Issue 130 • 4th May 1991 • 88p

NEW COMPUTER EXPRESS

WIN £500 of Commodore software
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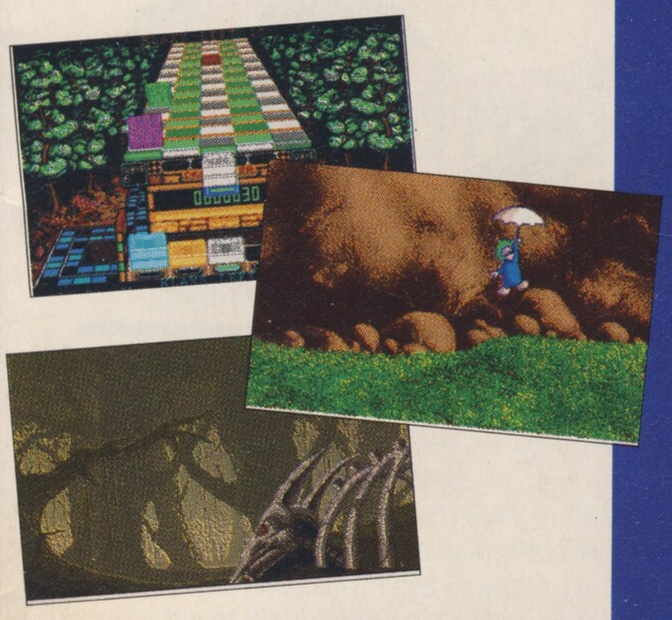
FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

AMIGA PLUS

Is this the best hard drive yet?

GAMES

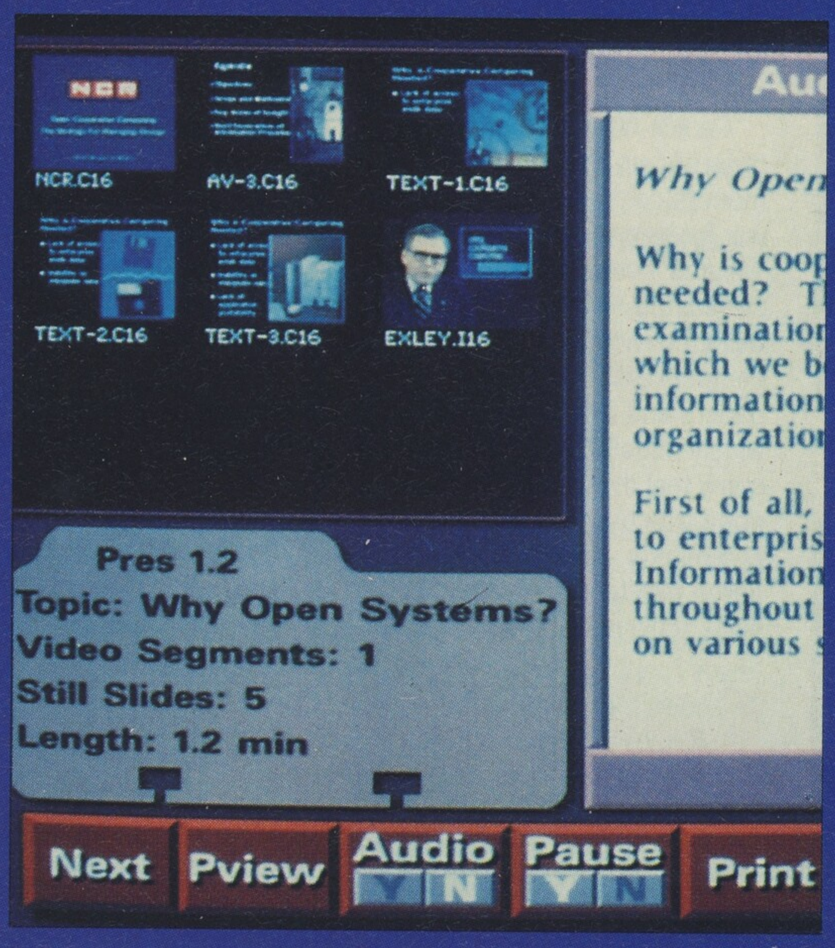


Which one took the top British leisure award?

THE NEXT GENERATION

FACT PACKED SPECIAL ISSUE

FUTURE PCs



INTEL'S SUPER DV-I

FUTURE MACs

APPLE'S CHALLENGER

DOOR TO DOOR EXPRESS INVESTIGATES

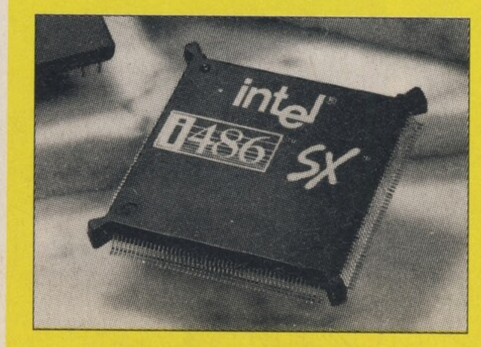
THE NET TIGHTENS

Last week, *Express* revealed a connection between *Door to Door* and *Routewise* route planners. A clear link has now been established between John Gold and the people behind *Routewise*.

And the first legal moves have been made against Gold and Watson.

FULL STORY – pages 55 & 56

THE TOP 20 LAUNCHES FROM THE 1991 WHICH? SHOW



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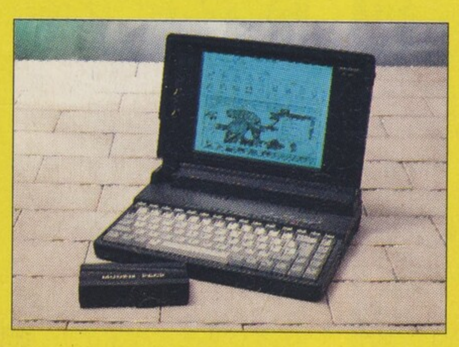
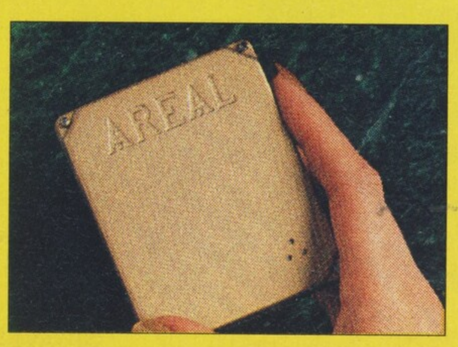


POWER WITHOUT THE WEIGHT



POWER WITHOUT THE SIZE

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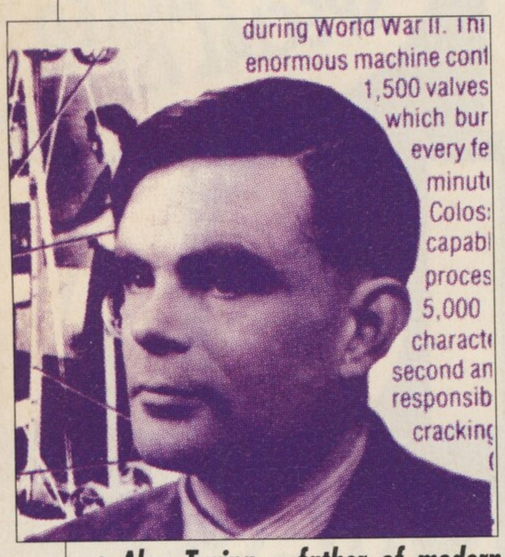
Future PUBLISHING
Your guarantee of value

frontend

edited by Colin Campbell

SEARCH GOES ON FOR THINKING COMPUTER



• *Alan Turing – father of modern computing.*

Can a computer think in the same way as a human being? It's the question which has been intriguing scientists for much of the century – and now it is to be put to the test.

A competition has been announced in which the world's most sophisticated computers will battle it out to find a machine which can truly be described as 'intelligent'. Some 150 pieces of hardware will be hauled into the Boston Computer Museum, Massachussetts on 8 November to take part in the first Turing test.

Named after British computer pioneer Alan Turing, the so-called Imitation Test is designed to find out if a computer's responses to certain questions would be any different from a human's. An interrogator sits in front of a terminal and keys in questions which are relayed to a human, and to a computer. The question master does not know which answers comes from the machine, and which from the human, and is asked to make a distinction based on the responses.

If he answers incorrectly, or fails to tell the difference, the theoretical conclusion is that the computer can properly be described as a thinking machine.

However, given that today's computers are relatively primitive in this field, the range of topics discussed will be narrow so that computers will have a chance. Entrants expect there to be a bias toward mathematical and logical questions rather than on matters of taste or opinion.

Organiser Dr Robert Epstein explained: "It's a great challenge and, to be honest, we're not expecting the computers to do all that well. Optimists think it will be at least ten years before a computer wins, and pessimists think it will be much longer."

He added: "When a computer passes the test it will be an extraordinary milestone in human history. At that point computers will be a living entity." The best entry will be awarded $1,500, but if a machine manages to pass the test the inventor stands to pick up $100,000.

Genius Alan Turing is widely regarded as the father of modern computing. In the last war he helped crack the Nazi's 'Enigma' code, but he committed suicide in 1954 after being convicted of homosexuality. Today his papers and theories are still widely debated and, although many feel the Imitation Test is not a true barometer of a computer's ability to think, most agree that to pass it would be a huge achievement. ■

Pacman tunes in to TV

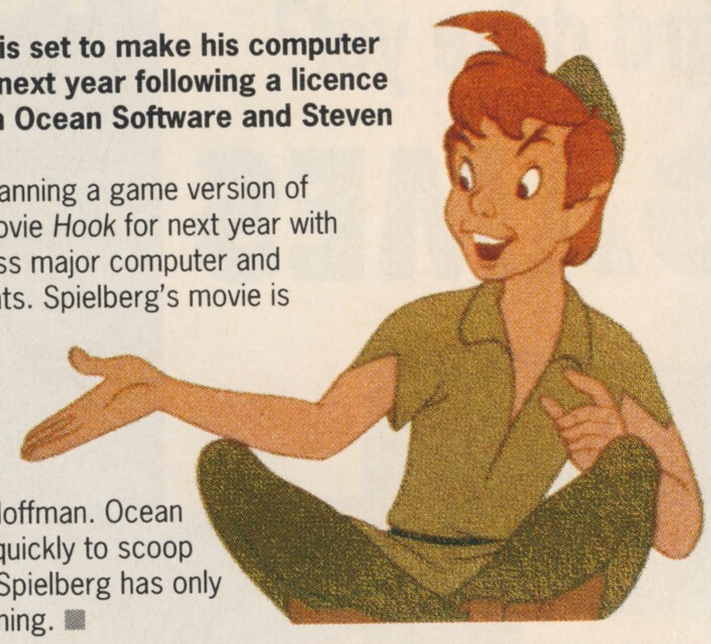
Pacman has once again munched his way into the centre of attention.

Everyone's favourite game character is featured in the first full colour full image advertisement on the satellite TV text service Supertext. The ad will run through 19 European countries reaching an estimated eight million Supertext viewers.

Tecmagic's ad is a promotion for the Sega Master System conversion of *Pacmania*, due for release in July. ■

● Peter Pan is set to make his computer game debut next year following a licence deal between Ocean Software and Steven Spielberg.

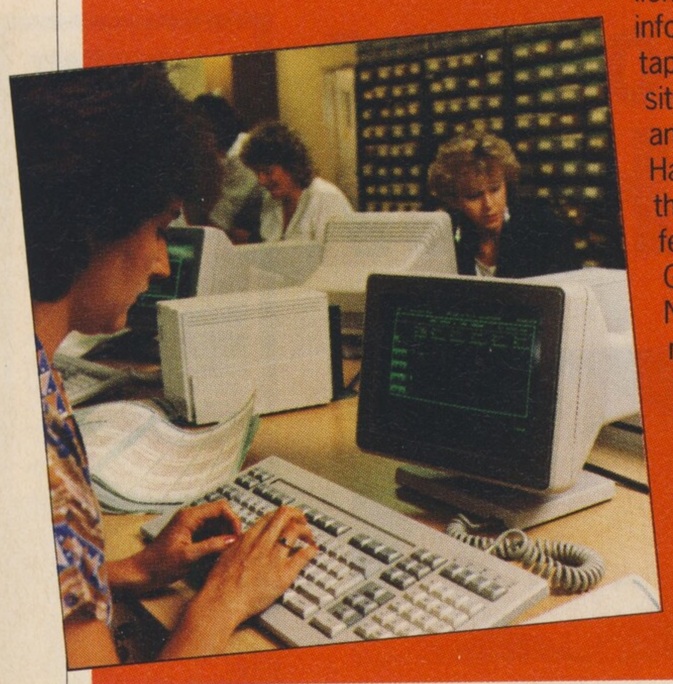
Ocean is planning a game version of Spielberg's movie *Hook* for next year with releases across major computer and console formats. Spielberg's movie is based on J M Barry's wonderful *Peter Pan* story and stars Dustin Hoffman. Ocean had to move quickly to scoop the licence – Spielberg has only just begun filming. ■



HOW TECHNOLOGY COPES WITH CENSUS

You've already filled in the census form, and probably forgotten about the whole business for another decade. But for the computer managers and data analysts the hard work has only just begun.

Britain's biggest ever data processing operation is already underway with 1,700 computer operators sifting through 20 million forms. The information is being tapped into Unisys PCs situated in Glasgow and Tichfield in Hampshire, from there it will be transferred via the Government Data Network (GDN) into a massive Amdahl 5990 mainframe. ■



● Find out how state-of -the-art kit is used to sort out the millions of forms in our special feature on page 8.

Eagles tiptoe into Tulip £2m sponsorship deal

High flying football heroes Crystal Palace have signed a sponsorship deal with London based PC manufacturer Tulip.

Starting next season, players such as Mark Bright, Nigel Martyn and Geoff Thomas (pictured) will be helping to promote the Tulip name.

The Eagles are just the latest football team to forge lucrative links with a publicity hungry computer industry

As part of the deal Palace will be playing alongside Tulip in a number of joint business deals. Other soccer clubs with computer connections include Manchester United (Sharp), Chelsea (Commodore), Manchester City (Brother) and Everton (NEC). ■

MEGADRIVE DIPS £40

Sega has whipped £40 off the price of its 16-bit Megadrive games console, with other price cuts across the inferior 8-bit consoles.

The Megadrive, which has racked up sales of 200,000 in Europe since its September launch, is down from £189 to £149. The original Sega Master System comes down £20 to £59 while the Master Plus machine slips from £99 to £79.

Sega is currently locked in a vicious battle with Nintendo over console supremacy in Europe. Nintendo has already won the lucrative Japanese and American markets, but clever marketing and reasonable pricing has kept Sega ahead over here.

The price cut is likely to woo even more people into the gaming fold – Dixons has been selling the Megadrive for £150 over the past few weeks with considerable success.

A recent survey conducted by a British console magazine found that 62.6 per cent of readers owned a Megadrive or Master machine while Nintendo Entertainment System owners amounted to 26.7 per cent. ■

Prince puts up loan for PD

A Public Domain library has been set up in Manchester, with the help of a grant and loan from the Prince's Trust.

New-Wave Software opens this week after a year and a half of seeking a backer. The firm, run by 20-year-old J P Bankes-Mercer, and 21-year-old Colin Jones, is the first software company to be backed by the normally conservative Prince of Wales Youth Business Trust.

New-Wave has collected 2,000 disks for the Amiga, 1,700 for the PC and nearly 1,000 for the ST ranging from games demos to clever utilities. The duo used a £3,000 grant and £3,000 loan to buy a massive hard disk for the PC software, as well as ST and Amiga floppy disks and standard office apparatus.

Bankes-Mercer told *Express*: "When we went to the Prince's Trust a year ago they didn't understand what we were trying to do. When we talked about downloading and such they were totally lost. They're more used to funding hairdressers and catering businesses.

"In the end they brought in an independent company to make an assessment and they were impressed with our plans. We're trying to bring enthusiastic and friendly attitudes to PD, something which has been missing in the past."

You can contact New-Wave on 061 839 5378, or log onto the company's Fun Bulletin Board on 061 839 5281. ■

Who's afraid of computers?

Contrary to popular myth, older people are no more likely to be afraid of computers than youngsters.

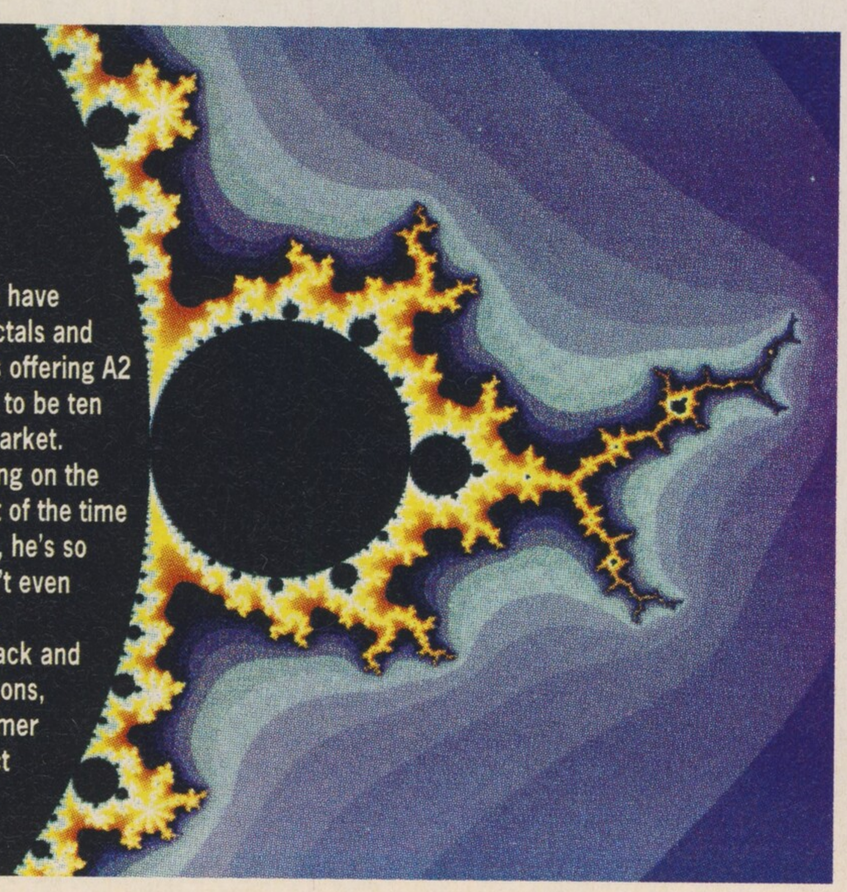
According to a study of 81 different research projects, almost 50 per cent of students and business people suffer from some form of "computer phobia", with ten per cent often experiencing acute symptons.

Women are slightly more likely to find the prospect of humming hardware daunting, but there are no notable differences between the age groups.

The analysis is the work of Dr Larry Rosen and Dr Phyllisann Maguire of the California State University. Their findings have been published in the latest issue of US publication *Anxiety Research*. They found that one in ten of those people tested were likely to experience sweaty palms or heart palpitations when confronted with a computer; no significant trends through any sections of society could be found.

Dr Rosen pointed out: "These people are at risk from losing a major battle in the technological revolution. They will have to select professions that are not computer-orientated severely limiting their earning power." ■

CRACKING FRACTALS



A computer graphics company claims to have cracked the problem of reproducing fractals and Mandelbrot sets at high definition, and is offering A2 sized posters for sale which are claimed to be ten times better than anything else on the market.

Clive Menhinick says he's been working on the software for more than a year, with most of the time spent on improving the definition. In fact, he's so concerned about his secrets that he won't even say which machine the software runs on.

Two poster prints are available – a black and white Julia set image called Fractal Dragons, and a full colour Mandelbrot set. The former costs £4.99 and the latter £9.95, Contact by fax on 061 228 7356 or call 061 445 5888. ■

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Dr Watson has lied on at least one account – page 55

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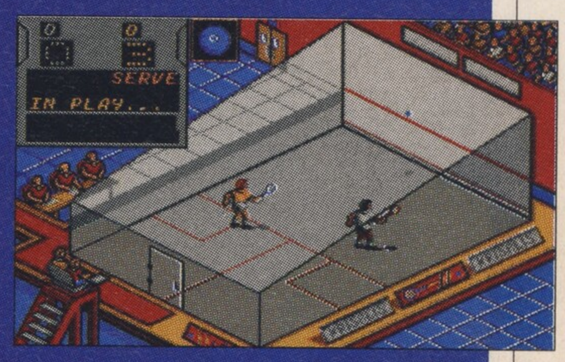

Competition
Your second chance to be a winner in our £5,000 Commodore software giveaway – page 58

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Spider sim sensation

Arachnophobia, the game of the film is due to hit the streets within the next month, and French software house Titus is the firm behind it.

Like the film on which it is based, the game sees the hero – you – battling millions of highly poisonous South American spiders as they try to take over the USA.

You get to chase around hundreds of locations including cemeteries and schools, in your quest to defeat the main arachnid. Aside from the chasing, there is also a great deal of killing as you spray the vile creatures with Toxi-Max insecticide.

• ***Eight legs, hairy body, big fangs? Yes that means big trouble in Arachnophobia.***

The point of the whole endeavour, aside from rescuing the poor spider-inflicted citizens, is to become United Nations most trusted agent.

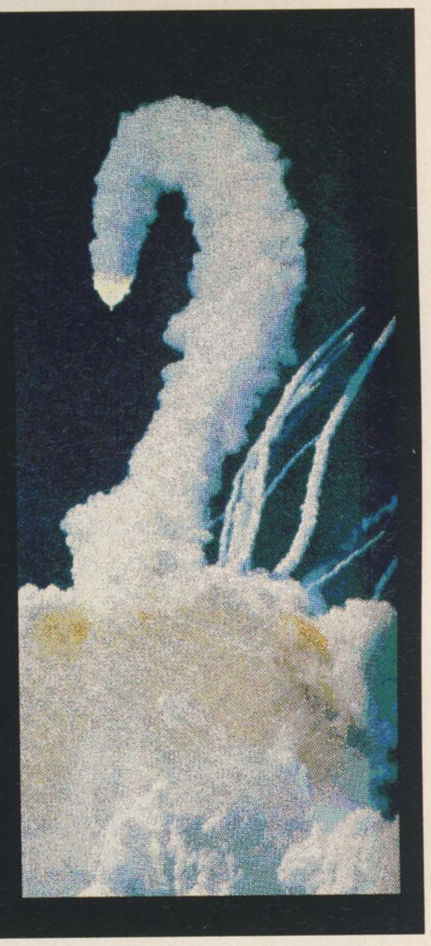
Arachnophobia is to be launched for the ST, Amiga, PC, C64 and CPC. ■

Virgin shuttles off

Virgin Games is to launch, if that's the right word, *Space Shuttle Simulator*. The company claims that the game is "the most accurate and comprehensive simulation of NASA's Space Shuttle".

Programmed by Vector Graphics, the package makes use of 3-D perspectives and Shuttle control panels. You're the pilot and you get to train and then fly the machine in a number of scientific missions. To add that aggressive touch there are also Strategic Defence Initiative (SDI or Star Wars) missions to be flown.

Shuttle will available for the PC (£44.99), ST and Amiga (£39.99) late in 1991. ■



• ***How not to play* Space Shuttle.**

Family fun with horror

A game based on forthcoming movie *The Addams Family* is to be launched next year by Ocean.

The firm has secured the licence to the film, which itself is based on the famous comic-horror TV show of the same name.

Both the game and film are expected to be released early next year.

Meanwhile, Ocean says it has turned down the opportunity to launch a game based on the film *Highlander II*.

A spokesman for the company says Ocean was offered the licence at script stage, but it decided it was not interested. ■

Games gurus back Lemmings all the way

PSYGNOSIS SCOOPS EURO AWARDS

• ***Lemmings: no doubts about Europe's best game.***

***Lemmings* has won Best Computer Game in the European Computer Leisure Awards held at London's Hippodrome recently.**

The game's Liverpool based developer, Psygnosis was celebrating after picking up Best Game plus five of the most prized gongs.

The 16-bit specialist scooped all the leading accolades including Software Publisher of the Year, Best Graphics and Best Sound (*Shadow of the Beast II*), Best Action Game (*Killing Game Show*) and Most Original Game (*Lemmings*).

Hardly surprisingly, Best Animation went to *Dragon's Lair II: Time Warp*, while *Secret of Monkey Island* won Best Adventure/Role Playing Game. *F-19 Stealth Fighter* was voted Best Simulation, *Klax* was Best Mind Game and *Tetris* was Console Game of the Year.

In the non-games section, the winners were: *Deluxe Paint III* (Best Art Package), *Fun School 3* (Best Home Education), *Microsoft Works* (Best Home Productivity), *Video Toaster* (Most Innovative Peripheral) and *Amiga Vision* (Special Multimedia Award).

The European Leisure Awards were judged by the editors of 32 international computer titles. ■

• ***The Three Stooges: Mo, Larry and Curly back on computer.***

Mirror reruns classics

Mirrorsoft's 'computer movie' *The Three Stooges* is to be relaunched at the new budget price of £9.99.

The Stooges join violent shoot-'em-up *Xenon II* on the company's 16-bit budget label Mirror Image this month. *The Stooges* – originally developed by US company Cinemaware – features digitised speech from funny-men Mo, Larry and Curly in arcade sequences taken from the movies of the '30s and '40s. It's out on the Amiga and PC.

The two-year-old *Xenon II* is still regarded by many as the ultimate shoot-'em-up for the Amiga and PC with its combination of superb graphics and excellent soundtrack.

It's available for the ST, Amiga and PC. ■

GAMES IN THE MAKING

● Grandslam Video is to launch a game based around the England football team next month. The company recently re-released submarine smash *Hunt For Red October* and is also working on *Die Hard II*.

● Geoff Crammond, programmer of the award winning *Stunt Car Racer* is coding another high speed car game for MicroProse. Simulation specialist Prose is keeping extra quiet about this project, so expect something special.

● Do you remember *Rollerball?* The ultra-violent movie from the late 1970s starring James Caan is to be turned into a computer game. Team 17, one of the newest games developers on the British scene, has begun work.The game should be jam-packed with pointless violence.

● Cutesy arcade platform heros Bub and Bob are set to make a comeback in the fortchoming *Bubble Bobble III*. The Taito coin-op licence has gone to an unnamed British company.

● US Gold is working on two more games on the Indiana Jones theme. Although there is no *Indiana Jones IV* movie planned, the Birmingham software developer has decided to attempt a repeat of the success it enjoyed with spin-offs from *Indiana Jones: The Last Crusade*. Once again, gamers will be offered an adventure title as well as a fun arcade game. Expect an official announcement within the next few weeks.

Latest chipsets will run MS-DOS and OS/2 on the Mac

MOTOROLA MAKES MAC RISC MOVE

After months of speculation, Motorola has decided to go ahead with the production of an as yet unnamed, reduced instruction computer set (RISC) based processor.

These new chips will form the basis for a new range of Apple Macintosh computers which, *Express* can reveal, are set for release within six months.

Motorola's latest design will be downwardly compatible with previous 68K series chips such as the 68000, 68020 and 68030 that form the heart of the existing Macintosh range. This means that new users will still be able to run existing Macintosh software.

A by-product of the high speed RISC platform also means that Intel's 386 and 486 could be emulated, opening the way for a generation of Apple Macs which will be able to run both MS-DOS and OS/2, as well as Apple's soon to be launched, and hyper-friendly System 7 operating environment.

Price structure for the new machines is yet to be announced by Apple, although it is thought that users will pay a premium for true PC compatibility and the speed of processing offered by a Motorola RISC system.

Late last year, there were strong rumours that Apple would be splitting from long-time partners Motorola. Although Motorola has a long and distinguished history in chip manufacture, and a solid working relationship with Apple, it was thought that the company would not commit resources to RISC development.

Apple, on the other hand, saw this technology as the logical route to take for a high-speed, flexible and open system to boost its recent inroads into the burgeoning graphics and DTP workstation sector as well as the home and business computer market worldwide.

• ***The next generation of Mac s could be running Lotus* 1-2-3.**

The rapid, and lucrative success of the Mac Classic, LC and Si computers has left Apple with a problem. While its low cost machines are attacking the PC market in homes and offices, software for the machines is still priced out of the pockets of many users. A RISC system capable of running MS-DOS would provide Mac owners with the ability to access a vast array of relatively low cost software which up until now has only been open to PC users.

However, with future relations between Motorola and Apple further consolidated, the next stage in the RISC development on personal computers, could well come from Intel. Its i860 acts as a graphics co-processor in tandem with Motorola's 68040 in the NeXT range of machines. There is no technical reason that Intel's RISC development could not be extended to PCs. ■

Computer crashes

New computer-based animation techniques are all set to change the way in which we look at major disasters like fires and motorway pile-ups.

US firm, Forensic Technologies International (FTI) has developed a 3-D colour animation technique which is able to reconstruct, in great detail, the locations and probable causes of such tragedies.

Using these computer-constructions, FTI is able to show how fires spread, or even which driver was responsible for an accident.

The logical extention of this is to model locations, such as the Channel Tunnel, in order to show where and how accidents might happen before the event takes place. At the moment FTI is hiring out its services to companies being sued in connection with such incidents. ■

Apple accused of racism

Apple Computer was pleading its innocence recently after being accuses of corporate rascism. 15 part-time workers took the giant US company to court claiming that they had been refused fulltime work just because they were black.

Apple, which maintains that 20 per cent of its staff come from ethnic minorities, paid nearly half a million dollars to the complainants in an out of court settlement. It has also offered employment to all but one of them. However, Apple staunchly refused to submit any admission of guilt. ■

Young shoppers help fight crime

Younger visitors to next week's *Computer Shopper* Show are to be invited to use their computing skills in the battle against crime.

The Metropolitan Police, in conjunction with Commodore, is running a Crime Bytes competition which calls on kids under the age of 17 to write a game with an anti-crime message. Games can be based on one of five themes – vehicle crime, juvenile crime, personal safety, computer crime and burglary.

Each game must involve ways of how best to avoid or prevent crime, with entries to be judged both on originality and playability. The competiton is divided into three categories – individuals up to 12 years old, from 12 to 17 years old and schools or youth groups. Entries must be in by 31 July .

Commodore will present the overall winner with an Amiga 1500, while seven runners up will win an Amiga 500 each. The four best group entries will be given a CDTV.

"As soon as we heard about the show we realised it was an ideal vehicle for our competition," said London crime prevention officer Derek Morris. "We know that youngsters visiting this event possess the talent and enthusiasm we are looking for."

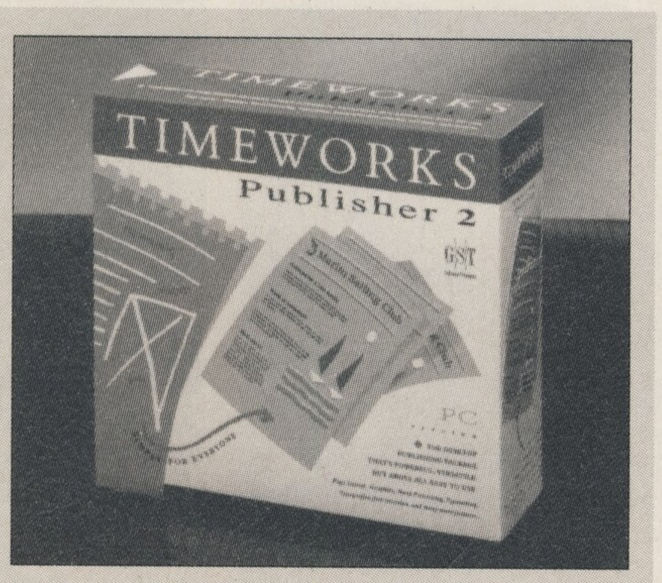
The *Computer Shopper* Show, is on 10-12 May at Alexandra Palace. Entry fees are £6 (£4 for a child). Cheaper tickets are available in advance by calling the credit card hotline on 051 357 1736. ■

Time for Timeworks

GST's latest upgrade of its popular *Timeworks Publisher* Desk Top Publishing package includes many new features introduced in direct response to comments by existing *Timeworks* users, according to the company.

Among the features in *Timeworks Publisher PC 2.0* suggested by consumers is the facility to import TIFF graphic and *WordPerfect* 5 text files. Other new features include automatic text flow around irregular graphics, customisable page sizes and up to 999 pages per document.

The program has also been made easier to install and the manual has been completely rewritten to include helpful hints and tips.



• ***Timeworks 2.0: developed with the help of customers.***

***Timeworks Publisher PC 2.0* is aimed at low to medium range PC users and retails for £39.95. Existing *Timeworks* users can upgrade for £29.95.** ■

Interpol faces virus nightmare

International police agency Interpol has teamed up with Scotland Yard's computer crime squad in an effort to stop the virus menace.

Already, Scotland Yard's detective inspector John Austen has set up a European computer crime working group which will advise different police forces in Europe on how best to tackle computer crime.

One of the group's first tasks is to pool information on viruses, virus writers and virus experts. Interpol has been impressed with Scotland Yard's tenacious approach to computer crime, and its ability to cut through technical and legal difficulties. Austen will be responsible for training virus experts who will then keep a track of the movement and sources of illegal routines.

Scotland Yard's detective constable Noel Bonkcoszek explained: "What we want is a system by which someone in Timbuktu with a virus can call us, explain what they have, and for us to understand what they mean. We need some form of standards to follow. At the moment different countries have different ways of dealing with viruses. We want an agreed format to follow.

"It'll be a bit like a laboratory, where specimens of viruses will be housed so that experts can use it to become acquainted with the viruses on the circuit."

Interpol is already planning to direct its attention toward Eastern Europe, which is already a notorious breeding ground for unpleasant programs. ■

Olivetti drops £100 on printer price

Olivetti has lopped £100 off the price of its JP350 Ink-Jet printer which now retails at £499.

The firm claims that the machine offers "near laser quality" with its 300 x 600 dots per inch resolution. Print speeds are 360 characters per second (cps) in high speed draft mode, and 120cps in letter quality.

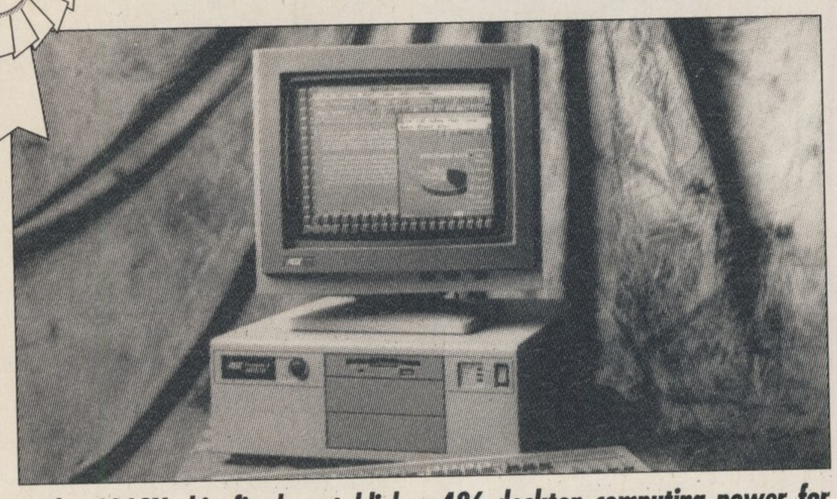
Meantime, the giant Italian manufacturer last week announced a 70 per cent slump in profits for 1990 to £59 million. Sales for the year remained steady at £4.2 billion. ■

All the best from Britain's top computing jam

THE TECHNO

Last week, Birmingham's National Exhibition Centre was a glorious festival of delicious hardware and software. The place was dripping with the latest and the greatest in high-tech. *Express* details 20 of the best new products...

3 AST Premium II 486SX/20



• The 486SX chip firmly establishes 486 desktop computing power for the mainstream user.

Expect a flurry of 486SX desktops to be launched over the coming months. But it was AST which stole plenty of valuable *Which?* publicity with its quick off the mark launch.

First day visitors had little more than a few hours to aquaint themselves with Intel's chip, before they were inspecting a working machine.

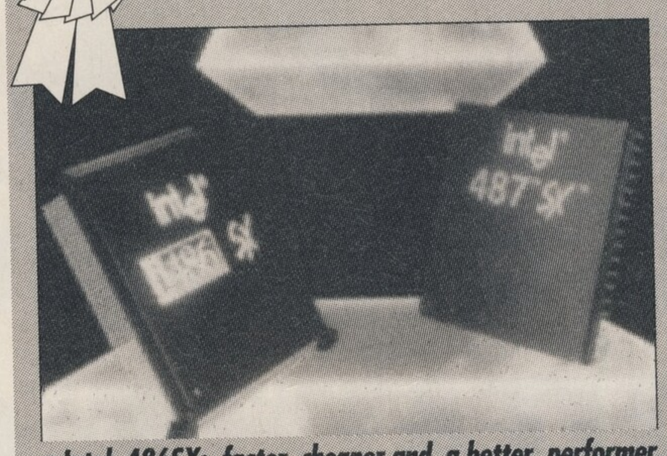
For an early starter, price is not at all prohibitive. You can pick up an entry level Model 3V with single floppy drive for a respectable £2,595, although the Model 213V with huge 210Mb hard disk weighs in at a more difficult £3,595.

Graham Hooper, director of UK operations, was evidently pleased with his company's ability to launch quickly. "We're committed to becoming a leader in this market," he said, "The advent of the 486SX chip firmly establishes 486 desktop computing power for the mainstream user."

TECH SPECS: 20MHz 486SX microprocessor with 4Mb RAM upgradeable to 80Mb. Integrated 16-bit Super VGA graphics adaptor. Six industry standard expansion slots. One parallel port, two serial.

Phone AST on: 081-568 4350.

1 Intel 486SX - undisputed star of the show



• Intel 486SX: faster, cheaper and a better performer.

As a low-cost alternative to the fully fledged 486, the new SX is destined to succeed. It offers 70 per cent of the speed of its predecessor at a fraction of the cost, and can manage 35 per cent greater performance than the 386.

Hardware manufacturers are already clamouring at Intel's gates in a frenzied attempt to secure supplies. The result for buyers is that PCs will be faster and cheaper. Nobody is complaining.

The 486SX microprocessor runs at 20MHz, and 16 Million Instructions Per Second (MIPS). There's an on-chip eight kilobyte cache for fast instruction and data access. According to Intel it is 100 per cent binary compatible with the greater 486 and the lesser 386, but some are predicting compatibility problems with a number of leading software packages including Excel 3 and Lotus *1-2-3 Version 2.2*.

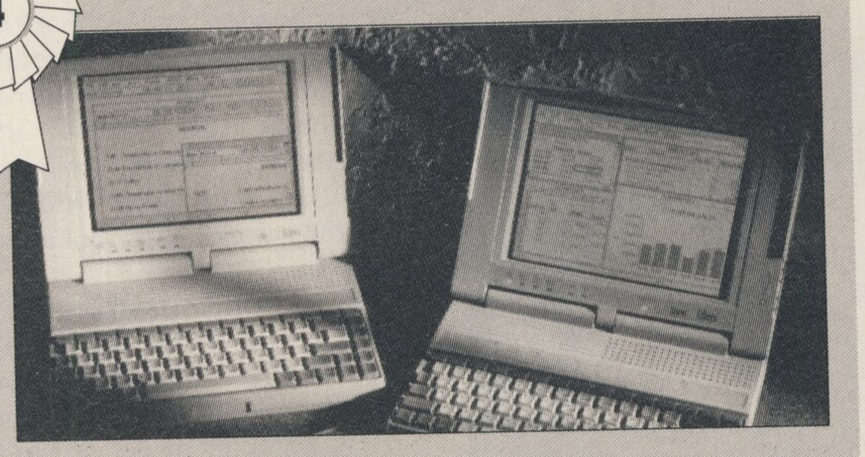
The SX is effectively a 486 without maths co-processor. Some software programs will recognise the chip as a 486, attempt to address the co-processor, and will fail to run. Intel says the problem is in hand, with talks underway with top software companies, all of which are likely to amend to rogue programs.

An upgrade path has already been established with the simultaneous launch of the 487SX Math CoProcessor, but buying a 486SX PC, and then paying £476 for the upgrade is an unlikely approach.

Dave House, who co-ordinated development at Intel, pointed out that the chip would "give systems the computing horsepower to exploit popular graphical user interfaces like Windows 3, at an affordable price". He added: "End-users will have access to low-cost systems featuring the advantages of 486 technology."

Telephone Intel on: 0793 696000.

4 Librex notebooks



These days, companies hoping to clean up in the PC market need to be very big indeed. Librex, specialising in notebook computers, is an offshoot of Nippon Steel, the 28th biggest company in the world.

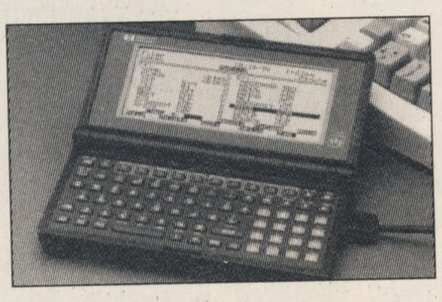
Librex settled in to a huge stand slap bang in the middle of the show, and proceeded to launch two notebooks, a 286 and a 386SX. Technically, neither are especially impressive, but Librex is assuring everyone that its dedication to notebooks will bear fruit. This is Nippon's first venture into the computer market, and the launch is being carried out at the same time in Europe, Japan and the US.

The Librex 286 costs £2,095 while the 386SX retails at £3,096.

TECH SPECS: Both measure 8.4" x 11.7" x 2" and weigh 6.3 pounds. The 286 features 20Mb or 40Mb hard dis,. 1Mb RAM and runs at 12.5MHz. The 386SX comes with 40Mb or 60Mb hard disk. It runs at 20MHz and offers 4Mb RAM. Both sport 10 inch diagonal VGA display – backlit VGA mono.

Phone Librexon 0753 811007.

HP 95LX Palmtop PC



• The HP 95LX – the first palmtop to combine PC power with full Lotus 1-2-3 Release 2.2 capability.

Hewlett-Packard and Lotus Development announced a nifty 300 gramme palmtop PC boasting the full capabilities of Lotus spreadsheet *1-2-3*.

The HP95LX is the size of a calculator, sports PC compatibility and costs a reasonable £449. Along with the spreadsheet (version 2.2), buyers will be offered a suite of personal organiser tools, and the option to buy additional software which can be slotted into the machine's industry standard card slot. Programs already available include *Finance*, and *Invest and Loan*.

Hewlett's UK managing director John Golding enthused: "The Palmtop PC answers users' needs for a high performance hand-held computer that enables them to perform business applications anywhere. It is the first of its kind to perform the right combination of features, portability, ease of use and low price. We are convinced that this is the hand-held solution against which all other palmtop PCs will be measured."

Tech-specs: Measures 16cm x 8.64cm x 2.54cm. Weighs 300 grammes. Comes with 512K RAM and 1Mb ROM. Industry standard memory card, serial port, MS-DOS. Lotus *1-2-3* in ROM.

Telephone Hewlett-Packard on 0344 360000.

5 ALR 486SX Upgradeable PCs

At an entry level price of £1,399 you might be excused for going absolutely bonkers over ALR's range of 486SX PCs. But these are upgradeable models, which means you'll be looking at buying extras such as monitor and VGA adaptors.

Even so, for the established PC owners with spares to hand, this is an excellent alternative to the likes of AST's traditional all-in-one approach. Vice President Paul Otellini promised: "This offers a new low-cost entry point to powerful 486 computing."

Tech specs: There are tons of different options for individual needs from the very basic, to EISA power stations, but all are based on Intel's 20Mhz marvel.

ALR is on 0635 531922

15 TO 20

15. VIGLEN IV/33 486
Most notable of monster 486 machines was Viglen's effort, the Vig IV/33 EISA range.

The HD200 could set you back £3,869, but you would have one of the fastest IBM compatibles on the market.

Tech specs: Colour monitor and 100Mb hard disk. A 128K writeback cache offers extra performance for multi-use and networks. All models zip along at 33MHz and come with 4Mb RAM expandable to 32Mb. Windows 3 is included. Viglen: 081 997 3000.

16. MANNESMAN TALLY MT911 LASER PRINTER
The 10 pages per minute laser boasts an engine life of 600,000 pages. It costs £1,599, Mannesman calculates that total cost is just 1.85 pence per page.
Mannesman Tally: 0734 788711.

17. PHILIPS BRILLIANCE 7000 MONITOR
Costs just £349 and offers Super VGA capabilities with resolution of

jamboree – *Which Computer?* '91

TOP TWENTY

10 Brother dot matrix printers

Along with a laser printer and a small ink-jet machine, Brother unveiled two low-cost high-spec dot matrix models.

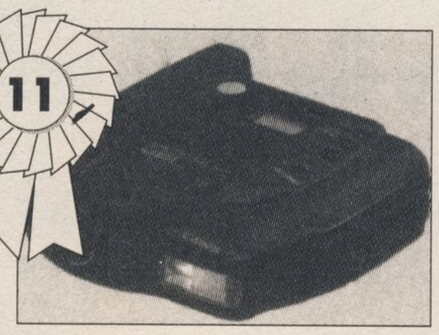
Brother is making lots of noise about the machines' fast printing speeds and paper handling qualities, and is reckoning on home and small business users forking out for the extra capabilities. The 9-pin 1309 retails at £239 while the 24-pin 1324 costs £319.

"Until now, entry level dot matrix users have had to make do with slow speeds and restrictive paper handling," said general manager John Carter, "We're setting new standards."

Tech specs: Both the 1324 and 1309 can manage 216 characters per second (CPS) in draft mode, but the former can deal with 72cps in letter quality mode compared with 45cps for the 1309. The 1309 (9-pin)and 1324 (24-pin) come complete with four and seven fonts respectively.

Brother is on 061 330 6531.

11 Canon Ion PC Kit



Canon officially launched the Ion camera at *Which?* along with the Ion-PC Kit which is a bundle of camera, still video digitiser and software for IBM compatibles.

The Ion allows you to take pictures which are saved on to disk and can then be transferred to computer or video. Images can be imported and exported to applications such as desktop publishing and multimedia databases. It's in the shops this week for £995.

Tech specs: The bundle includes Ion RC-260 still video camera, Ion PC digitiser, transfer software, interface cable, battery charger and batter pack.

Canon is on 081-773 3173.

12 PanaSync TX1703 monitor

Panasonic wheeled out an obligatory 386SX notebook, a few printers and some top-end colour monitors.

For Computer Aided Designers (CAD) and the serious DTP user three high-resolution monitors were on offer. The 17-inch TX1703 (£1,399), 20-inch TX2013 (£1,899) and 21-inch TX2103 (£2,399) offer VGA, Super VGA, 8514/A, Mac II and 1280 x 1024 resolutions as standard. Monitors, possibly the least glamourous of add-ons, were not in evidence so much this year, and Panasonic decided to impress with top-end models.

TECH SPECS: Multi-scanning over 30-64 KHz and 50-90Hz frequencies. Silica coated electrostatic free screens with dot pitches of 0.28m or 0.31mm. Panasonic is on : 0344 853550.

13 Iansyst Monologue 2.0

Listen up. A software utility which gives your computer the power of speech has been released.

Iansyst's *Monologue* will turn text and numbers in word processors, databases, spreadsheets and electronic mail into sound. It can rattle off errors as spelling and grammar checkers sift through text – ideal for those occasions when you find yourself comparing between on-screen text and hard copy.

Digits missing from spreadsheets will resound as errors and you can listen to electronic mail in the background. *Monologue* synthesisies text into a male or female voice and is available for the PC priced £89.

Iansyst is on 071-607 5844.

14 Sage MainLan for Windows 3

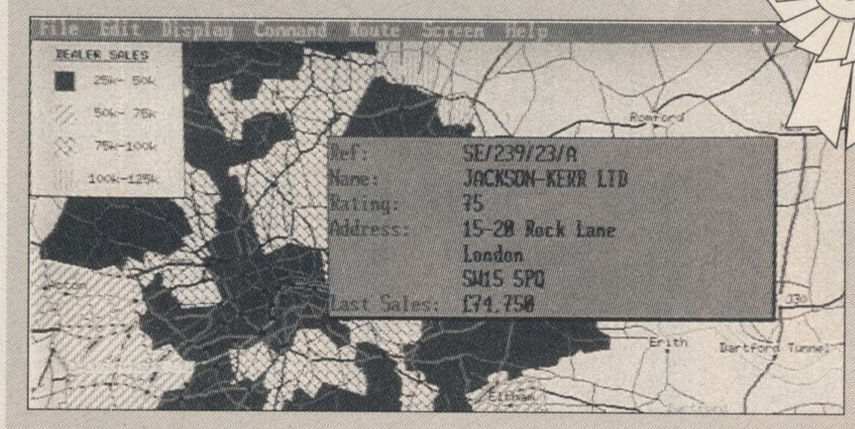
One can't help feeling that Windows 3 mania is here to stay. British software house Sage certainly agrees, last week it unveiled a Windows 3 version of its MainLan GTi local area network.

It will support a network consisting of a mixture of Windows and non-Windows based PCs. Any machine in the network can make use of the graphical user interface. There is also remote access to hard disk for disk sharing and an interface to Windows Print Manager to enable printers to be shared across the network. Prices depend on requirements.

Sage is on 091 213 1555.

AutoRoute Express

6



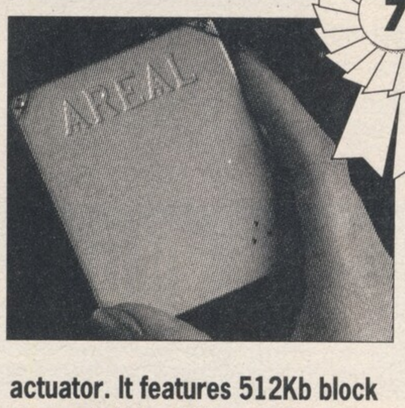
What with this *Door-to-Door* saga, some of you might be tiring just a little with geographical data systems, but you can always rely on NextBase to come up with the goods.

Next month will see the release of *AutoRoute Express* which offers PC owners the chance to plan their journeys through a windows like interface. NextBase says the full colour program is ideal for the home user who wants to plan holidays. Versions covering the USA and Europe will be launched along with the detailed UK maps.

You'll be able to configure the program to your own needs making *Express* more than just a route planner. NextBase was showing a pre-production version at the show, and we'll bring you more details as they emerge. NextBase is on 0784 460077.

Areal MD-2060 hard disk

7



Areal's 60Mb hard disk drive is being billed as the smallest of its kind in the world. It manages to store 62.9 Mb on a single glass disk in a package that is only 14.99mm wide and 87.6mm long.

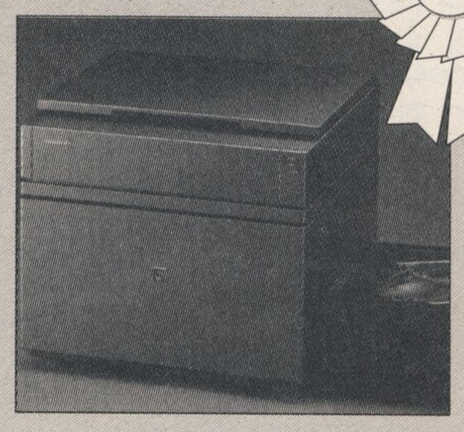
Although it's hardly a consumer product, the little drive is sure to be a hit among notebook computer manufacturers seeking to make their creations smaller and lighter.

Tech specs: Average access time of 22ms with two data heads and high performance rotary actuator. It features 512Kb block size and AT task file emulation.

Distributed here by Tekdata: 0782 577677.

Sharp FO-9000

8



No, it's not a computer, but in the great scheme of things, it could be more important than anything else at the show. Sharp's FO-9000 is the world's first desktop size full colour fax machine.

Although it's not due for launch until very late this year, Sharp was showing off its capabilities, and they were truly impressive.

Colour reproduction of both the A4 and A3 models is fantastic, with 200 dots per inch (dpi) resolution and 64 levels of colour gradation over a spectrum of 262,000 colours. Zoom transmission is available in the range of 25 per cent to 200 per cent, and it comes with all those useful little gadgets such as 100 auto-dialing numbers and memory transmission.

No price as yet, but we don't expect to see this in Dixons' bargain bucket for quite some time. Sharp is on 061 205 2333.

Silica Notestar

9

Which '91 saw the first UK showing of a neat modular expandable notebook. When you need expansions, instead of piling all your bits and pieces on to the side of the machine, you can whisk out the battery pack and slot the lot in there while running off the mains.

The Notestar comes with a 12MHz 286 processor with six interface ports and an LCD grey-scale display and costs £1,399.

Tech specs: Measures 310mm x 212mm x 44mm and weighs eight pounds. 20Mb hard disk, single floppy drive, two battery packs with five hours use. 1Mb RAM expandable to 5Mb. 640 x 480 VGA display.Silica is on 081-308 0888.

1024 x 768. Definitely worth watching.
Philips: 081-689 4444.

18. OSICOM EXECUTIVE TOWER TW486/33E
Ridiculously high-spec 486 featuring EISA architecture, 128K cache, 8Mb RAM, 330Mb hard disk and 1Mb colour VGA graphics,. Start saving up – it costs £7,000
Osicom: 0222 778888.

19. ASHTON-TATE APPLAUSE II

APPLAUSE II
Simply great graphics for presentations that mean business

Ashton-Tate unveiled its second version of *Applause*. The popular business graphics pack combines charting, drawing and electronic slide show. New features include spelling checker and network support. It costs £395 with special deals for upgraders.
Ashton-Tate: 0628 33123.

20. DISKETTE QUARTZ ANALOGUE CLOCK
And finally, one for fun. Host Diskettes launched a range of curious and colourful clocks designed out of 3.5 and 5.25-inch floppy disks. You can choose between tradtional clock or digital.
Contact: See your dealer.

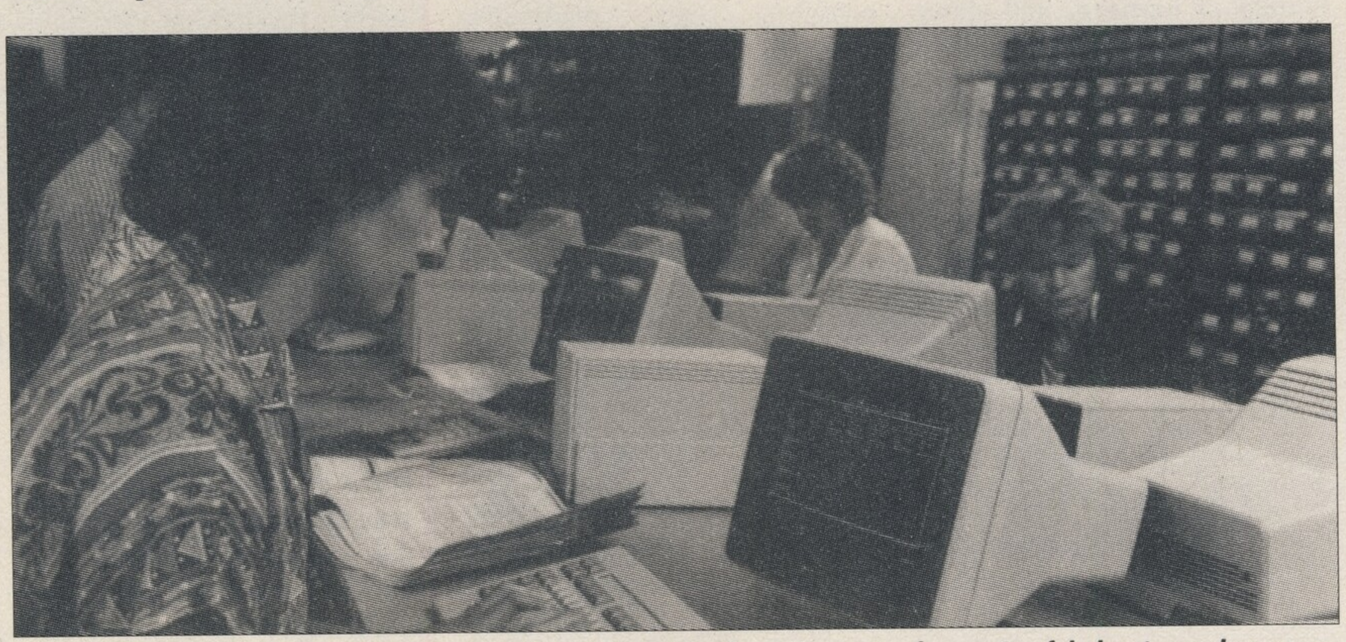
MAKING SENSE OF THE CENSUS

Hundreds of computers will be put to task in handling the massive job of collating and sorting millions of census forms. But how will it work? *Express* lifts the lid on the biggest information technology operation the country has ever seen...

On Sunday 21 April a-once-in-a-decade event took place. The biggest single data processing operation the UK has ever seen, the 1991 census involved the distribution and collection of a staggering 23 million forms.

Other statistics are equally mind-blowing, 135,000 people were involved in the census, including 2,000 temporary staff at the Government's Glasgow centre alone. The forms, which will not be declassified for 100 years, will require 12 miles of racking storage space. Government officials would not say what was the precise cost of census, but agreed that it ran into millions of pounds.

But it is the computer operation which is most fascinating. Over two billion key-strokes and 65,000 megabytes of on-line storage were involved. 80 BTOS workstations, 300 PCs and an Amdahl 5990 mainframe with 192 megabytes of main memory were included among the hardware. The software, which was designed especially for the census, is based on Model 204, an inverted list database designed in the States.



• Staff at the Government's Glasgow office input information from the census forms. Careful planning and raw computing power are being called upon to make the two year collation experience run as smoothly as possible.

It contains 40,000 lines of code written in the Model 204 fourth-generation language and took 18 months to compile. Most of the software will be discarded after the project is completed, in about seven months. It seems like an awful waste, but by the time the next census comes round in 2001, it will have been long obsolete.

All the data processing is being done at the Government's Titchfield, Hampshire office, while most of the data entry will be undertaken in Glasgow. The British Computer Society (BCS) has even been called in as a security consultancy.

TAKE YOUR TIME

Although the first cataloguing of the general population took place as long ago as 1086, when William the Conqueror commissioned the Domesday Book, the first proper censuses didn't begin to evolve until the 17th Century. Before that, inventories were made for specific purposes, usually to find out who was supposed to be paying taxes, doing military service or forced work.

As such these were not censuses; a proper census involves the accumulation of statistics on anonymous individuals, ie, the information gathered by government inspectors is supposed to be used only to chart current trends and predict future ones. The compiling of the Domesday Book caused great popular resentment, and the receptions other inventories received were hardly any better.

COMPUTERS IN THE FRAME

The first time a computer (of sorts) was used in any census was the 1890 US Census when Herman Hollerith used a computerised counting system. Hollerith devised a system of perforated cards and mercury-filled trays to mechanise the laborious counting process. Although this was extremely primitive by today's standards, at the time it was revolutionary and cut the time needed to compile the data by two thirds. Later, Hollerith joined with two companies to form Computing Tabulating Recording Company, which grew into IBM.

Needless to say, the census was as far removed from Hollerith's as was the first US Census from the compilation of the Domesday Book, but the difference is not just a technical one; the Government has made secrecy and security of information its number one priority.

The message to any would-be hackers itching to pit their wits against the system is "forget it". Although computer staff will be able to access information internally, the database is not connected to a public network.

As far back as July 1988 the Government announced a review of the data protection, confidentiality and security arrangements for this year. The Data Protection Registrar supported the idea of an independent review, and in its report, the BCS urged that security arrangements be monitored independently, from preparation to processing and storage.

LEGAL PROTECTION

As well as splitting the mainframe up into several virtual machines, all data transmitted over the Government data network between Glasgow and Titchfield will be encrypted.

With the exception of postcodes, names and addresses will not be kept on the computer at all. There are also legal safeguards as well as technical ones. Under the Census Act 1920, it is unlawful to disclose the name or full address of any individual or household; the Government has also given an assurance that access to information will be limited strictly to staff who need it.

Since the last census in 1981 there have been many new developments in computing and in the Government's own set up. These have all been considered by the BCS and include improvements in the technical side of processing which allow massive volumes of data to be kept permanently on the computer, increased (internal) on-line access through the Government's own network, the growth of the "hacker phenomenon" and the implementation of the 1984 Data Protection Act. ■

FUN WITH FIGURES

So, what will the new census tell us about the UK that we don't know already? If you didn't fill out the form personally, ask the head of the household what kind of questions it asked.

Here are a few recent statistics which are likely to be updated, reflecting on current trends:

- **In England and Wales the average age of marriage for men is 28, for women, 25.**
- **In 1985, 13% of all families were single parent families.**
- **There are 1,053 females to every 1,000 males**
- **Women out live men by 77.7 years to 71.8 years.**
- **In 1987, out of 22,272,000 dwellings, 64% were owner occupied.**
- **We are served by 128,983 doctors but only 25,286 dentists.**

HOW INFORMATION TECHNOLOGY HELPS

In the hot summer of 1987 Britain was preparing itself for the Lager Lout. In towns such as Woking, Haverill and Havant young llads, fuelled by liquid dynamite, went on the rampage.

But it wasn't a spontaneous thing. The police knew that a trend would appear, that there would be copycat incidents.

A team of data analysts were called in to study the social set-up of those three towns. They asked the census computer which other towns showed similar characteristics. The computer pumped out names like Guildford and Gravesend.

The police were ready when, within a matter of days, similar incidents broke out in those very towns.

WHY ALL THE FUSS?

With the exception of 1941, there has been a census every decade in Britain since 1801. The census provides information to assist policy and planning, not only by central and local Government, but by health authorities, businesses and numerous other public and private bodies.

Here are a few of the areas in which census information is put to use:

- **TRANSPORT STATISTICS: helps plan road building and public transport facilities, and to estimate how many cars will be on the roads in the future.**
- **EMPLOYMENT: who works where and does what? Information on people's jobs assists both Government and private enterprise in developing job opportunities and training programmes.**
- **RACE: Britain is now one of the most culturally diverse nations in the world; a break down of different racial groups will tell us who we are and where we come from.**
- **HEALTH SERVICES: particularly important for local health authorities to enable them to develop services and facilities for the long term sick and the ever-increasing elderly population.**
- **HOUSING: is another area in which the compiling of statistics is important for local Government, particularly with the current housing crisis.**

BEHIND SCHEDULE

It is a standing joke that Government contracts always overrun their allotted budget and timetable; no figures are available for the total cost of the current census, but it must be astronomical. During the course of the BCS's review of security, much of the hardware and software had still not been installed!

0203 682686

SKYE COMPUTERS

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- ★ 102 Key Keyboard
- ★ Flip Top Case
- ★ Hercules Graphic Card
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286-20Mhz	£450	£505	£680	£780
386-16Mhz	£675	£730	£905	£1005
386-25Mhz	£875	£925	£1100	£1200
386-33Mhz cache	£999	£1060	£1235	£1330
486-25MHz 8K cache	£1350	£1400	£1580	£1680
486-25MHz 128K cache	£1855	£1905	£2085	£2180

ADD VAT @ 17.5% TO TOTAL ORDER

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Full Tower Case	£79
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Extra 1.2 or 1.44 Floppy	£33
40Mb Hard Drive	£120
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200Mb Hard Drive	£410
Extra Ram per Mb	£45
Mouse	£29
MS-DOS 4.01	£59
1 Yr on-site maintenance	£50

All systems are burnt in and tested for 48 hrs before despatch.

Delivery - £18 + VAT.
Delivery normally within 7 days, but please allow 28 days.

DVI DAWN

Intel's Digital Video Interactive technology is all set to let your PC run full motion video. Stuart Clark updates the latest frames...

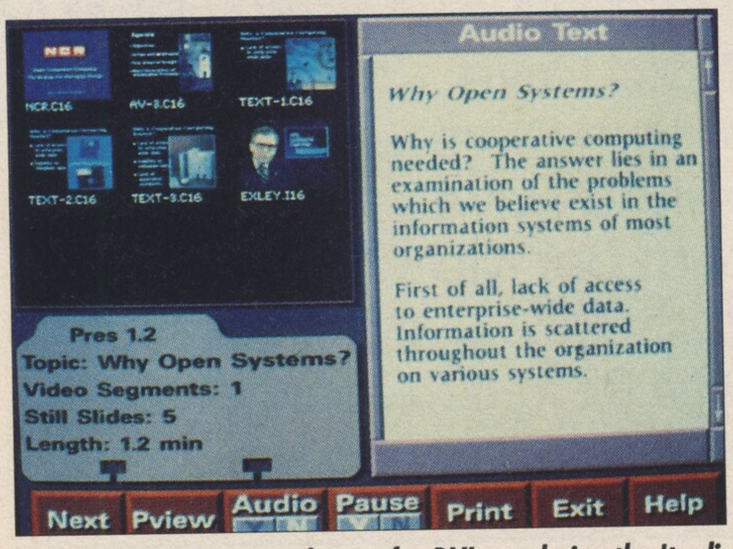
Although Intel is making the news elsewhere this week with the launch of the 486SX chip, the American chip giant also investing heavily in the technology required to deliver full-frame full-motion video to the PC screen. The central problem the company has set out to address is how to sufficiently compress video and multimedia data in such a way that it can be quickly accessed and displayed at the 30 frames per second a moving video image requires.

Consider the problems. Firstly, the means of storing the high volumes of data involved requires a CD-ROM drive; a device offering up to 650Mb of storage space and a price becoming more affordable to the mass of PC owners. It's not uncommon to find such drives for under £400 now. But CD-ROM drives can only transfer data to a central processor at a rate of 150K a second, and moving video requires a 30 frame per second refresh rate. So somehow you have to reduce the screen data for each frame to 5K. Moreover a typical full screen image can account for as much as 750K therefore one second of moving video might occupy as much as 22.5 Mb of data. At the rate a CD-ROM drive can deliver data to screen, it would take you nearly two minutes to display just one second of full-screen full-motion video. Clearly, this is impractical.

SECRETS OF COMPRESSION

So what's the solution. Well it's a very neat one - and very secret too. What DV-I achieves is a compression rate of as much as 160:1; which means that a 750K screen can be squeezed into less than 5K. The secret behind this lies in custom silicon which can process data in real time at rates required, but the real trick is in the way data is stored – and that's a software solution.

The algorithms at the heart of DV-I technology check the differences between each frame and its predecessor and if there are no major differences the system only encodes the areas of the image that have altered. Thus a key frame is compressed, the alterations in the subsequent frames noted, and if the key frame ceases to be an adequate representation of the sequence of frames, a new key frame is compressed and so on. As a result up to one hour of full screen moving video can be stored on a single CD or 7,000 high resolution (1024x 512) still images, 650,000 pages of text or five hours of FM stereo. The implications for multimedia applications are enormous. A typical CD could contain 20 minutes of full motion video, 5,000 high-res stills, six hours of audio running over the stills and 15,000 pages of text.



• Training is a big growth area for DVI - replacing the 'traditional' laser disc and video. DVI is cheaper and more flexible.

CAPTURE AND DELIVER

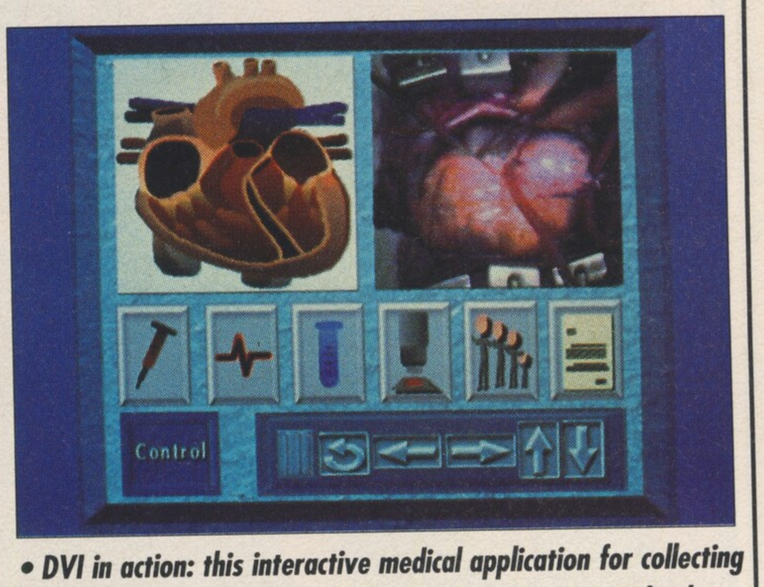
The Digital Video Interactive system comes on two plug-in cards – the Capture and Delivery boards. At present both only work with the American NTSC video standard but Intel has announced new boards that will be available in the second half of this year which will support PAL. They're also claimed to be twice as fast as the current series and will run on a 386SX.

The Capture card is a high resolution digitiser which allows simultaneous audio and video processing in realtime. Moving video can be captured, compressed and played back at 30 frames each second and still images up to 1024 x 512 pixels resolution can be filtered and stored. Audio can also be digitised at 14 bits per sample at up to 16 KHz.

"This is not emerging technology. Whatever you see you can buy"

Such sampling rates are achieved through real time compression and decompression via two 82750 video chips – a pixel and display processor. The former can handle 12.5 million instructions per second – that's over 6 times the processing speed of a PC AT – while the display processor can treat each pixel selected to any one of 16 million colours. While fast, these two number crunchers only form part of the picture. The key to the card is the set of proprietary algorithms which compress the digitised data at unheard of rates. Typical compressions of 6:1 result in no discernable difference between a live video image and its compressed counterpart. The pay-off is that hi-resolution, 16-bit colour still images with file sizes of 1.2 Mb can be squeezed to 188K in less than half a second. Similarly, realtime video can be compressed to 4.5K per frame.

The Delivery board is a playback card which can be used without the Capture board to decompress stored images for displays. With up to 2Mb of on-board video RAM, the card is billed as a 'complete multimedia playback solution' enabling video overlays and text/graphics integration plus audio for interactive training, point of sale information, business presentations and entertainment. Two i750 processors are found on this board too, but they are used in parallel with decompression algorithms to unsqueeze and display screen data.



• DVI in action: this interactive medical application for collecting information uses animation, video and touch screen technology.

So where is this all leading? In video the results will be far reaching. Already a US developer has introduced a digital real time video editor which has a facility using two PCs and video effects software to do the job that five years ago would have required equipment that cost over a million pounds. Perhaps the biggest repercussions will be felt in computing. Intel expects that lower costs will soon enable DVI to be incorporated into PC motherboards with the system becoming part of a central processor by the year 2,000.

Multimedia may have faded from prominence in 1991, but if anything, this is the year which looks like producing the goods. While CD-I and CDTV, due this year, are exciting enough, Intel has stolen the march. Until faster processors and larger storage devices are cheaply available, heavy-duty compression algorithms will be needed to supply the essential full screen moving video component of any true multimedia system. ■

DEVELOPING DVI

If you were to sit down tomorrow and start to develop the next generation of computer games, or the definitive interactive guide to 20th century cinema, here's the equipment you would need:

- A 25MHz 386 PC with a 40Mb hard disk just to boot the system software. A 720Mb hard drive might not go amiss to store work in progress.
- CD-ROM drive with a SCSI interface and a tape streamer, a DAT unit, to transfer data for CD mastering.
- Graphics tablet, RGB video rostrum camera and colour scanner for importing images.
- Colour video printer, audio amplifier and speakers for output along with a couple of monitors.
- Capture board and delivery board.
- Requisite authoring software and C library routines

Total price? Around £31,000
But is this a dream set-up or what?

DVI UK

Intel's DVI technology is handled in the UK by Thorn EMI, on (0628 822181), which also acts as a development support centre. With its long background in video and training, Thorn can supply expertise in transferring analogue video to digital video. As Thorn is keen to point out, DVI is not emerging technology, whatever you see you can buy. Currently it has four hardware developers working on DVI projects in the UK. Training, simulations, point of sale and information systems are the main applications in development, but there's a *Question of Sport* style pub trivia game waiting in the wings that features real sport footage.

REAL TIME OR PRODUCTION?

DVI actually comes in two flavours - RTV and PLV. Real Time Video captures and compresses in real time at up to 30 frames per second, but only at 128x120 resolution. On the other hand, PLV, or Production Level Video, offers 256x240 resolution by mastering from 1" or Betacam SNP format video. PLV is therefore most geared up towards pro use and offers acceptable 9-bit/pixel video encoding.

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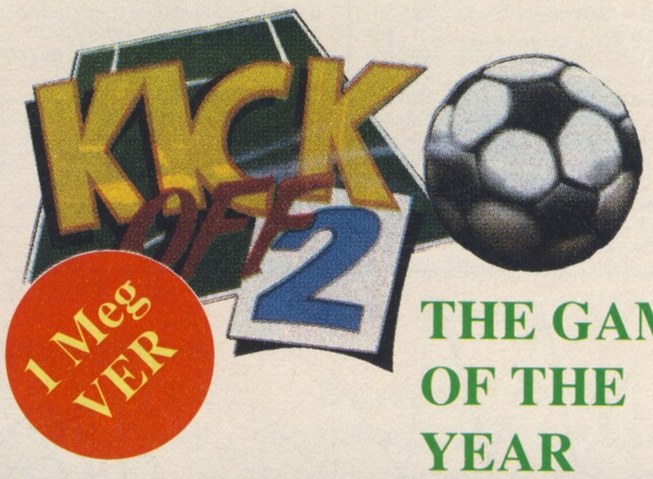

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EXPRESS MAIL

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!

Commie sounds

Yo, 'ere does the music on the new Ariston telly advert sound commie 64ish or what? Beware the man who wears loud ties,
The Android.
Rhyl, Cwyd

Well spotted Andy. But our next correspondent, by all accounts a human, not only spotted it, but also made the all important creative leap required to win himself a fiver in the process. Just goes to show the limitations of machine intelligence really doesn't it? Write in again and I might consider feeding you a few extra RAM chips.

New angle

Computer spotting visually is become a trifle old hat so I have decided to be a nuisance and propose something entirely different.
1) In the latest TV advert from washing machine manufacturers Ariston, some unidentified ATari ST or possibly Spectrum 128 music plays throughout. The ad seems to imply that computer music is tedious and just goes on and on
2) In the forthcoming single from 'The scientist' called 'Spiral Symphony' some boulderdashesque (now there's an adjective! - H F-W) **sound effects can be heard**
3) Finally in the latest record from Manchester group Zero Zero a very C64 sounding sound is used for the bassline. Has anyone else heard any computer-sound in TV ads or programmes or indeed records?
Mark Kernaghan
Sherwood, Nottingham

'Nuff said

Nice Try

Some months ago I won a game called *Night Shift* in your sister magazine *Commodore Format*.

I have been waiting since January for this game and would like to know if it has been released yet and how long it should take to reach my doorstep
Faisal Qureshi
Gatley Stockport

Now I know there's been mix ups with *Express* getting prizes to compo winners but it's a bit rich to expect us to chase other mags for their prizes. However, this ingenious and unexpected avenue of redress may have been successful had I not unexpectedly and disingenously binned your full address.

He's not Tom's brother

Why is it Frank O'Connor finds it necessary to slag off the Spec in *Express* 128? If this plonker thinks that the Specs have rubber keyboards then he must be living in 1982. The Spectrum changed the world of home computing and will never be forgotten.
Adam Tomasso
Carrbridge. Invernesshire

Go easy on the youngster. Frank O'Connor wasn't even born in 1982. He's only six years old. Tim Smith has to rewrite his tiny scrawling crayon jottings each and every week.

Is that wor pint?

I 'll be popping down to the local pub in about half an hour for a drink and was wondering if any of your readers would like to join me?
Earl Tubthumper
Tamworth, Staffs

It would seem they've all gone to join a guy in another pub. You know, the guy who wrote exactly the same letter to Viz a couple of months ago which you read and decided to copy.

Sane at Last

Yesterday I was given issue 120 of your magazine by my nephew and what a revelation it was!

I discovered that I am not the only woman in the country who plays games on a computer and what is more I also leanrt that I am not the only (over) 50-year-old to have just started using a computer. WOW! and just as I had convinced myself I was a freak. I have owned my lovely Amiga A500 (1 meg) since my fairy godfather husband gave it to me for Christmas and a whole new world has opened up.

The only bleat I have is that it would be an enormous help if mail order advertisers would code their games - i.e. SU for shoot em-ups A for adventure etc. It is a waste of time and money to have to phone the company and ask as most of the 'older computies' cannot manage the fast and furious killer games.
Elizabeth Shore,
Worcester Park, Surrey

That road to nowhere

The article on Geographic was quite an eye opener. At first I thought it might just have been a young lad with an idea for making money that just went badly wrong, but instead it appears that it was a total con.

Interestingly enough *Computer Shopper* ran an article on it this month, but certainly nowhere as deep as yours. It must have been good for you to be able to get your teeth into something like this.

ON-LINE MAIL

Own a modem? Squirt us a letter. Got a fax? Fire us a missive. *Express* has its own conference on CIX. Why not give this on-line service a ring 081-390 1244 and talk to us direct! You can also leave E-mail for us on Prestel and Micronet - get in touch @011112623, or on Telecom Gold @84:txt152

• Unbelievable but true. Our number one fan is in fact a £109 lawn mowing operative who lives in Hatfield. Relatives and friends of this plucky young droid are available from all leading mail order catalogues and top stores.

On the Grass

Just in case you were interested (though you probably aren't) your mag has its number one fan here at Hatfield Poly. We all call him Flymo, and he is SO dedicated that he writes a weekly NCE guide in order to get more people here to buy your mag.

I think he deserves a pat on the peripheral !!!!!!!.
The Geriatric Raver

And just to show our gratitude we printed his picture.

Out in space

I read your magazine regularly while orbitng in my intergalactic thruster. I noticed recently that *Express* is cutting down its coverage of alien killing games. Is this because you have realised there are few of us left after a decade of furious firepower with us as the merciless victims?
Karloid, Aboveyou

There's plenty of alien looking things at Future Publishing I can tell you. And a lot of them work here.

On the floor

Those pictures of *Express* staff dead on the carpet were in extremely bad taste. Please don't stoop to the same depths again just to impress your readership.
K G Stephens Ascot, Berkshire

Right boss. Our will is your command.

Related to mail order, as I understand it, adverts inviting customers to send money relating to goods advertised (selling off the page) must conform to certain legal requirements under (I believe) the Mail Order Act 1974).

They include indicating the owner of such as a business, in the case of sole traders - proprietor and if using a PO Box number then they MUST display the trading address at some point in the advert. There are a few that don't seem to do so in this week's issue.

I'll stand corrected if I'm wrong, but that's how I interpret it.
Richard Gorbutt
High Wycombe, Bucks

Thanks, we're still biting away but to pick up a couple of your points. According to the Consumer Law Handbook, the Mail Order Transaction(Information Order) Act of 1976, advertisers have to state their name and address on any ad, but not the identity of the owner of the company. You are right though about PO Boxes - they must include the full address. Unfortunately, Geographic stuck to the letter of the law in this respect.

Yes

I know that IBM comes in for a lot of stick, and that some of the criticism is fair. And I'll bet quite a few people had a good laugh when they lost money recently. But if a company the size and influence of IBM are in trouble it's bound to mean that the whole computer industry is feeling the squeeze.

This should not stop companies spending our hard earned cash on developing better products. After all, the likes of IBM are guardians of computing's future.
Peter Blair, Leeds

No

Are you members of the Mail Order Protection Scheme?
David Senior
Pendle lancs

Maybe we should be.

Give us a pay rise...

Thirty weeks I've bought your damn paper and thirty weeks have passed without fair coverage of the QL, BBCB, Electron or PCW. I know these aren't the most popular machines, but they should get more than the occasional snipe. The only mention I could find of my PCW was in a letter reply saying that it couldn't be used for serious DTP.

Well let me tell you, sir. Several friends and aquaintainces get a regular newsletter produced on my PCW and all prefer it to NCE. It's clearer to read and cheaper to produce. As for the QL, BBCB and Electron, where are they now? Were there any competition we would buy that. There isn't so we're stuck with you. Do better and respect minorities. We pay your wages
Frank Steveling

I'm told the Editor has a series planned 'in the not to distant future' on the very machines you mention plus all the others that are no longer, how shall I say this, err.. no longer number one on the buyers' shopping list. So, stay tuned. Then can you pay me some more so I can get rid of my Fiat Uno and buy a decent car.

And Next....

Whatever happened to the 'much vaunted' NeXT machine from egoist Steve Jobs? Following the media hype a few months back, I still have not seen one of these machines advertised (and before you ask, yes I could afford one), and am unable to track one down. Seeing as you were involved in the hype and media manipulation surrounding the machine, how about some answers.
P Staunton, Harwich

Mmm...Believe it or not there was a NeXT Cube for sale in the *Shopping Express* free reader ads the other week so you missed a chance there didn't you?

Otherwise, *Express* is still awaiting its first review machine though we're told it's on its way. Presumably this means NeXT are all set to start shipping over here at long last

And so finally...

Why has Centrefold changed its name to Soontofold? I think we should be told.
Michael Bridges, Acton

Easy...it's going to fold – as simple as that. Why? A couple of reasons so I'm told. One, readers' responses weren't all that positive after the survey we did a while back and two, Tim Smith's off to become News Editor. The page is to become a...well you'll just have to wait and see.

WRITE A LETTER AND WIN A GAME SHOCK

Yes, it's true. We're now in our second week of giving away free full price games to the best letters we receive each week. This week's titles up for grabs are listed below so all you have to do is write to us at the usual address, state the game you're after, and we'll do our best to do the rest.

So here's this week's five hot hits right now shall we?

- **ATARI ST - VIRGIN'S *Judge Dredd***
- **AMIGA - DOMARK'S brand new *Skull and Crossbones***
- **COMMODORE 64 - IMAGE WORK'S *Passing Shot***
- **AMSTRAD CPC - ZEPPELIN'S *Jocky wilson's compendium DartsS***
- **PC - Infogrames' *Welltris***

So get writing on anything under the sun and win yourself a free game!

DEATHBRINGER '90 et al VERSUS

Rubbish

What a load of old tosh your stand on piracy is. We will never be defeated, never. Not by FAST not by you, not by the publishers. Can't you see that as long as games are a rip-off, people will look at any means of getting them cheaply.

That price breakdown you printed a few weeks ago was ridiculous. All we see are publishers and programmers on 30 grand a year and driving flash motors. It's a con. Why can't you see it?
Total Wiper
Wigan, Lancs

CD players are expensive but I don't go and nick one just for the sake of it do I? And we get letters from programmers who've been ripped off al the time

More Rubbish

Thank you for your enlightening reply it had me in stitches. Thank you also for your ever excellent editing, leaving out the amazingly funny comic strip.

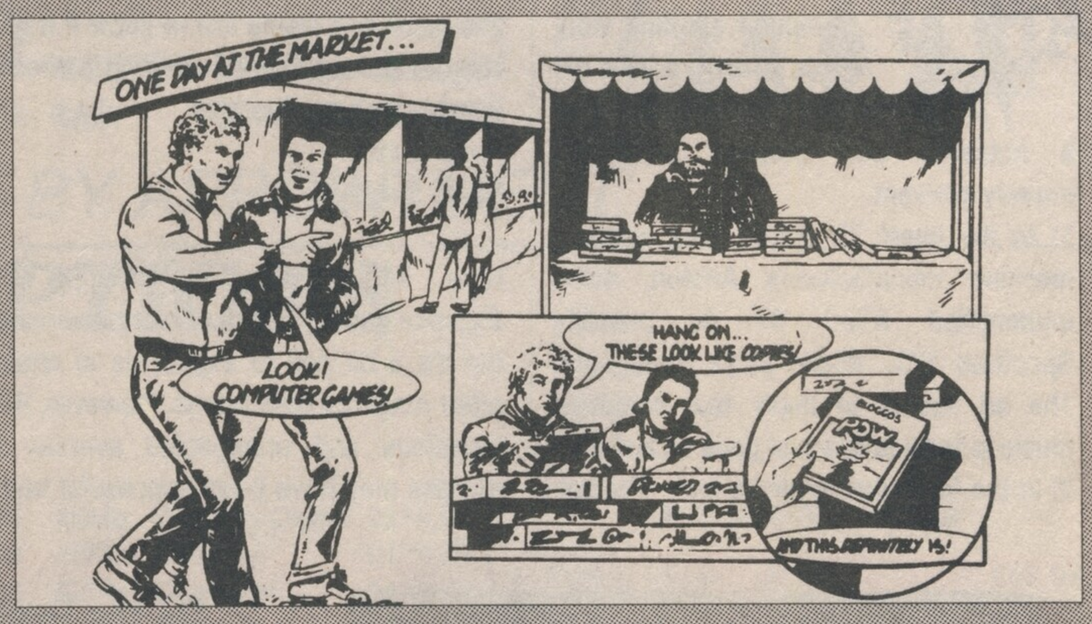
Still, I understand that certain dungheaps that approximate human beings might be offended by the rich cultural diversity of the language, so I have sent a copy with the traditional 'f*s' in their places.**
Deathbringer 90
L5 space colony, Mars

We didn't run your version of the FAST advert because it was crap. How you can describe it as 'amazingly funny' is the only laughable thing about it.

Elspelling it out

If Deathbringer wants to be branded as a thief then he is going the right way to achieve his aim. He may have escaped the law so far but he will get caught eventually, just like most common criminals.

It would appear that he is exactly that, judging by his own description of his activities. I shall look forward to seeing him laugh on his way "down" to a lengthy "Stretch", that being the case.



• That FAST ad - loads better than the crappy one Deathbringer' sent in.

Whether the ads from ELSPA are popular or not is irrelevant, they are not designed to be popular. We want to know who the hackers and illegal copiers are, and will do our level best to find them.

It is most unfortunate that all legitimate market traders (*Express* 128) should get tarred with the same brush as those, in the context of games software, who sell bug ridden hacked copies from their stalls.

It must be said that our ad depicting a market stall scenario is one of a series, and again is a reminder to the public on the illegality of purchasing pirated copies wherever they are sold. It is in no way meant as a slur on market traders, and we would encourage readers to do business with them, especially, when it comes to original packaged software.
Roger Bennett, European Leisure software Publishers Association
Hope that puts the record straight

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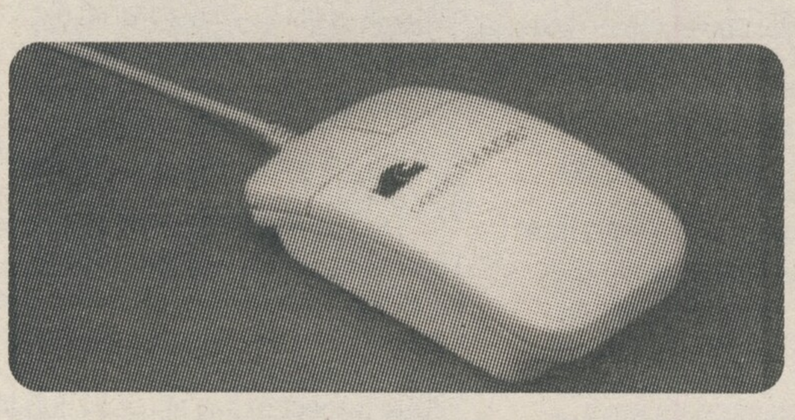

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SOLD OUT

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It's ideal for artists.

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OPTICAL MICE

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IBM PC with Dr. Halo	£49.95
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Amiga

ATONCE UPGRADED

Silica Distribution has released a major software upgrade to its successful multitasking PC emulator ATOnce. You can obtain Version 1.27 of the ATOnce software by sending your original ATOnce Amiga master disk back to Silica Systems, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX. Here's what it has to offer:

Monochrome EGA/VGA Emulation – OK, it's not quite the full colour EGA and VGA emulation that Vortex is promising for the next major release of the ATOnce hardware, but it's a step in the right direction. EGA emulation offers a resolution of 640x350, while VGA emulation offers a 640x480 display. Vortex claims to have successfully run software such as Windows 3.0, *Excel 2.01*, *Flightsim 3 and 4*, *Jet* and Gem 2.0 and 3.0 under the new screen modes. Indeed, these new screen modes further extend the impressive compatibility of ATOnce with the vast range of PC software.

New CGA Emulation – It's always nice when a developer listens to what reviewers have to say. In the case of ATOnce, Vortex has taken heed of the criticisms levelled at the comparatively slow speed of screen update when running it in 16 colour CGA mode. After much head scratching and coffee consumption, the Vortex programmers have managed to speed up screen rendering considerably.

Faster Disk Changes – Under the previous release of the ATOnce software, changing disks was a painfully slow process. Every time you inserted a new disk (be it MSDOS or AmigaDOS format), the Amiga would read status information from it before allowing access to its contents. Under 1.27, you can now turn this off so that a PC disk can be accessed immediately.

A2000 Compatibility – If you have a 2000 (or a 1500), you can now buy a separate adaptor which allows ATOnce to be used on these machines. The new software release now supports this adaptor, so make sure you buy it if you buy ATonce for your 2000.

New Hercules Font – In addition to all the jazzy stuff above, Vortex has also added a new 8x16 screen font which is used during Hercules emulation. This font is larger (obviously) and therefore reduces the amount of flicker present in previous releases.

SNIPPETS....

Stateside company SunRize Industries (of *Perfect Sound* fame) has announced that its long awaited range of 12 and 16-bit Amiga sampling cards are just around the corner. When I spoke to the chaps at SunRize, they assured me that the 12-bit card should be shipping by the time you read this. Retailing for $500 (expect to pay £350 in this country) the card plugs internally inside the A2000.

The more exciting of the two, the 16-bit card, isn't going to be available for at least two months yet, but already it sounds as if this product could take the music industry by storm. For just $2000 (expect to pay about £1300 in the UK), you get a full stereo 16-bit sampler that offers CD quality sound, direct to disk recording and full SMPTE and MIDI compatibility. If it is even half as good as the spec SunRize has been waving under my nose, I can see companies such as Akai and Roland suffering. More details next week and a full review soon.

AmigaNuts United has finally launched *OctaMed version 1*. For just £10 you receive a sophisticated sound chip sequencing package that will allow you to write tunes on your Amiga using up to eight sounds simultaneously. Not only that, but it includes full support for

AMIGA CD-ROM DETAILS

Sources close to Commodore have revealed more details of the forthcoming A690 CD-ROM drive for the A500. The device has been specifically designed to allow A500 owners (and eventually 2000 and 3000 users) to take advantage of the stream of titles for Commodore's soon to be released CD-based Amiga, the CDTV.

Currently, the drive is only available in external format for the A500, but an internal version will also be made available for direct connection to the A1500, 2000, 3000 and 3500 machines. Not only will the drive allow access to CDTV products, but it should also open up new dimensions for Amiga multimedia applications. Software such as Commodore's own *AmigaVision* will be able to directly control the CD-ROM drive when the correct driver software is installed.

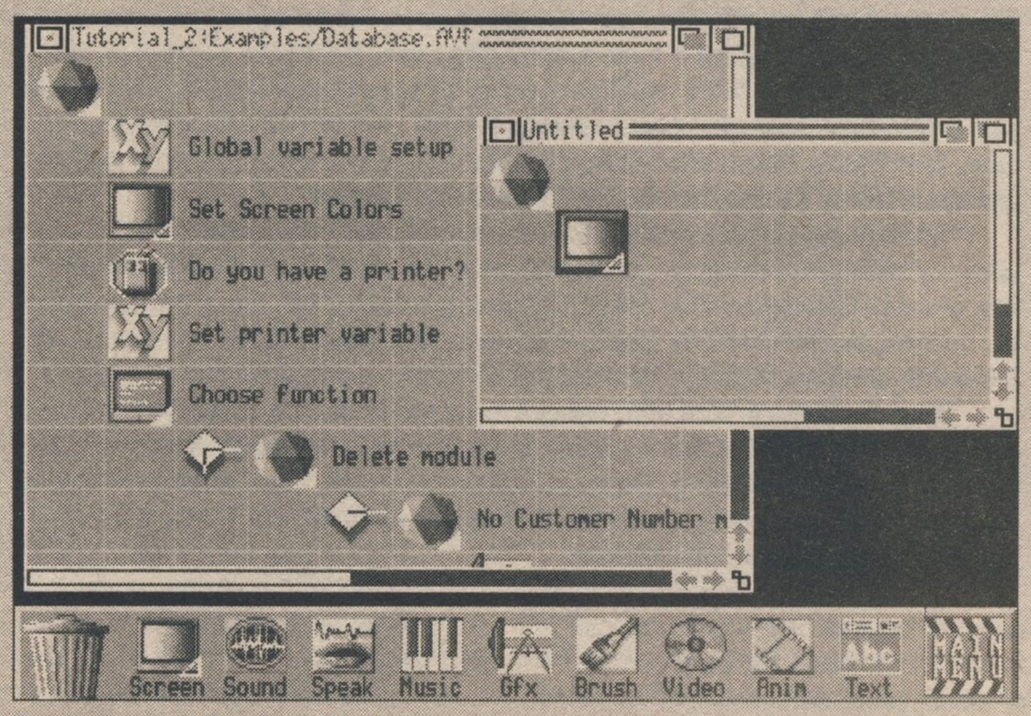
The best news of all is the price of the drive itself. Commodore is provisionally aiming for a £299 price point, which would make it very competitive indeed. CD-ROM titles will be available for around £35, although the products themselves will justify their relatively high price by their complexity and depth.

There are currently no fewer than 25 CDTV titles ready to be released when the CDTV is launched. By the time the drives themselves are launched for 'the real' Amigas, there should be more than 100 CDTV titles available. These break down into basically six different categories including entertainment software, educational software and information systems. Commodore is going to great lengths to stress the educational strengths of the CDTV, and many believe the CDTV and similar products could be the electronic books of the nineties.

Among titles to be launched is a completely cross-referenced Encyclopedia, a World Map, the *Complete Works of William Shakespeare*, a family music making package and a number of entertainment titles including *Xenon 2* and Psygnosis' cutesy smash hit *Lemmings*.

According to my source, Commodore plans to 'officially' launch the drive in the States in September, with the UK launch following in October. The drive has already been shown to US Amiga owners at the recent (well, January actually) Consumer Electronics Show in Las Vegas.

SPEEDY FOLLOW-UP FOR AMIGAVISION



Most of you still will not have had a chance to play with version one of *AmigaVision (pictured above)*, but already Commodore has announced the impending release of version two of its acclaimed multimedia applications generator. No details have yet been released, but rest assured that I'll inform you as soon as I hear more. Who knows, if Commodore is feeling very generous I might even receive a review copy so that I can give you the low down on what is undoubtedly one of the most important pieces of Amiga software ever developed. Commodore is on 0628 878888.

MIDI and memory saving synthesised sounds. A full review as soon as I get around to it. In the meantime, AmigaNuts is on 0703 785680.

NO PARM IN IT

I must just take this opportunity to thank John Goodwin of Sothal in Sheffield for his recent letter. John wrote to me after reading my review of INOVAtronics' excellent Hyper Helpers system in issue 126 of *Express*. According to John, he has found a PD program that will do exactly the same job as the *LaunchPad* utility bundled with Hyper Helpers.

Called *ParM*, the program adds extra pull down menus to the Workbench screen. These can be customised to allow you to run just about any program without having the hassle of messing around with directories to access the program's icon. *ParM* is available from your favourite PD supplier (ask for Fish disk 419). Thanks John!

Jason Holborn

ST

PRODIGAL VIRTUOSO

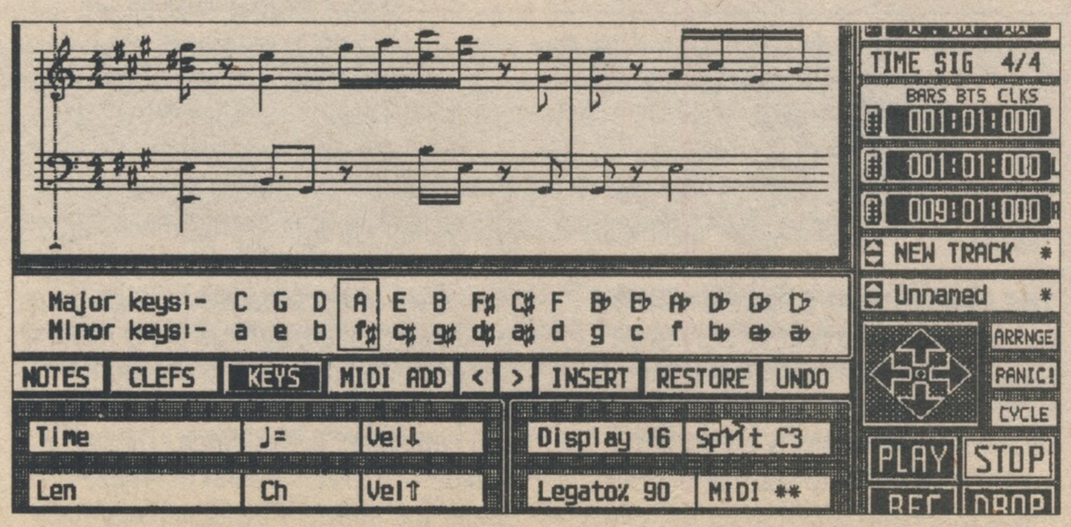
The battle for supremacy of the MIDI sequencing market is really hotting up. The latest contender vying for the control of the studio and home music sequencing market is Digital Muse.

The company's budget *Prodigy* sequencer was well received when it first appeared a year ago. So to keep in line with all the other major updates, occurring at the moment, the company has just released version two of its modular sequencer software.

Most obvious addition to *Prodigy* is a score page editor. This will enable the user to modify songs in stave/musical notation form. Thus you can move notes up and down a stave and cut and splice as necessary. However these facilities are part of a separate module which has to be purchased on top of the price of the main sequencer.

Scoresheet is a module enabling you to print out the musical notation. Other features of the module include smooth real-time scrolling, single track display and unrestricted event insertion. clefs, keys and time signatures can be changed and notes can be dragged around on-screen. This module brings the sequencer into line with the other MIDI packages currently on the market.

Owners of half meg STs can now run the *Prodigy* package. The whole program, due to its modularity, will now run on a 520ST. Thus only those



• Prodigy *version two has been treated to a brand new score edit module. Modifying music will be made considerably easier as now you simply move notes up and down a stave.*

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POOR SALES FOR ATARI USA

The recession isn't just biting into Atari UK's sales figures. The American arm of the company has recently turned in some disappointing results for the last quarter as well.

Overall, sales are down a full 11 per cent on the same quarter last year, while for the year they're down 3 per cent. While explaining that the Gulf War had a great effect on sales, Sam Tramiel, the president of Atari pointed out that net income had vastly improved and was in fact up $10.9 million against the same time last year.

"Although sales in the fourth quarter were understandably disappointing, the company continues to strengthen its balance sheet. The Atari STE and TT/030 computer line, based on Motorola's 68000 and 68030 micro-processors, still remain the mainstay of our business, and we are taking measures to ensure its continued growth and success. The Mega STE, which was introduced in December 1990, was well received," said Tramiel.

The performance of Atari USA continues to lag well behind the company's branches in Europe. However any difficulties the American arm has will by the nature of international business, be reflected overseas. The future looks good, though. With a whole new range of machines on the launch horizon including the Panther games console, Atari is the only hardware company worth bothering with.

modules required at any one time can be loaded into memory, leaving room for actual score creation.

Virtuoso is Digital Muse's other major MIDI package, this time aimed at the top end of the market. One of the program's major features is its ability to converse with two other packages: *Music DTP* and the ADAS hard disk recording system. This compatibility with other programs arises out of *Virtuoso's GEM* multi-tasking capabilities; you can run any other GEM program concurrently. While retaining the modularity of *Prodigy*, *Virtuoso* comes complete with all the modules so, for example, you won't have to shell out extra cash in order to use the *Scoresheet* module.

Prodigy 2.0 and *Virtuoso 2* are available now from The Digital Muse Ltd, 44 Gloucester Avenue, London NW1 8JD. Telephone 071 586 3445.

NO EXPERIENCE NECESSARY

The improvisation software *Band in a Box* has been updated to version four. The program works in conjunction with popular sequencing software and improves phrases, songs, drum rhythms or bass lines for musicians suffering from lack of inspiration.

Version four's main feature is the user-defined styles section. This enables the user to create a unique style by playing in one bar of either drums, bass or piano. The program then works out all the other chords for you, from the style you've entered. It creates 256 different patterns/styles and the user can then specify which ones to play and in which order.Other features include: lyric entry, style change at any bar, send/save patches at any point, change tempo at any bar, pause and play at any bar, MIDI thru, real time tempo change and any time signature.

Zone distribution, which produces the package, has also brought out a fakebook of 550 songs, which costs £20. The company can be contacted at 5 Abbeville Rd, London SW4. Telephone 081 766 6564.

BASIC HELP

It's all very well being a super-efficient assembly language coder, but what if your grasp of registers and byte movements doesn't extend beyond eating in the local fast-food joint? The answer lies in BASIC language programming. However, even with this easily learnt language, problems still arise because of the hastily compiled manuals which are supplied with the language disk.

If you are finding problems programming in BASIC, or even if you're looking for expert help in advanced programming, then a new BASIC programmers group could provide all the answers.The BASIC Programmers Group is being run by Mark Blackall and is aimed at helping users of all the main ST BASICS. Mark tells me that the aim of the group is to encourage use of the language, while exchanging ideas and assistance. A library of programs is being compiled, covering all the popular aspects of BASIC programming.

To get hold of a free newsletter, drop Mark a line at 68 Queen Elizabeth Drive, Normanton, West Yorkshire WF6 1JF, or telephone 0924 892106.

INTERNATIONAL RESCUE

There's a new magazine about to hit the streets, aimed at the international Atari community. Titled *International Atari User Magazine*, it's aimed at the intermediate level Atari user and will cover the entire range of machines.

The 40 page magazine will be available in this country via the Bath BBS and its Sysop Malcolm Burridge. Each issue costs £1.50 while an annual subscription is £10. Malcolm can be contacted at 43 Midford Road, Bath BA2 5RW. Telephone 0225 836182. Alternatively, if you have a modem, dial the bulletin board on 0225 840060.

Andy Hutchinson

64

THE CONTINUING STORY OF DIZZY

Not a company to rest on it's laurels Codemasters has recently released a sixth *Dizzy* game (shades of *Police Academy*). *Kwik Snax* is purely an arcade/action game starring our old friend Dizzy and is a step up from *Fast Food Dizzy*.

Each level comprises a huge maze which scrolls left/right as Dizzy makes his way around it. Dotted around the maze are a number of eggs from which the cute little Fluffles hatch. These wander aimlessly around the maze under the threat of being kidnapped by the resident nasties – flies, ghosts,

leapers, stompers etc.

Dizzy must save his friends from this awful fate and does so by touching them after which they follow him wherever he goes. It's quite possible to have umpteen Fluffles follow you in a huge line. As soon as they are lead to the exit an you are awarded an inordinate amount of bonus points. Then it's off to the next level but not before Dizzy has selected a weapon to help him on his quest.

After every four levels there is a bonus stage, allowing even more points to be gained. Here Dizzy must catch falling YolkFolk in a net before they are devoured by a shark.

Kwik Snax is a thoroughly enjoyable game; the graphics are clichéd and dated in places but on the whole are colourful and jolly. Music and sound are average, as is the presentation, but the game's playability overcomes any aesthetic flaws. Quite simply, a smashing budget game.

C64 IN HACKING SHOCK

It seems that the people behind *Neighbours* have a little bit of common sense after all. Over the past few episodes Todd Landers has been playing endless games on his new C64 instead of doing his homework (a few nods of recognition out there, I feel).

This was all very well until he started using his £600 set-up to hack into his school's computer down the telephone line using a modem which looked strangely like an empty cardboard box; it wasn't even plugged into the C64. It was more a case of a neatly written BASIC program. Nice try, though, Todd. What with his C64 and Paul Robinson with his A500 who will be the poor blighter who gets the Speccy 128? Any bets on Des?

FIRST LAST AGAIN

Any game worth its salt will eventually be rereleased, if the software house has any sense that is. Following the launch of *Ninja Remix* and *Last Ninja III* (now available on cassette and disk, by the way) System 3 has decided to treat Joe Public to the first of the *Ninja* games again and the story goes something like this: You are the , er, last surviving Ninja after the evil Shogun Kunitoki has wiped out the rest of the Ninja race. You must make your way to the Shogun's palace and ultimately destroy him.

The game is set across six huge levels – the wilderness, the palace gardens, the dungeons, the lower palace and the inner sanctum. In case you've never played a *Ninja* game the Ninja himself explores an isometric kingdom collecting objects and weapons to aid his quest. Owing to some clever memory mapping objects can be hidden behind trees and other objects. Adversaries must be fought and there are all manner of pits and swamps to cross.

The puzzles are fairly straightforward; gas bombs are used to put the dragon to sleep for example. This allows the player to get straight into the game but it does take a while to get used to the control method. Graphics on the whole are colourful, imaginative and meticulously detailed and are backed up by some superlative 3-D programming.

However, my favourite aspect of the *Last Ninja* is the music – some of the greatest C64 tunes of all time are in here and all 12 tunes are simply beautiful. I personally regard this as the best of the *Ninja* trilogy so grab a copy at this ridiculously low price as soon as you can.

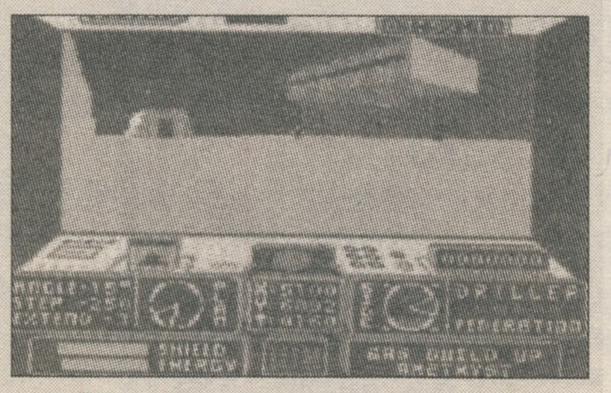
SMALL BUT PERFECTLY FORMED

After my look at Tracey (*Express* 127) another handy graphics dongle has come to my notice. The Icontroller is a tiny joystick that you mount semi-permanently to the side of the C64 (in other words you stick it on with a sticky pad). Its connector sits snugly into either joystick port and it also allows a proper joystick to be plugged simultaneously.

A little joystick may be very nice to look at, but what is it for? Anything, basically. The Icontroller is an absolute Godsend – the emphasis is definitely on control – as it is amazingly accurate and hyper-sensitive. It makes light work of art packages, pull down menus, sprite editors and indeed most games. Also it

THRILLING DRILLING IN SPACE

And just when you thought the reviews were over up pops *Driller* at the eleventh hour. This budget re-release is one of my all time favourites utilising the Freescape system to great effect. Basically the game is set on the moon of Mitral and due to a set of unfortunate circumstances there is a rapid build up of gas under the surface of the moon. You guessed it – you are the crazy dude who has to save the day.



• Driller contains some of the best music ever written for the C64.

You do so by planting a rig in each of the 18 sections of the moon. The rigs can't just be plonked anywhere, though. If your newly planted rig doesn't achieve at least 51 per cent success then you have to try again. There are plenty of puzzles to solve (mostly by hitting various switches) as well as a vast area to explore complete with corridors, underground labyrinths, etc.

At the start of the game you can control a tank-like vehicle which is quite slow and cumbersome. Later on, however, you can climb into a sleek jet and zoom around to previously inaccessible areas.

***Driller* is a compulsive and absorbing piece of software. Although sluggish, the 3-D graphics are both atmospheric and functional but it does take a while to get used to the slow update. The music, well words fail me. In my humble opinion *Driller* boasts the best soundtrack ever to grace the C64 – a spine chinning rendition of the eerie *Halloween* music – and creates a wonderful atmosphere. I kid you not. Puzzles are nicely structured but unnecessarily tough in the later stages. Quite an unusual release in many respects as some will love it while others will loathe it. All I can suggest is that you try before you buy.**

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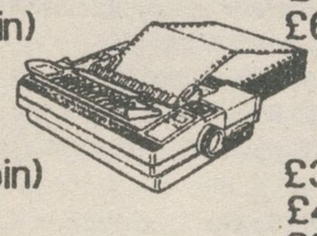

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allows the user to conveniently control everything from the keyboard area. Although it costs a whopping £17.95 illustrious artists such as Robin Levy (*Armalyte*) and Steve Rowlands (*Creatures*) swear by it.

For the record the Icontroller can be used to great effect on: Vidcom, Graphic Editor, Geos, SEUCK, and most other utilities. Contact FSSL Computer Software, Masons Ryde, Defford Road, Pershore, Worcs WR10 1AZ.

SUMMER SLUMP

It's that time of year now that Spring is in the air when the software houses decide to lessen their output. In other words the dreaded 'summer software slump' when games are as rare as a believable storyline in *Neighbours*.

"Disaster for the C64!" you cry. Well, yes and no. While I will endeavour to bring you reviews of any new games, the column will feature a whole host of other things in the meantime such as Public Domain software, BASIC programs, hints, tips, pokes and hardware reviews. In fact, anything. So drop me a line at the usual *Express* address with all your games hints and tips, suggestions or anything else C64 related. I thank you in anticipation.

A TO Z

That's your lot for this week. Next week I can whole heartedly promise an extra special feature the A to Z of essential games. 26 games which you must have to be real dude.

Andrew Roberts

PC

KlassiK .626 Medium
Lucca .636 Medium
Mikron .427 Small mec
skyLite .606 Light upr

***• Can you believe this print-out's from a 9-pin printer? All thanks to* Protype.**

PROTYPE IS HERE!

It's true, the *Protext* add-on from Arnor is finished, and will be on sale in a couple of weeks time. I've now seen some print-outs done with the new program and they are truly stunning.

At first sight, you're sure you're looking at the results from a 24-pin printer, they're that good. In fact they were produced on a humble 9-pin Citizen 120D.

Protype integrates smoothly with *Protext* (only the AmsDOS or ROM versions, though – it won't work under CP/M Plus). You can call up the different fonts simply by using ordinary *Protext* commands, and you can use a selection of fonts within a single document.

The secret of *Protype*'s superb printed output is the way it handles the print head. Although the resolution of a 9-pin printer is comparatively poor, by sending the print head across a line of text no fewer than twelve times, Arnor's program generates text of amazing printed quality.

This to-ing and fro-ing of the print head obviously slows printing down to a crawl and this is probably the program's biggest drawback. Although the 120D, for example, can manage 120 characters per second (cps) in draft mode, by the time the print head has made 12 passes for each line, you're looking at an actual print speed of something like 5-10 cps, which is horribly slow.

This means that you'll only be using *Protype* when print quality is of the utmost importance. Unless, of course, you get in a stock of continuous stationery and just go out for the day...

Another stumbling block is *Protype*'s price; £30 is a lot of cash for a program that just tarts up your print-outs, after all. However, the increase in quality is so huge that *Protype* can hardly be thought of as merely a 'print enhancer'. After all, it could save you the cost of a new 24-pin printer! On top of that, though it's designed to fit in snugly with the existing *Protext* family, *Protype* can in fact be used with just about any other program!

It's good to see Arnor producing some new, serious and very high-quality (as we'd expect) software for the CPC, at a time when support from the big-league serious publishers has pretty well dried up. The company itself admits that the timing of the release was due more to the fact that the program was finally finished than because it feels the CPC is undergoing a resurgence. Nevertheless, the fact that Arnor is still taking such an interest in the CPC market is great news for all owners!

Protype, as I said, will set you back some £30. Initially, it will be available direct from: Arnor Ltd, 611 Lincoln Road, Peterborough PE1 3HA. Or you can call on 0733 68909.

CALLING DICK TRACY

At last – the much-vaunted *Dick Tracy* game appears on Amstrad cartridge. Quick, quick, load it up...!

Oh. Is this it?

Dick Tracy the game is much like *Dick Tracy* the film. It's about as deep as a Bejam pizza. In the game, the man in the yellow overcoat just plods along shooting, jumping, collecting and generally going about his business in a pretty uninteresting way.

The new Amstrad hardware has been used pretty well – the *Dick Tracy* sprite, for example, is nicely detailed, and the scrolling is smooth and fast – but the gameplay itself lets the whole thing down. What doesn't help is that the controls are stodgy and unresponsive, which is bad news when you often need split-second timing and exact positioning to avoid getting nailed by a hail of lead.

Equally annoying are gameplay glitches that let you run out of ammo at crucial points without any chance of doing anything about it. You can't go back and find some more ammo, and you can't go forward without it. All you can do is march into a rain of bullets and get it all over with.

• Dakka dakka dakka...! Dick's picked up a machine-gun clip, so he can really rip into the bad guys now.

Dick Tracy was never going to be the world's most promising licence, but the game is disappointing nevertheless. At least on the console, thin gameplay notwithstanding, we could have expected some fantastic graphics – but we didn't even get those. They're good, but not that good. And at nearly £30, well, forget it. Sorry folks.

GX4000 RULES!

Talking of cartridge software, Trevor Johnson of Ashford, at least, is a fan:

"Some people are saying that console games aren't worth £25 just because the graphics are better. I dispute this. I have a 464, 6128 and now a GX4000. Although I have loads of games on the CPC, which one do I play on the most? The GX4000 – and I only have two games on it! The graphics are much better on the new machines, updating extremely quickly and without slowing, even when there is lots happening on the screen. The sound, too, is improved, and there's no more tedious loading between levels, which are also bigger and more detailed than your average CPC disk games. So on the whole you pay £10 more and get £10 more game.

"Secondly, the sales of the new machine were disappointing over Christmas because, I believe, there is lots of competition and Amstrad didn't put it into people's minds that they must have an Amstrad. But also the general lack of games is encouraging people to go for the far inferior Nintendo and Sega. So once software shortages are sorted out and games reach shops like Menzies, Smiths and the Virgin Megastores, then sales will pick up.

"Lastly, I would say that the GX4000 and Plus machines are the best around. They are miles better than any other 8-bit machine and almost as good as your average 16-bit. Everyone who has seen my console was amazed, even my brother, who has an Amiga. I am extremely pleased with my GX4000 and I think it is better value than a Megadrive. So if you are thinking of moving on to a 16-bit, don't. Just buy one of the new Amstrads!"

Excellent – a GX4000 fan! I was beginning to wonder if there was such a thing. The lack of software has certainly been the console's undoing, and although I've spoken to everyone involved in the manufacture of the games – including Amstrad, the software publishers and even the cartridge duplicators – everyone is saying something different. The publishers say Amstrad isn't turning round the cartridges quickly enough, while Amstrad claims it's all down to the publishers now.

One thing's for sure – Amstrad's original requirement, that publishers had to put up the cash for a minimum duplication run of 20,000, will have put many of them off. And between you, me and these four walls, Amstrad has now been talked into lowering that figure considerably. Will that increase the number of games on the market? We hope so. But the confidence of the dealers and the publishers has been badly shaken, and it might take a while to bring it back.

Rod Lawton

Spectrum

WOMBATS, BUT NO HEROES

The bearded visage of Mike Gerrard has over seen the adventure section in *Your Sinclair* for several eons and the man's a household name, in households that play adventures on their Speccies at any rate. Not content with being a guru to millions of feverish pixie loving types by writing about adventures every month, the multi-talented chap has gone and programmed one of the blessed things himself.

One of Our Wombats is Missing is the appealing name of Mike's debut (or at least the only one in living memory) on the ever fluffy Zenobi Software label. Obviously by writing a game himself after years of hard but fair reviews of other people's efforts, Mr Gerrard is opening himself up to greatly amplified criticism. There won't be much chance for that, though, because without further dithering I can confirm that Gerrard has followed his own advice and has produced something of which to be proud. It's also nice to see an original plot for a change.

In *One Of Our Wombats* you are a zoo keeper which makes a change from the muscle-bound, axe wielding hero in fur trimmed briefs you're expected to control in most quests. In fact you're a YTS zoo keeper set the seemingly simple task of locking up the zoo for the night. Needless to say the wombat of the title is not in his cage and the object of the game is to find it and lock up the rest of the zoo for the night – again, a welcome change from the usual other world sci fi/fantasy plots that take precedence in adventureville.

The whole thing has a pleasantly irreverent tone with some jokes so bad you have to laugh. The problems, as you'd expect, are very well constructed, obviously drawing on the authors planet-sized adventure brain and immense troll-bashing experience.

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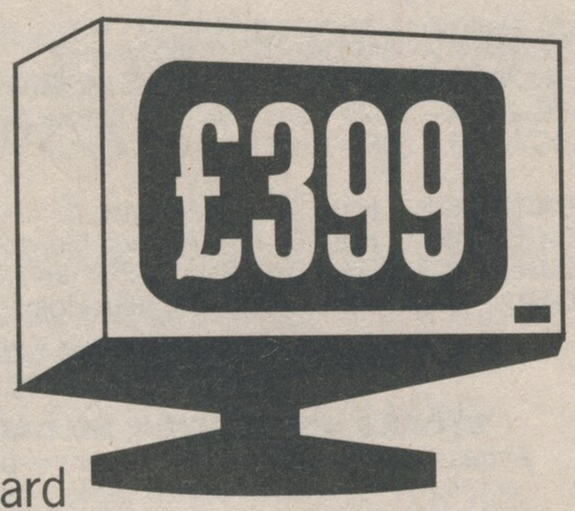

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If there's one moan it's the fact that *One of Our Wombats* doesn't appear all that snazzy being graphicless save a nice enough loading screen and showing the rather utilitarian nature of *The Quill*, the old but worthy adventure creator with which it was written. But if you can do without trendy features and a distinct lack of helpless princesses to save *One of Our Wombats* is worth buying. I don't think Mike would give it a Megagame rating himself if he was totally honest but it's pretty damn close and represents something a bit different in the often rather boring dimension of Speccy adventures.

One of Our Wombats is Missing costs £2.49 (but see the May *YS* where Mike cuts his profit margin and offers a 50p off coupon.) from Zenobi Software, 26 Spotland Tops, Cutgate, Rochdale, Lancs OL12 7NX.

WHAT'S ON YOUR TAPE?

Here's a handy wrinkle shamelessly copied from the latest issue of *ZAT* fanzine (a snip at 80p from PO BOX 488, Tweedale, Telford, Shropshire, TF7 4SU). To obtain a catalogue of programs on tape Plus 2A owners (they're the people with black Plus 2s) can type CAT "T:". Then by whacking a tape with unknown contents in the cassette deck you can discover exactly what wonders are stored on it. Obviously this takes a while but you could always go away and make a cup of tea or something.

Other Speccy owners can bring up a similar list of tape contents by using LOAD and the name of a program that obviously doesn't exist – "PRISONER CELL BLOCK H SIMULATOR" perhaps.

Do you have any tips for the Spectrum? I'd be eternally grateful for any help relating to games, serious software, programming, hardware and just general using. Send everything relevant to me, Robin Alway at *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW. Look forward to hearing from you.

ARE YOU RECEIVING ME?

SAM Co have got a new piece of kit out that should interest homes with the good sense to own both a Speccy and a Coupé. The Messenger is a hardware fix set to banish your loading day blues. Basically it's an interface that sits between Spectrum and SAM and allows you to stop a program running on the Speccy and save it to the Coupé. This should almost completely eliminate the often horrendous loading problems experienced when attempting to load Spectrum stuff on the SAM.

The proposed price is £29.95 and call me a miserable old cynic but I can't help thinking that's rather a lot to pay for Spectrum compatibility that the SAM was meant to have anyway. SAM Computers Ltd can be contacted on 0792 700300.

BREAKOUT WITH KNOBS II

An essential rerelease you should search out immediately is *Arkanoid II – The Revenge of Doh*, which is the really rather good sequel to the original *Breakout*-with-lots-of-knobs-stuck-on arcade game. This one doesn't improve greatly on its predecessor because there isn't really that much that needs adding but the same compulsive gameplay has been transferred intact much to the detriment of any important work you have to do.

About the biggest change is the introduction of two exits to go through when, or rather if, you manage to clear the screen of it's bricks. This lets you select onto which screen you want to progress and means blooming difficult ones can be avoided providing you remember where they occur.

If you had any affection for the original *Arkanoid* this provides more of the addictive same and gives you loads of joystick waggling for only £2.99.

CIRCUIT DIAGRAMS

Paul Martin of Stirling recently wrote asking where he could find circuit diagrams for his Spectrum 48K and Interface 1. You may remember, although I won't blame you if you don't, the quest for these mystic relics conducted in this column a few years back. My 'unique' filing system means I can't find the appropriate issue but if my memory serves me correct one of the names mentioned as a possible supplier of circuit diagrams were our old friends at Chezron Software.

Get in touch with them at 605 Loughborough Road, Birstall, Leicester LE4 4NJ. People with better memories can write in and tell me anywhere else that has intimate knowledge of our computer's insides.

Robin Alway

Archimedes

EASY WRITING

Icon Technology has at last gone public on *Easy Writer*. Icon is new to the Acorn world, but *Easy Writer* is a conversion of its respected Macintosh wordprocessor, *MacAuthor*. Like Clares' *Schema*, *Easy Writer* was originally commissioned by Acorn, but Icon was left to finish its development alone when Acorn dumped all its application software development last year. (Don't confuse *Easy Writer* with *EasiWord*, which is Minerva's *Wordwise*-like RISCOS wordprocessor based on the word processing element of *Desktop Office*.)

If *Easy Writer* lives up to its reputation, it should be a trump card in the RISCOS pack. I have a pre-release copy, so there'll be a full report in a fortnight or so.

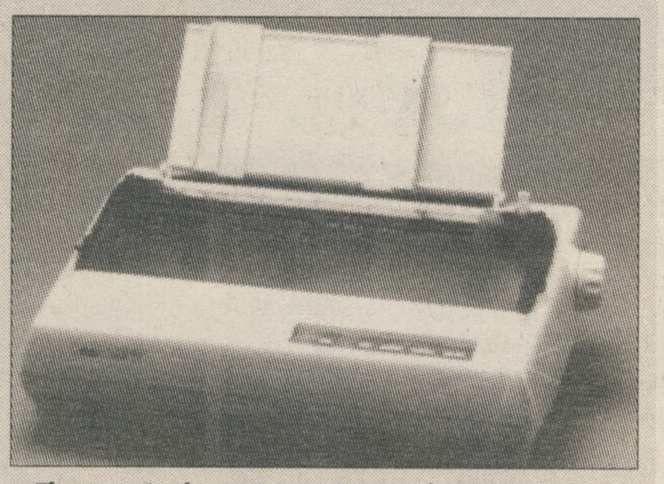
INTEGRATION EQUALS COST SAVING

Bells are tolling for ST506. Integrated Drive Electronics (IDE) is an idea whose time has come. Ian Copestake was the first to demonstrate an IDE drive, IDEA, at last year's Acorn User show: £440 for a fast 20Mb drive and it's still the only way of adding an internal hard disk to an A3000. Brilliant stuff.

Copestake does IDE drives for all the three-box Archimedes too: if you have an older A310 and haven't fitted a backplane yet, you don't need to. The

STAR TWINKLES IN COLOUR

If you have a Star colour dot-matrix printer like the popular LC10c or more recent LC24-200c, then Beebug has something to cure the black and white blues. Its *17 Star* printer driver conforms to Acorn's level 2 standard, which means it can do multi-file printing and interpret the 'fancy font' codes in text mode, as well as all the usual image mode printing of sprites, drawings and outline fonts.



• The new Beebug 17 Star Printer driver controls the colour options on the LC10c and LC24-200c printers.

The difference between it and the usual PrinterDM (which also works fine since the Star printers are Epson compatible) is that Beebug's driver controls the colour options on the printers too, so your sprites can be printed in 'full, vibrant, living colour' or at least the thin imitation of it that dot-matrix printers with multi-colour ribbons can manage.

Contact Beebug on 0727 40303.

Idea 'hard disk on a podule card' fits either to the backplane if you have one, or directly to the backplane socket if you haven't. A 40Mb version will set you back £350.

More recently Watford Electronics (0923 37774) has decided to offer similar 'hardcards', and though they aren't yet available the 20Mb version is expected to cost £350. Other hardware upgrade manufacturers like Atomwide (0689 838852) are doubtless readying their versions. And The Serial Port (0243 531194) has added IDE cards to its existing range of SCSI hard disk options: £315 for 40Mb. I expect a Solidisk version any day now.

Why all the action, and why is IDE becoming so popular? It's all down to prices and the PC market. IDE hard drives are simpler to build into PCs because the standard PC disk drive controller chip is effectively built into the drive itself. The drives are commodity items: IDE drives are now outselling other types like ST506 and SCSI, so their prices are driven down. The growth of portable PC sales makes IDE drives cheaper still, as portables use the smallest 2.5 inch IDE drives from Conner and Prairietek (as do the Copestake Idea and Watford hardcard). Commodity components like these sell in their millions in the PC world, and it's not just big things like hard disks that are cheaper as a result. Using the same components as PC manufacturers helps you build cheaper keyboards, mice, serial ports, parallel ports and floppy disk interfaces.

This gives us a clue to how Acorn could improve the A3000 if a new machine were to be launched (as predicted in *Express* 127). Using a few standard chips from the PC world, while keeping the main ARM chipset intact, would drastically lower the component count on the circuit board and reduce the cost, without compromising compatibility.

In much the same way, the A3000 itself uses a completely different keyboard circuit from other Archimedes: with the exception of a couple of games, software doesn't notice the difference. If the parallel port chip were changed, your existing Arc software wouldn't know (though maybe a dongle would, which might spell trouble for software protected in this way). Is Acorn thinking this way? Well, one clue is that some development versions of RISCOS have mysterious IDE driver code built into the FileCore module, along with the ADFS, SCSI and RAM disk drivers.

PRO ADD-ONS FOR IMPRESSION

Aside from announcing its intention to write a world-beating drawing package, Computer Concepts has also sneaked out an upgrade to *Impression*. But the *Impression Business Supplement* isn't the sort of upgrade which will appeal to everyone.

For £57 you get a neat mailmerging utility, colour separation, a PostScript utility and extra file loaders, as well as the latest version of *Impression* itself. The file loaders are particularly aimed at businesses running PCs as well as Arcs; they allow *Word Perfect*, *WordStar* and *Microsoft Word* files to be loaded directly into *Impression*, so you don't need to go through an intermediate ASCII file stage. The mailmerging allows you to create lots of standard letters from a single *Impression* file and a file of names and addresses. It will link to any Arc database as the data file need only be ASCII. Digital Services' *Squirrel* would be an ideal way of keeping the records, but they could just as easily come from Colton Software's *Pipedream* or even Minerva's *Flexifile*.

Expression PS and the four-colour separation utility are only for those using *Impression* for professional-standard typesetting. Together they allow you to control vital aspects of the PostScript files produced by the PostScript printer driver. The files can be sent to a typesetting bureau and turned into film for a printing company.

Expression PS controls the film size and half-tone screen density, as well as allowing documents to be 'reflected'. It also rationalises the translation of Arc outline font names to their PostScript equivalents: normally you have to edit the *PSprolog* file inside the printer driver application.

Impression itself can now print cropping and registration marks outside the page area to make 'professional' use easier.

Release 2.1 of *Impression* has a few other new features: for example, it automatically saves your file every few minutes, so you're less likely to lose a morning's work accidentally. All 10,000 or so registered users can upgrade to version 2.1, separately from the Business Supplement.

Contact Computer Concepts on 0442 63933.

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CM8833-II

Not a third-world car number plate, but the latest incarnation of what must be the world's most popular monitor. The Philips 8833 has been around in various guises for years: Acorn bundle a version of it with its colour systems.

Now Philips has gratuitously updated it to version two status. It's still a bog-standard monitor; it doesn't have a big screen, it is not FST, it is not multisync, it's not anything in fact. But the 14-inch screen picture quality is focussed and steady.

It has a new case design, with a look you'll either love or hate. The controls you need are at the front but hidden by a curiously shaped, curved hatch. A good range of inputs at the back mean it's easy to use with an Arc, or a old Beeb, or something like a TV tuner: it has analogue, TTL and composite video ports, but lacks the SCART input of the previous model. It also has two speakers, so you can connect up the headphone socket on the back of your Arc for stereo sound.

The new model retails for around £20 more than the standard Acorn model, but it remains better value.

SHOPPER SHOW

The Spring *Computer Shopper* Show is at Alexandra Palace in London, from 10 to 12 May. There will be just a few Acorn-related stands, but not the kind of activity we saw at the show last Autumn. For further details telephone 051-357 1736.

Ken Coumarin

Macintosh

THEY CALLED THE WIND...

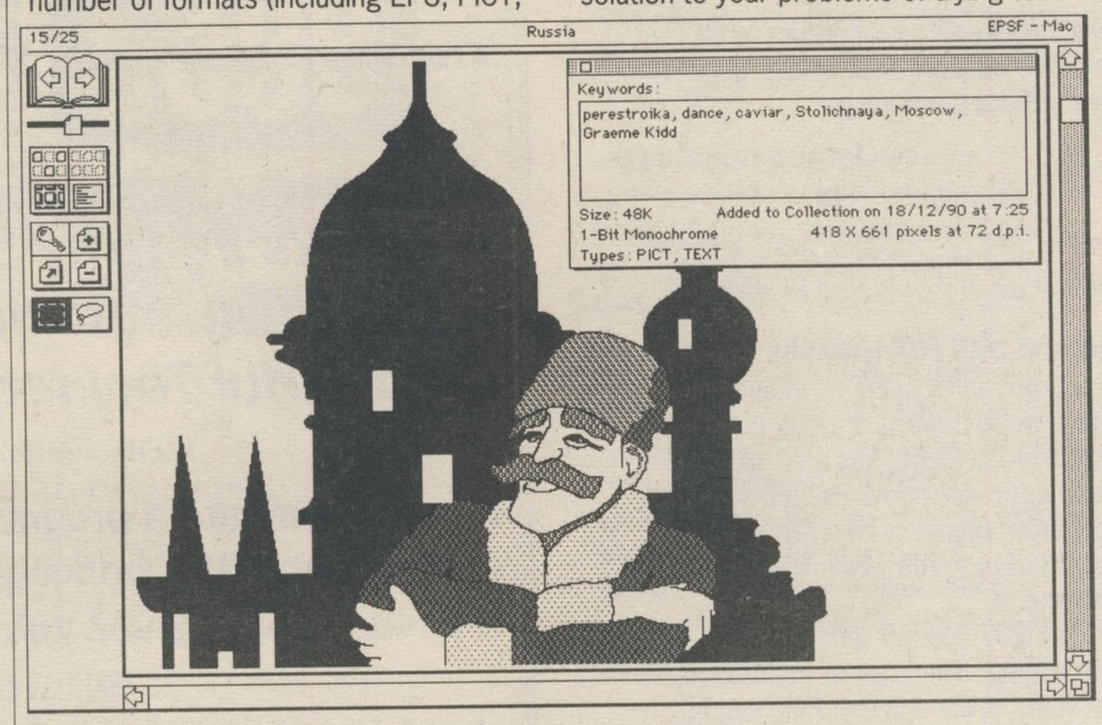
...Mariah, although quite why is beyond me (feasible suggestions on a postcard, please). They have also called a new piece of software *Mariah*, and rather neat it is too.

Billed as 'The MultiMedia Manager', *Mariah* is basically a tool for archiving and retrieving images, text and sounds. All the user does is create a 'collection', which can then have images added in a number of formats (including EPS, PICT, PICT2 and TIFF), together with text (but only in plain-text format) and sounds such as those recorded with the microphone which comes with the LC and IIsi. You can assign keywords to each 'thing' that you add to the collection, and can then search for particular keywords, find a named object or view all the EPSs in the collection.

If you store large numbers of images on your Mac, this could be the solution to your problems of trying to remember exactly where you put a particular image. *Mariah* is fast, can export objects from a collection with no problem (even changing the format if you wish) and is implemented well.

I can only see two problems: the first is that you must save word processor documents as 'text only' before you add them to a collection, which means that you lose all styling. The second is that, because the collection is stored as a single file, file corruption could cause you to lose vast amounts of data. But then, you do take regular backups, don't you?

I'd recommend *Mariah* to anyone who stores multiple images on their Mac; it costs £110 and is available from Softline – 081-642 4242.



• **Mariah:** ***Keywords can be assigned to images to assist in finding them later.***

EDUCATION FRAUD

Apple UK is taking legal action against a company, Selwood Consultancy, which bought a number of Mac LCs (rumoured to be about 50 machines) from an AppleCentre. Apple says that the company claimed to be 'The Selwood Institute of Higher Education' – and hence took advantage of Apple's not-unreasonable educational discount on the Macs.

Apple maintains that this constitutes a fraud, as the Selwood Institute is not a genuine educational establishment, and is asking the High Court to declare the sale null and void, order the equipment to be handed back and award damages to Apple. Apple is obviously a little peeved that someone has tried this on; so if you were thinking of pretending to

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A NEW CLASSIC?

Will Apple release a version of the Mac Classic running the 68030 processor in place of the current, rather outdated 68000? American magazine *MacWeek* thinks so – it predicts that the new machine will appear in the fourth quarter of this year. If that is the case, then it will almost certainly be the death-knell for the Mac SE/30, which already looks rather long in the tooth and superfluous to Apple's product line. Of course, the fourth quarter is also the predicted release date for the two tower Macs, which will be based on the 68040 chip, and the three new portable machines (see Mac columns passim, as they say).

MONEY TALK

Apple's latest financial results are just out, and the company claims that it has shipped about 85 per cent more Macs in the second quarter of this year compared to the same period in1990. This is, of course, almost totally due to the new Macs launched last October; with the Classic still selling at a phenomenal rate, it isn't unreasonable to assume that about ninety per cent of the growth is due to that machine alone.

Figures buried deep in the press release, however, show that all is not totally sweetness and light. Gross margins (whatever they are) were down by 5.9 per cent, while net income (that's profit, as opposed to turnover) dropped by £1.6 million.

But John Sculley was quick to explain that drop: "Our operating results ... demonstrate our ability to effectively manage the changing economics of our business. As we expected, our gross margins declined due to changes in our product mix." In other words, the company is selling cheaper Macs, so profit margins are less. But on the other hand, they did sell far more Macs than last year...

VGA FOR THE MAC?

A few weeks ago, we mentioned that it is possible to connect a VGA monitor to a Macintosh – saving yourself hundreds of pounds in the process. While it's perfectly possible to make up the requisite lead yourself, two companies in the States have come to the rescue for those less confident.

James Engineering Inc sells a fully built adaptor for $40, while BMUG – the Berkeley Macintosh Users Group, of which our own David Morgenstern is a leading light – has a self-assembly unit which sells for $15. (Remember that you'll have to pay postage on top of both of these prices.)

If you're interested, call James Engineering on 0101 415 525 7350, or BMUG on 0101 415 549 2684. Be warned, though, that not all VGA monitors will work; check carefully before you buy.

For more information on the subject, there are a number of messages on the subject in the 'mac' conference on CIX, your friendly neighbourhood bulletin board. If you have a modem, the number to call is 081-390 1244, with your modem set to 8 data bits, no parity, one stop bit. Speeds from 300 baud to 2400 baud are supported on that number; log on as 'new' to register. And that is the end of the commercial.

Ian Wrigley

POSTCARD FROM AMERICA

I wrote a couple of weeks ago about MacAble – Tools for Independence, a show for disabled users. Some of the products showcased were not just for people with special needs.

Articulate Systems' Voice Navigator II is a little black box with a long gooseneck microphone. It digitises spoken sound, processes the sound, and then performs a user defined command. The device doesn't 'know' English, so any language, or sound is treated as a specified word. This is great for people that have trouble speaking clearly. As long as they can reproduce the word consistently, the action will be carried out.

The interface to teach the Navigator is really slick. It automatically runs through an application, and gets all the commands you might need using the product. It keeps track of the set defined for other applications—you don't want a redundant OPEN for every application on your hard drive.

Early versions of Navigator were a little unreliable, but the latest release works like a charm. The demonstrations of using voice commands *with* the mouse were very impressive. Users say it takes some getting used to, but really does make people more productive.

A device that wasn't at the show, but is recommended by a friend with a slight motor disability is the new MouseMan, three-button mouse from Logitech. The buttons are user programmable, and available in left-, or right-handed versions. One button can be a regular mouse click, while the others can be a drag-hold, and release. This can give the user extra time to get the mouse position just right, without having to hold down the button. It also has a nice curved ergonomic shape.

Quick Tip: The compact Macs have always allowed a screen dump with the Command–Shift–3 combination. This f-key did not work on the modular (Mac II) machines, so there's been a thriving commercial and shareware market for colour screen capture programs. System 7.0 fixes this deficiency, by taking a screen shot, and creating a colour PICT document. The strange noise you'll hear when you work this trick is not your hard disk crashing – it's supposed to be the sound of a camera shutter.

David Morgenstern

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WHOLE WIRED WORLD

Computers are hot news wherever they are in the world. This week Steve Gold reports on the good times at Ashton-Tate, bad times at the Pentagon, and hard times at IBM and Intel.

GET MORE FROM A MAC - MAKE IT THINK BIG

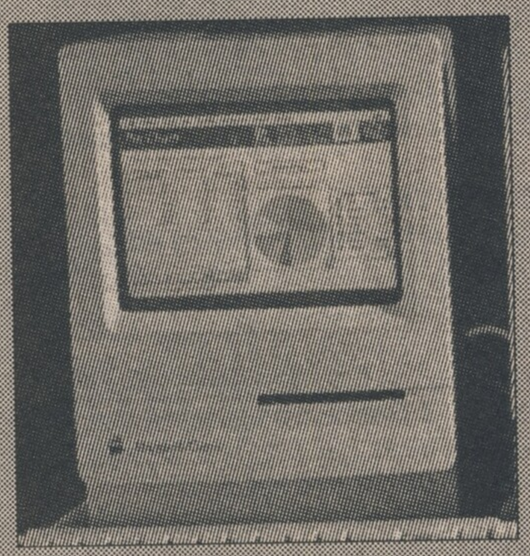
Technology Fusion in the US has come up with an interesting hardware addition for the Apple Macintosh - a virtual monitor expansion system called TotalVision.

The $349 system transforms the internal display of your Mac Classic, SE or Plus, making the system think it's working with a larger screen when, in fact, it's not, the company claims.

TotalVision works in hardware pan, hardware flex, and hardware zoom modes. Its hardware pan feature expands the 512 x 342 pixel display to 1024 x 1024 pixel. As the mouse cursor touches the edge of the 9-inch screen, it pans across the 20-inch virtual desktop at hardware speed.

The flex feature allows the user to see the full 8.5 inch page width of documents without having to scroll back and forth. When used with the pan facility, it shows a full two pages.

The zoom facility, meanwhile, allows users to expand any portion of the image.



• The Mac Classic: big screen action.

TANDY STEAMS AHEAD WITH 1000 RLX

Tandy, better known as Radio Shack in the US, has announced a new home computer called the 1000 RLX. The machine, which is billed as the basis on which Tandy will build its next generation of home PCs, carries the extra power of a 10MHz 80286 microprocessor and a single 3.5 inch 1.44Mb floppy disk drive.

A second 3.5 inch drive bay on the machine will accept either a floppy disk drive, or a 20Mb/40Mb hard drive option. The system also has one PC-compatible expansion slot.

Pricing on the system has yet to be confirmed. I wouldn't be too surprised to see the machine on sale through UK Tandy outlets shortly - this implies that a sale on the existing 1000 series of home computers is on the cards.

ASHTON-TATE GETS ITS COPYRIGHT BACK ON DBASE

Ashton-Tate got some good news recently - *dBase* is once more under copyright. A US district judge reversed his December decision that invalidated Ashton-Tate's copyrights on its *dBase* database software.

The company has been working in something of a commercial limbo since December, when Judge Hatter dismissed Ashton-Tate's lawsuit against Fox Software and the Santa Cruz Operation (SCO) by declaring Ashton-Tate's *dBase* copyrights invalid. A-T immediately appealed the ruling and also asked the judge to reconsider his decision. Although the judge initially rejected the motion to reconsider, he finally reversed the ruling.

Ashton-Tate president Bill Lyons said he was "ecstatic at this early resolution" of the copyright issue, and that he now expects the lawsuit against Fox and SCO to move forward.

TALON TO UPGRADE SUPERCHARGER FOR THE ST

Condor Trading of Salona Beach in California has announced preliminary plans to upgrade its Supercharger card for the Atari ST to 80286 capabilities. Currently, the card only emulates an 8086/8-based system.

The new card will come with 1Mb of RAM, expandable to 2 or 4Mb using single inline memory module (SIMM) chipsets. The onboard 80286 microprocessor is rated at 12MHz, which is quite respectable for a PC clone these days.

That having been said, the ST Report on-line newsletter seems to have got its paws on a prototype and reports that the card has a Norton rating of 14MHz. A 16MHz version is also in the pipeline, the newsletter claims.

Two versions of the 12MHz 80286-based Supercharger are expected. The first fits into the unit's existing case and is fairly easy to install. The limitation is that the basic 286 card does not feature any PC expansion slots.

The second version comes in a new metal case that contains the 80286 board, a built-in power supply, and two extra 16 bit expansion slots. Installation is rated as being as easy as the first version - just plug in to your ST and go.

The 286 version of the Supercharger isn't expected to be around for at least another month, however. More details as I have them.

IBM AND INTEL LOSING THEIR MARKET SHARE

It's official - after years of dominating the computer market-place with PC hardware and DOS software, Intel-based DOS computer systems are losing their popularity.

According to The Gartner Group, an information technology industry research, analysis and consulting firm, 1995 will see Microsoft Windows with 41 per cent of the new installation market share, while OS/2 will have 21 per cent.

The Stamford, Connecticut-based company predicts that IBM will not be successful in its efforts to encourage a majority of users to move to OS/2. Bill Gates, eat your heart out.

DUTCH HACKERS BREAK INTO US NETWORKS

• Holland: home of heinous hackers

A US newspaper has reported several Dutch computer enthusiasts as having invaded American military and government computers last winter. Despite serious levels of hacking, they were not arrested because current Netherlands legislation doesn't forbid such intrusions. Changes in the Dutch law are, however, in the pipeline.

According to the *New York Times*, last February one of the alleged intruders appeared on Dutch television at the University of Utrecht while breaking into what he said was a US military computer, holding missile test information. The paper said that he had his back was to the camera.

Federal investigators told the *Times* that a group of hackers, believed to number three or four, had not done any serious damage, nor have the members tapped into any classified information.

But, the newspaper said, the hackers broke into a range of computers, including those at Kennedy Space Center, the Pentagon's Pacific Fleet Command, the Lawrence Livermore National Laboratory, and Stanford University and have tampered with information in some of the systems.

The *NY Times* said that the Dutch hackers were detected last year by a US government computer researcher who was able to monitor them through computer security techniques.

Gail Thackeray, a former Arizona assistant attorney general who has prosecuted computer crimes, told the paper: "This has been a terrible problem. Until recently there have been few countries that have computer crime laws. These countries are acting as hacker havens."

The Associated Press meanwhile, quoted Maarten Rook, director of economics and personnel at Utrecht University, as defending a student who allegedly used a computer network at his school to penetrate US military systems.

The news wire said that Rook was present during the February filming of the intrusion shown on late-night Dutch TV. The broadcast showed hackers breaking into what purportedly was a US Navy computer installation in San Diego.

During the broadcast, AP reported, the hacker, whose face was not shown and whose voice was scrambled, linked his personal computer to the Surfnet data network used by Dutch universities. Surfnet in turn is linked to the US-based Internet bulletin board, through which the system hack was made.

The case is causing some controversy in the US, so it's likely we'll either see a change in the law to allow extradition from foreign countries, or at least a flurry of activity in the Netherlands! ■

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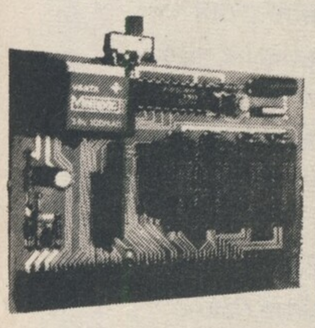

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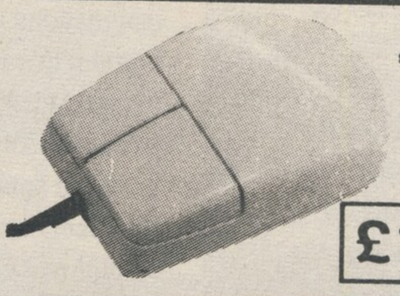

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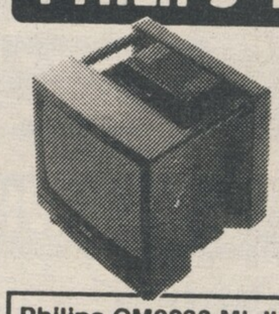

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OPENING TIME

Well, that's about it then friends and neighbours. Takes out onion turns on Karaoke machine and begins to sing:

"And now-a! The end-a is near-a! And so-a I face-a the final-a curtain-a!. You c..." (*that's enough of the* Sex Pistols *version Sub*)

This is the last of the Centrefolds. From now on you will have to find your computer humour elsewhere in the magazine. And hey, I'd just like to thank all those people who have made the last few months so fruitful. Thanks to Amanda, Julie, Dave, Andy, Stuart, Graeme, my mother, Ipswich FC, Electronic Arts (*That's quite enough of that rubbish. Get on with your real work and make the coffee you demoted little beast – Sub)*

Right, enjoy this last Centrefold if you can. And prepare for next week's serious diary, and 'Where are they now?' spots.

ENTIRE KNobSoFt STAFF SHOT BY COMPUTER COURT

Unanimous decision • Drugs link • Royal involved • A nation laughs itself stupid

• Fred 'foetal' Hodges: supplied Hash tables to the rich and famous as well as the poor and anonymous. He just didn't care!

A piece of news which is set to topple empires, shake the foundation of the computer establishment, force resignations and generally be quite irriating to a rather large number of industry sharks ... er people, hit the newsdesk this week.

The entire staff of once proud KnOBsoft have been arrested and shot in a court comprising members of ELSPA, FAST, and Bolton Wanderers Supporters Club (Detroit division). The trial, verdict and sentence were carried out in a matter of seconds following the entrance of the two felons.

Bert Smith, ex kNoBsOFt supremo and chief exponent of the Von Ripemoff business and management philosophy remained stoical at this death: "Please don't kill me! It wasn't me it was my brother. It was society! It was my dog!"

Mr Eric Royal, a dustman from Chard who had bought *Really Filthy Strip Poker* from the company was unable to comment at the time as he was dancing on the corpses singing "Happy days are here again!". Tears of joy were shed throughout the land as a national holiday was declared even for those people owning Orics. Smith's golfing chums were heard to order "Large ones. He would have wanted it that way". As they mourned the death of a comrade.

"I didn't think the products were that bad really. I mean, some of them didn't work too well, but neither did the motor car when that started"
B Smith, ex-head of KnoBSOft

Smith's accomplice, Ms Imogen Anytimeyoulike met her end with grace and elegance, although her eventual execution at the hand of a flight sim programmer was another matter.

In his fairwell letter to the thousands of people who had been mug enough to buy software, and hardware in the form of the Knobbo Extended keyboard and neck brace, Smith said: "Sorry about all that dosh I took off you. I didn't think that the products were that bad really. I mean, some of them didn't work to well, but neither did the motor car when that started di it. I blame the industry."

The final word comes from software guru, Fred 'Foetal' Hodges:"They were all stoned out of their heads anyway. That's life really innit"?

• Golfing pals – large ones all round

WHY OH WHY DID IT HAVE TO FOLD?

We asked several leading figures in the publishing world, all of whom strangely wanted to remain anonymous, about their feelings on the closure of the Centrefold. Here are their comments:

A PUBLISHER

"Er... what was the Centrefold anyway? I hope it wasn't in any of my publications "

A READER (because they were the most important people)
"Has it folded? Oh brilliant! It bored me to death, there were no colours or anything, and some of the pictures were irrelevant and there weren't enough jokes like you get on Steve Wright in the afternoon, and it kept taking the micky out of my computer. I'm glad it's folded. Can we have more bits about hex and machine code now please, or maybe some Paul Daniels would be nice".

A DEAD PERSON
"Well I thought it was jolly funny myself. I really cracked me up every week".

A SOFTWARE HOUSE CARTOON CHARACTER
"I lived under the thing for a while and it was no fun man I can tell you. I couldn't work under those conditions, I couldn't express myself if you dig what I'm saying being a star and all."

A SMALL THOMPSON'S GAZELLE
"It's metalingusitic twists and turns undermined classic narrative form and of course textuality, and it did shed new light on authorial vision. Apart from that it was a load of bol...

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TECH TIPS

Want to know where's the best place to buy those essential upgrades? Looking for some serious DTP? Need a good book to help you cope with your new software? Write to Keith Pomfret, Tech Tips, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

HELP! CPC prince

A CPC 6128 that I bought had a ROM board with it. Inside are *Protext, RODOS* and *Promerge*. I know that *Protext* and *Promerge* are a word processor and mail merger, but there aren't any instructions on how to operate them. Can you help? The RODOS ROM looks interesting too (does the DOS bit of RODOS mean disk operating system?) Help again if you can.

Finally (I'm keeping it short but meaty) I want to buy a printer for the computer. There are three for sale in the second-hand electronics shop and the man assures me either would be ideal. They are the Amstrad DMP2000 , the Amstrad DMP2160 and the Amstrad DMP3160. Which is best?
Jo Riding,Doncaster

To get a set of instructions for *Protext*, contact Arnor on 0733 68909, but be prepared to prove to them that your ROMs are legal and decent (people have been known to pirate ROMs). The person that sold you the 6128 should have given you the necessary documentation so maybe a trip back to the vendor would help.

RODOS is indeed an operating system. RODOS stands for Robot Disk Operating System and comes from Romantic Robot, the people who brought us the Multiface. Romantic Robot is on 081-200 8870. One small problem you may encounter is that RODOS and *Protext* don't see eye to eye. If you have problems, you'll have to disable RODOS (or throw it away, that's what I did with my copy).

The printers you describe will all work with the CPC assuming you use the right cable. Try to get the cable supplied when you buy it. The 2000 and 2160 were designed to work with the CPC and are the same charcoal colour. The 2160 is essentially the same machine as the 2000, but is slightly faster and therefore a better buy.

The 3160 will work with the 6128 but is cream in colour and was designed to match the Amstrad PCs. The 3160 has the ability to produce the full IBM character set as well as the standard Epson/ASCII set available on the 2000 and 2160.

If you're planning to use the printer with other computers (you may be thinking of upgrading), the 3160 is the best of the three as long as you aren't bothered about matching colours.

HELP! Mobile data link

As a founder member of the Ancient order of Yuppies I seem to be missing an important device. I saw a dedicated cell phone modem reviewed in a PC magazine but I've lost the magazine. What is it and who makes it and is it BABT approved?
Miles Routledge, Chester.

The dedicated cell phone modem is a product marketed by Racal and only works on the Vodafone network so if you're on Cellnet, stop reading here.

The system is called the Orbitel CDLC Data modem and costs around £500 from your Racal dealer. We've tried it out on portable PCs and the Outbound Macintosh portable and it works very well. The only problem we found was that logging on to on-line services at cell phone call rates are very costly. That won't worry you if you're a Yuppy with loads of money, but at £25 an hour to go on-line peak rate before you start paying the on-line services that you use is really a bit steep.

HELP! Play on ...

If I want to digitise music for a multimedia project at college, whose permission do I need? It is a shame to have to go to the trouble of producing the music myself when it could be done much more simply by sampling directly from a CD to the computer.

Is it totally against the law or can I get permission? The multimedia project isn't to make money, it's an assignment.
Wayne Wilson, Hatfield

If you want to snatch digital samples from recorded work, you need the permission of the copyright holder. It may be a long and drawn out process but I suggest that you write a letter to the record company that publishes each CD that you want to use, explain what you want to do, how much sound you want to digitise and for what purpose. It's then up to them whether or not they'll give you permission. If it's for a college project, I'm sure it will give your method more credence if you can demonstrate a thorough and legal way of working

TIP! Don't do this

If you're fed up of spending £25 a time for laser refils, here's a cany trick that will save you a fortune.

Wait until no-one's looking at work and empty the toner bottle refil from the xerox machine into a suitable container. It must be dry and sealable. I find a Jiffy bag ideal.

This toner can then be put into the laser refill cartridge and hey presto, zillions more copies for free. The quality may go a bit rough, but it's cheaper than throwing money out of the window.
John Morley, Rutland

I've heard some silly ideas in my time, but that is about the most daft. Firstly, if you put photocopier toner into your laser printer and it works properly, you're lucky. Secondly, you will throw away any claim you have to warranty or service work by introducing 'foreign matter' not approved for the machine. The fact that you're already experiencing problems with quality speaks for itself.

When someone told me that they were re-inking computer ribbons with Fairy Liquid, WD40 and endorsing ink, I thought that I'd heard the most stupid tip, but yours makes that seem positively sensible. If you had an RS Cosworth, would you run it on with a mixture of treacle, maple syrup and Benylin in the sump because that looked like multigrade oil? I suspect you might, but the rest of us wouldn't.

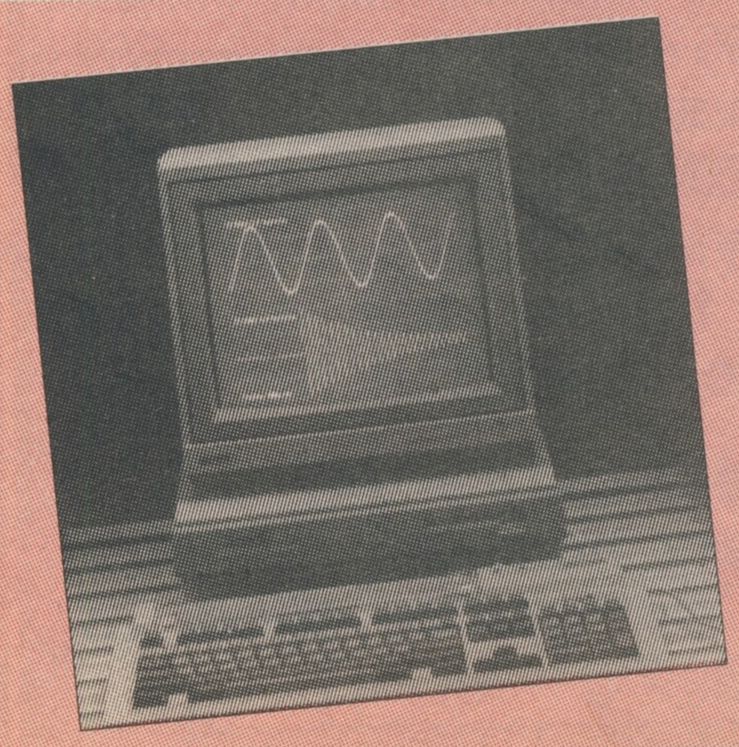
TIP! Plain paper fax

The glossy flimsy paper that fax machines use is user unfriendly, unpleasant to the eye an feel and environmentally naff. In our office, we found ourselves photocopying faxes and wasting even more resources to give ourselves hard copies that didn't curl up and go black at the slightest ray of sunshine.

The solution that we found was to install a fax card in an office 386 that already had a laser printer and scanner attached.

Result, an invisible fax that prints to laser quality on a medium that is less unpleasant to feel.
David Hicks, Nuneaton

What a good idea.The only things that I



HELP! Archimedes screw

My A3000 Archimedes has a sticker on the back that says Serial Upgrade not fitted. Where can I get the bits, will I invalidate the warranty (it's two months old), and is it easy?
Malcolm Davies

If you open up your machine, the warranty's out of the window anyway. The chaps at Acorn tell me that the serial upgrade isn't a user fittable option. I opened up the office Arc and it seems to be a simple enough job, but when I tried to source the parts from Acorn dealers, they closed ranks and refused to part with the bits. Until your A3000's out of warranty, it's probably a good idea to leave it in one piece anyway, but as far as the upgrade goes, if some nice dealer will send me the bits, I'll cover it in Circuit City in the near future.

can add to that is that if you're going to go down that route, make sure that your scanner, fax software, printer and computer are all compatible.

If you're running on a 386 or 486 machine with the possibility of true multi-tasking, pick a fax card and software that can run 100 per cent as a separate task in the background. Otherwise, you run the risk of losing the PC when it's in use as a fax.

HELP! More scope

We need a good sturdy oscilloscope and a digital multimeter for hardware development. Which would you choose?
Tony Reade, New Romney.

We've had the Hitachi V-222 Oscilloscope on test for the last month or so. It's a nice piece of kit that won't break the bank and has an easily readable illuminated display, twin beams, square wave calibration source. It's easy to read, use and adjust controls. Hitachi is on 081-202 4311.

As far as digital multi -meters go (and that's quite a long way if you include the space shuttle) it's really a matter of personal preference. Some of the cheaper (£20-£50) models from a supplier like Tandy will do a good job My own preference is a Fluke multi-meter that I've had for years, but at £300 five years ago, it was a once a lifetime luxury. I still find myself using a Tandy cheapie for jobs where the environment is hostile.

It isn't so long since I saw a £200 meter become flat when an auto electrician working on the computerised management system of a car forgot to put the handbrake on.

HELP! Pocket full

No, no, no, no, no. The Psion is a nice idea, but I use an office computer so it has to be QWERTY. It must be battery powered, small enough to fit in the pocket, able to communicate with my PC and ? drive a printer.
Mrs LB.Rudge, Leicester.

Tush Tush, the Psion's a splendid little critter that will do everything that you require of it except the QWERTY keyboard. During the recent *Door to Door* debacle, I've had to make extensive use of a Psion Organiser. I too use a QWERTY keyboard most of the time and I can understand your not wanting to go to an ABCDE keypad although after a little practice, the Psion was perfectly usable.

To solve your problem, the solution could be the Casio SF9500 digital diary. This has a QWERTY keyboard, is an ideal on the move memo taker and scheduler, but more important can drive a printer and interface with a PC with additional add on packs.

The SF 9500 is about the size of a large spectacle case only a little flatter.

HELP! Serious DTP

If we have a budget of £3,000 and want to add DTP to our office bureau, what should we buy? The printer that we currently use wants us to get an Apple system, but that sounds expensive. Can we afford Apple? If we can't, what can we afford? Bear in mind that we only need to see approximately what a page looks like to proof read it and don't need fantastic detail. An A4 screen would be nice, but not essential. I don't suppose that there's much chance for colour in our budget is there?
Marlene Webb, Lincoln

Yes you can afford Apple, but only just. However, if you're going into DTP commercially you can't afford not to use Apple. I know I run the risk of being burned at the stake by all of the PC, ST and Amigaphiles who turn out acceptable DTP output from their machines, but I'll risk that. The Apple Macintosh is the industry standard Desktop Publishing machine.

For your £3,000 you'll get the cheapest colour machine with a 14-inch colour monitor, a Bubblejet printer that isn't fast, but produces nice A4 proofs and a piece of serious DTP software. Talk to your printer about DTP software, they no doubt have a favourite and my guess is that it will be *Quark Xpress* or *Pagemaker*. As for the A4 monitor. That will probably be out of your grasp unless you settle for a second-hand one.

HELP! Amiga hard drive

Which hard drive will go on an Amiga A500, allow me to play games and let me add large quantities of extra memory?
Bjarn Twelloe, Manchester.

The Impact Series II A500+ which you can pop along to Preston and purchase from Ladbroke Computers. Alternatively you can ring them and organise it mail order. Ladbroke is on 0772 203166.

HELP! Clean keyboard

How do I keep my keyboard clean without using cling film or some other protective covering. I've tried these and they decrease the response of the keyboard so that it becomes difficult to touch type.
Mary Chennels, Newcastle upon Tyne.

The simplest way is with a half inch paintbrush. The keyboard should be dusted with the brush daily so that no debris has a chance to accumulate. ■

BROUGHT TO BOOK

HELP! Fair shares

Is there a decent book to give me an idea of what is available in Shareware. There seem to be a lot of words written about PD, but not shareware
Eddie Monk, Glasgow.

Dr File Finder's Guide to Shareware is the current definitive work on the subject. Its ISBN number is 0-07-881646-7. As well as the 1,000 plus pages of information on the subject, there's a disk crammed with info too.
Alternatively, if you want a Shareware catalogue and reference guide, a couple of pounds to Shareware Marketing will get you *The Shareware Book*.
Alternatively, you could ring them on 0297 24089.

HELP! Meglomania

Somewhere some time in the last year, some mag mentioned a book that could help you plan scenarios in *Sim City*. I'm getting good at ruling the world but feel that ta little help wouldn't go astray. Do you know of any books that are written purely about.
Dave Black, Hartlepool.

The Sim City Planning Commission Handbook by Johnny L. Wilson should give you that extra leg up in your fight to rule everywhere. Its ISBN number is 0-07-881660-2 and it is a 190 page paperback with Chapters on the following:

- The Joys of Mayorhood
- Urban Planning in the past
- Human resources and problems
- Heavy traffic
- Ecology and Entropy
- Crash landing.

And many other relevant subjects. There are appendices on using the terrain editor and an atlas.

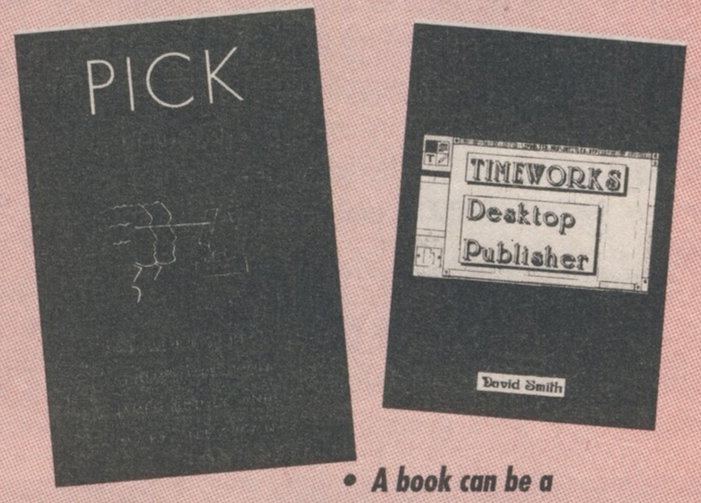
HELP! Infected

Why do computer magazines take a blind stance about viruses? If we ignore them, they won't go away. PC User, PC Plus and Personal Computer World have ignored my letters and on phoning one of the magazines (I can't remember which) I was told: "We don't mention the Vee word." As a business man computerising my accounts and payroll department, I want to be prepared for any eventuality. I can't believe that no one has ever written a book on Viruses. Please help or are you going to give me the Vee sign too?
Mark Bayley, Shrewsbury.

I agree with you that the "If we ignore the monster it will go away" attitude is daft and counter-productive. The book that should sort out all your virus worries and answer all of the big Vee questions is the Computer Virus Handbook by Richard B. Levin.
ISBN 0-07-881647-5.

HELP! Timeworks tutorial

I bought an Atari ST with a hard drive and several pieces of serious software. One of these was *Timeworks* which I'm told is a Ventura DTP clone. I don't know much about layout so I need a book that will teach me about setting up pages. A general all purpose book will probably do the trick, but I'd rather have something dedicated to *Timeworks*. Is there any?
Kevin Stamp,Stowmarket



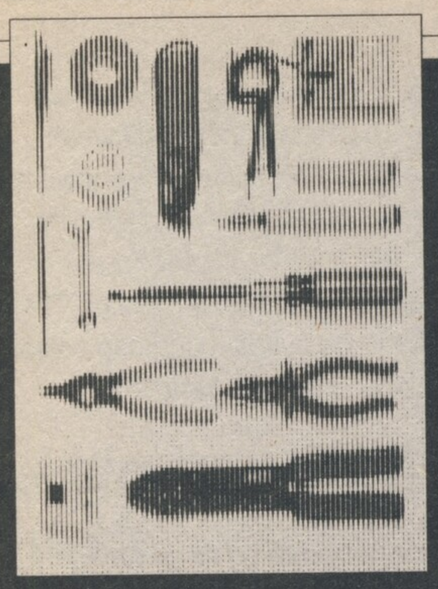
• A book can be a good investment.

A user's guide to Timeworks DTP by David Smith will fire you up with the inspiration that you need. ISBN 1-872824-00-5.

HELP! Pick a language

For a system that is supposed to be easy to use, *Pick* is a sod to unravel. We know that it's powerful, we know that it's useful and we know that we've bought it. What we need to know now is how to help our staff understand it. Has anyone ever tried to write a book that will interface the very powerful *Pick* with the very stupid humanoid.
Trevor Laste, Coventry.

You could invest in a copy of *Pick for humans*. this claims to be the pick-humanoid interface that you are looking for although we haven't had a chance to read it yet. The ISBN number is 0-07-707243-X.



CIRCUIT CITY

Keith Pomfret looks back over the first three months of Circuit City to bring you these edited highlights . . .

The Circuit City brief gave us a page that could cover absolutely anything for the enthusiast, but pitched at a level to get everyone involved.

We've answered your questions and queries in a demonstrative way and offered a range of projects that varied from the simplest soldering job to a multi PCB decoder project that even our team of experts baulked at. This week, we're looking back at some of the projects in the first three months of Circuit City that attracted mail and we've been asked to repeat.

DOUBLY SPECIAL

Issue 102 saw the first Circuit City Special. Doubled up in size to two pages we looked at a series of do-it-yourself projects from Maplin that ranged from £3.95 to well over £100. At the cheaper end of things were a live wire detector and a metal detector. High up on the list was a NICAM stereo decoder. Interestingly enough, while we received dozens of letters asking us to build up the £140 NICAM kit with a difficulty rating of very hard, the simple sub £10 kits didn't attract anywhere near as much mail.

The full list of projects on offer was: a video dubbing kit, a power controller, 240v inverter, digidice, RTTY (radio telytype) unit, amplifiers and speakers, a MIDI thru box, detectors, mini lab power supply, logic probes and testers, a weather satellite receiver, CPC expansion system, NICAM unit, laser and a geiger counter.

POWER UP

The laser and geiger counter attracted quite a lot of mail including a letter from a chap who wanted to fry his neighbour's cat for leaving kitty mess in the garden. We built up the Inverter as part of a project to provide enough power to run a computer from a 12v car battery. This was to offer the ability to carry on using a computer after electricity had failed or on the road, say, in a car.

The Maplin kit offered about 60-80 watts of power, just enough to run a small computer. The diagrams and details that came with it suggested that it could be upgraded to provide more power if more vehicle batteries were available.

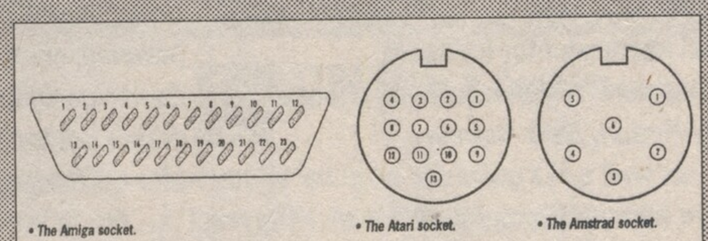
CHIPS WITH EVERYTHING

In issue 104 we whizzed off to the Chip Shop and instead of a good lunch were given a menu for a 286 AT clone. By buying the bits and building the machine ourselves, we got the price down to a respectable £757 including VAT. Even with the VAT increase this year, that's still a full spec AT for under £800.

CABLE PULLING

Back in issue 101 we looked at a simple cable to allow you to use the Amstrad CPC monitor with an Amiga or ST. With so many people taking that upgrade route, it seemed a sure way to save money while utilising existing resources.

Simply, it was a soldering job with the Amstrad monitor socket being connected via a short cable to the ST or Amiga video outlet. The connection and socket diagram is reproduced on this page for anyone who missed it first time round.



AMIGA LEAD

Amiga pin 3	to	Amstrad pin 1 (red)
Amiga pin 4	to	Amstrad pin 2 (green)
Amiga pin 5	to	Amstrad pin 3 (blue)
Amiga pin 10	to	Amstrad pin 4 (synch)
Amiga pin 16	to	Amstrad pin 5 (ground)

ST LEAD

ST pin 6	to	Amstrad pin 1 (red)
ST pin 7	to	Amstrad pin 2 (green)
ST pin 10	to	Amstrad pin 3 (blue)
ST pin 9	to	Amstrad pin 4 (hsynch-synch)
ST pin 12	to	Amstrad pin 5 (vsynch-synch)
ST pin 13	to	Amstrad pin 5 (dround)

• The ST/Amiga CPC monitor connections.

ARCH ENEMIES

We'd had a pile of letters from Acorn Archimedes, BBC and Master owners complaining that they weren't allowed to do the tiniest upgrades on their machines without kissing the warranty goodbye. We investigated and came up with a list of enhancements that Acorn said had to be done by a dealer.

Co-incidentally, all of these except one had been fitted by an enthusiastic Archie owner in the building without causing his machine to die.

ALL FORMATS

It's all very well telling people to weld bits of kit together but we felt that we should tell them where to get those bits of kit in the first place. A Sunday in the company of like minded wireheads at the All Formats Show brought a show report with a mass of practical advice for those wanting to build a PC, find some rare parts and pick up some tools and other useful bits for the bench.

At the beginning of December, Michael Stirling, a chap we'd met at the All Formats show proved his worth and became resident Archimedes hardware wallah with a simple project to get Hi-Fi sound from a BBC A3000. It worked and young Stirling had carved himself a niche (some might say made a cross for his own back) as the guy who ventured inside an Archimedes A3000 and came back to tell the tale.

PC RESET

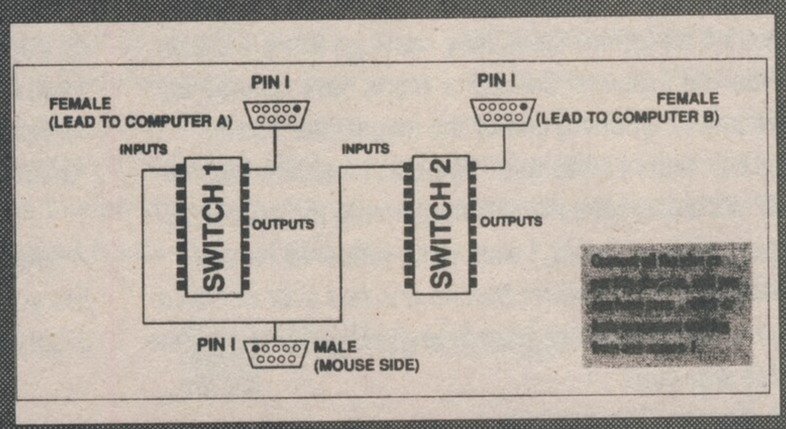
A few letters bemoaning the lack of a reset button on a PC had us canibalising the office Goldstar 386 to find out how its reset button worked. Result: It's quite simple really. All you need is a momentary switch, two pieces of cable and enough information about your own PC to identify the reset line. In simple terms, pulling the reset line to ground was enough for a reset without having to turn the machine off at the mains. ■

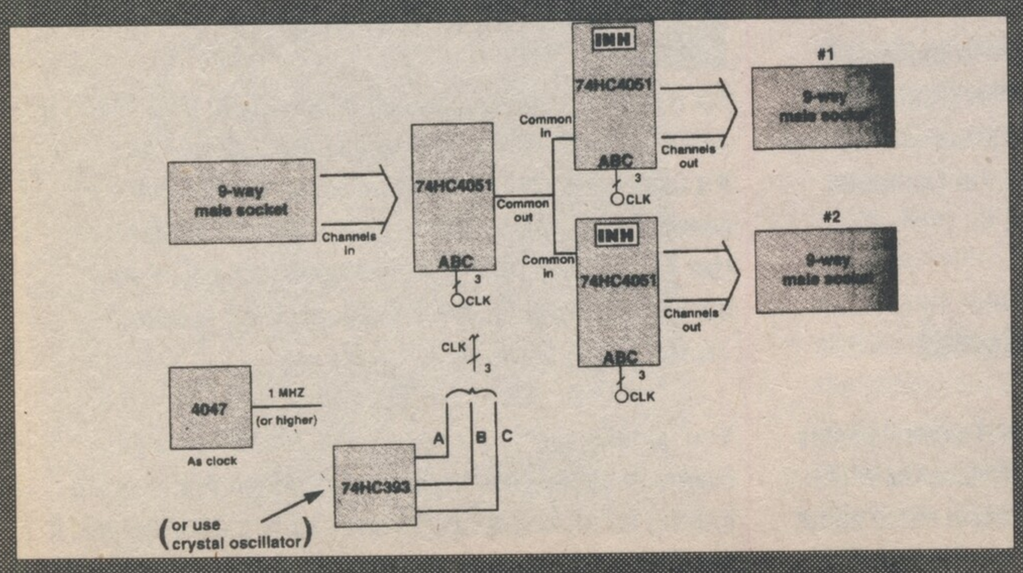
SIMULTANEOUS SWITCHING

When I was banished to Russia for a week to chase up the Soviet computer scene, *Amiga Format* technical editor Pat McDonald stepped into Circuit City to offer a switching device to control more than one machine simultaneously with the mouse.

This stimulated much debate with offers of alternatives flooding in. The original is reproduced here for your perusal along with one of the enhanced versions sent in by a reader.

You judge for yourselves.





• Above: Pat McDonald's controversial mult-mouse switch.

• Left: One readers' offering that followed Pat McDonald's multi-mouse switch.

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Simpson	0332 760353
Maplin	0702 554155
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AMSTRAD 6128 disk drive, colour monitor, mutiface 2, tape deck, firmware guides, assembler, lots of software PD spare disks. Phone Gordon after 4pm. 041 776 6755. May deliver.

AMSTRAD PPC512, fully IBM compatible, portable computer with twin drives, monitor, printer and soft's. Offers please to: 041 3399 2200 ask for Fahim.

AMSTRAD PC2086, 12 hard twin 3.5's and external 5.25, 2 years old, hardly used and Epson LX800, 9pin printer. All in original boxes and manuals. Offers over £450. Tel: 0836 631343 evenings.

AMSTRAD PC2086 32Mb, hard disk; VGA colour, excellent condition, software includes. DOS 3.3, Windows, P.C. Tools, Locoscript, £650. Tel. 0224 660275. Games too!

IBM at (286) compatible, 1 month old, full documentation, VGA card, monitor, 20Mbte hard disk, 1.2Mbyte drive, 5 expansions, symphony, wordperfect, works, installed, £680 o.n.o. Harvey 081 908 1370.

COMMODORE PC10 with 20 meg hard drive, plus loads of software £550. Tel. 051 430 6488.

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XEROK PC/XT. Fully IBM compatible. Single 3.5" drive. MSDOS and mini office software. Bargain £300 o.n.o. Contact Bob. 0903 750010 (evenings and weekends).

AMSTRAD PPC512D portable computer with Commodore colour monitor, and Amstrad DHP 3000 printer and top copy + w.p. software £550 the lot. Phone 0769 80762,

WANTED NEC APCIII, computer with MSDOS, 3.10 international version system diskettes. Tel: 0274 546599, after 6pm.

AMSTRAD PPC640D, with built in modem and twin 3.5" drives, £300 o.n.o. Tel. 9734 782572 (Wokingham).

AMSTRAD PC1512, colour monitor, 32 meg hard card, 51/4" and 31/2" disk drives. Complete with loads of software. £650 o.n.o. Tel, 021 421 6634, evenings.

PPC640DD portable, 8087 co processor, accessories, manuals, MSDOS, very good condition, £375. Panasonic composite video monitor, colour £100, mono £40 + p&p. Pet computer, two 136 colour printers £100. Star SD-15 printer £70 + p&p. Tel: 0224 790498.

IMPRIMS (Seagate) 155 Mb (formatted) hard disk drive, model 94166, Wren 3, full height, Esdi, £400 o.n.o. Phone 0375 851706, after 6pm.

INTEL 80287, 10MHz maths co-pro. Boxed, including registration. £90 o.n.o. Tel: 0592 890604, weekends/evenings.

WANTED any info on advance 86B IBM compatible, computer, ie, position of dip switches any help gratefully accepted. Also cheap RAM expansion board 384K to upgrade to 640K. Write to: Mr. Cassidy, 63 Flooden Way, Billingham, Cleveland, TS23 3LQ.

HYUNAI PC/XT for sale, inc 20 meg hard card 31/2", 51/4" disk drives, 640K RAM, A4 mouse, original software, books, loads more spring mega bargain super £349 o.n.o. Contact Andy 0253 724607.

286 PC Arc Proturbo with colour monitor, hard disk 3.5 and 5.25 hard drives, as new condition, with all manuals and thirty original programs only £750 o.n.o. Tel: 0527 541526.

FOR SALE, IBM compatible, colour CGA £400. Atari 520ST £150. PC Ditto £30. Psion organiser CM £30, nearest offer secures. Phone Norwich, 501165.

IBM COMPATIBLE, notebook size, 20MBHD, 1.44 FDD, 286 IMB RAM batteries and carrycase, brand new, still boxed £1300. Karl, 23 Winifred Avenue, Hornchurch, Essex, RM12 6SU.

PORTFOLIO by Atari 16BIT PC compatible 128K RAM. I've got a spare, hence only £100. Call Michael on 0924 466704, after 6pm. Also Archimedes A3000 boxed, perfect condition, only £500. M.O.T. Forces sale.

◆ AMIGA

AMIGA 2000 HD, fitted with 9Mb RAM, fast 80Mb hard drive 10845 monitor with software, only four months old, and in perfect condition. Sensible offers. Flicker Fixer £200. Telephone 0527 541526.

1.5Mb RAM expansion for A500, brand new, £65. 31/2" disk drive, plus hardware copier, plus disk drives book, £50. Also 13 assorted games, £25 the lot. Tel: Tim 071 537 7813.

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BULK DISKS	10	20	50
3.5" DS/DD 1Mb	£4.25	£8.00	£19.00
3.5" DS/HD 2Mb	£8.25	£16.00	£36.00
5.25" DS/QD	£3.75	£7.00	£19.00
5.25" DS/HD 1.2Mb	£6.00	£11.00	£32.00

All prices include VAT and p&p. Amiga Public Domain 99p
Catalogue disk 80p. Phone for details

SANYO 16LT Laptop, twin 3.5" floppies, 640K RAM, MSDOS, battery charger, manuals, case, £375. Howson. (0484) 713784, West Yorks.

80286, 44 MEG 4D, 1 meg RAM, 1.44 and 360K drive VGA monitor, 4 months guarantee, plus 100 shareware programs, £650. No offers. Phone 0404 891806.

PC SOFTWARE, Armada Speedboat, Tennis, Risk, Jack Nichlaus Golf, Greg Norman Golf, Carrier Command, £8.50 each. Geniscan GS4 500. Hand Scanner £100. Ring John 0430 860548, York.

PC200 for sale, 32Mb hard disk, 31/2" internal floppy, 51/4" external floppy drives, software, PC200, is a 640K IBM XT. Compatible, £500 or swap good Amiga + software, Stevenage 362745.

SAGE payroll II, for IBM PC, £100 o.n.o. Also Sage Accountants + £200 o.n.o. Both not yet registered. Call (0865) 724395.

FOR SALE, Peter Nortons, inside OS/2 programming book, duplicated gift, cost £21. £10, also 25 mixed PC shareware disks, £15, on 51/4 disks wanted Defender of the Crown on 51/4 for PC. Tel: 021 308 5278.

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AMIGA wanted or PC, will swap for H- Fi. Phone for details, after 6pm and ask for Glyn 0780 721 806.

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AMIGA 500 (1 meg), 2nd drive, Commodore 1084 monitor, Epson printer, stereo speakers, mouse, manuals and lots of software, only £650. Phone evenings (0635) 32439.

CHECK/MATE (Amiga 500). Meg memory, fitted internal 20 meg hard/ drive. Plus internal meg/drive and external drive. 300 disks s/w Naksha mouse, Scart leads etc. £750 (Steve Wood, 25 Nightingale Lane, Wellingborough, NN8 4TP.

AMIGA 2000, with 3 meg RAM PCXT, bridge board, flicker fixer, 1 Mb, Agnus and 20 meg SLSI hard disk for sale for £1250 o.n.o. Tel: (0223) 359161 after 6pm.

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AMIGA PD, large collection for all tastes, send 90p for latest catalogue on 3.5" disk - with loadsa free PD. Chris Jackman, 3 Albion Terrace, Lexham Road, Litcham, Kings Lynn, Norfolk, PE32 2QQ.

CAN some one help me. I have two broken joysticks, the forward switch is broke. If you fix one , you can keep the other. Ring 081 749 5036, ask for Antony.

I STILL have Amiga games to swap for PD. All original with Docs. Give me a call on 081 749 5036, ask for Antony.

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AMIGA originals games for sale, Deluxe Paint II, Night Breed, Beast 2, Back To The Future II, and Days Of Thunder, £8 each or £35 for all. Ring Eddie. Tel (051) 727 1426.

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WANTED an Amiga BBS Commercial Program. (Not shareware). Cash waiting or swap hardware or software or beg, borrow or grovel a copy. Must be original. Phone 061 962 6377, before 6pm. Voice, after on BBS.

DEMOS and animations for sale, or preferably swaps. Disks to disk basis. Write to 4 Lipgate Place, Portishead, Bristol BS20 9QN. 100% reply rate. Posted same day! Tel: 0272 845571 mostly Amiga, small ST orders taken.

AMIGA 501 1/2 meg upgrade with clock, £30 or swap for external drive. Also lots of Speccy stuff send SAE for list. Roger, 50 Foxhowe, Coulby, Newham, Middlesborough, Cleveland, TS8 ORU. For info on 1/2 meg. Tel 0642 598935.

◆ SOFTWARE

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MICRODRAFT design, for the PCW, £40 +p+p. Phone (0903) 206739.

HISOFT Editor assembler Debugger, Devpac 1 with programmers hand book. Good condition. Selling for money, towards C Compiler. Amiga, £20. Phone: 0253 823353 and ask for Mark between 4 and 6pm.

AMSTRAD tape games for sale! 136 must go! Worth over £1400 will sell for £180, all originals, eg X-Out, Turrican. Please write to: Z Lyons, No 4 Cottage, Wooton, Woodstock, OX7 1AE.

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AMIGA PD. Large collection, includes: demos, music, utilites, educational, horror, etc. Current catalogue on 3.5" disk features, lots of free PD and bargain software. 90p. Chris Jackman, 3 Albion Terrace, Lexham Road, Litcham, Kings Lynn, Norfolk, PE32 2QQ.

B2000, 3 drives, action replay MK II, Amiga monitor, StarLC10 printer, 600 disks, £1,000. (Buyer collects). PSION XL, 2 carts £30. DRS20 CPM computer + 32 meg HD and monitor. (no software, books). Hence £50. (35856).

AMIGA A500, Kickstart 1.3, + CBM A501 512K RAM, external disk drive, mouse mat + mouse, dust cover, joystick £370 o.n.o. CBMA590 20Mb hard rive, IMb RAM, PSU, 10Mb +PB utilities etc. Boxed £350 o.n.o. 051 4260138.

AMIGA A500 Screen GEMS. 1Mb RAM, 2nd drive, stereo sampler and 200 PD disks. Boxed with full warranty. £480. Tel: 0325 357916, 4-7pm only. Buyer collects. North East area.

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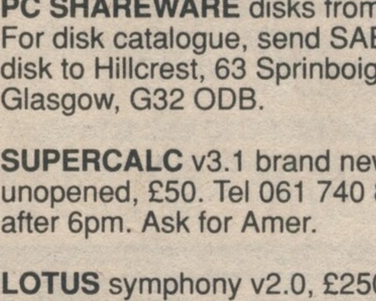

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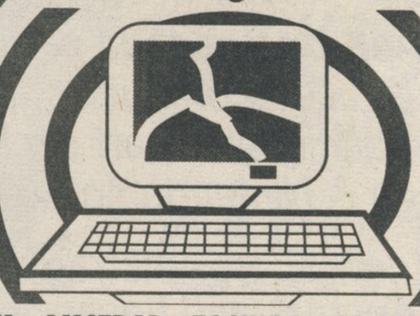

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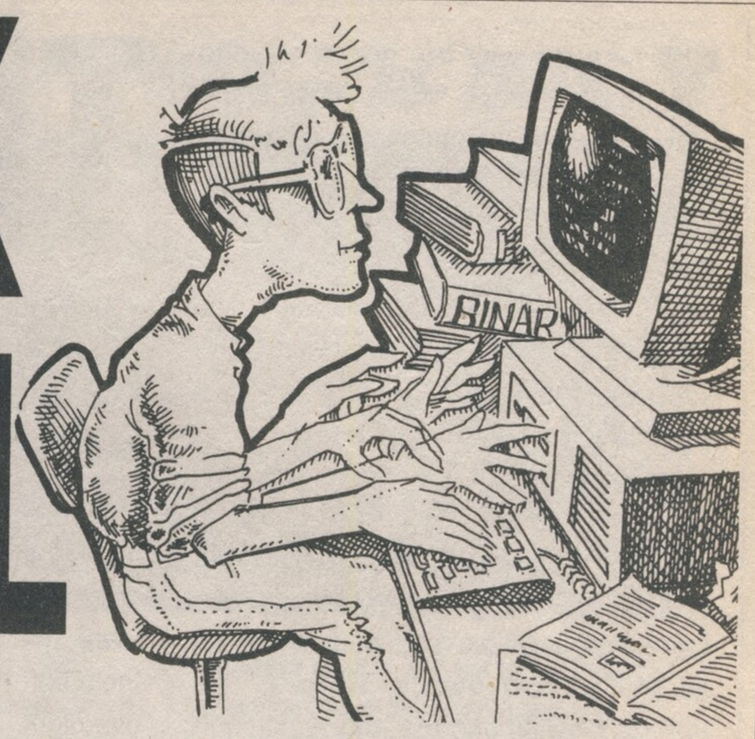
SMALLTALK SAYS IT ALL



You're trying to develop or prototype a program, but are not sure what language to use? Mary Branscombe shows how Smalltalk can help you.

Many of the object-oriented languages on the market are extensions of existing languages. As well as C ++, there are extensions to Pascal, Lisp and Prolog and it seems that almost any language can be extended in this way, but adding on to an existing language is not the only way of developing an object-oriented language. While an extension such as C++ builds on the strengths of the original language, the underlying language also influences the way that objects are put together. In an extended language, it is possible to mix code based on procedures with code based on objects.

One other approach is to write an object-oriented language from scratch, but there are only a few such languages. Much of the original work on objects and classes was in Simula, while Bertrand Meyer's Eiffel and Nicklaus Wirth's Oberon are more recent works.

The Smalltalk language was developed at Xerox in the 1970's for Alan Kay's Dynabook project, which attempted to build a hand-held notebook computer that could recognise hand-written input and which would be powerful enough to satisfy business users, but simple enough to be used and programmed by children. Smalltalk was to be the language in which the Dynabook would be programmed and some of the developers from the Dynabook project used these ideas when developing the interface on the Macintosh.

Like the environments on the ST and Amiga, or Microsoft Windows and the Mac interface, the Smalltalk interface presents the computer as a desktop. For the user, the similarities mean that the computer is easier to use. For the programmer, it means that everything from a file to a utility to the Wastebasket is an object. The user does not type in instructions for the machine to carry out, they select an object and that object has to know what to do, either by doing something itself or by sending a message to another object to do something.

Because it is easy to use, Smalltalk is good for developing and prototyping programs in. It is designed to be an exploratory language where you can make changes to parts of a program without having to make a lot of other alterations because of that.

PUTTING IT TOGETHER

Most of Smalltalk is made up of pre-defined classes which act as building blocks; new programs can be put together rather like Lego blocks, by joining classes together. If you need a new object, it is usually easiest to modify one of these classes and the best way to learn the language is to study them.

If you want to add to a class, you can define a new class which inherits code from an existing class. This means that you can share code between two objects without having to write the same code out twice. Unless you are specifying a value for a variable, all the code in a program is made up of messages sent from one object to another.

WRITING CODE

To use the classes that make up Smalltalk, you pass a message, which is written "message:". For example:

```
answer <- FillInTheBlank request: 'What file do you want to open?'
```

sends the `request:` message to the object `FillInTheBlank`. This is a class in the Smalltalk library which displays a box on screen with the question 'What file do you want to open?'The user can type a reply into the box and this will be put into the variable `answer`.

The question is a string, as it is in single quotes. Comments are written in double quotes so that:

```
"this is a comment"
```

and not a string. Characters are prefaced by a dollar sign,eg, `$a`,and arrays are written in brackets so that:

```
(firstCat first Dog secondCat)
```

is an array of three variables.

The names of classes, objects, variables and so on are known as identifiers and they can be global, and used throughout the program, or local to one class or object. Global identifiers such as the names of classes must begin with capital letters while local identifiers must begin with a lower case letter. Global variables are listed in an object called `Smalltalk` and all variables must be declared before use. Local variables can be declared as part of a new object or as temporary variables. To declare temporary variables they are listed between vertical bars:

```
|firstCat firstDog secondCat|
```

declares the variables for the array.

The Smalltalk object also holds references to symbolic constants, which are written as "`#constant`". The value of constants is set using `at:put:` messages, which **put** a value **at** a place.

```
Smalltalk at: #MeaningOfLife put: 42.
Smalltalk at: #AgeOfCat put 3.
Smalltalk at: #WelcomeMessage put 'hello there'.
```

The `<-` symbol used above assigns a name to an object. To create a new instance of the `Cat` class and give it the name `littleCat`, we declare the variable `littleCat` and assign the name to the new class, which is created by the keyword `new`:

```
|littleCat|
littleCat <- Cat new.
```

All the data structures in Smalltalk are objects. One interesting structure is Dictionary, which lists associations between objects, for example:

```
|virtues|
virtues <- Dictionary new.
virtues at: #cat put: #independant.
    at: #dog put: #loyal.
    at: #owl put: #wise.
```

This creates a Dictionary listing the virtues of some animals. Even the control structures of Smalltalk are objects. Conditionals are `ifTrue:` and `ifFalse:` messages, while loops are `whileTrue:`, `whileFalse:`, `timesRepeat:` and `do:` messages. ■

ENVIRONMENTAL ISSUES

Smalltalk comes with a graphical environment written in Smalltalk itself. Objects are shown in windows on the screen and these can be moved or altered with a mouse. The three buttons of the mouse are used to select information, to alter the contents of a window or to make changes to the window itself.

The contents of a window are known as a view, because they show you what the program actually does. A program itself is known as a model. The code that controls the programs and the windows they run in is called a controller.

LITTLE PICTURES

Smalltalk also provides bit-mapped graphics, where any pixel in the screen display may be black or white. Images are stored as Forms. The screen cursor is stored as a form and different images are displayed for different activities: a pair of glasses when the system is reading a file, a pen when it is writing to a file etc.

Pairs of co-ordinates can be stored as points: `100@50` is a point 100 pixels across the screen and 50 pixels up. Rectangles can also be stored as pairs of co-ordinates giving the upper left and lower right corners. Simple lines can be drawn by the Pen class.

THE VERDICT

PROS

▲Smalltalk is good for trying out ideas because it is easy to change things.

▲ Commands for bit-mapped drawing make it easy to add graphics to your programs.

▲ Everything is an object, for easy to organise programs.

CONS

▼Smalltalk is a large system - you need at least 2Mb of memory to use it properly.

▼ To modify and re-use the classes provided, you need to know the system well.

▼ Graphics are only monochrome - black and white.

THE PD COLUMN

This week's PD Column is value-packed for goodness as frisky Frank O'Connor looks at five pieces of software to please anyone from Adamski to Lester Piggot

There are very few honest ways to make money these days. The more affluent among us generally got to be that way by treading on other people's toes. So you still want to be rich? Well you could rob a train or a bank. Both methods have been tried in the past and with varying degrees of success. Too risky? How about a nice easy million or so pounds?

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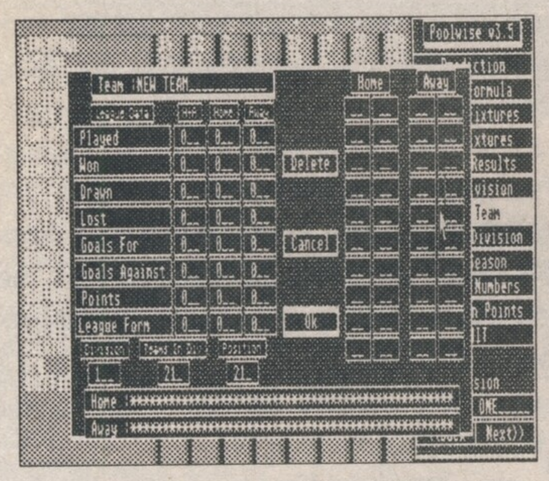
Back in the real world however, Goodman PDL has come up with a Public Domain Pools predictor that makes the full price ones look a little lame. It should be stressed to all the drooling would-be Rockerfellers out there, that the pools predictor is hardly a foolproof means of becoming wealthy overnight. It is, however, an extremely slick and polished means of cutting down the chance factor when filling out pools forms.



• Pool your resources and win a fortune?

Menu driven, as every good ST program should be, it involves a simple system of inputting relevant figures. Figures which would include the team scores for the teams in their corresponding leagues, as well as home/away fixtures, and any other details the program asks for.

The program then calculates a prediction of results, based on previous performance, and hey presto! comes up with its own selection of score and no score draws.

All that remains is for you to pack in your job, and tell your boss just exactly what kind of twisted space frog he is.

SPACE, THE FINAL FRONTIER

Not any more it isn't. Man has now successfully managed to litter every single environment he has access to.

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Just click on the on-screen map, and *Norad* will tell you just exactly which damoclean particle is a-hangin' over your head. It's all bad, dirty paranoid fun of the juiciest kind.

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Hey, remember when you write off for juicy info to any of the companies mentioned, always to enclose a stamped addressed envelope. For one thing, those postage charges soon mount up, and the second and probably most important reason is one of clerical irritance. Imagine having to write out all those different addresses.

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kind of business program.

How about an invoice printer? Something that will print out invoices with the minimum of difficulty. Well, PD company Digital Applications has a program to do just that.

Called, spookily enough, *Invoice Printer*, the package allows you to input the names of the items, their cost and then, just from the goodness of its own heart, the program will add up the total and print it out as neat as can be. Super, smashing and smart.

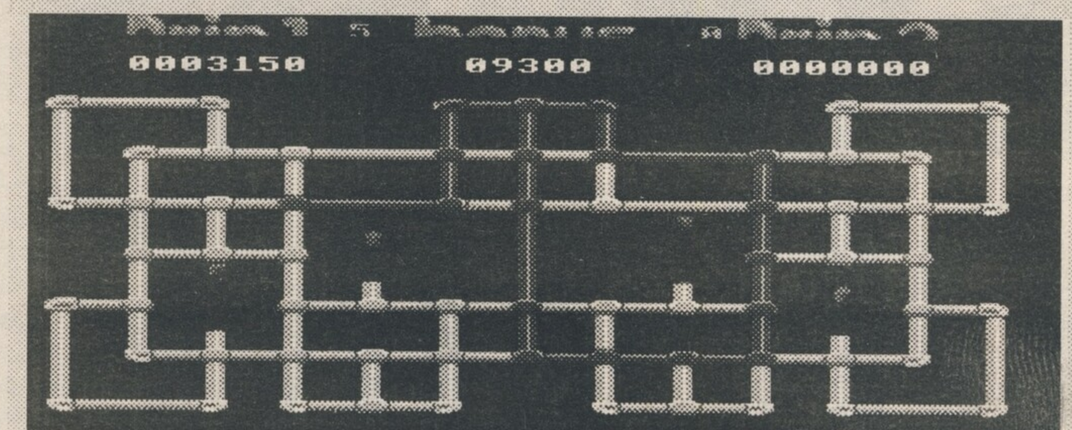
IF MUSIC BE THE FOOD OF LOVE ...

So you've got a bit of a penchant for music. So you like to make sounds, and maybe even melodies. So you've got an Amiga. So you've composed lots of tunes with several different programs. Wouldn't it be nice if there was a program which allowed you to play back modules arranged on different packages and combine them smoothly?

Obviously there is. It's Public Domain and it comes from Amiganuts. Called *Mod Pro V1.8,* it is an updated version of an older program. This new version has been tweaked and fiddled with and is now happy to cope with *Pro Tracker V1.1* and *MED 3.0* modules.

The program is fairly intuitive and can happily deal with several other module types. It allows you to have autoplaying music on your workbench, so if you are clever enough, switching on your Amiga could sound just like a trip to the local shopping mall. ■

Drip, drip, drip little ... er, May



• Drip: *a repainting job which pits your wits against disgusting odds*

Being a drip isn't always such a bad thing, especially when you are as cool as the one in a new Amiga PD game from Premier PD, called (you guessed it) *Drip.*

The drip involved is trapped in amaze of drab pipes and spigots. Unhappy with the surrounding colour scheme, he decides to brighten things up a little by painting the pipes.

The denziens that inhabit this maze are none too happy at the prospect of chintzy drapes and pastel colours, and set out to kill El Drippo. And so he dons his coolest pair of shades, and sets out to do some good.

Reminiscent of the ancient arcade game *Amidar*, *Drip* has you guiding a little drip shaped (hence the name) sprite around a network of pipes. As he passes over a section of pipe, that section changes colour. The screen is finished when all of the maze has been re-painted. The task is not quite as simple as it sounds, as a number of obstacles hinder your progress.

These obstacles include a motley collection of goons who roam the maze with varying degrees of intelligence, and taps which drip toxic liquids on your bonce. There are lots of screens to be coloured, and a nice range of bonus objects and power-ups to be collected.

The graphics (if only you could see this in colour) are very smooth and detailed and the sprites have incredible character. The sound is limited, but suits the game perfectly, and the overall effect is a polished maze game which wouldn't look out of place on the budget shelf at your local Amiga emporium.

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01 For Amiga	071-377 1358	v21/22/22b/23
061 PC Support	061-443 1529	V21/22/22b/23
4/ABC	0460 64511	V21
Above Board	0254 682862	HST
Absolute Zero Q	081-741 7233	V21/22/22b/23
Airtel	0342 717800	V21/22/22b
Aix-386	0905 52536	V21/22/22b/23
Ajl Electronics	0452 309125	V21/22/23/23v
Alan Solomon's	0494 724946	V21/22/22b/23
Alchemist	0666 504597	
Alternate Reality	0352 856626	V21/22/22b/23
Alternative Viewdata	081-761 8220	V21/23/23v
Almac PC Board	0324 665371	300–2400MNP5
	0324 665460	HST
	0324 665449	Hayes V 9600
Amiga II	0619 626377	
Amiga Board	0268 510495	V22/22b/23
Amiga Connection	081-981 9289	V21/23
Amiga Shack	0737 361178	V21/22/22b/23
Amiga South East	0293 28464	V21/22/22b/23
Amlink	021-778 5868	V21/22/22b/23
Amtech Support	0202 294716	V21/22/22b
Andrew's BBS	0384 296964	V21/V22/V22bis.
Andromeda Galaxy	0243 379430	V21/22/22b/23
Apple Crackers	0268 781318	V21/22/23
	0268 780724	V22/22b.
Apricot Tech Sup	021-456 2402	V21/22/22b/23
	021-456 2401	V21/22/22b
Arcade Fantasy	0533 376056	300-2400
Arcport	0252 737065	V21/23
Arena	0625 539063	V21/22/22b/23
Argus Project	091-490 0327	V21/22/22b/23
Arkham BBS	081-952 5128	V21/22/22b/23
Aspects	061-792 0260	V21/22/22b/23
ASTon-line	081-847 5389	
Attic	081-308 0466	V22/22b
Auld Reekie	031-663 9924	V21/22/22b/23
Avalon Northeast	091-564 0009	V21/22/22b
Bablle BBS	0532 785964	V21/22/22bis
Babbs Tower	0394 276306	V21/22/22b/23
Banat Board	081-783 1151	V21/22/22b/23
Barnabas	0708 852526	Hst
Barney's Rubble	021-441 1801	V21/22/22b/23
Basingstoke Opus	0256 728331	V21/22/22b/23
Bath BBS	0225 83584	1/840060
Bath BBS	0225 840060.	V21/V22/V23/V22bis
Bay BB	0227 741528	V22 Bis/MNP5
BBS09	0705 736025	Hst
BBZ	081-663 3732	V21/22/22b/23
Betelgeuse 5	0463 231339	
Beyond Belief	0642 787898	V21/23
Bexhill Centre	0424 224417	V21/V22/V22bis/V23.
Big Bang Burger	081-420 6356	V21/22/22b/23
Bike Shop	0705 827764	V22/22b
Bixbox	0634 200931	V21/22/22b
Blackpool College	0253 57941	V21/22/22b/23
Blindin' BBS	01 764-0954	V21/23
Blitter BBS	0292 671638	300-2400.
Body Matters	071-603 7581	V21/22/22b/23
Bona Board	081 675 7549	2400
Boog	0252 626233	V21/22/22b/23
Boroughbridge Q	0423 324532	V21/22/22b/23
Braindead Opus	0823 254352	V21/22/22b/23
Breakthrough	051-734 5817	V21/22/22b/23
Brown Bag	071-404 0897	V21/22/22b
Brunel BBS	0272 584352	V21/22/23
Budget	021 311 1068	Up to V22bis
Buz Board	081-202 9175	V21/22/22b
Buzby's Grapevine	041-762 2000	Hst
Byte Back!	081-959 8105	V23
Cargo BBS	0420 475462	V21/22/22bis
Campus Ros	0223 357445	V21/22/22b/23
Castle BBS	0276 691872	V21/22/22b/23
Cats Board	0628 824852	Hst
Catweazle	081-428 9476	V21/22/22b
Central BBS	021-711 1451	V21/22/22b/23
Chase Wildcat	0543 871562	V21/22/22b/23
Chequers	0622 891308	V21/23
Chiba City	0501 44262	
Chipboard	0532 320225	V21/23/23v
Chronos' Lair	021-744 5561	V21/22/22b/23
The City BBS	021 352 1237	300-2400
CIX	081-399 5252	V21/22/22b/23
Clapham Junction	0234 64261	V21/22/22b/23
Cliff's Corner	0502 518274	V21/22/22b/23
Club 1512	081-204 8755	Hst
Co-op Board	081-316 6488	V21/22/22b/23
Co-op Board (crs)	061-832 1961	V21/22/22b/23
Co-op Board (nicc)	0509 826339	V21/22/22b/23
Co-op B'Mouth	0202 532701	V22/22b
Co-op P'Mouth	0705 754851	V21/23
Codeomatic BBS	0472 360811	V21/22/22b/23
Communitel Demo	081-968 7402	V23v
Compass!!	0942 896661	
C'center Opus	071-928 2005	V21/22/22b
Computers 4 Christ	0926 428294	V21/22/22b/23
Connection	071-978 8540	
Connections	081-903 1309	V21/23/23v
Connex	071-431 3922	Hst
Consett Forum	0207 506179	Hst
Corby Town Opus	0536 205113	V21/22/22b/23
Cornwall Gate Opus	0752 848806	V21/23
Cp/m User Group	0753 868196	V21/22/22b/23
Crown Green	071-245 1512	V21/22/22b/23
Crystal Junction	0384 441929	V21/V22/V22bis/HST
Crystal Tower	081-886 2813	V21/22/22b/23
Cure	0604 27865	Hst
Cv Database Bb	0427 810211	V22/22b
Cyberspace Amiga	0295 275045.	V21/V22/V22bis
Cynotel	081-346 2816	V23v
DIE	061-434 9907	V21/22/22b/23
Dambusters	0203 333195	V21
Dark Crystal	081-207 2989	Hst
Dark Halo	0392 434477	Hst
Dark Side	0446 33729	V21
Darkhaven	0604 413716	V21/22/22b/23
Data Network	081-478 5464	V21/22/22b/23
Datanet	0245 323693	Up to 14.4kbps
Datasel/wanderland	081-680 5330	V23
Datasoft Opus BBS	0460 54615	V21/22/22b/23
Datatrade Q	0536 725180	Hst
Dbase User Group	0532 842213	V21/22/22b
DCE Board	0296 88165	V21/22/22b
DCS	081-879 7578	V21/22/22b
Delta	0252546269	
Deep Thought	0634 683696	Hst/v32
Desert	0244 550332	V21/22/22b/23
Desert BBS	0604 758126	V21/22/22bis
Diamond Opus	0791 86504	Hst/v32
Diggertel #1	0925 411265	V21/22/22b/23
Digital Matrix	021-705 5187	V21/22/22b/23
Direct Access	0935 79760	up to 2400
Direct-line 1	081-841 1847	V21/22/22b/23
Direct-line 2	081-842 2030	V21/22/22b
The Dock	091 454 6978	300 to 2400
Domain BBS	081-773 2422	V22/22b
Dragon's Tower	081-202 0709	V21/22/22b
Dunedin Blackhole	031-669 2974	
Dwarfen Realm	0376 501036	V23v
Eddie's BBS	0635 71324	V21/22/22b/23
Edinburgh Castle	031 334 7043	HST
Empire BBS	0473 683215	V21/V22/V22bis
Empirical Research	0543675158	V21/22/22b/23
Empyrion	0792 580781	V21/22/22b/23
End To End	0376 84644	V21/22/22b/23
End Zone	0524 752245	V21/22/22b/23
Engineers Workbench	051-327 7036	V21/22/22b
Equaliser	0232 454097	V21/V22b/V23
Eureka II	081-683 0629	V21/22/22b/23
Exchange S/w	0767 5051	V21/22/22b/23
Eye-2	0525 715789	V21/22/22b/23
Fal Opus	0736 794827	V21/23
Falcon BBS	081-527 4165	V21/22/22b/23
Family Skeletons	0480 812097	V22b
Fido Uk1	0734 713909	V22/22b
Flight Path	081-759 1957	V22/22b
Focus International	0905 795002	
Focus Tbbs	0303 42690	Hst

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Fox's Den	0689 27085	V21/22/22b/23
Free Net One	0767 51972	V21/22/22b/23
Freelance Lynx	0480 406261	V21/22/22b/23
Friday The 13th	0642 224833	V21/22/22b/23
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Grenadier	0825 762803	V21/22/22b
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Halfwits BBS	0272 340310	V22/22b
Hamnet	0482 465150	V21
Harlequin	061-945 3612	V21/22/22b/23
Hastings BBS	0424 717919	V21/22/22b/23
Hawk'S Castle	0344 411621	Hst
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Health-data	081-986 4360	V23v
Heartbeat	0734 352032	
Hilary's Board	0277 233468	V21/23
Hot-air Opus	0579 70347	V21/22/22b
Humber Bridge	0482 850785	V21/22/23
Humberside East Coast Systems	0964 614524	300, 1200, 2400
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	0903 700771	V21/22/22b/23
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BBS	071-704 0760	Hst
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Jersey Opus	0534 39389	V21/22/22b/23
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Jolly Fisherman	0754 67796	V21/22/22b/23
Jolly Roger	081-742 1640	V21/22/22b/23
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Kernow Bb	0209 821670	V21/22/22b/23
Key-board	0908 668398	Hst
Kidlington BBS	0865 56703	V21/22/22b
Kirklees Opus	0484 665415	V21/22/22b/23
King Of The Castle	0233 620228	V21/22/23
Komputer Knldge	0844 274066	V21/22/22b/23
Kybernesis	081-673 7294	V21/22/22b/23
Labyrinth	051-724 4458	V21/23
Lamplight Qbbs	0705 811531	V21/22/22b/23
Laser Tbbs	0532 438430	V21/22/22b
Lau's Ql Bb	081-751 6096	V23v
Lightfinger's Place	0202 485723	V21/22/22b/23
Linelight	0580 212043	V23v
Linx BBS	0522 511277	V21/22/22b/23
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London Embassy	081-366 1778	Hst
London Guest Hse	081-748 0974	Hst/v32
London Mail Centre	081-534 1200	V21/22/22b/23
London Metropolis	081-519 1055	V21/22/22b/23
Loony Bin	0703 787489	V21/23
Mabbs	021-444 8972	V21/22/22b/23
Mach II BBS	0242 260 685	V21/22/22bis
Mactel Hq (grn Box)	0602 455444	V21/22/22b/23
Mactel Metro	081-543 8017	V21/22/22b/23
Mactel Phoenix	0473 610139	V21/22/22b/23
Madness BBS	0603 300947	V21/22/22b/23
Magic Castle BBS	021-430 3761	V21/22/22b/23
Magic Mushroom	0361 83641	V21/22/22b
Magnum	0274 547006	V21/22/22b/23
Magrathea	0376 24402	V23v
Manor	0980 863031	V21/22/22b/23
Marctel	081-346 7150	V21/23/23v
Matrix	051-255 0225	V21/22/22b/23
Max BBS	V21/V22/V22bis/V24/V32/V42/V42bis/9600/14K4/MNP and LAPM. Numbers as follow:	
	0905 52536 Alien Node	
	0905 57822 We/ve Got A Hot One Here	
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	0905 56610 So You Like Spam Node	
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	0905 58042 Troffers Node	
	0905 754151 For All Software Troffers	
	0905 754127 Live and Kicking Dawn Raid	
Mbbs Leconfield	0964 550745	V21/22/22b/23
Mbbs Mitcham Ilc	081-648 0018	V21/23
Medway	0634 280031	V21/22/22b
Mektronic Consultants	061-773 7739	V21/22/22b/23
Merkinstead	061-434 7059	V21/22/22b/23
Merlin	0443 834179	V21/22/22b/23
Micro Live Bb	081-567 6500	V21
Micro Update	081-877 1529	V21/22/22b/23
Microdeal	0726 65422	V21/22/22b/23
Microlog	0422 71921	V21/22/22b/23
Midget Gem	0748 834836	V21/23
Mind Boggles	0362 762868	V21/22/22b/23
Miridian	0273 588924	up to 2400.
Mininet 3	0642 672813	V21/22/22b/23
Miracom Support	0473 232540	Hst
Mirage	061-652 1242	V21/22/22b/23
Mirror II	0628 810889	V21/22/22b/23
Mirrorworld/quest 1	0883 844044	V23
Mission Impossible	0602 654329	Hst
Mk Board	0908 671289	V21/22/22b/23
Mkbbs	0908 504556	V22/22b
Monkey Tree	0952 677002	V21/22/23
Monusci	0293 545665	V21/22/22b/23
Motor Exchange	0484 435314	V21/22/22b
Multi-bbs	041-649 9043	V21/22/22b/23
Murdoch's Hangout	021-711 2620	V22/22b
Murky Caverns	081-426 9386	Hst
Mwcfe	0926 421844	V22bis
My Little Phoney	0865 773277	V32/HST
Network 23	0274 482021	V23v
Nicc Mid-west	0341 250377	V21/22/23
Nighthawk	0329 45384	300-2400
Nite Life	071-976 6807	V21/22/22b
No Escort Required	081-200 3817	Hst
No.1 BBS	081-958 1689	V21/22/22b
Noah BBS	0272 572322	300-2400
Norpac	0434 608324	V21/22/22b
North Wales BBS	0978 88372	V21/22/22b
North Yorks Q	0423 868065	V22/22b
Northern Lights	0768 773685	V22/22b
Norwich Onion BBS	0603 423305	V21/22/22b/23
Nova	0455 553371	V21/22/22b
Nova-net	0274 370760	V22

SHOPPING EXPRESS BUYERS' GUIDE

While *Shopping Express* is undoubtedly the perfect way to track down the best bargains in the computer world, many people are still, perhaps understandably, wary of buying products via mail order or through personal ads. This is probably because usually you are not able to have a look at what you are purchasing before you hand over your money. We do everything in our power at this end to make sure that all the advertisements we run are above board. But here are a few tips designed to help take the risk out of buying via mail order or over the telephone.

● Be precise in describing what you want to buy. Leave no room for error. Feel free to go overboard in double checking details - make, model, specifications, colour, size, the page number and name of the magazine in which you saw the advertisement etc.

● Confirm the exact price of the article you are buying. If you are phoning a company check if there are any hidden extras, such as postage and packaging.

● Check how the item will be delivered to you and how long it should take. This is especially important with reader ads where delivery details are rarely mentioned.

● If you are writing off for the product keep copies of all letters. If you are phoning, note down details of when you phoned and who you spoke to.

● If possible enquire about guarantees and servicing. Check the supplier's policy on returns and refunds. With reader ads, it is best to make the effort to see the item personally before you hand over money.

● It is best to to pay by credit card, especially for items over £100, as this provides extra cover under the credit card companies' own insurance schemes. Otherwise use a crossed cheque or postal order. Avoid sending cash at all costs.

MAY AUCTIONS ROUND-UP

SOUTH EAST

MCD (0932 788600)
18 MAY – St Paul's School, the Ridings, Green Street, Sunbury-On-Thames
Auction starts at 10.30am. There is viewing and testing on the evening beforehand from 5pm-8 pm, and on the day from 9am.

TECHNOLOGY COMPUTER SERVICES (081 651 3639)
18 MAY – Pickhurst Junior School, Hurst, Bromley, Kent.
Auction starts 10.30am. Viewing and testing from 9am.
25 MAY – Kemnal Manor School, Sevenoaks Way, Orpington, Kent.
Auction starts 10.30am. Viewing and testing from 9am.

TRADERDESK (0527 579120)
27 APRIL – Harrow Leisure Centre, Harrow, Middlesex.
Auction starts 11am. Viewing and testing from 9.30am.

SOUTH WEST

ABTEK (0722 413337)
5 May – New College, Helston Road, Swindon.
Viewing and testing from 8.30 am.
Auction starts 11am.
1 JUNE – New College, Helston Road, Swindon.
Viewing and testing from 8.30 am.
Auction starts 11am.
25 MAY – BAWA Leisure Centre, 589 Southmeade Road, Filton, Bristol.
Viewing and testing from 8.30 am.
Auction starts 11am.

MIDLANDS

TRADERDESK (0527 579120)
11 MAY – National Motorcycle Museum, National Exhibition Centre, Birmingham.
Auction starts 11am. Viewing from 9.30am

STEVEN SHAWCROSS (AUCT) LTD (061 789 3537)
8 MAY – Priest House Hotel, Kings Mill, Castle Donnington, Derbyshire.
Auction starts 1pm.

NEW KENSINGTON AUCTIONS (0602 442022)
16 MAY – New Kensington Auctions offices, Kensington Park, Halam Fields Road, Ilkeston, Derby.
Auction starts 10.30am

MANCHESTER

COMPUTER CONNECTIONS (0254 813316)
18 MAY – Bowlers Leisure Complex, Trafford Park, Manchester.
Sale starts 10am. Viewing and testing from 8.00am.

SCOTLAND

TRADERDESK (0527) 579120
19 MAY– Bothwell Bridge Hotel, Glasgow.
Auction starts 11am. Viewing and testing from 9.30am..

BIDDING TIPS

● Prices at auctions can be quite a lot lower than in shops, but you will have to pay in full on the day.
● Make sure to get a catalogue before you go along. If you phone the companies they should be happy to supply you with one.
● Set yourself a limit.
● Give any itemsyou are considering bidding for a good looking over and check if there is any warranty. If there is not you still have the rights of a second-hand buyer. Under the Sale of Goods Act you are entitled to a refund if the item is faulty or does not match up to the description given.
● Wait for the auctioneer to call the first bid. He'll come right down if no-one offers.
● Don't be tempted to outbid over the odds. You might come up against a dealer for whom a bargain is just a higher than normal margin.

If you run auctions anywhere or know of any coming up in your area please contact us at *New Computer Express*, 30 Monmouth Street, Bath BA2 2BW. Tel: 0225 442244 or fax: 446019.

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DMA Design
49 Meadowside
Dundee DD1 1EQ

Tel: 0382 28100

Fax: 0382 28787

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Future Publishing Ltd
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WANTED

One experienced 68000 programmer for immediate work on the **Sega Megadrive** version of **"Robocod"** (James Pond II) and further projects. Megadrive knowledge not expected.

One experienced 68000 programmer for conversion work on **Amiga/ST** projects. A good knowledge of at least one of these computers is essential.

Both positions are long-term, in-house (situated in Derbyshire) and carry a salary of **£12,000+**, based on experience and ability.

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TEXT PUT TO TEST

CDTV is not the only link between the Amiga televsions. Dave Golder checks out an add-on that takes the pain out of accessing Teletext.

Anyone who has ever used Teletext will know how irrtating it can be to use. You sit around for ages waiting for pages to pop up. Multi-screen pages flip over in their own time, rarely matching the speed at which you read. And even with the most advanced Teletext television sets the optimum number of pages you can save in the memory is four so you still spend most of your time laboriously pressing in digits on a keypad. It would be so good if you could just program in the pages you actually want to see then sit back and relax as they automatically pop up in a sequence customised to suit the speed at which you read.

With a Teletext adaptor linked to your computer that's exactly what you can do, but at a price. The Microtext Amiga Teletext adaptor costs £152.16, which, considering you need a computer and monitor to go with it, may seem a rather expensive way to make Teletext more user friendly. But the adaptor does have other advantages such as facilites for saving and printing pages or transforming your monitor into a television.

SETTING UP

The Amiga Microtext package comprises a small adaptor unit, a software disk and the necessary connecting leads. The only thing you have to supply, apart from an Amiga and a monitor, of course, is an aerial. Connecting the system is simple and only takes a few minutes. The only drawback is that the lead from the adaptor to the parallel port is extremely short and restricts where you can place the adaptor.

When first set up the unit has to be tuned to the Teletext signals. In the UK there are four – CEEFAX on BBC1 and BBC2 and ORACLE on ITV and Channel Four – and the unit locates the signals automatically. The relevant wavelengths are then saved to disk so you don't have to retune every time you switch on. Regarding the signal, despite what it says in the manual about the system being known to work with bent coat hangers, you will actually need a strong signal preferably from an external aerial.

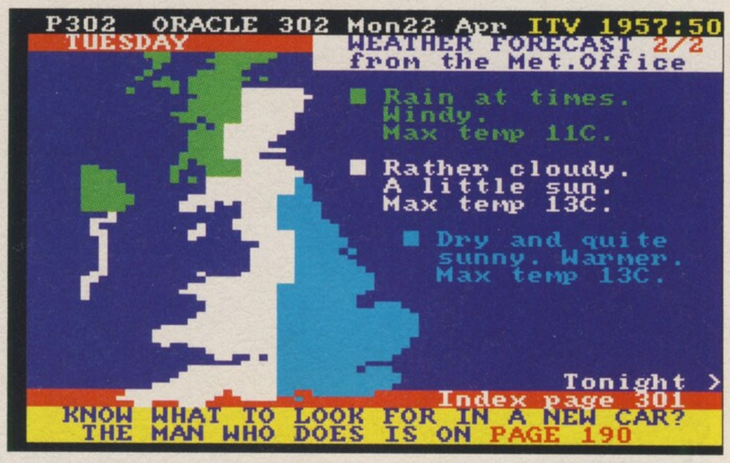
Now you are ready to use Teletext. Pages can be selected either by entering them in via the keyboard, or with the mouse. The mouse provides a shortcut, as you can use it to point to any page number on the screen, such as those listed on a contents page, click on it and the system will go to that page.

• When you save pages as IFF files you have to remember to remove the program gadgets from the top of the screen.

There is an automatic review facility which stores the last 16 pages which have been viewed. This is especially useful with pages which contain sub pages, such as the local cinemas guide on ITV page 234. This gives you a listing over a number of pages which flip through in a continuous loop at a preset speed. With the review feature you just set the system on the page go away and do something else then come back and read them at your own rate.

The adaptor can also be used to transform your monitor into a colour television

You can take this one stage further by programming the system to run through a sequence of pages automatically. The pages can be selected from any channel and can even include individual sub pages ie just the third page of the cinema guide. You can then sit back and read the pages of your choice as they pop up on screen without you ever having to touch a keypad, and you can even regulate how long you want each page to stay on screen. The program can also be saved to disk so that the sequence will start automatically when you switch on.



• With the printing facilities of the adaptor you could keep hard copies of the weather maps to brighten up Geography projects.

• Teletext graphics are very low res, and pictures are rarely any more complex than this.

PRINTING AND SAVING

Being able to save and print pages of Teletext is the main advantage of the package. Pages can be saved as text only, in which case you can fit up to 800 on a disk, or as graphics files in IFF format. Similarly pages can be printed as text only or as a full screendump. As pages of Teletext usually only exist for as long as they are broadcast, these facilities are the only practical way you can keep copies of them for future reference.

The adaptor can also be used to transform a monitor into a colour television which is a useful space- and money-saving feature. So long as you have a strong signal and a good monitor you can receive some very high quality pictures.

Overall, the Microtext teletext adaptor does what it sets out to do extremely well. The only real drawback is the price. A cheap Teletext set costs just over £200 whereas the cost of the adaptor along with a colour monitor or television will come to closer £300, and you are going to need the computer to drive it on top of that. Unless you have a real need for hard copies of Teletext pages, it really amounts to little more than an expensive toy for couch potatoes. ■

Microtext *also produce Teletext adaptors for the* ST *(which retails for £152.16) and the* PC *(£199.66). Write to* Microtext, *7 Birdslip Close, Horndean, Hampshire PO8 9PW, or telephoning 0705 595694.*

HOW ORACLE AND CEEFAX REACH YOUR SCREEN

If you have ever seen a line of dots at the top of a badly tuned television screen, that's Teletext. A normal television signal contains 22 lines which do not normally show up on the screen; two of these lines carry the Teletext digital signal. It is transmitted along with the normal television signal, but you need a Teletext decoder to be able to view Teletext pages.

These pages consist of text and rather crude, blocky graphics. All pages are numbered with a three digit figure and you call up the page you want simply by entering the number you want using a numeric keypad of some variety (though there are some shortcuts as explained in the main text)

The two Teletext services in the UK are the BBC's CEEFAX and the Independent television companies' ORACLE. Both tend to offer services such as news, televsion times, stocks and shares, weather reports and traffic news.

As far as Ceefax is concerned that's about it, but the ITV service has much more to offer, including film reviews, horoscopes, crosswords, rock magazines and, unfortunately, adverts.

VERDICT

FOR:

▲ Allows you to adapt teletext to your own needs to make it a much more user friendly medium.
▲ The mouse makes choosing pages much quicker.
▲ You can save and print pages of teletext.
▲ Doubles as a TV adaptor for your monitor.

AGAINST:

▼ Reception of teletext signal needs to be very srtong for Teletext adaptor to work.
▼ Lead from Teletext daptor unit a bit short.
▼ Quite costly in comparison to normal Teletext televisions.

BUBBLING UNDER

● Heavens. Virtual Reality comes to the your home computer – well, at least that's what Electronic Arts is claiming of *Cyber Fight*. The one-to-one combat action in *Cyber Fight* is in some ways similar to EA's ageing *Mail Order Monsters* where monsters were built to beat the living daylights out of each other. In *Cyber Fight*, however, the combatants are robotic and capable of carrying all manner of sexy hardware such as sledgehammers, high-power machine guns and even nuclear warheads. Written by Michael Powell (who took racing into the future with his debut, *Powerdrome*), *Cyber Fight* employs an impressive-looking solid 3-D display and plenty of physical forces to generate a 'real world' feel. *Cyber Fight* will appear first for the IBM PC and compatibles in September. An Amiga version is planned for release early next year.

● From the man who brought you System 3's supremely playable beat-'em-up *IK+* comes ball-bashing of a different variety. Archer Maclean's *147 3-D Snooker* is being billed as, "the fastest, smoothest and most accurate snooker simulator ever seen," by its publisher Virgin. And given what's been shown so far, it's no idle boast. Archer's *Snooker* looks a bit tasty and no mistake. Sticking closely to the rules of the real game, *3-D Snooker* utilises a swish, solid 3-D display which means that the action can be viewed from almost every conceivable angle. You can expect to see *147 3-D Snooker* from September on the Amiga and Atari ST at prices yet to be announced.

CHART CHAT

Straight in at the pole position this week, and is there anyone who really doubted that it would, is the latest masterpiece from the Bitmaps, *Gods*.

TOP 10 SIXTEEN-BIT GAMES

THIS WEEK	LAST WEEK	TITLE	PUBLISHER	MACHINE
1	NE	*Gods*	Renegade/Mindscape	ST AG
2	1	*Lemmings*	Psygnosis	ST AG
3	7	*PGA Golf Tour*	Electronic Arts	AG PC OT
4	2	*Fantasy World Dizzy*	Codemasters	ST AG
5	3	*Final Whistle*	Anco	ST AG
6	NE	*Wonderland*	Virgin	ST AG PC
7	5	*Speedball 2*	Mirrorsoft	ST AG
8	16	*Rocket Ranger*	Mirror Image	ST AGPC
9	13	*Kick Off/Extra Time*	Anco	ST AG
10	RE	*Defender of the Crown*	Mirror Image	ST AG PC

ST = Atari ST AG = Commodore Amiga PC = IBM PC or compatible OT = Other

Games Week

If it's the latest reviews, the hottest news and the most essential tips you're after then Gary Penn is the man with all the answers.

DOUBLE DRAGON III

• *There's trouble on the streets outside the weapon shop in* **Double Dragon III** *on the Amiga.*

In a more traditional beat-'em-up vein, the perennially popular ***Double Dragon*** saga is set to continue later this year with ***Double Dragon III***.

The boys are back in town for more of the same, though this latest incarnation features enhanced visuals, more simplistic yet more rewarding fighting control and a shop from which to buy weapons. The Spectrum, Commodore 64, Amstrad CPC, Amiga and Atari ST versions are coming from Storm, the label behind the conversions of ***Saint Dragon***.

RODLAND

Another, more immediate Storm conversion is that of ***Rodland***, a platform'n'ladders romp in the nutrasweet mould of ***New Zealand Story*** and ***Rainbow Islands***. ***Rodland***'s stars are a pair of sickly cute little gals with long hair and big eyes. Their weapons are rods which they use to pick up the bad guys, such as sharks and fluffy bunny types, before bashing them about a bit over their heads and against the ground. What a hoot. Storm's certainly managed to capture ***Rodland***'s look. Whether the arcade original's feel will be present in the Amiga and Atari ST conversions remains to be seen when they are released in September.

• *Sick and sickly sweet: the Amiga version of* **Rodland.**

GAMES REVIEW

JAHANGIR KHAN WORLD CHAMPIONSHIP SQUASH

Krisalis
Amiga, Atari ST,
IBM PC and Compatibles £25.53
Amstrad CPC, Commodore 64
Spectrum Cassette (£11.23)
& Diskette (£15.31)

No Other Versions Planned

NCE HOT SHOT

Squash in home computer form has been around since the days of *Pong*. Early representations were variations on that very theme, in fact. Since then there have been few innovations despite a Jonah Barrington endorsed effort from New Generation way back in 1985.

Jahangir Khan is, according to his PR person, the fittest man in the world. It is ironic, then, that this simulation of this extremely sweaty sport requires minimal physical effort on the part of the player.

Jahangir Khan World Championship Squash adheres closely to the rules of the sport and yet manages to provide immediate arcade-style playability. The control is a little fiddly at times, but on the whole it has a healthy feel to it, especially when a high-speed rally is up and running and the authentic sound echoes in your ears. The game is best enjoyed with a second human player, but even the computer opponent plays a believable game.

Anyone in search of a sports simulation other than a variation on the football theme is advised to look no further than this.

PLAYING TIPS

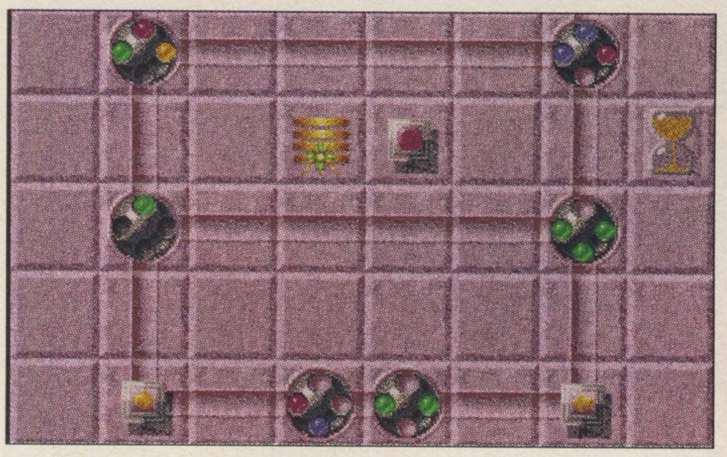
LEMMINGS

Psygnosis
Amiga, Atari ST, IBM PC & Compatibles

So the positioning of a Bomber is of the essence but you can't get it to stand still? Well try this if the situation allows... When the would-be Bomber reaches the required position turn it into a Blocker. Now you can light the fuse. You don't have to explode a Blocker to remove it. By using a Digger on the Blocker you can get it to walk.
PLUS! Some codes courtesy of one Simon Richards of Twickenham in Middlesex...

FUN	TRICKY	TAXING	MAYHEM
5 LDHBAJLFCT	NHLDIBADEU	FAJHLDHBGT	HFANLMFPHN
10 IJHMDHBKCN	BINLLDIIEU	DHFIJLLGGU	HLDIFINEIU
15 HBANLMDPCS	MDIBAJLNEP	NHMDHFALGS	FAJHMDIJIP

LOGICAL



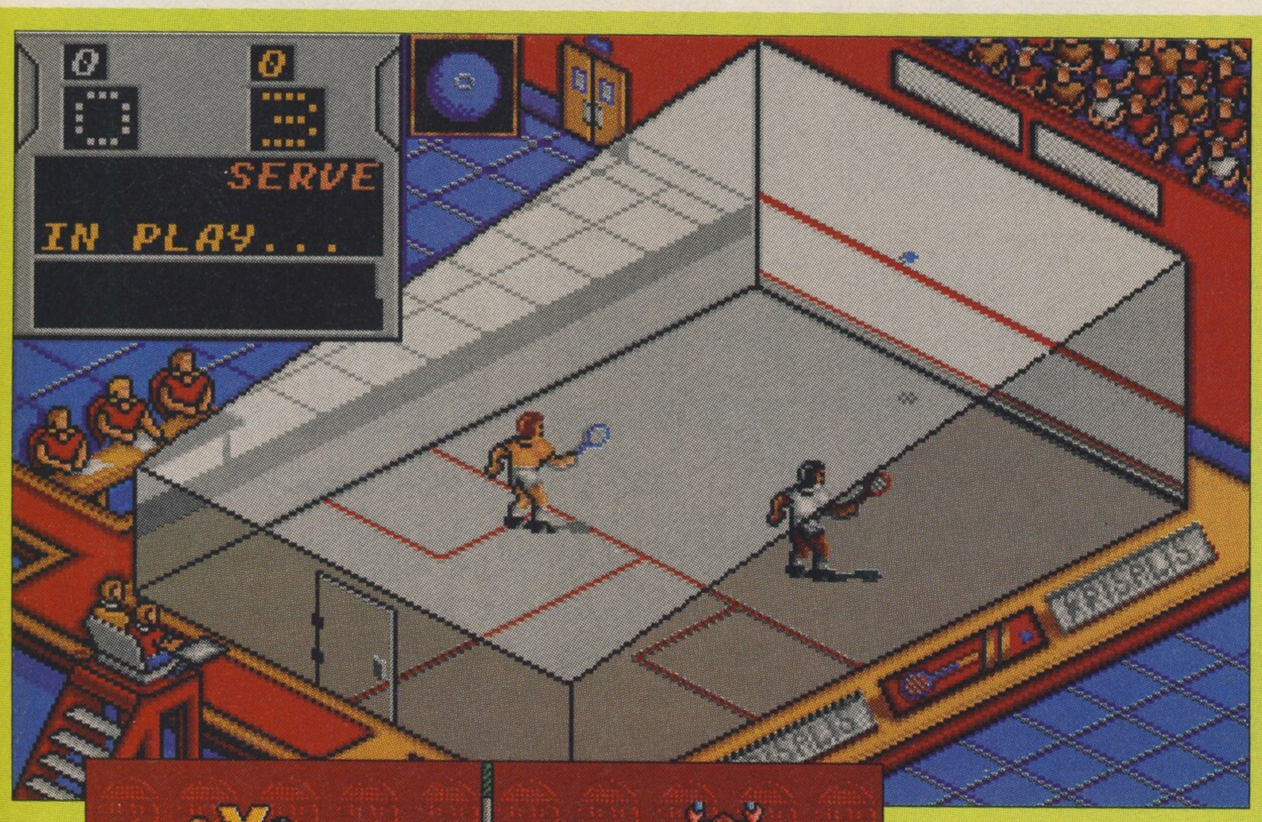
• ***Wheely taxing:* Logical *on the Amiga.***

Software publishers worldwide seem to be producing arcade puzzles left, right and centre these days. One of the latest, and most playable, is ***Logical*** from Rainbow Arts of Germany. Similar in some respects to MB Game's *Downfall*, ***Logical*** has over 100 screens each comprising an arrangement of wheels and interconnecting channels. Each wheel contains four holes on its circumference. Different coloured balls roll along the top of the screen and drop into any available hole in the wheels. You can then rotate the wheels and move the balls around the screen via the channels. The screen is complete when each of the wheels contains four balls of the same colour. The going becomes a bit more mentally taxing on later levels where colour priorities and 'filters' come into play. Despite the brain strain involved, it's quite mellow to play and comes recommended. ***Logical*** is due to appear during the merry month of May on the Commodore 64, Amiga, Atari ST, and IBM PC and compatibles. ■

??? GOT A PROBLEM ???

Bad luck, eh. But fear not, for we may well be able to help – with anything game-related anyway. Simply jot down in as much detail as possible exactly what the problem is and send it to DO ME A LEMON, Games Week, *New Computer Express*, 30 Monmouth Street, Bath, Avon BA1 2BW.

Maybe it's a certain problem that's causing you to scream. Maybe it's a certain screen that's causing you problems. Or perhaps you simply need a cheat mode. Whatever the score, personal replies are out of the question, but we will endeavour to answer as many queries as possible through these pages. And don't forget to mention the game's title (look, it happens).



• ***Before anyone can begin to give a service with a smile the players spin a racket to decide who will do the honours. This is just one of many neat touches seen throughout. Audience attendance varies depending on the level of play – either Club Tournament or World Championship knockout competition. Reach the final and TV cameras come out in force.***

• ***Options and statistics abound. Apart from a comprehensive league system complete with load and save options, there's the facility to watch two computer-controlled players battle it out, change the bounciness of the ball, and alter the level of player control (though it must be said the EASY option is a little too simplistic for its own good). If all the icons prove too confusing, an on-line HELP function tells you what's what.***

PLAYING TIPS

POWERMONGER

Electronic Arts
Amiga, Atari ST

Powermonger has a great many hidden features to discover. Here's a few from Peter Molyneux, one of the Bullfrog team behind this smash hit

FUN WITH SHEEP: PART ONE

- Don't kill all the sheep. If you do, something very strange happens. On second thoughts, give it a go...
- Enlist a shepherd with sheep into your army. This way you have a portable food source. There's also a silly side-effect to be had. Set the shepherd afloat in a boat and his sheep will swim behind him. If the shepherd is killed the sheep wibble on the water and look very silly indeed.
- The following effect only works on the Amiga version. In the winter, take a lone Captain to the North of the map. Leave him be, but keep 'em peeled. He should start shearing a sheep, complete with appropriate sound effects. It doesn't last long, though, as he has a tendency to kill his fleecy friend and eat it (Bullfrog insists it didn't implemented this and it is in fact a 'natural' side effect).

BUT IN GENERAL ...

- Don't starve your people during the winter period otherwise they will revolt.
- Inventing cannons and catapults is easier than you might think. Simply make a Captain aggressive before clicking on the desired town and then on the invent icon. After 10 seconds or so click on the invent icon again and then on the town in question. This should speed up the process quite considerably.
- For an near invincible army which can take on allcomers and win with ease, collect together 10 people with boats and bows and arrows. Now you can attack any size of enemy force from the water.

AND FINALLY, SOME CHALLENGES FROM BULLFROG:

- Shoot down the child-bearing stork as it appears (it always comes in from the top left-hand corner of the playfield). If you are successful, every pigeon will leave its tree and carry a child in tow.
- Try chopping down all the trees in the world for a strange consequence. Hint: attack them.
- Try creating a city with all workshops in so it produces lots of stuff.
- Try winning the last world on the top row of the map by inventing no extra weapons and staying in the water all the time.

HINT: get together some boats real quick.

Apparently there are some special names which can be entered for some special effects ranging from more food to six captains immediately and being able to select any world from the large map. Sadly, Bullfrog won't reveal them until next week. In the meantime, further help can be gleaned from the Electronic Arts *Powermonger* book.

Have you discovered anything strange about *Powermonger*? Have you a *Powermonger* challenge for the Bullfrog boys? They reckon they can handle anything you throw at them, so why not prove them wrong? Send any discoveries or challenges to POWERMONGERY, Games Week, *New Computer Express*, Future Publishing, 30 Monmouth St, Bath, Avon BA1 2BW.

There are several dedicated hard drives available for the A500. Keith Pomfret looks at the A500+ drive that offers a plus.

HARD ACT TO FOLLOW

The GVP Series 2 A500+ for the Amiga A500 is a cream slanted box that matches the A500 in colour and profile. It slides into the expansion slot on the left and continues the elegant lines of the machine to which it is docked.

From the outside, the box looks like an extension to the Amiga with the only control in sight being a curiously named games switch. Inside, the A500+ has a hard drive and controller and has sockets which allow for up to 8Mb of extra memory which can be added in increments of 2Mb.

SCUZZY

The A500+ is a SCSI device (which stands for Small Computer System Interface and is pronounced 'scuzzy') and has a port on the back that allows it to be daisy-chained along with up to another seven SCSI devices.

We looked at the 52Mb version and to try it at its greatest potential we specified 4Mb of RAM chips to increase the 1Mb A500 to a 5Mb machine.

It took less than a minute to connect the A500+ to the waiting A500. Like the A500 it has a separate power supply so room had to be found on the ring main to plug it in. The power supply is in a flat plastic case and needs to be placed the right way up on a flat hard surface to allow air to convect heat away. This one definitely shouldn't live on the carpet.

UP THE RAMS

The A500+ that we reviewed had the RAM already installed by distributor Ladbroke, but even if we had to do it ourselves, it's a simple enough job and explained well in the manual.

The process of installing the RAM is covered in five easy to follow steps with troubleshooting and configuration advice.

As the A500+ is a SCSI device, certain conditions must be adhered to. The last device in a daisy chain of SCSI devices must be terminated and the manual contains a section on chaining and/or terminating by the proprietory SCSI/RAM controller.

This may all sound a little complicated, but it is attention to detail like this coupled with good concise instructions that makes the difference between an adequate and a desirable product.

FORMATTING

With everything connected and hardware configured, the next job is to run the software and set the drive to function in the way you want it. If you are not used to hard drives the sequence of partitioning and formatting will seem a little long drawn out and complicated, but remember that a hard drive is much bigger and more complicated than a floppy and must be preparedlike this. The density of data on a hard drive is much greater than a floppy so the preparation routines and installation must be designed to check and verify diligently.

So once you have run the software and set the drive the way you want, it's simply a case of powering up the Amiga and letting the A500+ Autoboot.

THE VERDICT

GOOD

- ▲ **Size.**
- ▲ **RAM Expansion.**
- ▲ **Gamers Switch.**
- ▲ **Documentation.**

BAD

- ▼ **Does not attach to A500, just slides in.**
- ▼ **If an A500 was lifted with A500+ in situ, the connector could be damaged.**

PUTTING THE BOOT IN

It is at Autoboot that most new Amiga hard drive owners hit their first hiccup. It's OK using serious software on a hard drive machine, but games generally see the hard drive Autoboot and curl up their toes and refuse to run.

The technical reasons why they do this are for another arena, but suffice to say, it is infuriating when you spend more than £30 on *Revenge of the Bad Splurgy Space Things* to find that you have to rip out your hard drive for the thing to run.

Not so with the A500+. The switch on the cover is a clever little device that allows you to disable the hard drive Autoboot routines while retaining the use of any extra memory in the A500+. After reviewing several Amiga A500 hard drives, it's a nice change to be able to go from utilities to games at the flick of a switch instead of needing major surgery on the machine.

DIRTY HANDS

For people who like to do more than simply buy and use a product and need to get 'dirty' either programming or adding hardware modifications the last two chapters of the manual will be of special interest.

Chapter six offers a programmer essential documentation on accessing and utilising the features of the drive. Chapter seven is a series of schematics and plans of all connectors and interfaces and contains a complete Technical Specification.

The A500+ is a good hard drive for the A500. It has features above and beyond many of its competitors. The manufacturing quality is good and it matches the A500 in size, shape and colour.

"Attention to detail and good concise instructions make the difference between an adequate and a desirable product..."

You do not have to fiddle about removing the A500+ whenever you want to play games and the quality of documentation is good. The manual is simple to understand and concise. An added bonus with the review model is that it was sourced at Ladbbroke Computing. When we telephoned for help and information the quality of information and technical support was exemplary. If you are going to buy a hard drive for your A500 you must consider this one. ■

The A500+ is available from Ladbroke Computing in Ormskirk Road, Preston. Telephone: 0772 203166
The A500+ costs £529.99 for 52Mb version and £649.99 for 105Mb version at Ladbroke.
These prices are for a bare unit, but Ladbroke can RAM cofigure them up to 8Mb in increments of 2Mb. Prices on request.

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Judge orders bank accounts to be frozen

THE NET TIGHTENS

As the first legal moves are made against Watson and Gold by *Express*, and a strong link between Müller and Gold emerges, we re-cap on the story so far. Next week, the investigations should conclude...

A few months ago, John Gold advertised *Door To Door*, a route planner for the PC and Amiga produced by an organisation calling itself Geographic (Dept Transport Studies). A lot of money was banked by the people behind Geographic, a lot of customers were left dissatisfied – they'd either received a flawed product or no product at all.

Complaints flooded into the *Express* office, the telephone number given in the advert ceased to work, and Gold failed to pay his advertising bill. *Door to Door* was clearly rubbish – of all the letters we received, only one was complimentary, and that turned out not to have been written by a real person.

Express traced the woman that Gold had said led his team of programmers: Dr Susan Watson of the Institute of Transport Studies at Leeds University.

Watson initially lied to *Express*, denying that she had anything to do with the project, but she later admitted both financial and administrative involvement with Geographic. She added that she'd lost contact with Gold – another statement that soon turned out to be untrue, according to witnesses.

As reported last issue, the man known as Geographic boss John Gold turned up at Watson's Cranford Place home – the address used in the Geographic adverts – after Watson told us that he had disappeared.

We travelled to Cranfield place and knocked on Susan Watson's door. No one answered although a man fitting the description of Gold given by Watson's neighbours was seen peering through the bay window. When Trading Standards Officer Graham Hebblethwaite visited the house later that day, Watson answered but denied that Gold was there.

Then we found and identified Gold's W registered SAAB, taking its registration number.

ANOTHER FIRM, ANOTHER PRODUCT

At the same time we investigated the doings of a company called Titan. Early last year, this firm produced *Routewise*, a route finding program for the Psion Organiser that bore more than a passing resemblance to *Door To Door.* Titan Computers was run by a chap by the name of Glen Grant-Müller and was based less than a five minute drive from Geographic.

Further investigation showed that the Titan House, Cleveland Road address used by Titan computers – another domestic house – now appears on the electoral register in the name of J and S Downes.

Adverts for *Routewise* were placed in *Express* in January last year and have never been paid for. When Titan applied to Future Publishing, the company behind *Express*, for credit, it did so in the name of E. Dowhyj ... but when we visited the address there was no E. Dowhyj or Glen Grant Müller at Cleveland Road. We were told by the current occupier of the property that Grant-Müller had moved to "somewhere in Queens Road" nearby, but then the trail went cold.

"Watson lied, denying that she had anything to do with the project"

Then we chanced on a stroke of luck. The Saab driven by John Gold turned out to be registered to an Elizabeth Grant-Müller, resident in Queens Road. Another trip to the electoral register confirmed that the person living at the address at which the car is registered is none other than E. Dowhyj. We tried directory enquiries. The number is ex-directory.

NEW DEVELOPMENTS

We contacted *Express*'s finance and legal people to see what could be done. The most effective way, we were told was to take out a writ naming Susan Watson and John Gold as people who owed Future Publishing some £4,500 for advertising, and then take out an injunction that would freeze the bank accounts of the people behind Geographic.

We'd already been given Dr Watson's bank details by one of our readers, but we needed to be able to prove to a Judge in Chambers that the Geographic money in Watson's account might be moved before debts were settled. It's at this point that you, the readers joined in. *Express* paid for several disgruntled Geographic customers to visit solicitors and swear out Affidavits.

These affidavits were then passed on to Future's solicitor, who engaged a London barrister to take the matter to the Central Office in London. We sought a Mareva injunction against the bank account of Susan Watson, and on Friday April 19 the judge granted us that injunction. Watson's bank account was effectively frozen - a Mareva injunction stops an asset being disposed of or diminished in any way by a debtor.

Midland Bank, which holds Susan Watson's account, was notified immediately. Watson had told us that she had paid cheques sent as payment for *Door to Door* into her account – and now any money that remains in that account will stay there until debts are cleared.

On Monday 23 April one of our readers who had been fortunate enough to get a refund from Geographic called the *Express* hotline with details of another account used by Geographic. Brian Hogwood remembered that the refund cheque he received had been drawn on an account in the name of Gold and Watson 'trading as Geographic'.

Time was of the essence, so we immediately applied for an amendment to the Mareva injunction on Susan Watson's account to include any accounts in the name of Susan Watson and John Gold trading as Geographic.

And as the Midland Bank was not prepared to reveal how much cash was in the account that was already frozen, we also sought to extend the injunction so that the Midland Bank was ordered to notify us of the contents of both accounts.

On Tuesday 23 April the amendments to our original Mareva order were granted – and the Midland Bank was enjoined by the court to reveal the contents of any accounts held by Susan Watson, or Susan Watson and John Gold trading as Geographic, within three working days.

This page went to press at noon on Friday 26 April - and we had not yet heard from the Midland Bank.

THE NEXT STEPS

So far, the West Yorkshire Trading Standards Office (TSO) has sent recorded delivery letters to Susan Watson at her home and work addresses, listing the complaints that have been received from people who bought *Door to Door.* According to Mr Attenborough of the TSO, these complaints fall roughly into two cate-

• ***The Exprress investigation begins after we received hundreds of complaints from readers.***

DOOR TO DOOR EXPRESS INVESTIGATES

gories – people who have paid money and received nothing and people who have received a product that does not live up to the claims made for it in the advertising.

So far, the TSO has not received a reply to these letters – nor has *Express* received a reply to the recorded delivery letters we sent to Watson some weeks ago. And Dr Watson refused to comment when a Trading Standards Officer visited her home on April 16th. But the complaints are still rolling in...

Express in working closely with West Yorkshire TSO on the Geographic case, and before next issue goes to press we will be visiting the addresses we have for Gold, Watson and Müller with a Trading Standards Officer in a final attempt to get answers to unresolved issues.

We asked Attenborough what charges Geographic might have to answer, and he told us that Gold and Watson could well face criminal charges under the Trades Description Act – the Oxford TSO is currently looking into the possibilities of initiating such an action and has asked the West Yorkshire TSO for assistance.

"If someone is setting up companies under false names and then disappearing we'd have to bring in the Police . . ."

While the police have been informed of the circumstances surrounding Geographic, it would appear that they are awaiting the outcome of the TSO investigation before considering the case. "If we come by anything more serious - such as fraud or theft - we will pass it on to the police,' Attenborough said.

TSOs work closely with the police, as Attenborough explained: "If it turns out that someone is operating under an alias and is in the habit of setting up companies under false names and then disappearing, we're back in the realms of false pretences and fraud. We'd have to bring the Police in at that stage."

There may well be grounds for disgruntled customers to bring civil actions against Geographic under the Sale of Goods Act, which sets out to protect consumers against companies that provide shoddy goods, but customers would only be able to claim damages in such an action – which would almost certainly be limited to £19.95 in the case of *Door to Door*. The cost of taking proceedings would outweigh the potential gain for an individual Geographic customer. If criminal charges are brought against a company, however, the court can award compensation.

The investigations into Geographic are drawing to a close. In the next issue of *Express* we will be report on the results of the West Yorkshire Trading Standards Officer's visits to the people involved in Geographic. And the Midland Bank will have revealed how much money, if any, is in the accounts that have been frozen.

We are taking further legal advice, and if it turns out that there is money still in the bank, we will explain what disgruntled Geographic customers need to do... ■

JOHN GOLD OF GEOGRAPHIC TRIES TO ANSWER HIS CRITICS

In *Express* 128 we asked John Gold to get in touch - and he did. He sent us a letter. Unfortunately, he was in such a hurry that once again he forgot to put an address or a telephone number on the page.

It is a long, rambling document in which Gold fails to address any of the criticisms about the product he was selling or the service he provided to customers.

● He fails to explain what action he intends to take to satisfy disgruntled customers.

● He fails to account satisfactorily for the absence of the digitised maps that were promised - in the read.me files, their absence was explained away on the grounds of a delay in obtaining Ordnance Survey permission. Readers will recall that the Ordnance Survey copyright department could find no record of an attempt by Gold or Geographic to obtain copyright clearance.

● He fails to justify why the product, as shipped, failed to match up to the many claims made for it in the advertising copy he used to tempt people to buy *Door to Door.*

● He fails to explain why he is not settling his debts - to magazines and their readers.

All Gold seeks to do in the letter is confuse the issue, and snipe at other programs and companies. It makes interesting reading - and is reproduced here in full so that our readers can judge Mr Gold's attitude for themselves...

Re Geographic Door to Door **19-4-91**

We did not order huge artistic graphics in our adverts because the "DTD Database" is in script form. Yet you allow games companies to do this in your magazine. Games that cost over £25 have these adverts but you know that when children open the box and play the game, they are only going to find the same old thing in a different shape and colour.

It is the artist that sells the game, with your help. As you know, full colour page adverts bring in a lot of money for you. It is your lifeline. This I believe is false advertising and if you are honest you know it yourselves.

There are not many children that have asked for a refund from yourselves or other software outlets and got it on the grounds "the advert is better than the goods".

"GB Route" has just over 350 places and none of the smaller roads. You cannot even enter your own data. It also has large "bugs" in it and is not a "routefinder and planner". It is fast but very limited, unless you just love zooming about with the joystick on the graphics. It is twice the price of "Door to Door". How good did you say it was? Just ask users of it - I have.

When "Routefinder" came out, depending on your machine, you could wait ten minutes for it to find a route. Ask users - I have.

All routes in "Door to Door" were taken from maps, if you did not agree with the route you could change it. Try and do that with other routefinders/planners.

And yes, you can go from your home to any other by following the on-screen instructions properly.

The majority of people that I spoke to told me that they were very unhappy with the expensive routefinders that they had purchased. They spoke of "wrong routes", "routes not found", "long waiting periods" and of "useless squiggles of lines on screen" which were meant to help you find your route (ie the graphics).

Everybody that paid for "Door to Door" received it, some much later because they did not reply to our prompt letters asking for their machine type.

The digitized maps were for a limited period in the first two weeks but after the way you have handled this I fear we will have to close and the free maps close with us.

We had huge expenses, digitizing maps and finding programmers for the add-on discs. Now, alas, we must all lose out because you did not go into "Door to Door" and find out what it is capable of.

When dealing with millions of pieces of data, errors can occur and this happens in all software. Hence the need for revision (1) (2) etc. Once again I will say that in "Door to Door" you can correct these errors immediately without waiting many months for the software house to sell you an update.

Ever heard of a program called "Amos"?

Future Publications sell mail order software. Many people sent you their £35.00 and waited a month only to find that the program was still not complete. They then had to pay out more just to make it work "as advertised". True or not? The copyright notice is used by many large software houses such as Gold Disks Pro-Page "Templates" at £42.00 a cheap add-on? You mention us owing money. Robert Maxwell owes hundreds of thousands of pounds to companies that will probably go down the tube, just because he prefers the money in his pocket rather than to pay what is due - we are talking of owing for years. Why not knock on the doors of his friends and associates and get the "Big Story"?

You have tormented and given descriptions and names of people that have had nothing to do with "Door to Door". I think a brave young writer could learn by you publishing this letter. "Door to Door" with its add-on graphics and animation data discs would have ben a superb package at hundreds of pounds. We were offering them at £19.95 and £10.00 respectively.

John Gold

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Aimed at just about everyone from toddler to pensioner, *First Steps* is an integrated software bundle designed to offer a learning package that takes in productivity, applications and leisure.

Included in the pack is an emulator that allows the Amiga to run BBC educational software. Although running BBC software on a BBC must be a waste of the Amiga's potential, it allows access to the thousands of programs already at use in schools

There's Logo too, a graphic and list processing language that uses a turtle to teach drawing on the screen. This version can talk too, allowing it to interact with the user.

Music mouse is a program that allows musician and non musician to produce complex musical arrangements using either the Amiga's internal sounds, samples or a full MIDI orchestra if you fit a MIDI interface and connect it to modules.

Putting prose to paper is handled by word processor *Pro Write*, with multiple font sizes and multi-task ability a couple of its features.

Infofile is a database that comes with templates for many often used methods of storing data including accounts, phone book, addresses, etc.

Artistic ability is catered for with *Deluxe Paint II* and output ot a printer can be enhanced by *Deluxe Print II*

Finally, a couple of tutoring packages offer a more structured approach to the educational side of *First Steps* and the package follows the requirements of the National Curriculum.

We're giving away thousands of pounds worth of *First Steps* over the next few months and to win this week's *First Steps* bundle (worth £500 plus) all you have to do is answer the following questions and complete the tiebreaker. Send your entry on the back of a postcard or envelope to: The *Express First Steps* Compo, 29 Monmouth Street, Bath BA1 2BW to arrive no later than 18 May 1991.

1) In the 1920s the secondary school qualification was:

a) 11 Plus
b) O Levels
c) Matriculation
d) National Curriculum

2) What computer language teaches us to process long lists and was named as a contraction of List Processing?

a) LOGO
b) German
c) Expletives
d) LISP

3) What add-on could you use with a sampling program?

a) A blood sample
b) A sound digitisers
c) A disposable syringe
d) Video Recorder

4) What company is there a little of in all of us?

a) Emerson Lake and Palmer
b) The Gretna Blacksmith's Forge PLC
c) Commodore
d) British Road services

Complete the following in a humorous manner in no more than 12 words:

The bit of Commodore in me is

.....

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Is it worth the £1,300 price tag?

Amiga video titling
Two genlocks compared. How do they stack Up?

New PC fax and modem cards
We review the latest Stateside imports

PLUS
• Hot news
• Front End
• Games Week
• Whole Wired World
• Tech Tips
• Circuit City
• Express On-line
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• Columns for: Amiga, Archimedes, CPC, C64, Macintosh,PC, Spectrum and ST

AND
Two copies of *PC Collection* to be won

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ABC audited circulation July-December 1990:20,204 copies per week
We regret we cannot enter into any personal correspondence. Technical enquiries should be addressed to Tech Tips at the address below. While every care is taken in the preparation of *New Computer Express*, Future Publishing cannot be held responsible for the consequences of any errors that may occur.
• Subscriptions: The Old Barn, Somerton, Somerset (0458) 74011
• Printed by Redwood Press, Melksham, Wilts
• Distributed in UK and Eire by Future Publishing (0225 442244), rest of world by Comag (0895 444055)

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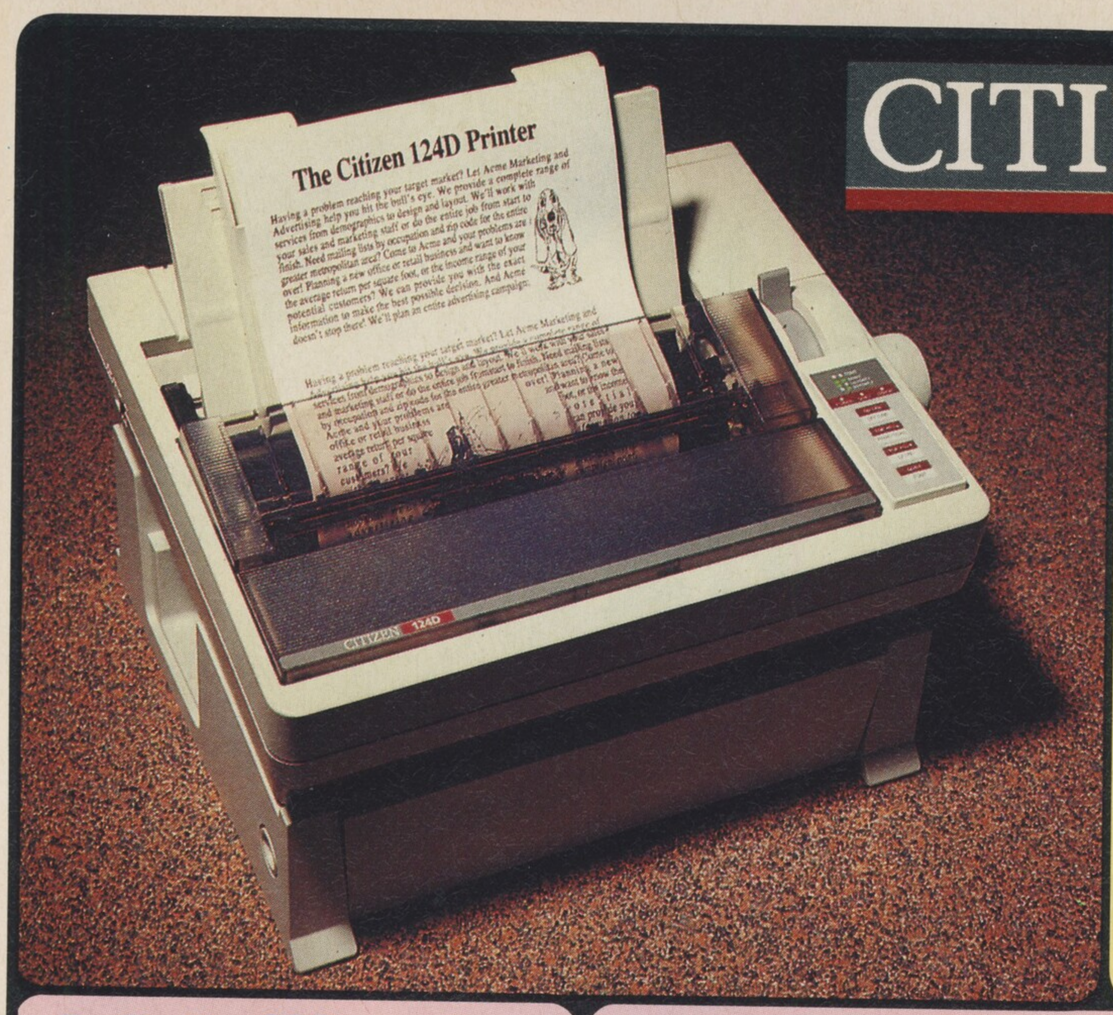

CITIZEN PRINTERS

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!*

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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.

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- *Print Speed 144cps Draft*
- *30cps NLQ*
- *Epson & IBM Graphics Emulation*
- *Pull Tractor & Bottom Feed*
- *Superior Graphics - 240×216dpi*
- *FREE Starter Kit*

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STARTER KIT £29.95
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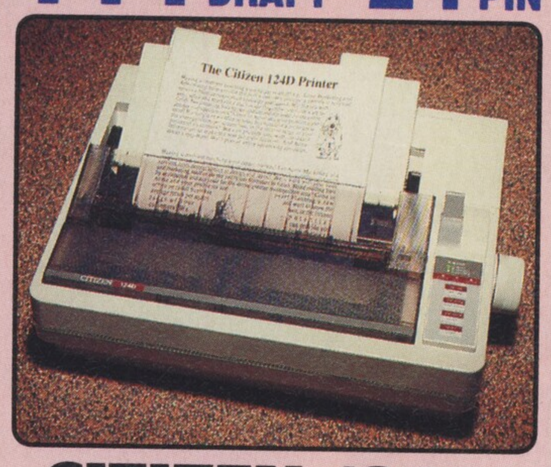
SILICA PRICE: £151.58

£129
+VAT = £151.58

144 CPS DRAFT 24 PIN



CITIZEN 124D

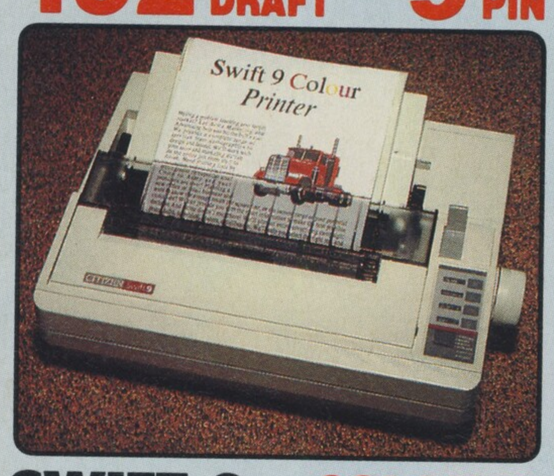
The award winning Citizen 124D brings high quality 24-pin dot matrix printing within every computer users reach. It is the ideal choice where high quality printing is required at a budget price.

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

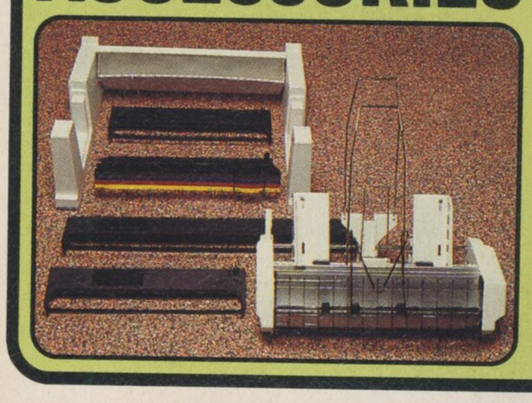
- *24-pin Impact Printer*
- *Print Speed 192cps Draft*
- *4 NLQ Fonts (64cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

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



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PRA 1209	Swift 9/124D	£32.25
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	PRINTER STAND	
PRA 1242	124D/Swift 9/24	£24.03
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RIB 3520	120D/Swift 9 Black	£4.11
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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!

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- *5 Continuous Envelopes on Tractor Feed*

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NORMAL RRP
£29.95

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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".

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Opening Hours:	Mon-Sat 9.00am-5.30pm	Late Night: Friday until 7pm	Fax No: 081-309 0017

To: Silica Systems, Dept NCE 0591-54, 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? .....

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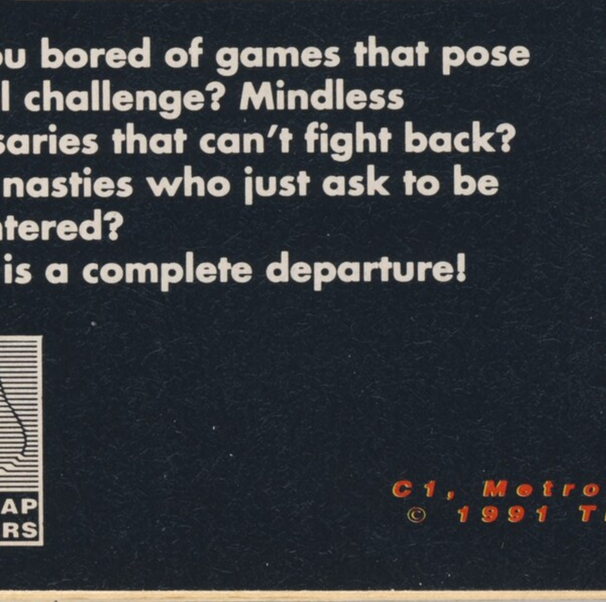
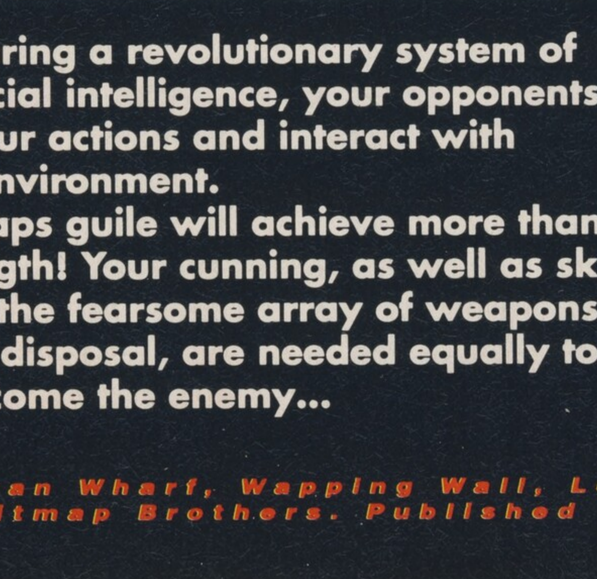
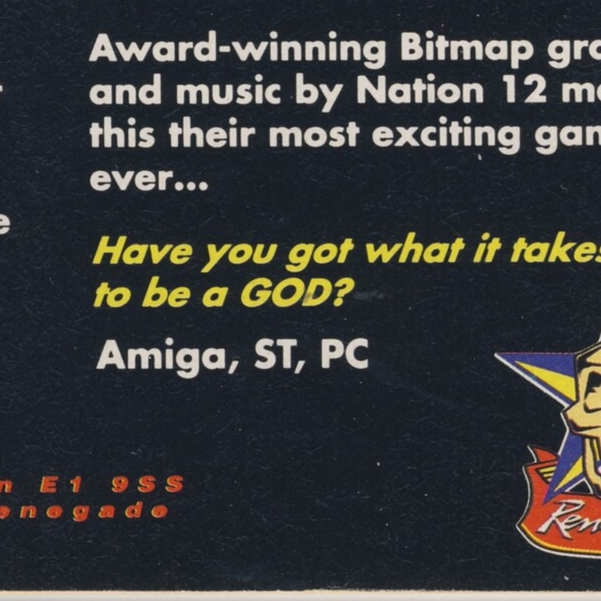
GODS

THE BITMAP BROTHERS







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Amiga, ST, PC

The BITMAP BROTHERS

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Renegade

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- **Add-ons:** don't waste time on the rest. Read about the best
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SOFTWARE: Only the best

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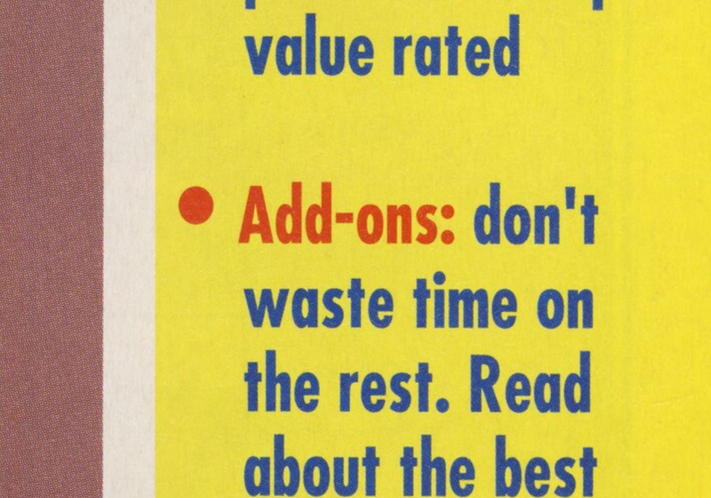

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1 Yr on-site maintenance	£50

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Delivery normally within 7 days, but please allow 28 days.

Welcome to the *New Computer Express* guide to the IBM PC and compatibles.

Within this free supplement to *New Computer Express* there is a fully illustrated, five page guide to building a PC from scratch. Even if you already own a PC you will find this comprehensive walk through an insight into its architecture and uses. If you don't, then prepare to be educated.

Aside from the serious stuff, we have also included a two page guide to the games which raise the PC's profile from a steady, business machine into a fully fledged leisure engine.

Once you've relaxed, you should read about what we consider to be the best in PC software and hardware add-ons currently avaible. Every product mentioned in this supplement is of the highest quality so you don't have to waste your time ploughing through the dross.

Have a good read.

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Tim Smith

CONTRIBUTORS
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Mike Jennings, Helen Kirkhope

future PUBLISHING

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Bath BA1 2BW
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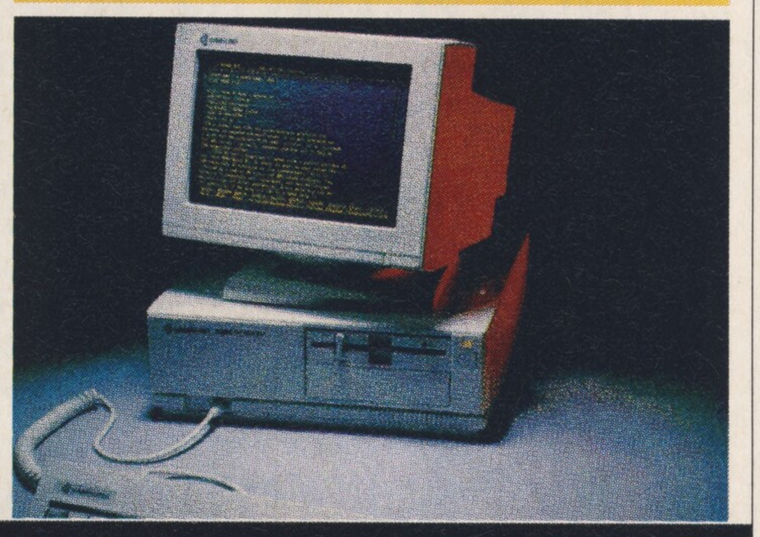
Hardware Add-ons
We pick the best from the following categories: modems, hard disks, keyboards, monitors, pointing devices, printers and scanners
– Pages 4 & 6

Application Software
You want the right programs at the right price. Check out our choice of the highest quality software.
– Pages 20 & 21

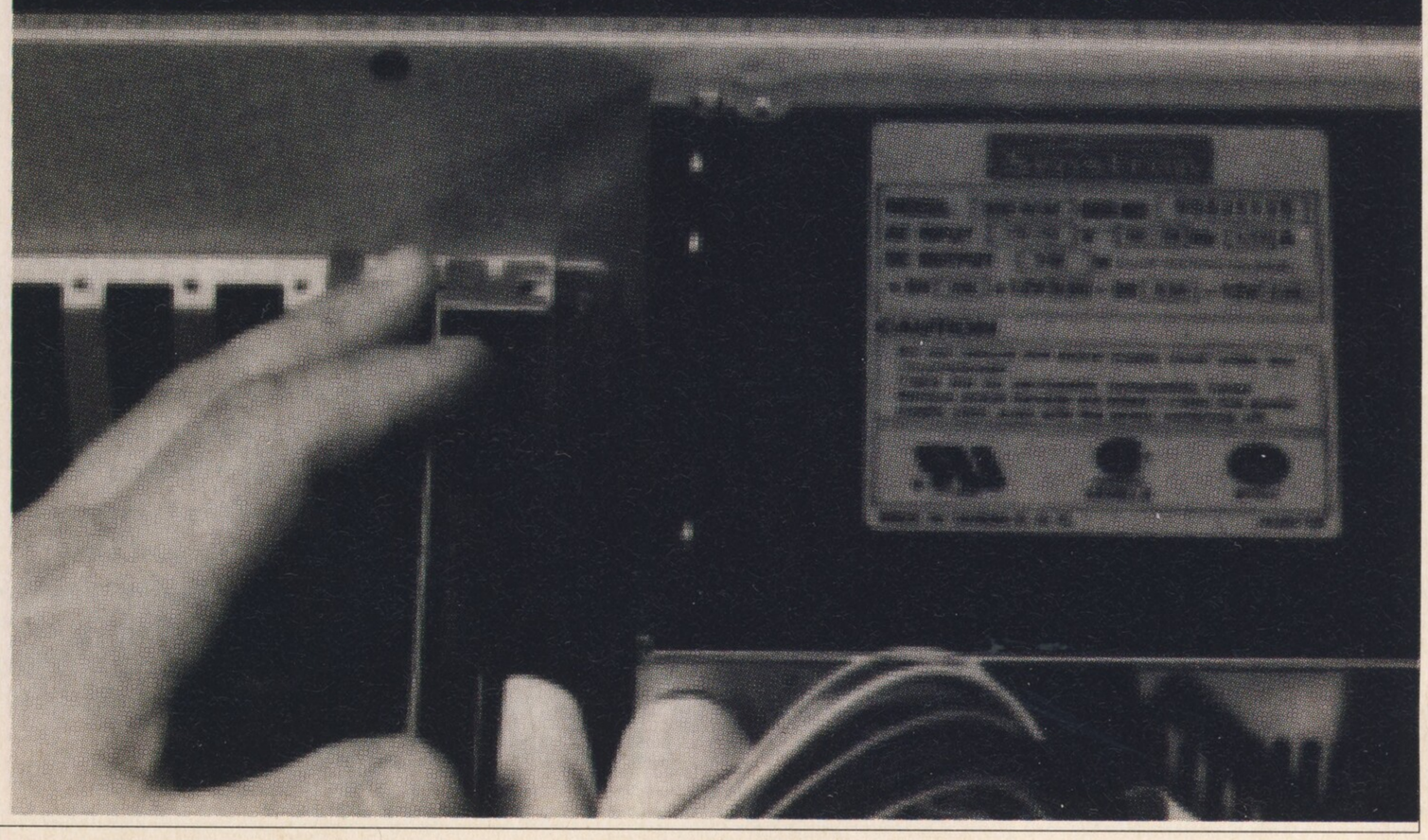
Games
Find out just how well the PC rates as a games machine. We review over a dozen classic slices of software. So make the most of your leisure time.
– Page 10 & 11

WIN!

A £500 Samsung 286 PC. Page 23



BUILD YOUR OWN PC
Creating a your ownPC, to *your* specifications is not as frightening as it might seem. See our comprehensive guide. Pages 15-19



HARD FACTS

The PC can achieve a great many action on it s own, but when it is teamed up with the correct peripherals it is capable of much more. Mary Branscombe rates nine of the best hardware add-ons around.

MODEMS

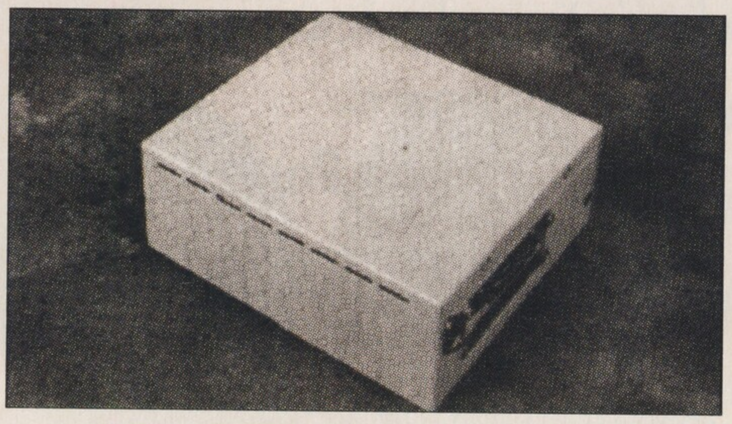
Dataflex Quadcom

Dataflex's Quadcom modem is a half-length card that will fit in the slimmest case. It offers V21, V23, V22 and V22bis support, and a range of speeds that allow you to access Micronet, Minitel, Telecom Gold and most bulletin boards.

It offers built-in MNP Class 5 error correction, which actually compresses a file while transmitting it, reducing the time (and consequently money) you spend on the telephone as well as reducing the need for retransmission. If two serial ports are already fitted to the PC, the card can be set to act as either the COM3 or COM4 port.

Transend software is supplied with the Quadcom, but if you spend another £115 on Bit Software's *Bitfax* program, you can use the card to send faxes, but not receive them. Although the 4800bps (bits per second) supported by the card is far less than the 9600bps of most fax machines, you can transmit in virtually any file format, text or graphics.

Dataflex • £343 • 081 543 6417



HARD DISKS

Most users will get their hard drive when they buy their machine, but if you need to add a hard drive there are three options: External hard drives: These are the ones most people will be familiar with. Small plastic boxes with a disk and read/write heads mounted inside.

Hard cards: you hard drive is mounted onto a card for internal fitting.

Removable hard drives: offer much greater capacity but are correspondingly more expensive.

If you are ever going to need to move large amounts of information between two PCs, most probably from your desk machine to a portable, or vice versa, an external hard drive can save a vast amount of time.

Although it's heavy, you could still put the Megastore hard drive into your briefcase. The drive contains a Seagate mechanism, so it should prove reliable. It connects to the parallel port of any PC and comes with a mains power supply that can use from 90 to 280V and 50-440Hz, so that it can be used in almost any country. The Megastore comes in various capacities up to a substantial 211Mb.

CD 2000 • £349 for 44Mb • 0753 44895

KEYBOARDS

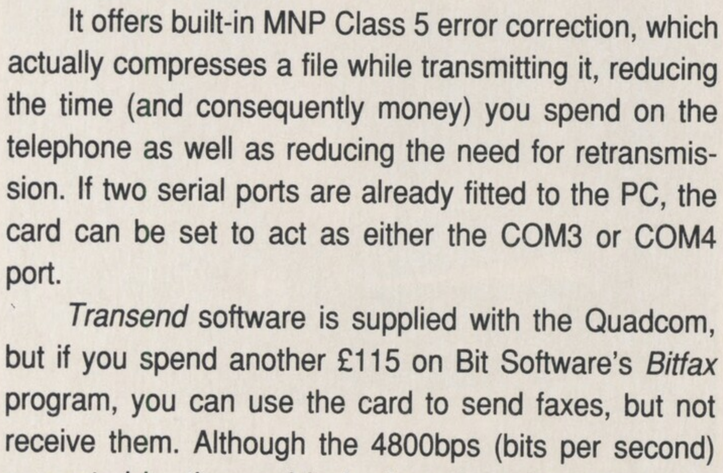
Enhancer 101

The popularity of the Amstrad PC1512 and 1640 was not always matched by the popularity of their keyboards, and the same can be said of many of the cheaper PC-compatibles on the market. There are many replacement keyboards around, offering extra features such as built-in trackballs and solar calculators, but the Evesham Micros enhanced keyboard is more of a workhorse than a novelty product. Although it has only 101 keys rather than the standard 102, this is more than made up for by ease of use and the pleasant key response. The keys give a positive click when you use them, which is generally accepted as an advance on the rubbery action of some keyboards.

If you are connecting this keyboard up to either of the aforementioned Amstrads, then you need do nothing more than plug it in; there is no need to install a new driver on these machines.

Evesham Micros • £74.95 • 0386 765500

MONITORS



Citizen ProCM 14i

Unless you're buying from a bargain basement or maybe a computer autction, you'll usually buy a display with your computer and you may have some choice between standards. If you want to upgrade later, you will probably want a better standard. While Super VGA is not fully standardised, the most important thing to check is whether screen drivers are available for the software that you intend to use with the monitor.

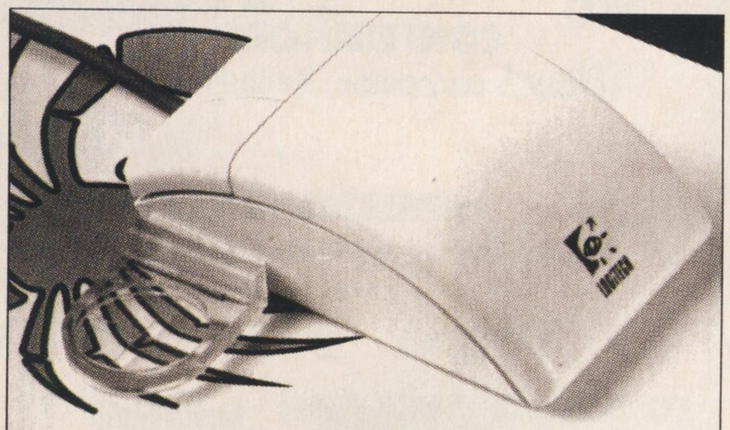
The ProCM14i is a multisync monitor; it checks the signals from the video adaptor card in your machine and adjusts itself to display in that mode. The 14" tube is a Trinitron from Sony, with an anti-glare screen. It is fitted with controls for height, width and centring as well as the more familiar contrast, brightness and vertical hold.

The maximum resolution of 1024x768 pixels is in interlaced mode, which can cause some flickering, but the screen's resolution gives excellent results in standard VGA modes. The shapes of characters are clean and clear, if a little small at 132x44 pixel text mode. The 800x600 mode used for Windows showed up particularly well.

Citizen • 0895 72621 • £650

POINTING DEVICES

Naksha Mouse and Tracey



• Shown here, Tracy and Logitech mouse.

The most useful pointing device I can recommend is a actually a combination of a mouse and a cheap, but not tacky, plotting, and tracing device which goes by the name of Tracey.

It is a perspex moulded device called Tracey which comes with a cross-hair sight that sticks onto a mouse using velcro pads.

Continued on page 6 ➤

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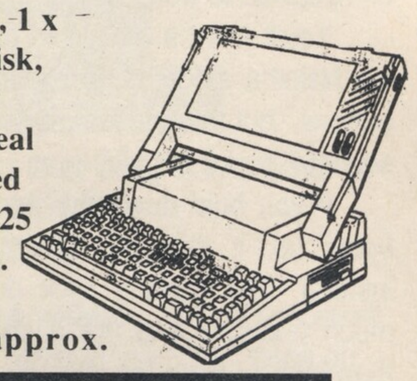

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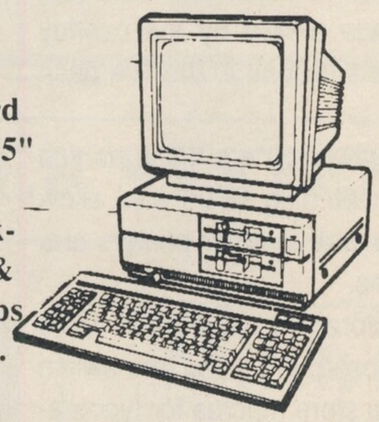

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Space for Internal Hard Disk Drive
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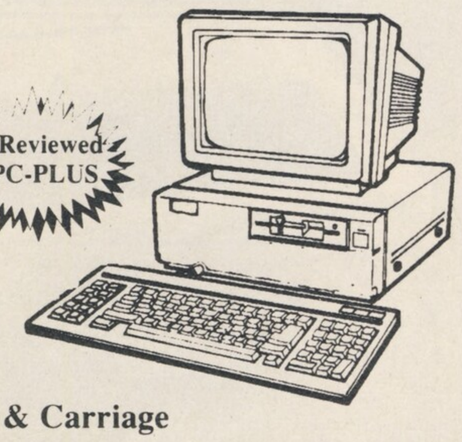
102 Key Keyboard made by EPSON
12" Mono Monitor

As Reviewed in PC-PLUS



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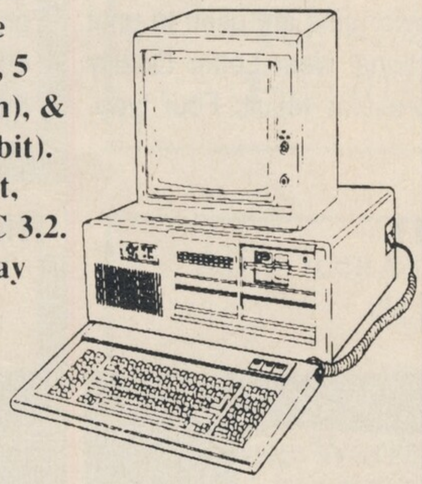

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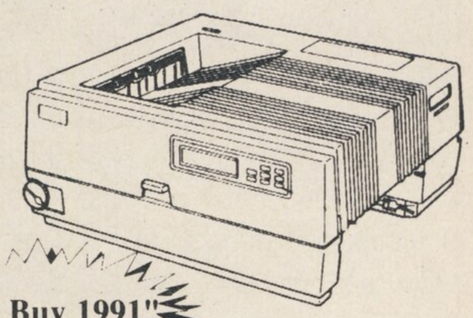

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You use the cross-hairs to trace around designs that you want to transfer to computer, there's nothing more complicated to worry about.

You'll need a mouse in order to use Tracey, and the Naksha model is an excellent rodent. It has three buttons, but the default is to emulate a two-button serial Microsoft Mouse.

If you hold down the third button as the system boots up, it changes to Mouse System emulation instead. The buttons click down firmly, without too much pressure and, for a change, the lead is more than long enough for even the most impressive desk. Leads and converters are supplied to allow you to use the mouse with an XT, AT or PS/2.

The mouse can be used to create custom menus that act as macros for applications, allowing you to program frequently-used sequences of keystrokes into a single mouse click. Another advantage is that the powerful *Deluxe Paint II Enhanced* software is bundled with the mouse. Finally for the extra tidy among you, there is also a 'mouse house' to keep it in.

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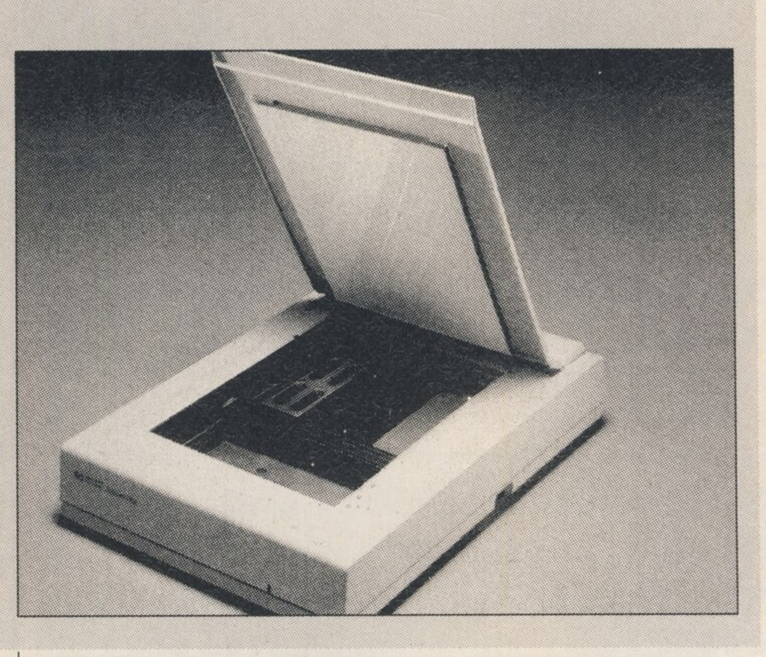
SCANNER/DIGITISER

Hewlett Packard ScanJet Plus

One essential element for good quality desktop published material is graphics. Now, you can either spend hours with paint packages creating your own or you can use Scanners, or the more high-tech digitiser to import ready made images - as long as you get copyright permission of course. The ScanJet Plus has become something of a standard in the world of desktop publishing. Physically, it is small and there are no external controls beyond the power switch. The lid can be removed to fit a sheet feeder for optical character recognition (OCR) work, a distinct advantage in a working environment. The scanner controller board needs Direct Memory Access because the large files produced by even small scans must be saved directly to disk. The controller's default settings will rarely need to be changed, making installation relatively straightforward.

No OCR software is supplied, but most packages will work with the scanner. Scanning Gallery Plus is a Windows-based package, but it comes with a runtime module so that you can use the software even if you don't have Windows on your machine. It will set the scanner to 75, 150 or 300 dots per inch (dpi). The Custom option will use internal algorithms to create image files with much higher resolutions, up to 1500dpi. Images can be previewed to select the scanning area and the resulting image can be cropped, cut or pasted. Files are produced in the standard TIFF (Tagged Image File Format) format.



Hewlett Packard • £1,199 interface • £450

24 PIN PRINTER

Panasonic KX-P1123

Although the design of this printer is far more traditional than that of the Star LC-200, it offers many similar features. Most of the printer's functions are controlled from five touch-pad switches on the front panel, rather than from more standard, and incredibly fiddly, DIP switches, which on other printers can be found lurking within the casing and require either tiny hands or skill with tweezers equal to most consultant surgeons. Again, a bank of LEDs guides you through the initial setting-up and installation of preferences. Combinations of font, pitch, form length, enhancement and margins can be stored in non-volatile memory as macros.

Happily if you make a mistake or get lost, you can return to the original factory settings at the push of another button. Five typefaces are supplied: Draft, Courier, Prestige, PostScript, Bold and Script. The print quality is very good, and quiet mode can hush the printer up to a considerable extent.

The paper handling is another good feature; the printer offers auto paper feed, continuous paper park and a perforation cut mode, where it advances the perforation line to the tear bar and then returns to the top of the page to print.

Panasonic • £340 • 0344 853388

9 PIN PRINTER

Star LC-200

Even the design of this slimline printer is unusual, with more curves than you usually find around computers. Setting the printer up is made simple by the overlay cards provided to give further functions to the five push buttons on the front.

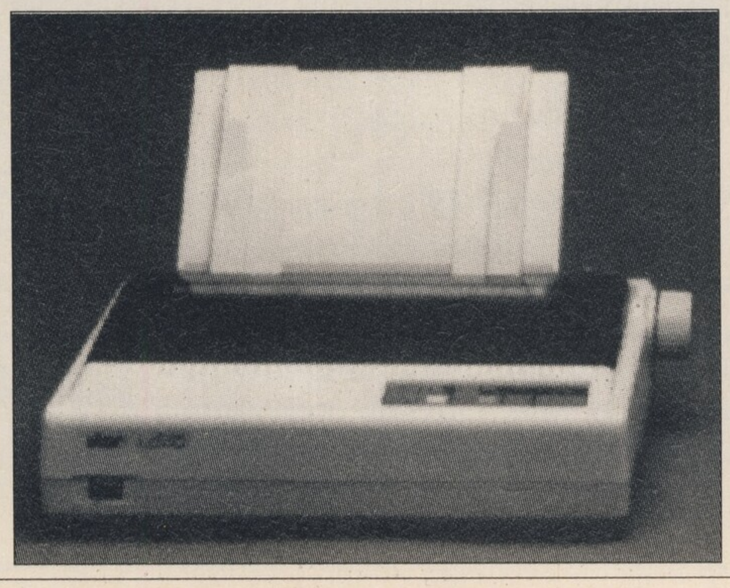
Indicator LEDs tell you what you are doing as you follow the tables in the manual. The LEDs also allow you to control all the settings that, in other printers are, assigned to fiddly DIP switches.

The settings are then stored in non-volatile RAM which means that you don't lose them when you switch the machine off. You can also store macros for typography settings, to make operation even simpler.

The ribbon comes in a cartridge which fits onto the head carriage. And with a bit of ribbon changing, the LC-200 can print in up to eight colours. The push-feed tractor doubles for pull-feed, which obviously allows for an additional paper path.

The high speed draught printing option is defined as a 'quiet' mode, because fewer pins are used to print the characters, while bi-directional Near Letter Quality (NLQ) print produces an impressive result. Four typefaces are provided.

Star • £298 • 0494 471111



LASER PRINTER

Hewlett Packard LaserJet III

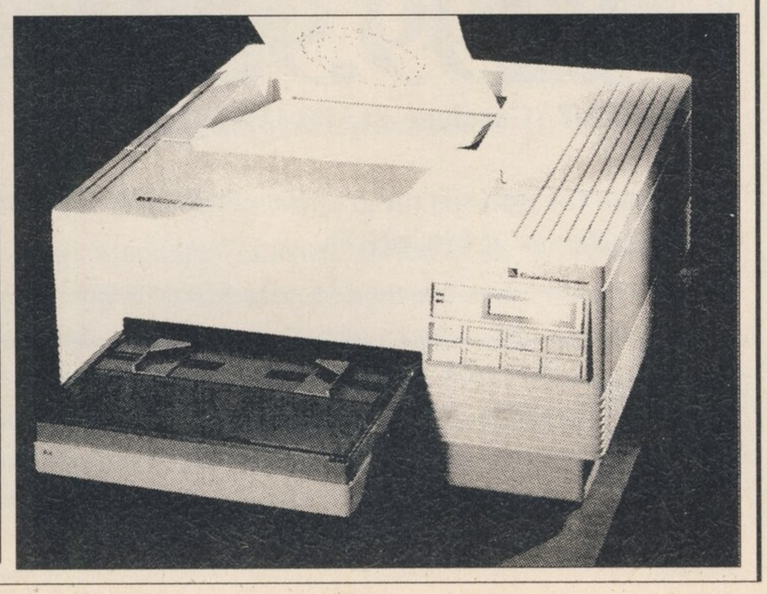
Hewlett Packard's presence in the laser printer market has always been strong enough to make its Printer Control Language (PCL) a standard in page description languages which can compete with PostScript.

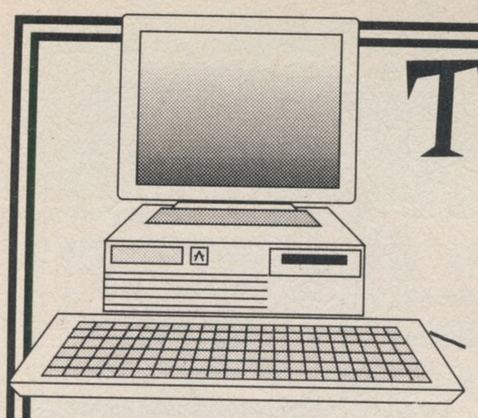
To complement the Courier and line printer bitmaps supplied, the Laser Jet III offers two scaleable fonts, Times and Univers, which comes from Agfa Compugraphic. More fonts can be added in bit-map and scaleable forms.

1Mb of memory is supplied as standard, rather than you having to fork out for an expensive RAM upgrade. PCL 5 is the control language used by the printer and this is integrated with the HP-GL/2 graphics language to provide effects like font rotation.

Perhaps the most interesting aspect is the Resolution Enhancement Technology (RET) that smooths out the jagged, bitmapped looking edges, or 'jaggies' as they are known, which appear on text and graphics. RET achieves this by modulating the printer's laser beam to fill in the jagged edges of diagonal lines and curves, producing visibly smoother lines than other 300dpi laser printers.

Hewlett • £2,294 • Packard 0344 360000 ■





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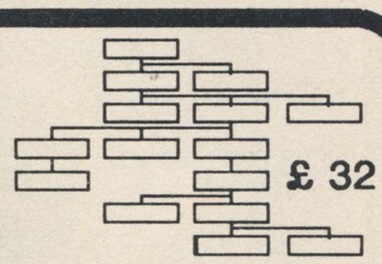

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GET THE MEASURE

PC games guru, John Minson, gives his recommendations for the best MS-DOS compatible entertainments of all time.

Until recently it seemed that PC compatibility stopped short of games. Although IBM never designed the machine with leisure in mind, mutations and modifications over the years mean that it can now compete with Amigas and STs and at last PC games sales are starting to take off.

Today's software is pushing the computer's capabilities to the limits and to run the most advanced examples you'll need a reasonably powerful specification. To sample the best in PC games you should have at least a 286 processor and be prepared to devote up to 10Mb of hard disk space space to entertainment; as graphics become more elaborate they eat up Winchesters!

To enjoy those graphics you'll also need a Video Graphics Array (VGA) display. There was a time when 16 colours were standard but now publishers such as Sierra and Access are producing stunning 256 colour versions. On the sound front you're hardly likely to be satisfied with the standard PC's beep. For that fully synthesised aural accompaniment invest in a sound card.

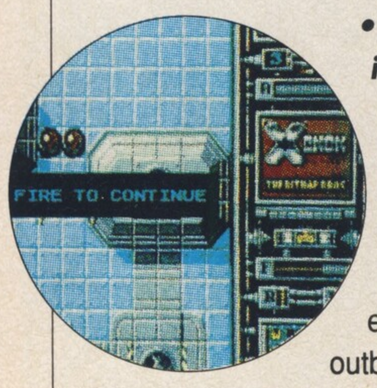
• Giving it stick. Not all games can be played with the keyboard, so see our recommendations

At £189.95, the Soundblaster (from Software Circus, among others) is a reasonably priced enhancement which is well supported by publishers. However for truly symphonic effects look to electronic instrument manufacturer Roland's LAPC-1 which provides a 32 voice synthesiser and, with the addition of an adaptor, MIDI capabilities. The one problem is that at £379 it's more of a serious musicians tool than an add-on for the occasional gamer.

Though some games are playable with the keyboard and there's often a mouse option, the ideal way to enjoy lightning-fast arcade games is via a joystick. That means dedicating another slot to its interface card. While these are essentially the same, buying one with some form of hardware adjustment for processor speed is advisable.

Choosing a stick is more difficult. Everyone seems to prefer different sizes of hand-grip and stiffness of response. There are plenty of cheap and cheerful models around but my personal choice is the superb Gravis (£49.95) from RC Simulations. It's quite expensive but is incredibly robust, though not well suited to left hand play. If you're seriously into flight simulators a good yoke shaped stick adds incredibly to the experience of computer piloting. The Zoomer (£59.95), also from RC Simulations, has a great feel and includes a sliding throttle for use with Microsoft Flight Simulator.

ARCADE ACTION
(It's not just for the kids)



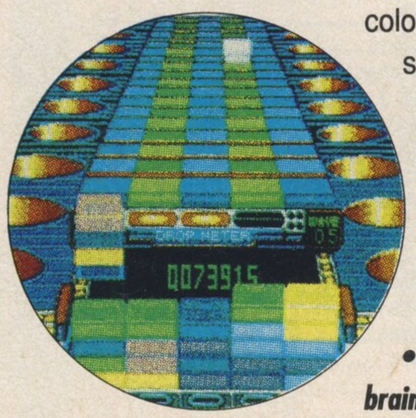
• Hard day at the office? Try relieiving the tension with **Xenon . . .**

While fast-blasting, arcade action may not be a top priority for many PC owners, there's no denying the cathartic effects of an adrenalin-pumping outburst after a day at the spreadsheet. Fortunately the ultimate in shoot 'em ups have both been re-issued at budget prices, making them cheaper than psychotherapy for the stressed PC owner.

Xenon (16-Blitz/Virgin Mastertronic : £7.99) and its sequel *Xenon 2*: Megablast (Mirror Image/Mirrorsoft : £9.99 : Release. May) are by ace programming team, The Bitmap Brothers who have a happy talent for perfectly balanced playability. Though the scenarios are simple - shoot everything and enhance your craft's capabilities with power pills which you collect as they float down the screen - the action is unbelievably addictive and the graphics are truly out of this world. Of the two, Xenon is slightly easier.

For a more relaxed arcade game, no collection should be without *Prince Of Persia* (Domark/Borderbund : £29.99). Again the formula is simple; it's the traditional exploration and mapping game set in a dungeon. What makes *Prince* a crucial purchase are its lush graphics and superbly smooth animation. As the athletic hero clambers between platforms or realistically skids to a halt, you can empathise with the action. Intelligent and addictive.

There's been a recently cult for abstract arcade games since *Tetris* (unfortunately currently de-listed). In this genre *Klax* (Domark) reigns supreme. Form vertical, horizontal or diagonal lines of coloured blocks as they spill off a conveyor belt. But I refuse to recommend it. It's dangerously addictive and you could spend hours playing it.



• . . . or you could test your brain with **Klax.**

ADVENTURES
(Take courage!)

Among the earliest computer games, originally played on mainframes, were adventures. Though these text based tests of mental agility have become something of a specialist cult in recent years no collection should be without at least one example of the historic Infocom series, now re-released at a budget price by Virgin/Mastertronic (£9.99). Despite their lack of graphics, the ingenuity of the plots and often hilariously irreverent humour make them classics. *Hitchhiker's Guide To The Galaxy* is a perfect though maddeningly lateral example.

• Wonderland makes technology count in a tested format

Last year Britain's Magnetic Scrolls breathed life back into the genre with *Wonderland* (published by Virgin/Mastertronic : £34.99), a superbly evocative adaptation of Lewis Carroll's classic. An ultra-friendly windows environment, automatic mapping, icon and menu control for common commands and stunning illustrations made this my PC game for 1990.

Another method of popularising adventures has been to turn them into animated, mini-movies. In this field Sierra reigns supreme. The most recent releases (*King's Quest V*, *Space Quest IV*) dispose of typed commands altogether and appear to have maintained complexity despite purely icon control.

Every collection should have at least one Sierra game (£24.99-£44.99), the question is which one. That will depend on your interests as the company has developed several long-running series, from the high fantasy of *King's Quest* through the procedural *Police Quest* to the hilariously salacious adventures of luckless lothario *Leisure Suit Larry*. If you've got a VGA system make sure you buy the correct version of the latest releases; the 256 colour graphics, digitised from original paintings are amazing!

• King's Quest V comes from an excellent series. So just because you've finished one dosen't mean it's all over.

RE OF PC LEISURE

SIMULATIONS
(Flying, driving, and operating)

• Makes you feel quite Woosie! PGA Tour Golf.

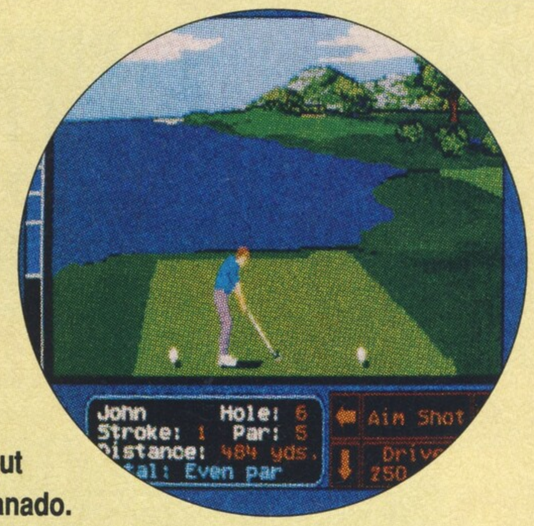
Programmers seem to have attempted simulations of virtually every human activity. However the most common subject is still flying an aircraft and the crucial example is the best known, version four of Microsoft *Flight Simulator* (£45). Though the cockpit is simplified into a generic layout there's no shortage of other details, from views of the plane to realistic cities. Aircraft performance is also accurate and you can fly a number of types, from Cessnas to private jets, or even design your own. Add-ons include alternative landscapes from around the world and more planes, including a 747. Flight Simulator provides the ideal balance between accuracy and accessibility for the desk-bound pilot.

• The computer sim of the MiG -29 now it's your turn to play the filthy pinko Russikie in his porky aircraft. (no offence)

One area in which Flight Simulator is lacking is combat. This is best left to dedicated programs, of which several are highly recommended. *Falcon* (Spectrum Holobyte/Mirrorsoft : £34.99 CGA; *Falcon* AT EGA £44.99) is a classic F16 simulation which is about to appear in a new version with superb VGA graphics and the ability to network with other Spectrum Holobyte military simulations to create a multi-player 'electronic battlefield' (*Falcon Mk 2*; £tba) . *F-19* (Microprose : £39.99), is a simulation of the Stealth fighter, first released when the plane was under wraps, and also due for an upgrade in the autumn. The nature of Stealth flying means that combat can be rather infrequent if you're doing your job properly, so dogfight enthusiasts (you bloodthirsty things) may consider the same company's excellent *F-15 Strike Eagle II*.

It must be your round old thing!

Almost every sport imaginable has been converted into a computer program at one time or other. However certain subjects seem to defeat programmers. For example, I've yet to see a wholly successful conversion of motor racing, for example. Luckily for anyone who sat through the late nights which lead to Wosenham's US Open victory and were dieing to have a go yourself, there has recently been a revival in the fortunes of golf games with no fewer than three good releases. Each can be highly rated for different reasons. Accolade's *Jack Nicklaus Unlimited Course and Golf Design* (£39.99) allows you to create your own links while Access' Links (via US Gold : £39.99) looks superb in VGA but even on a 286 the scenery takes forever to appear and there's too much

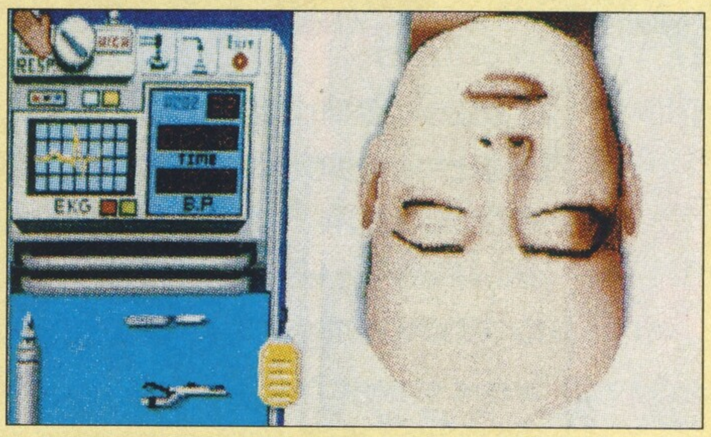


• While left, Jack Nicklaus desings and plays a round

detail for all but the real afficianado. This leaves Electronic Arts' *PGA Tour Golf* (£24.99) to come in first as a general interest, extremely playable simulation. Even if you don't play in real life, or if you don't get the time you could become hooked on the computer version.

Scalpel, suture, mouse mat?

Finally, all but the squeamish should try the oddest simulation available. *Life & Death II* (Mindscape : £29.99) is as accurate a version of brain surgery as you'd wish to have on your PC. From diagnosis to diving in with a scalpel, it's as fascinating as a TV documentary.



• Let me through, I'm a doctor! it's a matter of Life and Death (from Mindscape that is).

STRATEGY
(Just like Rommel?)

The PC is well served with traditional board and strategy games. There are inevitably several version of chess, of which the most attractive for the casual player, if not the hard core purist, has to be Electronic *Arts' Battle Chess* (£24.99) with its animated playing pieces. Of the other traditional games Software Toolworks' *Games People Play* (£29.99) is a useful compendium of draughts, backgammon, gin rummy and cribbage.

Word game enthusiasts must have a copy of *Ultimate Scrabble* (aka the spelling checker strikes back) on Virgin's Leisure Genius label (available soon at £34.99). Wargaming was radicalised by Rainbird/Microprose's *Universal Military Simulator* and *UMS II*(£39.99) which manage to be playable but contain depths which most recreations omit.

The most exciting developments in strategy games recently have been the 'god simulators' which put you in charge of a complete planet. *Populous* (Electronic Arts : £24.99) is a game of divine intervention in which you attempt to sway events on earth in you direction. A design of classic simplicity it's also beautifully presented.

For a different approach to world management, try either of Maxis's superb programs. *Sim City*, published by Infogrames (£29.99), sets you the task of developing communities for a growing population. Ocean releases the sequel, *SimEarth* (£39.95) which takes the challenge a step further; the canvas is a complete planet, the time-scale millions of earth, as you try to establish conditions in which intelligent life can develop.

Both games are beautifully presented and elegantly designed and programmed. *SimEarth* can even be played non-competitively; you create a world then watch as it evolves. In this respect it might be considered the first true example of New Age software.

• Today Dunstable, tommorrow the world! Sim Earth, well if it's good enough for the Mac it's good enough for the PC.

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It's all very well us going on about how good all these games are, but how do you get hold of them?

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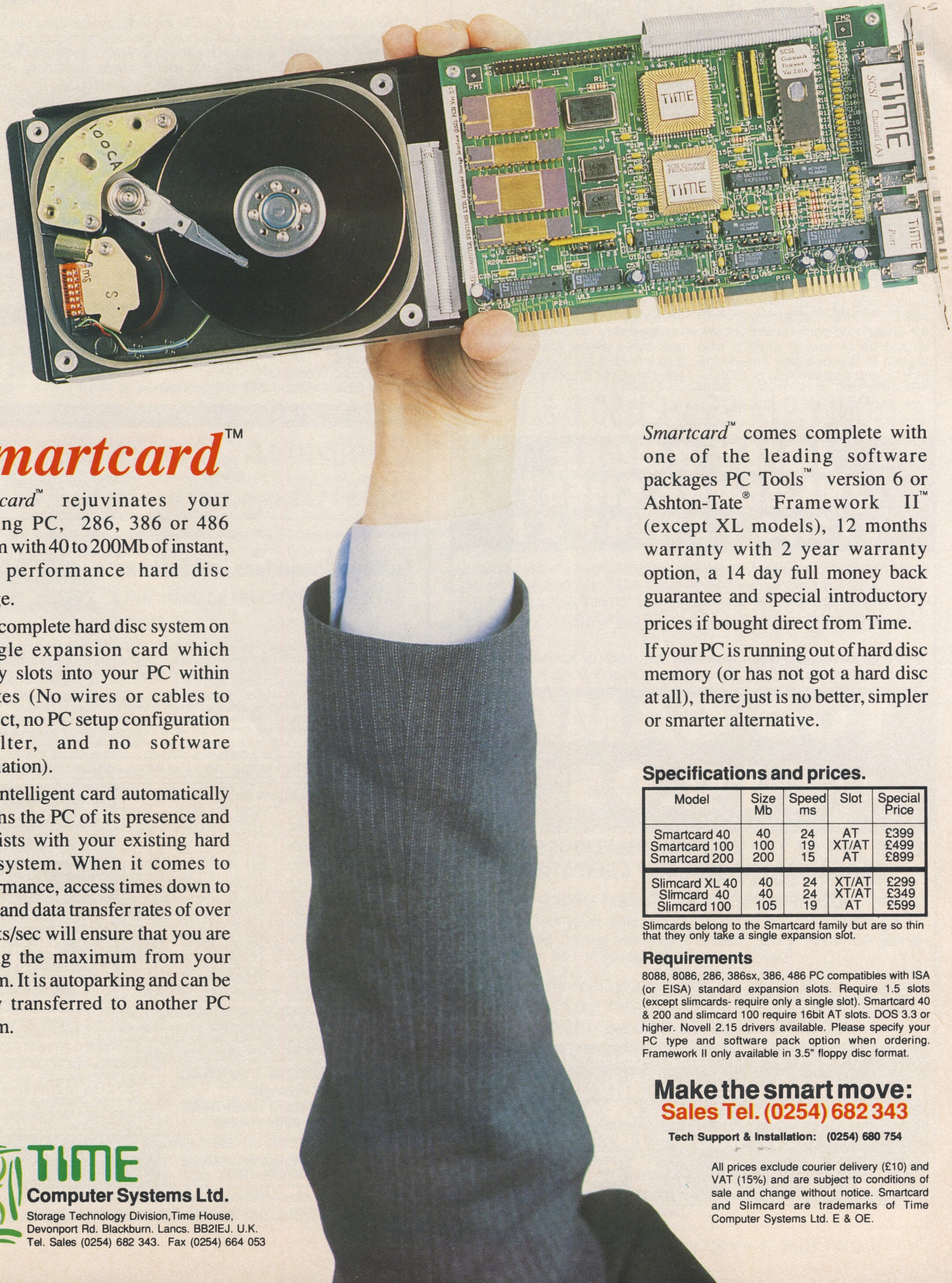

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Slimcard 40	40	24	XT/AT	£349
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AS EASY AS ABC

Keith Pomfret was told to build a PC which would stand up to the rigours of weekly magazine life. This is what he came up with...

We decided that we wanted another PC to supplement the office workhorses. We have a couple of PCs that are put to a variety of uses. There's a tired and elderly Opus IV XT, and a rather splendid Goldstar 386 . As we were impressed with the Goldstar, we went back to Silica which recommended DFI, a company specialising in PC components.

Rather than build everything from the ground up, we chose to buy a case that already contained a suitable power supply. As the whole kit had come from DFI we didn't have compatibility problems but nonetheless, it was worth half an hour to check the inventory of components when they arrived and make sure that everything was there. It was, so we could go ahead with the build.

When you're building a PC, it's worth keeping a running diagnostic check on your progress. The components can be tested as they go in and if you work that way, if you encounter problems you'll be sure which component has failed without having to take the completed PC apart. When preparing the parts for the build, take special notice of any connectors which are symmetrical and can be connected both ways round. Also look out for connectors which are similar.These too can cause confusion if you connect them wrongly.

BACK TO BASES

The base unit we selected falls into the category of medium sized footprint. . The solid metal case opened to reveal a reinforced cage containing a 200-watt power supply, two disk drive bays, an expansion card bay that would allow up to eight expansion cards, and all the necessary cabling and switchgear.

The rear of the cage held a port bay with room for two parallel ports and two serial ports, and a meaty cooling fan to douse the power supply and hard drive unit with cool air. A keyboard port, 110/240 volt mains converter switch and external power supply for the monitor complete the rear panel.

The clean-looking front panel of the case had space for 3.5 and 5.25 inch drives, a power switch, a reset button and a turbo switch. Next to the inset push switches was a keyhole for the security key.

HELLO MOTHER

The motherboard of the new Express PC had to be something a bit porky so we settled for a 386SX motherboard with 4Mb of on-board memory. The 4Mb installed on the board left room for another 8Mb in the SIMM slots already on the board.

Further expansion was coped for with eight slots, of which five were 16-bit and three were 8-bit. A maths co-processor was not fitted, but then we reckoned the 25 MHz 386SX was probably quite fast enough for anything we were likely to throw at it.

A late decision to add more memory on a board that could be moved from machine to machine simply saw us installing a 4Mb MegaLITH high speed 16-bit board. Plugging it into a spare 16 bit slot and configuring it to the system, we then used the straightforward install software and user manual took the guesswork out of what can easily become an arduous task.

DRIVING FORCE

Our new office PC would have to cope with disks sent from a variety of sources - so at the least, it would need to be equipped with both 3.5 and 5.25 inch drives. One of the main uses of the machine would be comparing software so it had to have a reasonable hard disk too.

The hard drive we chose was a compact Kyocera 40Mb unit with a fairly pedestrian 28 milliseconds (ms) access time. The 3.5-inch was from JPN and the 5.25-inch model was a Sanyo unit, also badged JPN.

LOOKS GOOD

As a reviewing machine, the PC needed to handle as many graphics standards as possible. We chose 16-bit super VGA, and installed a VG-5000 card which offers VGA, EGHA, CGA, MDA and Hercules graphics modes.

Finally, the most important part to us was the keyboard. Hours of use stretched into the future of this unit. DFI's offering was a full-sized AT-style keyboard with adjustable height and the fairly standard coiled cable that made it possible to set it down at a reasonable distance from the main case. The general consensus of *Express* staff was that it was a good keyboard marred only by a spacebar that felt a little tacky and lightweight.

SETTING TO...

The *Express* PC build went quite smoothly, thanks to good information and instructions provided with the various constituent parts. If you source your parts from several places or second hand and don't have the necessary instructions, expect to have a more traumatic build up than we did!

The screws, extra necessary fiddly wires and connectors came in a single polythene bag that meant that each had to be taken out and tried in its location in order to ascertain that it fitted.They all did, and there were more than we needed.

It's a wise move to locate every single screw, fastening and fixing and to check that they are all a good fit before diving in and assembling components. Some seemingly similar screws have a different pitch of thread, and forcing them into the wrong hole can lead to a bodged job - or even a damaged component.

Once everything had been checked, the white miniature posts used to attach the motherboard to the case were fitted, taking care to check that their positions matched the location slots in the cage. Once secured, the necessary power connection was made, then we waved a multimeter over the motherboard to check the circuits for integrity and continuity.

The two floppies and the 40Mb hard drive went in next with the 5.25 inch floppy sitting in the drive bay and the 3.5 inch floppy going vertically into its own slot.

A controller card was slotted into the motherboard, then connected to the drives via ribbon cables. We noticed that the drive connectors were symmetrical and it could have been easy to get them the wrong way round, so special care was taken to be sure that their polarity was correct.

• ***One PC and a whole heap of components. We show you how to turn the latter into the former.***

Then it was time to add video and memory cards to the expansion slots. The only problems encountered here were of configuration rather than of fitting, but by closely following the provided instructions, avoided them.

The motherboard we chose has its memory in SIMMS (single in line memory modules) and these stand proud of the motherboard far enough to foul the full length of some of the expansion slots, although there was still room for three-quarter length cards in the affected slots.

With three of the 16-bit expansion slots on the motherboard filled, there were still two spare 16-bit slots and 3 8-bit slots, so we were confident that there was room for plenty of expansion before we completed the hard work by putting the case back on and connecting the keyboard and a monitor.

Unlike buying a PC from the shop, the DIY PC doesn't come complete with suites of installed and configured software, and anything other than the most basic of diagnostics and utilities has to be bought separately. We chose MS-DOS.

SO HOW MUCH DOES IT ALL COST?

The price of building your own PC will vary, depending largely on the specification of the machine that you choose, but also on how much shopping around you are prepared to do.

A budget, single-floppy-drive, mono XT built from parts sourced from computer fairs and the small ads in magazines could be put together for as little as £140, while the parts bill for a fully-specified 386 could well run into the £1,000s. The important thing to bear in mind is that by building your own machine, you will end up with the computer you want at a price you can afford - and can start with a machine that offers you the upgrade path you will need.

Building you own PC will generally prove to be cheaper than buying a machine with a comparable specification 'off the shelf', and the knowledge you gain will stand you in good stead for further building projects or upgrades.

AS EASY AS ABC

We took the easiest route available - and got all the components we needed from one company, DFI, rather than shopping around. Still, we saved £350 and avoided incompatibility problems.

THE ESSENTIALS AND WHERE TO GET THEM

The kit we used for the *Express* PC build was produced by DFI, and is available from Silica (081-309 1111) at the following prices (Ex VAT) :

386-25-UN-E motherboard	£749
VGA 5000B video card	£179
Megalith 4Mb memory board	£129
MIG 400 series/parallel/drive interface	£50
5.25 inch 1.22Mb floppy	£89
3.5 inch 1.44Mbfloppy	£65
Keyboard (AT 102 key)	£69
Case including card cage, 200w power supply, switchgear and all the required cabling	£93
TOTAL (INC VAT)	£1,672

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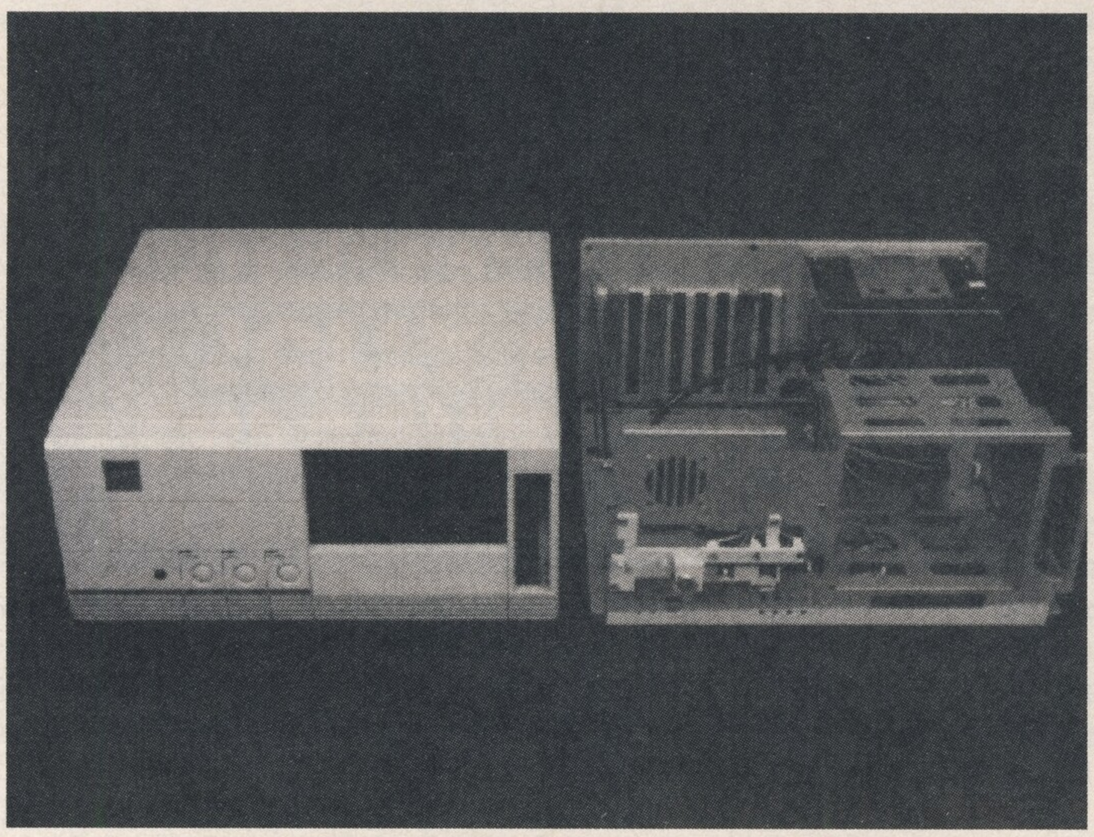
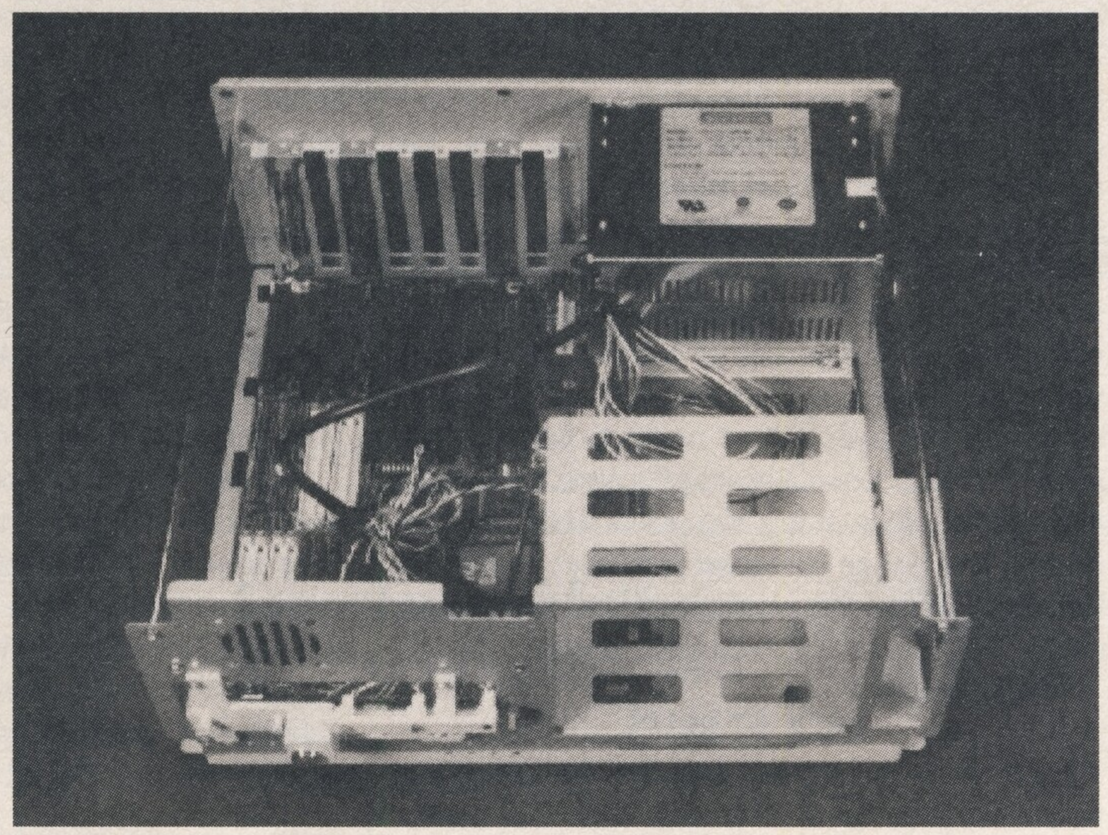
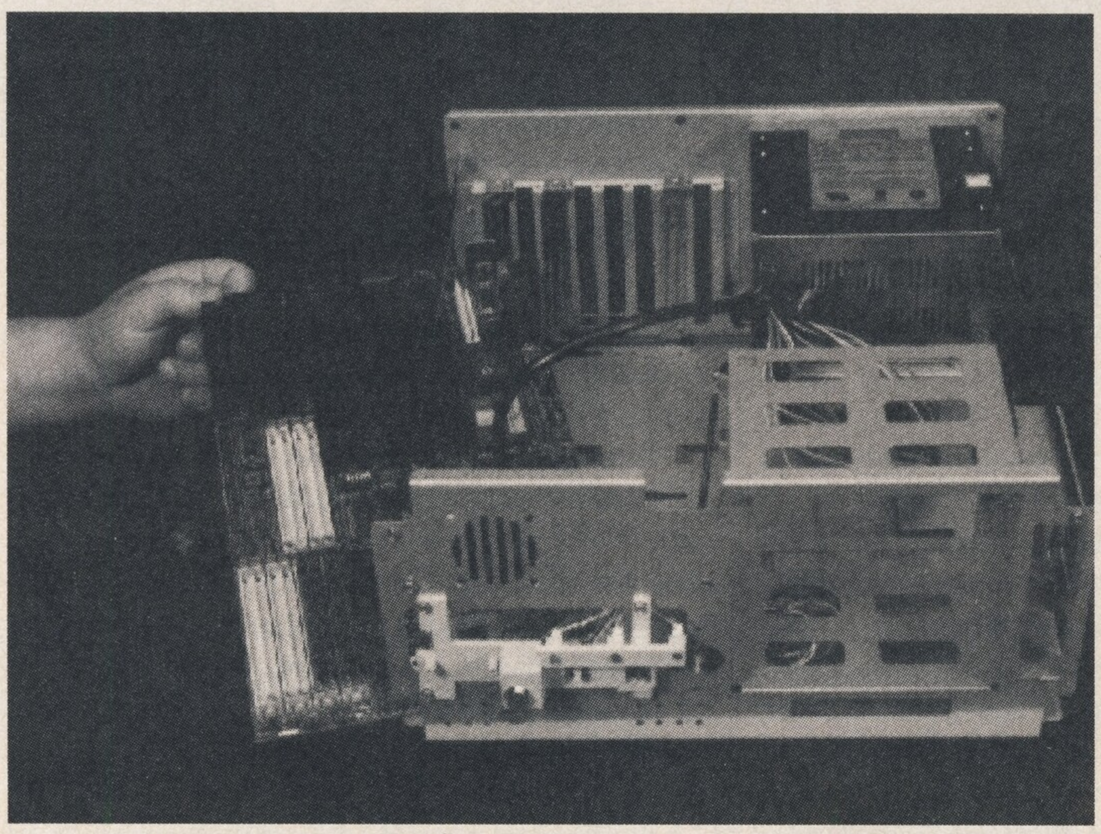


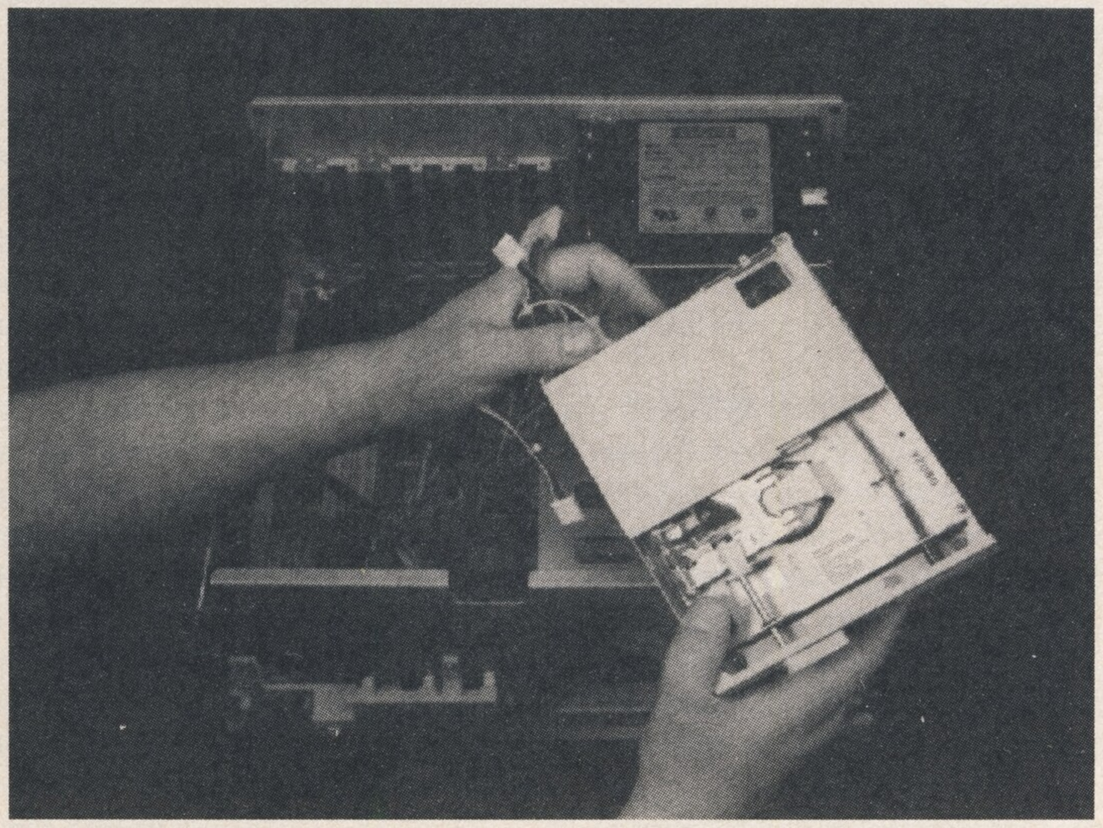
1 The bare bones – the case, showing the card cage, and the cover removed ready for the big build. It contains a 200-watt power supply with enough connections to power all of the machine's internals as well as an external monitor.



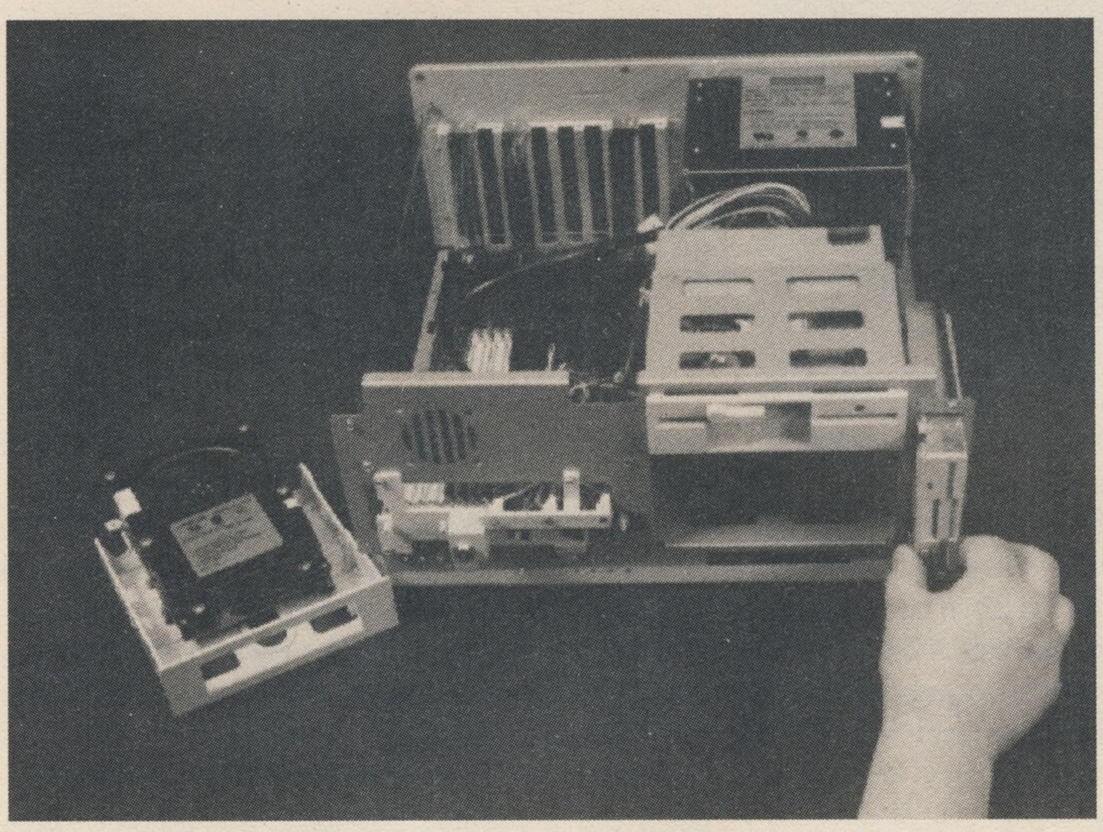
3 With the motherboard in place and fitting comfortably, check to see if the slots on the board line up with the slots on the cage. Luckily for us, they did, so it was a case of checking the board again to make sure that it was firmly located before connecting the power supply.



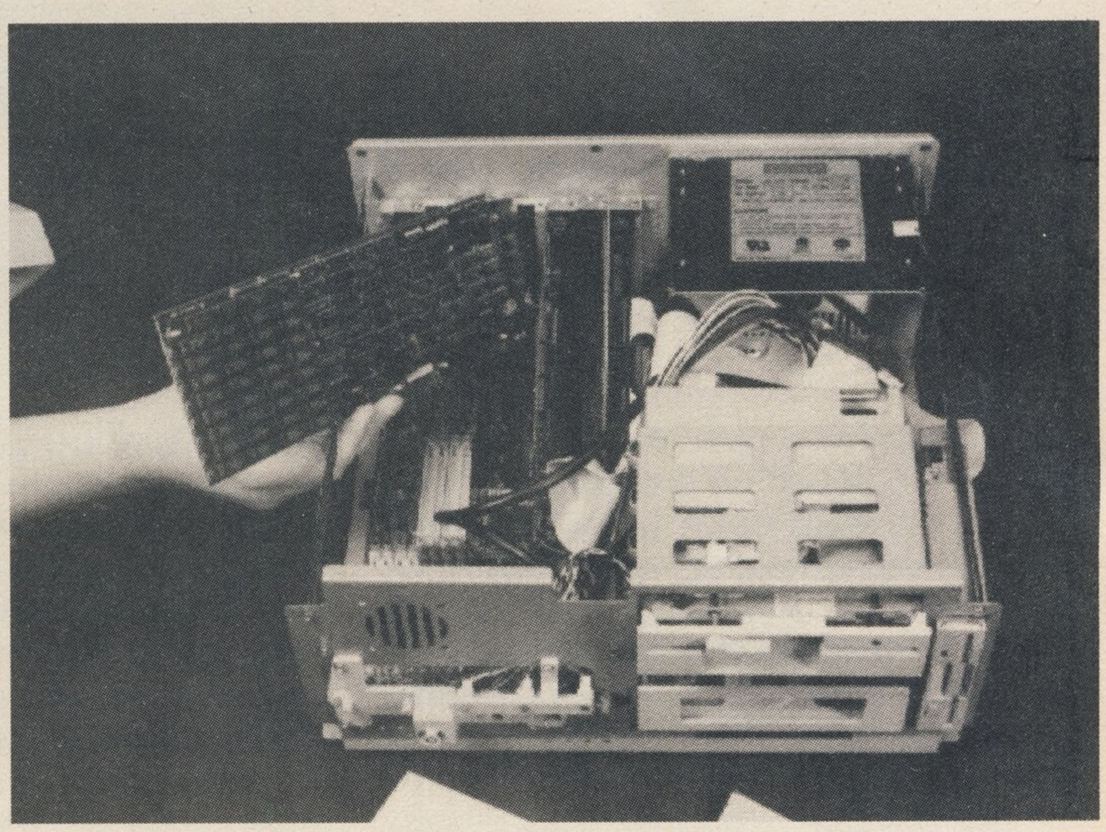
2 The first component to be fitted is the motherboard. This is located in the case using plastic post pegs which have to line up with the locating holes. Once the case and the motherboard are lined up, it's a simple matter of sliding the motherboard in and securing it.



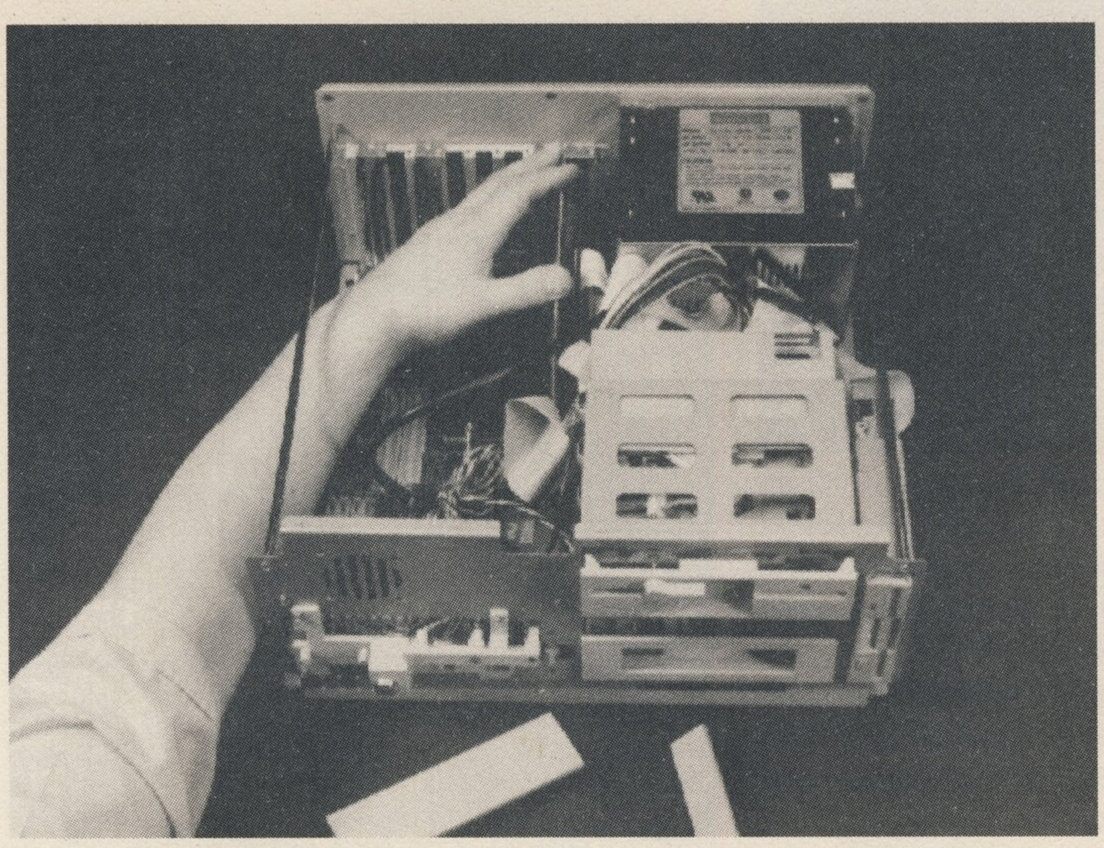
4 The floppy drives fit into a bay in the front of the cage. First in was a 5.25 inch floppy. This sat on a shelf in the bay leaving room for another floppy underneath.The cables from the power supply and drive card were longer than necessary and had to be bunched to fit.



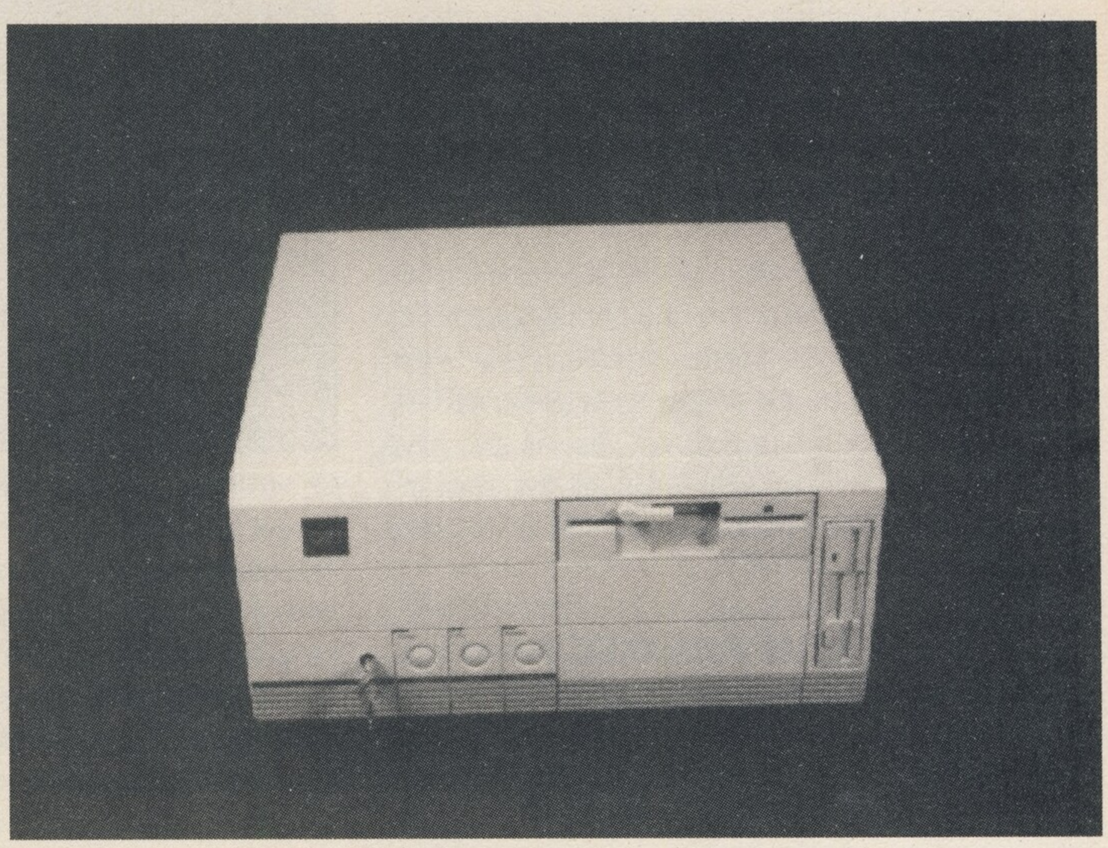
5 The 3.5 inch drive slides in vertically to the side of the main drive bay. Both the 5.25 inch and the 3.5 inch drives share the same ribbon connector cable. Having the diminuitive 3.5 inch floppy on its end saves space and adds to the character of the PC.



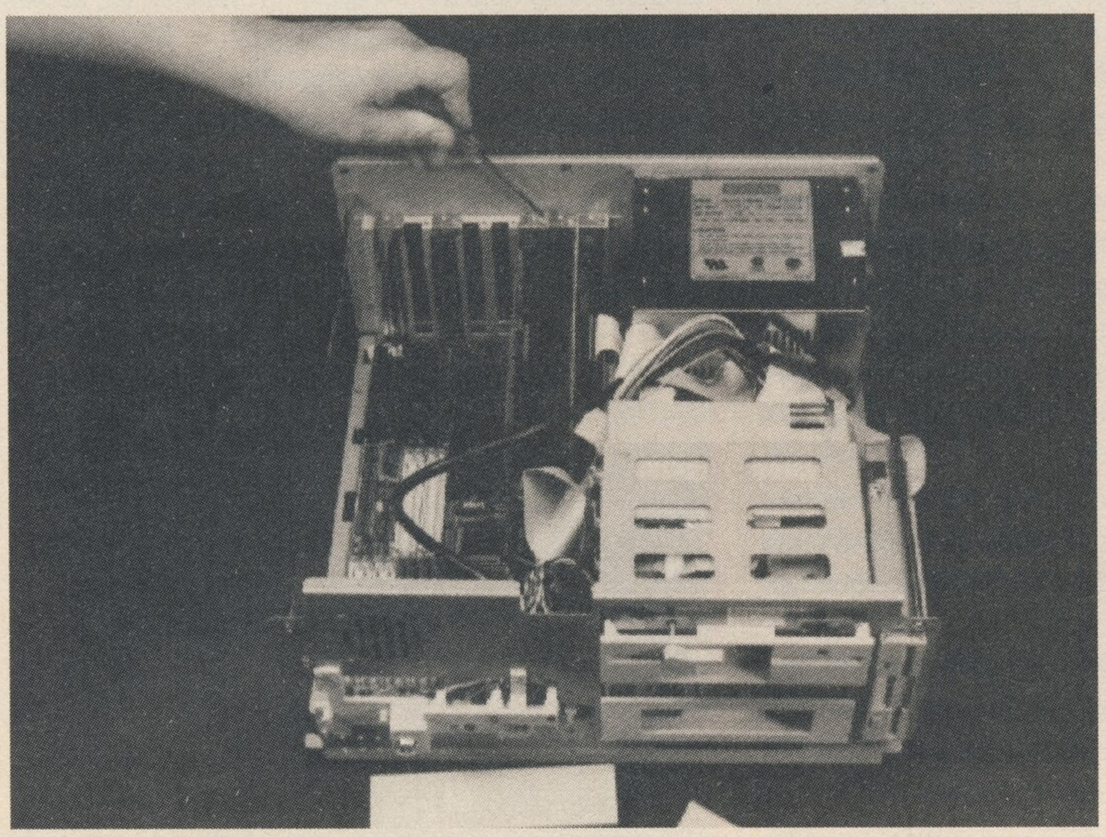
8 Although there was still space on the motherboard for extra memory, we decided to add an expansion card with more memory. Removing this card with all of its associated control circuitry would be less fiddly than shunting SIMMS (single in line memory modules) around.



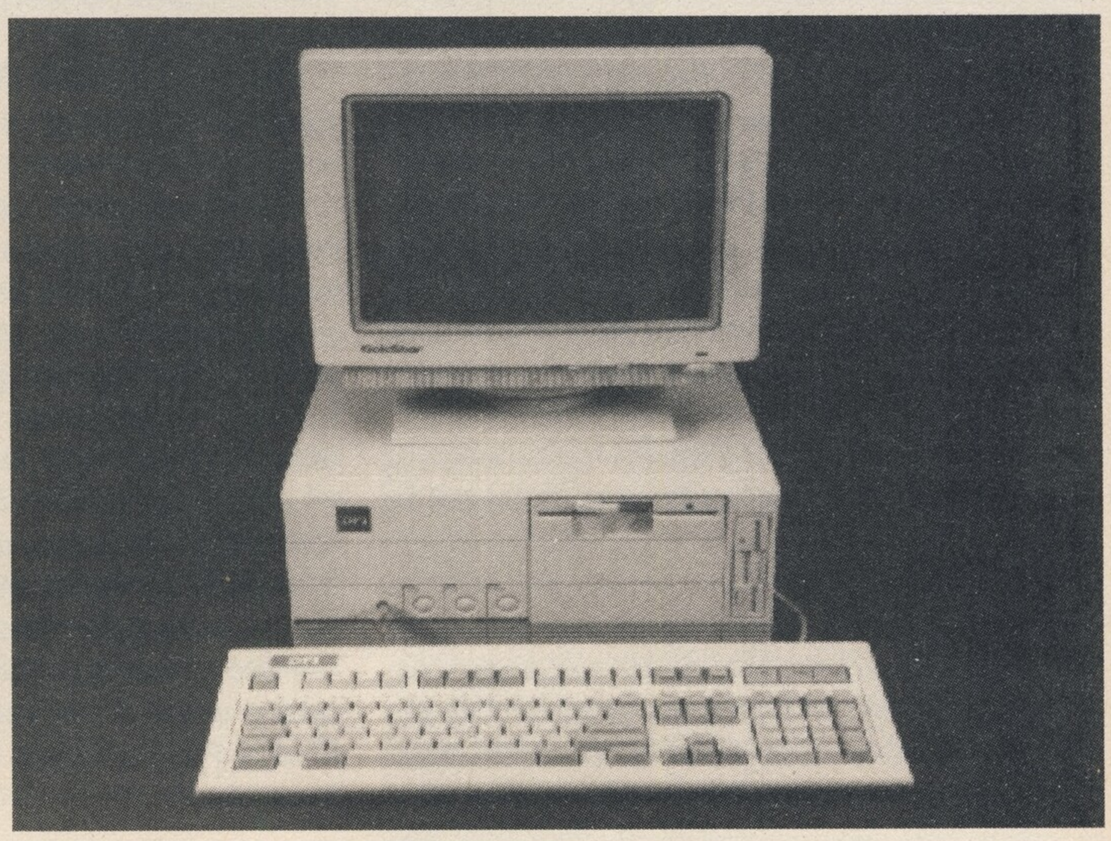
6 The 16-bit controller card has external serial and parallel ports, an internal bus for a games port and connections for the floppies and the 40Mb hard disk. It is secured by pushing it into a spare expansion slot and securing the screw at the external end.



9 Half a dozen screws attached the cover back over the cage, and we had completed the system unit in a more than respectable 55 minutes. This included connecting each component up during the build and constant checking as each part was fitted.



7 The video card is slotted into an expansion slot and secured with a screw. The 15-pin analogue connector on the external end of the card is connected directly to the monitor which draws power from an extra socket on the power supply included in the cage.



10 The finished job – we plugged the keyboard in at the rear, and borrowed the Goldstar VGA monitor to test the main unit while we waited for a VGA monitor ordered from another supplier to arrive. Everything worked and we'd saved £350 at the cost of 60 minutes labour.

AS EASY AS ABC

Before you can build a PC you will need to know what parts to buy. The specification you decide on will determine the full parts list but the basic core of necessary components is the same, no matter what you decide to put together.

Bear in mind that you don't have to buy everything from the same supplier - shopping around can save your cash, but if you buy from a handful of different places be sure to check on the compatibility of components when you place an order. And if you are really brave, or adept with the internal workings of computers, it's possible to cannibalise second-hand kit for useful components.

Whichever route you decide to take towards building your own budget PC, you should begin by deciding what it is that you intend to use the machine for. Make a list of your absolute necessities, and then work out your total budget for the project before you commit cash. Buy the essential components first, and if there's money left over, you may find that you can upgrade from the original specification.

Even if you don't known one end of a soldering iron from another without feeling for the hot bit, assembling a PC from modular components is probably well within your capabilities. Once the project is complete, not only will you have saved yourself cash - you will also have gained a good working knowledge of the way the machine works. Adding hardware upgrades in the future will seem trivial.

ESSENTIAL PURCHASES

The PC Case - target price range £25 to £130

There's no shortage of companies willing to sell you PC cases in a host of configurations, but if you have time to spare or are on a tight budget check out computer shows. You can often pick up discarded cases – or a discarded computer with a perfectly sound case.

The size of a PC case can vary from a small box the size of a breeze block to a desk-dominating monolith. The smaller ones look tidier, but large generally means better expansion possibilities and convection of heat. Tower cases that stand on 'end' on the floor can be a good compromise with plenty of expansion room without any loss of desk space.

Another thing to look out for is the internal specification of the case. Some expect you to do the drilling and bracket fitting yourself. Others come well specified with brackets and holes. You must be aware however that even the best specified case will probably need tweaking if you're sourcing parts from several shelves.

MONITOR

Target price depends on specification, from £80 to £500

The main job that you intend to do with your machine should govern which monitor specification you need. The original PC monitor was a text-only display, but more common now are CGA (colour graphics adapter), EGA (enhanced graphics adapter) and VGA (video graphics array).

Remember, though, that if all you do is word processing, you don't need the added expense of VGA. CGA or even text-only will probably do, and you can save some serious money. If desk top publishing is your forté, you'll need VGA, although if you're only preparing two colour pages, then mono VGA will do.

CGA is the least desirable - almost as archaic as the original text-only spec -while VGA is a real dream to look at. Choose the monitor for the job in hand, bearing in mind that cash saved now may not be saved in the long run if you are going to need to upgrade to another standard. You must also bear in mind that a monitor will be of no use without a driver card.

VIDEO DISPLAY BOARD

TARGET PRICE DEPENDS ON SPECIFICATION, FROM £10 FOR TO £200

Essential if the motherboard you chose doesn't have a built-in video display controller, and it's still possible to upgrade an on-board unit by using one of the expansion slots for a more powerful video card.

Video boards vary in both quality and price. Try to get a demonstration of the display board that you're planning to buy - run the kind of programs you intend to use. If you're buying it mail order, make sure you specify the use and applications that you want the board for.

POWER SUPPLY

Target price £10 to £50

The beefier the power supply unit you choose, the less likely your machine is to curl up its toes as you chain peripherals and expansion cards to it.

While 60 or so watts may have been enough to drive the original IBM PCs, if you are planning a full specified PC with hard drive and expansion cards, you'll need much more, so when you choose your unit, do so in the light of future upgrade plans as well as current needs. If possible, ask the vendor to describe a typical PC setup that a given unit will power. Also ask for rating in watts. Describe your own specification including any planned upgrades and ask if the power supply you have in mind will drive that with plenty of power to spare.

MAIN SYSTEM BOARD/MOTHERBOARD

Target price depends on specification, from £50 for an XT to £1,500 for a 486

It's more macho to say 'main system board' but motherboard has crept in as the de facto standard name for the main printed circuit board that houses the central processor, logic circuits, control systems and expansion slots. The motherboard generally comes with some memory installed, but its architecture (and price) will depend on the main processor.

Check full specification against price. What may appear to be a more expensive board could be a route to economy if it incorporates a video display controller that is suitable to your needs.

One budget approach to upgrading the raw processing power of the machine is to take an existing XT-style PC and discard its 8-bit 8086/8088 board in favour of a 16- or 32-bit 286, 386 or 486 board.

KEYBOARD

Target price £20 to £60

The keyboard is your door to the computer. It is the main method of input (although Windows and Geoworks tend to favour the mouse) and if it isn't right for you, you could be giving yourself years of pain and discomfort.

The buzz-phrase with keyboards is tactile-response, but what may suit one person's typing style may not suit another's. If you only get to try one component before you buy, make sure it is the keyboard. Less than an hour's serious typing will tell you whether or not it is the keyboard for you.

Size is everything too. The original IBM PC keyboard was a cluttered little beast and although some machines are still sold with this style keyboard, the more spacious AT-style 102-key version is now the standard. Apart from being more comfortable to use, it is less cluttered, with separate clusters of keys for numerals and cursor direction keys, as well as 12 function keys along the top.

FLOPPY DISK DRIVES

Target price from £40 to £150 depending on specification

As the PC standard evolved, so did the humble floppy disk drive and there are currently five types of floppy to choose from. They are as follows: 180K single-sided 5.25 inch; 360K double-sided 5.25 inch; 1.2Mb double-sided 5.25 inch; 720K double-sided 3.5 inch; and 1.44Mb double-sided 3.5 inch.

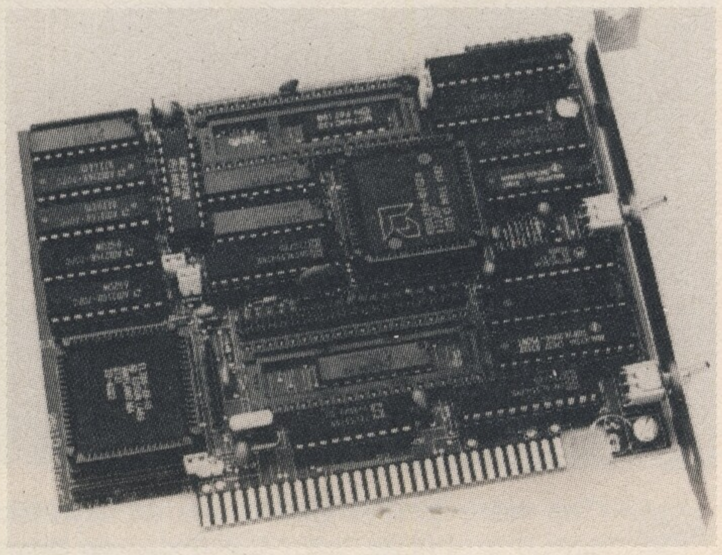
The double-sided 360K 5.25 inch and 720K double-sided 3.5 inch drives are far and away the most popular at the moment, although the 3.5 inch format is moving firmly towards establishing itself as the standard, with high-density drives becoming more common. The 180K drives are, frankly, of no use at all.

HARD DISK DRIVES

Target price from £100 to £1,500 depending on specification

For many people, the fixed disk (or hard drive as they are also called) is the heart of their PC. It offers massive storage capacity, and the fact that oft-used applications can be held on the machine thus avoiding the scrabble for disks every time the computer is switched on, makes it a necessity for serious computing.

Hard drives come in a range of sizes from 10 Mb to over a gigabyte (1024 megabytes). Common sizes are 20Mb, 32Mb, 40Mb, and 80Mb. The small 10Mb drives that can be found for sale at bargain prices may seem to offer monstrous amounts of storage space to someone used to 360K floppies, but after a few applications



• The soul of the machine, but don't forget all those other essential components which go towards making the perfect PC.

are consigned to its hard plattens, a 10Mb drive will seem surprisingly constricted.

Don't go for anything less than 20Mb and try to aim for 40Mb as a reasonable size. Bear in mind the average access speed quoted for your target drive - there's little point in crippling a whizz-bang motherboard with a sluggish hard drive, or installing an expensive, high-speed hard disk on an XT.

You will also need a hard disk controller card to make use of your new found storage space.

MEMORY

From an original specification of 48K of RAM the PC has grown up to need at least 512K for most applications with some demanding 640K as a minimum. And you may have to add extended memory beyond that limit...

Until comparatively recently,640K of RAM was the most that the PC's operating system could handle, but updated and alternative operating systems can now handle upwards of 32Mb of RAM in expanded and extended memory. Memory chips have grown up too, with faster chips, single in line memory modules (SIMMS) and memory-cacheing techniques helping the speed of data processing.

In general, you get what you pay for when you buy memory. So make sure you don't constrict a fast machine by buying slow memory.

OPERATING SYSTEM SOFTWARE

TARGET PRICE £0 (IT MAY BE BUNDLED WITH THE MOTHERBOARD) TO £120

The original PC operating system was MS-DOS which stands for Microsoft Disk Operating System. This evolved through several machine specification changes to the current version 5.

Other choices for an operating system are Digital Research's DR-DOS and UNIX. DR-DOS is similar to MS-DOS in the way that it works, but UNIX is the operating system of high-level workstations and minicomputers and is only really appropriate if you are putting together a real power machine.

INTERFACES AND EXPANSION

The use to which you put your PC and your plans for future upgrades will determine how many ports and expansion slots you need to have available. The minimum requirement is usually a parallel port for a printer and a serial port for mouse, modem and numerous other devices.

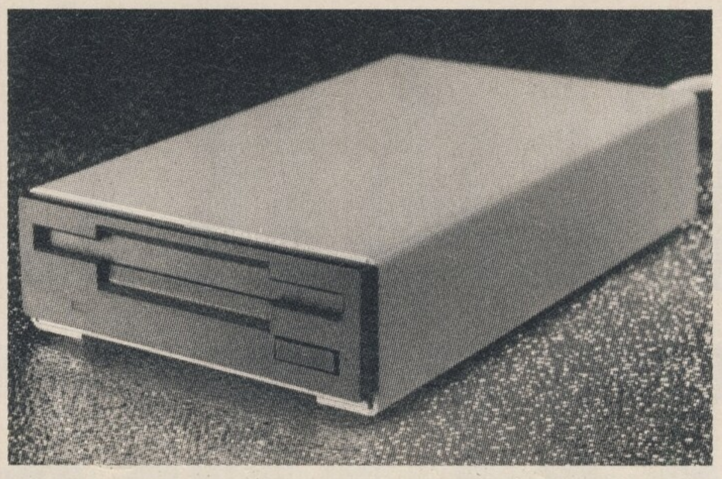
External disk drive ports are a possibility you may wish to consider, as are multiple serial ports to allow network, modem, scanner, fax and mouse to be connected simultaneously.

Expansion cards may have their own ports -*a VGA card for instance, is likely to have a 15D analogue connector for hooking up to a monitor, while a MIDI card will have another serial connector for use with MIDI expanders and instruments. Other cards you may wish to consider offer sound enhancements or the facility to connect a games joystick to the system.

WHAT AM I BUYING IT FOR?

It's easy to get caught up in the superlatives talked and written about the various processors, but to decide what you need think about the sort of work that you're going to do on your PC.

If it's a small office or home workhorse that you require for word processing, a database and some basic spreadsheeting, you'll probably manage with an XT. If you're going to use the kit for heavy number-crunching programs, you'll probably need to fit an extra



• A 3.5-inch floppy drive: fast becoming a PC standard as the now dated 5.25-inch slips into obsurity.

chip - a maths co-processor - to take the strain off the 8086 CPU.

Once you get beyond the above scenario you'll certainly need to think about at least an 80286-based AT. The difference in price between XT and AT motherboards is diminishing anyway, so perhaps it's worth considering an AT as your starting point...

The extra bells and whistles offered by the 386 machines are worthwhile if you intend to multi-task software under an environment such as Microsoft Windows. The added speed of the 386 processor will be noticeable in high-intensity graphics applications such as computer aided design (CAD) and desktop publishing (DTP). Bear in mind, though, that you will probably have to spend extra money on a faster hard drive in order to derive the maximum benefit from the increased processor speed.

HOW FAST DO YOU THINK YOU'RE GOING?

And then there's processor speed to consider. The original XT ran at 4.77MHz. By today's standards this is positively pedestrian, but nonetheless is adequate for most small business applications.

In due course, faster XTs appeared with processor speeds of up to 10MHz - in most cases, effectively doubling the speed that the original XT could work at. Not all the software that was designed for 4.77MHz operation survived too well at 10MHz, though, so some XT boards offer a dual speed mode where they can trundle along at 4.77MHz but a Turbo button cranks the machine up to the full 10MHz.

Originally, AT CPUs ran around 6MHz , but 8MHz soon became the most common speed. Today, enhanced ATs can be clocked at 16-20MHz. It's important here to remember that the clock speed of the processor isn't the only consideration in a general calculation of speed for a PC. A math co-processor can increase the perceived speed and a technique known as cacheing can help too. The speed of peripherals also affects the rate at which the system can cope with real-world tasks rather than theoretical benchmarks.

The rate at which data is transferred - or bus bandwidth - largely governs how much useful work a processor can do. An XT and an AT both running at 8MHz wouldn't necessarily process real data as fast as each other. While both processors would be clocking at the same speed, on the XT with its 8-bit bus would need to send twice as many pulses as the 16-bit AT. Thus the AT would be perceived to work much faster although in terms of processor speed, they are both travelling at the same speed.

When buying a motherboard, respectable speeds fall within these ranges:

XT 4.77-10MHz
AT 8-16MHz
386 16+ MHz

Processor speeds of 25MHz and 32MHz are becoming common, with figures of over 40MHz claimed for 486-based machines.

BUST THAT JARGON

Maybe you're building your own PC to save money, or perhaps you can't find exactly what you want off the shelf and feel that you can end up with a machine that's closer to your ideal specification. Either way, a glance at the adverts for DIY and build-it-yourself PCs can offer a daunting prospect - they tend to be peppered with more abbreviations than there are decorations in the civil list. Expect to bump into XTs, ATs, LIMMS, SIMMS, CGA, EGA, VGA, MS-DOS, DR-DOS and a host of other abbreviations clustered with timings and speed ratings.

Here's a rough-and-ready guide to the arcane world of these terms...

There are two basic kinds of PC: the XT and the AT. These were the names given by IBM to their extended (XT) and advanced (AT) models.

XT

In simple terms, an XT is a machine that has the Intel 8086/8088 series central processor. This is a 16-bit processor with an 8-bit data bus. Although the CPU can process 16 bits of information at once, the architecture of the computer means that it can only send that information out 8 bits at a time.

An XT has a simpler motherboard, and all of the expansion slots for expansion cards are 8 bits wide. The XT is the cheaper of the two machines and is perfectly viable for tasks that aren't processor-intensive and don't call for a lot of high speed calculations (which can include running the display as well as programs).

AT

The original IBM AT had the 80286 as its central processor. This chip was a development of the 8086/8088 series but with full 16-bit capability. ATs can process a full 16 bits at once, and the motherboard has 16 data lines. The combination of the quicker 80286 and the full 16-bit processing and data handling makes an AT an XR3i to the XT's diesel Fiesta. The expansion slots on an AT are also 16 bits wide, so further expansion to the basic machine can benefit from the extra data lines and the speed that brings.

386 ATs

The next step up is based on Intel's 80386 processor. The 386 is a development of the 80286 that offers additional features, including a 'virtual' mode which allows the 386 to act as several 8086 processors simultaneously. More than one program can run at the same time and with the right software, a 386 machine can multi-task several jobs at once.

The motherboard of the true 386 PC is a complicated beast and proportionately more expensive. In order to offer the features of a 386 without the expense of the more complicated architecture, the 386SX processor was introduced, which retains input/output architecture on a par with the 80286 ATs and yet offers the virtual mode, multi-tasking and other features of a 386 machine.

486 ATS

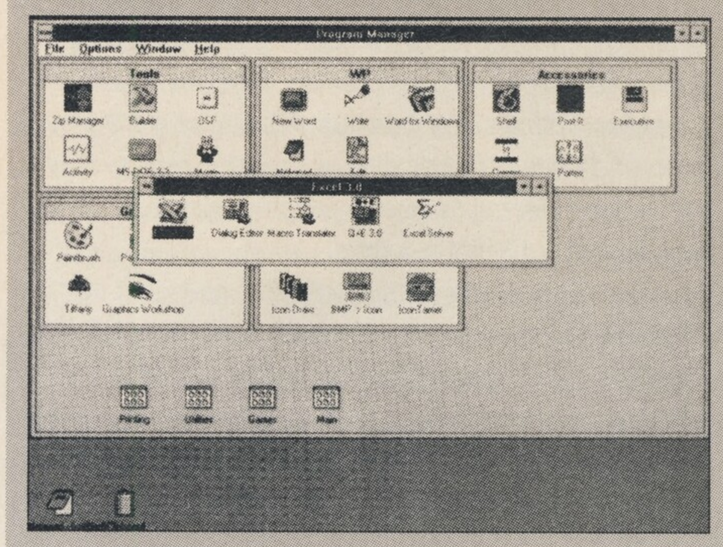
Next on the list and currently top of the AT range are the Intel 486-based based machines. The 486 is a yet more powerful processor that offers all the features of a 386 and more. Although some companies are currently offering 486 motherboards for sale, the budget for a first computer build project is unlikely to stretch this far.

SOFTWARE SOLUTIONS

The PC luxuriates in a vast array of software. However, this does not mean that all of it is suitable for your needs, or even of a high enough quality to run on your machine. Mary Branscombe looks at some of the best.

SPREADSHEETS

Microsoft *Excel*



First introduced for the Apple Macintosh in 1985, *Excel* has travelled well to the PC. Release 3 now offers versions for Windows 3 and OS/2 that combine powerful calculation with ease of use.

The worksheets are easy to use and manipulate. They offer a wide range of functions for managing data on the sheet. Options open to the user include calculating changes such as compound interest or capital depreciation, retrieving data, performing statistical analysis and many other facilities from the mundane to the abstruse. Not only can you use a spreadsheet to perform the usual "what happens if I change this" calculations, but the Solver module will also allow you to define a goal and ask the question"how do I reach this goal?"

Another unusual and useful feature is the Outliner, which compresses sections of the spreadsheet so that summaries and sub-totals stand out more clearly. This is also used to link several spreadsheets together. The automatic 'consolidator' will look at the row and column headings of several worksheets and link related elements into a single sheet. Data can be taken from several sheets to form one new one, or dynamic links can be used, so that the consolidated sheet will change if any of the sources are updated. *Excel* tries to integrate them, with the consolidated sheet acting as the top level of an outline, rather than stacking them in a 3D model, although you can produce stacked sheets. Like the powerful macro facilities, this is supported by an excellent on-line help system. *Excel 3* has the printing power of any Windows application and the Print Preview will let you see whether a worksheet will actually fit onto a single sheet of paper.

The package can read *Lotus* .WKS, .WK1 and .WK3 files and work with them without converting them into *Excel* format - this offers a positive move towards increased portability. Above and beyond all else it is the range of features and the ease of use that make *Excel* stand out.

Microsoft
£454 • 0734 500741

WORD PROCESSORS

LetterPerfect

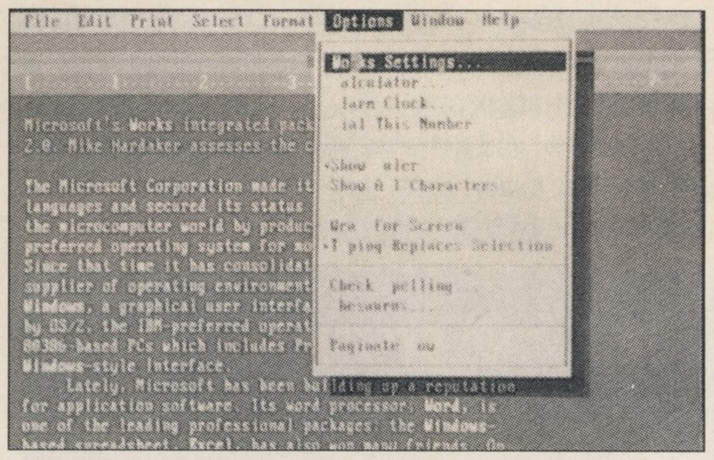
WordPerfect is one of the standards of the word processing market; a comprehensive, expensive and sometimes complicated standard. LetterPerfect from the *WordPerfect* Corp is a slimmed down version, ostensibly aimed at users of portable PCs, that provides the power of the original in a smaller and cheaper package. The system can be driven by menus using keystrokes or a mouse. However, if you object to working with menus, or are used to key commands, all of *WordPerfect's* key combinations will also work. You can import graphics, wrap text around these graphics and see previews of pages, at various sizes. The Reveal Codes screen is familiar from WordPerfect. allowing you to view all the formatting codes embedded in a file, and edit them out if required. The outlining features allow you to define eight levels of text. The spelling checker is powerful and the on-line thesaurus is particularly good example of its type.

LetterPerfect will read and export *WordPerfect* files, making it an ideal second word processor for your second machine. Where features such as footnotes are not supported in *LetterPerfect*, the text is interpreted as an endnote, but remains a footnote if you take the file back to *WordPerfect*. Compatibility of this level and price combine to make this an attractive package.

WordPerfect Corp
£207 • 0932 843497

INTEGRATED BUSINESS PACKAGES

Microsoft *Works 2.0*



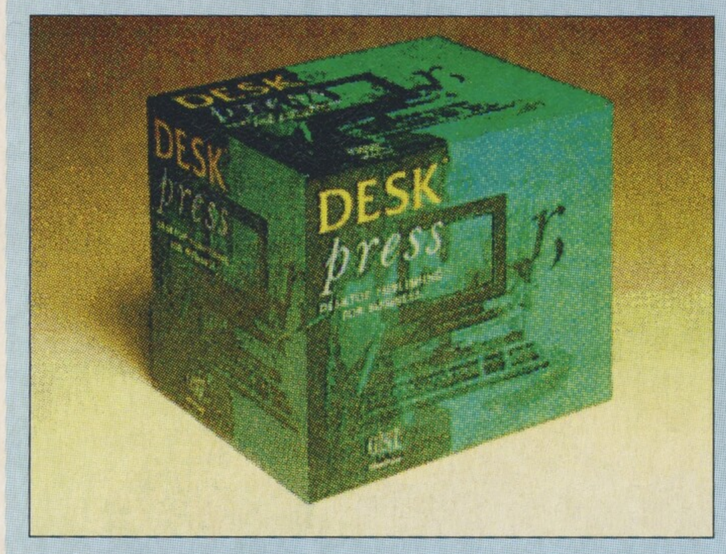
• Works *like a dream. Microsoft's little bundle has it all*

Works offers file management to provide access to common MS-DOS commands for copying files and handling directories, it also allows you to launch applications from its menu. The four main modules are word processing, spreadsheets, a database and a comms program. Similar keystrokes and commands are used in all the modules, making the package easier to learn and, as an added bonus, it is also easy to transfer information between the modules. A pop-up calculator also comes in handy, and the context-sensitive help system is definitely worthy of praise. The word processor offers a wide range of features which are easy to use from the menus and keystrokes. The thesaurus is convenient and helpful. Pages can be previewed before printing, and you can only select fonts in a document which your printer supports, saving much heartache. Although formatting commands such as bold and italic text are indicated by colour in text mode, the graphics mode shows you What You See Is What You Get (WYSIWYG) text, in real bold and italics.

Strangely, although the spreadsheet reads *1-2-3* files, it is not compatible with *1-2-3*. *Excel* key commands are supported, however. 70 functions are available and eight graph types are supported. The graphics mode can again be put to good use. The flat-file database is simple to use and you can design your own data entry forms. The comms package is as easy to use as the rest of Microsoft Works although it offers fewer functions, supporting only Hayes-compatible modems or cable transfers. Microsoft Works offers a package which is both powerful and easy to master, at a very reasonable price.

Microsoft
£166 • 0223 323656

DESKTOP PUBLISHING



DeskPress

As desktop publishing has moved into the mainstream, more powerful packages have become available. GST's *TimeWorks* DTP played a major part in this development and their new program, *DeskPress*, uses the same graphics engine as *TimeWorks* and offers the facilities of the earlier program and more besides.

Text can be typed directly into a 'frame', it can be boxed and displayed as normal, bold or italic, or imported from several word processors. It can be displayed on screen in serif, sans-serif and courier Typographica fonts, which can be printed to dot-matrix, ink jet or laser printers.

Powerful typographical controls are available, with separate control over leading and kerning of text Page layout styles, such as tabs and justification, are applied through paragraph styles. The layout language provided allows embedded style commands to be entered in the text between angled brackets, for point sizes, style names or typographical changes, so that the embedded codes can be exported in text files. Many graphics formats are supported for import, from .PCX, .PIC and Encapsulated PostScript (EPS) to *Frelance* and *AutoCAD*. The modular structure of the package means that import/export modules could be added to allow more text and graphics formats to be imported.

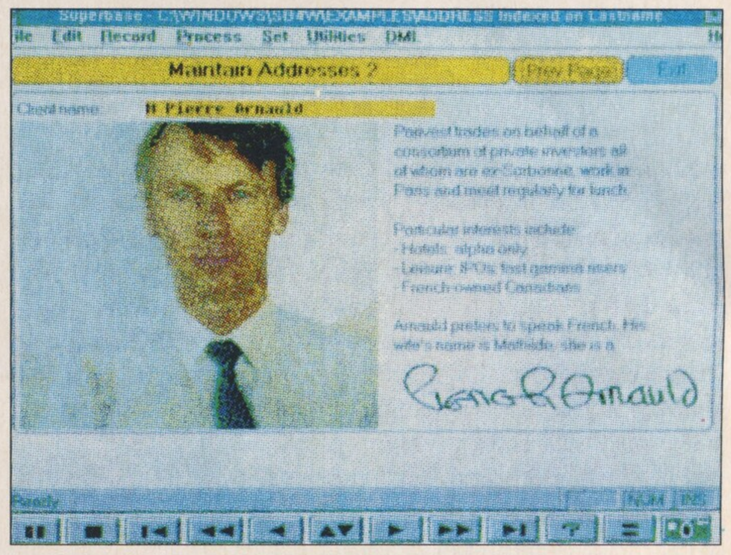
Graphics can be rotated in 90 degree steps and grouped together, so that captions can be attached to their respective pictures. The frame that encloses a graphic can be bent or distorted and text can then be wrapped around the side of the graphic Paragraphs can be numbered automatically for outlining, and indices and tables of contents can be created by highlighting entries in the text. Duplicate entries can be deleted and the tables and indices can be printed out a defined paragraph style.

DeskPress can control multi-page documents from master pages, while the paragraph codes give you control at a lower level. With the typographical control and output options, this is a powerful package indeed.

GST
£321 • 0480 496660

DATABASES

Superbase 4



• **Superbase 4: *pushing Windows further.***

The Windows 3 version of this traditional relational database combines well thought out screen and form design with ease of use.

Although the Windows interface is well used, *Superbase* also retains its menu bar. Text which is stored in records can be given a number of formats and styles. A field can refer to either a text or an image file; text files can contain up to 4,000 characters, while image files can be in IMG, .PCX, TIF, EPS, BMP or WMF formats.

The Hypertext help is supplemented by an on-line tutorial that can guide you through these processes.

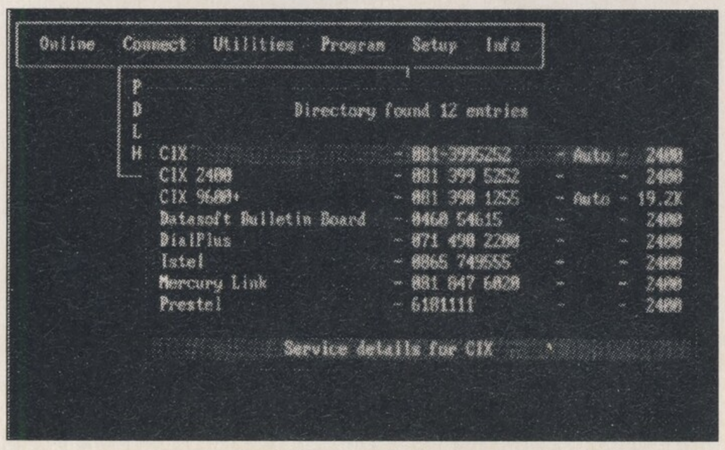
If a database is to be useful, more than one person will need to be able to access it, and to this end *Superbase* inherits the networking capabilities of Windows. Password protection and data locking are provided by the program, and the system can even deal with users who turn off their machines without informing the database that they have finished work for the day.

The text and graphics handling facilities of Superbase are combined with a powerful database engine and the Windows interface is taken advantage of rather than ignored.

Precision Software
£684 • 081 330 7166

COMMS

Datatalk 4



Datatalk was almost the first comms package for the PC to come out of the UK and this new version combines support for British modems and standards with a menu-based user interface and a number of powerful new features.

The program is aimed at the serious user; it offers emulation of several mainframe terminals as well as more standard features. Many British modems are supported, including Amstrad, Dacom, Jaguar, Pace and Racal. *Datatalk* also has settings designed to use the high speeds available from modems such as the Miracom Courier, and the Dowty Trailblazer. There is a built-in bulletin board facility which means that *Datatalk* can run in the background even when you are receiving files for that matter. A wide range of file transfer protocols are provided and Viewdata is well-supported. The *Datatalk* Command Language (DCL) allows you to create macros to automate access to on-line systems, saving time and money.

Datasoft
£207 • 0460 57001

COMPUTER AIDED DESIGN

AutoCAD 11

AutoCAD, was one of the first ever CAD programs has become the industry standard.

Drawing Exchange Format (DXF), which derives from *AutoCad* is supported by virtually every other PC CAD package. Version 11 offers a very wide range of features and functions, for two and three-dimensional drawing, as well as a C programming environment.

Autodesk Ltd • £2875 • 071 928 7868

MISCELLANEOUS

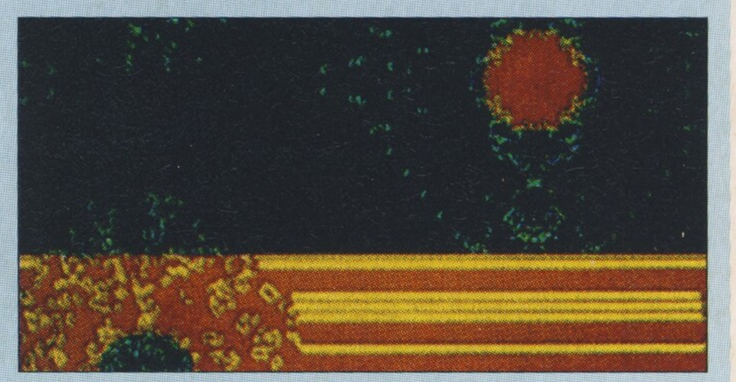
Rudy Rucker's CA Lab

There are a multitude of programs available to analyse and organise things or make your life easier, from personal organisers to handwriting analysis programs, but the most highly recommended software in this category is entertaining, informative and of no practical use to the majority of PC users. It's fascinating.

The *Cellular Automata Laboratory* devised by Rudy Rucker gives you two programs which enable you to study the effects of different rule-bases on one and two-dimensional cellular automata.

These may be most familiar from the *Game of Life*, where different 'cells' on a grid reproduce, thrive or die, depending on whether the conditions are suitable or not. The new state of every cell is calculated from the previous state and from the condition of its neighbours; cells can be overcrowded or die of loneliness.

While the main appeal of the *CA Lab* to most people will be the spectacular patterns and effects that they produce, automata can actually be found frequently in real life, so that the system can be used for simulation. A drop of water falling into a puddle produces effects that



can be described as an automaton.
RC allows you to 'feed' the automata and they respond in 16 colours, while CA runs in graphics mode, creating a universe of 320 by 200 cells that can take up to 256 colours in VGA. Changes in CA are controlled by more rules, which can be generated by the source code provided. By the way, for the 60s nostalgists or even the young trendies among you, *CA Lab* even comes with a set of starting patterns which can produce psychedelic effects.

Autodesk Ltd
£57.50 • 0483 300077

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By the way if you want to get in touch with Midland, Computer Brokers you can call on 0527 575419. Or turn write to Unit 2, 86 Sherwood Rd, Aston Fields Industrial Estate, Bromsgrove, Worcs B60 3DR.

1) George Dixon first appeared in which film?
- **A) The Blue Max**
- **B) The Blue Lamp**
- **C) The Blue S'brothers**

2) The initials SPG stood for?
- **A) Special Patrol Group**
- **B) Special Panda Group**
- **C) Sedate Parrot Group**

3) The 'Peelers' were named after who?
- **A) John Peel**
- **B) Emma Peel**
- **C) Sir Robert Peel**

4) New Scotland Yard used to be called what?
- **A) Old Scotland Yard**
- **B) Scotland Yard**
- **C) Ireland Yard**

5) Inspector Le Strad used to work with who?
- **A) Sir James Anderton**
- **B) John Stalker**
- **C) Sherlock Holmes**

There we go then. Pencils and pens at the ready. Your time starts now. All answers should be received no later than 11am, Thursday, May 18 and that's 1991 to you.

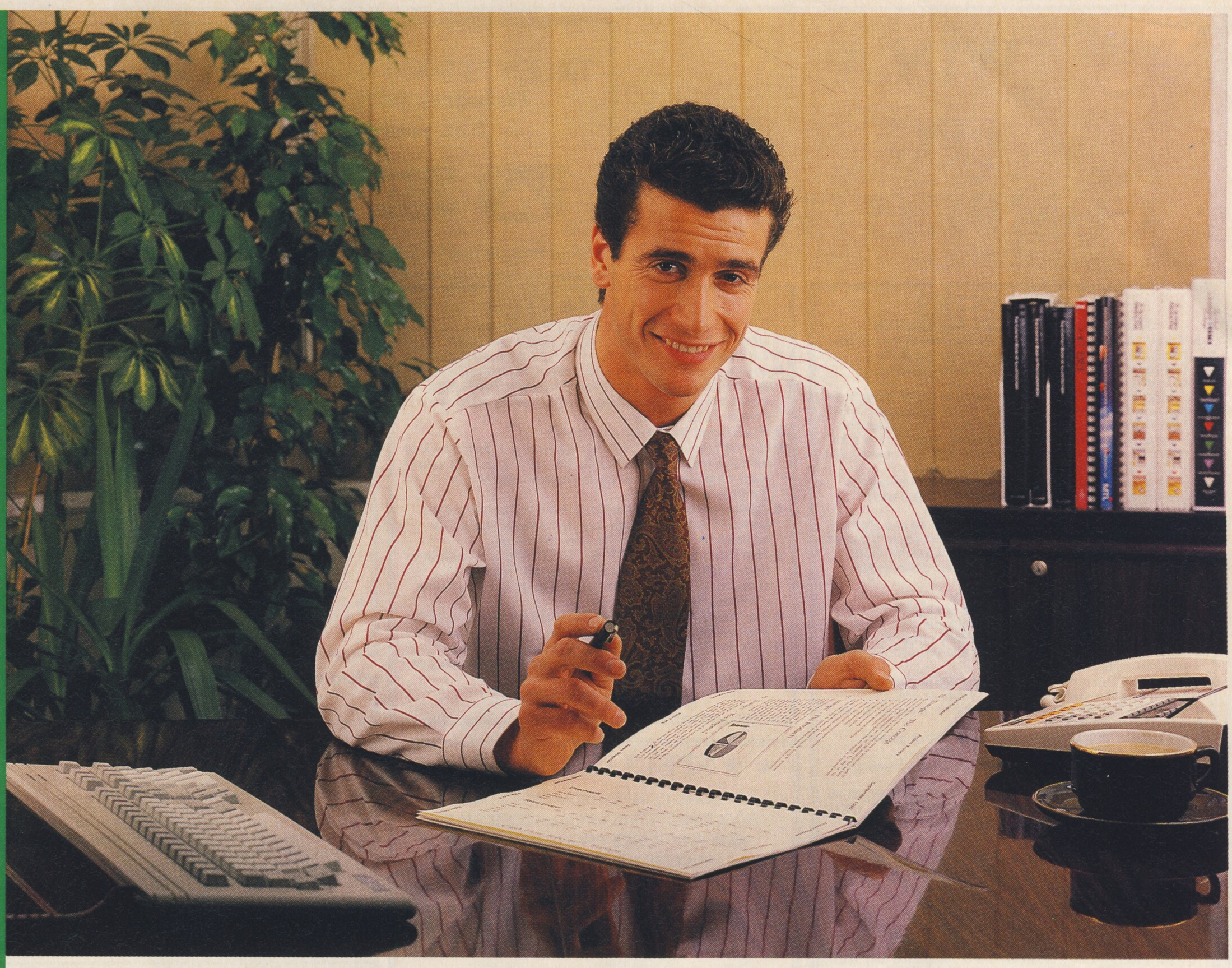
ATARI FAMILY CURRICULUM

And the winner is ...

The lucky, yet obviously erudite winner of the Atari Family Curriculum package is none other than

Mr David A Green of Tadley in Hampshire.

We say, "Jolly well done to you Mr Green!"



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RECESSION? WHAT RECESSION?

- Make your Micro earn!
- Whatever make of micro you have you can use it to make a good income even if you only have a couple of hours spare each week!
- This is not PIE IN THE SKY, MAKE A MILLION BEFORE BREAKFAST nonsense but a true report of exactly the sort of steps that we ourselves took at INTRASET.
- We have put together a package of easy, sensible business ideas which can easily be used by anyone with any Micro.
- NO COMPUTER EXPERTISE REQUIRED.
- Earn £££'s from home doing what you enjoy doing - using your computer!
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The Football Pools Predictor

"A LICENCE TO PRINT MONEY" - Mr F C Hammond of Essex
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- Just a couple of the many unsolicited testimonials about this truly amazing Football Pools Predictor Programme which has consistently astounded us with its accuracy. Check out its features:
- Predicts homes, aways and draws.
- No fiddly typing in of team names: unique indexing system for quick entry of fixtures and results just type in the results each week from your usual newspaper and the programme updates itself.
- Uses scientific formula which is the result of many years study of the football pools to give a strike rate which is consistently higher than the laws of average.
- Also has a SEQUENCE PREDICTOR option in addition to form Predictions which analyses coupon number sequences. This option has astunded us in the past and continues to do so.
- Can be used for league and cup matches. Updates season after season. No need to buy a new copy every season.
- Send for POOLSMASTER today and increase your chances of that JACKPOT. Comes complete with manual and informative Pools Guide.

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- Analyse YOUR handwriting, or your partners, friends etc. What are they REALLY like! Your handwriting always reveals your true nature, state of health etc.
- This programme is a must for anyone interested in handwriting analysis, both expert and beginner alike.
- The programme will provide an analysis of a subject's handwriting ranging from a simple signature analysis to a full 15 page complete character report. Ideal for prospective employers, experienced graphologists or anyone interested in this fascinating art.
- All you need is a sample of the subjects handwriting and follow the simple on screen instructions. Upon completion you are left with an in depth report detailing all aspects of your subjects character from career ambition, state of health through to sexual preferences and megalomania!
- You may even edit this report using your word processor for representation to your subject/client.

THE GRAPHOLOGIST is a must for serious business use or simply have loads of fun entertaining your friends whilst learning the finer aspects of this fascinating subject.

- COMPLETE WITH MANUAL OF GRAPHOLOGY

Price £49.95 inc. VAT and P&P

All programmes available for IBM/PC & compatibles, all Amstrad PC's, Amstrad PCW's, Atari, Amiga, CPC 6128 (unless otherwise stated). Perm-Master also available for Commodoere 128 disk. Coursemaster and Poolsmaster also available for all Amstrad CPC's, all Spectrums and C64 & 128

COMPETITION RULES

Every purchase made qualifies you to enter our competition draw. The total value of your purchases will determine the prize won.
There will be one 1st prize only per draw.
Spend up to £20.00 - 1st prize = a Star LC printer.
Spend up to £40.00 - 1st prize = Amstrad PC1512 SDMM
Spend over £40.00 - 1st prize = Amstrad PC1640 SD colour.
5 runners up will each win full set of Intraset software as above. Intraset's decision final on all matters.
Send SAE for list of winners.
Draw dates 28/9/91.

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- Works out your WINNINGS on most popular types of bet ie. SINGLES, DOUBLES, PATENT, YANKEE, CANADIAN, etc.
- MAINTAINS A BANK ACCOUNT - Bet like a PROFESSIONAL!
- PLUS the amazing COURSEMASTER SYSTEM BET. This superb easy to use betting system regularly provides our customers with MAJOR WINS for small stakes - try it and amaze yourself. Will even PRINT OUT YOUR BETTING SLIP for you if you have a printer!
- COMPLETE WITH 20 PAGE BETTING GUIDE AND MANUAL

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PERM-MASTER

If you enjoy doing the Pools and regularly use perms as we at INTRASET LTD. recommend then checking your coupon can be a nightmare. Have you won or haven't you? Perm-Master ends the agony by checking your perm for you. Simply tell it which of your coupon numbers are draws and it will do the rest, telling you how many winning lines you have. Perm-Master comes complete with several of the top perms already built in, but if your favourite perm is not there then simply create your own using the unique perm editor.

- Fast and simple to use
- Unique PERM EDITOR
- Create your own perm using the inbuilt perm calculator, test your own theories etc.
- For most block and single line perms

Price £19.95

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For all SPOT-THE-BALL fans this programme is a must, no more tiresome counting of 'x's or messy rubber stamps. Use your computer to do your SPOT-THE-BALL coupon.
Just tell your computer where you think the ball is using the screen template supplied.
Will print out up to 540 micro-fine crosses in your chosen shape, or simply tell it to choose at random.
Learns as it goes - tell it where the ball is every week and build up a database of results to use in SPOT-THE-BALL's sequence predictor option.
Works with any Epson compatible dot matrix printer or build your own printer driver using the on screen option.

- LET SPOT-THE-BALL fill in YOUR COUPON this week

SPOT-THE-BALL £17.95

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- Four addictive P.C. card games to test your skill and luck.
- P.C. PAIRS, THE INTRASET CASINO, P.C. GOLF & CHESS PATIENCE
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P.C. PATIENCE £14.95 (IBM/pc compats only with 256K + CGA monitor required)

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Spend over £80 and spread the cost at no extra charge! (Cheque purchases only). Simply divide your order by 4 and send us four cheques each with your name and address and cheque guarantee card number...Date the first cheque with today's date and post-date each of the other cheques by one month i.e. 1/5/91, 1/6/91 etc. We will then hold each cheque until it is due. Sorry not available on hardware items

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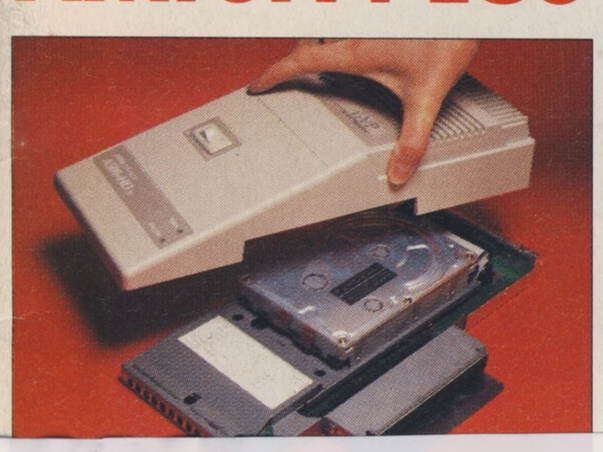

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Which one took the top British leisure award?

INTEL'S SUPER DV-I

APPLE'S CHALLENGER

DOOR TO DOOR EXPRESS INVESTIGATES

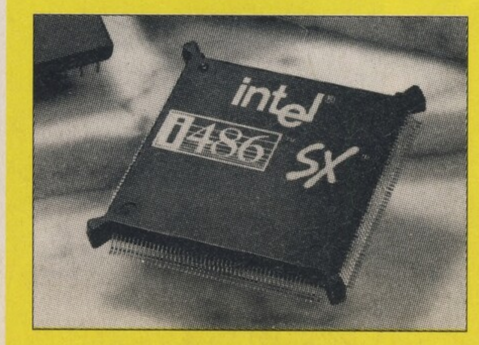
THE NET TIGHTENS

Last week, *Express* revealed a connection between *Door to Door* and *Routewise* route planners. A clear link has now been established between John Gold and the people behind *Routewise*.

And the first legal moves have been made against Gold and Watson.

FULL STORY – pages 55 & 56

THE TOP 20 LAUNCHES FROM THE 1991 WHICH? SHOW



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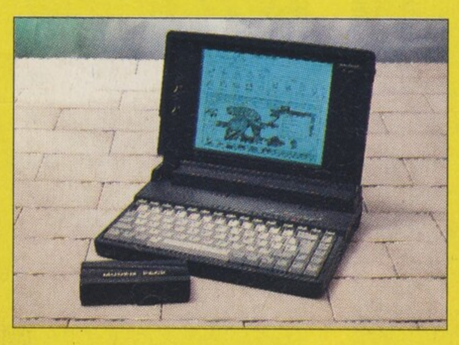

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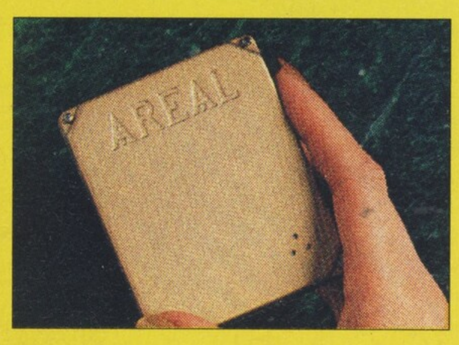

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