Issue 144 • 10th August 1991 • 88p

TONS OF TIPS FOR YOUR MACHINE

see pages 16-25, 31-33, 44-45

NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

AMIGA

ENHANCE IT!

How to make the best sound even better

ATARI

THE CD-I ST!

Is a new generation all set to appear?

GAMES

ARMALYTE

Gunning for glory?

NOW YOUR PC CAN BE A MAC!

Is this the *ultimate* emulator?

Full exclusive details on page 5

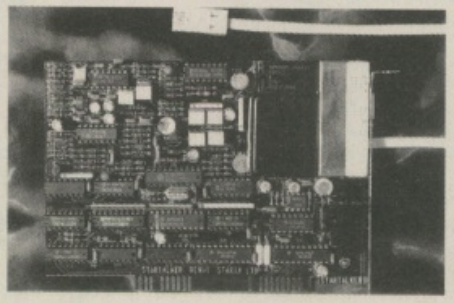
OH NO!!!

IT'S NCUBE2!

The world's fastest machine somehow just got even faster!

Why this man knows you better than the back of your hand – p55

STARTALKER



A PC card that answers your phone – p53

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Your guarantee of value

Frontend

Computing really does have a cute and caring side and Frontend's here to show you all the lovely things that people in the industry get up to...

US BRAIN STRAINS MAKE MAJOR GAINS

How did Einstein think? How does Viv Richards see a ball? How can Simon Rattle hear a piece of music? We may be closer to the answers to all these questions when a program called NeuroBuilder attains its true potential.

• Could next year's hit game be an Albert Einstein sim?

The software has been developed at the Los Alamos National Laboratory in the US and mimics senses such as sight and hearing. Although basic sensory principles using computer modelling have been experimented with before, it has been at a low level.

The NeuroBuilder team of Bryan Travis, Maureen Gremillion and Susan Coughlan believe that they can use NeuroBuilder models to actually discover the mysteries of the brain's functions.

The team feels that it could get close to finding out neurobiological secrets such as how the brain is able to create 'pathways' for the transmission of signals from the sensory organs to the brain. The next step from here would be to ascertain just how people feel, and then maybe how thoughts themselves are formed. ■

PANTHER PARADED

In a fit of communication Atari recently decided to show selected members of the press its now discontinued Panther console.

The hacks descended on Atari HQ in gorgeous, steamy Slough to be shown the small black box which Atari had decided not be bother selling.

As we reported in *Express* 135, Atari took the decision to scrap its games machine because it suddenly realised that it had been developing the Jaguar, a better example of the genre, and didn't want to release two of them at once. Apparently the Panther is, or was, a hot property featuring up to 8,384 colours on screen and 32K of memory. ■

Androids' animal magic

A new computer-based project may well soon be the pork of the town if UK-produced farming robots get crackling in the fields of England.

Android farmhands, milkmaids (and mates), seedling cutters, and even mushroom pickers could soon be a common sight leaning against the fences of the shires.

Researchers at the Agricultural and Food Research Council, based in Bedfordshire, are spending their days herding models of farm animals in front of the eyes of robot farm workers in an attempt to instill the recognition of shape and outline in the digital Eddie Grundies.

The models are programmed to take on different postures to give the young farmers a clue as to the difference between a freisian and a sheep. Once the robot farmers have been thoroughly trained they will be used to monitor the actions of real animals 24 hours a day and take the strain from their human counterparts who can then work elsewhere on the farm. ■

• If robot farmhands take over in the fields does this mean that computer-freaks Kraftwerk will be writing the new, ultra-modern Archer's signature tune?

• GET REAL! • GET REAL! • GET REAL! • GET REAL! •

FREE MARKET

Only in the Soviet Union? A Moscow-based computer reseller, the MMM company, has decided to get into marketing its wares in a big, and unusual way. From 31 July to 1 September it will pay the metro fares of an estimated five million muscovites as they travel around the city. The cost to the company is estimated to be in the region of £240,000!

EXPRESS IS READ BY MORE PEOPLE

It's official! *New Computer Express* is now being read by over 80,000 computer-users every single month. This outsells most of the monthly computer titles by at least 30,000 copies.

And this isn't just flannel, just phone the Audit Bureau of Circulation (ABC) and it'll confirm it. Certain other titles can't say the same... ■

• The Rocketeer, 1930's flight nostalgia is being updated in the deep south where robots are frolicking across volleyball courts. However, just in case any of the participating droids get carried away, cables have been placed around the court to restrain them

Cyber race

Robot Olympics? Old hat. Stationary, earthbound droids, pah! The latest thing in cyborg battle, the world's first Aerial Robot Competition, took place at the Institute of Technology in Atlanta, Georgia, last week.

Five robots took part and had to complete what sounds like an easy task. They had to move six metal discs from one end of a volleyball court to the other. Of course there was a twist; a barrier was placed in the middle of the court which the metal-men had to negotiate, and they had to complete the task in under three minutes.

The results are not yet available. However, the team from the Georgia Institute is said to be in with a good chance. It has modified a helicopter used on film making. Sensors, and several computers running Artifical Intelligence-based programs have been fitted to the machine. ■

Braille steps forward for blind computer users

Computing isn't all hex, DECs, hashes, crashes and "my ST is better than your Amiga" or at least it doesn't have to be. This week it shows its caring face once again with a pocket organiser for the blind.

The Braillemate weighs a mere one pound and is able to store up to 128 pages of text. Facilities included with the machine include a telephone directory, a calendar and, most importantly, the ability to play back data. This latter function is relayed to the user either in the form of synthesised speech or via an add-on braille touch-pad.

Of course users will need a way in which to convert their work to those people who haven't got around to learning braille. This can be achieved via hard copy. Sight-impaired and blind users of the machine can therefore print out their saved notes in Grade 2 braille using an inkjet printer which is able to produce the necessary indentations on the paper.

Other peripherals include credit card-sized RAM cards for the addition of extra memory.

Braillemate comes from an American-based company Telesensory Systems and costs $1,595. No UK distributor has as yet been appointed. However, if you would like more information, you should call 0101-415 960 0920. ■

DELL OF AN ARGUMENT

Those Yankee ways just won't wash in Blighty! Dell computers has been ordered by the High Court of Justice to modify the advert you see below or face a fine of £250,000.

The ad compares Dell's machines to rival Compaq's, and not suprisingly the latter objected. While comparison advertising is accepted practice in the States, it offends UK laws on the use and misuse of trademarks without permission. Dell is to appeal the case. ■

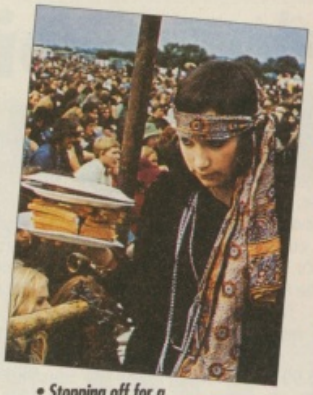
Software taps into the brain • On-line flower power • Androids i

If you're going to San Francisco...

You can wear flowers in your hair if you like, but a more constructive action would be to stop off for a cup of coffee and a quick download.

Yes, Frisco is reverting to the dream of Apple founder, Steve Jobs, who wanted computing for all. A new on-line service has been set-up to cater for the "bohemian set". At least that is the case if you believe SF Net's instigator, Wayne Georgi. He has placed a number of modem tables in coffee bars around the Frisco area.

The tables feature modems and monitors which rise up when a lever is pulled. Users pay $1 to log-in while supping their cappuccino. The system features live chat lines, message boards, E-Mail and even a 'Love Connections' area! ■



• Stopping off for a coffee and a bite to eat could turn into an on-line, love, peace and downloading experience.

SHOOT FROM THE LIP

"The PC and workstation worlds are converging. Out of this fusion, a new type of product will emerge – the RISC personal computer."
Edward R McCraken, CEO of Silicon Graphics making bold predictions for the future. Silicon has just announced the launch of its own "low cost' RISC machine. For more details see page 5.

"Over the years, particularly around the time of going public, Virgin has gained a lot of discipline and the sort of management controls that Sega imposes are really not that different to the ones imposed by Virgin."
Nick Alexander, ex-of Virgin Mastertronic, now of Sega Europe on possible culture clashes since the Japanese company took over Virgin.

"The Virgin image (of 'alternative zaniness') is greatly exaggerated. Richard Branson doesn't come around saying 'take that tie off and do something silly.'"
The same Mr Alexander talking of the good old days. Both quotes from *Computer Trade Weekly*.

"In the future there will be record stores where you plug a band's video into your virtual reality machine and you can interact with it."
Steve Ghee of VR specialists Division Ltd commenting in the *Guardian* on the horrors that might await fans of Des O'Connor, Colour Me Bad or Danni Minogue.

RUCKING HELL! Flame game

If you have got over the shock of seeing English rugby union reduced to a tattered remnant of its former glory after the drubbing it received from Australia, then you might be interested in a new game from Domark.

Rugby – The World Cup will be emerging from the Domark scrum in September, just in time for the World Cup in October. It features a *Kick Off*-like top down view, 16 international teams, passing, tackling and kicking, the ball that is. ■

The Japanese have developed a new advertising gimic in the form of a talking flame.

The Voice Poppy Light is a picture of a flame with integrated circuit sensors and a voice synth. Up to 32 seconds of sound or voice messages can be stored on the IC and these are played if a human comes into close proximity.

Don't expect to see it replacing moving plant pots yet as it costs about £330 a unit. ■

GET REAL! • GET REAL! • GET REAL! • GET REAL!

EAT THIS!!!

The next time you tuck into a box of chocs you may be shocked to see a cherry rising up from the soft centres, or a hazle nut popping out of the hard. The reason for this is that an American company is experimenting with holograms which it can overlay in the chocolate as it cools. The company is also looking to put cartoons inside lollies

COMPUTER CALAMITIES

Lazy lot! Send your tales of computer-related chaos and catastrophe to Computer Calamities, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW and we'll pay a fiver if it's printed.

This week, we felt that we had to make mention of the on going battle between NASA's space shuttle and its computer system. It seem that everytime the shuttle is due to take off, the computers go into 'warped' drive. It happened again on 24 July this year. Cape Kennedy, Florida, was the site. The shuttle Atlantis was the victim. Computer failure in the main engine controller was blamed for the delayed launch. Happily no one was injured. ■

ids in agriculture • Caring computers

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Win a £570 LAN Station!

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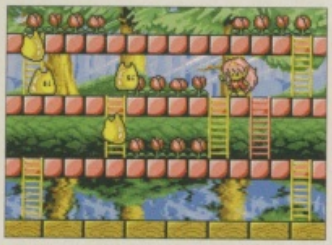
A visit to the land of Rod



• *Will Rodland be able to repeat the success of previous cutesy games like Rainbow Islands?*

Rodland is the latest addition to the cutesy platform game genre. It comes from Storm Software, the publishing house responsible for *SWIV*.

It is set in a fairy village the inhabitants of which are being changed from pukingly sugary little figures into rabid, rancid demons. This is because, Mom, who usually keeps everything under control, has been kidnapped and is currently residing at the top of the Maboot's Tower.

Mom in this case is the loving parent of the soppingly sweet Tam and Rit. Obviously you have to rescue the dear misspelt woman.

Rodland will cost £25.99 for the Amiga and ST versions, £11.99 on cassette for the C64 and Spectrum and £15.99 on disk for the C64. All will hit the shop shelves in September. ■

Going public

The Public Domain is causing more and more interest these days. So much so that a new magazine called simply *Public Domain* is to be launched on October 3.

Edited by ex-*Amstrad Action* writer Adam Waring, *Public Domain* includes a free cover mounted disk, and is packed with the latest on PD for the Amiga, PC and ST.

The aim of the mag is to provide an easy to read, informative guide to the thousands of free PD programs currently doing the rounds.

It will cost you £2.95 including disk and will be on sale every other month. ■

• *Can this magazine open the portal of public domain*

Fontasia is what you see

FPC Publishing has launched *Fontasia* for Lotus *1-2-3* users who want to spruce up their spreadsheets.

The second product in the company's WYSIWYG (What You See Is What You Get) series, *Fontasia* offers 15 new professional typefaces and four symbol sets for use with *1-2-3*. These include many specialised characters such a mathematical symbols.

Costing £125 for all 15 typefaces, *Fontasia* is available in English, French and German versions. Also available is the first WYSIWYG product *Clip-Artist* which, at £125, contains over 800 clip art images for a wide number of graphics software packages, including *1-2-3*, *Quattro Plus*, *Harvard Graphics* and *WordPerfect*.

Contact PC Publishing on 0734 332929. ■

• *Spreadsheets have never looked so good, thanks to* **Fontasia**

TURBO-COMPILING

To make life easy for ST owning Pascal programmers, HiSoft is launching an upgraded version of its Pascal compiler.

HighSpeed Pascal 1.13 allows ST users to launch programs written in Pascal directly from desktop environments such as GEM without having to revert back to the programming language. HiSoft claims the new version is faster and easier to use than previous versions and is compatible with Turbo Pascal for the PC.

High Speed Pascal 1.13 costs £19.95 For further details of specifications turn to the ST Column on page 17. ■

Biggest UK computer-related crime bust

INTERNATIONAL HACKING GANG SMASHED IN UK

Three members of the international hacking gang, 8LGM, have been charged with contravention of the Computer Misuse Act 1984 following the largest computer-related crime bust ever.

The three men, Neil Woods of Oldham, Karl Austin of Liverpool, and Paul Daniel Bedworth of Ilkley were charged and bailed at Bow Street magistrate's court on July 24.

The hackers had allegedly been tampering with computer systems around the country since August 1990.

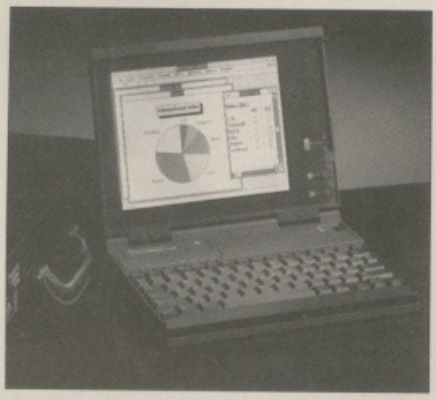
The arrests appear to have neutralised the presence of the 8LGM group in the UK

The unnamed operation which netted the triad was a joint affair by Scotland Yard's computer crime squad and BT.

While the arrests have apparently neutralised the presence of 8LGM members in the UK, other affiliates are known to live and work throughout Europe. The gang itself has offered no statement as to what actions it might take.

The case is not expected to come to court for some months, as officers of the Crown Prosecution Service will have to plough through thousands of pages of hard copy which is material to the proceedings. ■

Sub-£1,000 notebook



• *Texas says that it is dropping the price of its 286 notebook to £995 due to a rapidly maturing market*

Texas Instruments has announced that its TM2000 notebook is to sell for £995.

The machine weighs 4.4lbs, is VGA compatible with a 10-inch backlit screen, 12Mhz 286 processor, 20Mb slim hard disk and 1Mb of RAM expandable to 4Mb. It also comes complete with *Laplink* file transfer software.

According to TI, the reduction in price is nothing to do with the recession or the fact that the machine is 286 but because of the 'rapidly maturing market'.

For more information call 0234 270111. ■

Relive the revolution

The man who inspired a million posters on a million student walls is back, and this time he's bringing his computer.

Yes, that's right, Che Guevara, revolutionary leader, poet and martyr returns to haunt all capitalist running dogs in the form of a computer game called *Guerilla in Bolivia*, from CCS of London.

Your role is to do better than Che by not getting killed as you lead 15 hard core rebels across Bolivia.

The game is a strategy adventure and makes use of the great man's diaries beginning on November 7 1966.

History changing stuff? Or a crass political cash-in? Who knows.

However, if you would like to join in with the revolutionary struggle, the game will be on the shop shelves later this year for the Amiga, priced £24.99. ■

• *There is a Spectrum haunting the West. So rise up comrades you have nothing to use but your RAM with a new game for the Amiga*

'Perfect' Mac emulator for the PC, claims US company

ANYTHING A MAC CAN DO...

COVER FEATURE

If a small US-based firm called Hydra Systems has its way, there may be no point in buying a Macintosh ever again.

Hydra is currently producing the first fully functioning Mac emulator for the PC. And the company claims that its Andor board is capable of running any Mac-compatible software.

The Andor One is to the PC what the *SoftPC* is to the Mac. It comprises an add-on board and software which enable standard PCs from the XT upwards to run a wide range of Mac software.

APPLE ROMS

In order to get the most from the system users must also purchase Apple ROMs. And this is where Hydra really comes into its own. According to the Gail Wardwell of the company: "We buy Apple Pluses on the open market, they have used ROMs, and then we install them. Once Apple has sold them, they lose control of them."

Anyone wishing to make use of the Andor One system must have the following: a 3.5-inch disk drive (this can be a standard PC drive and requires no modification), the Andor card itself, 2Mb of RAM and the Apple ROM chipset installed on the card.

NO LIMITS

The Andor card comes with a floppy disk controller which enables the PC drive to act as an Apple drive, reading and writing to Mac format disks.

Once all this has been installed, the user makes use of the supplied software which has so far been tested on programs as diverse as *SuperPaint*, Microsoft *Excel*, and *Photoshop* among others.

Hydra, which is a new company based in San José, California, is claiming that the card can do far more than this. Wardwell says: "Anything that would run on a Macintosh Classic, SE or Plus will work." And anything that runs on these machines will run on the rest of the range.

Installing the Mac software is simplicity itself; the PC's hard disk does not even need to be repartioned. As soon as the hardware is fitted, programs can be loaded, stored and then run from a hard disk.

LEGAL THREAT

The only fly in the ointment as far as the Andor system reaching the rest of the world is Apple's famed litigious nature. Although no legal action has as yet been taken, Apple is even now in the process of evaluting Andor and the copyright implications.

• Us company Hydra reckons that it has developed a system which allows PC to run all Mac software.

Price for the board and software is $995 (approx £585). The Apple ROMs are available from Hydra for $500 (£294). For more information call Hdyra on 0101 408 253 5800. ■

Hi-tech Airlift to Moscow

In a move which mirrors the Berlin airlift of the late 1940s an American company is flying computers into reformers and journalists in Czechoslovakia and the Soviet Union.

The sadly outdated machines are being flown East by Boston-based Computer Exchange. Chief among the recipients is Edvard Shevardnadze, the ex-Soviet foreign minister.

Shevardnadze left the Communist party last year and is now compaigning for the democratisation of the USSR. He commented: "We really appreciate the support as we try to create a democratic forum in the Soviet Union".

The hardware has been donated by NEC, AT&T, Bell Labs, and many other US firms. Air freighting is being carried free of charge by Swissair.

However, this act of processor-based philanthropy comes with a few political strings attatched. According to Alex Randall, president of Computer Exchange: "Anyone [in the USSR] with a PC becomes a walking advertisment for the First Amendment of the constitution". ■

White right!

Paper white screens are better for you than amber or green, according to a report written by an associate clincal professor at the Univesity of California.

Dr James E Sheedy compared a 19-inch, monochrome paper white monitor with a 120 dots per inch (dpi) screen resolution and 67Hz screen refresh to an IBM VGA 14-inch mono screen with 640x480 pixel resolution and refresh rate of 60Hz. He discovered that the former provided 33 per cent more readability.

The professor's findings lead him to the conclusion that a light background is better than a dark one and that: "If we can make video display terminals and hard copy displays identical, then performance will be identical."

So perhaps a return to good old pen and paper could be the answer after all. ■

Philips sells off computer interests

Beleagured Dutch electronics manufacturers Philips has decided to sell of its minicomputing, networking, and document systems to Digital.

Philips, whose Interactive Multimedia side is heavily involved with the development of Compact Disc Interactive technology (CD-I), has commented that its Systems Division which embraces all of these aspects, has been continuing to perform badly. This lack of performance was becoming "a burden" to the company.

However, it is going to retain its PC manufacturing interests which currently holds 2 per cent of the European market.

The sale, which has not yet been valued, is expected to go ahead in October subject to shareholder approval. ■

Perfect Windows

The long awaited *WordPerfect for Windows* has entered Beta testing stage, with copies being sent to sites world wide, including the UK.

The company has also announced that anyone who buys *WordPerfect 5.1* for DOS between now and 30 days after the Windows version has been released will be entitled to a free licence to run *WordPerfect for Windows*. ■

Fly an Acorn

The RAF is using 12 interactive flight sim systems based on BBC A3000 computers as part of its travelling recruitment trailers.

Developed by Simis Ltd, which also designed a flight sim for British Aerospace, the system enables youngster to experience what it feels like to fly an RAF Tornado IDS.

Each budding pilot is allowed four minutes to complete one of three predefined missions, and also contains a multiple-choice questionnaire sequence on the RAF. ■

• The RAF is hoping to entice youngster to join its ranks by using 12 travelling Tornado flight simulators based on the BBC A3000.

Big investment in IT

Top British businesses are increasing investment in Information Technology (IT) despite the recession, reveals a CBI survey conducted in conjunction with corporate networking specialist SMM Communications.

'The Effectiveness of IT', compiled from a survey of CBI members at board director level, showed that 83 per cent intended to install new IT equipment in the next year. Nearly a fifth revealed that their current IT expenditure already exceeds £3 million, while a quarter spend at least £100,000 every year. 92 per cent believe their need for IT will increase significantly over the next two years.

The flip side of the coin is that smaller companies are expected to invest less than previously. The report predicts that small businesses will be investing about 13 per cent less on computer systems in the coming year. ■

NIBBLES

FAST raid

Bosses at the York headquarters of the York and County Press have agreed to take steps to reduce software piracy in their offices following an investigation by the Business Software Alliance (BSA) and the Federation Against Software Theft (FAST). In conjunction with Central Point Software, FAST and the BSA were granted an Anton Piller order, which allows copyright holders to inspect premises suspected of illegal copying without prior notice, after receiving a tip off that the York and County Press was using pirated copies of Central Point's *PC Tools*.

Developers' group

The Developers' Group is a new support organisation set up by The Software Construction Company aimed at software developers. For an annual subscription of £35 members will receive 12 issues of *Computer Language*, a developers' magazine from the US exclusively available in the UK through the new group, as well as details of the group's conferences and seminars, and substantial discounts on software development tools. Tel 0763 244114.

Perfect database

WordPerfect UK has launched an enhanced version of its relational database program DataPerfect . Version 2.2, which costs £359, features a new indexing system and a WordPerfect Office Shell for easier integration with other programs. Improved printing facilities allows for special characters. Contact WordPerfect on (0932) 850500.

No pirates Salford

A Salford software dealer has been fined nearly £20,000 as part of a piracy clampdown by the city's council. Trading standards officers prosecuted the dealer after having seized more than 500 pirated games imported from Hong Kong from his shops. The council is now warning other dealers to check their stock or face heavy fines.

A big dossier

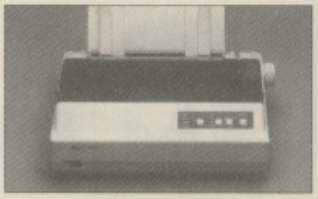
Viglen has upgraded its 32-bit 386SX Dossier notebook. It now features a 60Mb hard disk, a processor speed of 20MHz and 2Mb of RAM, expandable to 8Mb. Supplied with MS DOS 5.0 and Windows 3.0 as standard, Dossier now costs £1,799.

Printing protocol

Star Printer is launching two new printers. The LC-20 and the Pro-to-Col series.

The LC-20 is the upgrade to Star's acclaimed LC-10 series. It is a 9-pin dot matrix machine which comes with eight fonts, print speeds of up to 180 characters per second (cps) in draft Elite, and 45cps in Near Letter Quality (NLQ). It has a 4K print buffer, a built-in parallel/Centronics interface with an optional serial interface, and emulates both Epson and IBM printer standards. Price is £233.82

The Pro-to-Col series of printers comprises four machines. They are 9- and 24-pin printers all coming with colour capabilities. The two 9-pin versions, the wide carriage ZA-2000, and ZA-250 have 32K buffers, expandable to 160K. Star claims the print speeds produced by these machines exceeds 400cps.



• Star reckons that its LC-20 printer is set to be the LC-10 for the 90s.

The two 24-pin machines are the XB24-200 and the XB24-250. Print speeds are 300cps in draft and 100 in NLQ.

Price for the 9-pins is £399 and for the 200 and £499 for the 250. The 24-pins are £499 for the 200 and £599 for the 250.

Call Star on 0895 252131. ■

Home is where the work is

A new report published by Kogan Page claims that 500,000 people in the UK practise full-time 'Teleworking'.

Teleworking: A Strategic Guide for Management also claims that some 1.5 million Britons also work from home. On a part time basis Teleworkers are making more use of digital telephones, modems and personal computers to carry out businesses from their own homes.

It's not only the self-employed who are relying more and more on this form of working practice. Many large companies have taken up the option in order to cut down on overheads and employee insurance. It is estimated that between £500 and £1,000 a year can be saved on each staff member who works from home.

If you are considering setting up at home and would like a copy of *Teleworking: A Strategic Guide for Management* , it costs £18.95 and is available from Kogan Page on 071-278 0433. ■

New workstation claimed to be next stage in computing

RISC 3-D FOR LESS THAN £5K

Silicon Graphics is claiming that its new sub-$8,000 IRIS Indigo RISC (Reduced Instruction Set Computing) machine can produce the same quality of graphics as its $50,000 graphics workstation.

This graphics ability was able to produce the startling transformation scenes featured in the forthcoming blockbuster *Terminator 2*.

The Indigo machine costs $7,995 (£4,702) and comes with both CD-audio and video as well as the ability to produce full 3-D graphics. It makes use of a MIPS RISC processor and comes with 8Mb of RAM.

According to Silicon's president, Edward McCracken, the Indigo is the first step towards a new step in the evolution of personal computing:

"The PC and workstation worlds are converging," he says, "Out of this fusion, a new type of product will emerge – the RISC personal computer."

FAITHFUL REPRODUCTION

Not only does the Indigo offer high-end graphics capabilities including 3-D rendering but Silicon claims that, with the addition of Adobe's *Display PostScript* system which has already been announced as a supportive product, it gives full What You See Is What You Get (WYSIWYG). This means that what appears on the screen can be faithfully reproduced on a PostScript-compatible printer.

• Will the Archimedes one day be seen as the grandaddy of RISC personal computers.

The launch of IRIS Indigo is also a shot in the arm for the RISC-conscious Advanced Computer Environment (ACE) consortium which numbers Compaq, Digital Equipment, and Silicon Graphics among its members. A low cost RISC workstation/PC is of major strategic value in ACE's battle against Sun Microsystems, Hewlett Packard and the newly-formed IBM/Apple computers joing venture. ■

Anniversary Trek

A bold new Star Trek game is being released by Electronic Arts to celebrate a quarter of a century of the cult show.

Star Trek: The 25th Anniversary is a combination of 3-D space flight simulator and role playing. The plot comprises 14 separate story lines which often cross one another to form a complex scenario. Developer Interplay Productions promises the game will retain the spirit of the program, with 'classic' Trek humour and sound effects digitised from the orginal television seriel.

Star Trek will be available for the PC in October for £34.99 with a Christmas release planned for the Amiga version.

Also new from Electronic Arts in October will be Interplay's *The Bard's Tale Construction Kit* which allows players of the classic adventure game on the PC to design their own dungeons, monsters and adventures. It will cost £29.99.

• The new Star Trek game uses digitised graphics of actual models used in the series.

Finally, among Electronic Arts' budget releases on its Star Performer label for September will be *Populous*, a game still doing well in the full priced charts. Other new budget titles include *Magic Fly*, *Match Pairs*, *Ski or Die* and *The Immortal*. All will cost £7.99. ■

Honeymoon over for Blue Apple?

Apple and IBM's much vaunted agreement to set up a joint venture appears to be flying into some creative turbulence.

Both companies have agreed, in principle, to commit programming teams to the new company. However, friction is arising from the heavily rumoured choice of team head. The big money is going on David Liddle, president of Metaphor, a company recently taken over by IBM, to be the chief of the 'Blue Apple' venture. Apple appears to believe its committment to the project is be unrepresented within the top echelons of the joint venture.

A source close to Apple is quoted as saying: "It's very uncomfortable about turning over direction of the new company entirely to someone it has little experience with. This could be a deal breaker". ■

Copycat hacker

An Italian boy calling himself Cracker Jack is currently producing a mixture of concern and derision in the anti-virus community throughout Europe.

The *Virus Bulletin* recently reported that Cracker Jack has been attempting to produce copy cat viruses based on those coded by a Bulgarian known only as the Dark Avenger.

While Jack's attempts at creating digital deseases are a thorn in the side of the authorities, he has one major flaw: he is no good at writing code. According to the *Virus Bulletin*: "If Cracker Jack were a plumber he would have drowned years ago..."

Unhappily the Dark Avenger's viruses remains a danger. ■

High speed PC 250 per cent faster than nearest rival

NCUBE SMASHES SPEED RECORD

One of the fastest computers in the world has just got faster. 250 per cent faster than its nearest parallel processing rival to be exact.

IBM's Amdahl was the previous record holder for parallel processing with 419 transactions per second to its name. This is now in tatters as Ncube has just attained the almost unimaginable rate of 1,073 per second! Installed on the machine was Oracle's *Parallel Server* 6.2, a relational database.

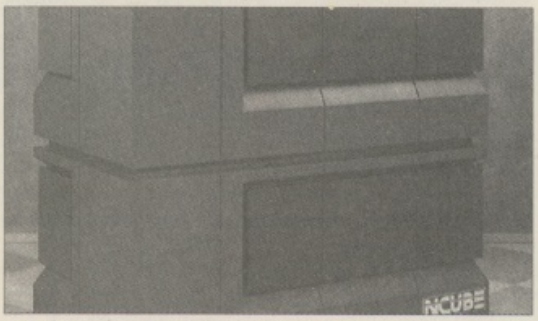
A transaction is the term used when comparing large computing systems. Essentially the machines go so fast that standard bench tests could not possibly hope to measure them. Consequently the measurement used is in real terms.

For example, the length of of time it takes to complete an account debit in a major bank, transfer the funds, and credit another account.

Ncube 2's transaction comparision involved simulating a major bank with 11,200 clerks managing in excess of 100 million accounts.

The 1,073 tps means more than just speed, though. The Ncube Corporation is claiming that the cost of each transaction has been brought down to $2,482 – and this is cheaper than a deskbound, standard PC!

At this price, the Ncube could get through $2,663,186 worth of work every second. That's $159,691,160 an hour. Not even BCCI would be able to get through that kind of money in that time. ■



• Ncube can work through $2,663,186 worth of calculations every second using its 205 disk drives and 500 million MB of memory capacity.

STATS AMAZING!

- The Ncube 2 is now up to model 10.
- It has 48 processors used purely to control disk drives
- It has 205 disk drives!
- Although Ncube 2 actually has 8,192 processors, it only used 64 of them for the test.
- A bank using the Ncube 2 could recoup the $30million the machine cost in just over 11 seconds.
- Nube 2 has a memory capacity of 500 million Mb. That's 769,230 CD-ROMs.
- Ncube 2 is capable of carrying out 60,000 million instructions per second (MIPS)
- Ncube's $2,482 per transaction compares to $50,000-£100,000 per transaction for a standard mainframe computer.

Integrated applications

Claris Corporation is releasing a simple to use integrated software package aimed primarily at occasional and first time Mac users.

ClarisWorks features a word processor plus graphics, spreadsheets, charts, database management and communications applications.

Where it differs from most integrated packages is that you do not have to quit from one application before using another as it gives users access to all the available tools from all applications for use in a document at any time. "*ClarisWorks* makes other integrated software look awkward," says Steve Johnson, Claris' UK managing director. "For some people this will be the only software they will ever need."

Distributed in the UK by Frontline Distribution from this autumn, *ClarisWorks* will cost £195. ■

Sam's just like a Spectrum

Lerm software has upgraded its popular Spectrum emulator for the SAM Coupé, SAMTAPE 4, to handle games which have been transferred using the Messenger system.

Messenger is a device which shifts the whole 64K of the Spectrum's memory onto the SAM. SAMTAPE 4 takes these files and changes them to SAMTAPE files, compressing them by up to 50 per cent in the process. Once done, SAM users can customise the programs and insert POKEs.

SAMTAPE 4M costs £11.99. Contact Lerm on 091-253 3615. ■

• Transferring Speccy games to a SAM-compatible format has never been easier, thanks to SAMTAPE 4M.

Mini-modem for Atari

The Atari Portfolio palmtop PC, has a new modem.

Andest Communications of Milton Keynes has announced the tiny piece of comms hardware. It runs at 300 and 1200 bits-per-second (bps) and supports VT52, VT100, and Teletype emulations. Kermit, Xmodem, and plain ASCII files transfers are also available. It costs £399.95. For more information, call 0908 263300. ■

Hi-Tech court cases

Sophisticated audio-visual and computer equipment is being used to present evidence to jurors in two major cases at London's Chichester Rents, Chancery Lane courtrooms.

Both the County NatWest and Barlow Clowes cases are using three PCs each and a total of 43 monitors capable of displaying video images as well as computer data. The equipment not only speeds up proceedings but also helps the jurors to understand the huge amounts of complicated evidence involved.

Chichester Rents is one of the first court houses in the UK to use such technology. The equipment has been installed by MarCom Presentations on behalf of the Serious Fraud Squad, which also developed the graphical presentation software used in the Barlow Clowes case.

"This type of high-tech equipment saves the court time and leads to a substantial reduction in costs," says Mark Tantam QC, a management consultant with Touche Ross, which is involved in the presentation of the NatWest case.

• The Serious Fraud Squad has developed software for computer presentations in court cases.

"The use of graphics improves presentation of material so that juries can understand the complex information more easily," he added. ■

Gross-ery?

IBM and Videocart Inc have entered an alliance to create interactive grocery carts in the US. The carts come with computer linked screens which relay information on best prices, advertising and sales messages. The messages are triggered off by strategically placed nodes around the stores. The intial production run is for 120,000 display units and software support. ■

**The much loved, and aesthetically pleasing Express barcode could soon be for the chop. But does the technology which is set to achieve this feat also provide ID cards for people?*

TOMORROW'S CUTTING EDGE

Why wade through musty old journals of scientific factS in the hope of finding the next development in computing, when you can get it right here and now?

Warp factor loads!

A company called Tera Computing in the States is claiming that its latest development, a general purpose supercomputer, could processes data travelling faster than the speed of light.

The American firm is already claiming that the machine, the development of which is co-funded by the Defense (sic) Research Projects Agency (DARPA), will run 100 times faster than latter day machines. It will cost an estimated $30 million – DARPA is contributing $7 million.

The proposed specifications are startling to say the least:

- 64-bit shared memory parallel processing
- Up to 256 separate processors.
- Each processor to have a peak potential in excess one billion instructions per second.
- Like Matsushita's Adenart processor (see Top of the Flops), it will also produce a billion floating point operations per second.

• She can take it Captain! She's staying together! She's staying together! Light speed is too slow for computer makers now but SOme think they can overcome it with software.

The company, however, is encountering some problems with the development of its monster machine. One minor detail is the speed of light, or rather the sloth of light.

Electronic signals cannot, as yet, travel any faster than light. So, Terra is working on software which will enable developers to add more processors and spread the information processing across them with greater efficiency. According to Terra, the software, combined with shared memory processing, will make faster-than-light processing a feasible proposition. ■

Barcodes check out

Just when we were all growing used to those unsightly barcodes which obscure the fronts of magazines, books, boxes of chocolates and even packets of sausages, it would appear that their days are numbered.

A company called Dallas Semiconductor has come up with a non-volatile chip which can be stuck to any surface and which can be read by computer.

The chip, titled the DS199X Touch Memory, has been described by DS' product manager, Rick Hall, as a "... silicon self-stick note" - in other words it is a smart Post-It note.

The information which could potentially be stored on these chips could be far more in-depth than is currently available with barcodes. Not only could date, identification number and price be easily readable by devices which cost a mere $25 to construct, data such as the name of the last person who checked the product, what checks were carried out, and what the expiry date is can also be made available.

The digital barcodes come in tiny 'containers' which measure 16mm, come with a sealed lid and are called Microcans.

Touch Memory chips are presently capable of storing 4K of information. That is roughly equivalent to 4096 characters. Another step-up from bar codes is the fact that the data on the chips can be re-written whenever necessary.

The implications for these devices go much further than simple product information however. Dallas Semiconductors has described uses such as hospital bedside testing, and entry control devices. Of course, the chips are also small enough to make handy identification badges which could be sewn into clothing or attached to credit-card sized ID passes.

With 4K of easily rewritable data at the ready, such cards could contain a wealth of information on individuals. ■

Top of the Flops

It is becoming less realistic to call Matsushita 'the Japanese electronics giants'. The company has simply grown too big for this description, and as if just to prove this point, it is currently working on a massive project.

The new project is a 20 Gigaflop (that's 20 billion floating point operations a second) parallel processor.

The system is already named 'The Adenart' and is said to include as a basic component, Matsushita's 64-bit RISC (reduced instruction set computing) processor, Omegha. This in itself comes with 256 different working parts and is said to be eight times faster than other such microprocessors.

The development on the new Adenart processor has not stopped with the attainment of this incredible speed. The Japanese, as expected, are already looking into ways of making it smaller and faster. ■

Hanging on the telephone

Until now you had probably not noticed one of the major problems with telephone boxes – they stand still. Well now, this 'problem' has been solved.

Mobile phone boxes could be littering the highways of the world within the next few years because the Japanese have developed solar powered versions. As the new boxes need no connected power source, they can be stationed anywhere. ■

Number crunching excites US scientists

Database sorting might not appear to be the most cutting of edge subjects, however, it has excited a number of US scientists of late. They have discovered a new technique which could change the way computers deal with numbers in the future.

Dr Michael L Fredman of the University of California, and Dr Dan E Willard of State University of New York claim that their discovery contradicts the received knowledge gained over the last 30 years.

Essentially they have produced a new algorithm which not only speeds up data processing, but improves its performance as the database grows.

The 'Fusion Tree' technique does away with traditional methods of sorting – these involve comparing two numbers at a time. Essentially Fusion Tree enables a computer to compare one number to 'many' numbers at the same time.

The story of the discovery follows the lines of many scientific finds. Like DNA and Penicillin, it came about as an accident. Fredman says: "We stumbled across this while attempting to solve another data retrieval problem".

Users of databases should not hold their breaths waiting for the commercial application of Fusion Tree. The basic algorithm is still in the theoretical stages and is not likely to be seen underpinning Lotus 1-2-3 or its like for a few of years yet. ■

Talking pages

An organisation called Interleaf is claiming that the documents of the future will be able to read themselves to us.

David D Weinberger, of Interleaf, made the statement in the lastest issue of American magazine, *The Futurist*. And he went on to say more.

Hard copy documents will also be able to adapt their contents to meet the needs of the person reading them. For example, an architect reading a city guide will have more graphics of buildings, and more text relating to their specialised interest automatically presented to them than to an historian consulting the same guide.

Interleaf does not seem to be making idle promises. At Comdex it showed off a prototype of such a document. However, this smart document was still computer-based and required 4Mb of RAM, a Macintosh or 386-based PC to run it. ■

• Before too long, War and Peace, The Good Food Guide, and even The Beano could be reading themselves to you. However, they could also be reading the bits which they think you'll appreciate.

CITIZEN PRINTERS

Silica presents some great offers on the award winning range of high quality dot matrix printers from Citizen. Each Citizen printer is built in the UK to exacting standards, ensuring superb reliability and a very high quality of output. Our confidence in the quality of Citizen printers is such that we are pleased to offer a unique two year guarantee with every printer. Plus, if you purchase your Citizen printer from us, we will give you a Silica Printer Starter Kit (worth £29.95), *FREE OF CHARGE!*

FREE DELIVERY
Next Day - Anywhere in the UK mainland

FREE STARTER KIT
Worth £29.95 - With every Citizen printer from Silica.

FREE COLOUR KIT
Worth £39.95 - With Swift 9 and Swift 24 printers.

2 YEAR WARRANTY
Silica offer a 2 year warranty (including the printer head) with every Citizen printer purchased from Silica.

WINDOWS 3.0
Free Windows 3.0 driver - In the Silica Starter Kit.

FREE HELPLINE
Technical support helpline open during office hours.

MADE IN THE UK
Citizen printers are manufactured to high standards.

144 CPS DRAFT 9 PIN

CITIZEN 120D+

The Citizen 120D+ is one of the UK's best selling printers. It has a stylish appearance and excellent features and performance for such an inexpensive printer. The 120D+ is available with either a serial or parallel interface and is an ideal first printer.

- *9-pin Printhead*
- *Print Speed 144cps Draft*
- *30cps NLQ*
- *Epson & IBM Graphics Emulation*
- *Pull Tractor & Bottom Feed*
- *Superior Graphics - 240x216dpi*
- *FREE Starter Kit*

RRP £233.83
STARTER KIT £29.95
TOTAL RRP: £263.78
SAVING: £112.20
SILICA PRICE: **£151.58**

£129
+VAT = £151.58

144 CPS DRAFT 24 PIN

CITIZEN 124D

The award winning Citizen 124D brings high quality 24-pin dot matrix printing within every computer users reach. It is the ideal choice where high quality printing is required at a budget price.

- *24-pin Impact Printer*
- *Print Speed 144cps Draft*
- *2 LQ Fonts (48cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *Superior Graphics - 360x360dpi*
- *FREE Starter Kit*

RRP £292.58
STARTER KIT £29.95
TOTAL RRP: £322.53
SAVING: £112.20
SILICA PRICE: **£210.33**

£179
+VAT = £210.33

192 CPS DRAFT 9 PIN

SWIFT 9 - COLOUR!

The Citizen Swift 9 is perfect for those who require high quality dot matrix black or colour printing at a budget price. The print quality of Swift 9 rivals that of other manufacturer's 24-pin models.

- *9-pin Impact Printer*
- *Print Speed 192cps Draft*
- *3 NLQ Fonts (48cps)*
- *8K Buffer*
- *Epson & IBM Graphics Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP £280.83
STARTER KIT £29.95
COLOUR KIT £44.65
TOTAL RRP: £355.43
SAVING: £133.35
SILICA PRICE: **£222.08**

£189
+VAT = £222.08

192 CPS DRAFT 24 PIN

SWIFT 24 - COLOUR!

The Citizen Swift 24 is one of Europe's best selling printers and has won awards including Printer Of The Year 1990. Its rapid print speed, quality and black or colour options, make it a natural choice.

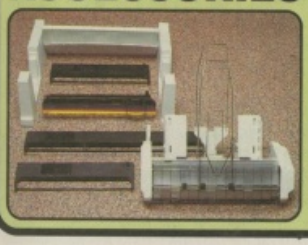
- *24-pin Impact Printer*
- *Print Speed 192cps Draft*
- *4 NLQ Fonts (64cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP £428.88
STARTER KIT £29.95
COLOUR KIT £44.65
TOTAL RRP: £503.48
SAVING: £199.15
SILICA PRICE: **£304.33**

£259
+VAT=£304.33

PRINTER ACCESSORIES



SHEET FEEDERS

PRA 1200	120D	£71.38
PRA 1215	124D/Swift 9/24	£88.70
PRA 1228	124D/Swift 9/24	£42.00

SERIAL INTERFACES

PRA 1189	120D+	£56.45
PRA 1209	Swift 9/124D	£32.25
PRA 1709	Swift 24	£26.38

PRINTER STAND

PRA 1242	124D/Swift 9/24	£24.03

ORIGINAL RIBBONS

RIB 3520	120D/Swift 9 Black	£4.11
RIB 3924	124D/Swift 24 Black	£4.70
RIB 3936	Swift 9/24 Colour	£15.63

COLOUR KITS

PRA 1236	Swift 9/24	£39.65

All prices include VAT and Free delivery.

FREE! STARTER KIT

Every Citizen printer from Silica, comes complete with the Silica Printer Starter Kit, including everything you need to get up and running with your new printer immediately, FREE OF CHARGE!

- *3½" Dual Format Disk with Amiga & ST Printer Drivers*
- *3½" Disk with Drivers for Microsoft Windows 3*
- *2 Metre Parallel Printer Cable*
- *200 Sheets of High Quality Continuous Paper*
- *200 Continuous Address Labels on Tractor Feed*
- *5 Continuous Envelopes on Tractor Feed*

If you already own a printer, and would like a Silica Printer Starter Kit, you may order one (ref: KIT 5000) for the special Silica price of £24.95 - £5 off RRP!

NORMAL RRP **£29.95**

SILICA SYSTEMS OFFERS YOU

- ***FREE OVERNIGHT COURIER DELIVERY:*** On all hardware orders shipped in the UK.
- ***TECHNICAL SUPPORT HELPLINE:*** Team of PC technical experts at your service.
- ***PRICE MATCH:*** We normally match competitors on a "Same product - Same price" basis.
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- ***THE FULL STOCK RANGE:*** All of your PC requirements from one supplier.
- ***FREE CATALOGUES:*** Will be mailed to you with offers and software/peripheral details.
- ***PAYMENT:*** By cash, cheque and all major credit cards.

Before you decide when to buy your new printer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals or software, or some technical help and advice. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is one of the UKs leading independent computer dealers and provides a quality service to users at home, in education and in business throughout the nation. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature on the Citizen printer range and begin to experience the "Silica Systems Service".

SILICA SYSTEMS

MAIL ORDER:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	**Tel: 081-309 1111**	
Order Lines Open:	Mon-Sat 9.00am-6.00pm	No Late Night Opening	Fax No: 081-308 0608
LONDON SHOP:	52 Tottenham Court Road, London, W1P 0BA	**Tel: 071-580 4000**	
Opening Hours:	Mon-Sat 9.30am-6.00pm	No Late Night Opening	Fax No: 071-323 4737
LONDON SHOP:	Selfridges (1st Floor), Oxford Street, London, W1A 1AB	**Tel: 071-629 1234**	
Opening Hours:	Mon-Sat 9.30am-6.00pm	Late Night: Thursday until 8pm	Extension: 3914
SIDCUP SHOP:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	**Tel: 081-302 8811**	
Opening Hours:	Mon-Sat 9.00am-5.30pm	Late Night: Friday until 7pm	Fax No: 081-309 0017

To: Silica Systems, Dept NCE 0891 - 55, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND CITIZEN PRINTER INFORMATION

Mr/Mrs/Ms: ..... Initials: ..... Surname: .....

Address: .....

.....

..... Postcode: .....

Tel (Home): ..... Tel (Work): .....

Company Name (if applicable): .....

Which computer(s), if any, do you own? .....

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.

WHAT'S NEW

The *Express* at-a-glance, no frills, no nonsense product guide gives you the low down on low cost DTP, infra-red mice, a designer T-shirt printer and more...

Take a good tip

PRODUCT: Football results predictor
NAME: Poolsmaster
COMPATIBILITY: PC, PCW, CPC, ST, Amiga, C64/128 and Spectrum

So you want to get rich quick? Need to know where to put your crosses on the pools coupons? Then Intraset Ltd reckons it has the answer with the latest upgrade of its football results prediction program, *Poolsmaster*.

According to Intraset, the program has helped many punters wins thousands of pounds over the last three seasons, and has the testimonials to prove it.

The new version has been updated to cater for the increased use of non league tables such as the Vauxhall Conference and the Vauxhall Open Premier. It also now features a 'fixtures spooler' which automatically repeats its predictions when you feed in the actual results, to save you having to check them out yourself.

Intraset has also released a book written by the same people who provided the formula on which *Poolsmaster* is based. *Guide to Pools and Perms* (£14.95) passes on the company's pools experts knowledge, and in conjunction with *Poolsmaster* forms a formidable winning team.

Price: £24.95
Availability: Now
Target users: Every gambling-loving computer user
Contact: Intraset: 02572 78600
Perceived competition: Sidmouth Software's *Tipster*.

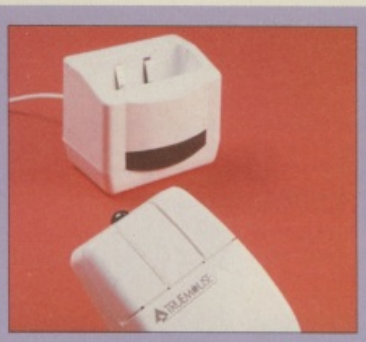
Remote control

PRODUCT: Infra-red mouse
NAME: Wireless Truemouse
COMPATIBILITY: PC

Wire can be a nuisance, and unfortunately computers use lots of them. How often has the wire on your mouse become hooked up with the keyboard lead, stuck under the corner of your CPU or even entangled with your telephone flex? The wireless PC Truemouse from Evesham Micros could be the solution.

Based on an infra-red system, the wireless Truemouse has a range of up to three metres at an angle of up to plus or minus 45 degrees. It comes with an infra-red receiving unit which plugs into the serial port of the PC. This unit also acts as a recharging device for the mouse, which can run for up to 10 hours fully charged.

The wireless mouse is, according to the company, more than just a gimmick and is capable of everything you would expect from a sophisticated traditional mouse; it has a switchable resolution – ie the higher the resolution the smoother the cursor moves on the screen – and a tracking speed of 700mm/sec.



• With the new Wireless Truemouse you can control your cursor from up to three metres away from your PC.

Built and designed in Taiwan, Evesham Micros is one of the first companies in the world to market the device, and is expecting to have versions for the Atari and ST available in September.

Price: £49.95
Availability: Now
Target users: All PC users
Contact: Evesham Micros: (0386) 765500
Perceived competition: Logitech's wireless mouse

Low cost DTP

PRODUCT: DTP package
NAME: Avagio 2
COMPATIBILITY: 286 PCs and above

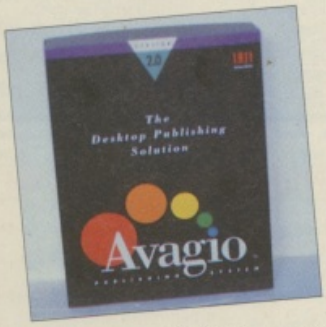
Avagio 2 for the PC has bought some very impressive Desktop Publishing (DTP) features well within financial reach of enthusiasts and home users.

For less than £150, *Avagio 2* offers text rotation, text which flows around curves and other irregular object, hinting on small type to produce sharper images, enhanced drawing facilities to produce polygons, curved shapes and bezier curves and colour printing.

It also includes 12 new fonts which are scalable up to 999 point and can be turned into hard copy on any type of printer. Scaling and sectional printing makes it possible to print large posters in parts on an A4 printer or to save any part of a page – graphical or textual – as a graphic. A print to disk facility allows you to send a document to a typesetter on disk.

Using its own Graphical User Interface (GUI) *Avagio 2* needs MS DOS 3.1 to run on a 286 or above.

Price: £141
Availability: Now
Target users: Businesses, clubs and groups that print newsletters, people producing fanzines
Contact: LTS: 0386 793147
Perceived competition: *Timeworks, PagePlus, Deskpress, Jetsetter.*



• The latest version of Avagio offers 12 fonts scalable up to 999 point size and sectional printing which makes it ideal for posters.

Concept printing

PRODUCT: Computer designed textile printer system
NAME: Concept II Heat Transfer System
COMPATIBILITY: PC

Computers have helped solved the problem of T-shirts with designs that either crack or fade the first time you wash them.

Concept II Research has developed a system using Mitsubishi colour thermal printers to print computer generated full colour designs on virtually any fabric, from cotton and knitted textiles to paper.

The system has been developed primarily for short order runs, where silk screen printing would be hideously expensive, and traditional heat transfer often produces unsatisfactory results. It is ideal for trendy, designer T-shirts not intended for mass production. It will also print on overhead projection acetates.

Concept II chose the Mitsubishi thermal printer because it uses a variety of inkroll which could be easily adapted for use in the transfer process. It can produce designs up to A3 size at a resolution of 300 dots per inch (dpi).

The printing system can be bought on its own for around £3,00, or as a part of a complete design system, including Computer Aided Design (CAD) software, colour scanner, PC, 20-inch monitor and graphics tablet for around £19,000.

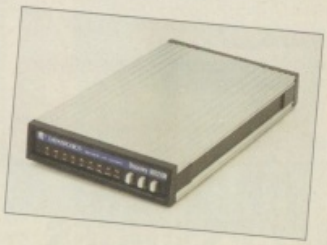
Price: £3,000
Availability: Now
Target users: Specialised, non-mass production textile and design companies
Contact: Concept II Research: 0438 313936
Perceived competition: None

Getting on baud

PRODUCT: Modems
NAME: 2496PF and 9632AM
COMPATIBILITY: PC

As part of a revamp of its entire modem range, Digital Matrix Ltd has launched two new units.

The 2496PF pocket modem is a V21/22/22bis device with built-in fax facilities which operate at 9600 bits per second (group III).



• Datatronics' new 9632AM external modem featuring password security and leased line capabilities is one of two new modems from the company.

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EXPRESS MAIL

Welcome to letters pages that takes it on the chin!

This week, Haydn Fitz-Williams prints your points on that SICK! cover story - was it all sensationalist gutter press journalism or did it just touch a few raw nerves? And should we be reported to the Press Council? Plus your chance to put a question to top industry figures!

Sick or What?

ONE OF HAYDN'S £5 WINNERS

The subject of pornography highlighted in issue 142 of *NCE* is one which we have given thought to since we started our PD library just over a year ago. During this time we have been offered, by other libraries and individuals, software which we considered contravened the Obscene Publications Act. Software like this can do nothing for the image of computing, PD or anything and to distribute it because it brings in the punters shows what the library bosses have as their main concern.

You ask if any regulatory body could be set up. Well I don't know where you would find anybody willing to do it no matter how much it was needed. How about this for an alternative? -You regularly receive catalogues from the libraries, as you go through them you should be able to see what sort of service is provided, whether there is porn there or not. If you find a catalogue that appears iffy then send it back to the library with your comments. If the problems are rectified you could then review the library.

There would be quite a scramble I would imagine to get a Future Publishing stamp of approval which you would be able to withdraw if the library let its standards slip or if you got justified complaints about it from users. This in conjunction with a yearly readers vote would really sort out the fly boys from the genuine enthusiasts. I'm not so sure about libraries that don't want a regulatory body – nothing to hide, nothing to fear!

I can't really comment on the operation of BBS except to say that they should have the same code of practice as the better libraries, constant monitoring of files uploaded and expulsion of users who misuse.

Leigh Caudwell, LAPD, Derbys

I'M SURE you represent just one of the many PD libraries who take a responsible line on this whole issue. Unfortunately, others, particularly some bulletin boards, are not so forthcoming. *Express* has been inundated with mail over the last week from individuals accusing us of biased, sensationalist lies written by 'chimpanzees, simpletons and vipers'. Meanwhile we'll seriously consider your stamp of approval idea.

Press body

I shall be filing a complaint with the Press Council, and would suggest that all BB sysops in the UK who feel aggrieved by your feature should do likewise.

Far from the BBS world needing a regulatory body, as the accompanying leader article says, the press has, once more, shown itself for what it is. It is the press, and putative magazines like *NCE*, that should be regulated by law, not BBS's.

Paul Dickie via Aspects

I CAN'T help feeling you're way off beam here Paul. *Express* has no wish to tarnish all bulletin boards with the same brush. We went out of our way to disassociate the vast majority of boards and libraries from the few who disseminate porn, piracy, violence and viruses. Turn to that feature again and take a look at 'a few warped people', 'a sick minority' and 'the majority of libraries and bulletin boards are beyond reproach'. Or are you claiming there is no porn, piracy, violence and viruses on offer anywhere?

Attention!

Hi guyz, just a quickie to comment on your article re: PD filth. For what it's worth I agree wholeheartedly with your comments. I think it's definitely something to bring to the attention of computer users; hopefully then it will be marginalised as much as possible (I doubt if it will ever go away).

Steve Orrell via Aspects

THANKS STEVE – far from being sensationalist we attempted to convey the facts as we know them. We have no wish to slag off PD as we believe it's a valuable asset in computing and wish to encourage it. At the same time, it has its flip side. And this needs to be exposed.

But not like that

I was just wondering whether your 'Sun' style crusade against 'Evil influences threaten Public Domain – SICK, shock, horror probe was really just to sell copies of *NCE*.

Without these sort of articles I would only have a vague idea about these sort of things – and I work as an analyst in the PC industry – so how much would the 'kids' you're trying to 'protect' know without the articles you produce?

I wonder how many spent hours trying to find porn, piracy and violence on BBs as a result of your article. If I was trying to promote these I couldn't think of a better way of doing it.

Edward Kenworthy, Swindon Wilts

I KNOW WHAT you're trying to get at, but unfortunately your 'head-in-the-sand' approach isn't a very useful one. I reckon ignoring issues encourages them far more than publicising them.

It's only by reminding people of their responsibilities that they ever get their acts together.

CDTV – Are brown goods the future? (maybe)

1

I can't help wondering whether the days of the 'computer' are over. It seems that with the emergence of machines like CDTV/CD-I and the range of arcade quality consoles, the need to compute is disappearing.

'Consumer' seems to be the operative word now with machines being specified to allow any ordinary Joe just turn them on and tune in.

Machines like the Mac and Windows on the PC have removed the need for actual programming style inputs and with more and more link ups with video and stereo sound it would seem the all-in-one box in the lounge is just around the corner.

CDTV is, I reckon, a new kind of invention in this respect and points the way to the future. As your feature proved, anyone can just switch it on and get involved.

When the price comes down to £199 or so and it sells like hot cakes, what will be the point of buying a dedicated computer?

Mark Jefferies, Burslem, Stoke

AH HA! The 'Will everything be brown in the future' debate starts here. You could well be right there, Mark. The whole point behind CTDV and CD-I is to bring the benefits of a computer to the mass consumer without them realising they're using one.

The perceived notion is that the domestic video is easily the most complex device, over and above the washing machine, that anyone other than bearded, bespectacled boffins ever want to operate, so let's make it real simple.

With a price of around £199 and masses of software 'just like television' rolled into one, 'brown' machines will banish techno-fear forever. Errr...probably.

2

CDTV – it's Total Vision, not TeleVision!

Brian Chalmers, Burslem, Stoke

TRY TELLING that to our technical editor Keith Pomfret!

ON THE COUCH

This week resident *Express* psycho...err...psychiatrist Dr Clare Anthony takes time out to lay ANDREW McMINN of COLCHESTER across her leather couch for a spot of frenzied analysis.

All lucky Andrew did was to write in about the machine he owns, the software he loves and the computer he would most like to own. And you could be next! Just send in your details to: Leather Couch Clare, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

OK Andrew, let's get down to business, just lean back and take a deep breath....

- MACHINE OWNED: Commodore 128D
- FAVOURITE SOFTWARE: *Leather Goddesses of Phobos*
- DESIRED MACHINE: Any 586-based computer

Oh dearie, dearie me. Those *Phobos* women again. You wouldn't believe the number of sessions I've had involving these fatal female fixations. Leather goddesses are, of course, inherently problematic since they exploit a pronounced schism in the male psyche. Namely, the wish to exercise sexual power while simultaneously being chastised for using it. Of course it's a sublimated urge of the oedipal variety.

And, Andrew, since I imagine your mother seldom appears before you dressed in shiny black leather and high heels wielding a whip, your frustrated unconscious seeks other avenues of fulfillment. Enter your Commodore 128. But it seems this particular vehicle is an increasingly insufficient means of escape. Hence the desire for a 586-based computer. And this leads us to another problem. As we Freudians know only too well, 586-based computers have one fundamental flaw. They don't exist.

PROGNOSIS: There is only one solution to such a pronounced fantasy. Sell your Commodore immediately and with the proceeds visit Tangiers and buy a sex change. On returning to the UK, join the police. You will shortly find yourself in the company of other Goddesses for whom a uniform is no small price to pay for a lack of leather.

PC con

How come PC stands for Personal Computer when my dictionary defines personal as close , intimate, etc, and yet PCs are the nastiest, coldest, most heartless and definitely most impersonal machines in the universe.

Not like my lovely BBC which is loving and caring and tends to my every need and whim (almost).

And yet by definition it must be an IPC- an ImPersonal Computer because it isn't a PC. Come on IBM, surely a breach of the trade descriptions act!!!!

John Justice via Aspects

I WAS WITH you all the way there until you mentioned the BBC. I found it just as impersonal as the PC – except when I played *Elite* for 19 hours in one stretch. Oh and by the way, IBM doesn't own copyright on 'PC' – every personal computer is a PC.

ST desktops 1

Great to see the feature on alternative ST desktops. Interestingly enough I once met one of the Tramiels at a show in Germany and he went to great lengths to convince me that Apple nicked some of its front-end from Atari! I can't remember the details now, but I thought Apple was on the block a whole year ahead of the ST. Still, this was when he was talking me through X-windows for the TT which really showed up well what a true GUI should be like.

Alex Carter, Bristol

YEP I'VE seen the UNIX front-end for the TT you're referring to and, apart from the NeXT, it looks to be in a league on its own. As for Apple nicking interface ideas off of Atari – I thought it had 'paid homage' – as they say in film making circles – to Xerox's interface. Still you never know.

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ST desktops 2

Thank God there are alternatives to GEM on the ST. It's one of the most annoying pieces of software to use and I find it unbelievable that Atari hasn't really upgraded it in nearly six years. I mean, what's stopping it from updating it? Do Atari execs all use Macs or something?

Andrew Clark, Durham

I MUST ADMIT I gave up with GEM too. I remember when I first used it I was impressed, but it's so far behind the ease of my Mac it's untrue. Oh and no, Atari execs don't use Macs – they use STs running Mac emulators! At least this is what I'm led to believe by my spies who report that the new Spectre GCR was the most eagerly awaited arrival at Atari UK HQ. Still, it's probably a similar story at Commodore UK too! ■

Ask a question and win a fiver!

Yep, this is your chance to put your queries to some of the world's leading computer companies. Over the summer, *Express* will be conducting a series of interviews with some of the biggest names in the biz. And we want your contributions!
Here's the list of the top manufacturers and developers we'll be talking to:

● Acorn ● Amstrad ● Apple ● Atari ● Commodore ● IBM
● Intel ● Microsoft ● Motorola ● NEC ● NeXT ● Nintendo
● Panasonic ● Philips ● Sega ● Sharp ● Sony ● Tandy

The theme of the series is 'Towards 2000', so we'll be asking the UK bosses of these firms to tell us where they've been, where they're at and where they're going. And along the way there's bound to be an opportunity to ask a lot of niggling little questions you've always wanted answered but never found in print.

So now's your chance to find peace of mind and if we like your question you could win some dosh into the bargain! All you have to do is drop a line to 'Industry Interviews', *New Computer Express*, 30 Monmouth St, Bath BA1 2BW and we'll do the rest. But hurry, we want to get this off the ground as soons as poss!

Write Now

Write and tell Haydn Fitz-Williams what you think! Reach him at: *Express Mail, 30 Monmouth Street, Bath BA1 2BW.* Sorry, no personal replies, even with an SAE and remember, only SOME letters win a fiver!

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AMIGA

- **Improve your sound quality with Sound Enhancer**
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- ***Protext* 5 upgraded – can it possibly get any better?**

ENHANCED SOUND

If you use your Amiga for musical applications, then no doubt you'll be interested in a new hardware add-on developed by Omega Projects.

The quality of the Amiga's sound capabilities is certainly pretty damned impressive, but Omega Projects claims that its new Sound Enhancer takes that quality to a new high.

The box works by compensating for the loss of high frequency harmonics in the Amiga sound. This is achieved using some quite sophisticated filtering hardware which boosts the Amiga's frequency response range between 8KHz to 22 KHz.

This may not make a lot of sense to most of us, but the net result is a marked increase in sound quality.

Sound Enhancer was originally developed to improve the quality of Amiga sound samplers, bringing them up into line with professional samplers. Obviously your Master Sound samples still aren't going to be on par with something like the Akai S1100, but you'll notice the difference none the less.

The device connects externally to the two audio jacks at the rear of the Amiga. It can then be connected up to either your Amiga monitor or, even better, the auxiliary input of a hi-fi.

The increase in sound quality isn't just restricted to sampling, however. Because the device intercepts the Amiga's sound output, it will improve the sound of just about anything, ranging from music packages to games.

According to Omega Projects, a prototype of the Sound Enhancer was demonstrated at the recent 16-Bit Show. Visitors were so impressed by the unit that Omega has already taken a large number of orders for the unit.

You can obtain yours by phoning Omega with credit card in hand. The unit costs a mere £34.95. I'll be taking a look at Sound Enhancer in a couple of weeks time when my review sample turns up, so stay tuned for that one.

☎ 0925 763946

SOUND CITY!

Amiga sampling freaks are in for a veritable treat, with no fewer than six new samplers in the pipeline. Even better still, at least four of these are either 12- or 16-bit devices.

You've probably already heard all about SunRize Industries' new AD-range of 12- and 16-bit sampling cards for the Amiga 2000, but the units are still not shipping. SunRize is blaming this on teething problems, but the 12-bit card at least should be shipping in a matter of days. I've been promised one of these revolutionary devices for review, so I'll be bringing you the low down on this marvellous piece of kit as soon as I can.

SunRize isn't the only company that has its sights set on the 12- and 16-bit sampling. Back in good old Blighty, New Dimensions (developer of the absolutely brilliant *TechnoSound* sampler) has disclosed its plans to produce both 12- and 16-bit samplers for the Amiga.

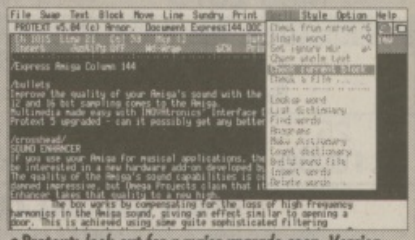
The company is obviously rather less forthcoming about specific details, but New Dimensions is hoping to have the 12-bit sampler out on the market in a

PROTEXT: THE BEST JUST GOT BETTER

I'm in heaven! Arnor has released a major upgrade to its highly regarded word processing system, *Protext*. Version 5.5 offers many enhancements over the existing release including a much needed thesaurus.

As a fan of *Protext* (I use it to produce all my copy), the inclusion of a thesaurus makes the *Protext* system virtually complete. Based on the Collins pocket thesaurus, it offers a massive 827,000 alternatives picked from 43,000 head words, cross referenced by type and usage.

While the thesaurus is the major addition, the improvements don't stop there. Other enhancements include a long awaited option to run *Protext* in its own custom screen, automatic hyphenation, mail merge linked directly with Arnor's *ProData*, widow and orphan control, text analysis and a lot more besides.



• *Protext: look out for a major upgrade soon. Version 5.5 offers a powerful thesaurus and a lot more besides.*

***Protext* 5.5 costs £152.75. Existing users can upgrade for £30 from version 5.0 and £60 from versions 4.3 and 4.2. Look out for a review of *Protext* 5.5 within the next couple of weeks.**

☎ Arnor is on 0733 68909.

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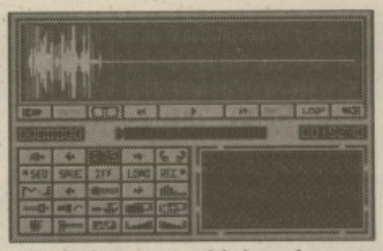
matter of months. But what makes this sampler so revolutionary is the price – believe it or not, New Dimensions is hoping to sell the thing for under £100!

Another UK company intending to dip its toes in the professional sampling market is St Austel-based MicroDeal which recently revealed that it too has big plans for its existing range of samplers. According to John Symes at MicroDeal, the company plans to upgrade both its *Master Sound* and *AMAS* samplers in time for September's Computer Entertainment Show.



• *MicroDeal's Master Sound looks set for a major upgrade. Watch these pages for more!*

MicroDeal didn't want to give anything away, so specification details are virtually non-existent. Having said that, I'd be very surprised if we didn't at least see a 12-bit sampler (AMAS is the most likely candidate).

CUSTOMISED INTERFACES

Following on from the recent release of its powerful multimedia authoring system *CanDo 1.5*, Checkmate Digital Ltd has announced the release of a companion product which makes the task of constructing good looking front ends that bit simpler, *The Interface Design Kit*.

What's more, the product isn't restricted to *CanDo* – owners of just about any multimedia system can take advantage of what the Interface Design Kit has to offer.

The four-disk kit consists of no fewer than 500 IFF-format clips which can be used in just about any package compatible with the IFFILBM standard. The pack is very similar to clip art collections for DTP systems, but INOVAtronics has made it more applicable to multimedia.

Clips on offer include commonly used multimedia icons and functions ranging from mathematical symbols, disks, videodisks, music, printers and documentation.

Backing this up is a comprehensive 30-page manual which gives you a run down of the disk's contents.

☎ 071-923 0658.

NEXT WEEK

I've been having a lot of fun with new sound samplers just recently. Next week I'll be taking a look at New Dimensions' *TechnoSound Turbosampler*. Not only is it packed with features, bit it's also dirt cheap! Stay tuned for that one.

Jason Holborn

ST

- **Atari to produce CD-I add-on for the entire ST range?**
- **ST gamers denied Lucasfilm's latest Indy adventure**
- **Give your speakers a workout with a rocking demo**

WHO KNOWS THE SECRET OF THE CD-I BOX?

So, will they or won't they? Atari has been uhmming and ahhing about Compact Disc Interactive technology (CD-I) for as long as it has been knocking out those endearing pieces of beige plastic that we fondly refer to as STEs.

However, recently the CD-I story has taken a drastic change of course with the announcement of the Falcon super computer. According to my sources what this means is that Atari *has* developed its own CD-I technology, therefore it won't be too hard for the company to produce an add-on box for the rest of the ST range.

The development of Falcon means that there is controlling software and CD-I hardware sitting in an Atari lab in California. Atari knows that CD based storage will be the next big technological development to be made available to the masses, if only because Sega, Commodore and Apple all have their own machines ready to sell.

I'm reliably informed from an excellent source within Atari that CD-I for the entire ST range will happen, though the company is unwilling to say when or at what price. I'm also informed by a source within one of the largest software houses in Europe that it has been approached by Atari to produce games software for this machine. We wait with baited DMA sockets.

LIGHT SPEED PASCAL

HiSoft is never quiet for long. It has produced a long line of excellent programming and utility packages ever since the days of the STF (with external drive). The Bedford-based company has just announced a brand new high speed Pascal language called (shock horror), HighSpeed Pascal.

This compiling language runs on the entire ST range and has been designed to be compatible with Turbo Pascal 5.0 on the PC. The £99.95 package is a single-pass compiler which can prepare run-time code at a reputed 20,000 lines per minute.

HighSpeed Pascal can compile to

Continued on next page ➤

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AG.02 Various; Gravewars, Jackland, Pacman, Othello, Empire, Hanoi...
AG.03 Star Trek (Agatron); Strategy game - Tobias Richter. (2D-Mb-2 disks)
AG.04 Monopoly; full version of the classic property trading game!
AG.05 Pacman 87; Multi level version of this addictive arcade classic.
AG.06 Various; Cosmoroids, Amoeba, Crazy Eights, Blackjack, Backgammon, Daleks, Yahtzee, Stone Age etc...
AG.07 Board and Card games; Cluedo, Othello, Klondike and Cribbage.
AG.09 Puzzle Maker; Jigsaw puzzles from IFF files. Plus Puzzle Pro.
AG.10 Space Invaders; Arcade Classic version! Plus: Lander, Amoeba...
AG.11 Tennis; excellent shareware sports simulation (Mb)
AG.14 Flascheiber; Boulderdash style game. Almost Commercial quality!
AG.15 Paranoid game; Arkanoid style, including a screen designer.
AG.16 Castle of Doom; Adventure game with graphics - beginners level.
AG.17 ST Bash; Space Invaders style shoot-em-up, aliens are Atari ST's.
AG.18 Golden Fleece; Infocom standard advanture. Plus: Tron; 2 Player Light cycle game. Train; Railway designer. Star Fleet, Kamikaze Chess etc...
AG.22 Return to Earth; Elite style Space trading game, digitised sound.
AG.24 Drip; Arcade quality game with digitised sounds and smooth sprites! Plus: China Challenge, Frogger etc.
AG.26 Zerg; Ultima style Role Play. Plus: World; Infocom type adventure. Daleks, Callisto, Puzz, Pontoon...
AG.27 Star Trek (USA); Strategy game. Captain the Enterprise. (2D-Mb-2 disks)
AG.28 Quattro; Tetris style. China Challenge; Shanghai style puzzle game Plus: Breaker and Asteroids.
AG.29 Chess; Superb Multi Featured! Titles, Tetriz Two, Battleships etc...
AG.30 Twintris; Superb Shape dropping game! MUCH better than original!!!
AG.31 Simpsons; vertical scrolling shoot-en-up style game! (SEUCK)
AG.32 Legotris; another Tetris style game, amusing digitised sound effects
AG.34 Tile Game; AMOS games creator variation on the old 16 puzzle.
AG.35 Cave Runner; Commercial quality Boulderdash style game! Excellent!
AG.36 Wizzys Quest; Professional quality arcade puzzle game.
AG.37 Rings of Zon (Vol.1) Ultima style fantasy/strategy game...
AG.38 Star Trek - Arcade game; SEUCK produced scrolling Shoot-Em-Up.
AG.39 Wacko in Wonderland; Platform game with large Graphics! Cute!
AG.40 Metagalactic Llamas; Classic Commodore 64 game by Jeff Minter!
AG.41 Wet Beaver; Version of original tennis game with digitised sound (Mb)

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AU.08 Various; Starchart: 600 stars & galaxies. TXED: editor/word processor.
AU.09 Midi Tools: Midi Keyboard; Five octave, mouse operated keyboard... Prochange; change Midi channels etc.
AU.10 Graphic utilities; Fontfixer, IFF Converter, Palette Converter... Boot utilities: Bootext, Bootup. Plus: Memcheck, Disksalv, Dragpack
AU.11 Starchart; Astronomy program giving positions and movements of all major constellations!
AU.13 Visicalc; Superb full featured Spreadsheet with manual on disk.
AU.14 Various: Amcat; cataloguing system, Icontype; change Icon type, Recoverable RAMdisk, Spell Checker, Black Book, DX Synth voice library...
AU.15 Dope Intro maker; Create Demos with this user friendly, package.
AU.17 D Copy; Excellent disk copier similar to X Copy, Good Nibble mode!
AU.18 North C; Complete C Environment for the Amiga! Amazing value!
AU.19 SID: Workbench replacement with easy file handling, improved DMouse window control and many more features
AU.20 K.O. The Virus: Virus detectors and killers! Includes; Virus X 4.1
AU.21 Avoiding CLI; Lots of useful utilities otherwise only obtainable through CLI; FixDisk, QuickCopy...
AU.22 Text Plus; Word Processor (v2.2) Very professional program with many commercial quality features!
AU.23 Word Wright; Word Processor. Plus: Amiga Spell; Spell checker!
AU.24 Spectrum Emulator; Run some Spectrum games on your Amiga!
AU.26 Complete C Manual; packed with info on C programming, 11 chapters plus 70 executable examples! (3 disks)
AU.27 Amibase (v3.76); Professional quality, multi-featured database program... Recommended!

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either memory or disk and operates within a multi-window editor environment. According to the press release the program enables, 'modular development and supports many standard units such as GEM/VDI, TOS, Bios/Xbios, Printer, Utilities and graph,' which is all beyond me, but may mean something to you demon programmers out there.

An in-line 68000 assembler is included in that package along with support for add-on 68881 maths co-processor boards. A comprehensive help facility is also included which runs from a desk accessory.

HiSoft tells me that you can upgrade from previous versions for £7.50 by returning your master disks to the company. Hisoft is at The Old School, Greenfield, Bedford MK45 5DE. ☎ 0525 718181.

INDY HANGS UP HIS HAT

It has come as something of a shock to discover that Lucasfilm is now not planning to release an ST version of its graphic adventure game, *Indiana Jones and The Fate of Atlantis*. It appears that the American company felt that it couldn't produce as competent an ST game as it could on other computer formats.

Apparently this decision has nothing to do with declining ST sales in America, which is surprising as American companies usually use this excuse. We can only hope that the company realises that there is an enormous ST market in Europe crying out for the high quality games which Lucasfilm produce. If it doesn't release *Monkey Island II: LeChuck's Revenge* I shall personally nip over to California and give them a sharp telling off.

SUPER SOUNDTRACKERS

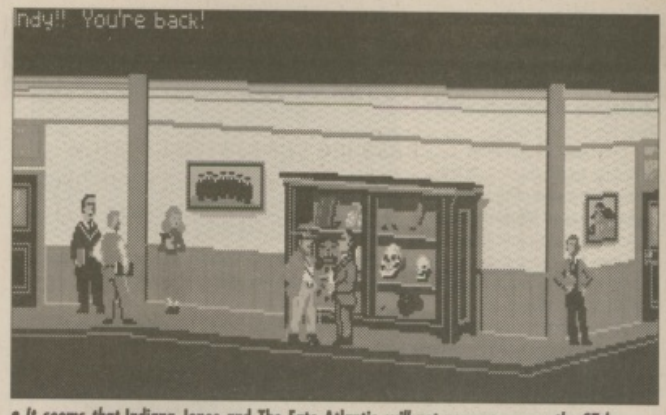
Everyone knows the problems associated with producing decent music on the ST. The built-in music chip is appalling, usually managing a few pathetic burbles and bleeps, meaning that programmers have had to resort to sequencing sampled sounds together to produce decent tunes.

The main problem is that these soundtracker files are usually quite large and are only used at the beginning of games. If, however, you just fancy giving your monitor's speaker a good workout you can pick up loads of these music disks from most public domain libraries.

The best soundtracker demo I've ever heard recently crossed my desk, supplied by the Riverdene PD library. This stonking demo lives under the unassuming name of *A Little Music Demo* and has been written by members of the Inner Circle group.

There are eight tunes on the disk and each one is superb. They are excellent for one reason: rather than attempting to use as many samples as is technically possible and playing them at as fast a speed as possible, the guys have actually created music.

The eight tunes cover a disparate range of styles from eurobeat through to Clayderman-like piano songs. Each is brilliantly pieced together, to the extent that you actually find yourself listening to the whole song – unheard of really.



• It seems that Indiana Jones and The Fate Atlantis will not now appear on the ST because Lucasfilm reckons that it cannot do the game justice on the system. What rubbish!

Riverdene has a rather special deal going at the moment, which is worth checking out. It is selling its PD disks at just £1 a go, the snag being that you have to order at least five disks. Riverdene lives at 30A School Road, Tilehurst, Reading, Berkshire RG3 5AN. ☎ 0734 452416.

CHEAP WAY TO UPGRADE

Ladbrooke Computing has done it again. The chaps there are fervent supporters of the ST cause and have dropped the price of their excellent RAM upgrades for the ST range. The Aries 2Mb upgrade used to cost £140 and now costs £99.99, while the 4Mb version is an extremely reasonable £169.99.

If you fancy getting your hands on a hard drive, Ladbrooke can do you a Datapulse 52Mb unit for £409.99 or a 105Mb unit for £519.99. This batch of summer reductions has been stretched to include the *MIDIstudio* sequencing package which is now selling for £29.99 and to its image scanner which now sells for £39.99.

Ladbrooke Computing can be found at 33 Ormskirk Road, Preston, Lancashire PR1 2QP. ☎ 0772 203166.

Andy Hutchinson

Andy Hutchinson is the news editor on ST Format, the UK's biggest selling and best ST magazine which hits the newsstands every month.

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PC

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THE USURPER?

IBM has began shipping a more stable beta version of OS/2 2.0 to a thousand large corporations, a move welcomed by microcomputer managers.

In a real-world testing blitz that IBM is calling the Early Experience Program, a thousand corporate customers will get copies of the new OS/2 beta software each week.

"We've never shipped a product to customers before that wasn't fully tested," says Lee Reiswig, vice president of programming for IBM. "Openness [in testing] ensures maximum response to the real world. You can't create laboratory LAN environments."

While corporate buyers were cautious about OS/2 2.0 because of the system's past weaknesses, a few of those who have had a chance to use it have already endorsed it wholeheartedly.

"OS/2 gives users what they want," reckons Bill Hollabaugh, a technical consultant for Levi Strauss, in the San Francisco. "Windows got the popular press. I think all that will change with OS/2 2.0."

PC-FILE GROWS UP

ButtonWare's *PC-File 6.0* has grown up and now sports a new, Windows-like user interface with buttons, scroll bars, and dialogue boxes. *PC-File 6.0* now locates *PC-File* databases or supplemental files on any drive or directory, has full mouse support, and better help screens. You can run the program either in character-based or graphics mode.

"It's more professional-looking and takes the confusion out of trying to find a file," says beta tester John Los.

The program's Graphical User Interface-like frontend lets you perform tasks in fewer steps.

Unlike the previous versions of *PC-File*, version 6.0 will not be offered as shareware. The shareware Version 5.0 will endure and be updated in the next few months to include all known bug fixes and a demo of *PC-File 6.0*. A Windows version of *PC-File* is under development but will be "a total rewrite" of *PC-File 6.0*.

PC-File 6.0 costs $149.95. Registered users of previous versions can update for $49.95.

Contact ButtonWare at P.O. Box 96058, Bellevue, WA 98009-4469. ☎ (206) 454-0479.

HP CROSSES PALM

Hewlett-Packard has announced that *IntelliLink*, a connectivity software-integration system, will provide support for the HP 95LX palmtop PC via HP NewWave, The company's desktop

Continued on next page ➤

THE (SORT OF) BOOK OF THE WEEK

Here's a novelty. For the beginner and intermediate user *WordPerfect 5.1 QueCards* are a handy bunch of reference cards lashed together in a spiral binder.

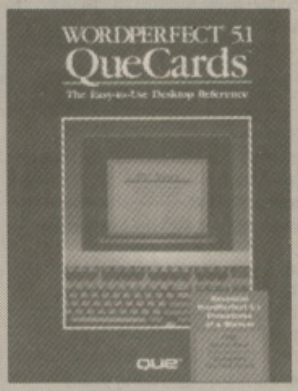
There are 10 sections divided by individual name tabs enabling you to flick to the required section. Once there, a sub-contents page describes exactly what is in that section. When you flip to the section you will see individual blocks of information such as 'To create boldfaced text' or 'To insert date codes' which are highlighted in various colours and with large black arrows for easy scanning.

The cards also make very good use of colour, different fonts and bold type to help speed up your info-intake.

Capping off the ensemble is the 'easel' – a thick piece of cardboard at the front of the binder. Just fold out the cutaway supports and, hey presto, you have an ideal support, set at a readable angle, that allows you to flip through the reference cards with ease.

***WordPerfect 5.1 QueCards* is a brilliant idea, ideal for when you can't be bothered to wade through heavy manuals. My advice? Hurry and form a Que to buy one!**

Available in the UK via bookshops, computer stores or from Computer Manuals. ☎ (021 706 6000).



• Not exactly a book but a very handy ring-bound series of reference cards.

BURNT DIMP SAYS

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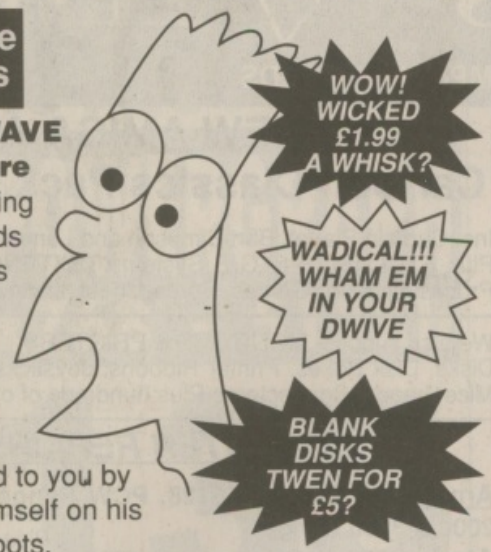

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◄ software. *IntelliLink* lets you transfer information between the palmtop and the NewWave environment on a larger PC. Using NewWave, *IntelliLink* users will be able to open an icon representing the handheld PC and choose that data to transfer from the palmtop to the NewWave desktop.

This selection automatically creates a NewWave object containing that data. To transfer data to the Palmtop you would simply drag and drop objects onto the icon representing the Palmtop itself.

☎ 0344 361263.

GOODIES FROM BORLAND

Borland, which recently acquired the popular dBase system, has publicly demonstrated its own dBase compiler, indicating that Borland technology will be the future direction of dBase.

Object dBase, as Borland refers to its under development Windows compiler, can generate either Windows applications or DOS EXE files. Output code is fast and small.

Also displayed for the first time in public at the demonstration was *Paradox* for Windows. Borland announced that Paradox and Object dBase will share the same forms, reports, query-by-example functions and database schema designs. Both products will be able to read and write native *Paradox* and dBase files. Borland's object-oriented approach to building software makes such sharing of application code possible.

Paul Rigby

DOS 5.0 CORNER: OPTIMISING MEMORY

DOS 5.0 does not optimise the use of high memory areas. By changing the order in which devices are loaded by DOS into high memory, the amount of conventional memory made available also changes.

DOS 5.0 is not capable of determining the ideal order in which to load each device, to best match the device's memory needs to the available memory areas.

You can fine tune the load order of device drivers and TSRs by testing different load orders in CONFIG.SYS, followed by the MEM command, which returns statistics on available memory.

There are products, such as *QEMM*, from Quarterdeck Office Systems, or *386 Max* from Qualitas, which are designed to optimise the load order of TSRs and device drivers.

However, if you are not using a third-party memory manager, the first two lines of your CONFIG.SYS should read:

```
DEVICE=HIMEM.SYS
DOS=HIGH
```

The first line loads the HIMEM device driver, which makes high memory available. According to Microsoft documentation, HIMEM.SYS must be loaded before any memory managers.

C64

- **First impressions of *3-D Construction Kit* for C64**
- **Incentive's virtually unbelievable compilation**
- **Essential cheats to be a hot shot in *Supercars***

REALITY OF VIRTUALITY

After weeks of anxious anticipation, the *3-D Construction Kit* has finally arrived.

Incentive's latest creation package offers unlimited scope for anyone with imagination and a flair for games design, in a format that is rapidly gaining credibility. Let's face it, Virtual Reality is the definitive games medium.

The whole caboodle is initially slightly complicated, which is why I have neglected to review it this week. My first reaction was "Where the heck do I start?" there being an absolute gaggle of icons and options to use. Thankfully the manual is excellent, and you can start creating more or less straight away.

Hopefully I will have grabbed the intricacies of 3-D world building sufficiently enough to provide a comprehensive and accurate lowdown next issue.

FREESCAPE FROLICS

With the release of the *3-D Construction Kit*, it seems rather apt that Incentive has released the *Virtual Worlds* compilation, featuring the best of the company's games.

Each game utilises the unique Freescape system, which has won more awards than you can shake a stick at. And the effects which it achieves become increasingly impressive from one game to the next in terms of speed and playability.

● *Driller* is set on the moon of Evath, which has a slight problem in the form of a huge gas build-up under the planet surface. It is your task to plant drilling rigs in each of the 18 sectors to release the gas and save the planet; easier said than done.

Some sectors bear a cross where the rig must be planted, but mostly it is a case of trial and error. Later sections feature a number of traps and static guns, but thankfully you can swap your vehicle for a nippy jet.

Fairly straightforward gameplay, with a few rather obscure puzzles, and some excellent music. The screen updates are very slow, however,

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especially when compared to other Freescape games.

● *Total Eclipse* sees you in 1930s Egypt, again faced with the task of saving humanity from a potential catastrophe. A rather nutty bloke decided to erect a pyramid, at the top of which was built a shrine for the Sun God. He set a curse; if anything should block the sun's rays during daylight hours it would be destroyed. Nice chap.

And, lawks a lawdy, the moon is set to cause a total eclipse in just two hours at which time the pyramid will explode and shower the Earth with debris.

The aim is to reach the uppermost shrine and destroy it within the allotted time. Care must be taken to top up your water supply (from any nearby troughs), and if your heartbeat gets too fast you must rest a while. Ankhs can be collected to gain access to locked chambers and to remove other barriers.

Numerous traps and puzzles litter the pyramid, making it one heck of a challenge. The Freescape system is used to great effect, evoking a very authentic atmosphere and improving on *Driller* in many respects.

● *Castle Master* – Your twin is imprisoned in the Castle of Eternity, doomed to become a spirit slave of the particularly nasty castle Magister. You have set out to rescue him, because that's what twins are all about, and the game starts outside the drawbridge.

Castle Master boasts several enhancements to the genre, most importantly the 'run' option which speeds up the game considerably. Keys must be collected to unlock doors, but these are as rare as... well... a very rare thing. Treasure can be used to boost your score, while food increases your energy.

The game also features a 'spirit level', which illustrates how many ghosts are in the vicinity – if it climbs too high, your quest is over.

Valuable clues can be found all over the place, on pictures, on keys, and on locked doors. Anything which looks particularly clue-worthy should be examined.

The game has no real puzzles as such, being more a case of unlocking doors and killing ghosts. Freescape has been radically revamped, though, and this is probably the most playable game of the bunch.

● *Castle Master 2 – The Crypt* – This little beauty was previously only released to members of the Home Computer Club. Strange, really, because it is quite an enjoyable sequel.

This time you are imprisoned in the castle crypt, and quite simply you have to escape. In terms of gameplay it is similar to *Castle Master* – except that it contains some incredibly tough puzzles – and it even features the same music! Still, if you enjoyed the original then *The Crypt* is probably right up your boulevard.

Overall, an absolute belter of a compilation. If you enjoy this type of game then my advice is rush out and buy *Virtual Worlds* on cassette (£14.99) or disk (£19.99) without delay. If the genre is new to you, try before you buy – some love 'em, some hate 'em.

• Castle Master and Total Eclipse are just two of the astounding freescape games on Incentive's Virtual Worlds compilation which is not to be missed.

SUPER CHEATS

Supercars is one of those exceedingly rare games converted from the 16-bits which actually retain all the playability of the original. Not only that, the graphics and music are spot on. However, the game can be a mite difficult, so here are a few codes to enter when asked for your name;

HARVEY will take you to level two – there are many more cars on the track, and you also have to do seven laps of each circuit.

ELLA takes you to level three – the real toughie. Not only are the other drivers totally insane, but you have to complete nine laps of each circuit.

LOADED gives you £500,000 with which to start the game, which allows you to buy every available enhancement, not to mention the biggest and best car.

FONDLE, for some entirely gratuitous reason, allows you to... erm... touch the girlie in the garage. For a nominal fee, every time you touch her in a delicate area she squirms.

And finally for Action Replay owners, try these two POKEs which multiply your winnings by 10:

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SPECTRUM

- **Is *Stack Up* more than just a colourful *Tetris*?**
- **Highlights compilation of top diskzine now out**
- **How to keep on playing even when you keep on dying**

STACK UP

If you have an eye for a bargain cast your vision shelfwards for *Stack Up* from Zeppelin. This is another game in the increasingly long line of high quality, non-licensed budget Speccy software.

Stack Up (priced at £3.99) is based on the classic *Tetris* but offers a sufficiently fresh approach to the old block falling down the screen concept to make it worth buying. Instead of rotating shapes as they drift down screen, in this one you change the order of the colours in a three square, horizontal block.

The object is to make lines of three blocks of the same colour which then vanish giving you more time. The game ends when the screen fills completely.

It's not radically different to *Tetris* but plays extremely nicely with a well judged pace and difficulty. If puzzle games are your thang you'll be wanting *Stack Up* without further delay.

OUTLET HIGHLIGHTS

I've told you time and time again what a thoroughly excellent publication *Outlet*, the on-screen mag for Speccy and SAM users is. If you haven't taken any notice here's your chance for some cheap redemption in the form of *Outlet Extra*, a compilation of some of the magazine's finest moments.

For the price of a standard issue this collection of edited highlights lets you see what you've been missing. In the case of *Outlet Extra 1*, this includes:

- Seven lessons in the difficult art of machine code.
- An assembler and disassembler.
- *Singlestep* , a program that runs and displays code step by step.
- A printing utility for 80 column text.
- A tape-to-disk and Opus-to-tape transfer program.
- *Outdex*, an index for the 40 odd issues of *Outlet*.

The second *Outlet Extra* disk, tape or cartridge is concerned with desktop publishing and graphics manipulation. It includes 300 clip art pictures and *Clipcomposer*, a utility that allows you to grab, move, scroll and create your own screens as well as a screen shrinker and programs to fashion giant text.

Outlet Extra 1 and 2 cost £2.75 each on cassette and Plus D/Disciple, Opus, Plus 3 and Microdrive owners can get either volume for the same amount plus the appropriate blank disk/cartridge. Write to Chezron Software, 605 Loughborough Road, Birstall, Leicester LE4 4NJ.

SAM SELECTOR

If you're a Coupé owner who enjoyed Nigel Kettlewell's *SAMDOS* File Selector you should be interested in his latest utility, the *MasterDOS* File Selector.

Apparently, this will only run with *MasterDOS* booted and, "takes advantage of many of the extra features that the new DOS has, including subdirectories, RAM disks etc."

Nigel tells me it's got lots of new features like an option to mark files, then copy, erase or recover them all at once. The price is £7.50 on disk only and SAMsters should write to Nigel Kettlewell, 12 Limited road, Moordown, Bournemouth, Dorset BH9 1SS.

MOAN AND PRAISE

NRA Cattell of Walsall has just written in with a moan and recommendation that are worth sharing with you lot.

Firstly the moan, which is about Garner Designs, publisher of *Sinclair and*

THE SECRET OF ETERNAL LIFE AND AMMO AND...

Prolific hackster Alan Jones has been at it again. He's forgone time wasting luxury pastimes like eating and sleeping to bring us another batch of Multiface pokes.

Operation Thunderbolt		
Player 1	42918,48-	Lives and
	42919,60	ammo for
	42920,0	both players
Player 2	41191,128	
	42853,61	
	42855,0	
	42856,0	
	41184,128	
Extreme		
	54830,0	Energy
	53365,0	Weapons
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	34702,0	Lives
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	54693,0	Lives
Helter Skelter		
	36936,0	Infinite lives
	42194,33	
Atom Ant		
	49384,0	Infinite lives
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And here are a couple of cheats to keep the Multifaceless in the audience happy:

Cavemania
Type ROK as your name to obtain infinite everything.

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Sam Computing and former organisers of the Plus 3 User's Group. This is the second complaint I've had about the company in the last few weeks. NRA says, "In the past you have had nothing but praise for Garner Designs and the Plus 3 user group in particular, and rightly so..."

He goes on to give three examples of how this has changed, citing the new higher charges for PD software (a hefty £3.95 per disk), the non-arrival of mags and disks and the costly price of the company's clip art collection (£20 for two Plus 3 disks of ST converted clip art). Basically, NRA reckons it's a, "RIP OFF!"

I'd still like to hear from Garner Designs itself or indeed anyone with any comments, good or bad to make about its service.

On a more positive note, NRA enthuses about *Dr Scroll*, a comms utility for the Speccy.

"It was written for idiots like me who need clear on-screen instructions in order to get pass the loading screen," he says.

Apparently it allows you to, "log on, zip around the files, log off and then peruse through them at your leisure." This happy customer reckons it saves a fortune and phone bills and for, "a mere fiver is a real bargain".

Dr Scroll is available from BG Services but old NRA didn't give an address and I'm afraid I don't know it. If anybody does, please write in for the sake of all modem owners!

Robin Alway

CPC

- **Serious software at some seriously low prices**
- ***Viz*: does the humour outweigh the gameplay?**
- **How to get off to a flying start with *Extreme***

SERIOUS VALUE

There may not be much serious software coming out for the Amstrad at the moment, but there are bargains to be had on programs that have been out for a while. Mail order supplier Turbosoft is offering some good prices on a lot of Arnor products right now. Arnor's excellent assembler *MAXAM*, for example, is £19.99. Also on offer are *Protext* (£19.99), *Promerge* (£18.99) and *Prospell* (£18.99).

The *Protext* family is designed as a modular series, where you add on the bits and pieces as you need them. But *Protext* is extremely effective as a stand-alone program; you'll not find a faster, more efficient text processor anywhere, and at the new price it's a steal.

Turbosoft has many more serious utilities on offer, plus a wide range of educational software and loads of games. Write to Turbosoft, Unit 6 and 7, Acacia Close, Cherrycourt Way Industrial Estate, Stanbridge Road, Leighton Buzzard, Beds LU7 8QE.
☎ 0525 377974.

IS VIZ TOO VULGAR?

Viz the comic is relentlessly, tasteless, vulgar, lavatorial, rude, offensive, disrespectful and unpleasant. You either hate it for all those reasons, or find the combination hilarious. I suppose I'd better come off the fence. I find *Viz* very, very funny. But it's not really a kids' comic. Admittedly, there can't be many kids around who haven't seen *Viz*, but it's marked as not being not suitable for sale to children, and most parents would not approve.

So what about the idea of a computer game based on it? Doomed or what? Like the comic, the game isn't supposed to be for sale to children, which doesn't leave much of a market for publisher Virgin to attack. And what about the gameplay?

Viz the computer game takes three of the comic's most memorable characters and lets you control either one of them in a kind of obstacle race with sub-games. In the races, you have to get your character to the finishing line first to continue.

So who are the stars of the game?

- Biffa Bacon is your average street-corner thug, the kind of lad who headbutts housebricks and drinks 15 pints of Guiness before breakfast. He'd be a great candidate for a brain transplant, but first they'd have to hollow out his skull.
- Buster Gonad has a couple of outstanding characteristics – a pair of unfeasibly large testicles which he uses for a variety of purposes. In his particular sub-game he's using them to crack walnuts on a production line, but he can also use them as a giant spacehopper.
- Johnny Fartpants is master of the 'nuclear colonic cough'. His diet consists solely of baked beans and other foods guaranteed to generate the maximum amount of internal pressure, and his anal

Continued on next page ➤

Your choice of protagonists in all their glory. From left to right: Biffa Bacon, Johnny Fartpants and Buster Gonad.

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◄ emissions can be used for a whole range of activities. In his sub-game he has to pump up a balloon (but not with his mouth) to raise himself as high into the air as possible.

During the racing part of the game, you get a running commentary from Roger Mellie (the man on the telly). Roger Mellie does not mince words. In fact, the words he uses couldn't be minced since they're about as short as they could be already. Roger Mellie emits a constant stream of obscenities in a kind of jovial, everyday fashion. You either find that funny or you don't.

If you tried selling this game without the *Viz* characters you'd have no chance, even as a budget. The playability is poor, the plot non-existent and there's very little variety.

What there is, though, is lots of humour and novelty. These aren't usually enough to make a game worth buying on its own, but in *Viz*'s case I'm willing to stretch a point. Go out and buy it? Probably not. Play it if you get offered a game? Definitely.

EXTREME TIPS

Here's some tips on how to get through the first level of Digital Integration's unusual arcade puzzler, *Extreme*:

- From the start, head to the top left to shoot the button. This opens the door into the fire down below.
- Head down and to the left and wait for the hole in the fire.
- Zoom inside the hole and stay away from the fire as it moves along (tricky this) until you reach the room at the end.
- Shoot the crystal holder then collect the crystal.
- Guide the crystal up and out of the room, then collect the smart bombs.
- Now head back through the fire using the hole again.
- Go back up to where the button is near the start and shoot the craft to release the Turbo power-up.
- Go back for the crystal and pull it left along the floor then right to the energy pad, where you can recharge.
- Pull the crystal right to the barrier, select Turbo and head past the barrier.
- Guide the crystal right along the centre path and down at the far right.
- Head down to collect the yoyo weapon and then go left with the crystal, using the Yoyo to kill the aliens.
- When you see the craft select Shield.
- The crystal will find the energy input pad, whereupon you can move left – still using the shield – and through the now open hatch.

FAME AND FORTUNE

Amstrad Action wants a Staff Writer Yes, it's true! Just in case you haven't already seen the ad in *Express*, Future Publishing's very own Amstrad magazine is looking for a new staffer. If you're an Amstrad nutcase, can work full-time in Bath, know all there is to know about Amstrad games and can write about them too, get in touch!

Rod Lawton

Rod Lawton is editor of Amstrad Action. *For all the latest CPC news and reviews buy Amstrad Action every month.*

MACINTOSH

- **High quality fonts that cost less than a pound each**
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FONT FEVER

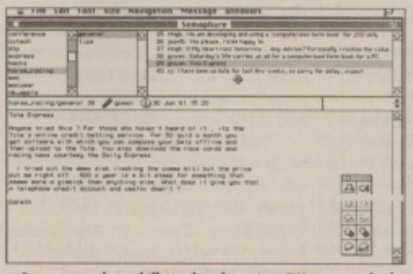
A press release and sample disk landed on my desk this week announcing 250 display fonts for as little as 99p each.

The fonts, which are Type 1 PostScript and hence fully compatible with Adobe *Type Manager*, are produced by Teleset Limited, and are called the FontBank library, a US set of fonts which have been licensed for sale in this country.

The fonts are display typefaces – that is, they are most likely to be used for headlines and other work where the type size is about 14 points or above – and are of remarkably good quality. The full library of 250 fonts costs £247.50 plus VAT and postage and packing, which means that each font costs just 99p. Alternatively, you can order a minimum of 10 fonts for £4.95 each.

The price of these fonts – especially considering the fact that they are really quite high quality – is astonishing; indeed, it could prove difficult for Teleset to persuade people that such low-priced fonts can be of such a high standard.

☎ If you think that this sounds too good to be true, give Teleset a ring on Freephone 0800 555838, and ask for a copy of the company's poster which has samples of all the faces in the range.



• Save your phone bills and make using CIX a great deal more pleasant with Semaphore II.

MORE FONTS

Talking about fonts, Monotype has just finished converting its well-known range of Classic Fonts into Apple's TrueType format.

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The first fonts to be released as TrueType will be the Gill Sans, Bembo, Plantin and Rockwell families.

The company is also offering what it calls a 'Classic Font Starter Pack' in TrueType format, which contains four weights of Calisto, Rockwell Bold Condensed, Photina Ultra Bold and Headline Bold.

The normal price for these fonts would be £280, but for a limited time the starter pack is selling for £49.90.
☎ Call Monotype's font ordering department on 0737 765959.

CIX FILE NAVIGATION

If you use your Macintosh to access the CIX bulletin board, I'd very strongly recommend that you check out *Semaphore II*, a new off-line conference reader written by a guy who goes under the CIX username 'Pascal'. It's a superb piece of programming – especially since it is Pascal's first C programming project on the Macintosh.

Basically, the program allows you to download and save information from, say, a bulletin board so that you can read it later when you are off-line, thus saving a fortune a phone bills. *Semaphore II* is in beta test form at the moment, but it's incredibly stable – although some people have reported bugs, I've yet to persuade it to crash (which is more than I can say for the Mac IIsi I use at the moment...).

The program has all the features you could want in terms of conference reading, and the author promises support for mail in the near future. When the program is in its final version, it will be a shareware product – the fee has yet to be fixed, but it's likely to be about £40, and is well worth it (And you'll need to pay the fee – the trial version will be 'crippled', and you'll have to pay to get a fully working version).

If you're a CIX subscriber, just join the conference 'sema4.beta', where you'll find the latest beta version available for download, along with topics for bug reports and general comments. If you have a modem and you want to join CIX, call 081-390 1244 with your modem set to 1200 or 2400 baud, 8 data bits, no parity, one stop bit and have your credit card ready – you can gain immediate access just by quoting the number on your plastic.

Oh, and just in case I haven't been enthusiastic enough about *Semaphore* – it's totally brilliant, and is one of the most useful pieces of Macintosh software I own. Get yourself a copy.

COLLECTION CATALOGUE

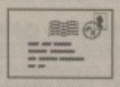
The summer Mac Collection catalogue arrived this week (OK, summer's nearly over, but there you go). *The Mac Collection* is run by the Macintosh User Group – members qualify for a discount on some items in the Collection.

Unlike many vendors of Macintosh software, the Mac Collection offers you a choice of US or UK versions – so if you're convinced that you don't need any manufacturer support and you don't mind words like 'color' appearing in your menus, you can save yourself a fair bit. For instance, the UK version of Adobe *Type Manger* is being sold for £83.43 inc VAT, while the US version is just £68.15. Likewise, you can save a massive £391.65 if you buy the US version of Adobe *Photoshop*, which costs just £451.20.

One neat little gadget in the Collection is *JukeBox Five*, which is a disk feeder that automatically loads and ejects up to 15 floppy disks into your internal floppy disk drive. This allows you to perform unattended backups of your hard disk and so on. Although it only works with flat fronted Macs (sorry, Classic, LC and IIsi owners) it certainly sounds like an interesting idea. It costs £164.50 including VAT.
☎ For a copy of the catalogue, call 0865 311166.

Ian Wrigley

POSTCARD FROM AMERICA



Some of you might think that I don't care for shareware after last week's column. I love shareware, and unlike most users, pay for it.

I wrote about the problems experienced by users of the *MaxAppleZoom* utility. The software stretches the screen out to the very edge of the monitor. All the copies of the program, legal, or otherwise, stopped working last June.

The author finally released a long letter on the networks complaining about System 7, and his heavy work schedule. He covered all possible excuses by claiming his Mac's motherboard died, and he presented his apologies to all the users that were "inconvenienced by the expiration date feature." Some feature! He hopes to get the corrected version out later in the summer.

All software eventually breaks and needs updating— a fact of life. Almost all Macintosh utility programs needed major work after the release of System 7. I have yet to receive an update notice for any of the packages I own. Commercial programs can bite the dust and not make it past the hurdles of system software revisions.

But all shareware is made to look bad when people don't use their bio-processors. *MaxAppleZoom* is a hack. Period. I was speechless when I heard that some database programmers need it for their layouts to work. It's insane for anyone to put their faith in a major hack, risking their client's business on such shaky foundations.

Another precarious spot is System 7 Finder's support of old Macintosh File System 400K (MFS) floppies. You can initialise a disk, but not rename it. I was unable to copy files from one 400K disk to another without a parade of error messages. The instant I returned to System 6.07 all the problems cleared up.

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All STE Ram Kits come with instructions and DO NOT require soldering in most machines.

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The Philips 8833 MkII is the perfect colour monitor for ST and Amiga owners. With its stereo sound and super quality picture it really shows off the full capabilities of the STE and the Amiga. The Philips 8833 MkII also comes with 12 months on site warranty FREE!

8833 with STFM cable	£249.99
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The new VISTO colour monitor. The VISTO C14M, made under official UK licence from Philips themselves, is identical in every respect to the Philips 8833 MkII including all inputs and outputs. But, VISTO have enhanced the looks of the monitor by replacing the case with a new upgraded better looking version. The VISTO C14M has a no quibble 12 month replacement warranty and comes free with cables for all Amigas and all Atari STs.

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Star LC24-200 Colour *(24-pin, 200 cps draft, 67 cps LQ)*	£295.00
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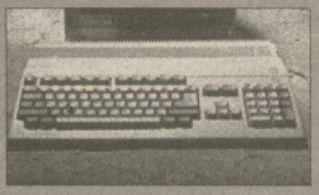
When the Amiga was first announced in 1985 its graphics system was state-of-the-art. Today, however, the competition has caught up and, well, the Amiga is beginning to show its age.

Now make way for the Spectrum 24 system for the Amiga. The unit, which ships at the end of August, is a 24-bit frame grabber with its own RAM that interfaces directly to the Amiga.

BNC I/O ports pipe the video signals between the computer and the Spectrum 24 unit, while special software provides control over real-time frame grabs, variable format saves, frame-buffered 24-bit displays, etc.

Despite the high specifications of the unit – which is said to be superior to Newtek's Video Toaster – it will only cost $699. According to Digital Micronics, the manufacturer of the unit, initial shipments will be NTSC, although plans are in hand to build PAL units to order.

Contact: Digital Micronics, 5674-P



• The Amiga 's graphics system is no longer state-of-the-art, but the new Spectrum 24 system for the Amiga should keep it in line with its competitors.

El Camino Real, Carlsbad, CA 92008, United States. Tel: 0101-619-431-8301.

ST DEVELOPERS GAIN SUPPORT

Not before time, Atari US has announced an ST software and hardware developer support scheme. Running under the title of 'The Aegis strategic partner program,' the scheme aims to encourage and support developers of third-party products for the ST and TT series of computers.

According to Atari, the program creates a unique relationship between Atari, its key re-sellers and developers. This relationship "nurtures the development of both vertical-market and cross- discipline solutions, resulting in a strong and effective national sales organisation."

A key feature of the Aegis program is the Aegis Symposium, a clearing house for the ideas and information that create the environment necessary to develop applications for the ST and TT, according to Atari. The first Aegis Symposium will be on 5 and 6 August at the Wyndham Garden Hotel in Sunnyvale, California and at the Cogswell Polytechnic in Cupertino, California.

As this issue of *Express* goes to press, more than 50 computer and music sales, third-party software, and Atari representative personnel have said they will attend the event. Key software developers attending the symposium include: C-Lab Software, Dr. T's Music Software, Hybrid Arts, Roland Corporation USA, Steinberg/Jones, Codehead Software, Goldleaf Publishing, Gribnif Software, ISD Marketing, Soft-logik Publishing and Step Ahead Software, claims

Need more information? Contact Atari US on 0101-408-745-2027.

LYNX MAGAZINE OUT IN US

Just when you thought it was safe to buy a Sega Game gear unit, along comes Computer Publications with a new magazine for the Atari Lynx. Called *Gamemaster*, the magazine is exclusively Lynx-only and, according to the company, it will "be bringing you news on and information all of the newest games and hottest hits for the Atari Lynx."

Unlike CP's other point of sale magazines, *Gamemaster* will be the company's first mail-only publications. $10 buys you ten copies of the magazine delivered to your door in the US, so a little extra should persuade the postman to deliver it to an address in the UK

According to CP, each issue of the new monthly magazine will include a minimum of two full reviews of new games for the Lynx, as well as a full page of hints and tips, plus a current listing of which game cards are available now for the Lynx, or coming soon.

Computer Publications Unlimited, PO Box 2224, Arvada, CO 80001-2224, USA. Tel: 0101-303-423-6805

NINTENDO'S GAME FOR GIRLS

In a world of male-dominated video games, Nintendo has released 'The little mermaid,' a computer game for its video games systems which it claims is the first package designed specifically for girls.

The heroine of the game is based on the character from the Disney film of the same name. According to Nintendo US, however, this little mermaid is no shrinking violet, but a woman of the 1990s. "She's spunky, she's resourceful, she has to rescue her friends," said a spokeswoman for the company.

Nintendo is shipping thousands of the $49.95 game to outlets in Los Angeles and New York, with full US distribution planned by the end of August.

According to Nintendo, 'The little mermaid' is a strategic hunt-and-seek adventure designed for girls between the ages of 6 and 11. The non-violent game was developed, said company officials, after seeing statistics on Nintendo games machine which show the number of girl users of the company's games systems rising from 19 per cent in 1988 to 37 per cent in 1990.

Considering Nintendo claims to have sold more than three million of its games systems in the US, that's a lot of potential sales – maybe that's why the Japanese giant is aiming to sell 500,000 copies of the package in the first year.

ST ACCELERATOR PACKAGE OUT NOW

Branch Always has announced that version 3.0 of its *Quick ST* software accelerator for the Atari ST is now shipping to all users who ordered it or upgraded to it directly through the US company

Quick ST 3.0 includes support for all ST, STE, Mega ST and TT computers. In addition, the company claims that this new version includes support for all of the new TT graphics modes.

So what is *Quick ST*? According to Branch Always, its a software accelerator for the ST – the package works by replacing many of the TOS functions with its own recoded and faster routines. With this version of the package, Branch Always is claiming that typical text and graphics functions of TOS are between three and four times faster when using *Quick ST 3.0*. This, the company says, means faster screen redraws and faster programs, whether programs are running on a 520 ST running at 8MHz or a Mega STE running at 16MHz.

On the Atari TT, the combined power of the machine's 68030 microprocessor and Quick *ST 3.0* results in text and graphics functions running 10 to 50 times faster than on a regular ST.

Branch Always is not the only company with an ST/TT accelerator package on the market. The other packages are *Turbo ST* and *New DVI*. But Branch Always claims that only *Quick ST 3.0* speeds up all the Atari TT screen resolutions. It runs on all version of TOS and requires around 50K of RAM.

• Quick ST 3.0 works by replacing many TOS functions with its own recoded and faster routines. It supports ST, STE, Mega ST and TT machines.

To use the package, a single .PRG file is located in the Auto folder of the boot disk. The same version of the package drives monochrome and colour screens. Surprisingly, it is still not overpriced – the software comes with all documentation for $34.95.

If budgets are tight, *Quick ST 2.2* is still available at a reduced price of $24.95 — the package isn't as fast as version 3.0, but it does squeeze into just 20K of RAM. Contact Branch Always Software 14150 N.E. 20th St. #302, Bellevue, WA 98007, USA.

ST CONNECTION MAGAZINE DUE IN SEPTEMBER

Computer Publications has announced that its *ST Connection* magazine, first reported in this column earlier this year, is now close to launch. The magazine sounds almost too good to be true – a free magazine with 16 pages of editorial distributed via Atari dealers throughout the US and Canada.

According to Computer Publications, the magazine's cover price will be paid for by advertising. By the end of the year, editorial in the monthly magazine should be boosted to 24 pages. CP is also offering the magazine by mail order. Costs have yet to be decided, but will be offered on an 'at cost' basis. Contact Computer Publications Unlim-ited, PO Box 2224, Arvada, Colorado 80001-2224, USA. Tel: 0101-303-423-6805. ■

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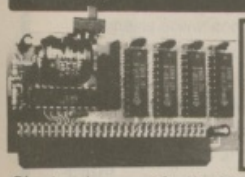

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N.B. Due to the large variance in design of the Atari ST, there is a small minority of boards in existence which may require a little soldering.

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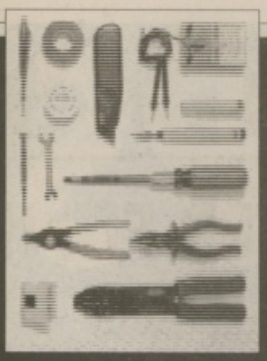


CIRCUIT CITY

Nothing happens when you switch your machine on and you're wondering what you can do. Keith Pomfret shows you the first steps to fault finding

The only thing more annoying than taking your machine to a repairer to find that it's the fuse in the plug that's blown is when you find out that the part that needs replacement costs more than the whole machine is worth.

A breakdown where a disk drive fails or display corrupts can usually be diagnosed without much difficulty.

When the whole system is dead, though, you have to start at the mains plug and work inwards from there.

This project isn't for the faint hearted and shouldn't be undertaken by anyone who hasn't got a sound knowledge of electrics and electronics. As it involves testing mains components with the power on, you should leave it well alone unless you are competent.

We value our million and odd readers per year,so if you've the slightest doubt, leave it to a professional.

These notes are by design general and not intended as a step-by-step walk through of a specific machine. Before you work on any machine you should obtain a workshop manual and circuit diagrams and appraise yourself of the positions of any components

DEAD ON ARRIVAL

If there's no sign of life when you fire up your machine you'll have to look closely for clues.

If you use a machine with a removable mains cord such as the ST or Mac, the first thing to do is swap the power cord for one that is known to work. If the machine works with an alternative power cord, the problem's between the mains and the machine. Check the fuse and if that's OK, check the connections within the plug. If it isn't those, discard the cord and replace it.

The mains power cord can be replaced for a couple of pounds so it's a false economy to try and repair a damaged one.

After the mains cord comes the power supply and transformer. All transformers have two things in common. They get warm and they emit a low humming noise. If one or both of these isn't present, there's probably a supply problem.

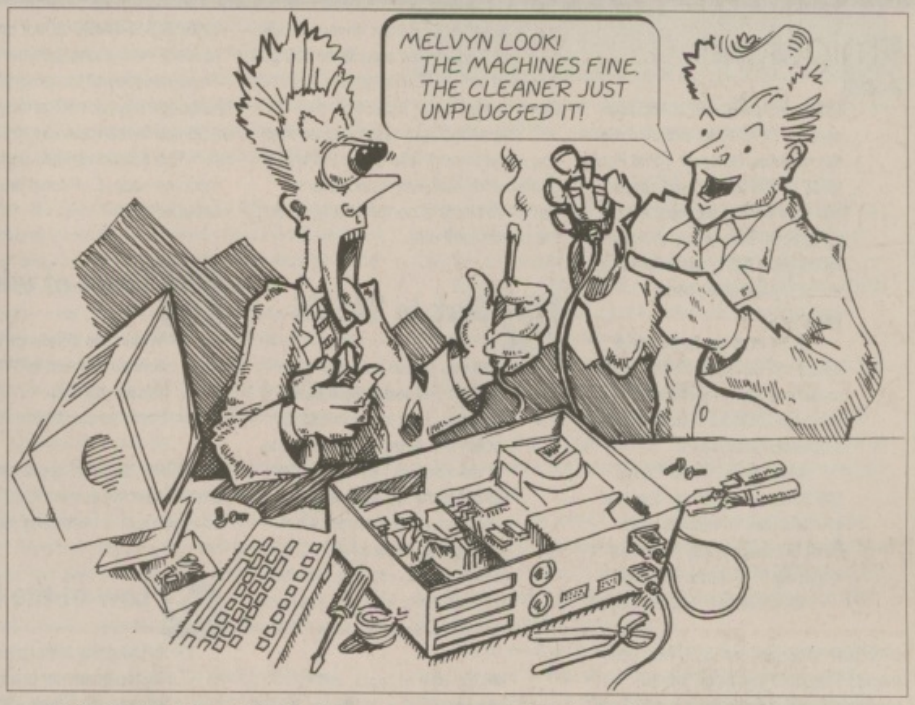
If your machine has a power indicator (normally in the form of a light or led), and this isn't on, this again points toward a supply problem.

Other than the fuse in the plug, there may be a fuse in line somewhere internally in the machine. The machine should be unplugged and disconnected from the power supply before this is checked.

SOURCE FOR SYSTEMS

A good source of reference that can explain the fundamentals and the more complex parts of commonly used systems and components is a necessity to the DIY electronics hobbyist and repairer. This project is based on information taken from the Electronics Repair Manual, published by WEKA of The Forum 74, Camden Street, London. ISBN 1-85303-010-4.

This weighty tome is a loose leaf binder with regular updates that covers everything from a hairdrier to a computer.



It is important to follow a logical fault diagnosis system to be sure that you don't do more work than you need to. Assuming that you have a fault in the mains power supply, you must test each part of the circuit

The voltage on the secondaries should be checked next. These can generally be found in the middle of the printed circuit board (PCB)

If the secondaries are measuring correctly you can proceed with the next step in the fault finding diagnosis.

Something to remember is that although unlikely, it is possible for the primaries to fail so don't forget to check this if the diagnosis still points to the transformer as the root of the problem.

Continuity in the transformer windings should be tested before it is given up as a complete failure and replaced. If internal fuses keep failing when replaced, you should consider checking the stage of the power supply after the transformer.

The transformer takes mains AC voltage and converts it to a lower (or higher voltage). In a computer this might be by a ratio of 20-to-one to take the 240 volt mains to 12 volts. The current coming from the transformer is AC and this is of no use to a computer which requires direct current.

The simple route from AC to DC is a bridge rectifier, which is a simple circuit made from diodes. It is possible for the bridge rectifier to break down, usually caused by some sort of live short circuit.

If it isn't the rectifier, other culprits to look out for are capacitors which aren't doing their job. Reservoir capacitors are the ones to look for here – they can develop a leak and instead of maintaining a balanced charge, they will lose it thus putting the circuit at risk.

If you have tested everything mentioned so far and still haven't found the fault, and there isn't a short circuited winding on the transformer (highly unlikely anyway), then it looks as if the problem's somewhere else in the computer.

Over the next few months, we'll be taking an in depth look at some of the common computer components and discussing what causes them to fail. ■

SPECIALIST SUPPLIERS

To undertake repair and servicing work you'll need to know where to get tools and supplies from. Most large towns have a Tandy store and if you can't find a Tandy, there's always Maplin for mail order. Maplin is on 0702 554155.

For more specialised equipment you'll have to scan around. If you find anywhere selling hobbyist bargains, let us know.

The piece of kit that most electronics hobbyists aspire to is an oscilloscope. You can sometimes pick up a bargain, but if you're buying new, you could do a lot worse than invest in a Hitachi scope. Hitachi is on 0532 430294

GET TOOLED UP

For this simple run through the power supply a very basic toolkit was needed. A set of screwdrivers, a multi-meter to test the circuits, a pit of long nosed plyers, a soldering iron, desoldering pump and a few blobs of multicore solder

TECH TIPS

Keith Pomfret takes you back to BASIC designs, keeps you and your laptop on the move, gets the most out of your DTP and prints your points on the best (and worst) hardware around

CPM crash

I have an Amstrad 6128 and also own the CP/M disks supplied with the machine. However, CP/M Plus (Side 1) fails to run when given the :cpm command, resulting in an Effect similar to that of a multi-faced game being loaded without the actual Multiface being plugged in.

CP/M Plus works fine on a friend's 6128, so surely the fault must lie with my machine? In contrast, CP/M 2.2 is trouble-free and works every time.

A while ago, David Wild of DW Software mentioned that the problem may lie with the extra bank of memory. Any ideas?, or is it that my 6128 thinks it's a 464?

Stuart Arnold, Halton, Leeds

IF YOUR CPM disk will work with your friends 6128 and you're getting a machine crash, the problem is definitely hardware. It could be the second bank of RAM that is causing the problem, but there are several other things that it could be too. Take your 6128 to your dealer or repairer and have it checked out. A full diagnostic check will reveal the problem.

Big DTP problems

I'm having big problems using Timeworks DTP on my STFM 1040. Whenever I print out anything I get these blank lines through everything.

My printer is an Atari SMM804 9-Pin DMP. I bought it two months ago, instead of having a holiday this year, so please don't say "change your printer".

I would be grateful for any help you can give me to cure this problem.

Dennis Thatcher, Walthamstow, London

YOUR PRINTER is somehow adding an extra line feed. This can be cured by modifying the printer driver or manually sending the appropriate codes to the printer before firing up *Timeworks*.

The first is a better and more practical solution. Printer drivers should be available from Timeworks or failing that, one of the ST PD libraries (try Goodman on 0782 335650).

The second solution requires that you understand a little about the way a printer works and won't necessarily work if *Timeworks* performs a reset on the printer attributes.

Back to BASICS

Can you please help with a problem. In designing a Basic Program, I am trying to add a column of figures 10 deep. None of the manuals I have read seem to cover the situation with appropriate information. What I have got so far is a line,

```
350 1 print c$; tab (8) cu
$; tab (29) z$; tab (39) y$;
tab (49)x$; tab (59)w

where c$= client; cu$=
current; z$ = 30 days; etc.
```

The idea is to input 10 times as above and then add each of five cols for a total. If it is possible, then perhaps you could help? Do you know of a BASIC users club for programmers? Thank you for any help you can offer.

Louis O'Brien Cheadle, Cheshire

THERE'S A TASK for our programming readers for the long summer evenings. There's a copy of the programming language of your choice for your machine to the most elegant solution.

The solution should be in BASIC, machine code, C, Pascal or Logo, to the usual address

1512 calamities

A question for Amstrad – ever since I got my A1512 PC I have wanted to know why there is a joystick port on the keyboard, when everyone tells me I have got to have a games 1/0 Card + Analogue Joystick. I hope you can help with this Life-Threatening Problem.

Ian Hurst, Wigan

THE 1512 HAS a dedicated port for the Amstrad joystick. The advice that you're getting is pertinent to PCs in general which need a separate games i/o card in an expansion slot in order to be able to utilise a joystick. Trials in the *Express* lab show that a 1512 with an i/o card is capable of being controlled by an analogue joystick.

• The 1512 can benefit from a joystick but which one? Read on...

Although it may seem like a waste of a dedicated port, the i/o card is probably more compatible with existing games software than Amstrad's hybrid joystick port.

Fount of wisdom

What's the difference between a font and a fount in DTP. (Concise letters rule OK)

Dick Neston, Maida Vale, London

NOTHING. General consensus says that fount is the correct spelling although font is becoming more popular.

Law of the lap

Is there any law against using a laptop computer in a car? I was using a Panasonic 150 in the back of my company car on the way to the airport when I was stopped by the police. They said that it was illegal and that I shouldn't do it, but they were unable to give me any more details.

I wouldn't dream of using it in the front where it could distract the driver and it wasn't at night so the reflection off the windows wasn't a problem.

Please give a definitive answer as BR has put a clamp-down on mobile computers, the airlines and airports hate them and now it seems that I'm not free to do as I wish in my car.

Willard Dunster, Richmond

ASSUMING THAT the police car stopped you for the computer and not for some other offence, they must have been able to see the screen of your laptop as you passed them.

You are quite right in saying that it would be wrong to use the computer in the front of the car, it is certainly illegal to have a VDU or LCD screen lit up in front of the driver.

I suspect that they stopped you under the same regulations that they regularly stop coaches showing videos to passengers.

A quick chat with motorway policeman, Nick Plod helped to make matters more clear. The reason that they stop coaches showing videos is that the bright screen distracts other drivers. This too could be said of your laptop. Coaches are told to draw the curtains and blinds so that the screen cannot be seen from outside before they are allowed to continue. If you have window blinds fitted to the rear windows of your car, you should be able to compute on the move.

We telephoned around to see what the prognosis is for mobile computing. Top of the heap came P&O European ferries who will give you a desk to sit at and electricity to power your machine. They can also supply other useful services for the businessman on the move.

Everyone else seemed to grudgingly admit that while they wouldn't actually stop someone using a laptop unless it caused a nuisance, they wouldn't encourage it either.

On the road

At the moment my finances won't stretch to getting a laptop or notebook computer, but I find I continually have a need to work on the move.

So, how can I get my desktop machine to work away from the

office? I've seen fridges, microwaves and the like working from large vehicles, so surely there could be some way to get my small 286 to work in my car? I don't want to lug around a huge generator or anything as it would take up too much space.

Rip Widmark, Felixtowe

YES, IT IS POSSIBLE to do what you want to do. An invertor is what you need which will take your car power (12v dc) which turns it to ac before transforming it by a factor of 20:1 into the equivalent of power from the mains.

A company such as Maplin should be able to help out and provide the parts to put one together. This will give you around 60w from an average car battery. A little tweaking and a couple of extra batteries under the bonnet could have you computing, cooking and even watching TV on the move (although not when you're driving!)

HELP European routes

At a recent computer show I saw a program that could give a route from anywhere in Europe to anywhere else in Europe and do all sorts of clever things like cost the journey and add in drivers' hours.

I use an Opus PC iV with a VGA display and a 40Mb hard drive and want to know if this sort of journey software will run on it. Also what is the program called? I'd need to dump the routes to an Epson Laser Printer too.

Caroline Jones, Cardiff

• Half an hour up the bye-pass or a 3,000 mile trek across europe: Autoroute and Pan European Navigator take the guess work out of route-planning.

THERE ARE TWO software packages that do the job that you describe – *AutoRoute* and *Pan European Navigator*. Both are good, well specified packages that will work with your computer and printer.

Navigator is a full and specified product with all of the bells and whistles provided in the basic package.

Autoroute allows you to take a core product and add the features that you need as and when you want them.

NextBase publishes *Autoroute* and is on 0784 460077. DPS publishes Navigator and is on 021-585 6633. ■

HELP Getting it off your chest

This isn't going to turn into a 'my machine's better than your machine' debate, but if you've something relevant to say and a reason why you're happy with your current hardware, write to: Getting it off your chest, at the normal Tech Tip address.

We kick off this week with a letter from David Pitcher of Norwich, who has worked his way around the machines and chosen a rather surprising favourite...

"Many tales of woe and maltreatment by hardware companies have appeared on your letters page since time began.

When compared to those that actually praise a computer firm, the amount of praise fades into insignificance.

I recently purchased a new computer, following my own advice, as I have over a decade's worth of experience with new computers. During these ten years I have gained considerable experience on the ST – a very underestimated machine, the C64 – was good in its time, but had a very sloppily designed graphics output

Even then, the Spectrum – an excellent little computer and suffered greatly at the hands of Amstrad's (lack of) development team in the +2 and +3 incarnations which suffers from the same problem (but much more so) than the Commodore.

The Amiga – a very special computer this one, but it suffers from the lack of an immediate upgrade; the price gap between the 500 and 1500 is just too large and does not offer any real hardware changes (like the ST does to the STE) such as graphics and sound or processor speed even though various stand-alone upgrades are available.

The lack of a new standardisation which should fill the gap up to the A3000 is forcing the machine gradually, but not noticeably (so far), out-of-date – a criticism levelled at Commodore technology into the 90s – until then a large hole exists and Atari can plug this hole in the coming years, if Commodore does not act soon.

I have also gleaned wide experience on the Acorn Archimedes and what a beauty it is too.

So, you may be asking, what is the point of this letter (having thrown myself off the point in several places)? I have written to you to complain about the major reasons why I did not choose to continue with the computers:

1) Piracy: there is no denying the fact that software prices have remained high because of the swopping of copied games reducing the sales of the aforementioned product, the steady prices have encouraged more into software piracy coupled with the recession. But the fact that prices have stayed the same in number does show that they have dropped in value if you take inflationinto account.

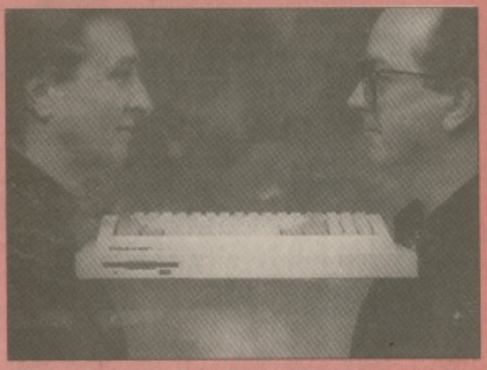
Do not be fooled into thinking that dropping prices will reduce piracy. Piracy is a result of the combined factors of the current social and economic climate, it is a symptom and even though it is possible to stop the symptom from rearing its ugly head, the underlying illness of the human mind will still be there. "Something for nothing" is the mentality of software pirates and this state of mind will only exist in large numbers when the economic climate worsens.

All the pirates are doing is bringing down a society of mutual distrust on themselves in which a software producer will find itself no longer able to trust the end user and move to other markets. Meanwhile the innocent buyers and programmers are suffering. I am totally sick of software pirates and piracy, which is why I have bought myself a computer that is not plagued with this problem and whose userbase is more respectful of the computer industry.

2). The lack of originality and real innovation on the above computers; they have all (bar the Archimedes) been stretched to their limits. There is no "new" way of doing things on these machines – they have been too sufficiently explored and I find them a little boring.

3) Amstrad....need I say more

What I needed was something new, something relatively unexplored. A new computer, a REAL new computer with different structure (the STE and AMIGA are relatively similar as are the "8-bits") but which also combined all the best parts of the other computers and also offered something of its own.



•The Sam Coupé – superb chip display,useful MIDI and sequencer and much more. Well that's how one Express reader sees it.

Secondly I wished to place my money behind an innovative and decidedly "kicking" manufacturer with new ideas and a fresh perspective on the industry.

Thirdly that manufacturer had to care for the customer and provide helpful advice when I needed it.

I bought this computer less than a fortnight ago and it is amazing – just what I wanted. The very impressive specs live up to their promises and more with its own brand of multi-tasking I stand amazed.

No this is not a NeXT – this computer is Samco's Coupé, the display chip is quite frankly superb and the 6-channel stereo sound chip by Philips is of excellent quality. The MIDI ports and sequencer make it all the more useful to me and blow the STE out of the window in many areas.

The art package is fairly impressive, but surely an upgrade is on the cards to take advantage of the 128 colour capability, the only annoyance is the lack of a mouse (although I am told that one is now available). And I am looking forward to the forthcoming release of a video digitiser.

This letter is meant as a public appraisal of Samco's excellent service and the brilliance of its new machine. I am very pleased with it and I await, with anticipation, of news of Samco developments of a higher spec machine (the Coupe II?).

Software support seems to have rocketed in the past month with not only Domark and Enigma Variations supporting the machine, but many smaller houses are developing software for the new machine. Word from a fairly reliable industry contact indicates interest from Ocean and possibly US Gold, however not having contacted them myself I am unsure of this development. For now Enigma Variations and Domark can take advantage of the machine fairly undisturbed and a fairly good job they are doing as well.

Congratulations on an exceptional magazine (although bias does creep in on some areas, but that could happen on any publication) and I hope that you soon re-instate the Coupé column now that its problems of last year are firmly behind it.

Here's to the computer industry improving in character and in strength."

Can you do better? Would you disagree with the scathing comments about the ST and the Amiga or the praise of Sam and the Arc? Do you feel that piracy is a result of the socio-economic state of the country or is it plain thievery?

Climb on to your soap box and join in the gavel-banging.

Write to Keith Pomfret, Tech Tips, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

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Amstrad VGA 12" paper white monitor.....£69	3" drives (6128, PCW etc).....£30
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Spectrum +3 with manual and psu.....£109	Amstrad CPC6128 (no manual).....£140
Spectrum +2 power supply.....£18	Amstrad GT65 monitor.....£49
Spectrum +3 power supply.....£18	Amstrad SM2400 modem.....£99
Amstrad DMP3000 9pin printer.....£69	3 1/2" 180K drives (BBC etc).....£22
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◆ ST

● **THIRD** Coast 65 meg hard disk, £375. NEC P2200 plus sheet feeder. £170. SM124 monitor, £80. 1040STFM, £170. SM124 monitor, £80. Timeworks DTP £30. Neo desk, £15. FTL Modula 2. Dev £50., plus games £10-£20. All as new. Tel 0628 25802.

● **ATARI** 520STFM, one meg memory, over £700's worth of games, including F-29, Xenon 2, Falcon, Chase HQ, Xenon and the brill music package quartet. Excellent condition, boxed everything for only £300. Tel (0207) 520975.

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● **ATARI** colour monitor SC1229, £180. Atari mono monitor SM125. £80. 071 4357664.

● **ATARI** STE 1 meg, 200+ disks, disk boxes, joysticks, extendor leads, mouse mat, dust covers, books, manuals, 100+ N.C.E.'s. ST/Amiga Format 1-13. ST Format 1-25. Phone Ian on Leicester. (0533) 701107 after 6pm. £650 o.n.o. Will split.

● **FLEET** Street Publisher v3.0 for Atari ST/E for sale. Original version complete with full manual and quick reference cart. Serious offers around £100 invited. No time wasters please. Phone Fraser on 031 553 2356 for details.

● **ATARI ST/E** PD availble for exchange or sale. Over 1300 disks to choose from. Send blank disk plus SAE to: 27 Rossyln Terrace, Edinburgh, EH6 5AU. For disk based catalogue or phone Fraser on 031 553 2356 for details.

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Amstrad ☆ Commodore ☆ Sinclair ☆ etc.

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● **ST STRATEGY** and War games plus other titles for sale. All boxed originals from £5 inc p+p. Also approx 500 31/2" disks new £25. For 100 inc p+p. Megadrive games wanted. Phone 0903 767030, Sussex, evenings.

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● **NEW PD** compilation disk for the Atari ST/E. Send SAE for details or £2.50 for a disk stating disk number (1-5). Cheques/P.O. to: A. Burns, 61 Coniston Road, Gunthorpe, Petersborough, PE4 6UL.

● **ATARI** 520STE, 1Mb RAM, SM124 monitor, Cumana 2nd disk drive, Naksha mouse, PC-Speed Emulator, some ST/PC programs. All under 1 year old, mint. £430, no offers. Tel Chippenham (0249) 656702.

● **ATARI** ST software - Kroget £10. Turbo ST (Blitter), £10. Quantum Paint £10. Neo desk £10. Knight Orc £8. Leather Goddess £6. Ninja Turtles £6. Robocop 2 £6 inc postage. 0529 304221.

● **720K** upgrade disk drive for Atari ST. £30 TOS 1.4 six chip ROM set includes fitting instructions £40. SF314 1 meg external disk drive, little used. £75 +p+p. Phone Pete (0322) 662747.

● **520STFM,** IM(DS) internal drive, SS extension drive, Star LC-10 colour printer, Sega MS, plus £650 worth of original boxed software. Also books and miscellaneous disks, worth over £1300. Sell for £700 o.n.o. Tel: Michael (0846) 670670.

● **STE** Sims for sale 2 x 256K with fitting instructions and sip adapter for older STE's only £25. Wanted, used Deskjet ink cartridges. Call Jeremy on 081 363 1578.

● **ATARI** 520STFM, 1Mb memory, 1Mb disk drive. Atari SM124 Hi-Res mono monitor. Steinberg Pro 24. Casio HT-700 midi keyboard 8-note Polyphonic, PCM drums, fully programmable, stereo chorus, pitch bend, 49 small keys. £500 o.n.o. Phone Mark 0744 21691 (Merseyside).

● **MICROSOFT WRITE** for sale, best offer gets it. STE 1 meg Simms upgrade. £25 with Sip adaptor if needed, portfolio 2 interfaces and mains adaptor. £150 o.n.o. Tel 081 3631578 ask for Jeremy.

● **ATARI** 130XE 1050 disk drive, Touch Tablet, joystick, mouse, Print shop, Paperclip Movie Maker and many games. £100. 081 2914094.

● **ATARI** ST PD for the cheapest PD around. Write to: Prophecy PD, 390 Coulsdon Road, Old Coulson, Surrey, CR5 1EF, enclosing disk and SSAE, please note: slam is a lamer.

● **ATARI** 520STFM, 1 meg D/S internal disk drive, 1 meg memory, orignal software titles, plus public domain software (demos, utilities) joystick, mouse controls, manual, leads, mouse, joystick, extension leads, mouse mat. £300. Tel 081 336 4551.

● **ATARI** 520ST Tower System, mono colour monitors, Citizen 120D printer, Golden Image mouse, mono colour switch box, games, M1 Tank Platoon, MIG 29 and more, including Word Writer ST only. £900. Ring Tom after 6.30. 0344 24396.

● **ATARI** 520ST, 40+ games, 1st Word Plus, Timeworks DTP and SM124 Hi-Res monitor, Quickjoy joystick (1Mb drive) £420 +. Phone Adam on 0947 810552. Please note price, new is £800+.

● **WANTED** back issues of the STOS newsletter. Will pay 75p per copy. Send list to: S. Raynes, 3 Union Terrace, Castletown, Penrith, Cumbria, CA11 9DY.

● **ATARI** ST, 4 meg memory, £199. Atari 1040STFM with SM124, £350. Hawk Calbre scanner. £300. Tel (0495) 272358 after 6pm.

● **ATARI** 520STE 1 meg upgrade expanded plus free games: £240. Atari SM125 b/w monitor: £60. Cumana 3.5" drive: £60. Steinberg Pro24: £60. All as new condition, no boxes, so buyer collects. Contact: Jerry. 0491 571779. (Home) after 6pm.

● **ATARI** ST public domain software to swap or copy to your disks for 34p. All types of PD wanted. Send your list and SAE now to Richard Kirk, Copes Farm, Withington, Leigh, Staffs, ST10 4PU.

● **ATARI** ST games and business software for sale. All originals. Switchblade 2, Awesome, Shadow Dancer etc. Calamus + font disks. Ring 0773 717911. Also Midwinter 2, Monster Business. Toki etc Gods.

● **ST ACTION** magazines Nos 1-37 (May 88 - May 91), includes disks £30, including p+p. Also Atari ST Elite £10. Please write to Stephen, 8 Roddens Gardens, Castlereagh, Belfast, BT5 7JJ, N. Ireland, or phone (0232) 798559.

● **ROLAND** MT32, 32 voice, 8 channel, midi expander, 30PCM drum sounds with Steinberg ST Synthworks Editor, plus 300+ sounds. £250 o.v.n.o. Roland Axis remote midi keyboard. £250. Wanted: midi drum pads. 081 591 5585 after 6pm.

● **ATARI 520 STFM,** SC1224 colour monitor with swivel stand, monitor switch box, replay 4 sampler, mouse, manuals, leads, £250 of software orignals, boxed as new. £400. Also ST Format and ST User magazines available. Telephone Andrew: 081440 7738.

● **PUBLIC DOMAIN** software for the Atari ST, only £1.75 including postage, clip art, games, utilities, exclusive samples, demos slide shows, send SAE + 50p for catalogue to: Mr. G. Ogden, Nightshift, 8 Bertelin Road, Stafford, ST16 3JJ.

● **ATARI** 520STFM, one meg second disk drive, £300 software, sound sampler, computer to Scart lead, complete with all manuals + boxed as new, £250. Contact Neil 0425 616605

● **PD LIBRARY OWNERS?** Still using 'FCopy III'? Get the latest 'Fcopy Pro' from Jennix PD, the very best Atari copier. Send Cheque for £1.90 (Jennix PD): 66 Abbey Road, Strood, Kent, ME2 3QB.

● **ATARI** SF354 31/2 single sided disk drive, two months old. £35. Seikosha SP-180AI 9PIN printer, £85. Both items come with manuals. Telephone Daniel Fuller on 071 515 7814.

● **15 3.5"** disks for £1 with lables, all including p+p. Get the most out of your ST + 2 disks for £8. Also Syncro Express II instructions + operating disk. £12 for more information. Call Den on 081 7712969.

● **VIDEO** digitising, I will digitise anything from video source. Details Write to: Mike N., 9 Ashburton Avenue, Ilford, Essex, IG3 9ET.

● **ATARI SM125** mono monitor, £90. SH205 20 meg hard drive, £190. Kaga Taxan 810 9pin NLQ printer, £70. Timeworks DTP £30. Atari STM, not working, main unit only £40. Tel 071 586 6155.

● **ATARI** 520STFM with one meg drive, upgraded to 1 meg RAM, mouse, some software, two joysticks, £250 o.n.o. Tel: 081 761 3082 ask for John after 6.30 evenings.

● **NEW** PD compilation disks for the Atari ST/E. Send SAE for details or £2.50 for a disk stating disk number (1/5). Cheques /P.O. to: A Burns, 61 Coniston Road, Gunthorpe, Petersborough, PE4 6UL.

● **ATARI** Mega 4 with QL and AT-Speed Emulators plus software and manuals. £825 AT-speed complete £125. All items in perfect working order. Any test. Tel: 081 889 4276. Tottenham, anytime.

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● **ATARI 520STFM**, 1 meg disk drive, mouse, joystick, plus over 40 software titles worth over £900., including DPaint, colour monitor and colour printer, all with cables and all boxed. All worth over £1500. Sell £1000. (0480) 450457.

● **ATARI STFM**, games etc, £150, Star-LC10 printer, (as new), £65, Nintendo Nes SMBI + II, others. £75. Amstrad 464, no monitor, hence £40. PAL PC Engine + games, £90. Details write: RK, 4B Currents Lane, Harwich Essex, CO12 3DE.

● **STATE 808** PDL the best for ST Public Domain demos! Our new disk catalogue is available free if you send us a blank disk to: State 808 PDL, 3A Old Lanark Road, Carluke, Scotland, ML8 4HW.

● **SIMMS!** 256 X 8, 80ns Simms from Macintosh. Should suit Atari STE. £20 per pair, 520STE - 1040STE upgrade, comes with instruction sheet fitting. Call Richard on (0573) 26032.

● **ST EXTERNAL** 1 meg drive with PSU, also 32 meg hard disk. £40 + £200. Tel 07532 685288 evenings.

● **ST SOFTWARE**, Devpac 2, Fast Basic Roms, Lattice C. Mavis Beacon, Elite, Falcon, Neo Desk 3, 1st World +, PFM, VIP Pro Superbase Personal. Phone for prices. 0753 685288 evenings.

● **WANTED** Dead Mega ST. Any condition, cash waiting, would consider other dead ST hardware. Tel 0753 685288 evenings.

● **65 MEG** 3rd coast hard drive, £350. 1040 STFM £170, SM124 monitor £70. NEC P2200 + plus sheet feeder £150. Lattice C V5 £85. Timeworks DTP, £30 plus more software. All as new, all o.n.o. Tel: 0628 25802.

● **ATARI** ST/STE programmers. Will anyone write a GEM based catalogue disk for PDL. Reward 8 disks PD! Over 500 to choose from. Contact NSK @ 66 Abbey Road, Rochester, ME2 3QB. 100% reply guaranteed!

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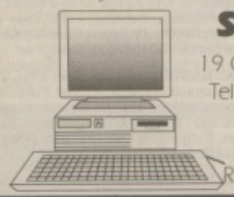

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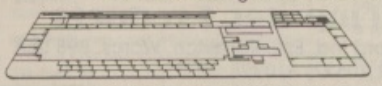

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● **THE ULTIMATE** PD exchange service, just send a disk with a demo list on and will send you ours absolutely free, swaps PD only. Send to Stuart Sankey, 67 Mapledene Road, Sheldon, Birmingham, B26 3XE.

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● **BATTLE** Scape, original wargaming program for Atari ST/E. Select units, use different terrain maps, 2 player game. £4 or SAE for details. R. Wright, 32 Valley Crescent, Wokingham, Berkshire, RG11 INP.

● **AMIGA** games. All originals, boxes + instructions. All £4 each. Mike Read Pop Quiz, Voyager, Backlash, Batman The Caped Crusader. Archipelagos, EXNON, Championship Golf, Xenomorph, Blasteroids, STR YX, Commando, Sonic Boom, Skrull. Phone 0777 848953.

● **AMIGA** games, all originals, box's + instructions. All £11 each. Rainbow Islands, Gunship, Total Eclipse, Golden Axe. Phone 0777 848953.

● **AMIGA PD** only £1.25 per disk, send £1 for disk catalogue or SAE for printed list. Send to 9 Broadfield Square, Enfield, Middlesex, EN1 3PA.

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● **TIMEWORKS LITE** DTP program for IBM on 31/2" disks, only £25. Delta 5 demo but usable database transactional, IBM compatible, 31/2" disks. £15. Phone Mike on 021 77 8808.

● **FOR SALE** Amos, Shoot Em Up Construction Kit, plus all copy system for Amiga copies anything. Offers. Ring 0789 763010.

● **C16/+4 SOFTWARE** for sale: All orignals and very cheap! Send SAE to Andy Tang, 155 Packington Square, Islington, London, N1 7UB for list.

● **WANTED** MSX2 software on disk or cartridge, any amount considered, also names and addresses of overseas suppliers. Please do not send any monochrome games if possible. MSX1 cassette games also needed, especially educational. V. Woods, 46 Field Close, Alconbury, Cambridgeshire.

● **FOR** the serious Amiga user, Fine Print £14. The Works! Platinum Edition £36. DPaint III £42. All as new, boxed £75. £75 for the lot inc p+p. Call 0925 755316.

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● **AMIGA** 'telepad' telephone pad program, quick loading, easy to use and includes 35 page spiral bound manual only £4.95 including p+p. Send cheques payable to P Budd, 12 Taylor Court, Worle, Weston-Super-Mare, Avon, B522 OLU.

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● **SPECTRUM +3** 128K integrated computer/disk system, new £120 o.n.o. Epson LQ1500 wide carriage, letter quality printer, sheet feeder, tractor feeder, serial interface spare ribbon. £195. 021 445 2685. (answerphone).

● **FOR SALE:** Atari portfolio with serial, parallel interfaces, PC Link lead £150. Casio DG20 digital midi guitar with 20 sounds, drum machine, strap. £120. Phone (0239) 711032.

● **SERVICE** wanted, picture digitising or scanning. Reasonable rate, as many pictures to transfer to PC or ST. Contact Nick, 57 Dean Street, Derby, DE3 3PU.

● **TO SUPPLIERS** and importers of I.C's. Can anyone supply one 8350 chip. I cannot find it catalogued in Great Britain. Tel 0232 642687.

● **PSION** LZ6L personal organiser with thesaurus, spell checker, 32K RAMpack datapak 64K and mains adaptor, very good condition, still boxed, cost £300. Will sell for £200 o.n.o. Tel 031 664 4650 after 6pm.

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VIRUS information wanted anyting to do with virus on all computers gifts or reward for best information on viruses sent to me. Please help me to help local charity. Paul, 3 Moorend Avenue, Chelmsleywood, Birmingham, B37 5SD.

● **SWAP** my boxed, as new, 6 month old, vidi Amiga + vidi chrome. For your digiview gold 4. Chris, Farnborough. (0252) 373177.

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● **HELP** wanted to set up a user group, preferably portables, but others welcome. Write to: Damian Cooper, Emerald Close, Hants, PO7 8N2.

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● **PSION** organiser, model CM, with mains adaptor. Cost over £100 new. Sell for only £40 (inc p+p) No o.n.o. this. Tel Nick, evenings on 063 472 3659.

● **R.G.B** splitter wanted, will pay £30 stand with light for digitizer camera, pay £40. Vido-chrome wanted, pay £9. Wanted Kickstart for two ROMS, pay £6. Steve (0628) 72275 6pm+.

● **8 INCH** disks (yes eight!), excellent condition, used only once. Approximately 125 in total, if your lacking in rare old disk size, you can have them all for £25+ postage. Phone Alan (0977) 5511018 (days).

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● **30 BLANK** disks unused, high density and double density £17 plus p+p. First come first served. Write to Malcolm Jacques, 8 Paisley House, Kershaw St, Laisteroyke, Bradford, B03 8PA.

● **TEXAS** instrument TI/99 computer, data recorder, extended basic, music make, Parsec cartridges introduction to basic tape. Exchange for Amiga s'ware, Acorn A3000 s'ware or almost anything. Tel 061 798 7279.

● **ACORN** A3000 contacts and PD software wanted (new user). Also wanted: Power board for poorley PCW 8256. Tel: 061 798 7279.

● **SUPERBASE** personal realtional database £70. Amstrad printer DMP 3160 £70. Wanted Mathcad ver 2.5. Volkswriter word processor £70. Wordstar Release 5 handbook/manual £10. Tel 081 427 0755.

● **OPUS** 51/4 dsik drive for BBC complete with manuals £40 o.n.o. or swap for 31/2 for Amiga. Interested, Steve Black, 18 Paul St Lochhelly, Fife, KY5 9AL. Buyer pays p+p! Also Turtles game (Amiga) £8 o.n.o.

● **SINCLAIR QL** 128K computer for sale, two microdrives, Psion software (word processor, database etc). New keyboard membrane £55 inc postage. Boxed with manual and printer label. Write: David, 37 Muirefield Avenue, Swinton, S Yorks, S64 8TF. (swap Amiga DTP)

● **SINCLAIR QL,** c/w twin floppy drives, colour monitor, 768K trump card expansion, Psion word processor, spread sheet, database, graphics and other software, books, manuals. All good condition, £195. 021 477 5538 evenings or weekends.

● **AMSTRAD CPC** software on tape and disk and half price (from £2 to £10). For list send SAE to: 68 Abbotsfield Road, South Woodham Ferres, Essex, CM3 5SS or for quick contact phone 0245 320089.

● **WANTED** Amiga 500 base pack + mouse etc. No software required, 1 meg upgrade if possible, also no monitor/TV. Write 68 Abbotsleigh Road, South Woodham Ferrers, CM3 5SS or phone on 0245 320089 will pay upto £150.

● **YAMAHA** PSS-270 stereo keyboard, 100 voices, 10 beats, demo + 13 segment display £80. Also British Telecom answer machine 'Robin' hardly used + good condition £50. List: 68 Abbotsleigh Road,South Woodham Ferrers CM3 5SS.

● **40 ST** magzaines, very good coondition, +14 cover disks (including interphase), £20 o.n.o. +p+p Includes Zero, Ace, ST User, ST Action etc. Lots of other computer magaznes in good condition, also. Phone 0989 65818.

● **WANTED** old computer hardware. Any condition, small charge considered. Monitors, keyboards, printers, joysticks etc. I Darren Littlewood, promise to answer any offers by return post. Send details to 33 Clay Flatt Lane, Rossington, Doncaster, S. Yorks, DN11 OAZ.

● **Q.L.** with manual abacus, easel, quil, archive, will exchange for Spectrum +128 or sell for £65 + postage. Spectrum hardware, software utilities, microdrives, Alphacom printer. £15 + postage. RAM music maker with instruction. £15 + postage. Arnold 0257 278464.

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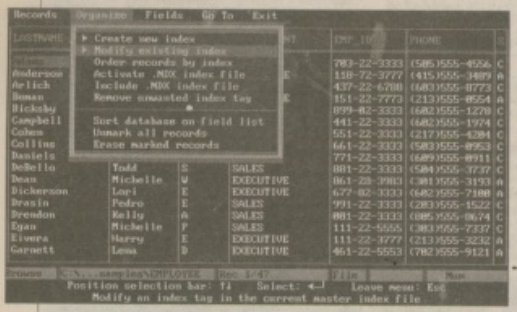
CARRY ON CODING!

From database packages to Amiga assembly language code, Mary Branscombe looks at the latest ways to improve your programming

The first products announced by Borland since it revealed its bid for Ashton-Tate, the company which brought you dBASE, are database packages for dBASE and Borland's own *Paradox* system. These will be based on the object oriented technology that Borland developed with ObjectVision and they will run under Windows, sharing objects such as forms, reports and queries. Although there have been versions of dBASE IV for almost every operating system from the Macintosh to SunOS and 386 UNIX, there hasn't been a Windows version yet.

Borland is also talking about a dBASE language compiler; dBASE itself has always been an interpreted language and a compiler should speed up dBASE applications considerably.

The products mentioned so far are *Paradox* for Windows and Object dBASE. Both will be compatible with their DOS equivalents and Btrieve, SQL and Borland products including ObjectVision and C++.



• *dBASE as it is today – the next version could run under Windows and include a compiler.*

FULLY ASSEMBLED

Any programmers just getting started with machine code or assembly language programming for the Amiga should take a look at ACC Assembler from the Amiga Coders Club, which is available from the Amiganuts Public Domain library on 0703 785680.

The disk includes a full set of programming tools with the A68K PD assembler, the *Blink* linker program and two conversion programs, *Data2Obj* and *ConvertFD*. These tools would be enough to assemble your source files into ready to run programs, but you also get a text editor (also called *ACC*) that can edit the source files. As you can run all the other tools on the disk from inside the *ACC* editor, this gives you more of a programming environment than just a collection of programs.

PHAR MORE MEMORY

If you want your programs to take advantage of the virtual memory management that you get with Microsoft's Windows 3, version 4.0 of Phar Lap's 386, DOS-Extender complies with the DOS Protected Mode Interface (DPMI) to help you write applications for Windows enhanced mode.

This DOS extender now supports all five industry standards for managing extended memory on the PC, including VCPI, the Virtual Control Programming Interface. This means that your Extend applications will work with EMS emulators like DESQview (which turn extended memory into expanded memory) and with Windows in real mode, which will run on any PC from an XT upwards.

Phar Lap's software has been used to build programs like Autodesk's *AutoCAD* and Wolfram Research's *Mathematica*.

TALKING COLOUR

There are many new versions of the Smalltalk/V programming language from Digitalk, including releases for OS/2 and the Macintosh.. Smalltalk/V DOS includes a colour extension kit and the Windows version includes new classes.■

MAKING MACROS

I'm using Lattice C on my ST and I've been trying to use macros in some of my programs. I'm worried about the overhead though – does a macro take up more room than a function call?

John Wallace, Birkenhead

A macro is a line of your program that's replaced by something else when the code is compiled. If you're printing a title screen and the title of your program is too long to keep typing in, you can use a macro like:

```
#define TITLE Interactive 3D Graphics\
for fun and profit on your ST
```

The backslash \ lets you continue the text on the next line. Every time you use TITLE in your code, it will be replaced by the text of the title and a macro of this kind doesn't take up enough extra space to worry about.

Short macro calls, even with parameters, may produce less code than a function because you don't have the overhead of declaring the types of the variables and telling the function what to return. Compare:

```
#define funcmac(x,y) x*x+y*y
```

to:

```
float funmac(float x, float y)
{return x*x+y*y
}
```

As you don't need different macros for different data types, you can use the same macro with two sets of varable declarations to handle float and integer variables:

```
int i,j;
float u,v;
```

If you call funmac(i,j) this will be an integer arithmetic calculation, which is a lot faster than floating point maths on most machines. You'd have to write two separate functions to get the same effect without macros.

OVER TO YOU

Have you got a problem with your programs? Have you found a neat way to use macros? Write and tell me what's on your mind: Mary Branscombe, Future Publishing, 30 Monmouth Street, Bath, Avon BA1 2BW

THE APPLIANCE OF SCIENCE – A LOOK AT COMPUTING

Computer Science: An overview
J. Glenn Brookshear
Addison Wesley
ISBN 0-8053-0264-6

There are many introductory texts on computers and programming written for students. But there are very few that are as clear and comprehensive as this book, now in its third edition. It's full of examples and illustrations and is very clearly written. It covers virtually every topic in programming, from operating systems to database structures and in many cases, it explains the subjects better than some specialist books in each field.

Rather than discussing specific machines, Brookshear explains how all computers work so that by the time you get to the programming techniques, you have a much better idea of why the memory on your computer is limited and why reading a program in from tape or disk is so slow.

The section on operating systems covers the details of how an OS works rather than how to write one. Later sections in the book deal with the hands-on practicalities of programming, although Brookshear would rather get you to think about how to write a program than show you example code.

Whatever language you program in, whatever machine you use, this book should pull together all the tricks you've picked up and show you how to put your ideas together into programs.

• *Computer Science: is as clear as it's comprehensive.*

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APOCALYPSE – New C64 quarterly fanzine. Featuring reviews, tips, cheats and news. Send £1 (inc postage) to APOCALYPSE, 276 Burton Road, Midway, Swadlincote, Derbyshire DE11 7LY.

RE-RUN – 8-bit Fanzine for the Spectrum, C64, Amstrad CPC, BBC, ZX81 and Atari. Only 50p including P+P to: RE-RUN, 1 Northolme Close, Grays, Essex, RM16 2NX.

PLAY MATES – CPC games fanzine called play mates just £1.30 per issue full of reviews and bonzo news. Carl Surry, 37 Fairfield Way, Barnet, Herts, EN5 2BQ.

THE DISK – Issue 4 for Amiga users, includes – typing tutor, Tron '90, Label Print, Pop info, plus plenty more. Send £1 for 24 hour despatch or phone 0422 844215

USER GROUPS

AMIGA MUSIC – is there anybody interested in forming a Med and Sound Tracker User Group? Write to Joe Crosby, 24 McFarlane Place, Uphall, West Lothian EH52 5PS

WATFORD INDEPENDENT – Commodore Product User Group. Meetings 3rd Wednesday in month 7.30-10.00am at St Thomas Church Hall, Watford. Large PD library available to members. Details from Y2 Computing, Watford, 0923 50161

SOLINET BBC – User Group supporting SWR and Solidisk products. Magazine on disk. SAE 41 Westbrook Drive, Rainworth, Mansfield, Notts NG21 0FB

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USER GROUPS A TO Z

A

ABC AMIGA BEGINNERS' CLUB – PD library review. More info in beginners' pack. Send £1.50 to Ian, 110 Whitehill Park, Limavady, Co Londonderry, N.Ireland, BT49 0QG. Tel: 0504 765174

ACORN ARCHIMEDES.RISC USER 117 Hatfield Road, St Albans, Herts.

ACORN ARCHIMEDES Archive, 18 Mile End Road, Norwich NR4 7Q

AMATEUR RADIO (CBM) – Simon Lewis GM4PLM Commodore Radio Usrs Group, 69 Irvine Drive, North Clippens, Linwood, Paisley

AMIGA CLUB – Buy, sell and exchange Amiga games. Originals only. Speedball 2, Powermonger, Midwinter, ICFTD, A10 Tank, DPaint 2, Zak McKracken, Off-Road, Turtles. Phone 0789 764039 with Games List.

AMIGA HELP CENTRE – A group to help novices. For CLI help disk and registration send £10 to Simdev, 29 Avon Square, Hemel Hempstead, Herts.

AMIGA HELPLINE SERVICES – Free club for young and old. Send SAE toG Keenan, 21 Skirsa Place, Glasgow, G23 3EE.

AMIGA LOST GAMES CLUB – We are setting up a gropu to program Amiga games and send out demos to the different publishers so we need designers, coders, artists and musicians for the Amiga. Ring 0782 266964.

THE AMIGA TEAM – A group to help novices. Help given in programming – Assembly, BASIC, C, Logo, Pascal and CLI. For registration and introduction pack send £10 to 11 Beech Grove, Northallerton, North Yorks, DL6 1JY

AMSTRAD BUSINESS USERS - Amstrad Professional User Club, enterprise House PO BOX 10, Roper St, Pallion Ind Estate, Sunderland SR4 6SN. Tel 091-510 8787

AMSTRAD CPC USERS - Tony Baker, United Amstrad User Gp, 26 Uplands Crescent, Fareham, Hants PO16 7JY. Tel 0329 234 291

AMSTRAD CPC HOME USERS – Steve Williams, WACCI, 9 South Close, Twickenham TW2 5JE. Tel 081-898 1090

AMSTRAD LOCAL GROUPS - Amstrad Groups Federation, 4 Sutton Road, Gorton, Manchester

AMSTRAD PC SOFTWARE – Colin Smith, Colbar, 10 Penwood cl, Westbury, Wilts BA13

AMSTRAD PCW - Bob Ellis 'Rowan' 100 St Peters Close, Moreton-on-Lugg, Hereford HR4 8DW. 0432 761 860

AMSTRAD 1512/1640/PPC - PC Independent User Group, The Computer Advice Centre 87 High Street, Tonbridge, Kent. Phone 0732 771 512

AMSTRAD BUSINESS USERS – Amstrad Professional User Club, Enterprise House PO BOX 10, Roper Street, Pallion Industrial Estate, Sunderland SR4 6SN. Telephone 091-510 8787

APPLE MACINTOSH. John Lewis, Macintosh user group, Macintosh House, 11 South Parade, Summertown, Oxford

APPLE SYSTEMS – Irene Flaxman, Apple 2000, PO Box 3, Liverpool L21 8PY.

ARABIC COMPUTING – Rich Lackey, Arabits, 9 Bellview road, Worthing, West Sussex BN13 1EY

ATARI ALL MACHINES – Colin Hunt, BaPAUG, Wimborne Road, Oakdale, Dorset BH15 3EF

ATARI AND ST PC EMULATOR SUPPORT CLUB – SAE to 153 Parrock Street, Gravesend, Kent, DA121ER

ATARI BUY AND SELL SOCIETY – Atari hardware bought and sold. Anything new, anything old, many a bargain looking to be sold or gisa ring to sell whatu got. 0495 272092.

ATARI PORTFOLIO - D Gilpin, Atari Portfolio User Group, 84 Cambridge Avenue, Gidea Park, Romford RM2 6QU. 0708 730764

ATARI ST DIY HDISK BUILDERS CLUB – information on how to build from scratch an HDisk system for your ST. Help given on what you'll need and how to connect it all up. Call 0495 272092

ATARI ST - Paul Glover, The ST Club, 9 Sutton Place, 49 Stoney Street, Nottingham NG1 1LX. 0602 410241

ATARI ST demos/PD wanted. If you can write demos or want exclusive titles. Write to ST Demos, 8 Bertelin Road, Beaconside, Stafford, ST16.

ATARI ST/STE HELPLINE – We can scan, digitalise and provide loads of clip art. SAE to Nist 53, Lenaghan Park, Belfast, BT8 4JB

ATARI ST USERS ASSOCIATION – provides support for all Atari ST/E users. Help and advice given. Quarterly club magazine and disk. Also exclusive PD library for members. For further information write to ASTUA, 18 Poplar Close, Biggleswade, Beds, SG18 0EW

B

BBC MICRO - BEEBUG, 117 Hatfield Road, St Albans, Herts AL1 4JS. 0727 40303

BASIC PROGRAMMERS' GUIDE – for all BASIC programmers. Phone Andy on 081-648 4326.

BATPUG – Turbo Pascal user group also open to other PC Pascal programmers. Costs £10 per year. Write to 12 Clegg Avenue, Cleveley's, Blackpool, FY5 9BJ. Send an SAE for sample.

BOMB OUT BROS – A new ST PD coding group wants new members to help expand our range of games, demos and utilities. Write to Adrian Speight, 25 Gilbert Crescent, LLanelli, Dyfed.

BRIDGE CENTRE AMIGA CLUB – A club not just for Amiga users but anyone who wants to become familiar with the Amiga. All age groups welcome. Games, music and educational software. PD software £1. Me,mbership £3 a year and an additional 20p every Friday. Come to our meetings at the Bridge Centre, Haddington, East Lothian, Scotland every Friday.

C

C64 PD CLUB – E Masaba, 84 Garmoyle Rd, Liverpool L15 3JH

C USERS GROUP – Francis Glassborow, 64 Southfield Road, Oxfoed OX4 1PA. For everyone interested in the C and C++ programming languages. Publishes a bi-monthly newsletter.

CAMBRIDGE Z88 - Roy Woodward, Z88 Owners' Club, 68 Wellington St, Long Eaton, Nottingham

CD ROM - UK CD-ROM User Group, High Wings, Salem, Treforys, Abertawe 0792 844 370

CHESHIRE 16-BIT USERS CLUB – Amiga, ST, PC, Arc at Radley Common community centre, off Poplars Avenue, Orford, Warrington, Friday nights. All welcome. £1 admission.

CHESS COMPUTER PROGRAMMERS and interested players send an SAE to Steve Roe, 25 Nene Walk, Worksop, Notts or ring BBS 0909 479080

CHOICE – on-line help. Tel 0308 23224

CHESHIRE NIMBUS USER GROUP – Geoff Nelder, Queens Park High School, Handbridge, Chester

CHURCH ADMINISTRATION - Rev Stoker Wilson, Church Computer User Group, St John's Vicarage, Greenside, Ryton, Tyne & Wear NE40 4AA. 091-413 8281

CID (Computers and Integration for the Disabled) is a registered charity. Write to Gordon, Chelsea Road, Inverurie, Aberdeenshire, ABS 9QZ or tel 0467 24202

CLERGY/MEDICAL EDUCATION – Mr T Jones, FREE-ED Shareware/PD 85 Stoke road, Taunton, Somerset TA1 3EL. Tel 0823 321 481

CLEVELAND AMIGA CLUB – Thought our Amiga scheme should get organised. Tel 06542 252133 and ask for Barry or write to 30 Aske Road Middlesborough, Cleveland, TS1 4DA. No lamerss. Hope to start PD club and fanzine.

CLUB A3000 – The largest Archimedes User Group in London! Visit our second open day on Sunday 23 June. For more details please contact us on 081-445 2126.

CLUB AMIGA answers your questions on software and hardware on its 24 hour helpline. Join now. Send £5 to Club Amiga, 5 Bowes Lea, Shiney Row, Tyne and Wear DH4 4PP.

CLUB M – Monochrome ST user group needs members. Dedication, enthusiasm and a sense of humour are the only membership fees. Small ever expanding PD Library. Write to CLUB M, 59 Maple House, Idonia Street, London SE8 4LT.

COBOL LANGUAGE - Allen Reavie 22 Mourneview St, Portadown, Northern Ireland. BT62 3AW

COLECO ADAM - Keith Mamer, UKAS 33 Homer Road, Croydon CXR0 7SB

COMMODORE ALL MICROS - Jack Cohen, ICPUG, PO Box 1309, London, N3 2UT. Tel 081-346 0050 after 6pm

COMMODORE 64 CLUB has been on the go for the last five months and new members are welcome. For more details send an SAE to The C64 Club, 20 Finlow Place, Dundee, Scotland

COMMODORE AMIGA - UK Amiga Users Group. Contact 144 Charles Street, Leicester LE2 0OD. Telephone 0533 510066 voice; 0533 517615

COMMUNITY COMPUTING - Community Computing Network 2nd Floor, 35 Pink Lane, Newcastle, NE1 5DW. Tel 091-261 0317

COMPUCORP. Compucorp University users group c/o Compucorp, Cunningham House, Westfield Lan, Kenton, Middx

COMPUNET – write to Independent Compunet Club, 148 Furzehill road, Boreham Wood Herts. WD6 2DX

CONFERENCING - Compulink, suite 2, The Scantuary, 23 Oakhill Grove, Surbiton, Surrey KT6 6DU Voice 081-390 8446. CIX BBS 081-399 5252

CPM & MSDOS Users Group – 42 Birkbeck Road, Wimbeldon, London SW19 9NZ. Tel 081-543 0824

CRYPTOGRAPHY & CODES - Mike Barlow, American Cryptogram Association 5052 Chestnut Avenue, Pierrefonds, Quebec H8Z 2A8 Canada

D

DATAEASE USER GROUP – High-Tech House, 10 Blackfriars Street, Norwich, NR3 1SJ

DISABLED - Jeff Hughes, Special Needs User Group, 39 Eccleston Gardens, St Helens WA10 3BJ 0744 24608

DESKPRESS USER GROUP – Is there one? Fancy starting one? If your answer is yes to either of the above, please write to me, Raymond Day, at 3 Hall Terrace, Willington, Crook, Co Durham, DL15 0QN.

DRAGON - Paul Grade, National Dragon Users Group, 6 Navarino Road, Worthing, Sussex or tel 0903 207585

E

ECONET – Michael Ryan, Econet User Gp, Balkeerie Cottage, Eassie by Forfar, Angus DD8 1SR

EDUCATION – Charles Shannon, TECUG, 35 Wellington St, Gravesend, Kent DA12 1JG. Tel 0474 567 931

EIGHT-BIT BACK-UP 8-bit user group for all. 25p plus SAE. to: 8-bit back-up, 1 Northolme Close, Grays, Essex.

EINSTEIN – Graham Bettany, UKEUG 80 Dales Road, Ipswich IP1 4JR

EINSTEIN PD USER GROUP – Help and advice for all

Let all the world know

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Einstein users. Over 100 disks of PD software. Send SAE to SW Knowles, 23 Howldsworth Rise, Arnold, Nottingham, NG5 8HZ

ELITE PLAYER GROUP – Swap hints, tips, etc. Fanatics welcome. Beginners welcome. Write: Ian Hurst, 7 Perrybrook Walk, Ashton in Makerfield, Wigan, Lancs WN4 8TR.

ELMSOFT PUBLIC DOMAIN SERVICE for the ST any weekend at Camden canal market, Haven Street, London

EMULATE. For Amiga, Amex. Monthly newsletter. Write to Pat 12b Northbrooks, Halrow, N Essex

ENTERPRISE – William Creaser, 6 Provident Street, Shaw, Oldham, OL2 8AQ. Independent Enterprise User group. Tel 0706 881382

ENTERPRISE - Tim Box, Independent Enterprise User Group, 50 Holdenhurst Avenue, Finchley, London N12 0HX. Tel 081-346 8032

ENET (like Econet) - T K Boyd, Enet (Amcom) User Gp, Seaford Cottage, Petworth, West Sussex

EUG – The Acorn Electron User Group. "The ELK is not dead yet" Send large SAE for details to EUG 134 Great Knightleys, Basildon, Essex ss15 5HQ.

EURO-PALS – Contact service. Make computer friends anywhere and everywhere. Send £4 to Julian Ross, 2 Bysouth Close, Clayhall, Ilford, Essex IG5 0XN.

F

FIND YOUR LOCAL CLUB – British Association of Computer Clubs. Database of all user groups in the UK. Banc y rhosyn, 14 Bron Y Glyn, Bromwydd Arms, Carmarthen SA33 6JB.

FORTH Language – Douglas Neale, FIG (FORTH Interest Group) UK, 58 Woodland Way, Morden, Surrey SM4 4DS

FRACTALS/CHAOS THEORY - Andy Lunness, 69 Bronte Avenue, Bury, Lancs BL9 9RN. Telephone 061-764 6469

G

GENEALOGISTS - Computer Group, Society of Genealogists, 14 Charterhouse Buildings, London EC1M 7BA. 071-251 8799

GENERAL HOME MICROS - Steve Winter, Chic Computer Club, PO BOX 121, Gerrards Cross, Bucks SL9 9JP 0753 884473

GEOS USER GROUP – for C64 and 128 owners. Disk based magazine. Send blank disk to GUG (UK) 110 Deansway, Woodloes Park, Warwick CV34 5DQ

GUG (UK) – GEOS User Group for C64/128. Also non-GEOS PD library. Send disk and return postage for GEOS, SAE for non-GEOS to GUG (UK), 110 Deansway, Woodloes Park, Warwick CV34 5DQ

GROUND FLOOR USER GROUP – support for all serious users of PC, ST, Amiga and PCW. Meets monthly in Calderdale, West Yorkshire. Further information from Jae on 0422 844991 days or 0422 845789 eves.

GUAGE - Martin Houston CUG (UK) Houston Technology Ltd, 14 Arden Oak Rd, Sheldon Birmingham BS26 3LX. Telephone 021-722 3168

H

HOUSING ASSOCIATIONS - Caroline Maries, Micro Users Ltd, Beaver Housing society, 23 Lewisham High Street, London SE13. Tel 081-318 1126

HEALTH WORKERS - Sue Mckendrick, Healthlink, 164 Windsor Rd, Ashton-in-Makerfield, Wigan WN4 9ES. Voice: 0942 712 385

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IBM PC USER GROUP – PO BOX 360 Harrow HA1 4LQ.081-863 1191 BBS 081-863 6646

INERTIA ADVENTURES – A ray of light in the dark cavern of the text adventure. Do you dare to enter this saga? Proceed by phoning 0265 51851 for details.

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JUPITER ACE – John Charter, Jupiter Ace Forth User Group, 17 Spring Wood Close, Dunston, Chesterfield S41 8BS. Tel 0246 237555

L

LISKEARD AMIGA USERS GROUP – For tips, help and information exchange. Contact Phil Golding, 19 Pound Street, Liskeard, Cornwall PL14 3JR. (0577) 46217.

LOCAL AUTHORITIES – Local Authority Micro User Group, John New, Borough Engineer's Dept, Municipal Offices, North Quay, Weymouth, Dorset DT4 8TA.. Tel 0305 785101 ext 272

LOTUS PRODUCTS - Lotus User Group, 79-80 Peascod St, Windsor, Berks SL4 1DH. Telephone 0753 841686

LYNX – R B Jones, Lynx User Group, 39 Ashton Close, Needingworth, St Ives, Cambs

LYNX DISK USER GROUP – J Koushappas. 172 Pasteur Gdns, London N18. Tel: 081 807 3859

LYNX LINK – Cards bought and sold and exchanged. Lynx fanzine each month. Send SAE to Peter Tefry, 32 Boma Road, Trentham, Stoke, Staffordshire, ST4 8EB.

M

MAC SOFT – six games for the Amstrad CPC6128. Send SAE, blank disk and 50p copy charge to Macsoft, 2 South Meade, Maghull, Liverpool, L31 8EF.

MAGNETIC MEDIA HANDLE WITH CARE – Amiga disk fanzine with news, reviews, music, games, utilities, userhelp. At least two disks per month. Each issue £2.80. Write to Magnetic Media HWC, 25 Rigbourne Hill, Beccles, Suffolk NR34 9JC.

MEGADRIVE CONSOLE CLUB – Used and new games sold, also exchange system and games brought from £6-£22. Write to Andrew Stanford, MCC, 15 Fields Park Drive, Alcester, Warwicks, B49 6QR or Tel: 0789 764039 after 4pm

MEMOTECH FILE – 93b StJohns Road, Biddulph, Staffs ST8 6LL

MEMOTECH - Phil Eyres - Memotech Owners Club, 23 Denmead Road, Harefield, Southampton SO2 5GS. Tel 0703 585106

MICRO-DESIGN USER GROUP – a new group for those PCW owners requiring assitance and advice with this DTP package. Large clip art library available. Phone Phil on 0709 543390

MID CORNWALL COMPUTER CO-OP – Atari ST. 8 Victoria road, Roche, St Austel, Cornwall PL 26 8JF. Telephone 0726 890473

MIDI/MUSIC – Spectrum music machine/MIDI user group. Magazine on tape, plus programs and lots more. For more details contact Sean Sanderson on 05242 62258

MOTOROLA 68xxx MICROS – write to Rick Applegate, 68 Microgroup, 8 Great Cob, Springfield, Chelmsford, Essex. BBS tel 081-316 7402

MSX SYSTEMS – write to Keith Neal, MSX Link, Austerby House, 80 Austerby, Bourne, Linconshire PE10 9JL

MUG USER GROUP – If you either play or run a multi-user game then write with details to the MUG User Group, 4 Garden Close, Penrith, Cumbria, CA11 7UD.

N

NASCOM/80-BUS/CPM - Scorpio Systems, PO BOX 286, Aylesbury, Bucks HP22 6PU.Tel 0296 624868

NEW BUG COMPUTER CLUB – Support for all machines. Metts weekly at Oxclose Multi-Purpose Centre in Washington each Tuesday at 7pm. All welcome, visitors 50p

NEWBRAIN - Ron Bury, NewBrain Support Grp, 70 Cranberry Lane, Darwen, Lancs BB3 2HL. Tel 0254 771891

NIMBUG – write to 13 Belle Vue Ave, Gosforth, Newcastle-upon-Tyne NE3 1AH. Tel 091-285 7806

NINTENDO GAMEBOY – I would like to start a user group for the Game Boy. Write to Justin Spencer, 2 Rose Villas, Thurnholmes Farm, Owston Ferry, Near Doncaster DN9 1BE or Tel 042772588

NORTHERN IRELAND AMIGA USERS – Send £2 for disk-based newsletter. Tips, news, reviews etc. NIAU, 98 Crebilly Road, Ballymena, County Antrim BT42 4DS.

NW ARCHIMEDES USER GROUP – Meets every Friday at Citizens Advice Bureau, next to Spectrum arena in Birchwood, Warrington. Ring Paul on 051-426 3915 after 6pm

O

OBSOLETE COMPUTER CLUB – Established 1990 to preserve and support Pre 1986 micros. Applicaions in writing to Mr S Walters, 42 Achilles Road, London NW6 1EA stating system details, date and history. All systems, micros and minis.

OLIVETTI PC1/PCS USER GROUP – Help with all aspects of these machines. Tel 0924 892106 or write to 68 Queen Elizabeth Drive, Normanton, W Yorks

ORIC ENTHUSIASTS – The contact point for all Oric support. 8 Staley Hall Road, Stalybridge, Cheshire SK15 3DT. Tel: 061-303 7369.

OS/2 - Karen Burns, OS/2 User Group,Cecily Hill Castle, Cirencester, Glos LG7 2EF. Tel 0285 655888

OSBORNE/CPM/MSDOS – write to Jeremy Browne BOOG, 102a Aldershot Road, Fleet, Hants GU13 9NY. Tel 0252 621745 voice or 626233 BB

P

PAGESTREAM USERS GROUP – all Atari/Amiga owners of Pagestream send large SAE to PUG, 70 Offerton Lane, Stockport, SK2 5BS. Include all your tips please.

PAS PD for the ST. Send 75p for the latest details and disk catalogue (refundable). Write to PAS, 97 Holland Street, Ebbw Vale, Gwent NP3 6HY.

PC INDEPENDENT USER CLUB – Helpline service, bi-monthly journal, shareware/PD, local meetings, bulletin board, £29-£50 pa (£36 businesses, £19 students) Free 30 day trial 0732 771512.

PHILOSOPHY APPLE - G Haines, Chinese Room Club, 43 Cornwallis Gdns, Hastings, East Sussex TN34 1LX. Tel 0424 714 102

PICK OPERATING SYSTEM - Hugh Kellt, UK Pick Users Assocn, PO BOX 907, London N10 2SB. 081-462 4666

POSTSCRIPT USERS GROUP – JP McKeown, 3 Pedn Moran, St Mawes, Cornwall TR2 5BA.

PRESTEL - Andy Leeder, ClubSpot 810, Church Farm, Stratton St Michael, Norwich, Norfolk, NR015 2QB

PSION ORGANISER - Mike O'Regan, IPSO, 130 Stapleford Ln, Beeston, Nottingham NG9 6GB. Tel 0602 735482

PUBLIC ADVERTISING LIBRARY – For Speccy owners. Two free C90 tapes when you join, as long as you send an adventure game original. We have some adventures available but we want more. For more info send an SAE now. to Alec Carswell (PAL), 16 Montgommery Avenue, Beith, Ayrshire, Scotland, KA15 1EL

PUC'S ATARI PORTFOLIO USER GROUP – New user group for the Portfolio pocket PC/organiser. Offers: newsletters, technical assistance, Talkback feature, software/hardware updates and hot news. Tel 0635 73662.

Q

QUANTA, QL AND THOR USER GROUP – The Corner House, Loxley, Warwick, CV35 9JT. Tel: 0789 842543

R

RESEARCH MACHINES - Steve Rochford RM National User Group, George Stephenson High School, Southgate, Killingworth, Newcastle NE12 0SA. Tel 091-268 2002

REVELATION (PICK) – write to Malcolm Frame, UK Revelation User Group, 136 Saint Albans Road, Watford WD2 4AE or Telephone 0923 35515.

R:BASE – write to Mrs Tansy Beal, R:Base User Group c/o Room A2044 BBC Woodlands, 80 Woods Lane, London W12 0TT. Telephone 081-576 7187

S

SA40 User group – write to Roy Williams, 17 Grove Road, Acton, London W5 6AW.

SANYO MBC-550 - M H Syed, Wistaria, 53 Acacia Grove, New Malden, Surrey KT3 3BP. Tel 081-942 9009

SCHNEIDER EURO PC - Alex Kefford, SEPUG, 11 Crabbet Road, Three Bridges, Crawley, West Susex RH10 1NF

SCIENTIFIC PC USERS – write to Tim Bunning, SPCUG PO BOX 17, Retford, Notts DN22 6BQ Tel 0777 709009

SEGA SWAP CLUB – Exchange your old megadrive games with other members. For details send SAE to SSC, 10 Sandwith Road, Todwill, Sheffield, S31 0JP

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SERVICE – Small friendly games swapping for Amiga. Over 200 original titles. Free PD swaps! SAE 13 Bournville Lane, Birmingham B30 2JY. Tel. 021-459 7576.

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SHARP USERS CLUB – contact Andrew Ferguson, 11 Harcourt Close, Henley-on-Thames, Oxon RG9 1UZ. Tel 0491 574850 evenings only

SHREWSBURY AMIGA USER GROUP – 1 Haughmond Court, Featherbed Lane, Harlescott, Shrewsbury, SY1 4NJ. Please enclose an SAE

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SOFTWARE EXCHANGE – send an SAE for info to 13 Bourneville Lane, Birmingham, B30 2JY or phone 0860 444594 from12pm to 10pm

SOFTWARE EXCHANGE THE COMMODORE CLUB – For all C64, Vic 20 and Comm 16 users. All welcome. Send SAE for details to Commodore Club, 36 Origar Way, Benton, Newcastle Upon Tyne, Tyne and Wear, NE12 8ED.

SOFTWARE EXCHANGE SERVICE – buy/sell/swap Amiga, ST and PC. SAE for info to 13 Bournville Lane, Birmingham B30 2JY or call 0860 444594.

SOLITUDE MOUNTAIN – Friendly new Amiga user group. Send blank disk or 50p to 565 Heathway, Dagenham, Essex

SORD M-23 – B Nicholson, Schlumberger Norge A/S Bjergstedveien, 4007 Stavanger, Norway. 474 657002

SMART SYSTEMS USERS – write to Francis Barton, Basement Holy Rosary church, Louis Street, Chapeltown, Leeds LS7 4BP. Tel 0532 629202

SOFTWARE EXCHANGE SERVICE – for info send SAE to 13 Bournville Lane, Birmingham, B30 2JY. New telephone number: 021 459 7576. Buy/swap/sell.

SOUTH 16 AMIGA USER GROUP – the UK's number one Amiga user group. For more information send SAE to South 16, PO box 16, Southampton, SO9 7AU. Now!

SOUTHERN AND DISTRICT. PC and ST user group.Tony Lowes 61A Broadway West, Leigh on Sea, Essex SS9 2BX

SPANDEFANG SOFTWARE – 68000 AC Coders magazine. Send £2 for sample to 4 Cambridge Terrace, Harrogate, North Yorshire, HG1 1PN. Atari, ST, IBM PC. 3.5 inch disk included in price.

SPECTRUM PLUS 3 USER GROUP – monthly magazine. 57 Lovers Walk, Dunstable, Bedfordshire, LU5 4BG

SPECTRUM DISCOVERY CLUB – magazine on disk for the Opus Discovery Disk Drive and the Sam Coupé. BD Mumford, 57 St Saviours Road, West Croydon, Surrey, CRO 2XE

ST USER GROUP – Send an SAE for a news letter to ST User Group, Ben Dobson, 1 Ryedale Way, Selby, North Yorkshire YUO8 9PB.

STEN – the ST enthusiasts newsletter issue three now ready. Send a disk and SAE for your copy now. Postal Trivia League starting. Interested? Write to 14 School Road, Morningside, Newmains.

STOS magazine, out every month.Send an SAE for full details to 11 Shore Crescent, Bishops, Waltham, Hants SO3 1DZ

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T

TAS (DATABASE) – Neil Hegarty, TASUG C/O Solutions for You, 1st Floor, 2 Lytton Rd, New Barnet, Hertsm EN5 5BY. Tel 081-441 1133, BBS 081-449 4171

TCS PD – over 250 disks. Only 99p. Send SAE to 40 Upton Gardens, Tarring, West Worthing, Sussex.

TANDY/MS-DOS – Roger Storrs, NATGUG Oakfield Ldge, Ram Hill, Coalpit Heath, Bristol BS12 2TY. Telephone 0454 772 920

TELECOMMS USERS GROUP – Interested in forming a Business Users Telecomms Club? If so then contact John Lever, Systems Services, Little Thatches, Rushden, Nr Buntingford, Herts, SG9 0SH. Tel 076 388393

TEXAS T199/4a - Peter Brooks, International TI User Group 96 Banbury road, Oxford OX2 6JT. Telephone 0865 510822.

THUNDERNEWS – CBM 64 user magazine on disk/tape. Send sae for details and competition to 159 Hough Road, Walsall, West Midlands WS2 9BG

TIUGUK – TI99/4A user group UK for S/W on disk, tape and module. Offers magazine and help. Write with SAE for more details to Peter Walker, 24 Bacons Drive, Cuffley, Potters Bar, Herts EN6

TRANSPUTER - Howard Oakley, Transputer User Group, Brooklands Lodge, Park View Close, Wroxall, Ventnor, Isle of Wight

TURBO – SAM Coupé user group. Six newsletters and six magazines each year plus a big PD library. £10 for a year. SAE for information to TURBO, 8 Healet, Lakeside, Tamworth, Staffs, B77 2RF. Established January 1990.

TYPECAST PDL – Atari ST/STE PD. Solely for DTP, WP, Art, clip art, no games. Send disk and SAE for disk catalogue to 31 Hartfield Crescent, West Wickham, Kent.

U

UK SOFTWARE EXCHANGE CLUB – Swap your used programs. Free membership. Atari ST and Amiga originals. SAE for details. No obligation. Write to UKSEC (SE), 15 Tunwell Greave, Sheffield S5 9GB.

UNIX USERS – UKUUG Secretariat Owles Hall, Buntingford, Herts, SG9 9PL. Tel 0763 73039 /73255 (fax)

V

VENTURA PUBLISHING - VPU (Ventura Publisher User group) Linda Liddell VPU c/o LLA Lound House, Forncett St Mary, Norfolk, NR16 1JP. Tel 0508 41580

W

WAKEFILED AND DISTRICT AMIGA USERS – interested in forming a local Amiga users' group? Contact Eddy on 0924 361101.

WHITE HEAD PDL – Atari ST PD from £1.40 per disk. Send two second class stamps for latest list to Hakan Akbas, White Head PDL, 15 Cavendish Mansions, Clapton Square, London E5.

WORDPERFECT – Michael Norman, Wordperfect User Group (UK) Dove Barn, Manor Farm, Wootton Woodstock, Oxon, OX7 1DX. Tel 0992 850500.

WORDPERFECT – Dr Ian Barton, A Perfect World, High Rigg, Alma Rd, Tideswell, Derbys SK17 8LS. Tel 0298 871 925

THE WOOLOOMOOLOO CLUB – If you like Jean-Michelle Jarre then join the club. Write to Bryan McPhail, 14 Wentworth Square, Kilwinning, Ayrshire, Scotland KA13 6RQ. Please state NCE 131.2.

SPOTLIGHT ON THE SIMFLY CLUB

If you're the sort of person who enjoys a bit of aeronautical excitement from the comfort of your own armchair then the Simfly Club could be just up your street.

Simfly is a specialist British club dedicated to the promotion and development of precision computer flying and air navigation skills.

The basis of the club is the NAVPAC achievement scheme which is a series of four training programmes which aims to take members from a novice stage of flying to a "seriously good" standard. The first level covers basic flying knowledge, aircraft control and visual navigation, while the fourth level concentrates on precision approaches.

The club uses the MS Flightsim 3 and 4 software running a PC as the basis for the scheme, though it plans to extend to other software in the near future. New members always start at level one and progress to each level when they choose. There is also an assessment scheme for which the club awards Proficiency Certificates.

On joining the new member receives an area visual navigation chart, basic visual navigation instructions, a list of a assignments, and a demo disk which is also used for assessments submissions. Each new level is available upon payment of that level's NAVPAC fee.

The Club also issues a very in-depth fanzine packed full of aviation information and flightsim tips.

Annual subscription costs £10, and the NAVPAC and assessment fees cost between £5 and and £10 depending on disk size and level.

Write to the Simfly Club at 2 Henley Manor, Raincliffe Avenue, Scarborough YO12 5BU.

THE PD COLUMN

This week Frank O'Connor delves into the PD sector and finds a professionally programmed Amiga game and comic relief and Pinball wizardry for PC users

Bug Bash is here. ***Bug Bash*** is one of those rarest of Amiga PD titles. A professionally programmed game for the price of a big bag of air. ***Bug Bash*** comes from the chaps at Amiganuts and jolly good it is too.

Bug Bash is a scrolling shoot-'em-up-come-platform game and features some of the most bodacious graphics and gnarliest sounds you'll ever see or hear on the Amiga (well, for free anyway). The game is cute with a capital C and for those of you with a twisted disposition, it's best avoided. The bad guys are cute, the good guys are cute, the backgrounds are cute, even the platforms are cute.

If you can counter the nausea the cuteness can cause, then you'll find yourself with a superb game. The character you control isn't actually named, so we'll call him Spanky for safety's sake. Spanky has a problem. His garden is infested with bugs. There are bees, wasps, beetles and all manner of creepy-crawlies.

Fortunately, Spanky is armed with a can of bug spray. He can zap the horrible little critters out of the sky, either jumping to reach them, or activating his helicopter back-pack. The point of all this, apart from dealing death to ravenous insects, is to clear the garden of litter.

To do this, you simply pick up any old sodapop cans and bits of paper you find, taking them back to a litter bin, where you deposit them for bonus points. Bonus pick ups for energy are also available at various intervals. Getting to grips with the control method is tricky, running and jumping are easy, but piloting the helicopter is a real pain.

• Amiganuts brings us the cute with a capital C Bug Bash. Protect your garden by zap ping creepy crawlies with your can of bug spray along to great sound effects and music.

Graphically, ***Bug Bash*** is a treat. It's colourful and packed to the brim with lovely, wonderfully animated sprites. The sound effects and music complement the game perfectly and the overall effect is a polished and spiffy game which wouldn't look out of place on the shelves of your local software emporium.

The game isn't exactly PD, more of an agreement with a programmer. This makes no difference to the average punter, it just means that you can't copy the software freely. Still, it's cheap, it's cheerful and it's a complete bargain.

PD GETS ON THE PC

IBM PC owners are being catered for extremely well at the moment. The PC has seen a rise in popularity with the acceptance of the PC as a games machine. This trend has been reflected in the PD scene of late, with more games oriented software seeing the light of day.

Owners of EGA and VGA machines are well aware of how graphically capable their machine is and one neat little PD game that shows this off, is ***Captain Comic***. This game and many others, is available from Benetech. The game is a neat scrolling platform job, with more than a little in common with ***Wonder Boy*** and other titles of that ilk.

Captain Comic looks like a chimpanzee. Quite how an ape achieved

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This package includes all the software you need for a small - medium sized business from a menu system through to a security system . The package includes Page Financial Controller, AsEasyAs, Droege CAD, Prooomm Plus, Freeway Payroll, Mindreader, File Express, Virus Scanners to name but a few of the programs included in this pack.

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This is a general selection of programs carefully put together to get the most from your PC. The package includes French & Spanish tutors, Qedit, Auto Backup, DanCAD 3D, City Desk (DTP), PC-Write, Protected Program Copiers II, Cashbook, Homebase, Poem Writer, Ms-Dos Tutor, Mouse Manager plus many more programs included in the pack. 66 in all!!

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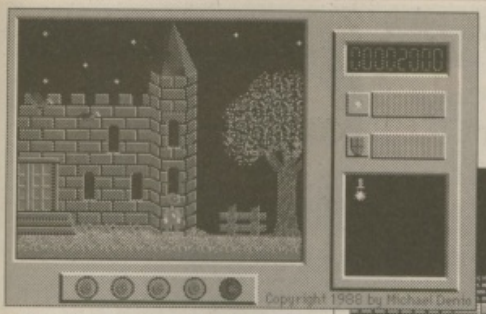

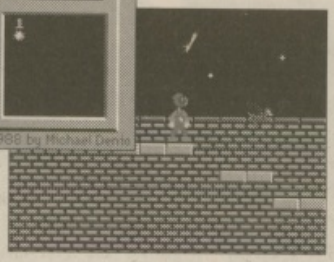

• The chimp-like Captain Comic's acrobatic skills enable him to leap chasms and vault platforms with ease.

such a high rank is a bit of a mystery. Still, a captain he is and a bit of an adventurer too. ***Captain Comic*** has to negotiate a series of levels, leaping chasms and vaulting platforms. He's a fairly acrobatic sort of a chimp and can leap fairly tremendous distances.

The distance he jumps is decided by the length of time you hold down the jump button. A long press causes a jump of Herculean proportions, while a short tap is more of a skip than a jump.

Along the way, you will be accosted by all manner of baddies. The most common enemy is a small harmless looking bird. These come alone or in flocks. They swoop and dive, all aiming for your tender head. Contact with one of these birds means a drop in energy for ***Captain Comic*** and should be avoided at all costs.

You can replenish energy at various intervals and a useful shield add-on is to be found on later levels. The graphics are pretty, very colourful and well designed. The jerky scrolling lets things down a little, but what can you expect from a PC? Sound is sweet and takes some advantage of the PC's internal speaker. ***Captain Comic*** is good, but not nearly as good as...

3D PACMAN!

You'll never guess what this game is! Oh, you did. Oh dear, you've spoiled the surprise. ***3D Pacman*** is exactly what it says it is. A 3D version of the classic maze munching beach ball game.

This game has been copied and redone more times than any other game in existence and now it finally appears on the PC. The object of the game (for those of you who have lived in Tibet for the last 20 years) is to navigate a maze, eating dots and avoiding ghosts. This time, there's no birds-eye view of the proceedings, it's a three-dee extravaganza, so realistic you'd think you were that voracious yellow beach ball.

Being Pacman isn't all fun though. There's a lot of dots to be eaten. As you zoom through the maze (and in this version it's more of a maze than the original), you pick up dots. In your way are tons of very nasty and unpleasant ghosts. Contact with these geezers is fatal, so avoidance is the best policy.

They tend to creep up on you and you can get quite a fright when you turn a corner to find one in front of you. Power pills can be eaten, endowing you with the ability to eat the ghosts (very useful). You can turn the tables on them and chase them round the maze. It's all classic stuff and the new 3D perspective gives the tired old theme a shot in the rear. Highly reccomended for big laffs.

PINBALL PLAYTIME

If your PC isn't all tired out after that lot, then it's time to dust off your platform shoes, get out your "Tommy" LP and groove along while you play ***Pinball*** on the PC. The clash of steel on steel. The ringing of bells and bonus multipliers, the thud of rubber on bearings.all of these are impossible to reproduce on a PC speaker, but you can do a lot with EGA graphics these days.

BUT WHERE DO ALL THESE GAMES COME FROM?

Benetech Systems
21 Loughborough Road,
Leicester LE4 5LJ
Tel: 0533 611231.

Amiganuts
169 Dale Valley Road, Hollybrook,
Southampton SO1 6QX.
Tel: 0703 785680.

Pinball is a rather natty version of the real thing. It takes the age-old birds eye perspective of the proceedings, looking down on the colourful table, complete with bumpers, flippers and of course a ball.

The graphics are very simple, colourful and attractive, but simple all the same. The real beauty of this incarnation, is the realistic ball movement. It's faultless. The ball slides around the computer generated table just like the real thing. The angles are right, the ricochets perfect, the game moves like a dream and you can develop some fairly sophisticated playing techniques.

Pinball is just one of many titles available from Benetech and it should be noted that they also do a fairly vast range of business and utilities software too. Groovy. ■

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Into coding? - Want to learn? The Amiga Coders Club is for you! ACC 1-4 is the first four compressed issues of an excellent series for coders, even if you are new to the Amiga. If you want to learn Assembly, using DevPac, (or our own new ACC special assembler disk), this is the club for you! ACC 1-4 (compressed) £1.50. The Amiga Coders Club disks are packed with source, hints, tips, advice from many of the well known coders that are on the Amiga scene today. Issue numbers 5-14 are now available. Please note, (excluding the compressed introductory disk (ACC 1-4), and no. 12, the price for each issue of the ACC disks is only £3.00. ACC 12 is our birthday issue, it is a 2 disk set, and therefore the price is £6.00. Amiga Coders Club Special! Here is a low priced assembler package for all you coders out there in Amigaland. (Given a good review in Amiga Format) £5.00.

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Computer Animation Competition and Exhibition Wed 21 - Wed 28 August
The Amiga Centre Scotland. Info: 031-557 4242.

PLASA Light & Sound Show
Sun 8 - Wed 11 Sept
Olympia 2, Earls Court, London. Info: 071-370 8174.

Leeds Computer Extravaganza
Fri 13 - Sun 15 Sept
The New Exhibition Centre, Leeds University. Info: (0532) 677 657.

CP/M & MSDOS Users' Group
Sat 14 Sept
The Spring Lodge Community Centre in Witham. Info: (0376) 517496.

Business Computing '91
Tue 17 - Fri 20 Sept
Earls Court Exhibition Centre, London. Info: 071-486 1951.

International Police Exhibition and Conference '91 Tue 17 - Thu 19 Sept
Barbican Centre. Info: 081-995 7700.

The Works of Charles Babbage
Thu 19 Sept
Lecture at the King Edward VI College, Totnes at 14.15. Info: (0803) 863821.

Effective Management of Information Technology Security Conference
Mon 7 - Tue 8 Oct
The Forte Crest Regents Park Hotel, London. Info: 071-587 1117.

Computers Count Tue 8 - Thu 10 Oct
Totnes Civic Hall. Info: (0803) 863821.

Business Communications Awards
Thu 10 October
The Savoy Hotel. Info: 0800 800 847.

Charles Babbage's Impact on Modern Computing Wed 23 Oct
The Science Museum, Kensington, London at 17.30. Info: 071-938 8196.

Image Processing '91
Tue 29 - Thu 31 Oct
At Birmingham NEC. Info: 081-868 4466.

System Builder Wed 30 – Thu 31 Oct
Sandown Exhibition Centre, Esher, Surrey. Info: (0822) 614671.

Computer Graphics '91
Tue 5 - Thu 7 Nov
Alexandra Place, London. Info: 081-868 9933.

Desktop Cad '91 Tue 5 - Thu 7 Nov
As above.

Open Systems '91 Wed 6 - Fri 8 Nov
Olympia, London. Info: (0784) 472200.

All Micro Show and Radio Rally
Sat 9 Nov
Bingley Hall, Stafford. Info: (0473) 272002. ■

Golden Moments

A look back into the history of computing with *Express*. If it happened we reported it first.

ONE YEAR AGO

● After a brand new sports car slammed into the back of their patrol car and shunted it 134 feet, the police got out to investigate. What they found was a drunken driver and a resilient talking car computer, still pleading, 'Slow down! Slow down!'. If you're looking for a best friend, forget computers, stick with dogs.

● The fastest ever (at the time, at least) PC was launched by Compaq, running a 486 processor at 33MHz. At £8,000, it immediately fell into competition with Sun's similarly priced, newly released bottom of the range SPARC station.

TWO YEARS AGO

● A particularly vicious virus was discovered, which would only infect PCs running *dBase*. All files saved by the user would seem to be stored as normal, but were in fact being collected by the virus. Only when the virus was discovered and removed would the damage be done: it would take all of these files with it. If, on the other hand, the virus was left alone, it would wait for 90 days before wiping the hard disk.

● Developers writing for the Lynx, Atari's hand-held games console, were given Amigas to aid software development. Could this have been because the Amiga is a better machine than an Atari for development purposes, or was it simply a goodwill gesture from Atari to Commodore?

● Speaking at an international hacking conference, a West German hacker explained why he had sold secrets from Western defence computers to the KGB. Apparently, it had nothing to do with politics, but was motivated by 'technical fascination'. Wau Holland, the prominent hacker, admonished him for a breach of hacker ethics. The West German intelligence authorities were also keen to give him a good admonishing...

The Insider...

Famous industry figures beware – wherever you are and whatever you're saying, The Insider will be listening in...

The Insider wishes to let you into a secret – it's no fun being a scandal-collector you know. All this cloak and dagger stuff is wearing on the soul, and the bank balance. Basically, mongering scandal is a nasty process, but it's addictive as hell. By the way, if you have any Insider-like info on famous computer industry figures, then send it to: The Insider, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW. A fiver will go to anyone lucky enough to get an item printed. Anonymity is assured.

TALKING OF WHICH

The people we really want to hear from are not those with grudges to bear against employers or ex-employers. We want to hear from those upstanding folk who work with computers every day and get to hear about things which are normally held back from the public. Info relating to bugged software being released deliberately (it has happened and the people responsible know who they are), dodgy business deals which see money passing from account to account when it shouldn't be... you know the kind of stuff. Keep us in touch. Hey! let's keep computing honest.

THAT'S OUTRAGEOUS

The *Express* look at the nastier side of cute, fluffy and non-profit making PD has caused a bit of an uproar among the PD librarians and sysops. It appears that Ray Burt-Frost of Amiganuts is not the the most popular fellow among his peers.

Express hacks have been inundated with calls from PD-people around the country complaining that their firms were not mentioned and that Ray Burt has been running his operation in an aggressive manner, edging out other firms and such like. We cannot substantiate any of this and would not condone or otherwise any such statements. All The Insider has to say is, if you have any beefs, then send them in pronto. It all needs to be out in the open.

DON'T TOUCH THAT DISK!

This is a genuine public warning in the best sense of the phrase... If you are considering the purchase of the latest edition of *CU Amiga*, beware, the cover disk apparently contains a virus. The Insider was going to check this claim out on one of the many machines which litter the office, until a rather worried looking tech-person leapt on the back of the old purple velvet smoking jacket, ruffled the designer silk shirt and screamed: "What the blue blazers, the freaking, crashing, flaming heck do you think you are doing?" These techies get so wound up.

Due to further expansion of our Sheffield offices, a number of vacancies have now arisen.

PRODUCER

If you have the ability to manage a game from conception through to completion, then this vacancy could suit you. Ideally you will have an understanding of programming, a sound knowledge of game structure and the ability to communicate with individuals and teams of programmers. Salary and benefits will be commensurate to experience. A current full driving licence is essential. Help will be given should the successful applicant need to re-locate.

PROGRAMMERS / ARTISTS

We require creative programmers and artists to work on 6502, Z80, 68000 and 8086 platforms. The variety of work ranges from Gameboy through to CD based projects . A proven track record is helpful but not essential as all applicants will be judged on ability. Salary and benefits will be commensurate to experience. Help will be given should the successful applicants need to relocate.

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In addition to our internal programming teams we are always looking to take on any freelance projects from external teams who have a proven track record. Demos and storyboards are always assessed.

All enquiries will be treated in the **strictest confidence.** Contact James North-Hearn or Sean Kelly on 0742 753423 or write to Gremlin Graphics, Carver House, 2-4 Carver Street, Sheffield, S1 4FS.

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U.S. Gold, Europes No.1 Computer Leisure Software Publisher, urgently wishes to fill the following posts:-

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Helpline Operator

To operate and set up telephone helplines to provide general information and help to the public. A basic knowledge of computers/software/gameplaying is required along with an excellent telephone manner and lots of patience. The applicant should preferably have a driving license and must be willing to deal with a variety of customer queries.
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All candidates should be of high calibre and able to demonstrate knowledge and enthusiasm for the computer games industry.
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Games Week

Stuart Campbell guides you through the summer games releases, gets you into the movies and keeps you in touch with the top 20 charts

STAR RATINGS

★ ★ ★ ★ ★ = EastEnders
★ ★ ★ ★ = Coronation Street
★ ★ ★ = Home and Away
★ ★ = Emmerdale
★ = Neighbours

RIGHT TO REPLY

Phew! Our postman has had to take a holiday after struggling to cope with the weight of the letter that flooded in in response to my sulky old rant at ELSPA a couple of weeks ago on the subject of mixed-price charts. The letter was from none other than Roger Bennett, General Secretary of ELSPA, himself, and went like this:

"ORDERS FROM GESTAPO HEADQUARTERS
Hello Stuart.

Today I am wearing my little black moustache, a black wig, and can be heard clicking my heels and shouting 'Heil ELSPA!'

I am sure you are sufficiently endowed with humility to be prepared to listen to the arguments for amending the charts which seem to have upset you so. I recall that you were a rational man (*don't know where he got that idea from - Stuart*) and that you would wish to hear both sides of an argument before taking a stance.

I can certainly take on board your argument on having charts based purely on sales but I am sure you will equally agree that comparisons should be based on a like-for-like basis. For example, the record industry does not have LPs in the CD chart or 45s in the LP chart.

It is apparent that ST owners are not really interested in Amiga, PC, or any other format charts. The same goes for owners of all other machines.

Additionally, the growth in specific format magazines requires specific charts based on full price and budget prices. I hope that you will bear in mind that the costs of producing the charts are borne by ELSPA members and the information they require has significant influence on how the charts appear. A weekly bound report called 'Chartalk' with 24 charts listed is distributed to Companies which make additional subscribtions for obtaining it. This contributes substantially towards paying what is virtually a six figure sum for the annual contract to Gallup for collecting the data and producing the chart.

While it would appear that you would prefer a totally unstructured arrangement for the computer entertainment business, I would suggest that some level of industry regulation is ideally necessary. Software publishers can then perhaps continue to develop entertainment software based on achieving a level of profitability for re-investment in new, good quality product so that you have something to write about, consumers have something worthwhile to buy, and magazine publishers can continue to employ Stuart Campbell. Long may it continue."

Well, at least he's got a sense of humour. But let's take a look at the arguments. The LPs and 45s one is, I'm afraid, nonsense. LPs and singles are inherently different products, a single is just as its name suggests, one song (OK and a B-side), whereas an LP is a much larger collection of separate tracks. The obvious parallel is with game compilations, but ELSPA's full-price chart includes compilations alongside

TOP 10 ALL FORMATS CHART

THIS WEEK	LAST WEEK	TITLE	PUBLISHER	MACHINE
1	1	*Man Utd Europe*	Krisalis	SP CO AM ST AG
2	27	*Hero Quest*	Gremlin	SP CO AM ST AG
3	7	*Dizzy Collection*	Code Masters	SP CO AM
4	6	*Teenage Mutant*	Mirrorsoft	SP CO AM ST AG OT
5	9	*Lemmings*	Psygnosis	SP CO AM
6	10	*PGA Tour Golf*	Electronic Arts	AG OT
7	5	*Monkey Island*	US Gold	ST AG OT
8	19	*Eye of the Beholder*	US Gold	AG OT
9	12	*Viz*	Virgin	SP CO AM ST AG
10	11	*Big Box*	Beau Jolly	SP CO AM ST AG

ST = Atari ST AG = Commodore Amiga PC = IBM PC or compatible SP = Spectrum
CO = Commodore 64 AM = Amstrad OT = Other
Chart compiled by Gallup. © European Leisure Software Publishers Assoc.

PLAYING TIPS

SCOOBY DOO AND SCRAPPY DOO

• Hi-Tec • Spectrum

If you're stuck on this rather spiffy little platformer, fret no longer. When you're on the title screen, simply hold down the letters H, E, L and P. The border should go white, and you'll have infinite Scrappies. Whether this is a good thing or not, you'll have to decide for yourself.

GAMES REVIEW

ARMALYTE

Thalamus • Amiga • £25.99 • ★ ★

This is a re-write of a popular C64 shoot-'em-up from a few years back, and has been programmed by Arc Developments, last seen coding the phenomenal *R-Type II* for Activision, so when it came into the office I had high hopes of a top-notch blasting experience.

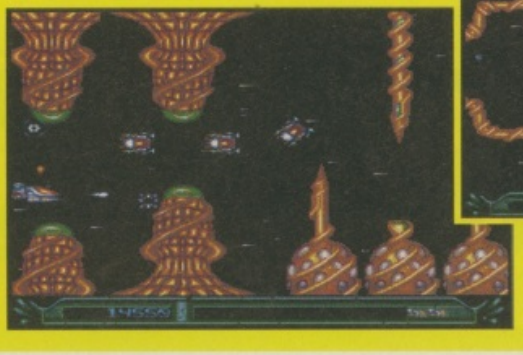
First impressions seemed to confirm this, with big, lush graphics zipping smoothly around to the accompaniment of a tasteful soundtrack and some great zappy effects, but within minutes things started to take on a different complexion as it all went horribly wrong, in more ways than one. Initially, it went horribly wrong for my little spaceship, as it met a bloody death several times in quick succession at the hands of the game's tough aliens and cramped landscapes, but then everything began to fall apart for the programmers too.

After losing my three lives (which didn't take long at all), the game insisted on keeping me hanging around for 50 seconds while it ran through a couple of unexciting animated sequences, displayed the title screen, reloaded the first level, etc. Since my game hadn't lasted 50 seconds in the first place, this was more than a little bit frustrating and there was no way of skipping the delay.

With every passing game the wait became more and more irritating, and eventually the disk found itself ripped from the disk drive and hurled with great force against the office wall. Now you might say that this was just me being crap at games and/or incredibly impatient, but I spent hours trying to make a decent amount of headway through *Armalyte* without success. It's a tough enough game at the best of times, but when you lose a life you lose all your power-ups (in time-honoured fashion), and taking on the subsequent attack waves without them calls for more skill than even an ex-European video games champion like myself can muster.

It gets even worse when you realise that at least 50 per cent of the dangerous situations in the game are of the type where you don't see them coming, and if you're not in the right place when they appear you're a dead man. In fact, this game reminded me of nothing so much as *Rick Dangerous*, which used a similarly unfair way of impeding your progress.

Armalyte is the kind of game which will suit incredibly talented zappers on the lookout for a stern test of memory, and who don't mind putting up with some decidedly iffy collision detection and samey landscapes while they're about it, but nobody else is going to care for it all that much.



• If you think that this doesn't look all that tough really, then why don't you give it a try, pal? Armalyte is a game for which only the most hard-ened alien-butcher need apply.

TOP 10 ALL FORMAT BUDGET

THIS WEEK	LAST WEEK	TITLE	PUBLISHER	MACHINE
1	1	*Bubble Bobble*	Hit Squad	SP CO AM ST AG OT
2	NE	*Shinobi*	Mastertronic	SP CO AM ST AG OT
3	7	*Dragon Ninja*	Hit Squad	SP CO AM ST AG
4	6	*Double Dragon*	Mastertronic	SP CO AM ST AG OT
5	3	*Magic Land Dizzy*	Code Masters	SP CO AM
6	9	*Fantasy World Dizzy*	Code Masters	SP CO AM ST AG
7	10	*Multimixx 1 Golf*	Kixx	SP CO AM
8	12	*Pro Footballer*	U&H Games	SP CO AM
9	15	*Quattro Cartoon*	Code Masters	SP CO AM
10	13	*Dizzy Panic*	Code Masters	SP AM

ST = Atari ST AG = Commodore Amiga PC = IBM PC or compatible SP = Spectrum CO = Commodore 64 AM = Amstrad OT = Other.
Chart compiled by Gallup. © European Leisure Software Publishers Assoc.

individual games without distinction. There aren't different charts for ordinary LPs and double LPs either, so dividing things purely by price is clearly an artificial imposition.

As for the point about machine-specific charts, I'm a bit confused. This is a multi-format magazine, and I personally believe (backed up by other correspondents) that ST owners or whoever ARE interested in a general chart, so long as it's in their machine's field (ie, 16-bit or 8-bit).

To ELSPA members, the question has to be "What information can you get from price-separated charts that you couldn't get from an all-in-one chart?" Mixed-price charts give you more information, not less.

And finally, no I wouldn't prefer a 'totally unstructured arrangement'. There's no point in comparing 16-bit sales with 8-bit ones, but it's quite definitely interesting to see whether ***F-15 Strike Eagle II*** on the ST and Amiga is outselling ***Little Puff In Dragonland*** on the ST and Amiga, despite costing £32 more. Quite where all this ties in with software houses making bigger or smaller profits is beyond me. Please Roger, give us back our charts.

HERE IT COMES AGAIN

This week movie games:

PLATOON • The Hit Squad • £3.99 for 8-bits and £7.99 for 16-bits •
Platoon was a game from the old school of movie licences – pull a few critical points of the film and make little sub-games out of them, then jam the whole lot together to make, hopefully, one decent whole game. It was an approach that led to a fair few inglorious failures, but this was one of the triumphs.

Where *Platoon* succeeded was in capturing the tension and atmosphere of the movie, and making all of the games capable of standing up for themselves to at least some degree. Players found themselves creeping around, lost in dense jungle and jumping at the slightest sound, and suffering moments of heart-stopping fright as a Viet Cong guerrilla leapt up right in front of their face from out of nowhere.

• *Get funky with Platoon.*

The game itself was well-designed and gripping, and still ranks right up there with *Batman* and *The Untouchables* as one of the very best movie licences ever. ★★★★

MOONWALKER • Kixx • £7.99 •
Is there any more that needs to be said about *Moonwalker*? If *Platoon* was the right way to go about a movie conversion, *Moonwalker* was surely an object lesson in how it could all go appallingly wrong. And yet the basic premise is the same, important moments of the movie turned into sub-games, so why was, and is, *Moonwalker* so unfailingly dreadful? The simple answer is that while the concept was sound, the execution (the sub-games themselves) was shocking.

Moonwalker brought to the fore some of the worst game design by a live person in the history of mankind, coupled with – on the Amiga version only, fortunately for ST owners – technical ineptitude of the highest order. The looped sample of Michael Jackson's 'Bad' which continuously accompanied the game was so atrociously done that the amount of time anyone could bear it for before switching the sound, or more commonly their computer, off altogether roughly equated to how long it took them to stop laughing, pick themselves up off the floor, and wipe the tears from their eyes.

• ***Moonwalker - it's...not very good, actually.***

ST owners were luckier, they only had to suffer the unbearably tedious gameplay, but really, there isn't a game-splayer alive who should be made to go through playing this for love nor money. And I should know. ★

RED HEAT • The Hit Squad • £3.99 for 8-bits and £7.99 for 16-bits •
OK, trivia fans, here's a question for you. What have Michael Jackson and Arnold Schwarzenegger got in common? Well, not much, but there is one thing binding these two media titans together – they've both been the subject of truly dire computer games. What must surely be the nadir of Arnie's entire career (yes, even lower than starring in *The Jayne Mansfield Story*) came courtesy of this game, a software atrocity that's not so much red hot as head rot. It featured a 'Cinemascope'-type wide screen, bordered by huge expanses of black nothingness, a phrase which also serves to describe the state of mind of whoever had the downright cruelty to design the gameplay.

Arnie lumbers slowly along the screen, punching out an endless line of bad guys and occasionally coming a cropper to one of the many random hazards that pop up now and again from out of nowhere, giving him no time to react to them even if he was still awake (which is more than could likely be said for the unfortunate player any time after two minutes into the game). A couple of banal sub-games add no interest whatsoever and the only truly remarkable feature is the breathtakingly bad (no, really, you wouldn't believe it) animation on the between-levels intro screens, which is at least good for a laugh. Which is all Ocean deserves for asking people to fork out for this disaster for a second time. If you buy it, I'll be back... ★

• ***Big Arnie recoils in heterosexual horror as a chum expresses an honest opinion of Red Heat***

MOVIE GAME COMPETITION!

Yes, you could win some top movie-game-type prizes if you're the first person to have the postcard pulled from the hat of cards containing the correct answer to the following movie-type question:
What do the films *Tron*, *The Battleship Potemkin*, and *The Best Little Whorehouse In Texas* have in common?
Answers to 'I Want To Win 50 Games', at the usual Express address.

HATSTAND CORNER

While taking a short holiday back in bonnie Scotland (home of clean air, decent water, real beer and chips with nippy sauce) this week, I happened across something which made my old heart do a double-take. Nestling in the corner of an Edinburgh arcade, what should I spy but a *Space Invaders* machine. 'Nothing abnormal about that', I hear you venture, but this wasn't any old *Space Invaders* machine. Oh no, this was a Prize *Space Invaders* machine. Yep, in a similar vein to the old cash-prize *Tetris* machines that came out a while ago, you can now play *Space Invaders* for money.

You only get one life, you lose all your points if you miss a Mystery Ship, and the invaders themselves act in some strange ways (although if you ever played the rare first arcade sequel, *Space Invaders* Part II or Deluxe, you'll know what to expect), but those old monochrome graphics and that old compulsive gameplay are back, as if they'd never been away.

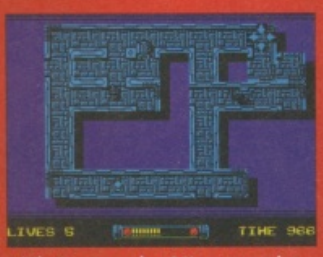
The 50p-a-game price tag might jolt a few veterans a bit, but with a maximum of £20 up for grabs, you can't really complain (and you can always have a game with no prizes for 30p). Conclusive proof, I think you'll agree, that the world has finally gone completely insane...

BEG, BORROW AND BURN

Unfortunately, we seem to have reached the lowest point of the software industry's summer recess, so that new games are incredibly thin on the ground. With that in mind, it's maybe a better idea to save your money and head off to Blackpool for a week, but if you really must buy a game...

BEG
F-15 Strike Eagle II • MicroProse • £39.99 for Amiga
Finally out, it's the latest in a long line of definitive action flight sims from Wild Bill and the boys. It won't be the game to convert you, but if you're a fan it's a stunner, and it's accessible too.

BORROW
Insector Hecti In The Interchange • Hi-Tec • £2.99 for Spectrum



• ***What's going on here? I'm not sure, but it's jolly good***

This curious little maze puzzle game suffers a little from that old Speccy bugbear of unclear monochrome graphics, but it's inventive and addictive, and for three quid that can't be altogether bad, now can it?

BURN
Burn something? In this heat? Are you kidding? Don't you think the ozone layer's in a big enough mess right now? Besides, when software's this hard to come by, beggars can't be choosers. If you see a new game, buy it. (Er, but don't blame me if it's crap...)

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STARTALKER CALLING...

Voice mail, automatic calling and answering, and more. It's all supposed to be possible with Staria's StarTalker. Tim Howell looks at StarTalker and speculates on its possibilities

PRODUCT: StarTalker
COMPATIBILITY: PC
FROM: Staria Limited
CONTACT: 0202 813141

Computers today are capable of almost anything and while the average user might not be able to use some of the more specialised hardware available, sometimes it's worth looking at them anyway, just to see what they're capable of. We look at StarTalker, a device that enables a PC to act as a voice mail and message forwarding machine, amongst other things.

StarTalker is a half-sized card that slots into a PC expansion slot. The card comes packaged with a microphone, a small speaker, a telephone lead and two manuals. There is also a disk of software which shows you what the card can be used for.

It must be said that this software is only a basic demonstration of what StarTalker can do. Because the card is aimed at developers who will create their own software to use it, there are no really usable applications provided with the card. Therefore, it is not possible to test the card to any great extent; instead the package must be looked at in terms of what it could be used for.

IN PRACTICE

The card, once programmed, seems to work in practice. At one stage we phoned up manufacturer, Staria, for more information, but found the company was on holiday. Instead of having to talk to an answerphone, a computer equipped with StarTalker was put in charge.

A recorded human voice gave us two options: press '1' to talk to one person or '2' to talk to someone else. Because StarTalker can recognise tone signals from the telephone, it can direct the call to the relevant person, either via a telephone extension or by calling them at another location. We left a message, which the computer subsequently recorded. About 15 minutes later our call was returned – the computer had passed on our message to the home of the person we had tried to contact. This is an example of StarTalker in action.

While it is difficult to replicate such an arrangement, the card was installed to see what could be achieved. Fitting StarTalker involves taking off the PC's case and inserting the card in any one of the empty expansion slots. This is no problem – the card sits there with its various sockets exposed at the rear of the PC.

These sockets are for the card's microphone and speaker. A telephone cord also comes out of the card which can connect to the telephone system. And, if needed, a separate telephone can also be connected.

SOFTWARE OPTIONS

Software is provided on a single floppy disk. One file is an example of how, in simple terms, the card could be used. This program features a menu with options such as replaying messages and making calls.

Two other executable files are even less complex. One is for recording and storing messages through the microphone. The computer digitises the voice and saves the message to the hard disk, which can then be replayed by the program or to potential callers. The other program is dedicated to answering phone calls and storing the caller's messages, after playing the user's own message – like an answering machine.

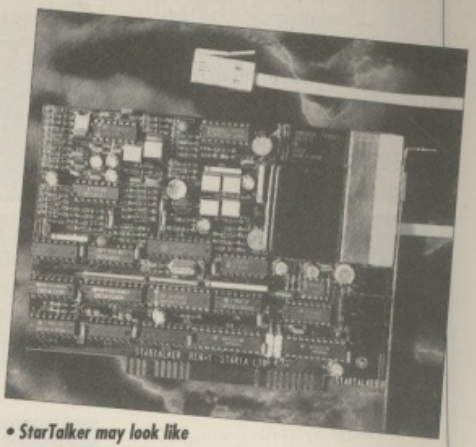
Programming source code makes up the remainder of the disk. These are written in BASIC and C and are for the potential developers to see how programs can be created. The source files have comments dispersed amongst the code explaining what it does. In reality, these files are more important than the executable files included with the card as they demonstrate the principles behind programming it, which is what, presumably, whoever buys the card is going to do with it.

• No this isn't the latest mini version of a Karaoke machine – it's Startalker's microphone and speaker!

READ ALL ABOUT IT?

The documentation for StarTalker comes in the form of two thin manuals. The first one explains what StarTalker is and how to use it; the second is about programming the card. The manuals are, in comparison other computer manuals, not very good. This is a classic case, it seems, of manuals being written by programmers for programmers, to the detriment of other people who have to read the 'techie' prose.

To be fair, developers would primarily be the ones reading these, but even so, they use very awkward English. The manuals don't actually say in definitive terms what the card does or what it is capable of, whichmakes it seem as if more than the software has to be left to the developer's imagination.



• StarTalker may look like just another PC card, but it's much more than that. By using it, your PC can answer your telephone calls, redirect those calls, and even make them. In theory a lot more is possible, but it has to be left up to the imagination of developers.

MORE THAN JUST A MESSENGER?

What can be seen from the review so far is that as the card stands, there is not much that can be immediately done with it, at least for a non-programmer. Consequently, some speculation is required as to what StarTalker is capable of, largely based on what Staria claims it can do.

StarTalker is capable of both originating and answering calls, which makes it quite versatile and opens up a number of opportunities in areas such as voice mail and tele-marketing, amongst others.

The card could, for example, answer and store messages for particular people. Callers could be given options of people to contact, or of different numbered 'mail boxes' to leave a message in. StarTalker would then recognise the commands which could be made by using a touch tone, or DTMF, phone. The people who use the mailboxes could ring up at later, enter a password via their phone and then receive their messages.

As well as answering calls, the card can also make them. One application of this would be for StarTalker to receive a message, then call someone to tell them that a message is waiting. That person could then call StarTalker back, enter a password and then hear the message. Programming the card would enable it to do all this, but at the moment this is largely speculation.

DIALLING ON

So why buy StarTalker? Actually, not just anyone can buy it – it will be on sale to developers only. So why the review? *Express* brings you the latest in technology and StarTalker demonstrates just how versatile PCs can be, as well as being an inexpensive way of creating a voice mail system, amongst other things.

Admittedly, this is a product that many people won't necessarily have access to, but perhaps once developers have got their hands on StarTalker they might bring out a new version complete with enough software for any PC user to be able to utilise it fully. ■

SHOW YOUR CARDS

FOR

▲ Can be used, in theory, for many applications

▲ BABT approved

AGAINST

▼ What the card is capable of, as it stands, remains speculative

PRICE

£800 RRP. However, the card is only being sold to developers and not individuals.

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A VEIN ATTEMPT AT PERSONAL ID

Is fingerprinting about to be replaced by vein checking as a method of identifying individuals? What exactly is it? How does it work? Tim Howell gets to grips with this new technology to see where its future lies...

Fingerprinting has long been regarded as the definitive method of personal identification, but it could soon be superseded by technology that reads the unique vein pattern on your hand and uses that as a way to identify people.

Veincheck, the name of the new technology, has been developed by Joseph Rice, an engineer from Nottingham, in combination with the British Technology Group. Rice was doing some work on improving the way bar codes could be read by computers and noticed that the vein patterns on his wrist were structured in such a way that they resembled the codes.

With vein checking fraud is impossible – veins are always attached to their owners so they can't be lost or stolen

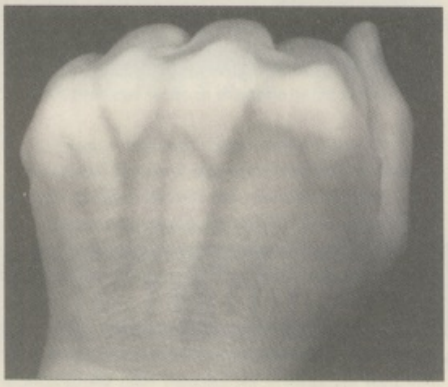
At this early stage Rice had to determine whether vein structures were uniquely individual – if they were to be used as a form of personal identification they have to be. Initially he examined the wrists of his family, and after observing that their veins were indeed different, he set about proving it on a larger scale. For this he went to a local supermarket and spent some time looking at customer's wrists – they too, he noticed, were also different. The next step was seeing if these observations could be interfaced with technology.

The uniqueness of vein structures has been confirmed by a more systematic study undertaken by Cambridge Consultants, Cambridge. The company tested 40 people to see if their veins matched. The method behind their testing was to divide the hand into 20 hexagonal zones and then look at the vein patterns to see where the joins and runs of the veins intercepted with the hexagonal zones. From there a number could be generated describing the interceptions.

This method was not as accurate as testing the whole vein pattern, but when the results were compared they confirmed the theory that vein patterns were different. Results were evaluated mathematically using a 'confusion matrix' technique. When a person was compared with their own vein pattern a result of 0.9 or 1.0 (perfect) result was achieved, while the closest anyone else came to being matched with the pattern was 0.4 – a comparatively low result. The differences in the results are large enough to show that vein structures vary, and that it would be possible to set a threshold level to determine if a pattern was authentic or not.

CONSISTENT IDENTIFICATION

Other ways of identifying people such as voice recognition, fingerprinting and hand-written signatures are not as consistent as this new method, it is claimed. On any given day a voice could sound different, fingers could be dirty or a name could be signed differently. With vein identification the veins are always in the same position, and whether your wrist is dirty or not, the infra red signal that reads their position can still work.



• This infra-red photograph highlights the vein structure of a hand as it is used by the Veincheck system. If you compare what you can see of your own hand's veins with the photo, you will see just how much of a difference the infra-red makes. And you might even be able to see how your veins are structured differently.

While many of the other forms of identification can change from day to day, some changes can be more permanent. In the case of fingerprinting, filngers can easily be damaged, in which case any form of identification that uses them will be rendered immediately out of date. Veins, on the other hand (no pun intended), are positioned on the wrist in such a way that it is much less likely they would be physically damaged.

FRAUD BUSTERS

One of the stimuli for Rice's foray into identification

LIKE THE BACK OF YOUR HAND: THE TECHNOLOGY BEHIND VEINCHECK

For demonstration purposes, Veincheck is currently running on a PC with frame grabber and CCD (Charge Couple Device) camera. A CCD camera is basically a normal camera, but one that doesn't filter out the infra-red signals. Most cameras are capable of capturing infra-red patterns, but they have had filters added to remove as much of these as possible.

So really the camera used with Veincheck is standard technology. This is how the system will stand until smaller, low-current chips to do the work are developed.

The camera scans the back of the hand below the knuckles and above the wrist. The camera responds to the photons given off, reads the values serially into the image processing chip, which turns those values into a video signal and the computer analysis the signals. The image is basically converted from digital to analogue and back to digital again.

The way the veins are compared is similar to aligning two photographic slides on top of each other. There is a standard reference vein 'map' which is compared with the vein structure of the user.

Certain points on the reference vein and the user's vein are then compared to determine the personal identification code. Because people's veins are different they will line up with different points on the reference map, providing a different personal code each time.

The mechanics of the system are quite straightforward. The image of the hand is scanned in from the camera at a size of 512 x 512 pixels. From there the image is enhanced which "teases the vein pattern out of the image." The pixels are filtered so that only features larger than 5 x 5 pixels are included in the image.

When processing the images the newly scanned image is compared with a database of reference images. A search routine scans the hand to find the side of it, and has further search parameters to find a 'good vein'(a vein of more than 32 by 32 pixels). The two images are aligned on top of each other. What the program is searching for are points on the images that match up with each other. Where the images don't line up, they can be rotated to try and find a match, up to five degrees.

If the person who the reference image is based on has their veins scanned and processed, then typically there will be 4,000 hits. If it is someone else, then there will only between 800 and 1,000 hits – quite a difference.

The system that is demonstrating the principles behind the technology is a 386-based PC with the program code written in a combination of BASIC and Assembler. Currently it can scan, grab and compare the image in half a second.

VEIN CHECKING

PERSONAL IDENTIFICATION

• Joseph Rice shown along side an earlier version of Veincheck running on an Amstrad CPC6128. He now uses a 386 PC

methods was to combat credit card fraud – he once lost a credit card himself which was then used fraudulently.

However, with vein identification fraud is impossible, Rice believes. Veins are always attached to their owner and so cannot be lost or stolen. Veins can't be surgically copied either, so forgery is out of the question.

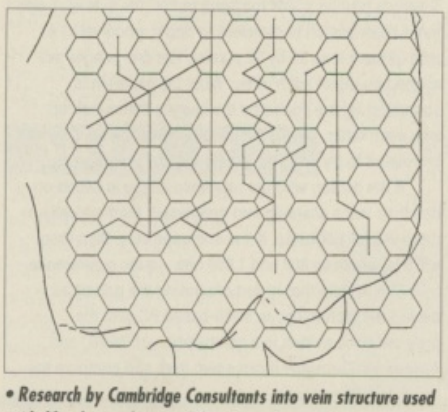
And it may be a gruesome thought, but even if someone's wrist has been severed or exhumed to try and beat the system, the infra-red scan will be able to detect changes in the limb's haemoglobin.

WORKING ON WAVE LENGTHS

The infra-red technique works by scanning the limb at different wave lengths. Skin is translucent to infra red signals, so no matter what colour it is the veins underneath the skin can still be read. Blood absorbs infra-red signals at different levels, depending on whether the blood contains oxygen or not. Thus, the infra-red signal could differentiate between a dead or live limb – if there is no oxygen, then the wrist is dead or in a poor state.

Obviously, as the system stands it is too large and unwieldy for personal use, at least on a small scale. For it to develop from here to a more practical level, the device would need an inexpensive chip-set and one that doesn't require too much power to work off. Rice believes it's only a matter of time before this happens.

Because the image scanned by the computer is only 512 x 512 pixels it doesn't take up a tremendous amount of memory. It would use even less once the image data has been compressed, and could then be stored on a small memory chip. If this is used in combination with a low-cost, low-power image capturing device, then there is no reason why the whole package could not be made small enough to fit on a credit card.



• Research by Cambridge Consultants into vein structure used grids like the one here to determine unique patterns

MUCH MORE THAN SECURITY

Once this happens Rice foresees the new identification method going much further than just the security requirements we are currently accustomed to.

For example, you may need a card to get into and use your car. As well as being a key to open the doors, the car could recognise the driver and set the car up in the way he or she likes – tuning the radio to a particular station or setting the height of the driver's seat.

If someone else tried to use their own card to enter the car, then not only would they fail in their attempts, but they would also be in trouble. The car could remember the identification number of the card and the user, compare it with those on record and then identify the would-be thief. This is much like how fingerprinting works today, but having the cards linked electronically could mean that offenders will be caught sooner.

And what happens if you lose your 'key' and want to get into your car? All is not lost. You could use someone else's card to transfer your vein pattern to the vehicle. The car would recognise the pattern of the veins, but not the match with the actual card. The card would still give you access to the car. However, this method is a bit risky. When the identification is being transferred via the borrowed card it will not be in an encrypted format. In theory this could mean the pattern could be intercepted – the radio waves being stored for future use. Rice says this method should only be used if absolutely necessary.

WILL IT HAPPEN?

As things stand at the moment, the technology for miniaturising Veincheck is almost available, and the overall situation is at the stage where it is up to companies to start thinking about using it. Rice has been in contact with several large security and technology groups and has an agreement with the British Technology Group (BTG) for further development and research. BTG holds the patent on the system. After this it really depends on whether the technology is picked up by a larger company to get it into the mainstream, probably from Japan.

Several Japanese companies, such as Toshiba and Canon, are looking into ways of developing low cost digital photography, the basic principles of which could be applied for vein checking.

One feature in Veincheck's favour at the moment is that it doesn't need to use high resolutions to work, which means that the processor controlling it doesn't have to do a lot of number crunching. Accordingly, the technology for accomplishing this on a small scale should not have to be too complex or expensive.

CCD (Charge Couple Device) technology is more expensive than the photo-diode technology that is being developed to be used in applications such as Veincheck. Edinburgh University is developing a low-cost, low-current photo diode that could be available at a cost of about £25 per semiconductor. The university is producing small runs of the diodes, so it might not be long until this technology is with us.

In the meantime, though, we can all dream of the days when we will be using our wrists and a piece of plastic to enter our homes, cars and businesses. ■

VEIN CHECK VS FINGERPRINTS

In simple terms, as far as identification purposes are concerned, the vein identification system is a direct competitor of fingerprinting. Or is it? *Express* talked to those who know best about these things: the Birmingham Identification Bureau.

Fingerprints have been used to identify people since 1901, when they were first classified and recorded. Initially it was difficult to convince people that everyone's fingerprints were different, but it wasn't long before they were regarded as being a unique and a conclusive form of identification.

Brian Reece, Deputy Head of the Birmingham Fingerprint Bureau, after first hearing about the vein identification system thought it would be a "horrendous thing to record". The Fingerprint Bureau is, admittedly, mainly concerned with identifying people at the scene of a crime. In this respect vein identification would not be the most useful form of identification – how could you get vein prints off a plate for instance?

Fingerprinting is based on recording the ridges of skin on fingers. Everyone's fingers have a unique ridge structure and in terms of keeping a record of fingerprints it's as easy as getting an imprint of the print with ink. And filing them is a simple matter of keeping a database of different types of prints, as they vary in the position and shape of particular ridges.

Classifying the ridges is a straightforward process, but Reece sees veins as being much more difficult to record: "There is no strict pattern to them, and the characteristics would vary depending on what level of the wrist the scan is made from. It would also be difficult to file (the veins) in order."

In more specific applications, Reece doesn't see any problems with using veins for identification: "The possibilities in terms of the practicalities involved are not very good, but for a specific type of application they could be used." In the past there has been talk of using nose and ear impressions as a method of identification, in tandem with fingerprints, so using veins is just another way of using the unique characteristics of nature.

As far as fingerprinting technology is concerned, the eventual goal is for a finger to be placed on a metal plate, for example, and then have the print read from it. Millions of pounds have been spent to develop this type of technology, but nothing definite has resulted: "Many firms say they can do it, but it's a matter of money as to whether it is used or not." Currently computers are used to store and compare fingerprints on screen, but they can't be read by the computers just yet. In practical terms, fingerprints are easier to read and identify, both at the 'scene of a crime' and as an overall method of personal identification.

However, while vein identification does seem a bit impractical at the moment it may not only be because the technology is not yet miniaturised, but because it is a totally new concept that takes a bit of getting used to. Many of the problems voiced by Reece have been looked into by Rice, and the solutions to them are on the drawing board.

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c) FidoNet
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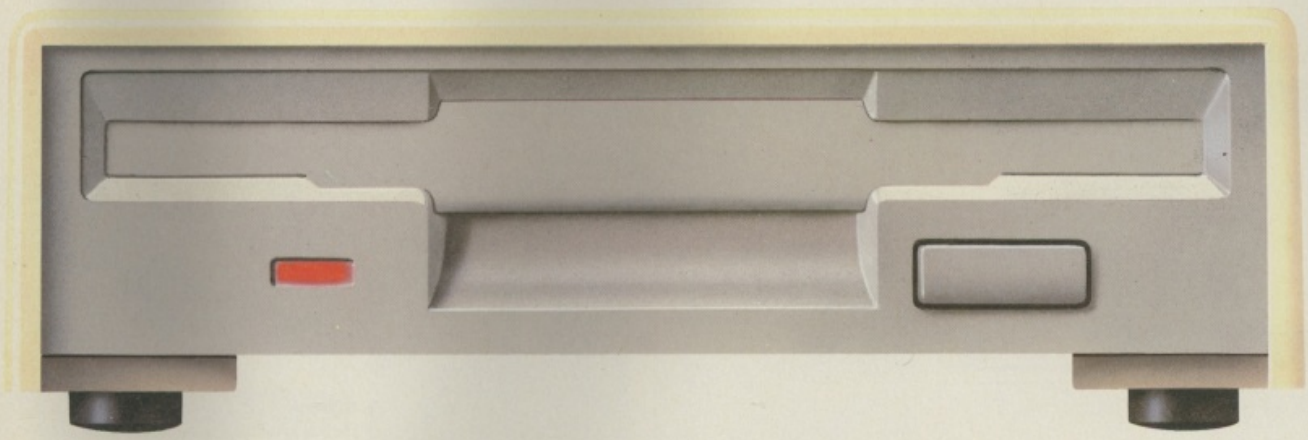

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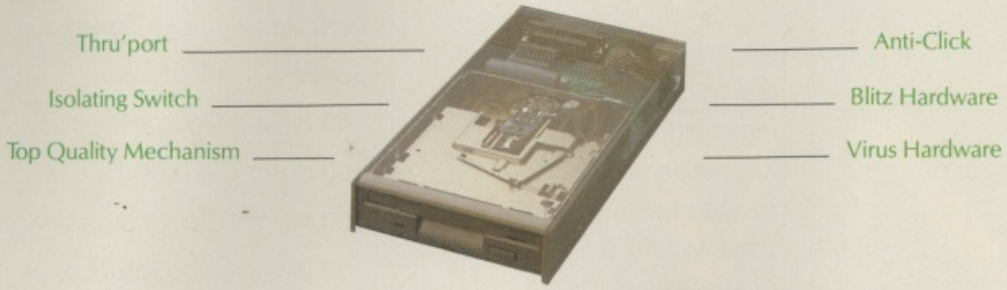

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