner of a humble Spectrum Plus 3 which although it is now rather tired, can still provide me with a lot of fun. One thing that I find annoying is the sound distortion experienced when using the TV leads. But recently I discovered a method of overcoming this which has restored perfect *(perfect? – Uncle TT)* sound to my Spectrum and which I'm sure other readers would like to know about.

The Spectrum +3 has load and save sockets as well as the TV output sockets owners would normally use. By connecting the save socket to an amplifier using an ordinary phono plug (I use a small amplifier purchased at Tandys for the purpose), I have perfect sound from Spectrum games.

There's also the added bonus of being able to make use of a standard pair of headphones if I don't want to disturb the rest of the family.
S. Bennet. North Walsham, Norfolk.

TIP Split rate

The embarrassed computer studies teacher in Tech Tips issue 58 was indeed suffering from a well know IBM PC feature. The IBM serial port, and therefore that of compatibles, cannot be set to transmit and receive at different baud rates, hence split baud rates, such as 1200/75, require some kind of kludge to work.

Two methods are in common use. In one the software re-programs the port's baud rate repeatedly, trying to keep it running at the appropriate rate depending on whether you are sending or receiving. This technique works fairly well, but *Procomm* (the software the teacher was using) does not have the capability. The shareware version of *Procomm* doesn't have viewdata capability either so is useless for accessing Prestel all round.

The second method is to use a modem which has speed buffering. The modem communicates with the computer at 1200 baud in both directions, but converts the outgoing data signal to 75 baud at the telephone connection. Most modems made for the UK market and described as Hayes compatible or intelligent will perform this trick. The Datachat 1223 is not one of these.

So as suspected, the software doesn't support the split 1200/75 baud rate. And while the modem does support 1200/75 (the only

HELP! I want to use the software from the college PC on my ST

As a student, I have access to a huge range of IBM PC software kept at my polytechnic. Unfortunately, I have an Atari ST at home and so I can't make use of it – or can I?

I have heard and read about these emulators that allow STers to use PC software as fast as on the original computer. Unfortunately, I'm fairly new to computers and I'm not quite sure what I need to perform this emulation. Would I need to have a 5.25-inch disk drive, or will the PC software work with the 3.5-inch drive?

Please help, I really would like to make use of the college software.
R. Bains, Southend, Essex.

Armed with the humble Atari ST, the possibilities for emulation – PC or otherwise – are almost endless. Hardware- and software-based PC emulators, hardware Apple Mac and software CP/M emulators are all readily available and work well. You don't need to own a 5.25-inch drive in order to access PC software as most of it is now available in 3.5-inch format anyway.

Hardware emulators consist of a circuit board complete with an Intel 8086 central processor chip – the same device that drives the genuine PC – and some RAM memory. Hardware emulators are fast and elegant, and because they have the same physical architecture as any other IBM-PC compatible they work very well.

Software emulators are, as their name implies, programs which employ clever programming methods in order to emulate a target computer. Because they're software-based, speed is limited and they tend not to be quite as compatible with the original as their hardware counterparts. They are, however, considerably cheaper.

There are two major hardware-based PC emulators for the Atari ST. These are PC Speed and Supercharger. PC Speed is a circuit board which fits inside the case of the ST; It has an V30 8086-compatible CPU but no RAM.

Supercharger is almost the same circuit board but with RAM memory and fitted inside its own slim case. Supercharger sits next to the ST and is therefore much easier to set up and operate.

Both devices cost the same (£299) but my money would go to Supercharger. With 512K of RAM on board and no fitting problems it is far better value. Supercharger is available from Condor Computers, who you can reach on 0734 819791.

If £299 is to you an impossibly large sum, then you might be interested to know about *PC Ditto*. *Ditto* is a software emulator which has been around for several years. The program is extremely popular and many ST users swear by it. Using some extremely clever programming techniques, Power Computing (0234 273001), the company responsible for the emulator, have managed to create a program which turns your ST into a PC, making use of the monochrome and colour monitors or a television to provide a CGA/MDA compatible display.

Although *Ditto* is slow, it does a very good emulation job and is well worth the £69 purchase price.

So there you are. Hardware and software emulation at prices to suit all pockets. You must remember though, that the software is owned by your college and not you! If you make copies of the software then you'll be stealing – you have been warned.

speed it has), it can't communicate with an IBM or clone at that speed.

The best solution to this problem is to get a good V22 modem with 1200 baud in both directions. You no longer need split baud rate for Prestel as they have finally decided to get in step with the rest of the world. You still need viewdata software though. With this in mind I would recommend *Transend Plus*, which is reasonably priced, has possibly the best viewdata implementation, and can even trick manual modems into working in a fake split speed mode on an IBM serial port. *Transend Plus* can be obtained from Messiter Software on 01-449 2994.

Lolo Davison, Scubbets, Gloucester.

TIP Rodent pied

If the small slippy feet of the mouse rodent fall off due to frantic scrubbing action of mouse owners who do not have a mouse mat and use their rodent on a desktop, then an excellent solution is to use double-sided sticky tape and PTFE (polytetrafluoroethane) plumbers tape to effect a repair. One roll of each of these tapes will repair 500 mice.

Any non technical readers can send their mice to me wrapped tightly in a new £5 note for postage.

J. Broadhead, Gladstone House, 14 Gladstobe Street, Ibstock, Leicestershire LE6 1NH.

HELP! Good Citizen

I have a Citizen 120D printer which I have been using with a Spectrum Plus 2 computer. The printer therefore has a serial interface and when connected to the RS232/MIDI port operated with some success.

I have now decided to buy an Atari 520STFM but wish to keep my present printer.

Can you please tell me whether I can use my printer with the Atari? I have made enquiries with various firms and have had different replies. I would like to know if I can obtain a lead to connect the computer and printer and then use all the software available or whether I will have to obtain a parallel interface for the printer.

A. Oliver, Port Talbot, West Glamorgan.

The Atari ST is equipped with both a parallel port and an industry standard serial port which will indeed enable you to connect the Citizen 120D to the machine. You don't need any special software, cables or settings. You must obtain a standard RS232 cable from your local computer store (price around £10) or from one of the many advertisers in Shopping Express. Using this cable the printer will connect directly to the ST and you'll be able to use it with almost all commercially available software.

Do remember to re-configure word processor and other programs, as they're usually shipped pre-set for use with parallel printers.

The Citizen 120D is a popular and robust printer that should offer many years of service.

BUG Truly impossible

***Impossible Mission 2* is a great game for the IBM PC, but you must keep the disk in the drive throughout the game. If you take it out and put it back in after you have saved the game onto another disk, then one directory of files is erased!**

You must keep the program disk in the drive and save games onto the original disk.

Michael Savva, Basildon, Essex.

TIP Football fun

I am writing with some tips for *TV Sports Football*. When your opponent is attempting a kick, either an extra point or a field goal, press [Alternate] and [Help]. This causes him to miss every time. If you want to gain fast yardage select Fake Punt. Then throw in front of your left wide receiver. He will be unmarked for about 20 yards, unless you try this too near your opponents goal.

It is very frustrating that you cannot edit your team during the season. If you have a disk editor you can alter the players attributes by selecting the Teamdata.fb file.

You can change teams to either human or computer control by changing the byte immediately before the quarterback's name to either 01 or 00.

The player's attributes are the four bytes immediately before the name of the following player. They are speed, strength, hands and ability with ratings of 01 to 08. Of course you could cheat and give your players all eights.

Needless to say, don't alter your original disk. Use a back up of your league disk.

G. Hackett, Crosby, Liverpool.

HELP! RAM upgrade

I've been trying to get my Atari 520 STFM upgraded to a 1040 and thought I'd struck lucky when I found a firm in Leeds who said they could perform this operation for the very reasonable price of £69.95 fitting and all. Alas when they opened up the ST, it turned out to be a 'flat top'. What? Yet another suspense mystery from our beloved Atari Corporation.

No doubt you know all about these flat tops but I wonder how many other users do. I was told that the chip to upgrade these was not the usual chip and that the fitting was far more complicated.

I bought my Atari 520 from the Evesham Micro stand at the Ally Pally show during November 1988 and was assured that I would have no trouble upgrading. Huh!

Anyway:

1. Can you explain what a flat top is?

2. The difference in the chip for upgrading?

3. Do you know of anyone in the Leeds/Manchester area who can do upgrades for the sort of machine that I have?

4. Is there any other way I can increase the memory of my 520STFM such as using the cartridge port, and if so, who should I contact to do it?

By the way, I took a friend's 520ST into the same firm at the same time. His wasn't a flat top and they did the job in about three hours and it works perfectly. The work also has a six month's guarantee. For £70 it must be the best deal around. So if you're prepared to give 'em a plug, they're called Altra and they live at 629 Roundhay Road, Leeds 8.

John Morris, Leeds.

1. There is no such thing as a 'flat top'. This is some strange invention on the part of Altra to describe surface-mounted chips. On many STs, the RAM can upgraded by simply plugging chips into sockets already present on the main motherboard. However, some machines have surface-mounted RAM chips. That is, there are no sockets, instead, chips are soldered directly onto the motherboard. These are far more difficult to upgrade – there are no sockets!

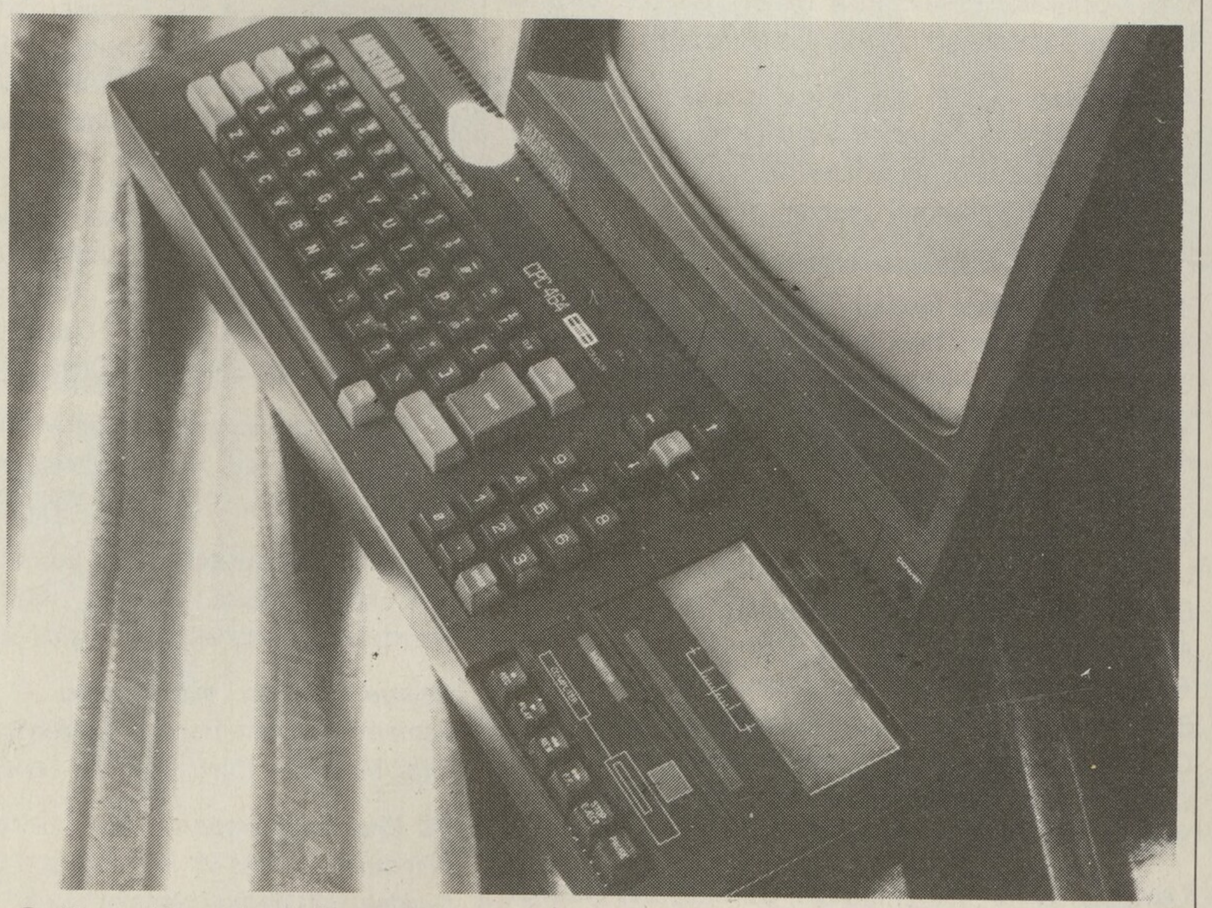
2, 3 and 4. You can still upgrade the ST's memory quite easily whatever kind of chip mounting the machine employs. Third Coast Technologies (0257 426464) market a little circuit board which fits over the MMU (Memory Management Unit) chip, upgrades the memory to 1Mb and is easy to fit. It can be upgraded by a further megabyte simply by exchanging a couple of chips on the circuit board at a later date. The device costs a little over £100.■

HELP! My CPC won't talk to me anymore when I play games

I own a humble Amstrad CPC464 and I have a speech synthesiser for it. When I first got the computer and synthesizer all was well, but now on some games I have, the computer or something just makes them crash (i.e. *Battey, Gauntlet II* etc). I am wondering whether it is the synthesizer interface or the computer, because when I take the interface out there is no problem on Gauntlet II. Why does this happen?

I am also having a problem with the built in data recorder which doesn't load all of my software. I got a cassette head cleaner and the games loaded so I played them. Next day when I went to load them they wouldn't. So I bought a cassette head straightener and for about two months they continued to load. But now they're refusing to load again. Is it the grotty tape player or is it the fault of that grotty computer again?

S. House, Dorchester, Dorset.



• Problems with tape head alignment and speech synthesis on the Amstrad CPC 464

The first problem could be caused by the synthesiser interface stealing cycles from the Z80 CPU (central processing unit) in your computer. This means that the Z80 checks all the ports to determine just what is connected to your CPC464. When it comes across the synthesizer interface it is made to give up more time than it intends to, and consequently, software which is running at the same time can be made to crash. This is borne out by the fact that when you disconnect the interface, software runs perfectly. Don't worry. There's nothing wrong with your computer or speech synth. You just have rather a boring chore disconnecting the synth before using commercial games software.

The second problem is – as you rightly ascertained – to do with the alignment of the heads. The angle at which the read/write head meets the tape is known as the azimuth angle and must be at 90 degrees i.e. the head must be at right angles to the tape. If not, then signals emanating from the tape are severely distorted making it impossible for the poor old CPC to understand what it is the cassette player is trying to say.

Try using your head alignment tool regularly and always keep the head clean by using a proprietory head cleaning fluid and a cotton swab.

If you play a music tape and adjust the azimuth while it is playing, you'll get best results from the computer when the sound is sharpest.

COMPETITION WINNERS

It's time for those of you who entered our £12,000 Christmas competition to discover if you should be watching out for the postman for the next few days. Please allow at least 28 days to receive your prizes – we cannot answer any queries before then.

Here they are, the winners of £12,000-worth of goodies from our Christmas Competition.

Our thanks to the companies that so generously provided their products as prizes: Natscha, Evesham Micros, Westoning, MGT, Mention, Star, Microillusions, Coktel Vision, CTW, Powerplay, Electronic Arts, Activision, CRL, Nextbase, Micronet, Impressions, Atari, Virgin/Mastertronic, US Gold, and CodeMasters.

Batman Pack – David C Isaacs,Berkshire

Olivetti PCI – Chris Ward, Northampton

PC Engine and five games – Kayle Garkut, South Wales

SAM Coupé – T Thompson, West Midlands

Atari Lynx – Yarko Blahyj, Derby; Richard Coleman, Ayrshire; D T MacPherson, West Sussex; Chris Lamb, Dorset; Kenneth Rane, Gloucester

Sega Super System – Andy Pickerin, Staffordshire

Amiga Monitor – M A Stubbs, Plymouth

25 US Gold Games – Daniel Hailstone, Northants

US Gold Compilation – Mr M Wilson, Hull; Martin Ritson, Morayshire; Ornette Wilson, London; Iain Holloway, Bedfordshire; Paul Taylor, Leics; D Stanford, Derbyshire; Wesley Ditch, Hampshire; John McElroy, Herts; John Oliver, Suffolk; Thomas Irvine, Co. Down; I E Campbell, Lancs; Mr A G Bowler, Kent; J F Campey, Middlesex; M A Smith, Colchester; Gregory Searle, Hants

Code Masters CD compilation – Mr Howard Coe, Kent; Filip Landuyt, London; Mike Betts, Somerset ; Willie Lawrie, Perth; Roger Glover, Glasgow; M A Stanley, Hants; Adam Whittle, Cambs; Peter Roznowski, Derby; Jim Wyatt, Swadlincote; Alan Walsh, Sussex; Jonathan Nurse, Bristol; Thomas McAteer, Glasgow; A Howard, Plymouth; Dr Clare Jenkins, Powys; Kevin Paul Davies, Gwent

Kenny Dalglish game – M J Simmons, Twickenham; Nick Edelsten, Bucks; P J Perry, Surrey; Kevin Lucas, London; Greg Hughes, West Midlands; Frank McCartney, Denny; Mat Broomfield, Essex; Rick Billson, Staines; Andrew Moulding, Cambridgeshire; Sean Laird, Scotland

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Autoroute – Terry Sankey, West Midlands;; Terence Egan, West Yorkshire; Andrew Hilder, West Sussex; Eric Murray, London ; S Knafler, Lincoln; John McGhee, Glasgow; Mick Jones, West Sussex; Mark McLean, Hants; C Jones, Reading; G J Salt, West Yorkshire

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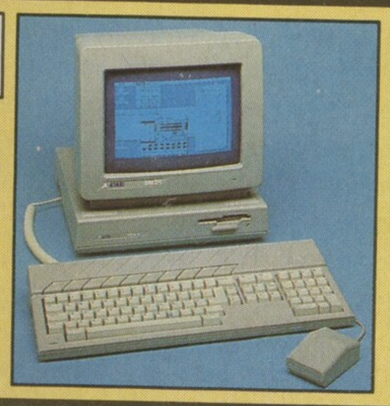
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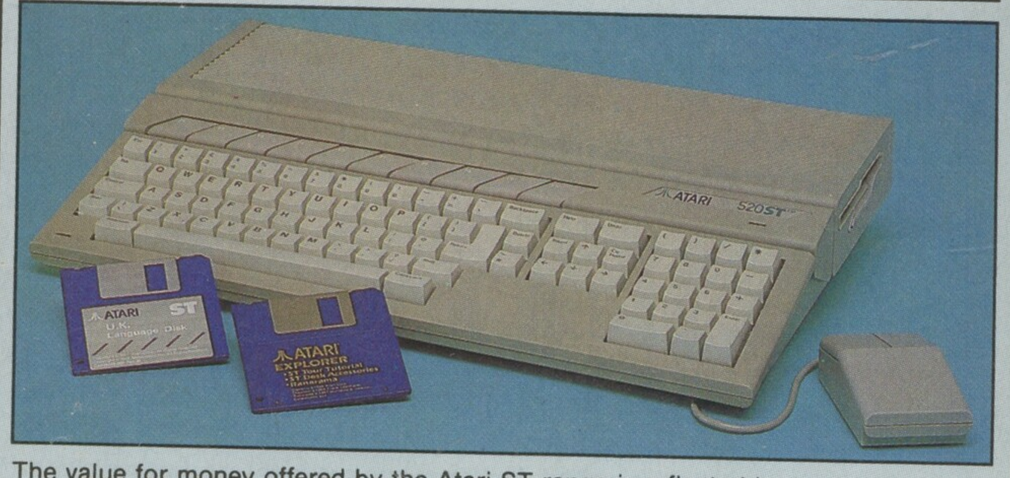
ATARI ST

ST COMPUTERS

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COMMENT

Why a less brusque approach by Atari to the STE's problems with compatibility would help set users minds at rest

Had Atari resisted the temptation to fly in batches of STEs to the UK months ahead of schedule, and instead launched the machine only when the software houses had truly accustomed themselves to the technology, then the frustrating incompatibility problems already being suffered by users would not have been so acute.

The inescapable fact is that Atari, in its desire to supply the Christmas market, has caused a New Year disorder which everybody could well do without.

It is well known that much of the firm's efforts at the end of last year were directed at getting STs into the UK, and correcting 'patchy availability'. But the premature introduction of the upgraded machine has given largely unprepared software houses a real headache and caused confusion among new users.

The publishers were given their first chance to poke around the STE last summer. Many games written or released before then have been proved to be incompatible. Even games launched as recently as *Stunt Car Racer* (November) are in difficulties – much of the code had been written before Microprose was presented with an STE.

It is obvious that programmers have unwisely decided to ignore many of Atari's warnings concerning the dangers of disregarding technical specifications. But that cannot be a surprise to anyone given the exploratory nature of our talented games writers.

Predictably, Atari is attempting to distance itself from the confusion and sticking to the line that the machine is 100 per cent compatible with the ST. As far as it goes, this statement is undoubtedly true, in that the machine is entirely in line with the ST's technical specifications, but what it fails to say is that the STE is not 100 per cent compatible with dozens of leading software packages.

PREMATURE INJECTION

Atari must have realised that there would be inconsistencies. Why wasn't more done to avoid this mess? While it is true that the software houses are almost entirely responsible for the glitches which are now coming to light, it is the premature injection of an unspecified number of STEs on to the market which has left users out on a limb, thrown the programmers into a panic and lent an unfortunate air of amateurism to the emergence of what should be an excellent machine.

Perhaps it has been thrust upon us by circumstance. By next autumn, when the STE should have been arriving, most games on the market would have been STE-compatible anyway. The problem would not have been so immediate, even though old copies of many games would still have been incompatible.

As it is, the software houses have been rushed into making changes to their products. To its credit, Anco managed to get an STE-compatible version of *Kick Off* onto the streets within 10 days of hearing about problems.

Many other companies, wise to the strange actions of hardware manufacturers, have moved quickly. And, by and large, users stuck with incompatible games will get a free replacement from the relevant software houses.

But it's still all a hassle for the end consumer. And as every day passes, it emerges that more and more packages are incompatible. *Express* reader Andy Richardson claims as we go to press that he has found 20 incompatible games on top of those reported in this week's news pages. These include *Barbarian 2* (Palace), *Colossus Chess X*, *Licence to Kill*, *Starglider*, *Weird Dreams* and *Operation Wolf*.

Further details are also emerging as to the nature of the problems. It is now said that certain models of external 3.5-inch drives will not work. It is also reckoned to be impossible to boot up in medium resolution, even after saving the Desktop in medium resolution. Richardson quotes a leading ST dealer as saying a program will be available by February which will rectify this.

But over the coming weeks more bugs will be appearing and more disastifaction will emerge with Atari's brusque handling of the situation. The delight of some STE owners at having bought the new machine is already turning to disgruntlement at being, willy nilly, guinea-pigs and fault-finders for the industry.

It is more than likely that Atari's UK boss, Bob Gleadow, brought the STEs in as a last resort, and even then was reluctant to do so. The existence of the 520STE was only acknowledged by Atari last November, and given previous problems with upgrades (the last as little as two years ago) the firm must have suspected the worst.

One can only hope we don't see further supplies of the STE for some months to come, and that users, dealers and publishers are given more time to prepare for its official arrival.

TAKE CARE

Unfortunately, if you own an STE it's up to you to take care when choosing programs. Where possible, check with public domain suppliers in particular when buying programs from them. It is estimated that some 60 per cent of programs are incompatible with the STE and an even higher percentage of demos. Over the next few months the suppliers of such programs will be as keen as anyone to secure STE-compatible demos and programs and to reduce those astonishing figures.

Most have spent the past few weeks checking through their libraries in order to separate incompatibles from compatibles.

When you are buying from dealers, look out for STE-compatible stickers or simply ask for advice.

If you are looking for an ST, either buy an STFM – Atari says it will be shipping these for most of this year – or accept beforehand that you are going to have problems with your STE for weeks and probably months to come.

There is little that this column can suggest for Atari to do now. The mistakes have already been made. We might wish, though, that the company rethought its policy of effectively washing its hands of the problem. Perhaps Atari feels that the public relations value of, say, offering Freepost facilities to punters who need to exchange software would be more than outweighed by the demands of financing and administering it. But it would cost the company nothing to state publicly that it was concerned about users' problems and regretted that they had arisen.

No doubt the day will come when STE owners reach the conclusion that the delights of their souped-up machine made all of this hassle much more than worthwhile. But while they are saddled with the problem of waiting for things to work and then exchanges to come through, even a verbal gesture of good will would be appreciated. ■

NEXT WEEK

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The start of a seven-week series in which the PC-compatible is explored inside and out

WHICH ST DTP?
Two contenders for the Atari DTP crown assessed – Calamus and Fleet Street Publisher 3

GAMES FOR THE NINETIES
What do the top games publishers have in store for us in the year to come?

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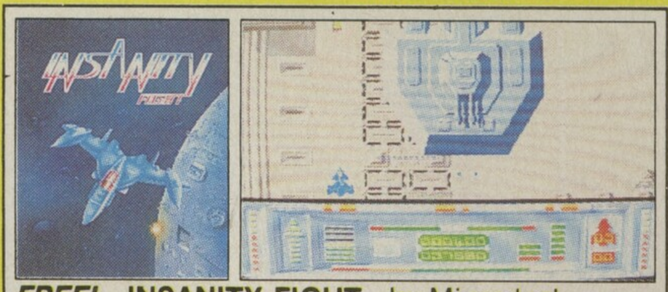
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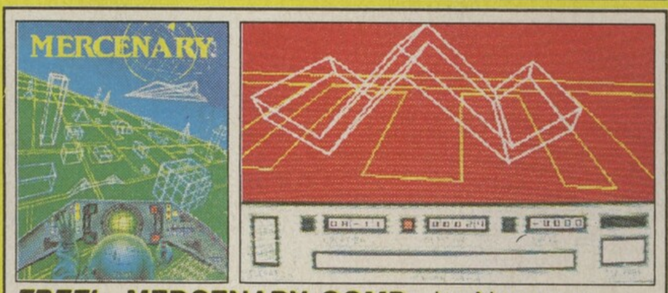
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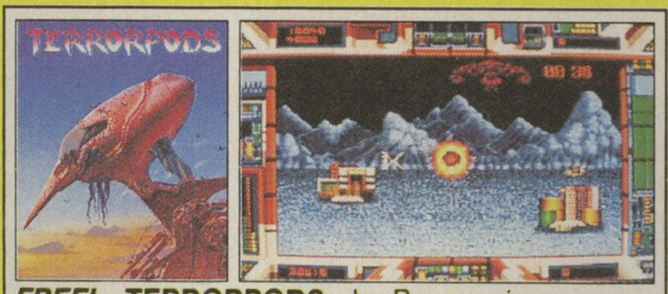
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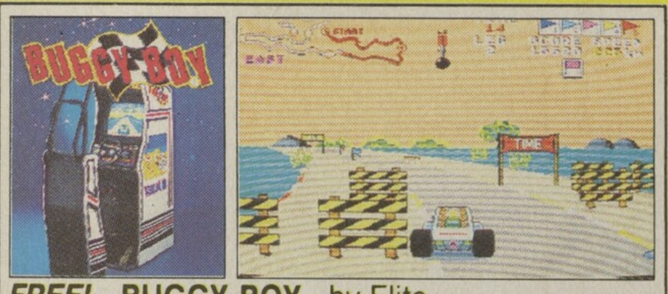
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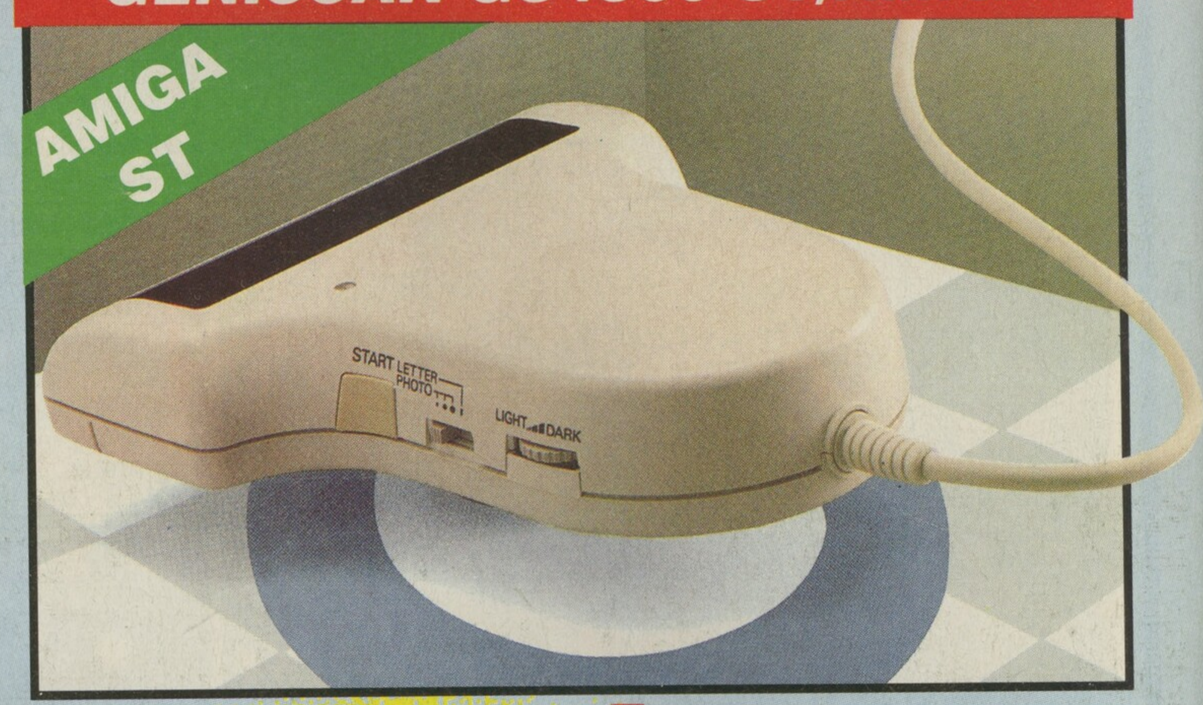
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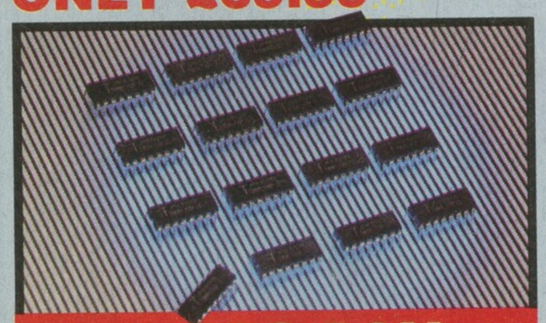


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