Issue 74 • 7 April 1990

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NEW COMPUTER EXPRESS

BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY

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- MiniAmp upgrade
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ST
- Pick of the paints
- Database price cut
- Armada reviewed

PC
- Virtual buildings
- 'Kill all viruses'
- Go tutor on review

SAM COUPE
- Its own column!
- Games update

ARCHIMEDES
- New 3000 bundle

BBC•C64•CPC
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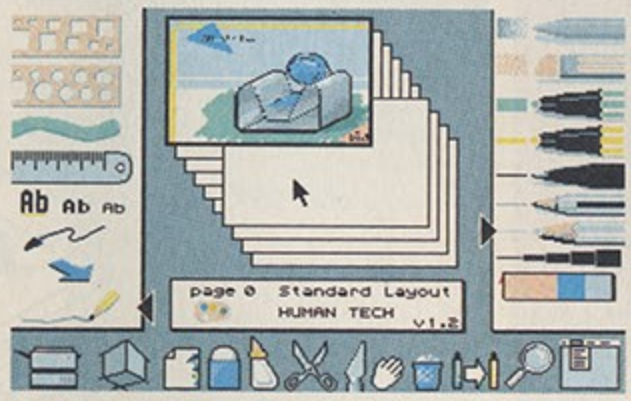
4 BBC 3000 in new education bundle



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BIGGEST COMPUTER IN THE WORLD!

First walk-through 'micro'

- Footprint of 5,300 square feet
- Monitor wide as a soccer goal
- Floppy disk taller than a man
- Trackerball the size of a car
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PC ESSENTIALS

Read Shopping Express for 28 pages of Britain's best computer bargains

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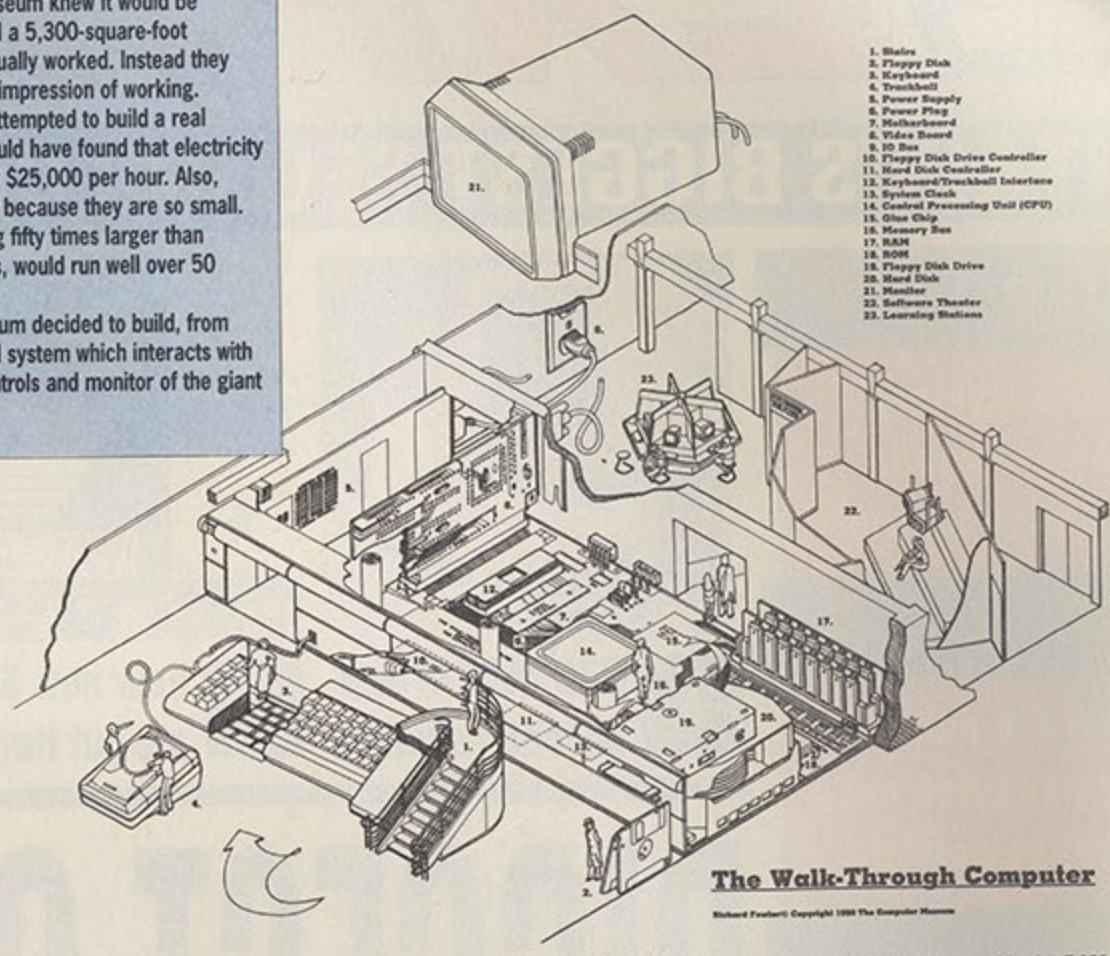
Huge American PC clone features a seven-foot high flo

But does it work?

The Computer Museum knew it would be impossible to build a 5,300-square-foot computer that actually worked. Instead they built it to give the impression of working.

If they had attempted to build a real computer they would have found that electricity costs would run at $25,000 per hour. Also, chips work mainly because they are so small. These chips, being fifty times larger than normal specimens, would run well over 50 times slower.

So the museum decided to build, from scratch, a parallel system which interacts with the keyboard, controls and monitor of the giant model.



• *The plan of the walk-through computer. It's based on a modern PC – note the SIMMs (single in-line memory modules) which provide the RAM.*

Sooty, Sweep, Thomas, the Fat Controller, Postman Pat, and his black-and-white cat...

A new software label has been launched which aims to make educational software fun for youngsters

All titles from Alternative's Friendly Learning label will feature well-loved characters from children's books and television. The programs are for the under sevens.

By Keith Pomfret

First up will be *Sooty and Sweep's Fun With Numbers* and *Thomas the Tank Engine's Fun With Words*. Also, *Postman Pat's Shapes and Sizes* is currently under development

All of the programs are joystick driven and need no keyboard skills from the child. The requirements of the National Curriculum have been catered for, and the software helps children acquire learning skills in word recognition and shapes.

Alternative managing director Roger Hulley said: "Most educational software is the result of programming by enthusiastic amateurs. We've broken with this with a series of programs designed and written by professionals. Difficulty levels and names can be set by the parents but if these are not set, the program defaults to the easiest option."

Alternative has licences for the use of many children's TV characters and the software provides interaction between the child and the character. In the Thomas game, a correct result is awarded with a fanfare and a blast of steam from Thomas, but a wrong answer solicits the admonishing finger of the Fat Controller.

• *Thomas the Tank Engine: kids can have fun learning with computers.*

Prices will be £9.99 for the 8-bit versions, with ST and Amiga at £19.99. More on 0977 795544. ※

The hological song

British Aerospace is using the laser-based technique of holography in its research into optical computers.

Holograms, more at home on jewelery, credit cards and light shows, are used in a holographical array which enables parallel optical interconnections between logical processors.

The holographic array means that the connections can be made across space with no intervening physical link.

The presence of a hologram refracts light passing through it and the resulting pattern directs light along different paths. Different designs of hologram produce different logic.

gh floppy disk and a microprocessor big enough to stroll about in

TAKE A WALK AROUND A PC!

Computer fans will be given the chance to walk inside a giant working model of a personal computer this summer.

On June 23 The Computer Museum in Boston, Massachusetts will open the doors to the world's first 'walk-through computer'.

The two-storey computer has been designed to give visitors who may never have used a micro an understanding of how computers work. And for those who are familiar with the technology, it is being pitched as an opportunity to see the computer like never before.

Visitors can stroll past a mammoth 21-foot screen and a 25-foot operational keyboard. There's also a working tracker ball nearly five feet high and a floppy disk as tall as a man.

Using the keyboard and trackerball people can point to any one of 300 cities of the world which are displayed on a map on the screen. The computer will work out the shortest route between any two cities and will display a presentation of sights which you would see when travelling between the two.

But it is the inside of the computer which is most fascinating. Visitors will see a processing chip magnified to 500 times the size of the real thing. The computer itself is 50 times the size of your home micro.

Walking inside the computer, visitors will see how the computer performs its tasks. They will be able to look inside banks of DRAM chips and watch the platter of a hard disk spinning around at a tremendous speed. Pulsing neon lights will simulate the flow of data through the computer and its peripherals.

The motherboard covers about one third of the gallery floor. This has been sliced in half to reveal the six layers of the board with its complex pattern of wires, insulating sections, power and ground planes.

Stooping under ribbons, visitors will be able to see the system clock which contains a cutaway view of the oscillating quartz crystal.

The whole project takes up 5,300 square feet and was initiated last October. It is expected to cost $1.2 million. More than 100 creative and technical experts have been working on this extraordinary project including many from the United Kingdom.

Sponsors include Apple, AT&T, Intel, disk manufacturer Maxell and Digital Equipment.

• More like a 3.5-metre disk!

The computer itself features everything you would expect to see inside a PC – except this time you have the chance to walk around inside. It is hoped that a similar exhibition will be staged in Britain or on the Continent within the next two years. ■

What is the Computer Museum?

The Computer Museum is the only museum devoted solely to computing. It boasts an extensive collection, from early efforts to machines which have had a huge impact on society (such as the first IBM PC).

It was set up in 1974 as a non-profit making organisation by Ken Olsen and Bob Everett who saw the need to preserve the history of computing. They saved an MIT Whirlwind computer from the scrapheap and have been collecting ever since.

Classics on view include the Univac I and Cray 1, as well as displays featuring some of the best in modern computer animation.

There are a total of 1,500 artefacts, 1,000 photographs and 70 films. It attracts 100,000 visitors a year and travelling exhibits have been shown to one million people. ■

Survey shows average PC costs £2,200

Britons bought 700,000 personal computers last year, spending £1,600 million on the hardware. That's the latest figure from leading market research firm Context.

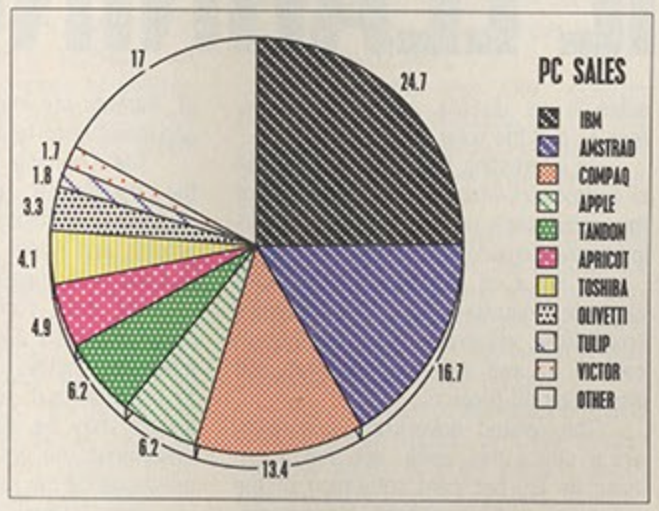
The figures for 1989 show that the average price of a PC was £2,211. Context doesn't count 'home computers' such as the ST, Amiga and Archimedes in its research. Figures are largely based on 'professional' machines such as IBM-compatible PCs and the Apple Macintosh.

PCs running the ageing 8086/88 chips lost more ground to the more recent breed of 286 and 386 machines. Only 13 per cent of PCs bought ran an 8086 or 8088 – down from 18 per cent the year before.

As widely predicted the popularity of 286 machines was stemmed by the emergence of affordable 386 and 386SX models. 29 per cent of PCs were 286 models although the value of those machines dropped from 1988's figure of 40 per cent to 31 per cent.

The raging battle for new expansion standards took a strange twist. The old ISA standard leapt from a 57 per cent share to an impressive 70 per cent. IBM's MCA machines – which were expected to perform well last year – dipped from 13 per cent to 12 per cent. The alternative EISA standard has yet to be introduced in any meaningful quantities.

In the battle of the brands, IBM came out tops again with



almost a quarter of the market (24.7 per cent) by volume sales. Amstrad made 16.7 per cent with Compaq taking 23.4 per cent. The big three were followed by Apple, Tandon, Apricot, Toshiba, Olivetti, Tulip and Victor.

Curiously, despite making lots of noise about this market sector neither Atari nor Commodore are featured. ■

Jack into the cyber future

Can you relate to CD-ROM drives and custom video chips? Would jacking into a real-time 3D flat-line fractal landscape be your idea of heaven?

If so there's a new magazine which has been launched for the self-styled cyber generation. *Cyber Times* is a bi-monthly which features all the latest in multimedia cyberspace – both real and imaginary.

Subscribers are offered cyberscratch videos, hi-tech fashion (Hyperware) and, in the first issue "an evening with twin 32-bit decks with Sony erasable and custom video samplers for sound-to-light wipe-out". No, we don't know what they're talking about either.

Articles are typed in a variety of fonts and faces allowing readers the luxury of not only reading the whole article but also picking out sub-features which appear in the same typeface. It's very, very weird. Subscriptions cost £15 from 90A Devonshire Road, London SE23 3SX. ※

Ashton Tate upgrades business software

International business software superpower Ashton Tate is to launch new versions of two of its most famous packages at this month's *Which Computer?* Show.

Multimate 4.0 is the latest upgrade to the firm's PC word processing package. It comes with PostScript support, integrated graphics and transparent document conversion. Users will also be able to send E-mail messages without quitting the program. A word checker also highlights stylistic and grammatical errors.

Applause II is the successor to *Draw Applause* – a business graphics tool. It includes 37 automatic chart types and the ability to display 5,000 colours on-screen at the same time.

Multimate 4.0 costs £459 and *Applause* weighs in at £395. As usual there are bargains for upgraders. ■

• Applause II: *more features.*

DSS computer

The Department of Social Security's attempts to crack down on so-called 'fiddlers' have entered a new phase.

The department has computerised its system and has now logged the names of 46,000 people suspected of fraud. It is hoped that a nationwide computerised system will help to track down those people who are alleged to be claiming from more than one area. ■

Pack offers comprehensive software line-up

• *Acorn's new Learning Curve pack: includes a full set of useful software designed to fit in with the National Curriculum.*

ARCHIE BUNDLE AIMS AT HOME LEARNING

Acorn has launched a BBC A3000 bundle called The Learning Curve aimed at parents who want their children to have the advantages of information technology in the home.

The Learning Curve pack will contain a BBC A3000 computer and applications for writing text, crafting pictures, drawing and creating music.

The popular word processor *First Word Plus* is included, with a 70,000-word English spelling checker. For those parents who wish to bring work home, the *PC Emulator* brings things down to the gentle crawl of a PC, and the package is completed by *Genesis*, a suite of programs including DTP, story writing, personal organiser, and a phonebook. Linkable information files are included on subjects as diverse as green issues, recipes and the solar system.

An interesting feature is a database of composers which will play a snippet of the composer's work, as well as providing screen-based information.

To tie it all together a VHS video cassette, narrated by TV personality Fred Harris, will explain what the system can do as well as providing ideas and inspiration for projects.

The related advertising campaign, which starts this week, will see Acorn using its 85 per cent saturation of the school market as a hook for parents. Describing the package as a "Gift for life," Acorn marketing manager Bob Coates said: "We are responding to a need that schools have made us aware of. Parents are interested in computers and information technology."

The Learning Curve can help with the mandatory requirements of the National Curriculum on information technology, and Acorn claims that it can fill that technology gap in the home.

The pack comes in a 'carry-home' case and costs £799. Acorn prefers to leave the choice of monitor and printer to the individual, recognising that some people may be able to utilise existing equipment and not all print and display needs will be the same.

This follows the launch of Commodore's Class of the Nineties pack in September and indicates a trend toward serious and educational micro use in the home. ■

It's all downhill from here

Did you give Closters and Aspen a miss this year, darlings? Take it from me, one would simply *die* without a few weeks on the piste.

Luckily, those adorable dears at Electronic Arts have brought out a video game giving one the chance to whizz down frightfully jolly ski slopes.

The game, called *Ski or Die*, has four sections – Downhill Blitz, Snowball Blast, Aero Aerials and Village Square (that's for jollying up the *après-ski*, haw haw).

Despite the *très* vulgar name, *Ski or Die* is a blast, and it only costs £24.99 for any IBM-compatible personal computer. *Ciao.*

• Ski or Die: *lots of snow*

Exterminator in for the kill

A new virus-busting software package has been launched which the publisher claims can wipe out all of the 70 or so documented rogue PC programs in circulation.

Virus Exterminator from MSS Technology has been 15 months in development. In that time the team of 'virologists' has devised a two pronged program to combat nasties. Half of the program is a hard disk manager which, once installed, will check on all files and will destroy any lingering viruses. Files which are diagnosed as being clean are backed up by the software.

The second is a memory resident exterminator which monitors the performance of your system. If there are any curious activities (such as a program attempting to copy itself) the user is alerted and the software stops the virus.

The programmers apparently scoured bulletin boards all over the world in search of viruses – *Virus Exterminator* even recognises a few from Eastern Europe.

The firm is keen to stress that is program is user friendly. "There have been packages claiming to cure PCs, but these have generally been unfriendly little routines," said a spokesman.

Virus Exterminator isn't cheap – it costs £99.95. Call 061-941 6429. ■

• *Left to right: Derek Thomson, Daniel Allan, David Hammond and winner Paul Fawson.*

Wasted youth? No way!

The four youngsters above have one thing in common – they like to spend hour upon hour waggling their joysticks, wasting baddies and otherwise clocking up astronomical scores on Sega video games.

For more conservative readers this may seem like a sure way to waste one's youth. But this lot know better. They've just arrived back from a corking holiday in New York – the rewards for winning Virgin/Mastertronic's Sega UK championship.

This cyber quartet were all champions in their regional competitions and as such, qualified for a four-day beano in the Big Apple. Just before departure they engaged in a frantic bid to be the champ. Paul Fawson, 14, of Camberley in Surrey managed a score of 480,000 on *R-Type* in the space of seven minutes. He also excelled on the other games – *World Grand Prix* and *California Games*.

If you fancy yourself as Britain's number one Sega gamer you'll just have to wait for the autumn when a new competition will be launched. Next time there will be an 8-bit winner and a Megadrive champ. ■

Apple cracks down on Mac cloner

Apple has started another intellectual property battle – this time in Taiwan. The target is Taiwanese clone maker DTC.

DTC launched 'Jonathan', a Mac clone, last year and 'MacPort', a Mac portable kit, at this year's CeBit show in Hanover.

Acting on Apple's complaint, the Taipei Prosecutor's Office organised police raids on DTC offices, and those of sister company Akkord. Apple says DTC has infringed its copyright and trademark rights. The Taiwanese authorities are examining the evidence with a view to issuing indictments against the five individuals responsible.

At Hanover, DTC was showing and shipping the MacPort, a kit that requires the guts of a Mac Plus, SE, or SE30 to be decanted into a portable case. A 640 by 480 graphics upgrade is available, and the overall weight is half a pound lighter than the Apple portable, but it has no power supply. At $1,600 it is a little lighter on the wallet though.

Apple has always been particularly sensitive to its intellectual property. It had requested that DTC – part of the Qume Group – cease selling specified products. This was apparently ignored.

Ian Diery, president of Apple Pacific, pronounced: "Apple has maintained, and continues to maintain, that it will protect its intellectual property to ensure that its investment in proprietary technology, operating systems and user interface is preserved." ■

Spread the network

Printer and peripheral firm Computerhouse UK has launched a software-independent networking device called JetSwitch.

JetSwitch enables the networking of PCs, STs and Amigas through hardware matrix connections. Eight-bit slave machines can be used for the more mundane tasks such as label printing and terminal emulation.

The entry-level system at £199 contains a couple of matrix boxes with switching to configure the network. It works through parallel ports and there's a serial option planned. More information from Computerhouse UK on 01-731 1276. ■

Computer job losses

Over 500 computer jobs were shed by the International Stock Exchange (ISE) and BP as the city shake-out continued the lay-off trend.

ISE restructuring caused staff cuts of nearly 200 and the closing of BPs Britannic House HQ accounted for the rest.

It isn't all gloom though for the computer workers. The average redundancy handshake will be worth £50,000. ■

Future of the Amiga portable uncertain

The future of the much-publicised Gigatron Amiga-compatible portable is currently shrouded in mystery.

The manufacturer says it is "working feverously" to get the machine ready within the next few weeks. It was to have been launched at the Hanover CeBit but missed the deadline.

However, it is the machine's position as regards Commodore which is causing some confusion.

Gigatron says negotiations with the Amiga's maker are under way, but insiders suggest that progress remains slow.

• Amiga: portable mystery rolls on.

It is unclear how much sway Commodore holds over Gigatron with regards to patents.

It had been suggested that Gigatron would not be able to launch its machine with out Commodore's blessing, as the Amiga contains several customised chips, notably the ones controlling its graphics capabilities.

However, Gigatron director Gunther Preuth said at CeBit that if Commodore did not sign then his firm would look elsewhere to get its machine to market. ■

Laser system ends 'out-of-stock' complaints

GAMES DISKS COPIED WHILE YOU WAIT

A software 'jukebox' that copies titles to tape and disk while you wait will be in your High Street stores by summer.

The PC-based system, called EDOS (Electronic Distribution of Software), will be installed in 50 branches of Menzies by the end of the year. This follows a six-month trial at Menzies' Princes Street branch in Edinburgh.

It gives software buyers a huge choice of games which can be picked from a simple menu. The software is downloaded from an optical disk on to tape or floppy.

As well as releasing valuable shelf space, EDOS can carry thousands of titles on its optical disk. This means that a retail outlet can carry the full back catalogues of software and support more machines and titles than ever before at no extra cost to them.

In recent times many retailers have preferred to release shelf space for recent titles. Anyone hoping to pick up an old favourite would find themselves out of luck.

Now, more choice is available for the buyer – and the software publishers get a wider sales base on titles that are no longer best-sellers.

CodeMasters and Elite released their 8-bit back catalogue for the trial scheme, and it is expected that other software publishers will queue to get on the system.

One leading distributor of computer games is claiming that this system will add another £100 million worth of sales on to the industry. While this estimate is clearly excessive, it is obvious that more computer games will be bought.

The computer at the heart of EDOS is an American Avedas, a PC-like system with the ability to copy games quickly while retaining copy protection. The systems cost £5,000 each.

As well as Menzies, W H Smith has shown an interest with a possible order of 100 machines. EDOS is also available to independent retailers and more information can be obtained from TBD on 0782 566566. ■

• EDOS: revolutionising software buying.

Mindscape takes on Mad Max

Mindscape has snapped up the licence for Mad Max and will have it out on the 16-bits for Christmas. Amiga ST and PC versions of the game are already under development.

Unusually tight-lipped Mindscape hinted that the Nintendo version, soon to be released in the US, would be an indication of its contents. The game will follow the flavour of the films closely, with tongue-in-cheek black humour.

Eight-bit versions are under consideration, and with the complete Max licence at their fingertips, Mindscape could soon be planning sequels. ■

• Mad Max: thundering along to a computer near you.

• DESKpress: *mid-price.*

Timeworks gets a big brother

A new PC desktop publishing solution will be released by *Timeworks'* publisher GST at the *Which Computer?* Show on April 24.

GST claims it has solved the problem of providing DTP for business users without the traditional high prices with *DESKpress*.

Everything needed to produce a document is included in the package. For users already committed to applications software, data from word processors, graphics programs and databases can be combined and imported into *DESKpress*.

Page sizes range from Filofax to A3 with multi-column modes and stylesheets provided. The program follows the user-friendly operating system that made *Timeworks* a success for GST, but with a fuller set of features.

It costs £279. Obtain more information about *DESKpress* from GST on 0480 496789. ■

Developers conference sets Atari's agenda

ATARI SECRET MEETING: EYEWITNESS REPORT

Last week Atari invited some 150 leading software developers to the Williams Formula One Centre in Didcot. The firm's intention was to talk to the people who turn hunks of Atari hardware into exciting games and business machines.

As always with these events, attendees were lined up and required to sign so-called 'non-disclosure agreements' whereby details of any meetings cannot be leaked to the competition or the press. Some hope.

We sent an award winning games author along to keep an eye on the developments:

"Atari's main thrust was the rekindling of the 'Atari Pro Support' programme where software developers get help lines and guys to talk to within Atari. They've now got a guy working there full time on software support which they've never had before. Before it had always been Bob Katz who got hammered about everything. The new man says he's not going to be able to answer everything but he's saying he'll do his best.

"There was a lot of marketing stuff, some presented by UK boss Bob Gleadow. Someone from America was shown in and he presented three TV ads they're showing over there for the ST, Lynx and Portfolio. Nothing very dramatic I'm afraid, but there's no doubt that they are gearing up to attack the market with everything they've got.

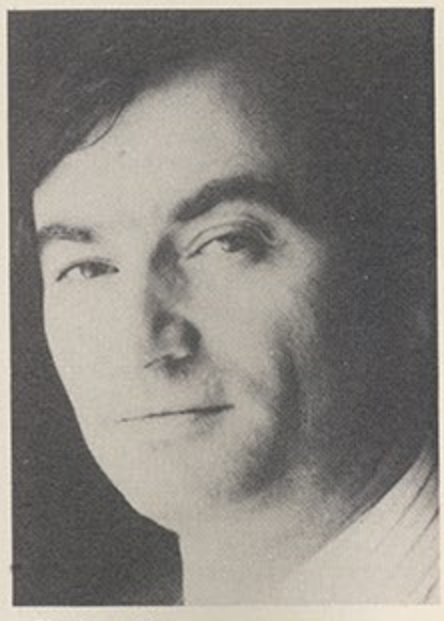
"Surprisingly they didn't really mention future product. The ST-CD looks as if it's at least two years away and no-one said anything about the ST Portfolio. They just wanted to talk about all their products from the base consoles to the ATW Transputer.

"But there was definitely a concentration on the Portfolio and the Lynx – hardly anything on the ST. But the thing is so well established now – I haven't needed help with it for years.

"But with the Lynx there were a few things that surprised me. Developing for consoles is wholly different than for normal games. You need more commitment and more money. Atari are Atari and they never give anything away, but the prices of developing kits are coming down very quickly. They are making things available to us.

"Normally, you'd see the development kit for the Lynx costing between £10,000 and £15,000. Atari are going to be giving them to us at drastically cut-down prices.

"As far as offering the Lynx as an open system, they said the situation would be much more open than Nintendo. They won't stop anyone releasing games on the Lynx." ■



• *Gleadow: talking to programmers.*

Chip chase continues

Alleged chip cheats Dinh Huu Tran and Phat Vien Doan have gone on the run after being charged with masterminding a $3.7m chip-theft racket in the States.

They were accused of recruiting Vietnamese workers at AT&T's Oklahoma plant to steal micro chips.

The chips were transported to Orange County, California, where they were fenced through dozens of Vietnamese-owned computer stores, (*Express* 72).

Chip thefts carry on as armed Vietnamese gangs, dressed as ninjas, continue their multi-million-dollar trail of terror across the States. ■

Evesham prize

Top computer retailer Evesham Micros was named Dealer of the Year by Atari at the European Dealer Awards in Milan.

Richard Austin, Evesham's MD, flew to Italy to pick up the award from Atari boss Bob Gleadow. Commenting, Austin said: "It's an honour to receive this tribute to our commitment to Atari." ■

WHAT'S IN A NAME?

Miles Gordon Technology has asked the fledgling Coupé Connection user group to change its name. The company told the group that it shouldn't use the Coupé name in its title because there is no connection between MGT and the small organisation. Coupé Connection is now taking advice and is looking for a new name.

MGT joint boss Alan Miles was keen not to appear overly strict. He told *Express*: "It's a standard response really. We don't want to be too hard especially since the machine is still in its early days. We don't want there to be any confusion. It wouldn't be fair if people thought the Coupé Connection were in any way a part of MGT."

Coupé Connection has set up a PD library. Contact the group at 10 Ricardo Road, Old Windsor, Berkshire SL4 2NU.

Meanwhile, up to a dozen games are expected to be appearing for the SAM Coupé within the next three weeks. ■

WP speaks Japanese

Businessmen trading in the US and Japan will benefit from Fujitsu's Japanese/English transposing word processor.

The OASYS 30AX-W is an international version of its Japanese word processor and will change Japanese words typed phonetically in the English alphabet to Japanese characters.

The $2,000 package will be sold directly to end users by Fujitsu America. More info from Fujitsu on 010 1 408 432 1300. ■

Hardy mice

ST and Amiga shoot-'em-up fans will be glad to hear of an upgrade to retain the robust case of the machines' existing mice while replacing the cranky switch gear with high-quality microswitches.

The upgrade is guaranteed for a year and a minimum of 200,000 operations and costs £12.50 including VAT, recorded delivery and labour. If you are interested in giving your mouse a longer life speak to Simpson Electronics on 0332 760353. ■

Virgin releases the game of the football cup that really matters...

OFFICIAL WORLD CUP GAME KICKS OFF

It's only a few weeks away. The frenzied carnival that is World Cup '90 kicks off on June 9. And if you're not splattered all over the TV screen then you might well be glued to your computer.

Virgin has just announced that it has scooped the prestigious licence to release the official game of the tournament. *World Cup Soccer – Italia '90* joins a host of other games which will be released to coincide with this great sporting event.

The game features a bird's-eye view of the pitch and includes all the detail one would expect from such a game. It's a straight conversion of the arcade game, complete with attract mode sequence. All the world's finest teams are are in the game including England, Scotland and Eire.

The game will be released this month on all major formats (except, for the moment, ST) and costs between £9.99 and £24.99.

Virgin has already warned other software houses not to attempt to pass off their games as being official licences. But it isn't stopping almost all the major games publishers from bringing out their own international tournament-based soccer games to coincide with the cup. ■

• England players watch in awe as Argentina gets another high score in Italia '90.

New console due in autumn

SNK's NEO-GEO console, described as an arcade machine for the home, will arrive in time for the September Computer Entertainment Show.

SNK's coin-op experience and a hardware specification that includes both 68000 and Z80 processors suggest that the arcade machine claims may not be too far from the truth .

Prices haven't been fixed yet, but in Japan, the machine is selling for the equivalent of £230.

The cartridges are expensive at £130 and in Japan they are generally rented rather than bought.

UK distributor Electrocoin is looking at a similar scheme make the expensive games more accessible. ■

Apple ahead in Xerox scrap

A San Francisco judge declared Apple the winner of round one in the copyright battle over the WIMP environment.

The bulk of a $150-million lawsuit claiming that the Apple Lisa infringed copyright of Xerox's Star software package was dismissed by Judge Vaughn Walker. He dismissed claims that Apple had indulged in unfair competition and 'enrichment'. ■

Video CD for multimedia

Dutch electronics giant Philips has squeezed 72 minutes of digital video on to a 12cm compact disc.

The system, known as full motion video or FMV, uses data compression techniques to store and retrieve the data and can be used in multimedia publishing.

An impressive data transfer rate of 170K per second is split 150/20 for video/sound. Prices for this technology start at £5,000. ■

The fax of life on the Amiga

Fast Fax from Michtron is a card for PC, ST, or Amiga that incorporates the features of a £2,500 dedicated fax machine for under £600.

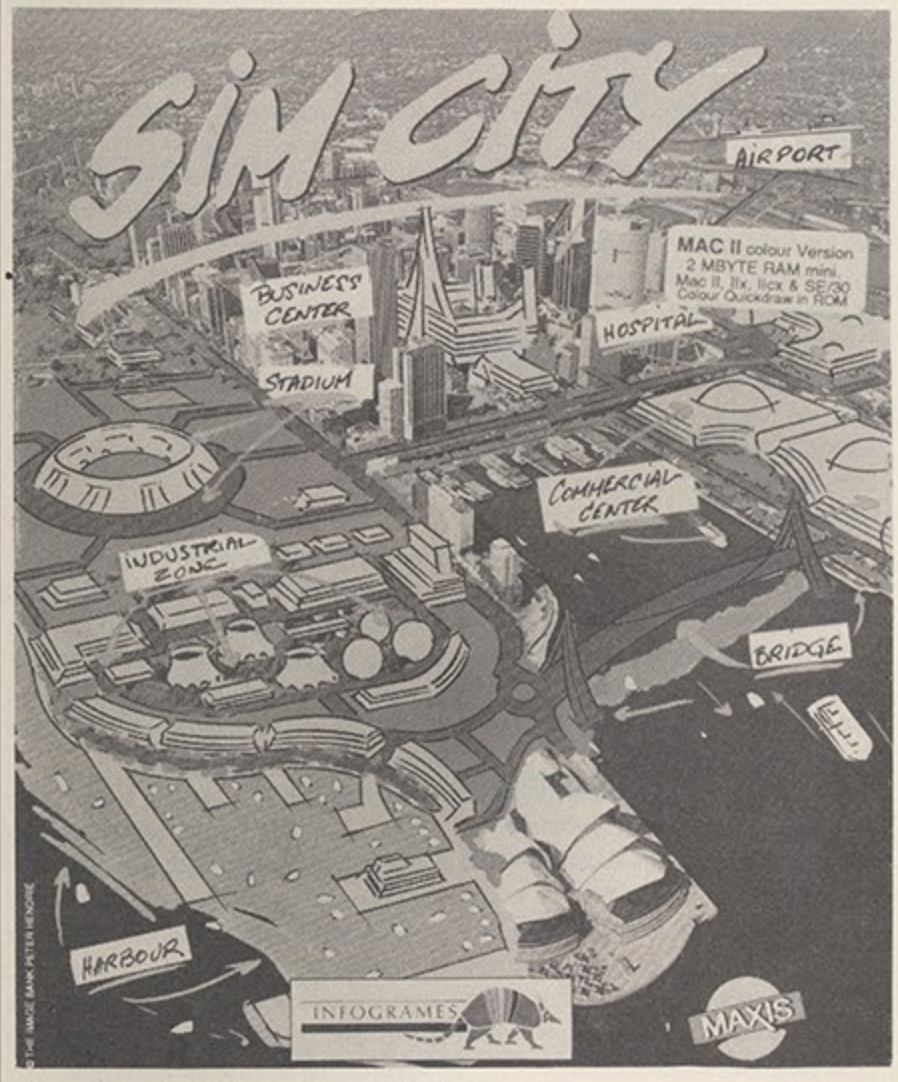
It has the ability to transmit graphics, letterheads, and signatures from disk and runs a dedicated 68000 plus a 32K RAM cache.

Single and multiple faxes can be scheduled for non peak-hour transmission and it communicates at up to 9,600 baud. Faxes can be read on screen and hard copy is available on most printers. The program is small (90K) and memory resident.

The price is £599.99 – more details from on 0726 59692. ■

• Fast Fax offers full junk fax facilities for the Amiga, PC and ST owner.

US AWARD FOR SIM CITY



• Sim City, the game that lets you play God (or at least Mayor) took a bow at the US software industry Oscars, the SPA Awards in San Diego.

It took Best Consumer program, Best Simulation program, Best Entertainment program and Best Curricular program. It was nominated in two other categories as well.

Sim City is published by Maxis in the US and Infogrames in Europe. ■

HEADBANGERS HEAD FOR THE SCREEN

Heavy metal megastars Iron Maiden will soon swap compact disc for floppy disk if licencing agent ISL finds them a publisher. The plan is for a game featuring Eddie, Iron Maiden's mascot and album cover logo.

Publishers chasing the title are Ocean, US Gold, Virgin, Mindscape and Gremlin, who started the ball rolling by suggesting it to ISL. ISL handles over 60 pop and rock stars, including Jason Donovan, and is hoping to start a new trend in licencing. ■

COMMENT

Education looks like it could be the flavour of the Nineties. Let's hope that initiatives like the Acorn bundle will set the tone...

With Acorn announcing the release of a National Curriculum-oriented bundle for the BBC A3000, and news from the United States of a thoroughly splendid giant walk-through computer exhibit, education is certainly the flavour of the week.

JUST THE TICKET?

One recent development which we may hope and pray will prove a filip to computer education is the announcement in the Budget of a scheme of 'vouchers for post-school training.

It is, of course, too early to say whether this is an entirely positive scheme or more of a gimmick. The level of computer-related training in Britain will inevitably always be tied to the quality of courses on offer and the number of places available on them.

If the vouchers concept is designed to produce an education 'market' running on supply and demand (which seems a fair assumption with the present Government), then it may be just the boost which is needed.

This week's Express Mail pages carry a letter from a reader who kindly draws our attention to a band of courses we have so far failed to mention. But he cites the surely deplorable fact that there is only room on them for one in thirty teenage applicants.

If the theory that there is no better incentive to supply than demonstrating demand in terms of hard cash seeking an outlet, then thousands of school leavers with £1,500 credit notes in their pockets and a yen to study computers will surely give rise to more and better courses a sight quicker than glib ministerial platitudes ever will.

EDUCATING ARCHIE

Leaving aside the perennial argument of whether Acorn has got the price right, the launch of its Learning Curve package for the BBC A3000 is surely, to borrow the phrase from *1066 And All That*, 'a good thing'.

No one will be foolish enough to suggest that Acorn, or Commodore with its Class of the '90s Amiga bundle, have set out to perform an altruistic public service with these releases, but I think that they do so as a side effect of their schemes.

The fact that they are out there flogging the concept of computers as valid educational tools is important, and the more manufacturers that get behind such initiatives, the better it is for all of us in the long run.

THE MACRO MICRO

I hope we don't have to ask to be forgiven our enthusiasm for the monster PC being built at Boston's Computer Museum. Frankly, it tickled our news editor pink.

Computers spent far too many years being regarded as arcane, incomprehensible things. That situation has improved a great deal over the past few years, particularly among younger people, but there are still many of us who wouldn't know a motherboard if it came and sat on us.

It is tempting to open one's mouth and insert both feet by saying that it is about time British institutions got their acts together with more imaginative computer projects, but perhaps they have done.

If you know of a sterling effort by a museum or gallery near you, please write in and let us know about it. ■

FROM The ARCHIVE

ONE YEAR AGO

IBM's dealers breathed a sigh of relief as Big Blue denied that it had relaxed its authorisation rules to gain hundreds of new dealers for the cheaper PS2/30 range.

In a letter to its existing dealers, IBM blamed the press and non-IBM dealers for the confusion.

The circulation of three Future titles, *ST Amiga Format, PC Plus* and *Amstrad Action* were described as buoyant in their first appearance in the ABC chart. *ST Amiga Format* has since 'doubled' to create two even more sucessful titles, *ST Format* and *Amiga Format*.

In a reversal of the trend to put board games on the micros, Telecomsoft unveiled plans to do the opposite. In a licencing deal with an unnamed suitor, BT planned to put the classic *Elite* out as a board game..

Driller, Darkside and *Total Eclipse* publisher Incentive decided to pull out of publishing and concentrate on development of their 3D environment Freescape.

MicroProse would take on board Incentive's publishing with 16 bit versions of *Darkside* and *Total Eclipse* as its first project.

Boots and WH Smith maintained their squeaky clean image by banning CodeMasters' latest release, *Rock Star Ate My Hamster* on the grounds that the packaging was offensive.

Prophesying profits perambulating away, CodeMasters leapt into action to provide an alternative plain instruction sheet for the two chains.

Clive Sinclair's Cambridge Computer launched its 60cm satellite reciever system with a promise of a smaller flatter 45cm dish in the autumn. The systems were priced between £200 and £260 proving that, for Clive, the sky's the limit. Quite what has become of the device since remains a mystery.

Shropshire local education authority gave its stamp of approval to Clive Sinclair's Z88 portable.Shropshire placed a major order for the robust little laptop and revealed plans to provide each of its 220 junior schools with at least 2 Z88s.

TWO YEARS AGO

Acorn remained steadfastly optimistic despite a reported loss of £3.3m for 1987. Two thirds of the loss was reported as coming from the custom services division which got the chop along with its 47 staff in November. A spokesperson said: "We switched from one technology to another and there was a hiccup while people waited to see what the relationship between our new and existing products would be."

Amstrad was totally dumbfounded by the lack of success of software for the Spectrum Plus 3. A spokesman said:"The whole thing's a bit weird. The software houses say they've got the games, the distributors say they carry them and chains like Boots stock them. Yet people say there's little Plus 3 software. It doesn't add up."

For the wallet-numbing sum of £22.95 ST owners could add a card that kept the clock running when the machine was switched off. The card called 'Forget me Clock' was produced by Frontier Software of Harrogate.

THIRTY YEARS AGO

IBM leapt out of the dark ages (two years later than everyone else) and sold their first second-generation computer. The IBM1401 used the up-to-date silicon/germanium transistors for the first time instead of thermionic valves, thus reducing the size (but not the price) of their product while increasing the reliability. The 1401 helped IBM ensure an 80 percent of the value of installed computer systems between 1960 and 1965.

Sources: *New Computer Express, MicroScope, Computer Trade Weekly*

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We regret we cannot enter into any personal correspondence or answer telephone queries. Technical enquiries should be addressed to Tech Tips at the address below.

ABC audited circulation July-December 1989: 22,277 copies per week

© Future Publishing Ltd • 30 Monmouth Street, Bath BA1 2AP • Tel: 0225 442244 • Fax: 0225 446019 • Subscriptions: The Old Barn, Somerton, Somerset (0458) 74011
• Printed by Redwood Press, Melksham, Wilts
• Distributed by Comag, West Drayton, Middx

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NEW MINIAMP ARRIVES

Trilogic, that purveyor of handy gadgets and various widgets for your Amiga, has announced the release of a new improved version of their popular MiniAmp system.

The Trilogic MiniAmp 4 Stereo Speaker System connects to the two jack connectors at the back of your Amiga and provides your machine with vastly improved sound output when compared to that of standard TV and monitor speakers. The new MiniAmp uses a new low distortion 'two chip bridge' design which has allowed Trilogic to double the output power of the new version while still using the same power supply.

Not only has the amplifier been improved, but Trilogic has replaced the old MiniAmp speakers with new compact speakers that provide better sound quality. Using the leads provided the speakers may be placed six feet apart.

The complete MiniAmp system, consisting of all the necessary leads, headphone adapter, amplifier, speakers and power supply, is available from Trilogic for £43.99. The company can be roused by phoning on 0274 691115.

FLICKER KILLER

I'm totally intrigued. I must admit that I've just received a tip that is so weird, that it's got me totally stumped. When it first turned up, I thought to myself 'It'll never work', but blow me down, it jolly well does. The person to thank for this mind-bendingly weird tip is Matthew Gailes.

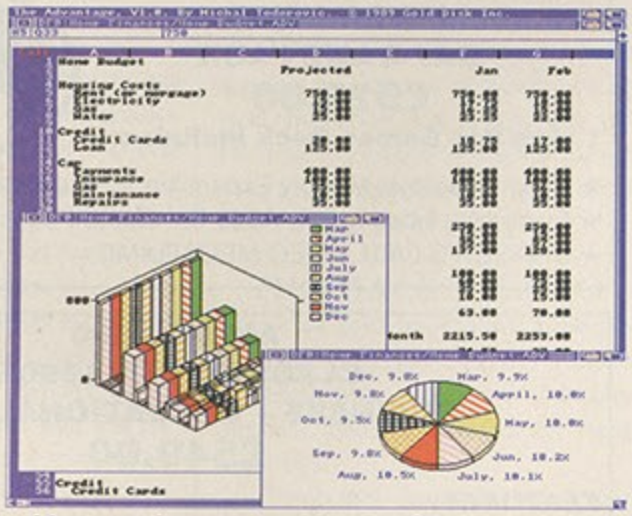
According to Matthew, due to an undocumented feature of the Amiga operating system (which roughly translated means 'bug'), it is possible to de-interlace any screen – even high resolution screens!

This wondrous trick is achieved by carrying out the following procedure. First, load a program that runs in an interlaced screen (*Pro-Page* or *DPaint* are good examples). Now click the screen gadgets so that the Workbench screen appears. Now move the pointer up to the very top of the screen and drag the Workbench screen to the very bottom of the display. Now do the same for the interlaced screen (the interlaced screen should disappear behind the Workbench screen). Next, click the Workbench screen to the back and drag the interlaced screen all the way to the top of the display. Finally, click the interlaced screen to the back and your previously interlaced screen should now be de-interlaced. Weird or what?

UNFAIR ADVANTAGE?

After many months of advertising, Gold Disk's eagerly awaited spreadsheet, *Advantage*, has finally arrived. Thanks to HB Marketing, I've been able to get my mitts on the little beauty.

The program features over 80 statistical, financial, trigonometric and user-definable functions, huge worksheets of up to 65,000 rows by 65,000 columns (that's a staggering 4,225,000,000 cells!), multiple spreadsheets open simultaneously, multiple databases and selection criteria on a single spreadsheet, full A-Rexx support, and preconfigured 16-colour charts. To cap it all, Gold Disk claims that *Advantage* has the fastest recalculation of any Amiga spreadsheet.



• Advantage – *the power spreadsheet from Gold Disk that looks set to redefine the standard in Amiga spreadsheets.*

Graphs can be saved as IFF or Aegis *Draw Plus* files, and *Professional Draw* clip format for use within Gold Disk's *Professional Page* and *Professional Draw* DTP programs. For more info about this amazing new spreadsheet, contact HB Marketing on 0753 686000.

DRIVING FORCE

Electronic Zoo has announced the release of a new external disk drive for the Amiga. Not particularly exciting so far. However, what makes this release exciting is not the drive itself, but the inclusion of five games with every drive.

The pack consists of the drive itself, which is fully CBM A1010 compatible, *Impact* (Audiogenic), *Super Huey* (Cosmi), *Gold Runner* (Microdeal), *Exolon* (Hewson) and *Leatherneck* (Microdeal again). All this could be yours for only £99, which is less than the price of the games alone! For more info, contact Electronic Zoo on 0453 887008.

Jason Holborn

PLAYING TIP

SWITCHBLADE

After receiving the cheat for *Switchblade*, it turns out that the same cheat works for this near-classic platform game. For those that missed it, here it is. Type in POOKY on the high score table for infinite lives. Simple, eh?

Alan Wild, Basildon, Essex

BOOK CORNER

I've recently received review copies of Abacus' new books, *Advanced System Programmer's Guide* and *Amiga Desktop Video Guide*, thanks to those nice chaps at Adamsoft. All these books and more are available from Adamsoft on 0706 524304.

The Advanced System Programmer's Guide is a follow up to the hugely popular and indispensible *Amiga System Programmer's Guide* which many Amiga programmers swear by.

This latest publication documents the intricate aspects of the Amiga operating system including extras added to the OS with the release of 1.3 Kickstart and Workbench. The book includes sections on the Amiga interfaces (audio, video, RGB, parallel, serial, expansion etc), Exec structures (nodes, lists, libraries and tasks), Multi-tasking (task switching, inter-task communications, exceptions, traps and memory management), I/O (device handling and requests) and devices (trackdisk, console, narrator, gameport etc).

If you're a programmer who uses the Amiga operating system extensively, then this latest release from Abacus will prove itself an invaluable addition to your reference material. Once again, Abacus has produced another classic that is a must for every Amiga programmer.

The second book is *The Amiga Desktop Video Guide*. Everyone has heard of it, but very few of us actually know a thing about it – yes folks, we're talking desktop video. We've all read endless articles and features on the subject, but very few have actually sat down and given a low down on the basics of video.

For all you frustrated Amiga video enthusiasts, Abacus' book could be the answer. The book provides an in-depth look at the basics of video, videotape equipment, video/Amiga interfaces, software, hardware and much more.

Whether you simply intend to add pretty titles to your holiday videos, or you're hoping to give Steven Spielberg a run for his money with your Amiga, this book is a must.

Topics covered include genlocks, digitising and scanning, video recorders and cameras, paint and animation programs, special effects, home and professional video techniques.

AMIGA GAME of the WEEK

XENOMORPH

Pandora • £24.95

No sooner do I review an Aliens-style game than another one comes along. Readers of *Express* from the days of the Gameplay section may remember seeing previews of Pandora's entry into the 'alien creatures taking over the base' genre, only to be told that the game wasn't to be released for a while. Well the game has actually arrived!

The plot places you as the pilot of the damaged supply ship Mombassa Oak on a trip to the science colony on Sirius B. On contacting the base to request repair services, it becomes clear that all is not well.

You land on the base, kit yourself out with weapons and pressure suit and enter the complex. The place is deserted, leaving you to wander around trying to find the equipment you need to refit your ship and leave. However, the reason for the lack of human inhabitants becomes clear – the complex is overrun with insectoid life-forms, destroying all human life they encounter. You must explore the base destroying the aliens in any manner you can – using weapons left by the unfortunate scientists – until you find the computer chips you need to repair your ship's computer and enough antimatter pods to fuel it for take off.

The environment used in *Xenomorph* is very similar to the adventure epic *Dungeon Master*. The movement and display system is similar, using the mouse to walk, turn and utilise objects. This may seem like a bit of a rip off, but with a game like *Xenomorph* which includes all manner of buttons, terminals and weapons, the system is about the most sensible method to employ.

The graphics are varied, using bitmapped 'sections' to build the rooms. Moving through the complex causes the new area to flick onto the screen to give an impression of movment. The feel is much more technological than games like *Infestation*, but this gives the game its own atmosphere.

Xenomorph is an involved and challenging role-playing-cum-action game that should appeal to any science fiction fans . There isn't such a tense atmosphere as there is in other games, but it's still worth checking out.

Maff Evans

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MINI-PC	SD	441	554
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80286; 8/12mhz; 1mb ram (exp. to 8mb); 7 slots; enhanced keyboard.
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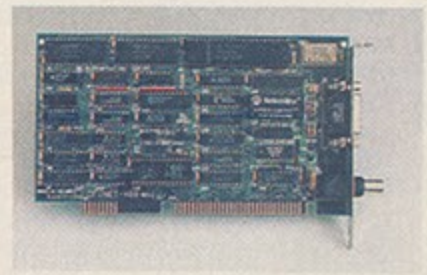

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CASH AND CARRY ON

If there are any remaining yuppies in the audience (what happened to them, I wonder?), they'll be thrilled to bits to hear about a new share price analysis package and portfolio manager. *Market Breaker* works with the ST's Microtext teletext adapter, automatically downloading share price information from Ceefax and Oracle. Interestingly the share prices that come with the package date back to October 1987, when the stock market crashed in spectacular fashion.

With that implied warning in mind, you may care to take advantage of *Market Breaker*, which also has options to spot promising trends from existing data. Graphs in five formats, including a moving average, giving you a head start on all those bulls, stags and the rest of the financial bestiary.

Market Breaker costs £69.95 from Jewsbury Software on 0705 595694.

Note: Yuppies' bank balances can go down as well as up, I'm very pleased to report.

SSH, YOU KNOW WHAT...

Come here while I let you into a secret. *The Unofficial Guide* is, well, an unofficial guide in which no less than 35 games from the hundreds released over the years are evaluated and illustrated. Priced at £2.95, the guide also carries a £5 voucher against any games purchase from MicroProse or its two subsidiary labels, Rainbird and Firebird. You can get hold of a copy from MACS, PO Box 325, South Croydon CR2 OXT.

DATABASE SLIMS DOWN

Electric Distribution's mighty *Database Manager Professional* is taking a tumble in price from £59.95 all the way down to £39.95. A sign, suggest the pessimistic, that this highly-regarded company is losing interest in the ST and flogging off unwanted stock? Not a bit of it, insists the company's Joanna King: "Quite the opposite, in fact. We've identified key areas in which our sales are not what we'd hope, and the professional/serious ST user is one of them. And already we've noticed a sharp upturn in sales of *Database Manager Professional*." So there. Serves me right for being so sceptical. Electric Distribution awaits your response on 0480 496666.

RICK'S BACK OUT

That sterling little combination of Indiana Jones, James Bond and Inspector Clouseau, Rick Dangerous, is back to conquer to the world and trip up over his own shoelaces. The delightful little bundle, which gave MicroProse's Firebird label one of the biggest surprise hits of 1989, is about to be unleashed on an unsuspecting world in a slightly amended version.

The only thing wrong with Rick was that he was a bit on the stiff side, ooer, and most players – myself included – got no further than that tricky bit with the snakes and the Egyptians on the second level. Now, you'll be delighted to know, you'll be able to start on any level.

Even better news is that fans of the miniature hero won't have to buy the new version, but can upgrade for a small (and as yet unannounced) sum.

MicroProse can pander to your every whim (well, almost) on 0666 504326.

RICK TWO: THE RETURN!

More glad tidings on the *Dangerous* front: the programmer Core Design is toiling on a sequel even as you read this. Now Rick is about to conquer the perils of space in his bid to defeat the evil Mr Big of the original.

MULTIFACE FATE UNCERTAIN

By the way, *Rick Dangerous* was one of the games that benefitted most from Romantic Robot's Multiface, a device that can freeze an ST program, allowing you to save your game position.

There was nothing more frustrating than doing that tricky bit with the rocks and the dynamite, only to lose a life at the very next screen. But save your progress through the game using the the Multiface, and nothing could hold you back.

And that observation provides a rather tenuous connection with a letter I've received from Lyn Mealey asking what the Multiface does, and whether she can buy one for her brand new ST. The first question I hope I've already answered, and to that I'd add nothing except to point out the erroneousness of the allegations of being a pirate's friend that occasionally get levelled at Romantic Robot's little widget.

You can, it is true, take a copy of most games with the Multiface. But - and this is the crucial point - you can't load the copy without having a Multiface installed. It seems unlikely, therefore, that the device could ever be of more than very limited use to people wishing to avoid paying for their entertainment.

Now, onto Lyn's second question. The Multiface is indeed still available, and doing very nicely. However, if as I suspect from other observations Ms Mealey makes, she has bought an STE rather than an ST, she is out of luck. For, as far as I know, the device does not work with the STE, presumably because of the new version of TOS (1.6). Manufacturer Romantic Robot has not decided whether to develop an STE-compatible version.

ARRIVING IN STYLE

The ST's abilities as a cheap and powerful DTP engine are only just emerging in this country. This market is going to grow very rapidly over the next two years, as the evidence of Germany indicates. Most of the professional programs released over the past year or two have been developed in Germany, where the standard purchase is a Mega 1 or above.

That's all very well, I hear you say, for professionals and companies that have large budgets available for such investment. But how, I hear you continue, can individuals stump up £400 just for a piece of software such as *Calamus*, remarkable though it no doubt is? Well, the short answer is, you can't.

But now Woking-based Style Publishing Services has come up with another solution: the establishment of a dealership for Signa Publishing Systems, offering a service that includes the use of mighty DTP program *Calamus* as well as excellent ancillary packages *Outline Art* and *Script*. This is no more than a natural extension into the world of the ST of the concept of DTP bureaux, Mac and PC versions of which have been booming for some time now.

So if you have material that needs turning into a highly-professional looking document, newsletter, catalogue or book, give Style a ring.

It does page and layout design and typesetting using *Calamus* and outputting to a Linotype 300, laser printing, copy typing and image scanning, as well as offering a neat proof-via-fax service and full support for *Calamus* and related programs.

Contact Style for an estimate or simply for more information on 0483 720090.

Steve Carey

AN EDUCATION IN ITSELF

As the ST becomes an increasingly important educational machine, new arrivals continue to appear. The latest is the already well-established Kosmos Software, which has now unleashed half-a-dozen titles. These included four foreign language tutorial packages, *French Mistress*, *German Master*, and the *Spanish* and *Italian Tutors*.

Each includes vocabularies covering nouns, adjectives and all that stuff, arranged by subject (the family, parts of the body, food and drink and so on). In addition, real swots can create their own special lessons such as homework and revision lists, storing them on disk for that dreaded time when exams loom.

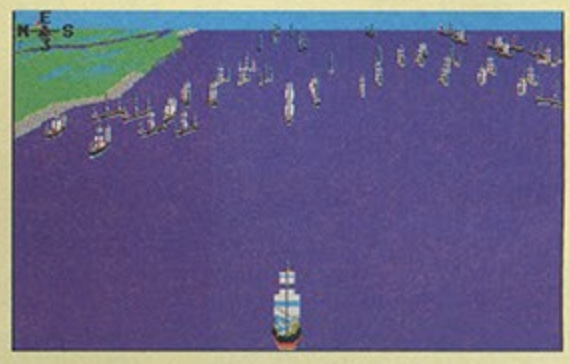
Two other programs also feature: *Answer Back Quizzes* in *Junior* and *Senior* versions, each containing a database of 750 general knowledge questions in such subjects as nursery rhymes, books and poetry, music, art and sport.

All six programs, which cost £19.95 each, are tried and tested, having appeared on several other, lesser computers (PC, that kind of thing) before making it into the big world of the Atari. Details from Kosmos on 05255 3942.

ST GAME of the WEEK

ARMADA

ARC/ATARI • £24.95



Dr Peter Turcan has made a name for himself by releasing some technically brilliant wargames. The last one we saw was *Austerlitz*, but before that *Borodino* and *Waterloo* turned our legs to jelly with the thrill of war. Although no one is about to dispute the brilliance of his wargames, they have tended to look remarkably similar to each other. The battle in *Armada*, however, was fought at sea so the war environment is different to the other games.

The game offers you the chance to replay the Spanish Armada, assuming the role of either Lord Howard or Medina Sidonia. This wargame differs from other Turcan masterpieces in that the formation of ships can win or lose the battle. Turcan has obeyed reality by giving ships' captains more control over their own actions than those in land combat. Thus you can issue an order only to see it completely ignored by an obstinate captain, so your ship formations may not run according to plan. While this proves annoying, it does at least give a real feel of the frustration of battle.

Orders to the captains are typed in using specific words to signal how captains should react. You receive reports back from the battlefield in the form of mail which gives specific indications of what is happening. You're also given a 3D visual representation, regularly updated to provide an overall view of the state of your ships.

To win the game the Spanish must capture a major English town and harbour, then keep a seaway clear for at least three miles. The English can only win by sinking enough ships to fend off the invasion threat.

***Armada* has expanded on previous Turcan wargames by paying far more attention to the visuals. 3D graphics and a radically different scenario emphasis the importance of a good battle plan and makes this certainly Turcan's best wargame to date. If this is your first wargame then you'll be amazed by the detail and accuracy of the game.**

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RET-URN OF THE LASERJET

The Hewlett Packard LaserJet has become the industry standard for office laser printers, so a new release from the company is something watched with interest. The latest machine is the LaserJet III, a review sample of which landed on (and nearly went through) my desk a few days ago. The printer looks big and square-cut, though in fact it has identical measurements to its predecessor. It also uses the same Canon SX laser engine as the LaserJet II. The new features are almost all built into the firmware of the machine.

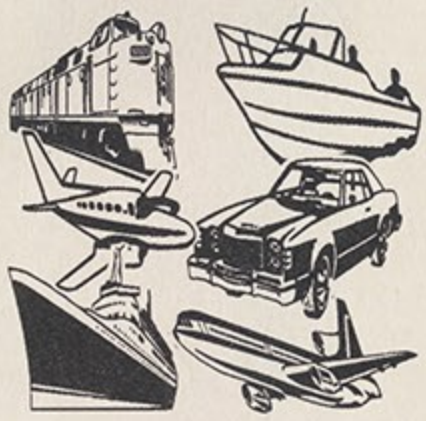
First off comes the introduction of scalable fonts. Times and Helvetica are included, using Compugraphic's Intellifont typefaces. This font technology is made possible by the latest version of the HP's Printer Control Language (PCL), which can now print files created under its plotter language HPGL, also a standard in its respective field. PCL 5 now rivals PostScript in several areas, though it remains less readable, working as it does with a series of Escape codes rather than PostScript's 'real English' commands.

Perhaps the biggest innovation, though, is Resolution Enhancement Technology (RET). This system automatically smooths diagonal lines and curves by filling in the 'jaggies' often seen on laser prints. It does this by modulating the laser beam to decrease the size of dot and reposition it horizontally closer to neighbouring dots. This is does within the current 300DPI dot matrix, producing local resolution increases close to twice this figure. RET works on all printed output, coming from existing or new applications, using the printer's internal fonts, softfonts, scalable fonts or the optional PostScript cartridge soon to be available for the printer.

The LaserJet III has 1Mb of memory as standard, though more of this is used for fonts than on the earlier machine, and it still costs £1,995 plus VAT. Now it's up to the LaserJet clone makers to catch up again!

CLIP-ART UPDATE

John Broad, whom I've mentioned before in this column, turns out to have strong connections with the UK Amiga User Group. I'll forgive him this eccentricity, though, since he's also been kind enough to update me with a further selection of the public domain clip-art which he's painstakingly transferred from various formats to *GEM Paint* (.IMG) and *PC Paintbrush* (.PCX) formats. The resulting clips are available through Softcell (0222 222895). They include a wide variety of material, some cartoony, some scans of 'real things'. It all helps to brighten up your DTP publications. I note that the UK Amiga User Group produces its catalogue entirely with *Timeworks Publisher PC* on an Amiga PC emulator.



• Some clip art from John Broad's collection.

John also sent me details of the origins of the PC game *PopCorn*, so I can now contact the original authors for permission to use it on a future *PC Plus* Super Disk.

SECOND TIME AROUND

For Amstrad to have a second strike at the laptop market seems eminently sensible. Laptops are still one of the fastest growing areas within computing and the PPC range never really caught on as Alan Sugar would have liked. Why not?

There were three basic faults with the design of the PPC. Firstly, it wasn't a laptop. The launch video of a globe-trotting commuter used an actor who must have been over six foot six high. He swung a PPC suavely through various international airports on his way to yet another board meeting. The rest of us have trouble not scraping the bottom of the carrying case on the tailboard every time we board a bus.

Amstrad claimed the length was to allow for a full sized AT-style keyboard – my guess is that it actually left plenty of room to use standard (standard=cheap) PC components inside.

• A second crack at the whip: Amstrad's portable 386 machine.

Secondly, the LCD screen in readable only with the aid of an arc lamp. This isn't a snide dig at the machine, it really has one of the least readable displays of any calculator I've ever seen, let alone a computer. Alan Sugar's much publicised quote "I don't know what all the fuss is about – you can read it" serves only to extol the quality of Mr Amstrad's vision. And that has nothing to do with his long-term marketing plans.

Thirdly, the machine is powered by 10 alkaline batteries, which give around five hours continuous use per set. Now, alkalines may have a better discharge characteristic than NiCad rechargables, and they may give a longer runtime per set. What is certain, though, is that they're prohibitively expensive at around £15 per set, and add greatly to the machine's weight.

The new machines – full details were in the news last week – appear to address all three of these gaffs. The machines are big, but not as unwieldy as the PPCs, the screens are very readable paper-white VGA affairs and self-switching power supplies can put power into them for two hours at a stretch – presumably using rechargable cells. The 286 version at £1,599 looks reasonably priced, too.

COLUMNIST BUYS DISKS!

Working for magazines usually means I can pick up plenty of disks for sending off reviews, articles, columns and the like. Recently, though, I'd run out of both 3.5-inch and 5.25-inch disks and needed to restock.

Browsing through the pages of various Future magazines, I picked on two companies who offered bulk disks at low prices. While not recommending bulk disks for storing valuable data, most of mine are only used once or twice, so I can afford to cut a few corners.

The companies I chose both supplied within two days, and offered a replacement guarantee on their disks. I'm sure there are other companies offering similar service, but can offer these two as sources I've used satisfactorily. Media Value supplies 360K 5.25-inch disks in lots of 25 at 20p each plus £2.50 p&p. Seven Disk does 10, 720K 3.5-inchers at 50p each (Media Value will do 25 at 46p each). Media Value is at Venture House, 212-214 Farnham Road, Slough SL14YL (0753 32445) and Seven Disk lives at Digswell Water Lodge, Digswell Lane, Welwyn Garden City, Herts AL7 1SN (0438 840456).

Simon Williams

DICTIONARY DEFINITIONS

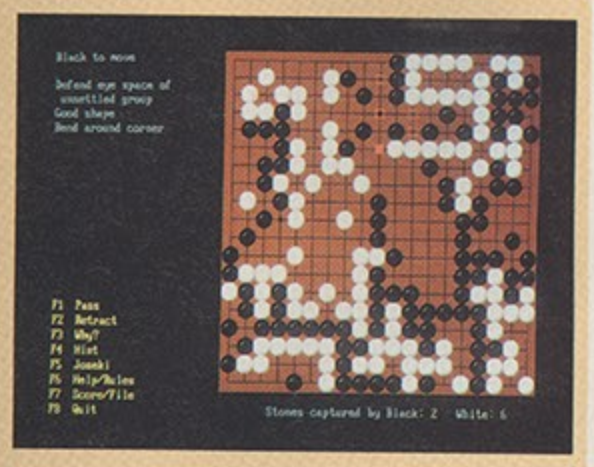
Also from John Broad (see Clip-art update) to complete a fun-packed bundle, he sent a string of computer dictionary terms, including:

Alpha test version – *too buggy to be released to the paying public*
Beta test version – *still too buggy to be released*
Release version – *alternative pronunciation of 'beta test version'*
Encryption – *a powerful algorithmic encoding technique employed in the creation of computer manuals*
Desktop publishing – *a system of software and hardware enabling users to create documents with a cornucopia of typefaces and graphics, and the intellectual content of a Formica slab; often used in conjunction with encryption*
Workstation – *a computer or terminal slavishly linked to a mainframe that doesn't offer game programs*
RISC – *the gamble that a computer directly compatible with nothing else on the planet may actually have decent software written for it someday*

PC GAME of the WEEK

COSMOS

Ishi Press • £34.95



Although chess is usually put forward as the 'game of kings', many would argue that the ancient Chinese game of go is far more subtle. Go is remarkable for having extremely simple rules – if you learnt draughts you shouldn't have any trouble with go – but requiring a depth of strategic planning beyond even chess.

It is played on a board marked out in a square grid of 19 by 19 intersecting lines. The two players have a supply of pebbles, either white or black, which are placed on the board so as to capture as much territory as possible. It all sounds simple until you play against a competent player, or indeed *Cosmos* 'the computer go partner'.

***Cosmos* presents a particularly stylish board on an EGA or VGA display. It also supports Hercules and CGA, or even text mode if your machine has no graphic capability, and caters for any board size from nine by nine to full size. Pieces can be placed using keyboard or mouse while menu options are picked by pressing the function keys listed on screen. There are no pull-down menus, but the system is easy to use.**

The program's proficiency can be set at anything from 1 to 100, apparently determining the number of moves the game looks ahead. Not being very proficient myself it is difficult to judge its play, suffice to say that it has apparently won computer go championships in the States and beaten *Nemesis*, its main competitor in the commercial field.

For those new to the game it comes with a cursory on-line tutorial and a slim 46-page introduction. However has a very helpful 'hint' facility and an on-line Joseki tutor – Joseki being a library of opening moves. At £35 it is quite pricey, but anyone with a computer and an interest in go should consider this program. It is available through Far Communications on (0533) 796166.

Matt Nicholson

Abbot

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Star LC10C Colour/80col/125cps/P	£206
Star LC10II 80col/180cps/P	£192
Star LC15 132col/120cps/P	£332
Star LC24 - 10 80col/24pin/180cps/P	£246
Star LC24 - 15 136col/24pin/200cps/P	£401
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SPECTRUM

FLEXIBLE FRIEND

Among the bills, Reader's Digest Prize Draw entry forms and requests for signed photographs in the post this week was a suprising piece of Speccy software that you have simply just got to hear about.

Flexipage is an innovative and decidedly wacky utility that's already been on TV and picked up a stack of glowing reviews.

Described by the bumpf as a 'Viewdata graphics/authoring system', it allows you to put together a series of text and graphic screens and link them together in a sequence to be displayed on your Speccy. This might not make you drool but it's easy to use, effective and the possible uses are widespread enough to make it one of the most interesting pieces of software for aeons (a long time even).

It has been designed with the novice Spectrum owner in mind and Alan Sugar should be made to sit in the corner and read it until he fully understands what a well-designed manual is like. He should then apply same to Spectrum manual.

The *Flexipage* manual sets out in plain language exactly how to go about creating screens and linking them together and how to set up an interactive quiz or adventure game.

A few exercises prepared by the author are included and go a long way towards demonstrating the potential of the program as a hi-tech advertising medium or educational tool. The interactive abilities are demonstrated with *Crime Quiz*, a series of multiple choice exercises that is currently being used by 11 police forces.

If you get permission from Flexibase Software, you're allowed to distribute read-only versions of any particularly good exercises you write with the system.

The program is easy to use with single keypress control throughout and lots of built-in help menus. It's available on cassette for £11.50 and disk (Plus 3 – 3-inch or Plus D – Discovery) for the equally innoffensive £13.50. Previous customers can update for a 20 per cent discount. Orders to Flexibase Software, 20, The Parklands, Droitwich, Worcs, WR9 7DG. There is also a SAM Coupé version in the pipeline.

Robin Alway

HACK ATTACK

Editor of *Enigma* magazine and Mr Generous 1989, the one and only Jon Rose (applause) has sent his latest batch of Multiface tips:

***Mega Nova* level 2 code is `26719`. Level 3 is `16640`**
***Mazemania* passwords: `HARLECH`, `JUPITER` and `STAYPUFT`**

Multifacers and owners of similar interface widgets can gain the usual infinite benefits by inserting the following numbers.

GAME	POKE	EFFECT
Ghouls 'n' Ghosts 48K	35387,0	Infinite lives
Ghouls 'n' Ghosts 128K	35390,0	Infinite lives
Guardian 2	50233,0	Infinite Lives
	50435,0	Infinite smart bombs
Space Harrier 2	43342,n	n= Number of lives
American Turbo King	44567,0	Infinite Lives

COUPE

HEAR YE, HEAR YE

As you no doubt read, drooled and fainted over in *Express* 71, MGT is offering an unstingey £20,000 prize for original SAM software and a number of publishers are also desperately trying to get Coupé-specific software out even as we speak. As well as those two encouraging announcements, MGT is busy buying up old Speccy classics ready for sprucing up and re-releasing on its own label.

MGT has secured Mike Singleton's superb *Lords of Midnight*, *Dark Sceptre* and Domark's *Revenge*. Plans are for selling the Coupé versions cheap.

Nearing the end of SAM's gleaming new pipeline are eight CodeMasters games, including *BMX Simulator* and *ATV Simulator* and possibly a disk of 10 games for around £10.

Finally a book of type-in listings designed to take advantage of those tasty new Coupé BASIC commands is due soon, no doubt to rave reviews in literary publications the world over. Surely no-one's still worried that the body will remain softwareless?

The Coupé's only been with us for a few months but already two owners are getting so enthusiastic about the wonderful thing that they've decided to form the first SAM Coupé user group and public domain library.

The library is a deserving organisation, and, understandably, it is on the lookout for PD programs. Indeed, the people will be grateful for any suitable software – particularly graphic – and sound demos and interrupt scrollers. Send all your SAM PD offerings to: The new PD library, 10 Ricardo Rd, Old Windsor, Berkshire SL4 2NU. Coupérians who want to join should send an SAE to the same address

Robin Alway

PCW

TAKING THE MICKEY?

A Mr Wellow of London asks me about mice. Well, a mouse in computer terms is nothing like its murine mammalian namesake, but a small cigarette pack-sized box you jold in your hand, conected to a special interface plugged in the back of your PCW.

As you move the mouse around on the desktop, a pointer on screen moves in sympathy. A mouse is thus a good way of controlling the cursor in drawing programs, games, desktop publishing packages or anything where cursors are too crude.

For word processors, spreadsheets, databases and so on, they're not necessary (and *LocoScript*, for example, doesn't work with a mouse and doesn't need to).

However, if you frequently use a desktop publishing or drawing package (*Stop Press*, *Micro Design*, *PCWdraw*, *MasterPaint*, etc) then a mouse might be a good investment.

My favourite is the Kempston mouse, and the same company now says it is bringing out a new improved model (actually a re-badged Naksha). Mouse plus interface costs £52.84, while *Micro Design 2* plus mouse plus interface costs £114.94. Details can be had on 0234 855666.

Why is a mouse called a mouse? Probably because it looks nothing like a mouse, just as a Bombay duck is a fish and an English public school is and always was Private.

FONT OF WISDOM

Owners of the excellent *Micro Design 2* desktop publishing package will be interested in a new set of fonts. The new set is for large headlines and main body copy on your newsletters and posters, and it costs £14.95 from the good people on 0889 567160.

EXIT RIGHT

Protext users on a 9512 may be irritated by the position of the EXIT key to the right of the spacebar. It's easy to hit accidentally and has the same effect as STOP, switching mode – making it redundant but awkward!

However, you can use CONFIG to change it. With your startup disk in the drive type CONFIG and select option 5 'Set keys for the PCW'.

Type in the code for the EXIT key, which is probably `08[RETURN]`. (Check on page 544 of your manual). Now press TAB to move across to the right hand table and type 2020202020 (five lots of 20). What you're doing is to make the EXIT key (known as key 08) return the character 20 hex (space) in the states of normal, shift, alt, shift-alt and extra.

Press [STOP] to get back to the main menu, save the configuration file to drive A with option 9 and quit back to *Protext* with 0. When you re-start you find that EXIT merely gives a space.

NUMBERS UP

Jane Seymour (no, not the actress) asks me if *Masterfile*, the database program, can sort things into numerical or date order. No, Jane, I am sorry to say that this is one of the things that *Masterfile* cannot do.

Rob Ainsley

MSX

ABOUT THE MSX

It may be impossible to buy a dedicated MSX magazine in the UK, but you can still get them from abroad. Indeed, I have recently seen two magazines that may be of interest: one from Spain, the other from Belgium.

The Spanish magazine, called *MSX Club*, is a monthly with a glossy colour cover and black and white contents. Even though the text is in Spanish, there are many interesting items such as listings, pokes and reviews of games that we never see in the UK, though they originate here.

A recent edition sports reviews of *Indiana Jones and The Last Crusade*, a game which must surely be released here soon if only on the Kixx label.

In the edition, there is also a section on games for Japanese MSX 2 computers – yet another area we are missing in the UK.

MSX Club subscription rates aren't cheap – 6259 pesetas for a year. In civilised currency that's £35, or £3 a copy. If you think it's worth that, send your subs to MSX Club de Programas, C./Roca i Batlle, 10-12-08023, Barcelona, Spain.

The Other Magazine is *Forum MSX*. This isn't as professionally produced as *MSX Club* as it contains few pictures and no colour apart from the cover.

The magazine does contain a wealth of information, reviews, listings and routines along with a few adverts, however. The text is written in French which is easily understood, even by me – and I haven't used French for years.

A small item caught my eye: there's a company, called Sparrowsoft, that claims it should be possible to upgrade an MSX 2 to a MSX 2 Plus with a simple chip (sounds too good to be true.) More details will be available in a future edition of *Forum MSX*.

Although I could find no mention of subscription fees I am sure that if you write to *Forum MSX*, c/o GENIN Alfred, Av De Monte Carlo, 102 Bte 10, 1190 Bruxelles, Belgium, the people will tell you the rates.

ONTO THE COLOSSEUM!

I've found *Colosseum*, one of Toposoft's latest games, quite entertaining although a trifle difficult.

Colosseum is a chariot racing game, you play Ben Hur, out-racing and out-fighting your opponents. The action is left to right horizontal scrolling. Graphics are two colour – well drawn – and sound is good, too.

There are four races to complete, each with four grueling laps. Your competitors are trying to prevent you from winning and as most of them have better weapons, it isn't easy. You start with a hatchet and if you destroy an opponent, you gain his weapon.

Even Ben Hur himself would find this one tough going. At £2.99, *Colosseum* is good value and it is better than many full priced games. Well done Kixx and thanks for giving MSX owners decent software at really low prices.

A point to notice: Toposoft conversions are always to a high standard even if they are straight Spectrum code with a few minor changes.

Keith Neal

CPC

BASICALLY BETTER

Remember the ST Desktop look-alike featured in this column a few weeks ago? There were so many calls about that one that I couldn't wait to see what else its author, David Wild, had written.

Well, among loads of software yet to be explored is a rather excellent extended BASIC, which features enough additional commands to make even die-hard machine coders look again.

How about this for a selection of goodies? Powerful drawing features, additional file handling commands, double location peeking/poking (ahem) with just one command and extended string variables to boot.

BASIC Plus (as it's called) runs under CPC BASIC and has a Help command for all those tricky little moments.

While we're at it, David has also written *Oops*, a handy little add-on for his GEM Desktop look-alike. If you've thrown a file into the trashcan approximately half a second before you realise it's absolutely vital and your whole life's (well, afternoon's) work has been irreversibly ditched (own up – you've all done it, haven't you), *Oops* will get it back for you.

If you want to know more about David Wild's programs (like how to get hold of them), you can write to him at DW Software, 62 Lascelles Avenue, Withernsea, North Humberside HU19 2EB. Sending £6 will secure you a disk full of sample software.

FAD UP?

Fads are common in the world of computer leisure, and the latest appears to be something dubiously titled 'New Age' games. The first two have arrived, and the news is that they're brill. The games in question are *E-Motion* from US Gold and *Pipe Mania* from Empire, both programmed by the Assembly Line.

The games are different in many ways but most interesting is the two player mode, where the competitive theme of the '80s dies a welcome death and co-operation becomes the buzzword. No longer is the aim to be better than the guy sitting next to you, but to work together and get further.

In *E-Motion* (which could be described as *Thrust* with balls) you have to guide molecule-like spheres around until they collide. Most of the time this means rapid nudging, but on some level you're actually tied to the damn things by elastic ropes.

This elastic quality makes life difficult as two players experience the kind of communication break down usually reserved for husband/wife driving lessons. 'Left, I said left.'

Simple graphics complement this ball-bashing spectacular, as the emphasis is definitely where it should be, on gameplay. You'll never forget the first time you're catapaulted off one side of the wrap-around screen by your mates ham-fisted control.

As if that weren't enough, those lads at the Assembly Line must have been doing overtime, because they've also come up with *Pipe Mania*, which is one of those dead simple ideas, with dazzlingly-addictive gameplay.

A pipeline has to be built to contain the flow of some lethal liquid. You must place pipe sections on the screen, but have no control over the order of the pieces that you're given.

There is a delay before the oozing gunge starts to flow, giving you a head start to position pipes. This advantage doesn't last long, though, and before you know it the action is frantic, trying to get the right pieces in the right places before the flooding begins. Let it leak and it's game over.

There are 36 levels to conquer in all. Naturally, as you advance in level, the tougher the challenge becomes. Luckily at every fourth level you are given a password to let you get back to the same place. You also get bonus game to play.

The game can be played on your lonesome, or with a friend. Needless to say, two players just adds to the excitement. You both have the same goal – to keep the flow flowing – and it's over for both if you fail.

Graphically and sonically the game is no great shakes, but for sheer playability it's hard to match.

The two games are both dripping with gameplay. It's hard to say which is the better of the two, but my money goes on *Pipe-Mania*. It has a fraction of a percent more playability which gives it the edge.

WRITE AWAY!

What a load of rubbish! Total rot! Utter balderdash! Well, if that's what you think, why not say so? Simply write to me c/o CPC Column, *New Computer Express*, Beauford Court, 30 Monmouth Street, Bath, Avon BA1 2AP.

Rod Lawton and friends

ALL TANKED UP

Having trouble with *Supertank Simulator*? Well you can give yourself infinite lives with this neat cheat from J Falcus of Optimus Software. Press ESC to pause, and then type in STANK (no, not a comment on the game) and hit ESC again to rejoin the game. Good, eh?

For *Chase HQ* simply re-define the keys as S,H,O,C,K,E,D. When 'TEST' appears on screen, re-define the keys for play (shocked being rather difficult to drive on) and then by pressing keys 1,2,3,4 you will gain some fun effects.

***The Untouchables* has a rather predictable little cheat built in. Just type HUMPHREY BOGART into the high score table. Then when you want to get to the next level press '9', '6', '3', '.' and the 'right cu'sor arrow' (the far right hand column of keys on a 6128). And boff, you're off!**

What was wrong Robert 'Captain Cardboard' Stack Ocean? The world has a right to know!

XE

COMMS CAPERS CONTINUED

You've got the 8-bit set up with a suitable interface and a shiny new modem sits alongside it. But what software should you use?

At this point you can breath a sigh of relief, because the best communications software available for the Atari 8-bit is completely free (and of course if you bought your serial interface from Bruen Software, the *Bobterm* software package was included free of charge).

Several of these public domain comms programs reside – and are available for download – on the The City bulletin board (021-353 5486 V21/V22/V23/and now with V22bis), but, obviously, you'll need to have software to facilitate communications in the first place! Yes? Yes.

Perhaps the best source for beginners is the public domain library run by Page 6. This is simply stuffed with all kinds of goodies covering everything from programming, through applications and utilities to comms software.

Page 6 can be contacted at PO Box 54, Stafford ST16 1DR or by calling 0785 213928 (Page 6 also publishes a rather nice magazine which shouldn't be missed by avid 8-bitters). For a couple of pounds, the disk of your choice will wing its way to you.

Which should you choose? Try *Amodem7*, an excellent program offering many features which is easy to set up and use.

Software is up and running, the modem is working just fine, who're ya gonna call? The City is far and away the best board but there are several others offering a modicum of support to the 8-bit community.

The Pheonix (0249 817704 V21/V22/V23 24hrs) has a section which includes a large amount of downloadable PD, and the Twilight Zone based in London (01-608 1485 V21/V22/V23 24Hrs) also caters for the world's, indisputablly best 8-bit.

Log on, download software and generally immerse yourself in the thriving 8-bit comms scene. Remember however, that the Sysops (SYStem OPerators) responsible for the boards don't charge any money, and consequently, receive nothing for allowing you to access their computers and hard drives, download their sofware and so on.

So by the way of goodwill, everytime you download a couple of games or utilities, upload a program too. In this way, boards will thrive, you'll be given greater access and more on-line time and the whole shabang will bowl along quite nicely.

DIY BB

But what about running your own BB? There's a lot of work involved, and a lot of expensive equipment to be bought, but once in working order, there's a lot of fun to be had – and no more telephone charges becuase everyone will call you! So what do you need to run a board?

We'll go into more detail later, but suffice it to say that you'll need a modem with an autoanswer option in order to pick up the telephone line when another computer calls and preferably two floppy disk drives.

Edmund Blake

YOUR FORMAT

Amiga 10
ST 12
PC 14
Spectrum 16
PCW 16
MSX 16
CPC 17
Atari XE 17
BBC 18
QL 18
Archimedes 18
C64 18

C64

MORE RELEASES

Why are so many software companies saving up new releases for Easter? Do they think we'll have a lot more money to spare?

For instance, Accolade is bringing out a little number called *Powerboat USA*, which is a racing simulator for one of the few sports in the world which hasn't yet been simulated.

Another case in point is Virgin. To celebrate Dan Dare's 40th anniversary the company is releasing *Dan Dare III*. And Dan Dare's getting married. Is nothing sacred?

US Gold and Ocean are also releasing titles for Easter and I'm sure many other companies will do the same.

MORE RUMOURS

Is Level 9's new HUGE game-writing system so huge that the company can't come up with any new programs?

I see no signs of further releases; I hear no rumours of games to come. So, as Level 9 has everything ready for *Gnome Free*, the third in the wonderful Ingrid Bottomlow saga, why doesn't the company release that one instead?

MORE REPAIRS

As not everyone can drive up to sunniest Wigan to get his or her C64 repairs done, here's an address for those poor unfortunates who live in the south. KPR Micro occupies 34 Petunia Crescent, Springfield, Chelmsford, Essex CM1 5YP, and it will tend to your ailing C64 for £28.70 – although it may cost more if there's a multiple fault. You get an extended six month guarantee included.

Pete Gerrard

MORE HINTS

Here are some POKEs for *Indiana Jones and the Last Crusade*:

Infinite lives POKE 32552,173.
Infinite whips POKE 37255,173.
Infinite torches POKE 35756,173.

To restart the game, SYS 32092.

Here are some tips for golden oldies:

To advance a level in *Matrix* press CTRL Run/Stop/the CBM logo key and fire at at the same time.

On the disk version of *Road Runner* take the disk out after starting level one and when you complete the level you'll start again on the same level. When you want to start on a new level, put the disk back in. This means that you can play level one four times.

Replace the disk and start level five. All good fun.

QL

MORE QUANTA

Quanta, the QL users group has published the chairman's report and accounts for the past year. The group's bank account is healthy thanks to two commercial ventures.

Ian Jones' excellent book on SuperBASIC was twice re-printed and the remaining stock of Tandata QL modems was sold at knock-down prices. Membership broke previous records, peaking at 2,200, which isn't bad for a supposedly- dead machine.

The group's huge software library has been re-organised from chronological to subject order, making it easier to locate programs.

Membership secretary Phil Borman is organising a minibus for the German Alternative Micro Show in Seeheim on April 28. Contact him on 0933 410277 if you want to join Quanta, visit the show or both. Similar trips to Frankfurt and Brussels were enjoyed by all.

COMPUTER-FREE WEEKEND?

An aquaintance who works in computing told me that his wife – fed up with being a computer widow – demanded a weekend break.

They booked into a hotel in the west country and duly arrived at reception to find that the hotel was full of ICPUG (Independent Commodore Products User Group) and their systems. One less than pleased wife.

Q-LIBERATOR

Liberation Software's popular Q-Liberator SuperBASIC compiler has been upgraded. It is now fully compatible with the Minerva ROM upgrade and has extra features.

The original Q-Liberator was developed at about the same time as Digital Precision's first compiler, Supercharge. Supercharge was generally acknowledged to have the edge on speed but Q-Liberator was easier to use, especially as Supercharge used a rather awkward anti-piracy device called Lenslok.

The two compilers differed in one major respect. Supercharge compiled to 68000 machine code, whereas Q-Liberator generated code for a hypothetical stack machine that was interpreted at run-time (like the UCSD Pascal system that was popular some years ago).

SPEED UP YOUR STORAGE

If you use a Microdrive cartridge or disk for a long time, it is a good idea to copy all the files to a freshly formatted medium. When the files are deleted and modified, they become fragmented with bits and pieces of the files stored all over the medium.

This slows things down so copying on to a new medium ensures that each file is contiguous.

John Torofex

BBC

TROUBLES AFOOT

I don't often have to re-write a complete BBC column for *Express*, but this week I've been afflicted with the dastardly and doom-riddled twin evils of file incompatibility and hardware fallibility.

In other words, the Master 128 has broken down and my column is on a disk that no other machine can read. Every cloud has a silver lining, though.

The Master 128 is in my office and is the hub. Not only is it a workhorse but it also acts as the file translator between the PC, Archimedes and Mac. When the hub fails, it takes the system with it. If only I'd got a copy on a 3.5-inch disk or taken a printout – no problem!

COLOURFUL WORLD

It's a colourful world so having only black and white on a printed page is a restriction. Longman Logotron has addressed the problem with *Printbox*, which is a "child-centred colour page design package for the BBC B, Master 128 and Compact computers".

Printbox takes a new approach to DTP. Material can be grabbed directly from other programs as well as imported. It's also strong on clip-art.

Printbox supports colour so good quality dumps can be obtained. Where it does fall down is in the documentation. Additionally, the typeface of the main text is of a size and design to make you read it from two feet away. What is more, the content is jumbled and reads as if the author couldn't decide whether to address a child, an adult or a teacher.

Andrew Brown

ARCHIMEDES

BUYING NEW

A pecking order is beginning to develop in Archimedes terms. Since Acorn stopped producing the A300 series, it has been a better bet to buy an A3000 than an A310, even though the second-hand A310 appears to offer more expansion potential.

The A310 does have a metal case and space for more podules and a hard disk internally, but you have to spend a lot if you want to add memory to the machine, and you have to install piggy-back boards to do it.

The A3000 can be easily taken up to 2Mb, though more than that is tricky. Specially-sized podules are available for the machine, but adding a hard disk has to be done externally.

The new 1Mb version of RISCOS Acorn is said to be developing is also rumoured to be compatible with A3000 and 400 series machines only.

The best entry-level Arc of all, if you can afford it of course, is the A410/1. This machine is fully expandable to the 4Mb of RAM at the cost of the RAM and can accomodate large hard disks without having to add backplanes, MEMC1a chips and hard disk podules.

The only snag is finding the extra cash for the memory upgrade and hard disk. Watford Electronics is still offering its free extras if you buy your A410/1 from them, though. Additionally, the company will throw in a 20Mb hard disk upgrade and an extra 1Mb of RAM for free. Contact the good people at Watford on 0923 37774.

AFTER THE TEMPEST

After last week's update on Clares' DTP program *Tempest*, you'd probably like to know that BEEBUG's program of the same purpose is reported running later than it was at first reported to be running. Latest ETA is 'sometime in the summer'. The name is likely to be *Ovation*. BEEBUG is on 0727 40303.

EACH TO HIS OWN

It's very easy to become addicted to one screen mode on the Arc. Once you start working with text at a given width, changing to a mode with a different width can seem alien and unfriendly – downright distasteful even.

I was showing a colleague the wonders of the Acorn WIMP the other day and he commented that the characters looked very thin – I was running in mode 16 which I've come to be very used to. To someone who spends most of his time on a Mac, it looked strange.

My two boys, who used to playing games on an Atari ST – and occasionally on the Arc – refer to the 80 column mode as 'squashed', while to me the 40 column multi-colour mode looks ugly and over-stretched. It comes down to whatever you're happy with, I guess.

IMPRESSION TIP

If you have the latest version of *Impression*, you find a template provided for making your own function key labels. At last there's a neat way of printing key details for all your favourite applications.

The idea of using templates is in itself very handy when creating a variety of different documents within *Impression*. Prepare the template first and save it separately from the document to which you're going to apply it. Then it will be handy for another day.

Bertrum Carrot

CHARITY SOFTWARE

Not only is Paul Beverley's Careware disk scheme (call 0603 507057) benefitting charities, but a new offer comes from Stellar Enterprises at 84 Dudsbury Road, Ferndown, Wimbourne, Dorset BH22 8RG.

***Eucorn* claims to be a 'revolutionary new generation of musical instrument' and seems to be a music processor for the Arc. It consists – so the half page press advert reads – of the program itself in BASIC and compiled versions, a 70 plus page manual and over two hours of classical pieces.**

"What does it cost," you ask? "Zilch," is my off-the-cuff reply. Just send an 800K formatted disk and return postage to the aforementioned address and receive *Eucorn* by return of post. If, after testing it, you think its the best thing since Erik Satie's *Monotones*, simply send a donation to a charity of your choice. I've sent off an 800K disk on your behalf, gentle readers, and will report on the outcome.

STAMPEDE

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THE SHOPPING EXPRESS GUIDE TO PC ESSENTIALS

The PC has an enormous range of high-quality software available for it, but the choice can be bewildering. Read on to discover the Shopping Express guide to 50 indispensible programs

There's probably more software for the PC than for all other machines put together, so a comprehensive list is clearly impossible. Choosing 'the best' fifty programs is impossible too – it depends on what you want your PC to do. But here's the *Express* list of the 50 programs we think should be at the top of your shopping list. Word processors, home accounts, spreadsheets, programming utilities... the list goes on and on. We've cut down our categories to include software that you can't afford to be without, at home or at work; the essential PC software.

We give what we consider to be the all-round best program or programs in each section, together with a brief description of each, and a few highlights and drawbacks. There's also the availability details, though as ever, check the mail order ads in Shopping Express first. You're sure to find some excellent discounts available.

WORD PROCESSORS

● PROTEXT V4

£100 • Arnor • 0733 68909

For sheer text and file handling *Protext* stands out. It's fast, flexible and full of features; good spell checker and mail merge facilities so powerful you can write program-like text and file handling routines. For writers and journos this is a must.

▲ Fast
▲ Spell checker
▲ Powerful mail merger
▲ Powerful macros
▲ Loads of extras – calculator, word counter etc
▲ Two file editing

▼ No real graphics capability
▼ Not good at handling complex layouts

VALUE FOR MONEY ★★★★★

● TASWORD

£50 • Tasman Software • 0532 438301

Superb value and fast. A few odd limitations but an excellent basic word processor. *TasSpell*, the spell checker, also available, along with *TasRes*, the memory resident version of the processor.

▲ Memory resident and fast
▲ Easy to customise
▲ DOS shell macros
▲ Word count, notepad features etc

▼ Clumsy text insertion
▼ Some limitations – find and replace won't accept spaces, blocks must be whole lines etc

VALUE FOR MONEY ★★★★★

● CELEBRITY

£80 • Software Paradise • 0222 887521

A well designed word processor with a lot of extras and plenty of appeal for the first time user. It doesn't show the compromises usual with beginner's packages.

▲ Good clear command structure
▲ Calculator, calendar, DOS manager etc
▲ Thesaurus and spell checker
▲ Up to four text windows

▼ Thesaurus US and a bit slow
▼ Window dimensions fixed

VALUE FOR MONEY ★★★★

● MULTIWRITER 2

£115 • NewStar Software • 0245 265017

A very powerful package that includes many features usually found only on really expensive word processors. *WordStar* dot commands can be included directly in a document so this may be ideal for *WordStar* diehards. Lots of extras – author's utilities and a filing program, for example.

▲ *WordStar* compatible
▲ Good menu and context sensitive help
▲ Extras: contents and index generator etc
▲ Filer utility

▼ Filer awkward to use

VALUE FOR MONEY ★★★★

● BORLAND SPRINT

£199.95 • Borland • 0734 320022

A hugely powerful word processor – certainly worth looking at if you need the complete works. Breathtakingly fast with an auto-save feature that means even if the power goes your document has been saved exactly as it was at that moment. Comes with front ends that make it look like *WordStar*, *WordPerfect*, *MultiMate* or Microsoft *Word* if you're used to those packages. A bit complicated to use though and modelled on C, which doesn't help.

▲ User interfaces for *WordStar* etc
▲ Thesaurus and check-as-you-type spell checker
▲ Cross-referencing
▲ Very powerful indexing facilities
▲ Laser and PostScript support

▼ Very complex to use – only get it if you really need all the power
▼ Still a few little bugettes

VALUE FOR MONEY ★★★★★

● MICROSOFT WORD

£395 • Microsoft • 0734 500741

Another of the heavyweights. Packed with every feature you can imagine, but you're paying for it. Easy and intuitive to use for such a high-powered package – ideas outliners, contents/ indexing and footnotes, very good graphics facilities – and of course it runs under windows and OS/2.

▲ All the heavyweight features:thesaurus, spell checker, author utilities
▲ Ideas outliner
▲ Good graphics import facilities
▲ Runs with windows and OS/2
▲ Easy to use

▼ Very pricey
▼ Need a powerful machine – slow unless you have a 286 or 386

● WORD PERFECT

£250 • Sentinel • 0932 231164

Supposedly the biggest selling word processor on the PCs. A huge program with everything you could ever need: thesaurus, spell checker, two column text, footnote and index generation, automatic date insertion, end notes, mathematical symbols etc etc etc. Frankly though a disappointment for the huge price; only any use if you're already committed to the program because of training – or if you can get it on expenses.

▲ Everything you could ever need in a word processor
▲ Exemplary manual
▲ Available on minis, mainframes as well as micros

▼ Vastly expensive
▼ Some very complex keystrokes for functions – must be learned by rote

VALUE FOR MONEY ★★★

● CHIWRITER

£92 • Shareware Marketing • 0297 24088

The word processor for scientists. Originally a shareware product, this word processor lets you design and use predesigned fonts for scientific use. Can cope with any mathematical symbols – even the most complex integrals for example. The most impressive WYSIWYG you'll ever see! Might be worth hanging on a couple of months for the PC version of *LocoScript* though, which will no doubt outperform *Chiwriter* for less money.

▲ Handles any maths – integrals, complex set theory symbols etc
▲ Does foreign characters too
▲ Footnotes and font designer

▼ Limited as a word processor: no mail merge, word count only after spell check
▼ Only one document at once
▼ Hidden extra costs for hi-res or screen

VALUE FOR MONEY ★★★

● TOPCOPY PLUS

£109 • Innova Software • 0453 835379

Big brother of *Topcopy* – a very powerful and well-featured word processor. Verging on the 'big league'. Very fast – memory resident – and keeps everything reformatted as you go. Multi document

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MANNESMAN TALLY

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Mannesman Serial Interface.....£49

REPAIRS FOR AMIGA AND ATARI

handling together with the speed of operation makes it ideal for people who shunt text around a lot. good spell check and mail merge too.

▲ Memory resident
▲ Can import text from defined areas of underlying screens
▲ Auto reformats but still fast
▲ Three files on screen at once, handles up to six documents
▲ Spell checker and mail merge
▲ Very fast

▼ One or two useful commands missed (eg. swop letters)
▼ No auto backup of files

VALUE FOR MONEY ★★★★

● GALAXY

Shareware • Advantage/PDSL • 0242 224340/ 0892 663298

One of many shareware word processors that resembles *WordStar*. Doesn't compete with ones you pay a hundred quid for, but for the price you get a usable program ideal for occasional use.

▲ Menus
▲ Spell checker
▲ Bargain price

▼ Restricted power – best for occasional user

SPREADSHEETS

Probably one of the primary uses for PCs, the spreadsheet is the staple of the small business user and some of the best around are available for the PC.

●VP PLANNER PLUS

£172 • Paperback Software • 0245 265017

Fully featured, Lotus *1-2-3* compatible spreadsheet generally held to be the ultimate in PC spreadsheet programs. There's support for a mouse as well as multi-dimensional financial modelling.

▲ Comprehensive
▲ Complex modelling can be achieved
▲ Reasonably priced (there's a cut-down £115 version too)

▼ Difficult to learn
▼ Hard drive and printer required

● LUCID 3-D

£91 • PCSG Inc./Software Paradise • 0222 887521

Cheap spreadsheet from PCSG lacking graphics but with the ability to perform most of the necessary functions. There's no 'minimum hardware' requirement and it's cheap. Also features 3-dimensional linking of cells from different spreadsheets.

▲ Cheap
▲ Linking of separate spreadsheets
▲ No minimum hardware requirement

▼ No graphics

● THE TWIN

£67 • Mosaic Software • 0604 830496

Cheap 'n' cheerful spreadsheet that is the younger sibling of the outrageously named Legend: Twin Level III. The Twin is an almost exact copy of Lotus *1-2-3* at a fraction of the cost of that eponymous program. Well worth 67 quid.

▲ Cheap
▲ All of the features of Lotus *1-2-3*
▲ Powerful graphics

● LEGEND: TWIN LEVEL III

£207 • Mosaic Software • 0604 830496

The spreadsheet that sounds like an adventure game. Burrow deep into the powerful Lotus 123-like features such as 3-dimensional cell linking, graphics and database functions.

▲ 123 features provided
▲ 3-D cell linking
▲ Powerful

▼ Not for the spreadsheet novice

● PC-CALC PLUS

£57 • Shareware Marketing • 0297 24088

Cheap basic shareware spreadsheet that is nonetheless good quality. All necessary spreadsheet functions implemented. You can get a version of this spreadsheet complete with – cut-down – manual for five quid from PC user groups. Full documentation will require registration with Shareware Marketing and the handing over of the full price.

▲ Cheap, cheap, cheap
▲ Easy to learn
▲ Available from user groups

▼ Basic

DATABASES

Everyone needs a database. From business use such as motor car parts, baked beans stocks and can opener suppliers to home uses such as stamp and record collections and train number cataloguing.

● DBASE IV

£595 • Ashton-Tate • 01-5699768

The database that's got it all. Spawned a huge range of clones for many other machines. Complex and all reaching, dBase is a database-specific programming language that allows you to build filing programs tailor-made.

▲ Complex
▲ Can be tailored to suit individual needs
▲ Industry standard

▼ Expensive
▼ Not for beginners

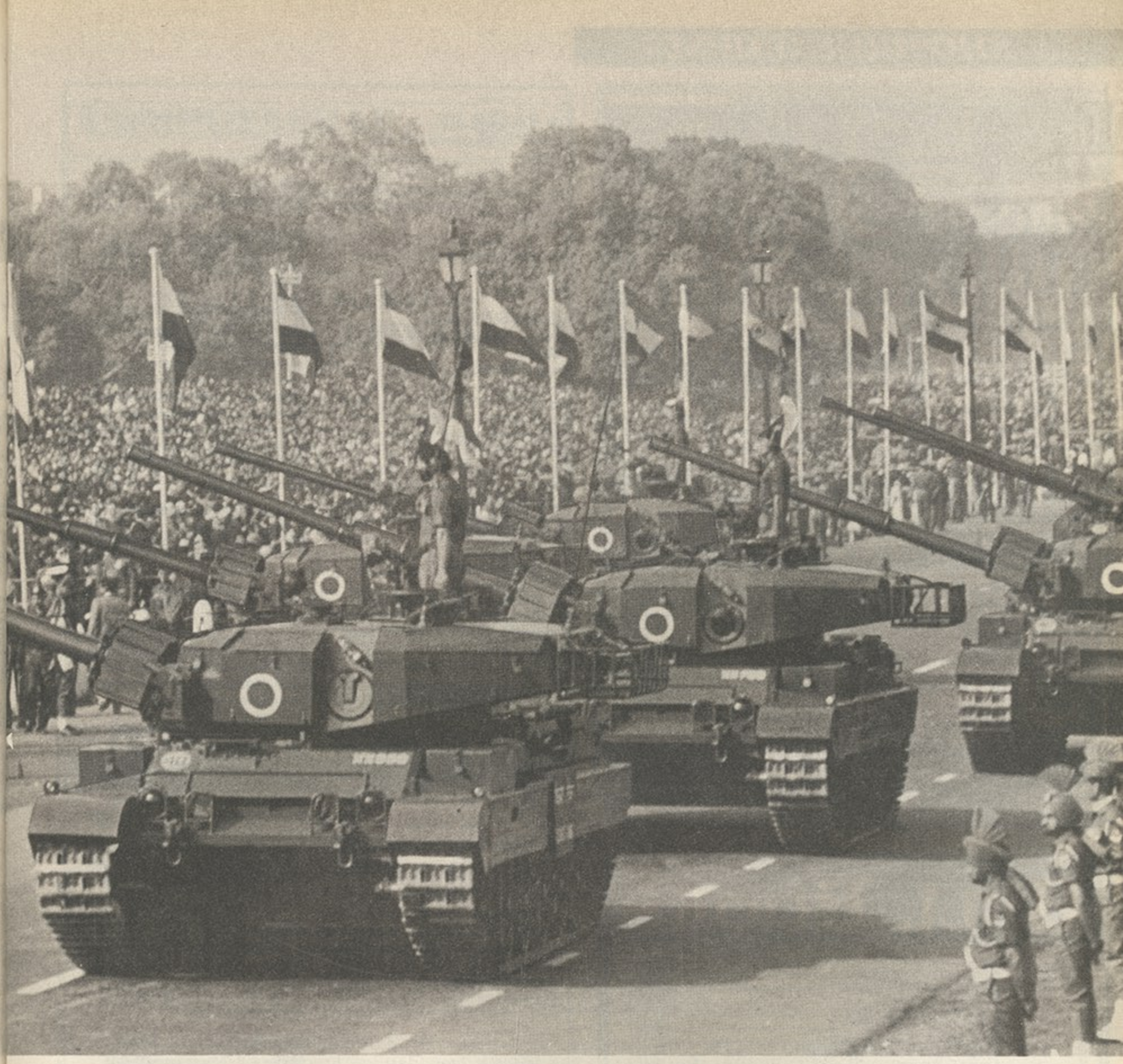
● DBXL 1.2 DIAMOND RELEASE

£115 • Software Paradise • 0222 887521

dBase clone featuring all the abilities of the original with a better text editor, variable arrays and user defined functions at an affordable price.

▲ Cheap
▲ Very powerful

▼ Difficult to master
▼ Not for beginners



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★ ★ ★ READ ALL ABOUT IT! ★ ★ ★

● TAS PLUS

£120.75 • Megatech • 01-874 6511

Powerful database that allows you to spread a database over many files. It's programmable, relatively easy to use and cheap.

▲ Fully featured
▲ Easy to use
▲ Cheap

● HYPERPAD

£114 • Software Paradise • 0222 887521

Apple Macintosh users have long had the opportunity to use the definitive associative database handling of *Hypercard* based on the concept stacks of interconnected cards each containing various data, programs etc., all accessible via a serious of icon 'buttons'. And now, at last, this power is available to the humble PC user with Software Paradises *Hyperpad*. All the features of the original system are here.

▲ Comprehensive
▲ Easy to use
▲ Moderately priced

▼ Setting up may confuse absolute beginners

COMMUNICATIONS

Got a yen to communicate with your fellow PCers? Need to transfer data around the planet? Maybe you want to connect several computers together to maximise your peripherals?

● THE $25 NETWORK

£25 • EQ Consultants • 0334 84248

Networks abound at the moment but you'd be hard pushed to find one that would set you back less than several hundred pounds, before, that is, the release of The $25 Network from EQ Consultants. For the tiny figure of 25 quid (EQ alas, hold no stock in exchange rates) you can join two PCs in perfect harmony, to have and to hold, from this day on...

▲ Amazingly cheap
▲ Everything you need (except a cheap null modem cable)
▲ Easy to use

● CALLBOX

£171.35 • Callbox Ltd • 0600 4478

A program which takes control of your telephone allowing you to perform all manner of snazzy dialing functions, number recalls, auto calls etc. All this for only one hundred and seventy one pounds, wow!

▲ Cheaper than equivalent hardware (i.e. telephone)

▼ Breath-takingly expensive
▼ Only for those without the energy to dial a number

● LINK MASTER

£19.95 • Amstrad Software • 0277 230222

Billed as the 'complete kit for file transfer between two PCs' thereby implying a hard/software cast of thousands, Link Master is a cable and bit of software for £20 that allows you to transfer files between two PCs. Why not just use floppy disks? Or, perhaps that would be asking just a little too much (perhaps it wouldn't)

▲ Cheap
▲ Easy to use

▼ Superfluous
▼ Unnecessary (unless you have machines with wildly differing drive formats

● PROCOMM PLUS

£59 • Shareware Marketing • 0297 24088

Fully-featured general purpose communications program for use with modems. The program supports the industry-standard Hayes command language and seven file transfer protocols. There's an earlier version known as Procomm which can be had from the same supplier for a few quid.

▲ Reasonably cheap 'n' cheerful
▲ Hayes compatible
▲ Plenty of file transfer options

ACCOUNTING

The serious side of the PC. And let's face it, if you've spent the enormous sums necessary to buy the computer system, your going to need to save money somewhere.

● MICROSYSTEMS

£454 • Multisoft • 0420 85572

Very powerful accounting package emanating from well-known accounts software writers Multisoft. Menu driven programs ensure ease of use and give access to virtually every possible accounts function necessary. There's some extremely good help screens too in case you should encounter difficulties.

▲ Menu driven
▲ Fully featured
▲ Easy to use

▼ Too expensive for the home or small business user

● A-B-C

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ADVANTAGE (NCE) 56 BATH ROAD, CHELTENHAM, GL53 7HJ. TEL: 0242 224340

● TURBO PASCAL V5.00

£115 • Borland UK • 0734 320022

Known and loved by all, this is the Pascal compiler. It's fast, fully-featured has good editing facilities and is easy to get to grips with. Perhaps a little expensive.

▲ Powerful
▲ Good editor
▲ Can used on single drive systems

▼ A little overpriced

GAMES

Not formerly associated with games playing, the drop in the price of the average PC compatible has set off a chain reaction amongst leisure software writers eager to cash in on a new market.

● 688 ATTACK SUB

£29.99 • Electronic Arts • 0753 46465

Send a mass of Eastern Bloc seafaring metal to Davy Jones' locker. Alternatively, take command of Soviet Russia's latest submarine and go fascist hunting. Either way, this game provides everything necessary for superior submarine simulation. Ahoy m'heartys.

▲ Wonderful graphics
▲ Complex
▲ Quality gameplay

▼ VGA necessary for best display
▼ Expensive

● FLIGHT SIMULATOR 3

£52 • Microsoft • 0734 500741

The latest in a long line of definitive flight simulators from MicroSoft for the PC and its compatibles. This program has it all for those looking for quality simulation rather than blood 'n' guts. Expensive, but then the best always costs more. Invest a few quid here.

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▲ All controls found in a real aircraft are simulated
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£24.95 • Firebird Software • 0666 504326

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▲ Old faithful too good to be missed
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£19.95 • Mirrorsoft • 01-928 1454

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All of our STE computers are checked prior to despatch. All ram upgrades are fitted on-site by our own engineers. All prices include 72hr courier delivery and vat.

ALL STE MACHINES COME WITH :

*** FIRST BASIC – a programming language**
*** MUSIC MAKER – excellent music program**
*** ORGANISER BUSINESS SOFTWARE**

ATARI STE 512K RAM	**£345.00**
ATARI STE 1MB RAM	**£395.00**
ATARI STE 2MB RAM	**£449.00**
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ATARI 520STFM POWER PACK

*** Atari 520STFM computer**

*** 20 Top Selling Games** (Afterburner, R-Type, Gauntlet 2, Super Hang On, Space Harrier, Star Glider, Overlander, Super Huey, Pac Mania, Nebulus, Eliminator, Predator, Xenon, Bombuzal, Bomb Jack, Double Dragon, Black Lamp, Out Run, Star Goose and Star Ray)

*** Mouse, Joystick and instructions**

ALL THIS FOR ONLY

£315.00

including vat and 72hr courier delivery.

STE RAM UPGRADE KITS

520 STE to 1MB (2 x 256K cards)	**£62.50**
520/1040 STE to 2MB (2 x 1MB cards)	**£179.95**
520/1040 STE to 4MB (4 x 1MB cards)	**£359.95**

OUR RAM UPGRADE PRICES INCLUDE VAT AND DELIVERY BY COURIER

POWER PACK GAMES !!
All of the above mentioned 20 games are available on their own as a games pack
£39.99

ATARI LYNX

THE NEW COLOUR HAND HELD CONSOLE

* Fully portable games system using plug in card software
* 16 colours from palette of 4096 on a 3.5" colour screen
* 160x102 pixel display - crystal sharp & back lit
* Volume, brightness and contrast
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* Flip screen for left or right handed players
* Excellent 4 channel sound effects
* 64K RAM, 16Mhz clock speed, 8Mb game capacity
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(with California Games card FREE !)
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Atari SM124 Mono Monitor	£ 99.99
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star

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5 x Black Ribbons	**£16.95**
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BLANK DISKS

All of our blank disks are guaranteed and all supplied with labels. Our 3.5" DS/DD and 3.5" HDD are KAO unbranded disks. The Sony 2DD are branded and boxed in packs of ten. The 5.25" disks are supplied with sleeves and labels.

	3.5"	SONY 2DD	3,5" HDD	5.25"
Quantity x 10	£6.85	£11.49	£15.50	£3.28
Quantity x 20	£12.99	£21.49	£28.50	£6.34
Quantity x 30	£18.99	£31.49	£39.99	£9.38
Quantity x 50	£29.99	£51.49	£62.00	£14.95
Quantity x 100	£56.99	£99.99	£117.00	£27.95

ST GAMES ONLY £2.00 EACH ?

Afterburner, R-Type, Gauntlet 2, Super Hang-On, Space Harrier, Star Glider, Overlander, Super Huey, Pac Mania, Nebulus, Eliminator, Predator, Xenon, Bombuzal, Bomb Jack, Double Dragon, Black Lamp, Out Run, Star Goose and Star Ray

All of the above games are available in the Power Pack Software pack for only

£39.99 – thats less than £2.00 each !!!

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We have openings for both games and applications programmers. B.I.T.S. has lots of interesting work available, covering many different formats.

Ideally, you will have a proven track record, good sense of discipline and knowledge of one or more of the following processors: 6502, Z80, 68000 or 8086.

Salaries from 10,000 - 16,000 pounds p.a. depending on experience.

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As a project manager you will be expected to co-ordinate programmers, musicians and artists. Applicants should have experience of project management from initial design to completion.

Salaries depend on experience but range from 14,000 to 18,000 pounds p.a.

Bits

B.I.T.S. is a rapidly expanding software development house based in London looking for bright, intelligent, friendly people with a sense of humour to fill various positions. In certain situations accommodation can be arranged or relocation aid given.
Employment commences in May. Please send you CV to: B.I.T.S., Abbey House, 376 Wandsworth Road, London SW8 4TE. Or call Foo or Paul on 01-978 1844.

HARDWARE DESIGNERS & ENGINEERS

We are looking for experienced digital hardware people to work on development systems for the programmers. Applicants will be responsible for designing interfaces for the new machines as they arrive as well as updating existing designs.

Salaries up to 18,000 pounds p.a. will be paid to the right people, depending on experience.

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As an artist with B.I.T.S. you will be designing the graphics for a variety of video games on many different computers and consoles. Applicants should have experience on both 8 bit and 16 bit machines.

Salaries up to 15,000 pounds p.a. will be offered to successful applicants.

PROGRAMMERS!

"The Best Amiga conversion Ever - Yes Ever" - (Ninja Warriors) ACE Magazine

"An absolutely Brilliant Conversion" - (Ninja Warriors) ZZAP 92%

"The best shoot-em up available" - (Silkworm) Commodore User 93%

"Awesome, totally awesome" - (Silkworm) Amiga Computing 96%

Reviewers are no fools and as everyone knows they are hard to please. We at The Sales Curve strive to produce games which are not only fun but represent the best in technical advancement and quality. The credits listed above on our most recent products, Silkworm and The Ninja Warriors, reflect this fact.

If you have the ability to produce games which will receive such rave reviews, then you really should talk to us. We have massive amounts of interesting in-house work for exceptionally talented and dedicated individuals.

We are specifically looking for programmers to work on either

- Spectrum/Amstrad conversions of top U.S. hits.

- Original products on all formats

- Coin-op conversions on all formats.

- Nintendo (We are one of the few European companies that really does have the endorsement of Nintendo and the technical information that accompanies that endorsement.)

We are based in smart, comfortable offices in Central London and offer a happy working environment with good pay and bonuses, training where applicable and we can help with relocation to London.

If you would like to have an informal chat about the many career opportunities within The Sales Curve, please telephone Simon Pick, Development Manager on 01 585 3308 NOW!!

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We need your help! All our in-house programmers have left and gone to work for The Sales Curve Ltd. They have such nice offices and people, and they even pay their programmers! We are so desperate that if you work for us we will promise to pay you **£200,000** a month, we will hint at a company car, we will tell you that you'll get your *VERY OWN OFFICE* and we will spread rumours about how we bought you a ten bedroom stately home in Buckinghamshire!

If you are very talented, easily conned into working for free, are willing to work flexible hours (around 23 a day), have difficulty in speaking, have no ambitions, want no friends, can work without any hardware, can program, compose music, draw graphics, make the tea, answer the phone, walk the dog, hoover the floor, paint the walls, dig holes and read tarot cards all *simultaneously*....we want to hear from you!

But please, please, please, don't phone those awfully nice Sales Curve people, because if you do, you'll never phone us. And whatever happens, try to avoid Simon Pick (please don't phone 585 3308 and ask for Simon)....he is simply too friendly and clued up to be a nasty, mean, stupid project manager!

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We are looking for talented people to join our successful team in

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A good knowledge of machine code in either Z80, 6502, 8086, or 68000 is required.

WE ARE WAITING FOR YOU!

If you think you've got what it takes then contact Mark Grimmer.

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PROGRAMMERS WANTED

We are looking for talented **Programmers/Graphic Artists** to work either In-House or Freelance for our expanding operation. You will be working on Home Computers and Consoles, so if you can code 68000/68030/68040/Z80/6502/8086, we are waiting to hear from you.

Salaries are all negotiable according to experience.

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We are looking for experienced programmers and graphic artists to join our in-house development team. If you have a successful track record on product development on any of the following systems then we'd like to hear from you.

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If you are looking for a highly competitive salary, a friendly working environment and recognition of your skills then why not give me a call on: **0276 684959** or send your details to:

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OUR existing development environment is based around A2000 machines all networked via Hydra network cards. Amigas are 68020/030 turbo card machines with local hard disk and access via the network to two Sony Magneto Optical subsystems (600 Meg re writable CD units). Add to this our existing base of in house tools, code modules and reference material and you have probably the finest development environment in Europe! We also have a full range of support technology, for example five digitisers, VHS video deck, U-MATIC video deck, sound equipment, CD ROM, 8mm, video deck, genlocks, camcorder, digital still camera etc etc.

WE can offer a good package of renumeration to the right candidates and will also help with any relocation expenses if required. The position is full time and candidates must be prepared to work in house, freelance programmers need not apply. Please apply in writing to Mr Lee Gibson at the address below, examples of your work will be required, (all disks will be returned), as will a CV of programming experience to date.

DIGIGRAPHIC LTD

1 The Terrace, High St, Lutterworth, Leicestershire LE1 6BA
Telephone (0455) 558855 Fax (0455) 556067

PROGRAMMERS REQUIRED

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Alternatively we are always happy to view and advise on any product submission that may be presented to us with the view to publishing.

Contact James North-Hearn today for an informal and confidential talk, or come to see us at the European Computer Trade Show, stand D10, 1st – 3rd April, Business Design Centre, Islington, London N1.

Gremlin Graphics Software Limited.,
Alpha House, 10 Carver Street, Sheffield S1 4FS
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ATARI

All our ST prices include: mouse etc. plus 5 disks of software including 'First Word' wordprocessor, utilities, Neochrome graphics utility, game and demos.

NEW - 520 STFM DISCOVERY PACK

Good quality, good value package based around the 520STFM computer including 512K RAM, 1Mb Drive and built-in TV modulator. Also supplied is:

STOS Game Creator, Carrier Command, Space Harrier, FirST BASIC, Outrun, Bomb Jack, Neochrome, Atari ST Tour, *plus* 'Discovering your Atari ST' Book

£259.00 Including VAT and delivery

520 STE POWER PACK

Amazing value, special ST package from Atari! Includes the very latest 520STE with 1Mb drive, joystick, mouse, user guide, 5 disks of public domain software, plus an incredible selection of chart-topping software with a total RRP of over £500! Software included is:

R-Type, Afterburner, Double Dragon, Super Hangon, Space Harrier, Overlander, Pacmania, Starglider, Super Huey, Eliminator, Predator, Bombjack, Out Run, Bombuzal, Xenon, Gauntlet II, Black Lamp, Starray, Nebulus, Stargoose, First Music, First Basic, Organiser

All for only **£339.00** Inc VAT & delivery

STE Memory Upgrades (SIMMS modules)

Simple plug-in modules with fitting instructions. Please note that you cannot mix RAM module types eg. (0.5Mb with 1Mb). We will fit them for you free of charge when bought with any STE; simply add the cost of the upgrade shown below to the price of the STE.

0.5Mb module (upgrades 520 STE to 1Mb)	£59.00
2Mb modules (upgrades 520/1040 STE to 2Mb)	£175.00
4Mb modules (upgrades 520/1040 to 4Mb)	£350.00

1040 STE includes 1Mb drive, 1Mb RAM, with built-in TV modulator	£399.00
520STFM 1Mb Drive Upgrade Kit with full fitting instructions	£74.95
520STFM 1Mb Memory Upgrade Kit, requires soldering	£59.00
Mega ST1 with monochrome monitor	£599.00
Mega ST2 with monochrome monitor	£849.00
Mega ST4 with monochrome monitor	£1099.00
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5.25" External Drive 360/720K 40/80 track switchable	£99.00
NeoDesk 2.0 Desktop replacement	£34.95
Lynx Portable Entertainment System inc.PSU & 'California Games'	£169.00

Amstrad PC1512/1640/2086

Free with 1512 models... Ability and 4 US Gold Games

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MONO 1640	477.39 **549.00**	554.35 **649.00**	738.26 **849.00**	673.04 **774.00**	760.00 **874.00**	685.22 **788.00**	772.17 **888.00**
CGA (COLOUR) 1640	564.35 **649.00**	651.30 **749.00**	825.22 **949.00**	760.00 **874.00**	846.96 **974.00**	772.17 **888.00**	859.13 **988.00**
EGA (ECD) 1640	651.30 **749.00**	738.26 **849.00**	912.17 **1049.00**	846.96 **974.00**	933.91 **1074.00**	859.13 **988.00**	946.09 **1088.00**
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2086 CD	651.30 **749.00**	738.26 **849.00**	912.17 **1049.00**	846.96 **974.00**	933.91 **1074.00**	859.13 **988.00**	946.09 **1088.00**
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12 MONTHS ON-SITE MAINTENANCE PROVIDED WITH ALL MODELS OF PC1512, 1640 AND 2086 FREE OF CHARGE !

upgrades / accessories

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Low prices on all portable PCs - especially twin drive models
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Fully compatible, high quality 3.5" external drives for the ST and Amiga

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in 50 cap box £18.95
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ATARI

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- Free **California Games** (multiplayer) games card supplied!
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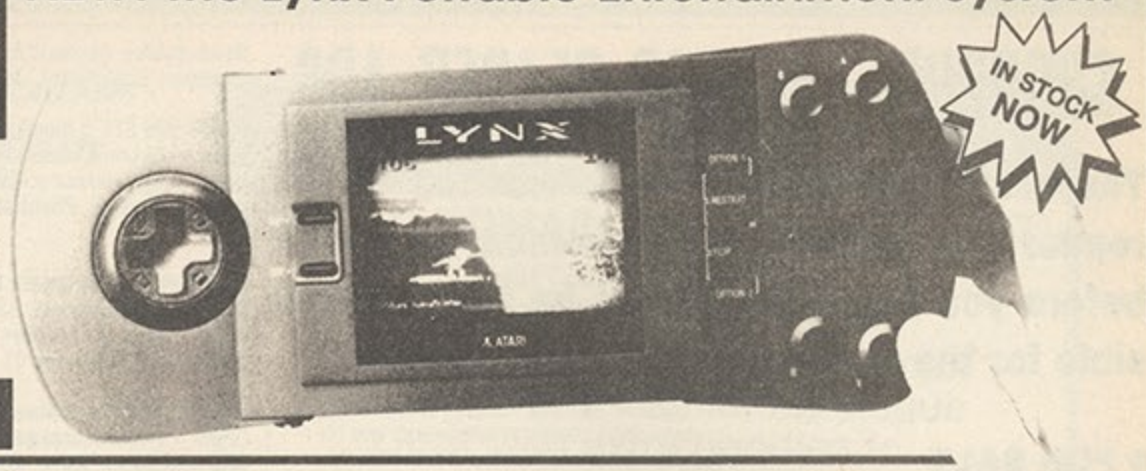
ONLY £169.00 including VAT and delivery

NEW! The Lynx Portable Entertainment System



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- ✓ Suits ST or Amiga (cable supplied)
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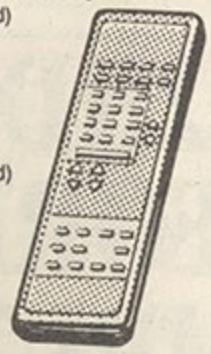

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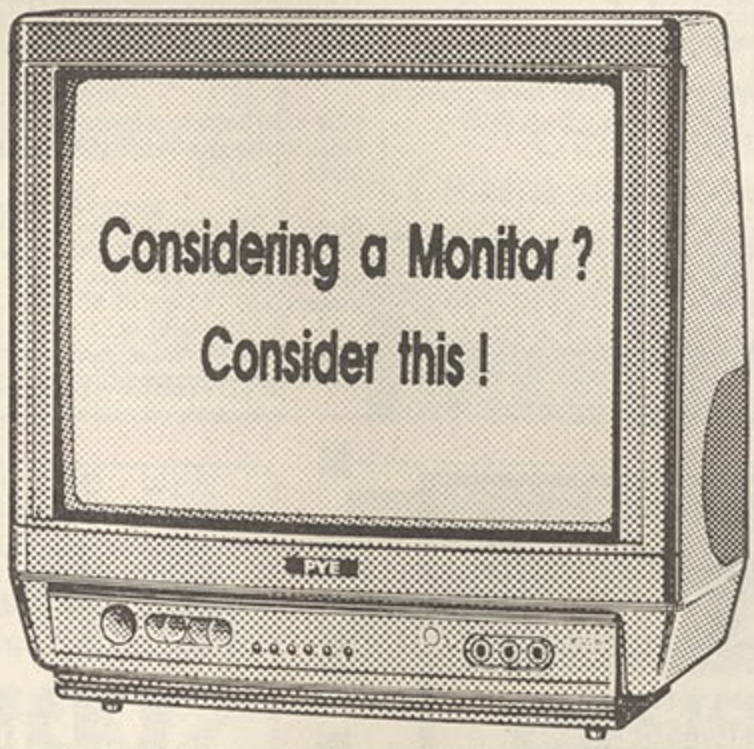

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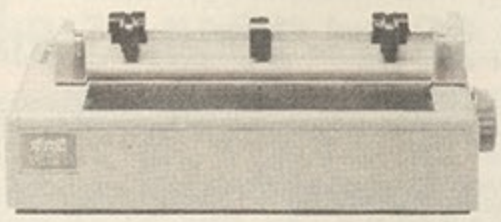

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PRINTER solidly built, Taxan Kaga 80-col, NLQ, hardly used, as new condition, incl. original packing, cost £195, space reqd, £100. Tel: Huntingdon 811154.

ATARI 130XE, disk drive with hyper chip, XC12 Recorder, software, magazines and more worth £500+ selling £300. Buyer collects. Phone Coventry (0203) 441832 after 4pm.

SPECTRUM plus two, interface one, Microdrive, Brother HR5 printer, joystick, games, plus many extras. Write to: Steven Jones, 16 Brackley Street, Runcorn, Cheshire, WA7 1EQ.

AMSTRAD PC mouse, compatible with PC1512 etc. good as new, only used twice £15 o.n.o. N. Evans, 13 Winton Road, Hatherley, Cheltenham, GL51 5AX. First come first served.

AMIGA games for sale, all originals, including Driving Force £13, Stuntcar Racer £13, Silkworm £10, Flight Sim. 2 £17 and many others. Phone Stephen (0494) 448507.

CBM64 and power unit £70. 3022 printer (IEEE 488) £40 IEEE488 interface £10. TMS 2716 Eproms £3 each, plus P&P. All v.g.c. 19 Saintfield Raod, Belfast, BT8 4AF.

MSX Toshiba disk drive with DOS Sony Hit-Bit computer and Philips Data Recorder approx 100 games, 2 cartridges, some disks. Ring after 5.30 (0532) 562178.

ATARI 520STFM, joysticks, disk boxes, mouse mat and £4000 software. Bargain at £500 o.n.o. Phone Grant (031) 337 4998 after 6pm. Buyer collects.

GAMEBOY Baseball game, boxed, cost £25.00 sell for £14.00. Also CPC disk games v.g.c. Send S.A.E. to Emma Broxup, Dalbeattie House, Oaky Balks, Alnwick, N. Ireland, NE66 2QD.

ST software - Knightforce, Carrier Command, C-Breeze to swap - any ST software considered in exchange. Tel: (0536) 512992.

AMSTRAD PPC640DD, dual 3.5in drives, MSDOS, IBM compatible, high speed modem, portable, used twice, as new, cost £639, sell £450. Basildon, Essex (0268) 417775 evenings.

AMIGA A500 for sale, boxed, 2 months old, under guarantee, loadsa games worth over £1,000+ sell for £195. Quick sale. Tel: Sheffield (0242) 303775.

SPECTRUM +3, Multiface 3, 100's games on disk and tape, books, mags, extras, too much to list £250 or swap for Atari 520STFM cash either way. (061) 702 9007.

ORIGINAL ST games for sale: Kick Off, Nigel Mansell Grand Prix, Space Harrier, Star Wars, Hellfire, Temple of Doom, TNT, £10 each or £50 the lot. Tel (0246) 211811 - Chesterfield.

ATARI Mega ST1, Hi-res monitor 24 pin printer, HPGL Plotter, modem, mouse, joystick, whole system just a few months old £1200, consider splitting (0495) 272092.

FOR sale KSpread III ver. 3.57 £35. Will consider exchange for Logistix package. Leicester (0533) 707206.

A software, Operation Wolf, Triad, Starglider 2, Populous, Barbarian II, Batman, Interceptor, £8 each. Xenon, Spitting Image, Las Vegas £2.50 each. (0703) 766949 after 7pm.

MEGADRIVE console and 13 games. Scart only worth £600, £400 o.n.o. Phone Darren on (0260) 279845 after five.

SPECTRUM Microdrive and cartridges, original software, interface, RS232, 48k Spectrum with Saga keyboard, offers parts or all. (0452) 618742 (Gloucester).

MULTIFACE 128 and Multiprint, hardly used £25 each plus P&P. (0928) 572947.

ARCHIMEDES 310. Riscos, manuals, disks, no monitor, one year old, (almost) but excellent condition £720 o.n.o. Tel: evenings (0926) 339932 selling to upgrade.

TANDY 1000HD fully IBM compatible, V20 processor, 640k RAM, 360k floppy drive, 10Mb hard disk, enhanced CGA, colour monitor, £450 o.n.o. Phone (Dunstable) (0582) 866617.

IBM compatible Commodore PC1. 640kb RAM, second 5 1/4-inch double density disk drive, Samsung green screen monitor, 84 key keyboard £325. Tel: Nottm. (0602) 500665.

SPECTRUM +2, three joysticks, over £250 worth of software inc. Operation Thunderbolt, T. Outrun sell for £180, 2 months old, perfect condition, altogether worth over £420. Tel: Sheffield (0742) 661117.

SPECTRUM 48k, plus Microdrive, Interface 1, plus cartridges, cassette recorder, over 50 games, books, will split, sell for £120 o.n.o. Phone Kevin (0268) 750101.

AMIGA 500, one meg upgrade, Philips CM8333 monitor second disk drive, plus loads of software, sell for £750 or nearest offer. Phone Neath 632930 after 6.00pm.

AMSTRAD PCW8512 with printer programs disks etc £375.00 o.n.o. Ring (0295) 268650.

SEGA, Light Phaser, Rapid Fire, 7 games, fully boxed, £133. Acorn Electron, 11 games, Diary program, £60. Tel (0734) 402787 (after 4.00pm weekdays, ask for David)

RGB monitor for sale, brand new, still boxed Sinclair dedicated, can be adapted to most computer 14-inch colour. Phone Alan (0753) 40534.

COMMODORE64, 1541, Star LC10, DPS 1101 Daisywheel, Action Replay 5, Joystick, Data Recorder, various games, utility, business software, £475.00 Tel: Bewdley (0299) 403163.

C64 kit for sale, hardware and software, utilities. Send S.A.E. for list. A.H. Foster, 24 Pansy Road, Bassett, Soton, SO2 3GR.

AMIGA A500 for sale, only 4 months old, like new, hardly used, loads of games including Wordprocessor. All for £300 ring Mark on (0373) 66183.

SEGA Master System with 12 games including Raston, Wonderboy, etc worth £395 will sell for £250. Write to: 4 Falkland Gardens, Leeds, LS17 6JH. Brand new, still boxed.

ATARI STM 1 Meg memory, 1 Meg disk drive, software, disks etc. Immaculate £289. Tel: (0761) 32610.

BRAND new two megabye Atari STE, £400 (no offers) Half Meg upgrade for 520STE, £50 (no offers) Phone Dan, (051) 734 0227.

AMIGA Datadisk for Superbase Personal. Complete British Amiga magazine index. S.A.E. for details or £10 for disk to: Twiddle, 52 Littleham Close, Bransholme, Hull, HU7 4RR.

OCEAN OC-118N disk drive, fully compatible with Commodore C64 1 1/2 year old, excellent condition £79. Phone Hemel (0442) 50680.

ARCHIMEDES 310 Riscos, Taxan 770+ Multisync monitor, plus extras, almost one year old, but excellent condition, manuals, disks. Selling to upgrade £1100 o.n.o. (0926) 339932.

AMSTRAD CPC6128 colour monitor, 3-inch disk drive £250.00. Deliver North West. Tel: (Works no.) (051) 236 0881 ext. 308 Mrs Strange.

C1541 disk drive v. good condition. Some software with 1520 plotter and leads £90.00 o.n.o. Phoe Rhayaoer (0597) 810374 Mid Wales after 6.00pm. Can arrange delivery if needed.

COMMODORE 64 (SX) 1541 drive 6-inch colour monitor + joystick and many games + demo's. Swap for LC10C printer or Mega Drive or sell £200 o.n.o. (061) 740 8188 6.30pm.

EXCHANGE your original games for my originals, all Commodore computers. Send S.A.E. for details. J. Bosworth, 106 Ardgowan Road, Catford, London, SE6 1UU.

ATARI 520STFM plus Philips CM8833 colour monitor, original 22 game pack, mouse, joystick £375. Casio Electronic Keyboard, many features, boxed £75. Tel: (0603) 632857.

ARCHIMEDES A440 base unit, 4Mb memory, 40Mb hard disk, as new only £1395 inc. software, no offers! Call (0532) 842780 evenings and weekends.

DRAGON 32 with some games £30, Commodore 16 with 26 games, tape deck etc £45. Both good working order. 168 Stoney Stanton Road, Coventry.

ATARI 520STFM with games and utilities with hardly used Centronics parallel printer and a Zenith hi-res mono monitor, serious offers aroung £500. Call (0276) 26072.

STE upgrade 520 to 1040 plug in Sim cards. 2 sets available £55 each. Phone Jim (0232) 794812.

AMIGA modulator £12, F16 Combat Pilot £12, Lombard RAC £11.50, Power Drift £10, Star Glider II £11, + many others. Phone (0422) 379065 evenings 7pm+.

AMSTRAD CPC464, green monitor, over £260 of software, many extras including books, stereo speakers, £195 o.n.o. Tilehurst 200459. Buyer collects.

ATARI STFM for sale, including mouse, joystick, games (Hard Drivin', Stunt Car Racer, Power Drift and others) unwanted Christmas present. Call Matt on (0530) 38684.

QL + disk drive + monitor (colour) + books etc. £175. Spectrum 128 + data recorder + books etc £75. Can deliver reasonable distance. Phone evenings - Reading (0734) 422908 Steve.

MEGA 1 Atari ST, high res monitor all as new £500. Atari 520STFM £190. Memory upgrad for STE £60. Phone (0495) 272092.

AMSTRAD CPC6128 disk with monitor, keyboard and printer with Mini Office Two. The Master disks and one game and cassette cable for £300 o.n.o Tel: Ilford 550 2919.

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● USER GROUPS

64 (Tape) not disk – users club about to start up – going global soon. Trade, Demos, comps: For details S.A.E. to: D. Mason, Ethorpe Hotel, Gerrards Cross, Bucks, SL9 8HY.

ADVENTURE enthusiast seeks contacts to exchange ideas etc for ST and PC games. Mr S Lucas, 47 Longcroft Lane, Cheadle Hulme, Cheshire.

ANY computer users who use Klaver Music Notation interested in forming/joining a user group; ring Mike on 01 520 5223.

BBC contacts wanted to exchange software, hints, tips etc. All letters replied to, write to K. Scotney, 17 Cromer Avenue, Burley, Lancs BB10 3HA.

BOURNEMOUTH and POOLE Atari User Group. Support for 8 Bit and ST. Monthly meetings. Membership £8.00. Quarterly Newsletter 8i16, £3.80 four issues. Details write to: 248 Wimborne Road, Oakdale, Poole, Dorset.

CALLING all hackers anyone interested in setting up a society write to me, Whizz Kidd's and hardware freaks welcome, all letters answered and treated in strictest confidence.

COMPUTER Student Contacts Wanted. Write to A. M. Drewett, 37 Longdon Ave, Aylesbury, Bucks HP21 9UW.

DISK magazine for Amiga freaks. Send Submission on disk to: Arthur Wyatt, 68 Shefford Road, Meppershall, Shefford, Beds. Submission disks get returned with magazine on, blanks returned as blanks.

DOES anyone know of an ST user club in the Wirral/Merseyside area that is open to membership? Please ring 051 678 8519.

DOES anyone know of an ST user group in the Reading / Wokingham area? If so please phone: Matthew by Tel: 0734 788085.

FAST Amiga contacts wanted, repeat fast! Send Discs or Letters to: Andy, 35 St Annes Drive, Aylestone, Leicester LE2 8HU.

GWYNEDD, N. WALES. ST User Group. I want to get in touch with all local ST Users to form a new group. Contact S. Rammerling, Clogwyn Plas Gwyn, Pwllheli, Gwynedd, N. Wales, LLS 36UA.

HYPERPAD – interested in forming a user group? SAE to Dave Langstaff, 78 Harrison Road, Swaythling, Southampton, SD2 37J.

IF You want to spread your groups in Asia. Send your latest + your demos to: Tariq, P.O. Box 3581 Safat, 13036, Kuwait. 100% reply, Amiga Only. Also will swap spot.

INTERESTED in joining a Kick Off League in London? With trophies for winners? Contact Ray at 30 Windsor Crescent, Wembley Park, Middlesex, HA9 9AW or ring 01 904 0555 between 6pm-11pm.

IS there a Clipper/DBase 3+ User Group in London? I will be grateful for any details. Guy Ellis, 23 Sussex St., Pimlico, London, SW1V 4RR.

ISLE OF WIGHT PC User Group. Anybody wishing to join should contact I.O.W. 0983 614277/614649 and ask for Sean.

JOIN CMUG the best Christian Micro Users Group. S.A.E. please to CMUG, 15 Howard Street, Gloucester GL1 4US.

JOIN the first free national ST user club. Register now! Make the most of your ST. David Dean, 5 Alpine Drive, Hednesford, Cannock, Staffs, WJ12 5NL.

KENT youth computer group at the Bowen Youth Centre, Kingsnorth Road, Ashford, Kent. All makes of computer. Write to Kris for details.

LAMER? Want to swap software, tips, demos and form a Lamers against Lamers Society? Then contact, Faisal Patel, 73 Track Road, Batley, W. Yorks, WF17 7AB.

LIST the low income ST User Group for students and the unemployed send two blank disks to Marcus, 9 Days Green, Chapel Street Mary, Ipswich, Suffolk IP9 2HZ for details.

NINTENDO contacts wanted for swaps and setting up of User Group! Write to: Ashley Middleton, Amberley, Park Drive, Little Aston Park, Sutton Coldfield, B74 27A, 100% reply.

PC200 user I think it's OK! Did you buy the other one? What do you think of it? Give me a ring 0432 266451 Neil.

PCW Users Interested in P.D. send S.A.E. to: PCW-File, 18 Sunbrow,Haslemere, Surrey GU27 2QP. The PCW-File is on Boog BBS 0252 626233, 24hrs, V21/V23. No Fees.

SCOTTISH QL Users Group. Your chance to meet other QL and Thor users north of the border. Contact Alan Pemberton, 65 Lingerwood Road, Newtongrange, Midlothian, Scotland.

SHARP users. Sharp users club, any model. The only one left for full support. Andrew Ferguson, 11 Harcourt Close, Henley-on-Thames, Oxon, RG9 1UZ. (0491) 514850 evenings please.

SOLIHULL, West Midlands Atari ST User Group meet second Tuesday of every month, other machines also accepted especially ARC's and even Amiga's. Phone 0564 770132 after 6.30 ask for Richard.

SPECTRUM Owners Join Indug, the World's largest Spectrum Users Group. Monthly Magazine, Discounts, Support + much more. Send A5 S.A.E. for full details to INDUG, 34 Bourton Road, Gloucester, GL4 0LE.

SPECTRUM User Group monthly magazine hints, tips, pokes & demos. For full details send S.A.E. to Rob Tronics, 61 Doyle Road, Bolton BL3 4SA.

ST contacts wanted if into Agtomation or any other, then write or phone 110% reply, almost. Lee Edwards, 24 Toplian Road, Glan Conwy Clwyd, LL28 5NP tel: 0492 580447.

ST users in Bradford, I'm starting a users group, just contact Dave on: 614945 and get the most out of your ST. NO FEES!!

TAKE advantage of the free helpline service, get in touch with other C-64 users, etc.... Join 'Crystal Unicorn'. No fee's!!! Adam, 'Redways', Harps Hall Road, West Walton, Wisbech, Cambs. PE14 7DJ.

THE Computer Information Club. A Club for PCW, PC, CPC, Spec+ and Atari, producing a Newsletter with hints, tips and discover software. Contact The Editor, 345 Western Way, Letchworth, Herts.

TI99/4A User Group. Quarterly Mag, software Libraries. Membership Secretary: Peter Walker, 24 Bacons Drive, Cuffley, Herts EN6 4DU. TI99/4A lives on yet!!

● HELP OFFERED

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ANYONE with PC hardware/software compatibility problems or having trouble deciding which PC compatible to buy. Call Paul on 061-962 7934, evenings. Completely free service!

BEEB help offered, including BCPL Basic and machine code. Write to Owen Astley, Dunelm, Durham Moor, Durham City, DH1 5EU. No SAE, no reply

COMPUTER freak offers help with any BBC B problems, however complex, also on use of DEC VAX 8800 in DCL, Pascal, ADA. S.A.E. to T.F.T., 5 Riversdale, Gilsland, Cumbria. Also 6502 work undertaken.

DO you need programs written on the Amstrad CPC range? Write to me now! Keith Grimsditch, 12 Reddish Vale Road, Reddish, Stockport, SY5 7HE. The sooner the better!

HELP given on Indy Jones the Adventure, also Dungeon Master. Please phone Paul on 0222 567596. Hi to the Pompey Pirates keep up the good work.

I can help with spares for Amstrad Commodore Sinclair computers, also TV and Video recorders. Can anyone help new Amiga operator? Ring Paul on 0332 760353.

MIMI 802 help! Erased system disc please phone 0737 823498 ask for Stupid John.

SOMEONE who can video digitise photos, mags etc..... will gladly sound sample anything they want done – write now! To: Neil Mansell, 53 St Marks Road, Canvey Island, Essex, S58 9NJ – don't delay!

STUDENT offers help with all aspects of MS-DOS, including Batch Files and Pipes/Filters. Send Query to: N Stubbs, 6 Lindrum Ave, Lyme Green, Macclesfield, SK11 0LG

TO all Pascal programmers: If you have any problems or just want to write something. Send me a letter and I will try to help you! To: Sioe-Lin Kwik, Richmond College, Queensroad, Richmond, Surrey, TW10 6JP.

TO PCW beginners. Locoscript, Newsdesk International. SAE to: John Peters, 299 Southway Drive, Southway, Plymouth, Devon, PLL 6QN. Share a problem, find an answer!

WANT help with any Amiga Software? Contact Pete, 15 Milford Close, Tonteg, Mid Glam, S. Wales, CF38 1HG.

● GOODS WANTED

WANTED PC engine games or sega mega drive games. Cash waiting. Tel: (0271) 46155.

AMIGA 5 1/4 drive offered for free!!! Just write and offer me a swap (Amiga related) Gordon Keenan, 61 Glenfinnan Road, Glasgow, G20 8JG (A590 RAM chips??)

HAVE you got a complete collection of Zero magazine? If so do you want to swap for a different collection NCE/ACE? Interested? Call Jason on 01-556 1318 after 6pm.

VAX or Microvax wanted. Don't laugh! I'm serious! Any configuration considered, will collect. Write to: Paul Roberts, 5 Arlington Close, Yeovil, Somerset, BA21 3TB.

SWAP Michael Jackson, Bowie autographed glossy promo photos for Atari STE hardware (disk drive, monitor etc) or sell, details: Paul, 38 Bolan Square, Lochgelly, Fife, KY5 9NF.

PLEASE help me. I need to get hold of "Superscript: for the CBM64. Yes! cash paid!! phone (061) 224 9751.

WANTED: Memotech MTX512 computer in goode condition, also Pascal ROM board. Please contact Shaun (0493) 665883.

WANTED. Cheap 2nd hand C64 software tape or disk originals only. Write to: G. Johnson, 14 Daly Park, Belleek, Fermanagh, N. Ireland, BT93.

WANTED help! Desperate! I will swap original Kick Off game for either TV Sports Football or Gazza Football. Phone Mike (0625) 525847.

WANTED: Midi Interface and/or Midi compatible step or real time sequencer for Amiga 500. Any offers? Phone Brian on (0279) 34906.

WANTED for C64/128 typing tutor and educational games, reasonable price paid or exchange. Tel: (0642) 613382 or write: 62 Humber Road, Thornaby, Stockton, Cleveland.

PD software urgenely needed. Please donate to the following address: 115 Beacon Hill Road, Newark, Notts NG24 2JN.

GOOD Electron software and hardware wanted write to: Paul, 3 Moorend Avenue, C'Wood, B'Ham, B37 5SD. Also Sega for sale offers of cash or computer stuff.

ATARI XL games on cassette plus old Atari user mags, must be in good condition. Write to: Dean, 138 Townsfield Road, Westhoughton, Nr Bolton, BL5 2NT.

WANTED: Your unwanted 3 1/2 disks, any condition, with or without labels, stick them in the post to: Paul, 38 Bolan Square, Lochgelly, Fife, KY5 9NF.

ATARI SM124 mono monitor required. Make me an offer - I'll probably accept, I'm so desperate!! Will collect in West Yorkshire. Call Steve: (0535) 273810, evenings.

WANTED Amstrad DD.1 disk drive. Must be excellent order. Tel: (0254) 392220 (Lancs).

WANTED: Original Amiga games- Rocket Ranger, Forgotten Worlds, Continental Circus, Kick Off. Will pay £10 each. Anyone got Bon Jovi or other Rock music demos. (0506) 39722.

MSX books magazines, useful programs. Disk or tape wanted. Particularly Spectravideo Express. Dave. Tel: (0908) 501310.

WANTED. Atari STFM (1 meg drive) approx £200 in used crinkleys for best package. Hurry before ye olde license gets cash! Tel: Steve (091) 5870610 (Wearside).

URGENT! I needs you! Calm down this isn't a proposal! Just call the latest BBS soon. Not Forem but hi to Forem BBS anyway. Tel: 01-920 1991.

MIMI 802 help! Erased system disc please phone 0737 823498 ask for Stupid John.

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TECH TIPS

HELP! Beeb PD?

My mother has written two programs on a BBC B microcomputer to do with insurance. When I mentioned public domain software to her, she said that she would like to put her two programs into a BBC PD library (they could probably be converted to a more useful machine such as an IBM PC).

Could you tell me if such things exist? If so, could you please print their addresses. Would my mother be able to charge a small fee for her programs?

My other query is: is it possible to use a BBC disk drive on a Commodore Amiga computer? Also, is the BBC emulator available for the Commodore software or hardware based?

Dan Samways, Ivybridge, Devon.

If a public domain library exists to support the BBC B computer then I'm damned if I can find it!

If any Techtippers know of such a library, then call me. Meanwhile Dan, your mother is at liberty to distribute the programs in any way she sees fit and to charge whatever price she believes the programs are worth. Probably one of the best ways to sell the software is via an ad in Shopping Express – the consumer section that reaches more weekly readers than any other.

As for connecting a BBC B disk drive to a Commodore Amiga 500 – it's perfectly possible, although if the drive is old, you may need a little public domain utility to slow the step rate (the rate at which the read/write head across the surface of the disk), or you may encounter a failure to read or write data occasionally.

The BBC emulator for Commodore's machine is software based and is simply a BBC BASIC emulator enabling Amiga owners to run BBC BASIC programs.

TIP Manual blindness!

Re the letter from Richard Daley (*Express* 68) about Arnor's *Protext*. I had several problems when I first changed over from the Amstrad CPC ROM version to the Atari ST version.

On each occasion a phone call to Arnor's help line solved the problems in minutes, and I found the gentlemen at Arnor very willing to help. However, on a later occasion when I wrote for assistance it was a matter of several weeks before my reply arrived. When I queried this, I was told that there was a backlog of written replies.

It does rather sound as though Mr Daley may have been suffering from that well-known computer syndrome 'manual blindness'. The *Protext* manual gives full details of configuring the printer driver and so, in conjunction with his printer manual, it should be a simple matter to get £ signs printed.

My LC24-10 didn't have any problems in this respect – is Mr Daley certain that he has his dip switches set for the English character set? But if all else fails, I would suggest a call to Mr David Taylor in the UK Technical Support department of Star Micronics (01-840 1800). This gentlemen was extremely helpful to me when I had a problem with my Star printer.

Helen C Croom, Stapleton, Bristol.

HELP! ST upgrade

I've had a single-sided drive ST for a few years now and have decided to upgrade to an STE, so could you please answer the following questions for me.

1. Does the STE use the new internal plug-in ROM boards like the 1040STE? Or does it have the chips soldered onto the board like the olds STs?

2. Why is the 1040STE £200 more expensive than the 520STE when an upgrade to 1Mb costs £100? What is the extra £100 for?

3. Besides being incompatible with a small amount of software, are there any other bad points against the STEs?

4. Is there any software that uses the enhanced capabilities of the STE yet?

Tom Hall, Yetton, Bristol.

1. All of the 520STE range can make use of plug in memory and other upgrade boards, although there is still a high proportion of surface mounted chips. Unfortunately, due to savings in manufacturing costs and ease of construction (if not upgrading), surface mounting is becoming the norm.

2. Simple answer, a 520STE costs £399 and a 1040STE is £499. I make that a £100 difference myself. The £299 machine is the old model ST.

3. None whatsoever. And even the games software compatibility problem is rapidly sorting itself out. The STE is a superior machine to any previous ST offering, as it has better graphics and sound and more software in the pack.

4. *Titan* from Titus is one of the latest games released for the ST, and features extra sound and graphics abilities to take advantage of the STE. Additionally there are, I believe, several more currently in production.

HELP! Printer problems

I am considering buying a Star LC24-10 dot-matrix printer and am slightly worried about compatibility problems. I need the printer to operate primarily on a BBC

HELP! Which machine should I buy for my Open University course?

As I have recently enrolled for a computer degree course with the Open University, I need a computer system of larger proportions than my Commodore Amiga *(surely you really mean better specifications? – Uncle TT).*

Owing to the amount of software, books and knowledge I have amassed in the two-and-a-half years I have owned the machine, my preference for the upgrade lies with an Amiga 2000 with an AT Bridgeboard. I would therefore be grateful if you would advise me on one or two points concerning the system.

1. What level of MS-DOS and IBM compatibility does the AT Bridgeboard give? Is it 100 per cent, or are there things which will not run? Specifically, I need to be certain that MS-DOS, UCSD Pascal, Lotus *1-2-3, PC Automator* and *First Framework* (all latest versions) will run error free.

2. Is the output from the AT Bridgeboard as good as a PC in terms of graphics, sound and so on?

3. Is it possible to speed up the AT Bridgeboard and Amiga from its normal 7.14MHz to run at 12MHz (the same as a standard PC)? If it is possible, is it an expensive operation?

4. Is there such a thing as an internal modem for the Amiga 2000 which can be addressed by the Amiga and the AT Bridgeboard?

5. Finally, I have a Cumana CAX354 external 3.5-inch second disk drive for use with my A500. Will this, after removal of the case, fit into the second drive slot of the A2000?

S J Carcas, Chippenham, Wiltshire.

Phew! A bumper crop of questions there, kids! An OU course, huh? Am I right in saying that the Open University bases its computer appreciation courses around the Amstrad PC1512/1640 computer? If so, then that is the machine you should buy – it's a whole lot cheaper than buying a Commodore B2000/Bridgeboard combination and you get to use the Amiga 500 already in your possession for games and the like. Why buck the system? If they recommend the PC512, buy it. I believe they have a student rental scheme to enable the more impecunious students to hire a computer.

If you're absolutely set on the B2000 (and it sounds very much as though you are...) I suppose I ought to answer your original questions.

1. Nothing provides 100 per cent compatibility except the IBM PC, ie, the real machine. However, because the Bridgeboard isn't an emulator but a full hardware PC compatible on a circuit board inside the B2000, you won't have any problems running the software listed in your letter.

2. Exactly the same – at least that's the theory. Any PC emulator not providing a reasonable simulation of the target machine's sound and graphics won't get very far. The Bridgeboard will run software requiring a range of display standards including MDA and CGA, and will also provide the supremely sophisticated 'beep' of the PC without problems.

3. I think you may be a little confused. The 'standard PC' runs at 4.77MHz and it is most definitely not possible to encourage the B2000 to run at the AT's 12MHz.

4. No. PC internal modems require the 8-bit expansion slot in order to connect to the machine. You will have to use one of the many external modems on the market.

5. Yes, the Cumana 3.5-inch drive will work perfectly with the B2000 using that machine's second drive slot.

microcomputer for programming, but I'd also like to use it with my Amstrad PCW9512.

Firstly then, is it fully Epson-compatible so as to work unaided with the BBC B? Secondly, can I really print all the characters in *LocoScript* and what additional software (eg printer drivers) will I need?
Tim Gowen, Diss, Norfolk.

The only printer fully Epson compatible is a device bearing Epson on its name plate. That said, many printer manufacturers build the Epson control codes into their printers and Star is one of them.

The LC24-10 should work perfectly if you select 'Epson printer' from within a word processor. The printer will definitely work without problems attached to your BBC B and PCW9512 computers.

You'll be able to print all the characters from *LocoScript* and shouldn't need any additional driver software.

HELP! RAMmed home

I have a Spectrum Plus 2. Please could you tell me how I can save my RAM to tape? I am very desperate. My best friend has a 48K Spectrum. Can he save things into his RAM? If so, how?
Daniel Chapman, Sprowston, Norwich.

I think you may be a little confused as to what RAM memory is.

In order that you can tell you computer what to do, and so that it can store the instructions you give to it, the computer has a RAM (random access memory) that is just like the notebook and pencil you use at school. You can scribble whatever you wish into RAM, and the computer will store this information until you switch off. Once power is disconnected, everything in RAM is lost.

If you want to put new information into RAM, you just keep adding new items until the memory is full or you decide to clear it all out by switching off. If you've written a program and want to keep it by storing the instructions on tape, simply issue the SAVE command which in Sinclair BASIC takes the form `SAVE "filename"`.

TIP Monitor expert

You hardly seem old enough to be my Uncle! Your photo reminds me of me some 30 years ago! Anyway, Mr White (*Express* 68) may have bought an unsuitable monitor for his Atari ST. I would suggest that Mr White's problem is within the monitor itself.

The symptoms described by your correspondent suggest to me a faulty tube, having perhaps a leaky or shorted cathode grid.

There are other possibilities in the tube driver circuits, maladjustments to the delay lines, chrominance demodulators, colour burst amplifiers, clamping diodes and transistors, microchips or whatever technology is used in the signal path. These can only be checked and rectified by a skilled person. Any attempt by anyone other than the qualified will result in the premature demise of either the equipment, person or both!

The preset adjustments that Mr White has twiddled with are set using special grey-scale generators and oscilliscopes or other expensive equipment to very fine tolerances and in a certain sequence depending upon the tube circuitry. It's possible that arbitrary twiddling may produce an acceptable picture but the adjustments may be so shifted that the tube is driven incorrectly, which may causes problems in the huge voltage generator, EHT and scanning circuits.

Colour tubes usually operate at around 20,000 to 24,000 volts and draw three times the current needed by monochrome tubes. To avoid undesirable picture size fluctuations and excessive X-radiation, they're provided with circuitry to control and stabilise the beam current. If a tube operates outside the manufacturer's specification a fire hazard exists. Indeed, I wouldn't live in the same house with apparatus operating in such a fashion – I've seen too many burned out sets, literally!

I don't mean to be alarmist, but Mr White would be well advised to seek help or return the display. Incidentally, unless I'm mistaken, televisions and monitors in Canada are intended to run on 110-volt 60Hz supplies and are also designed to run under NTSC conditions. British colour equipment uses the PAL (phase alternating line) method. Assuming the power supply conforms to the UK specification, then it is very likely the incorrect picture is a result of using the wrong standards system. If this is the case, then I think he's unlikely to rectify the problem.
Michael J Stock, Breaston, Derbyshire.

HELP! Job prospects?

I am currently studying City and Guilds in COBOL programming and would like to know if you know of any COBOL tutorial software (preferably public domain or shareware).

The machine I will be using said software on is a Victor VPC IIe (640K with a hard drive and IBM MS-DOS compatible). I would also appreciate your opinion on the validity of my imminent City and Guilds qualification from the viewpoint of prospective employers in the data processing and PC fields.
J C Keilaus, Bidston, Wirral.

Having rummaged through the waste products, or rather sparkling catalogues, of several of the more well-known public domain libraries, I'm afraid I can't find any tutorial software for COBOL. I think perhaps a text book would be a better suggestion.

One of the best introductions to COBOL available at the moment is Andrew Parkin's *COBOL for Students*, published by Heinemann and priced around £10. This book is good for beginners and more advanced students alike, and is well written and easy to assimilate.

Employment prospects? Very good, I should think. COBOL is still the most widely used business programming language in the world and anyone with recognisable skills in the language shouldn't have any problems locating gainful employment.

Read copies of *Computer Weekly* and *Computing* (available from your local college or library) wherein you'll discover many employers looking for people with your skills. Be mindful, however, of our recent correspondence in the letters pages about getting emloyers to recognise your qualities.

HELP! Can't STOS

I am beginning to feel suicidal *(No, dear, this is Tech Tips, not the Samaritans – Unc)* in my long and continuing struggle to use STOS.

I am now on my third set of disks after having twice complained to the supplier, but I am still running into the same brick wall. The problem is that although the language disk loads without problems, I cannot load anything from the accessories disk, which is disastrous since this disk contains the sprite editor among other things.

Whether I use the Help menu or LOAD or ACCLOAD, I keep getting Bad File Format and File Not Found messages. The supplier sent me a self-unarchiver disk which promptly crashed as soon as it attempted to unarchive the files on the accessories disk.

Since I experienced identical problems with three different sets of disks, I am beginning to wonder if STOS is compatible with earlier ST models such as mine. In a vain effort to remedy the problem, I did upgrade to a one megabyte disk drive, but the problem with STOS is still the same. Can you please help me before I go completely insane?
D W Howells, Witham, Essex.

To be perfectly honest, I don't think I can. The problem is obviously not a fault of STOS – three separate sets of disks can't all be displaying the same problem and no-one else that I know has encountered any difficulties. So I'm afraid there must be something wrong with your machine.

Have you upgraded the memory, fitted any internal devices such as a real-time clock or in some way changed the internal architecture?

Have you tried the disks with a friend's ST – that would at least prove the integrity of the software. If you have a very early ST, then the problem could be with the version of the operating system, although I'm not convinced with that explanation.

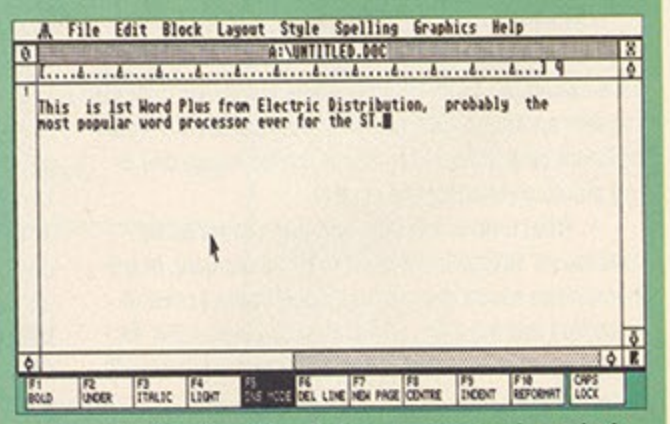
If anyone else has experienced similar problems with STOS, write to me and I'll try to correlate the information and discover a solution. And that of course applies equally to all software – whatever the problem, Uncle Tech Tip will cure your ills! ■

HELP! STE vs. Amiga: which is better?

I'm a budding computer freak of 13 years and I've got a problem. I don't know whether to buy an Atari STE or a Commodore Amiga as I've got a low budget to spend and can't afford to make a wrong decision.

I need the computer for school and I'd like to play games as well. The Atari comes with lots of games and a word processor and is cheaper, but the STE does not work with all the games – will this problem be solved?

The Amiga has better graphics and sound than the STE, but does not have as much software in its pack or a word processor, and it is more expensive. So which should I buy?
James Wheddon, Southampton, Hants.



• The availability of good bundled word processors is a point in theSTE's favour over the Amiga, which is more of a games machine if you look at the packs Commodore sell it in.

You have limited funds and a thirst for games, right? Buy the STE if you can find one in the cheaper games pack. It's cheaper than the Amiga and comes with more software, thereby saving you even more money. You'll have to hurry though as Atari recently put the price of the STE up to £399 and dropped the extra games. Don't worry about the problems with games compatibility and the STE. Most of the games that won't run are reaching the end of their life anyway and new games are all STE compatible.

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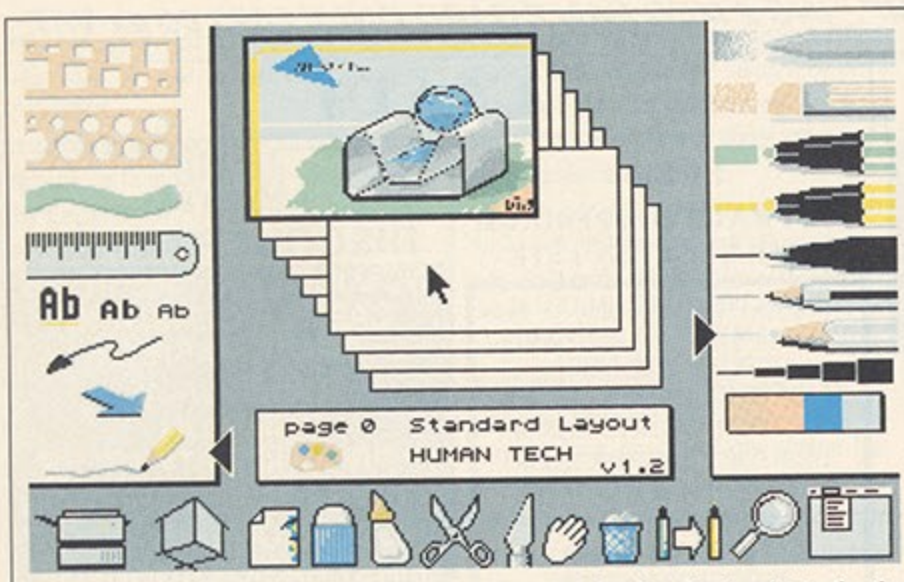
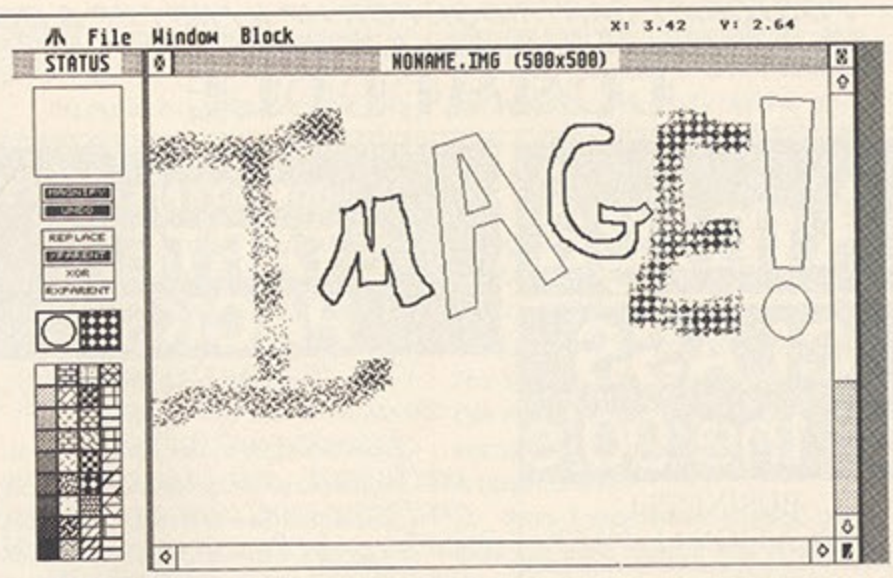
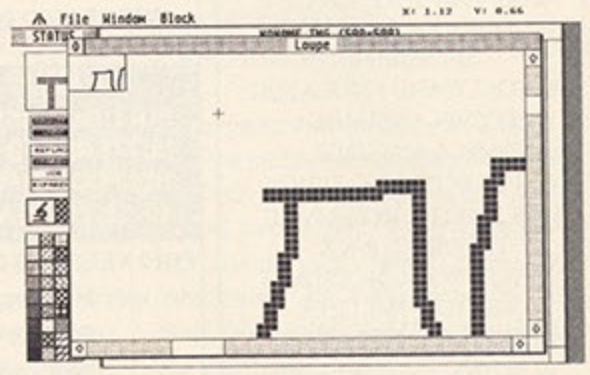


• Zz Rough has a unique approach to computer-aided drawing. Apply paint to the the screen and it mixes the colour underneath into the new colour as if you were working on top of wet paint. Zz Rough also allows you to use 3D images, but its editing abilities are limited compared to Canvas.



• Image might not let you work with colour but it does offer a much higher resolution than the other art packages. Picture windows can be far larger than the screen size, with scrolling bars used to move round the picture. Unfortunately only one image can be held in memory at a time.

THE FOUR TOPS?



• In Image, zoom in up to five times actual size on your picture to edit pixel by pixel.

ST art packages have been thin on the ground, but now, like London buses, four have appeared together. Mark Higham runs his paint brush around Canvas, Paintpot, Image and Zz Rough.

How many of you have used paint and pencil to create your own works of art on paper, only to try and do the same thing on computer with appalling results? Computer graphics are a form of art in themselves, and learning to manipulate the medium can be difficult. Paint packages try and simulate the effects of using real brushes and paint, but they fail miserably – so what does it take to make a good paint package?

When the ST hit the shelves back in '86, the paint packages Degas *Elite* and *Neochrome* quickly followed. At the time there was no simpler way to draw images on the ST. But that was four years ago, and since then we've seen a huge market for sophisticated paint packages filled to bursting with a host of extras which make Degas *Elite* and *Neochrome* look like something out of the Stone Age. Unfortunately, these powerful programs have always been on someone else's machine – until now. *Canvas, Image, Paintpot* and *Zz Rough* are here to try and bridge that gap at an affordable price.

WHAT YOU GET

Canvas and *Paintpot* work in all three ST resolutions, but they are primarily intended for colourful, low-resolution work. *Zz Rough* only runs in low resolution, which can be limiting for some applications. *Image*, on the other hand, only runs in high resolution mode, so only black-and-white drawings can be created – this does have the advantage that 640 x 400 pixels are available, twice the size of low-resolution screens. On top of this, *Image* can handle pictures which are much larger than the screen size. Drawing takes place within a window and vertical and horizontal scroll bars enable you to move around the picture.

When it comes to manuals, none of the paint packages are sophisticated. *Paintpot* and *Image* both come with a photocopied 32-page manual (A6 size for *Paintpot* and A5 for *Image*), while the manual for *Canvas* is contained on the disk and must be printed out first.

Paintpot, Image and *Zz Rough* all use standard GEM drop-down menus accompanied by a set of icons to give access to additional functions. *Image* expands on these by enabling you to click on your picture to bring up an additional window which is filled with icons offering the drawing commands. *Canvas* is slightly different in that it follows the Degas *Elite* method of presenting an option screen from which you select the entire range of features. A work window then enables you to edit brush sizes or sprites. By clicking with the right mouse button you alternate between the work area and the menu screen, again in an identical fashion to Degas *Elite*.

If you have enough memory, *Paintpot* lets you work on a maximum of nine screens, which is one more than Degas. *Image* only permits seven work windows to be used, but since one image can be as large as 6,000 x 4,000 pixels on a 4Mb machine, this is hardly going to prove restrictive. If you think nine screens are excessive then *Canvas* will set your head spinning. It gives you as many screens as memory permits, and on a 4Mb ST this stretches into 150 work windows – more than enough for any budding Picasso.

All the packages support Degas, *Neochrome* and IMG standard ST formats, with *Image* converting low-resolution pictures into shaded high-resolution screens. *Canvas* supports a further 11 formats for saving 3D images (more on that later), fill patterns and sprite blocks. *Image* has the additional advantage of supporting *Calamus* pages so that you can load a page printed to disk, or even create new fonts up to 800 points high.

But if it's colour you want, you can't do much better than turn to *Canvas*. Standard STs provide you with a choice of 16 colours on screen from a palette of 512, but if you own an STE then it lets you pick 16 colours from a palette of 4,096. It is the first paint package to utilise the extra features of the STE.

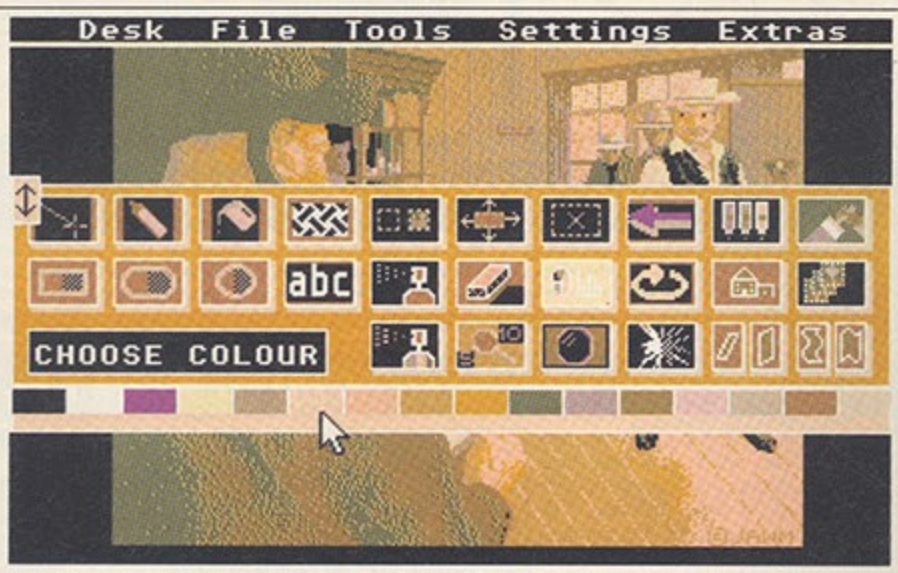
MOUTH-WATERING EXTRAS

All the packages provide the standard circle, fill and line drawing options found in Degas *Elite* and *Neochrome*. What matters more are the added bonuses which should be there to make drawing easier. In these stakes, it's *Canvas* which fares the best.

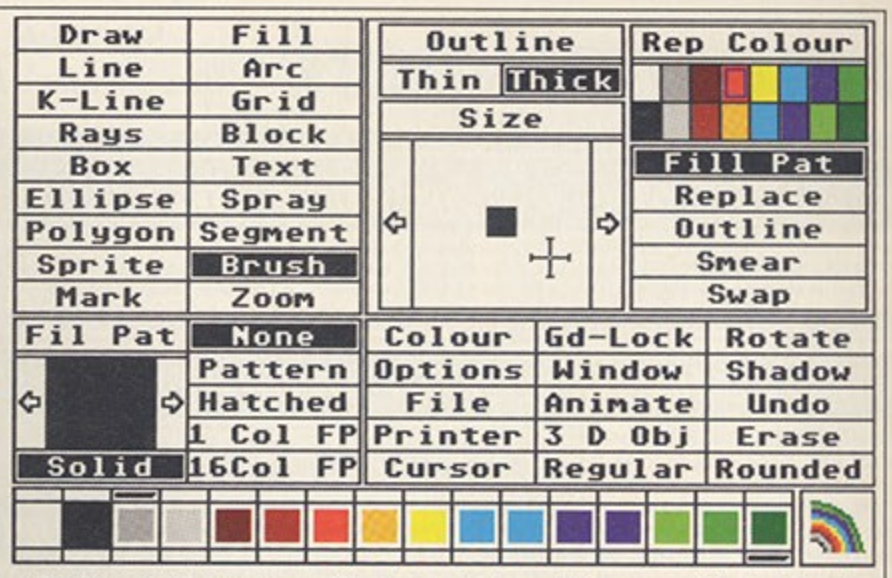
It marries ordinary paint commands with unusual 3D features more commonly found in a CAD package. Three windows provide you with views from the X, Y and Z perspectives. You can add polygons to any of the three planes so that you gradually build up a three dimensional, wire-framed object. Polygons have a maximum of 20 sides, which might not sound many but this appears as a circle. On top of this, you can add lines to your object in any plane to build up all manner of shapes. Each 3D image that you create is defined as an object, with up to eight objects available. Once you're happy with this 3D image, you can view it, rotate it, re-scale it and then paste it into your drawing. The object is contained in memory so that at any point you can adjust its appearance and then paste it back into your picture.

Paintpot is livened up by a pot pourri of extras that seem to be tossed in with a vague hope of making it a superior art package. For example, there's the opportunity to transform a picture by adding sine and cosine ripples to it so that you get simple waves in the image. Sadly there aren't any more of these mapping features which would have made *Paintpot* far more exciting. You can also import text files directly from *First Word Plus* and use a variety of fonts included on the disk.

One feature which does seem rather odd in a

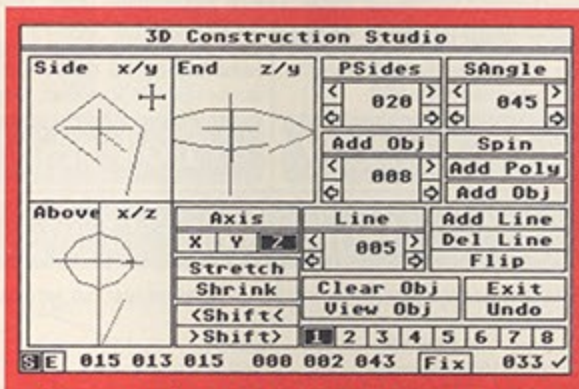


• Paintpot offers you the opportunity to insert sine and cosine ripples into your pictures. Sounds weird? It gets even stranger – it lets you create pie charts and bar graphs by selecting the right options from the menu screen and then inserting the data. The package then calculates how they should look.

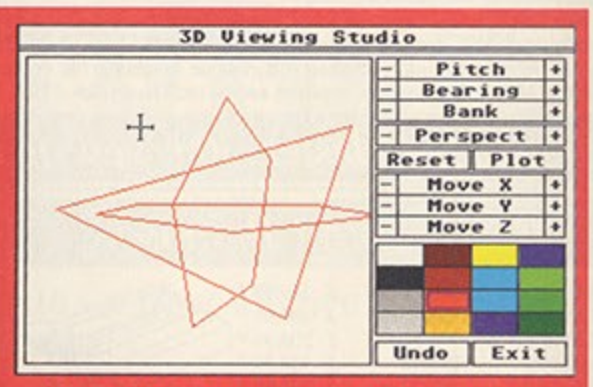


• The Canvas option screen enables you to select everything you need to start drawing. Colours, brush sizes, sprite definition and even 3D drawing tools are available. In its use of a full screen for selecting paint options, Canvas is reminiscent of the classic ST art program Degas Elite.

• Use the cosine mapping routine to add a vertical ripple to your pictures in Paintpot.



• Canvas can be used to create 3D images. You can build up objects using a simple range of tools...



...then view them at full magnification. Now you can go back to your work screen and paste the image onto it.

paint package is the ability to generate pie charts and bar graphs. These are selected using the drop-down menus which bring up a requester asking you to enter the size of slices of the chart or graph in terms of percentages. When you've entered all the data, the software then generates the correct diagram. Areas of the chart are shaded, usually with a random fill pattern or using your own colour scheme.

CUSTOMISE YOUR SOFTWARE

One feature which is common to both *Paintpot* and *Image* is the ability to customise the software so that brush types, printer settings and file types are all set when the program is loaded. A file containing the configuration is saved onto disk. It's a shame more paint packages don't include this feature since it saves five minutes of running through the menus re-configuring everything to suit your needs.

Paintpot uses this feature extensively to save everything from spray size and speed, graphics mode and brush type to shatter size and bend number. Even the position of the clock is saved onto disk.

In *Image*, the printer configurations are saved onto disk. This is important since the massive size of the screens means *Image* can be used to create posters and title pages with the appropriate printer. The drawing options in *Image* are fairly basic, comprising of brushes, frames, circles and boxes. There are standard and user-definable fill patterns accompanied by a gradient fill to add shade to your picture, as well as magnification to five times actual size which enables you to edit pixel by pixel.

One very useful feature of *Image* is the ability to use a huge range of GDOS fonts. These are standard ST fonts and if the ones contained on the disk aren't enough for you, more can be found in the public domain. By changing the point size and adding special text effects you can achieve some very impressive results – output can look as if it's come straight from a DTP package. Unfortunately, there's no option to rotate text which seems like a major oversight considering the kind of work that *Image* is intended for.

Zz Rough is unique in its approach to art. While the others are fairly standard packages with additions to the usual range of drawing tools, *Zz Rough* is more of a drawing simulator.

The tools available act just like real pens and brushes, and colouring works in layers. Thus, if you apply colour to a part of your picture it is merged into the colour already under the pen, just as if you were trying to paint on a wet surface. This is remarkable for a machine which only provides 16 colours on screen at once. Unfortunately, the results aren't breathtaking, but they do give images created with *Zz Rough* a unique appearance.

On top of this, you can create, scale and rotate 3D images and then paste them into your picture in a similar fashion to *Canvas*. The 3D objects in *Canvas* tend to be fairly primitive but *Zz Rough* excels in its ability to import more sophisticated 3D objects from *CAD 3D*. Although you can't manipulate them easily, you can at least paste them into your picture for more exciting results.

WRAPPING UP

Considering the price and features of *Canvas*, there's no better art package on the market at the moment. There's just so much you can do with it. Whether you own a standard ST or the new STE, you're going to be impressed with *Canvas*. *Paintpot* seems to lack direction. While it certainly handles all the basic requirements, it just seems to have a jumble of extras tossed in for no reason. Pie charts and cosine ripples make it sound good, but they serve no useful purpose.

The unique approach of *Zz Rough* is certainly worth a look but if you're serious about creating decent pictures, you're unlikely to manage it here. On the other hand, if don't need colour but you want but the ability to produce quality output then there's nothing to beat *Image*. A huge range of printer drivers and the enormous size of the pictures means you'll have no trouble generating quality posters.

Before you decide which package to spend your cash on, consider what features you want most. They all offer something different but many of the extras aren't going to be much use to you.

Previously we've had to watch in awe as other machines have performed graphical miracles, but with these four new packages the ST can finally do what you want. ■

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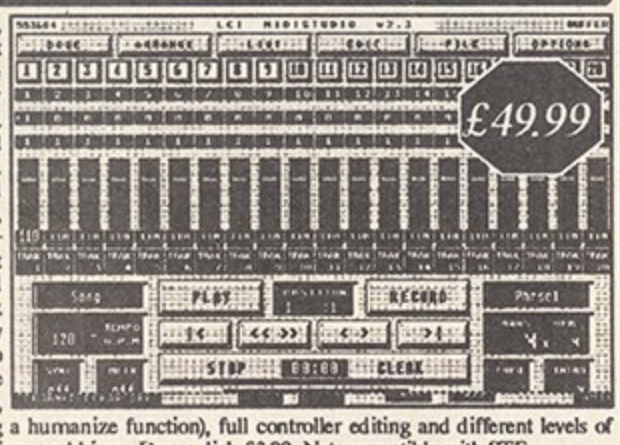

Midistudio is an attractively priced, 20 track Midi Sequencing package. It can record up to 682 bars per phrase (pattern) on up to 100 phrases. Any phrase can be placed on any track. Tracks can be soloed and muted and tracks and phrases can be named. Program numbers can be displayed in a variety of ways including 0-127, 1-128, in banks from a11-b88 or a01-b64. The Desk features sliders to set relative volumes on each track and you can even do a mix on the fly. Midistudio also has a clock to display the length of the last playback. Step time note edit functions are available including copy, split, merge, append, transpose, velocity editing (including a humanize function), full controller editing and different levels of quantizing. Midistudio works in medium and hi res. Demo disk £3.99. Not compatible with STE.

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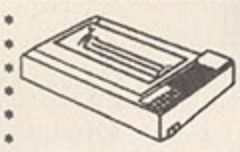

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SOUNDS OF THE FUTURE

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Every year Frankfurt plays host to the world's largest music fair, which makes Olympia look like a Wendy House. It was hard to find a stand that didn't have a computer running the equipment in the keyboard and synthesizer hall. Sadly there were no UK software houses anywhere to be seen, and with oceans of German, Dutch, French, not to mention American, music software just outside our sea walls I predict severe flooding in the near future.

AMIGA ANNOUNCEMENTS

Sales of the Amiga have overtaken the ST in Germany, but the considered Teutonic opinion seemed to be that it is really more a games machine than a heavy-duty work horse. This stems from the fact that the high-grade music software available for the Amiga in the UK like Dr T's *KCS* and *Music X* is not well known in the rest of Europe. The Amiga, however, looks set to make a breakthrough in the world of music on two fronts.

The first is the Steinberg *Pro 24* which is now completed and will arrive in the UK in about a month. This is a complete re-write and re-think of the original concept developed over two years.

Among its many additional features are a far easier to understand screen and window routine, sophisticated track and pattern editing with 8-way MIDI splits available for any track, superior MIDI echo effects, score display, drum editor, flexible quantise, a record mode that lets you pick from up to 127 'takes' of any track, and the ability to load and save MIDI, SMUS and IFF files, drum files and set-up pages. SMPTE synchronization routines are planned to be included in the future, and it supports all the usual MIDI synchronisation standards.

There are no plans for it to use the internal sounds on the Amiga. It can be run on a 500, although for speed you would need more than a megabyte of RAM. No price has yet been fixed for the UK market.

STARTING UP

The second Amiga breakthrough is a starter package put together by the combined forces of Kawai, Commodore and Steinberg. Called FunLab it consists of a Kawai single keyboard, a MIDI interface and a simple five channel sequencer on disk. The colourful software also has drum pattern pages, a mixer and a sound editor/creator for the keyboard, featuring graphic and traditional note display and editing plus a wealth of pre-programmed tunes.

You can also program sections of the keyboard to match the accompanying patterns and sound combinations. It is aimed at people who know very little about either music or computers and the expected price is between £350 and £400.

Dr T's stand was running the Amiga version of the inexpensive entry-level sequencer *Tiger Cub* which has full internal voice support and will sell at under £100. For this you also get a simple scoring and notation package thrown in.

SOUNDS ON THE ST

It seems that the world and his dog are frantically trying to come up with ST voice programmers for the new Yamaha flagship synth, the SY77. Many stands had 'nearly complete' versions offering various easy solutions for this complex beast – at present not all of them have distribution in the UK.

Heading the field were Steinberg and C-Lab, the two well-known German heavyweights in music software. Both programs operate within their own multi-tasking environments and both convert older DX7 sounds to the new synth. This is the area of greatest interest as it immediately gives the SY77 tens of thousands of voices which have been tried and tested over the past seven years.

Steinberg seems to have the edge, its deals directly with a DX7. C-Lab's has the faster multiple window environment but can only convert DX7 sounds from software files, but I expect that this will change. C-Lab's SY77 programmer is the first in the Polyframe series of modular universal editors.

C-Lab was also showing for the first time *Notator 3* with a new graphic screen for MIDI controls such as pitch wheel, sustain, velocity, etc, plus improved scoring and real-time MIDI mixing controls to work in conjunction with MIDI-equipped desks and outboard effects on up to 96 channels at once. Interestingly, Dr T, C-Lab and several other smaller companies are co-operating on operating systems so that multiple environments can work with unrelated software.

TEACHING TUNES

The educational market is also up for assault as C-Lab is launching new three packages. *Alpha* is a cut down version of *Notator,* although at £170 it is not an entry-level system. *Aura* is designed to teach aural perception of pitch and rhythm, and at £40 should do well. *Midia* explains and displays in simple graphic form exactly what the MIDI data is doing at any moment in time. UK release dates are not yet confirmed.

Another teaching system, this time French, called *Live* uses an ST as its basis. You get a simple-to-use – but more than adequate – sequencer and choose from a whole host of software to either teach yourself a style of playing or an instrument. Each disk comes with sets of exercises and textbooks. It is being ported over to the PC and Mac and should be available in the UK within the next six months. We'll let you know when a distribution deal has been fixed up.

OTHER MACHINES

Surprising there was little new software for either the PC or the Mac. Steinberg has ported the *Cubase* sequencing package over to the Mac and enhanced it on the way, but this is professional software with a price tag to match. As is *Beyond* – an equally heavy-duty package from Dr T.

Yet another French software house, Midipack, had all-in-one packs for ST, PC and Amiga which comprise a sequencer and tone module plus MIDI – *Midipack* comes in a school-type carrying case and has a wealth of disks which not only contain lessons in different styles of playing and arranging but also have current chart records voiced and sequenced for you to play along with or learn at home.

On a professional level there was an increase in direct-to-disk recording hardware and software for the ST, PC and Mac. The advantage of recording direct to hard disk is that you can synchronise and edit, extend and mix music on screen before putting it on tape. Several UK studios are using this instead of tape editing and mixing as it is clean, quick and versatile.

Both Hybrid Arts and Digidesign market complete systems for the Mega STs, Digidesign being launched on the Mac soon. Digigram of France uses a PC and data compression to produce a similar system, although with reduced editing, for £3,000 – and that includes the PC thrown in! Maybe we will see these on the home market in the next year or two – cheap, clean sampling with editing facilities could save me buying a Compact Disc player! ■

CONTACTS

Steinberg	099389 8484	Hybrid Arts	01-444 9162
Dt T	01-258 3454	Digigram	021-733 2063
C-Lab	0462 480000	Digidesign	0462 480000

INNER WORLDS

Andy Storer looks at the revolutionary system all set to transform computer-aided design and awaits its arrival on home systems...

CAD has been such a boom area in recent years that blueprints generated by computer are now the basis of nearly all design prototypes for everything from machine parts to skyscrapers.

Central to its predominance in the architectural, automotive and engineering industries has been the virtual monopoly secured by Autodesk's *AutoCAD* software. Widely thought of as the *dBase* of architecture, *AutoCAD* brings in nearly $200 million a year for Autodesk which is in the enviable position of having over 1,500 developers around the world writing custom software to utilise and enhance the basic package.

This PC package, which has just been ported across to the Mac, includes the standard features of 2D to 3D transition and solid shading but also, through fully-compatible add-ons such as *Animator,* disk to video transfer and vice-versa. Also able to run on dedicated graphics workstations, *AutoCAD* also presents ultra-high resolution screen outputs for the most demanding of design needs. With 250,000 users around the world and offered at a basic price of £300, there are some 400 specialist applications available to tailor *AutoCAD* to particular needs.

CYBERSPACE PCs

So with such a guaranteed revenue, it's perhaps not surprising that Autodesk can afford to explore some of the higher realms of forefront technology. At its research labs in Sausalito, California, the company has been working on artificial or 'virtual' reality systems based around fast Compaq 386 PCs to assist in architectual visualisations and, implicitly, transform the relationships between designer, contractor and client.

At the heart of the research has been technology developed by NASA and fellow frontiersman, VPL Research, which has created quite a name for itself with the solid 3D modeling package, *Swivel 3D*, for the Mac. The main two pieces of equipment featuring in this advance are the Eyephone and Dataglove. In combination, the two allow a number of users to simultaneously hook up to their machines to enter computer-generated worlds.

In theory at least, the technology is relatively straightforward.

The Eyephones, a pair of lenses worn like goggles which display computer graphics, update screen information according to the position of the wearer's head. Trackers monitor the users' movements and transmit the changing positions to screen co-ordinates accordingly. Move your head and the perspective changes – you get the feeling you're within the simulation.

The Datagloves cost about £5,500 each and consist of fibre-optic cables that act as sensors to detect finger movement. An electromagnetic tracker locates the glove's position in space and light from an infra-red diode shines though a matrix of fibre-optic cables on the back of the glove. When a finger is bent, a portion of the light is shielded and the resulting signals are converted into voltages which are in turn digitised into measurements of movement.

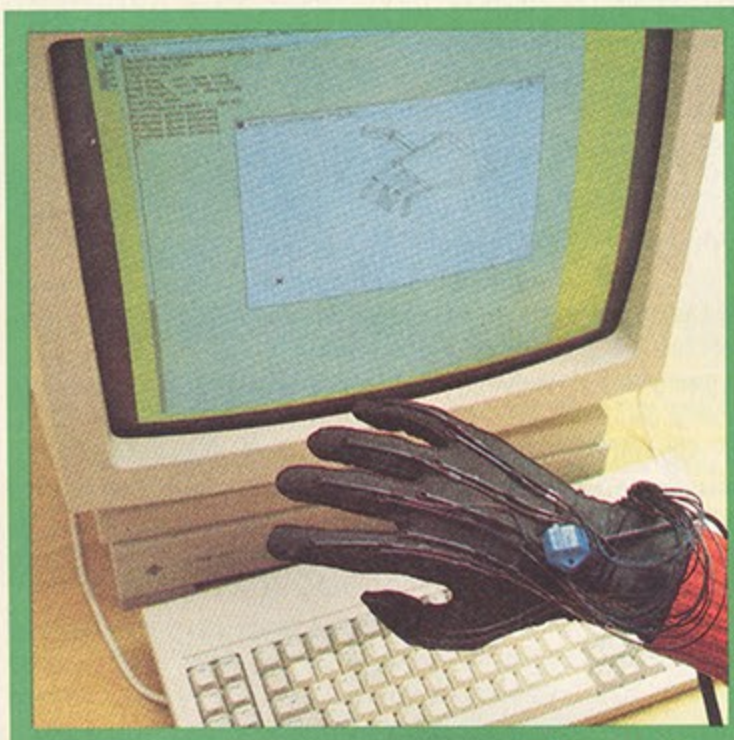
Sets of data from the goggles and glove correspondingly refresh the point of view or object being displayed and manipulated on screen. In practice, this and similar systems cost an arm and a leg. The first shared artificial reality system Reality Built For Two from VPL costs £250,000 and uses two Silicon Graphics Iris workstations to feed high-resolution images to each eye of the goggle, while a 'low-end' version for the Mac II comes in at £44,000.

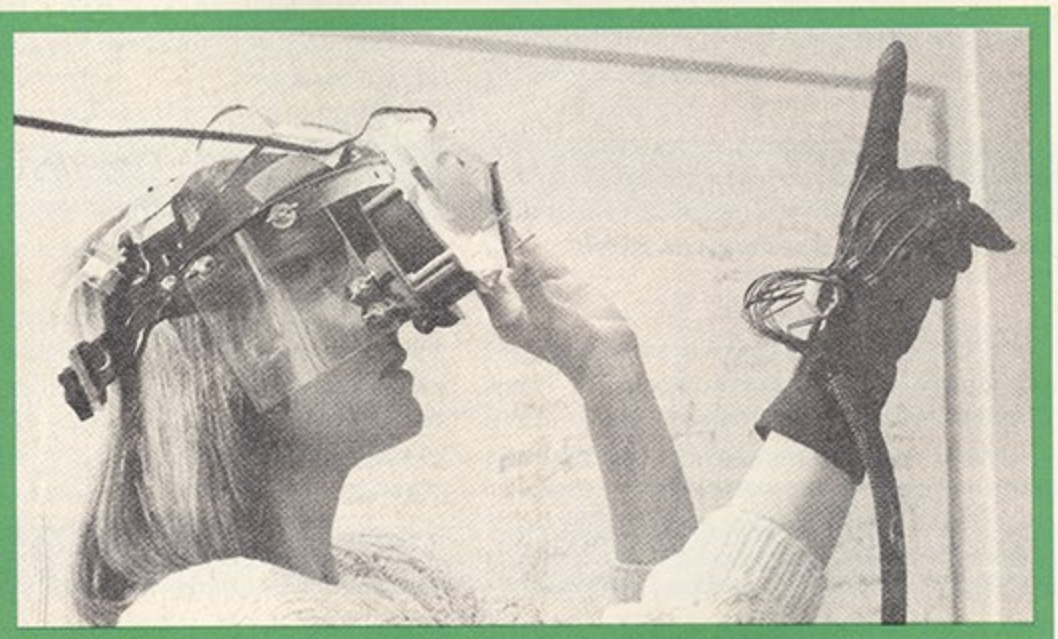
STEP INTO YOUR SCREEN

But Autodesk's system is based around relatively inexpensive 386s and claims to offer users the ability to wander around 'cyberspace environments' at an affordable price. Autodesk is busy developing the necessary interfaces to connect people to machines in this new way.

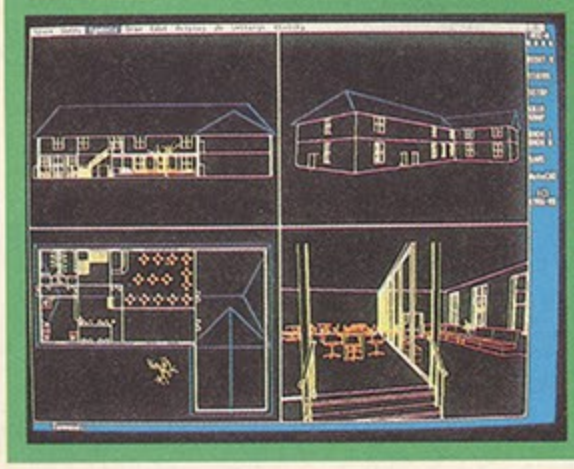
Two further pieces of gear have been employed to allow a more convincing virtual reality. Stationary walking or running boards similar to those used in gyms are being incorporated which allow users to actually feel as if they are walking through the interiors of buildings while piezo-electric elements in the finger tips of the gloves have also been added to convey a sense of pressure when touching or moving objects within the simulation.

The intention is to provide architects and clients with the means to mutually explore the design of a building and, once within it, actually move design components around with their 'virtual' hands. Pull-down menus can be invoked by simply making a fist and





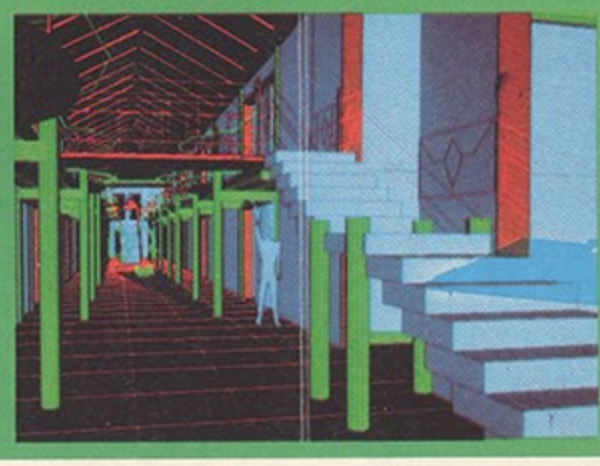
• Autodesk's eyephones used in its Cyberia project allow a user to 'enter' a computer-generated world. Hooked up to a 386 PC, the goggles feature two Watchman-sized LCD screens.

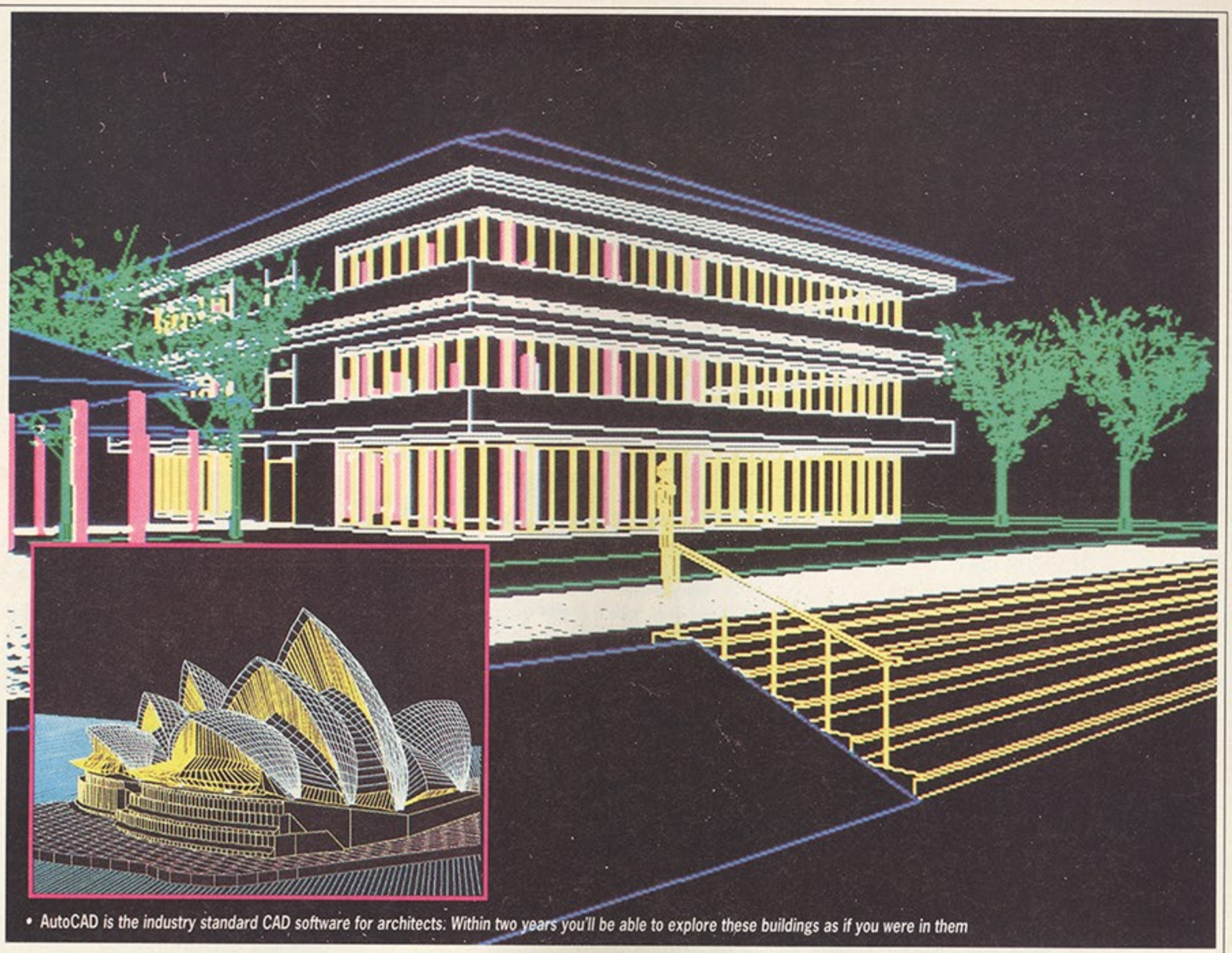


• VPL's Dataglove (above left), costing some £5,500, contains fibre-optic cables which relay hand movements to the host computer so that both models and menus can be manipulated.

• AutoCAD (left) currently allows you four simultaneous views of any model on screen. But even this is not enough for Autodesk – it wants to put you in the blueprint itself!

• Right: Computer-aided architectural design (CAAD) will shortly allow both architect and client to 'walk' through the interior of a building design





• AutoCAD is the industry standard CAD software for architects. Within two years you'll be able to explore these buildings as if you were in them

once they've dropped into place you can actually point to the menu item and get it to, say, change the colour scheme, add a window or take you to an instant exterior view. Using the pressure-sensitive gloves it's already possible to push windows, doors and furniture into new positions. What this all means for the architect and client is clearly radical. Connected via phone lines both could walk through the same building together while in different parts of the world.

However the emerging technology does represent new dangers that make the arguments revolving around obsession with video games pale into insignificance. Already VPL has licensed the Dataglove concept to Nintendo for increased gaming interaction with PowerGloves now available for as little as £50 in the U.S. Throw in a pair of goggles and you would have a digital dimension that many commentators forecast will one day replace television as the dominant entertainment medium.

For the time being though, off-the-shelf systems can only update screen displays at something like five frames a second, so a true semblance of realistic movement is somewhat limited. But Autodesk reckons that within two years, 30 frame per second systems will be available, making moving video speeds a reality. ■

EXTRA DATA

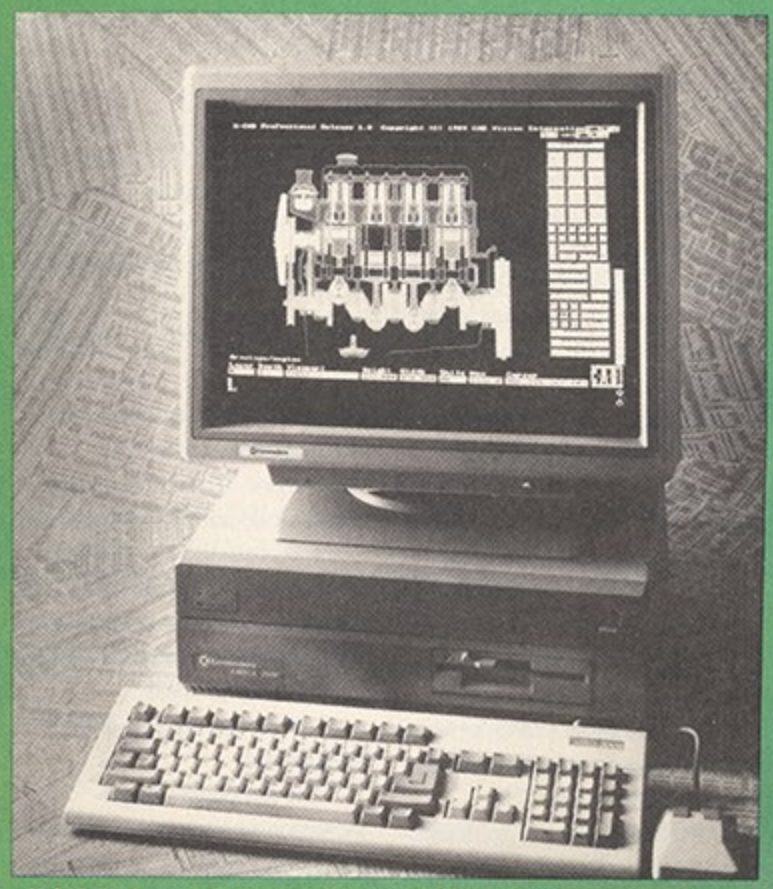
You can read more about cyberspace technology and virtual reality applications in *The Cyber Times* – an excellent bi-monthly publication billed as a forum for 'Today's users of Tomorrow's Technology', from 90A Devonshire Road, London SE23 3SX for £15 a year.

THE AMIGA IS VIRTUALLY THERE

Commodore touts the Amiga 2000 as 'the best kept secret in the PC market' when it comes to CAD. Its relatively low-cost *X-CAD* software available from Applied Vector Technology (on 01-603 3313) has been very well received within the industry and incorporates most of *AutoCAD*'s features. Indeed, it seems the Amiga is also set to be predominant in the new virtual technologies.

As reported in *Express* 73, a Canadian company, Vivid Effects, is using customised Amigas to bring new forms of interactivity to users. In this case, a different approach has been used to convey a user's movements to the computer rather than goggles and gloves. With the Mandala system, a video camera is used to monitor a user's movements by digitising them. The images are then incorporated into interactive video screens.

The system is fast and flexible enough to handle the speeds necessary for games as well as modeling but the user still remains outside of the simulation. However, this may soon be mitigated by the inclusion of stereoscopic glasses like X-Specs but so far extends only to 10-foot by 8-foot walk-in spaces where you're surrounded by video projected screens.



• X-CAD Professional *on the Amiga – state of the art for Commodore CAD.*

DIY DATABASES

Tim Smith continues his tips and tricks on applications programming by looking at the choices you need to make when setting up your own database. Next week: word processors

Most people have a least an idea of what a database should do. At its most basic level a database holds information, sorts it, finds it and outputs it. One major decision lies at the heart of all databases, be they super-smart mainframe jobs or home computer software: what information is important and what is extraneous?

HANDS OFF

Before even attempting to write the first line of code you should get as far away as possible from you computer, preferably go on holiday with a confirmed technophobe, and think about what exactly you want from the program.

The first question to pose is whether or not you need a database in the first place. If you decide yes, then you should look at the way in which you currently store information. If it is to be a database dealing with something simple like names and addresses then do you use a diary, a card index box or a 'personal organiser'? If, on the other hand, you are a collector of rare groundnuts then how do you categorise your collection? What are the most commonly required facts? Do you need statistics to be gleaned from the data such as how many new nuts you collected this year, this week or this month? Or do you simply want to compile lists? Another important question to pose yourself is whether or not you wish to import and export information in the form of files.

Having answered these questions as best you can, you probably feel that you are ready to go ahead with the program. Not yet pal! BASIC sees files in various forms, there are sequential input/output files and random access files. Working out which of these formats is best for your purposes is essential to the rest of the program building. You have to decide early on whether or not a entry is going to be regularly updated or left as is once you have entered the details. Think long and hard about this one because it will affect the rest of your planning.

VILE FILES

Coping with the heart of the database, the file, can be a nightmarish activity if you don't follow a simple but golden rule; as soon as you open a file should be aware of where in the program you are going to close it. Merely using a CLOSE statement without parameters such as file name and number and hoping for the best might work, but the chances are that you will crash your program.

The fact is that even small databases will require a couple of files to be in use. Your main file will contain the core data but you might like to incorporate another subsidiary file to carry peripheral information which can be referred to if necessary. You will almost certainly use a temporary file for initial input and yet another to be used during search and sort routines. Most BASICs will allow you to have three files open at any one time; these will be referenced by name and number – for goodness' sake give them all very different names and CLOSE each one separately.

With this in mind, the initial section of your programming should be to write the end of the program. Make sure that your exit routines are foolproof in that there is no leaping from different menus to the end, an action which might leave files open or temporary files unerased – this final action will fill a disk in no time and lead to confusion when you next run the program. If you are writing a program for other people to use, make certain that the final section of your database contains a few messages about backing up files, or better still make sure that this action is carried out for the user. Keep it tidy at all times.

GUTS AND GLORY

Once you have got your exit routine sorted out it is time to concentrate on the core file itself. What information do you want stored, how much of it is imperative to store for later searches and how much can safely be written to a subsidiary file?

Do not make any file too full because this will slow searches down to a near standstill and negate one of the main uses of a database which is to find the information you require quickly. Ideally you should have a maximum of five or six fields in your main file which can be referenced to the subsidiary files for full output. A field is a small section of a record (such as Name), a record is an entry in a file (such as Peanut) and a file contains all the records for Groundnuts.

Things like passwords, fancy printing and statistical analysis are perfectly possible but take time and energy to perfect. The basics are here so have a go. ■

HIDE AND SEEK

Once you have all the information you require in a file, you can do one of two things; either feel that you have done a damn good job, or begin to work out how to find the information again. You will probably have entered the information in the most logical order possible, in the case of groundnuts the name will come first, but you might like to seek your records by country of origin. There are many forms of sort and search routines (people sit up all night – even during the World Cup – in order to create new and exciting ones) from the split binary search to the bubble sort and if your program is going to be a pukka affair it is certainly worthwhile examining some of the options by using the manual for your particular BASIC.

Before you can look for things, however, you will need to have entered them, and when doing this it is imperative that you check that incoming data matches your expectations. There is no point in having a field for 'date of discovery of groundnut' which has no error checks attached because one wrong entry can mean a entire record is omitted during a search. So organise yourself an error check.

One simple example of this is shown above.

The reason for using a subroutine as opposed to carrying out this very simple error check in line 30 is that you may have included another INPUT for say, "date of import to the UK". If so, the subroutine can be used again and again saving space and cutting down on the amount of tedious code writing. Obviously this check does leave out a lot, such as the fact that you may well have entered "32/13/00", but date checking is an art in itself and well worth experimenting with. What this immediate checking does is to save you a great deal of heartbreak when it comes to accessing the information later.

```
10 LOCATE 10,10:INPUT "Date of discovery DD/MM/YY ";date$
20 GOSUB 1000
30 LOCATE 20,20:INPUT "Name of nut";nut$
1000 IF LEN date$<>8 THEN PRINT CLS GOTO 10 ELSE RETURN
```

• An example routine to check date entries.

CHECK LIST

Finally, before coding you should have the following routines mapped out on paper:

- Number of files to be opened (and closed!) at any one time
- Where they are created
- Where they are deleted
- An exit routine to include backing-up
- An error checking subroutine for input
- A search routine containing sorts and searches on the most important fields
- A formatted output routine to both printer and screen.

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The MEGA ST computers are styled as as lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

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April showers

After reading the problems of Marcus Turvey and Jon Hawkins in *Express* 68 I must tell you about something that happened to me.

While playing *Hollywood Strip Poker* on my Mega ST one night, I realised that I needed a cold shower. As I didn't own a shower at the time I used the power of my brain, the Mega ST and a knowledge of quantum mechanics to make one.

The disk drive doubles as a soap dish, the ST heats the water and the shower curtain is made from 100 old Twix wrappers. The performance of the ST is improved with the water cooling and the shower works well.
Raymondo 'Screaming Mad' Burcham BSc (Bronze Swimming Certificate).

What a splendid thing to do with an ST – but are you sure you ended up with a *cold* shower? In the olden days, our boilerman remembers installing a C64 in every room and using the power supply as a storage heater. After a couple of hours playing *Forbidden Forest* the building achieved a rosy glow.

Where are they now?

I am desperate to get in touch with any of these people:

Paul Kaufman
Carolyn Groeneveld
Geoff M. Phillips
Kester Cranswick

They all worked closely with Oric products and I desperately need their help.

If they are reading this, or anyone knows where they are, could they please contact me.

Also, what happened to Touchstone, Sector 7, Windmill and Severn Software? Any help gratefully received.
Robert Cook, 10 Thomson Avenue, Kings Norton , Birmingham B38 8YD.

We've checked our list of people and places and unfortunately we haven't come up with anything, so it's over to you, our readers. I reckon that if everyone who sees a copy of *Express* asks the next 500 people they meet if they can help, we've got a better chance of finding them than if we put a pound each way on Red Rum.

Crane in the neck

I am a placid person seldom roused but after reading Express Mail in issue 72, I must hit the keys in response.

My grievance: Ben Feinbaum replying to Neil Hodgkinson's letter said that the "My machine's better than your machine" cat-calling had really gone far enough, and yet in the same column printed comments by Iolo Davidson claiming that users of the Mac "are forever incapable of understanding a real computer like the IBM PC".

The truth is both are real computers and both are well behind current technology. Why do I say this? Both the leading games machines can emulate the workings of the products of the corporate giants by either software or hardware. Is the reverse true?

The only reason that the PC and the Mac are in their respective positions is because they were first and were backed by business, but first doesn't always stay in the lead and biggest doesn't mean best.

The most innovative fields such as scanning, optical character recognition, vector front ends and so forth are better implemented on games machines.

In the office where I work the function of our single PC is to act as a fileserver to a network of STs, and our Mac sits mostly unemployed as it is only used for checking software compatibility.

Finally, no more political bickering since there are daily papers and TV for that kind of thing and don't let an otherwise good weekly reduce itself to kiddy comic level.
Jon Crane, Aldershot, Hants.

Dear Mr Placid Crane, how can a seemingly intelligent chap like yourself with proficient abilities as a letter-writer and access to a nice laser printer spoil an otherwise splendid letter with such total nonsense?

I agree with all your sensible platitudes about different computers being better at different things, but I'm at a loss to understand your thoughts on your own office. I'm sure, whoever set up your office the way it is, did so because they had a series of tasks to carry out and considered the networked STs the best solution. Otherwise they would be guilty of waste and bad management.

You must accept that other people will configure their systems with the hardware and software available and within their budgets. For example, in *Express*'s office we wouldn't give you a banana buttie for an ST to do our job, but we'll gladly disembowel anyone who tries to pinch our Macs. However, I can't see a confirmed games buff being too chuffed if we nicked his Spectrum and gave him a Mac. Horses for courses.

Stephen King writes...

I was greatly annoyed to read the idiotic letter by Iolo Davidson in *Express* 72.

Really, political discusions in the pages of *Express* should be put paid to – they have no real relevance to computing, which is what the letters page and the magazine as a whole are supposed to be about. People who want to discuss politics should write to the newspapers, not to computer magazines.

However, Davidson (is he the fellow who used to write that foolish column at the back of *Your Spectrum*?) doesn't stop with making a fool of himself politically. He proceeds to go in up to his neck by asserting that the Macintosh is not "a real computer like the IBM PC".

What is his definition of a 'real' computer? Mine is this: a computer on which

Capricorn Utd 1 Scorpio City 0

I've read with interest recent articles about astrology and horoscopes. I have a couple of points to make:

1 If astrology is governed by the planets and the stars of the universe, how is it that if you look in the daily papers, none of the predictions seem to agree with each other?

2 How is it that horoscopes never say :

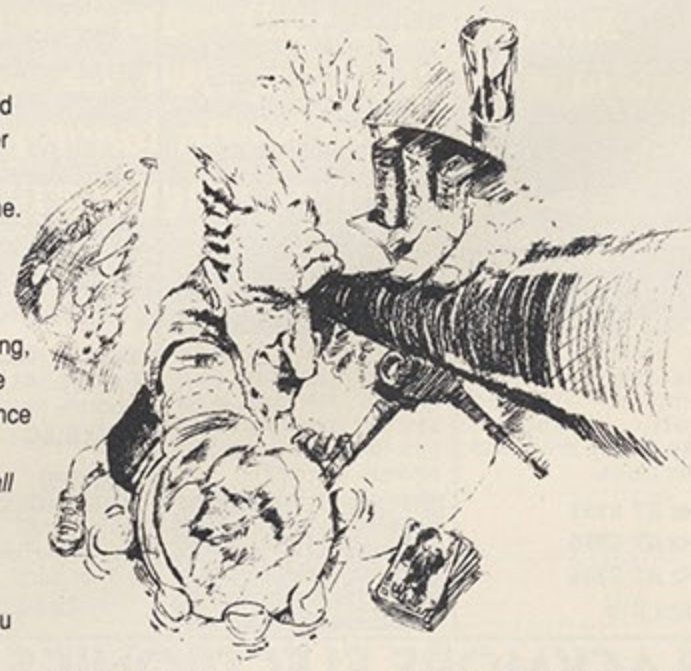
Scorpio: Today is going to be mind-numbingly boring and sod-all is going to happen to you.

We all know that everyone has days like that, but it's never predicted.
Lee Jackson,
Great Sutton, Merseyside

Well, Lee, didn't there used to be a python named after you? To answer your questions, I'll ask you some.

1 If you gave 10 painters a crayon and an exercise book and asked them to draw the same thing, would all the results be the same? Would their difference negate their validity? *(Ah, but the painters wouldn't all claim to have got it 'right', would they? – Ed)*

2. Would you buy a product that said: "Lee, you are a boring nonentity to whom nothing will ever happen," or would you prefer something that cast you in the role of a mildly interesting chap?



Personally, I don't believe in astrology, but I don't see that as a valid reason to decry it. After all it gives encouragement and solace to many people.

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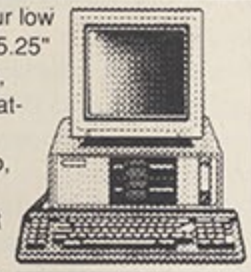

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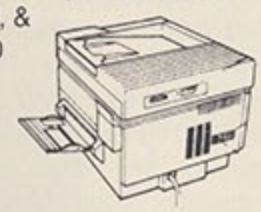

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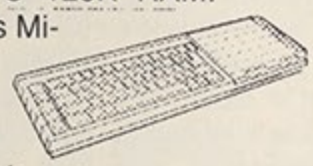

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it is possible to do useful work. Thus the PC, the Mac, the ST I used before I got my Mac and the Spectrum I had before that are all real computers. The Seg Megadrive (for instance) is not – it is a toy, since you can only play games on it.

Had Davidson addressed his comments at a machine like the ST or Amiga which, though very capable, have little acceptance in the business and education communities, they would have been understandable, though ill-advised and bigoted. To address such remarks to the Mac is simply ridiculous.

Even if he believes that only a computer used by businessmen is 'real', he can't disqualify the Mac on these grounds as it is used by many businesses. I would lay 10 to 1 on that *Express* uses Macs somewhere in publishing.

Davidson should stick to giving technical advice, which he seems capable of, and leave politics to the papers and the 'my computer is better than yours' argument to schoolchildren. If he is who I think he is, he should be too old for such childishness.

And please, Express Mail, kill off the politics correspondence and also the absurd one about astrology. For the record, I am a Labour supporter and think astrology is nonsense.
Stephen King, St Andrews, Fife.

The Editor writes:
Well, yes and no. The 'politics' started when we carried the story that a Government minister was calling for people to take more interest in computer-related training. A reader responded by saying that the Conservatives had a cheek making out that people didn't want such training when in fact there is all too little of it available.

I thought, and continue to think, that this is an entirely fit subject for a computer magazine to see discussed in its letters pages (and it has raised at least one useful contribution, see elsewhere in this issue's letters). Having bitten the bullet and agreed with the correspondent that the Government should pull its finger out, I resolved to print responses which disagreed.

That the opposing point of view came in the form of a 'you socialists are a bunch of loonies' tirade is rather sad, but I hope I discharged my duty as an editor in printing it.

You would easily win your bet on *Express* having a Macintosh somewhere in the show. The magazine is entirely desktop published via the Art Editor's IIcx and the two production stalwarts' Mac IIs. This means that even the copy written on various other machines (and screen-shots grabbed from them) goes through Macs before printing.

Furthermore, the news and features editors and staff writer write all their copy on Mac Pluses, while I use my SE for all sorts of purposes.

If Iolo Davidson thinks our machines are not real computers, that is his problem. We all regard the idea as thoroughly risible. It may upset Iolo that we can do our jobs more easily and efficiently without having gone through all of the Big Boys' PC stuff like him, but we are quite happy not to need to.

The machine's friendly interface has brought many non-techies to computers who would otherwise not have done so, and that includes me.

The problem Stephen (no relation, I presume?) is that some people are much the same with both politics and attitudes to computers: 'If it doesn't hurt, it isn't working'. Enjoy your Mac (and LaserWriter, by the look of your letter) and don't give a damn about people who sneer at you. They're probably only envious anyway!

Spot the programmer

Did you know that the games industry has something in common with the music industry at present?

They both release totally unoriginal, rushed out drivel.

On the music side there are Stock, Aitken and Waterman releasing songs that are almost the same as the last one but with a note of the bass line changed, sung by unattractive untalented teenagers whose singing skills don't even compare to those of a mouldy potato.

On the games side there's a well known wet software publisher releasing rip-offs of its previous games with different graphics and more bugs than would fill an Amiga's operating system, programmed by untrendy, untalented, boring, spotty, greasy-haired, ugly programmers (I'm one of them) who have only just figured out what the power switch does.

Notice the similarity?

There are good games around, just as there are good records, but those are few and far between.

Anyway, I'm off to the shops to buy Sonia's new single and my new game, *Operation Batcop's Bughunt*.
A. Programmer.

Did you know that the publishing industry has something in common with the music and computer games industry?

On the publishing side, there are programmers who are too frightened to sign letters with a proper name, writing letters that are just the same as the last 10 we've opened only with a different word misspelt. These are written by unattractive untalented teenagers whose letter writing skills don't even compare to a Salvation Army Yearbook.

Organised MSXers

I note that you have the occasional individual asking for information concerning the MSX machine.

Although I would accept that these machines are not as popular as some MSX owners claim, we still have user groups and clubs in existence. At present there are two such groups: ourselves and a club called MSX Central. The latter con be contacted by writing to: 14 The Wardens, Allesley Village, Coventry, Warwickshire CV5 9GJ.

As far as our user group is concerned, we do not run a club as such, so anyone is entitled to use the facilities. We do publish an MSX magazine, usually between 20 and 30 pages every six weeks or so.

We also deal in the buying and selling of MSX equipment, so if anyone is looking for particular MSX software and so on, if we do not have it we can usually point them in the right direction.

We also run and manage a viewdata service that is dedicated to MSX, and will soon have a scrolling bulletin board from which software can be up- or downloaded. Information can be obtained by writing to us at the address below.

Finally, MSX Central and ourselves will be combining to produce an MSX show on Sunday November 11. So if any MSX enquiries come your way, please refer them to either of the user groups – the only two which survive and are still quite active.
Vernon Wyland, Crossways, 396 Park Lane, Maghull, Merseyside L31 1HQ.

Better than referring them all individually, we have printed your letter! Thanks for the information, and good luck with the show.

Educating Tech Tip

I don't worship Thatcherism but I must point out an area of government activity that you missed.

Tech Tips in *Express* 71 gave a reply to a letter asking about training in programming. While Uncle Tech Tip was right, he failed to mention training at an Information Technology Centre (ITeC).

These government centres were set up to provide training in electronic office skills, electronics and computing.

The only age qualification is that the student be above school leaving age.

Courses are available in computer languages and the use of major software packages.

Courses are heavily subscribed with one place for every 30 applications from teenagers and the adult courses have waiting lists as well. However, a teenager at school could secure a place in advance, and careers teachers can arrange a visit and in many cases a period of work experience before leaving school.

I am biased, I am a tutor at South Liverpool ITeC and I believe that we offer some of the best training in the country, and many people (YT and ET) can receive training allowances while they study for GCSE, BTEC, C&G, RSA and Pitman.
Jimmy English, Southport, Merseyside

I tried to find Tech Tip to cane him for the omission, but he was behind the bike sheds so I'll get him later.

Thanks for an informative letter about a subject that a lot of folk are having to come to terms with.

Only today I commented to a former colleague that I could hear the clatter of a typewriter as I chatted to him on the phone. He said very quietly: "Yes, but that's all finishing. We've got an Apple Mac to play with and learn about and they're going to *make* us use it soon." He sounded as if 'soon' was far too soon.

Keep on educating the great unwashed and keep us up to date with ITeC *(and especially let us know when you are no longer in the unenviable position of having to disappoint 29 out of 30 keen teenagers – Ed).* ■

A superior sort of Spectrum emulatorz

After reading the Amiga hardware/software emulator review in a recent copy of *Express*, I thought that you might be interested in a device that I intend to market for owners of PC and ST machines.

It is fully Spectrum compatible, loads any Spectrum software directly from tape or disk, gives a perfect emulation of the Spectrum screen display. It also supports Spectrum BASIC and sound.

All hardware add-ons and interfaces are supported and slot onto an edge connector. There is no loss of speed and the machine has its own built -in 48K cache of RAM.

I expect to sell it for around £50, bundled with £100s-worth of software.

Sounds incredible? Not really. That's about the going price here for a, wait for it, second-hand Spectrum.
Jeff Tullin, Tyne and Wear.

I wouldn't advertise it if I were you, Jeff. You'll only end up with some ST or PC owner frantically phoning you to find out how to put it in the disk drive or even worse, an Amiga owner phoning up in the middle of the night.

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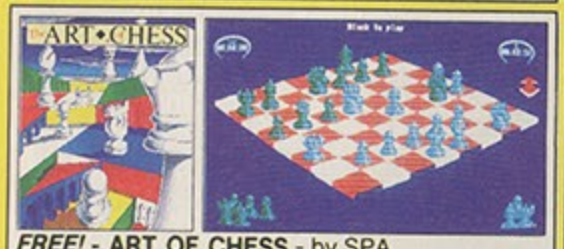

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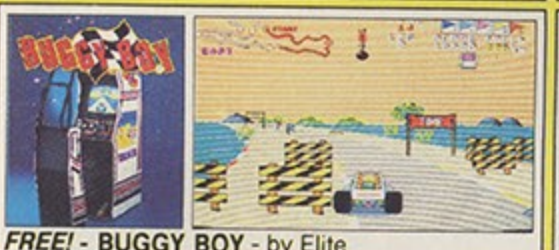

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Do you already own a computer
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COMPUTER CHAOS

A selection of computers which perpetrate disasters from the copious annals of Mel Croucher

CALIFORNIA, USA

The GTECH Corporation is so confident of its 4,375 interactive terminals that it contracts to pay the Southern California Lottery $4,000 for every minute the system fails to operate, and $1,000 per minute if punters find the computerised lottery 'unacceptably slow'. Just before Christmas a GTECH maintainance operator is despatched to 'improve system reliability', but installs the wrong back-up program. The indemnity cost? $3,116,000.
(*Los Angeles Times*)

WORCESTER, UK

At the outbreak of the Falklands War the Prime Minister, the High Street banks and the Ministry of Defence are approached by an unknown man offering an early warning system on the cheap. He is given the bum's rush. Undaunted, he now contacts ICL saying that he's got an MoD contract for the UK version of Star Wars, and is being backed by the banks and Downing Street.

ICL jumps at his loony deal and delivers £300,000 of computers to an empty office. An additional £200,000 of gear is obtained from sundry hardware companies, and the whole lot is protected by £50,000 of security locks. When arrested, the individual gives his name as General Galtieri. He is sentenced to 12 months chokey with another 12 months suspended.
(*Daily Telegraph*)

THE PENTAGON, WASHINGTON

The latest report from the US Airforce Electronic Systems Division is delivered. It covers the competence of military software contractors and is split into five categories, based on a two-year survey and comprehensive questionnaire. Here are the results.
Category 5 (Optimum performance): Nil
Category 4 (Competent control): Nil
Category 3 (Reasonable understanding): 2 per cent
Category 2 (Capable of repeating existing tasks): 14 per cent
Category 1 (Chaotic or unpredictable): 84 per cent
(*Aviation Week*)

PORTSMOUTH, UK

A self-styled expert in computer chaos recieves a data disk originating from a nameless publication (*Computer Trade Weekly*). He integrates it into his database and this morning's work gets fried by a vindictive virus calling itself 'yengh, yengh, yengh'. The expert does not panic, spotting the virus immediately. He isolates all the rogue data, shuts down his entire system, cleans out his DOS and loads the back-up data, which years of experience force him to make at the close of every working night.

The back-up also gets fried, wiping out four weeks work. Just before the expert hits the toilet, he realises that his system is linked to a Toshiba Laptop PC using a battery back-up in case of power failure.
(Mel Croucher)

LOS ANGELES, CALIFORNIA

Airport customs officials score a running hit when their computer identifies Richard Lawrence Sklar as a notorious Arizona heist fugitive. His name, birth date, height, weight and eye colour prove his identity, and Sklar spends the next two days being strip-searched, handcuffed to violent offenders and abused by police and cell-mates alike. Unfortunately, 58-year-old Sklar is a political science professor at the University of California, and this is the third time he has been arrested by rogue FBI computer data. Professor Sklar's electronic records cannot be altered, and the FBI advise him to avoid any more false arrests by staying at home.
(*Washington Post*)

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