Issue 122 • 9th March 1991 • 88p

NEW COMPUTER EXPRESS

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

THIS WEEK

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PC emulation made even cheaper with KCS' Power PC price cut **PLUS** cheap Amigas for UK schools

ATARI
Sam Tramiel gives firm details of Atari's Panther hand-held games machine **PLUS** a new 1.44Mb drive is announced

PC
Can a PC really beat a Mac at DTP? Corel*Draw* comes close

MACINTOSH
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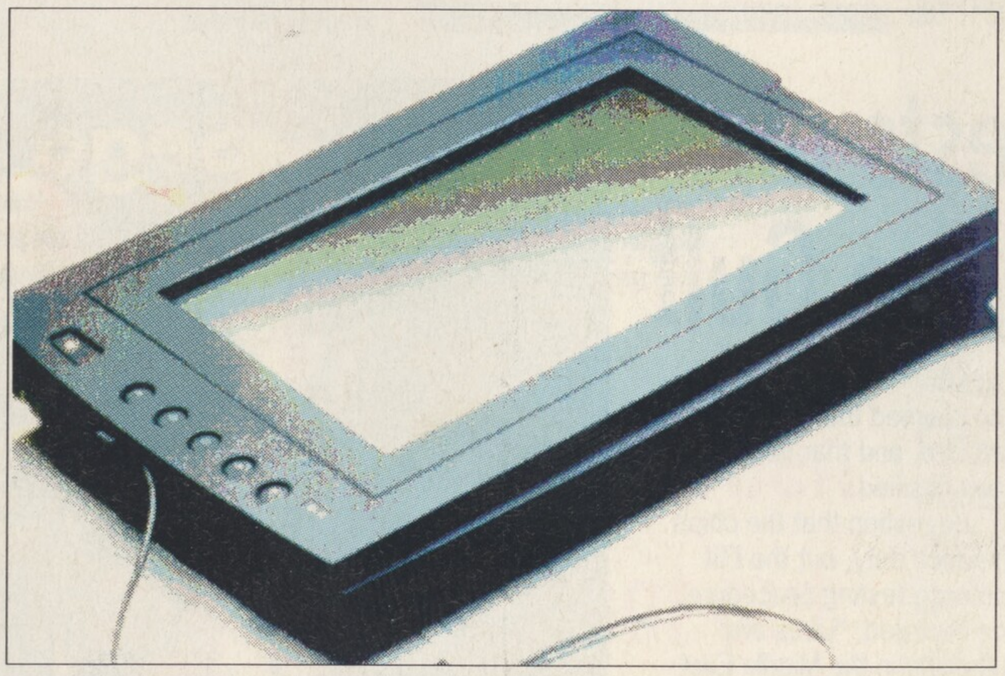
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BARGAINS !!!

AMIGA CONSOLE SENSATION

EXCLUSIVE

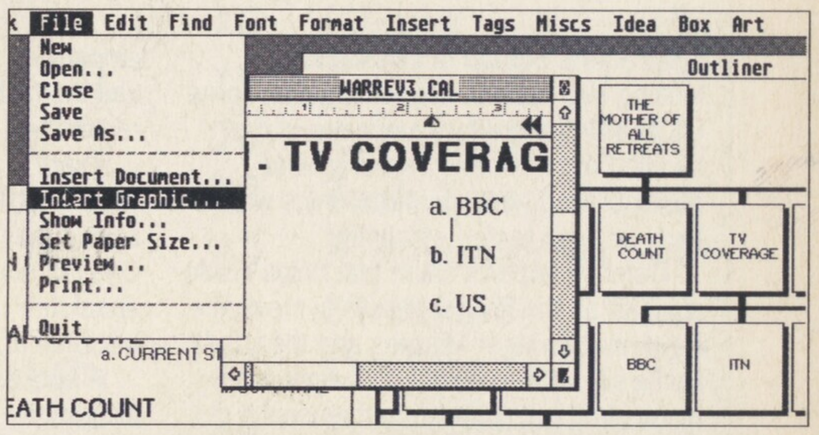
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CALLIGRAPHER
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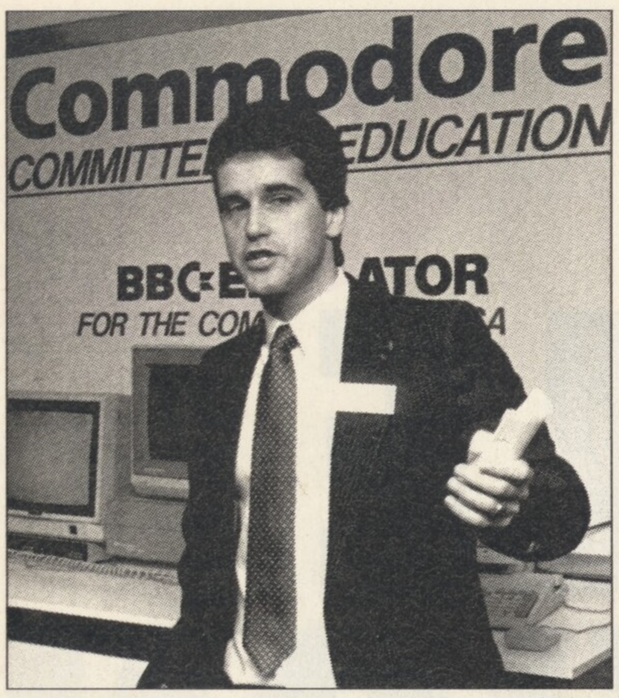


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frontend

edited by Colin Campbell

COMMODORE COOKS UP DEAL FOR SCHOOLKIDS



• Commodore UK head of education, Peter Talbot, offering schools more for their money.

More and more schoolkids could be introduced to the pleasures of 16-bit computing, thanks to a special new deal for schools, cooked up by Commodore.

The firm is offering Amiga 500s to schools and colleges for just £299, and each Amiga will come with one favourite educational pack from a choice of *Deluxe Paint II, Deluxe Print II* or *Logo with Talking Turtle*.

Peter Talbot, Commodore UK's head of education, said: "The Amiga is a versatile computer, ideal for anything from word processing to graphics and painting applications. This offer gives schools more for their money, allowing more children to gain first hand experience of serious computing."

He warned that the offer would be "policed very carefully" to make sure the right people were gaining from the deal. He added: "We put the £100 off pack together in response to a call from the minister for education [Kenneth Clarke]. He wants manufacturers to be as competitive as they can with educational products, so we came back with a very keen price for the Amiga." ■



Put yourself on the business map

A PC based software system that can present data analysis in a colourful map format was launched last week.

Publisher MapInfo says SPSSX/PC Plus Map will help business users make decisions on geographic information. For example, market researchers could use the program to locate a shop's customers by post code or telephone code. A promotional campaign could then be targeted at homes within the shop's catchment area.

The system is offered as a mapping software module for data analysis pack SPSS/PC Plus and includes maps for country boundaries as well as domestic counties and post code areas. SPSS/PC Plus Map costs £495. You can find MapInfo on 0932 566262. ■

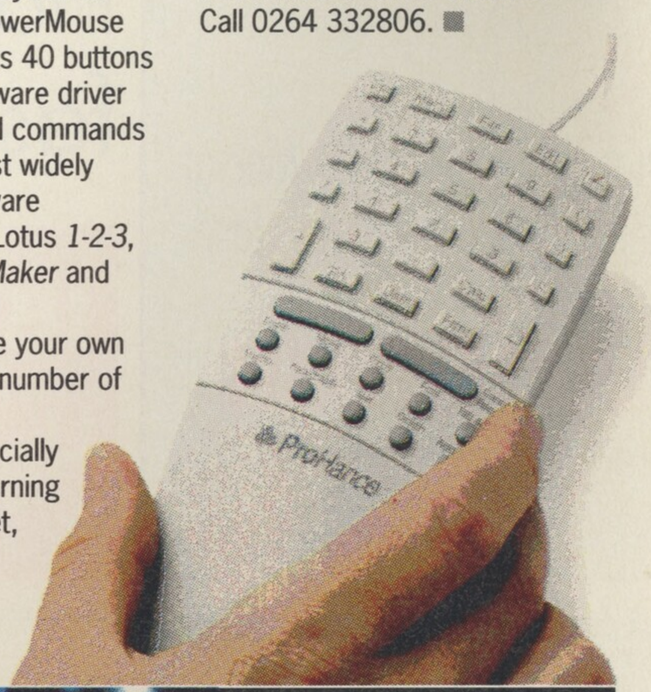
Muscle mouse

A programmable mouse has been launched which could enable you to use software without touching a keyboard.

The ProHance PowerMouse from ADACS features 40 buttons and a universal software driver including pre-defined commands for some of the most widely used business software packages, such as Lotus *1-2-3*, *WordPerfect*, *PageMaker* and *SuperCalc*.

Or you can create your own macros for a larger number of applications.

"This will be especially useful for people learning to use a spreadsheet, or looking to save time," claimed product manager Paul Moss. "It cuts down time and eliminates the error brought about by computer type-ins." The PowerMouse retails at £125. Call 0264 332806. ■



Don't forget Which?



Business computer users are being reminded to mark a date in their diaries for the forthcoming Which Computer? Show.

Organisers of Britain's biggest business computing event are promising a feast of new launches as well as seminars and villages set aside for special requirements.

As always, Which? will be held within the vast halls of Birmingham's National Exhibition Centre. This year it will take place from April 23 to 26.

Over 100 new launches are expected from all the industry's major players, and there will be special centres set aside for Desktop Publishing, Computer Aided Design, data security, networking and multimedia.

If you're in the business of power computing, call the Which? Ticket Hotline on 091 416 4570. ■

FBI probes false tests on computer chips in the Gulf

The Federal Bureau of Investigation is looking into reports suggesting that some US and British military hardware in the Middle East has been based around sophisticated new computer chips which had not been tested efficiently.

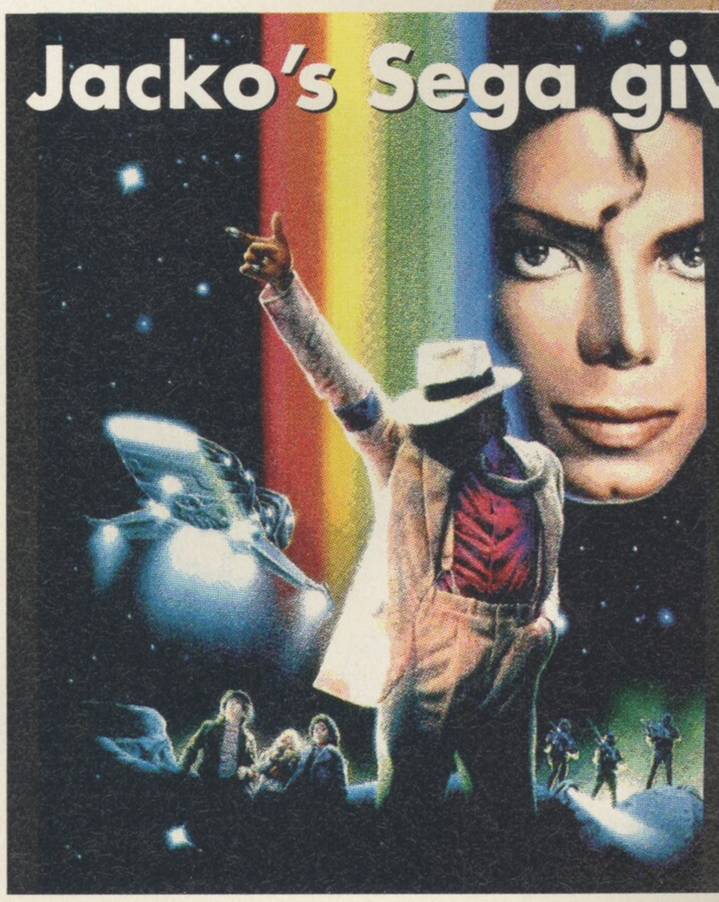
Defence experts claim that chips inside such kit as the Patriot Missile system, the Hawk and Stringer Missiles and the US Air Force's F-15, F-16 and F-111 fighter planes had not undergone the usual rigorous testing procedure.

FBI agents have already called on the premises of a California based company called Natel Engineering. The authorities were acting on information from ex-employees who claimed that testing times had been shortened, and that some results had been falsified.

There is no suggestion that the chips have failed on active duty, but the FBI says it must enforce testing procedure. One FBI source revealed: "Lives are absolutely on the line in the Middle East because of this."

A spokeswoman for Natel said that allegations of irregular testing procedure were "absolutely untrue" and added: "Our reputation speaks for itself. There is nothing abnormal about this. We are subject to government scrutiny all the time." ■

Jacko's Sega giveaway



Michael Jackson has been recruited to help persuade video gamers to go for Sega's 8-bit and 16-bit consoles.

For the next few weeks buyers of either the Master System or Megadrive will be offered a free copy of the *Moonwalker* game , as well as a video of Michael Jackson's *Moonwalker* movie.

The 8-bit Master System currently retails at £100, while the Megadrive costs £189. If you already own either, you'll be able to pick up the Jacko double pack on its own within a few weeks. ■

HAVE SKILLS WILL TRAVEL

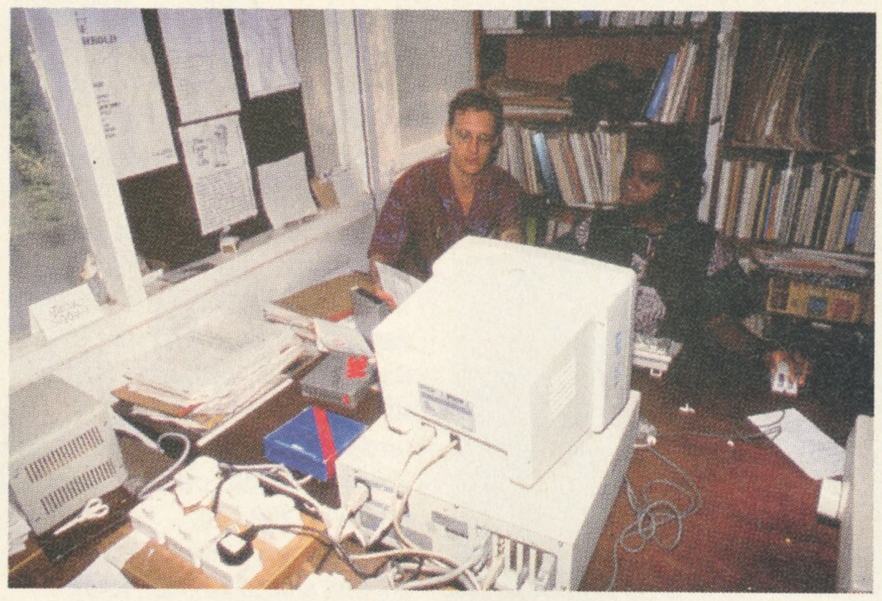
Skilled computer users are urgently needed by charity organisations working in the developing world.

Last week the Voluntary Service Overseas (VSO) said it was actively and anxiously looking out for programmers, systems analysts and computer trainers who would be willing to help set up and continue relief projects around the world.

Volunteers will work in schools, public centres and governmental departments in developing countries such as Papua New Guinea, Sierra Leone, Sri Lanka, Tanzania and Zambia. Their main function will be to teach locals how to make full use of the computer systems at their disposal.

The VSO hopes to send 15 computer users out by the autumn, with a further 12 following early next year. Volunteers must be over the age of 22 and should have at least two-years experience in professional computing, preferably in a teaching capacity.

Anyone interested will be required to sign a two year contract, but the VSO promises that it will be rewarding work, and that volunteers will not be "out of pocket".



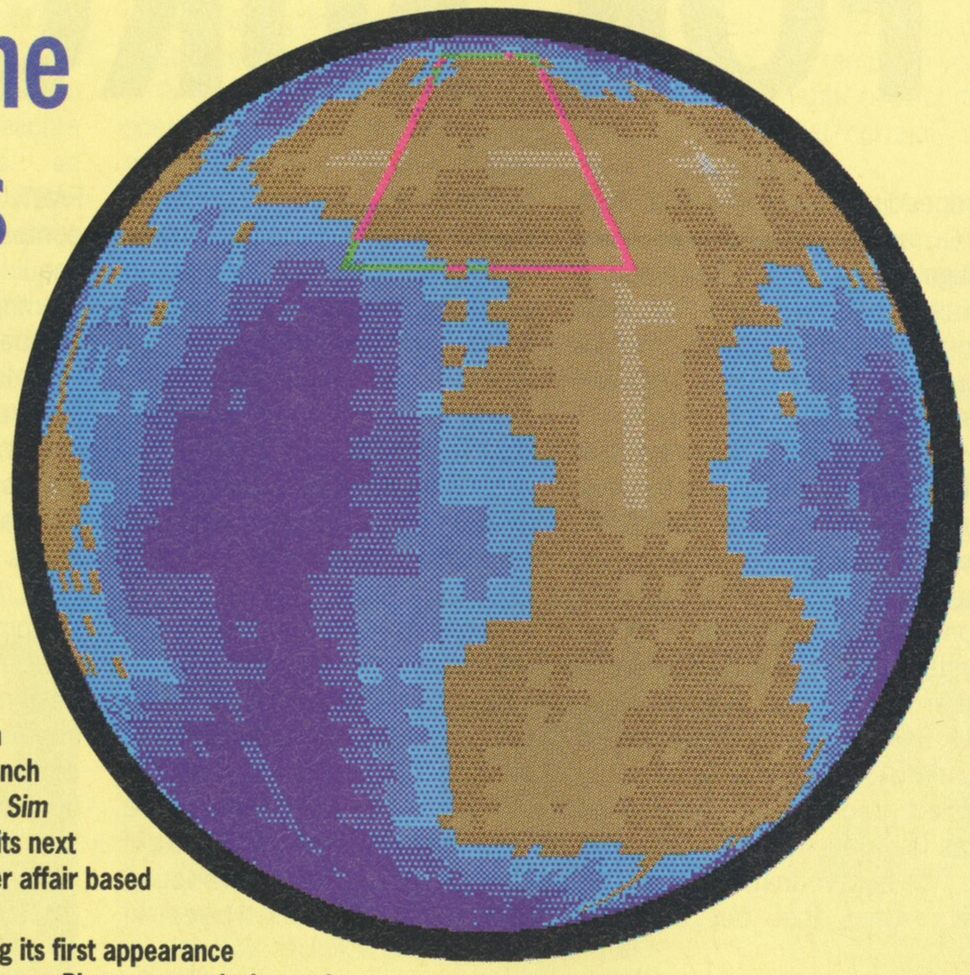
• Use your computing skills to help train people in developing countries.

Some 20 computer staff are working for the VSO at the moment, but their two-year contracts are coming to an end. All staff are given language training before departure.

VSO's technical co-ordinator Keith Budden commented: "Preferably we are looking for experienced computer staff with a degree. Computer trainers are needed to design and teach courses in colleges and schools. For example, the University of Sierra Leone in West Africa needs a computer lecturer to teach business computing to government staff."

Anyone interested should contact the VSO at 317 Putney Bridge, London SW15. ■

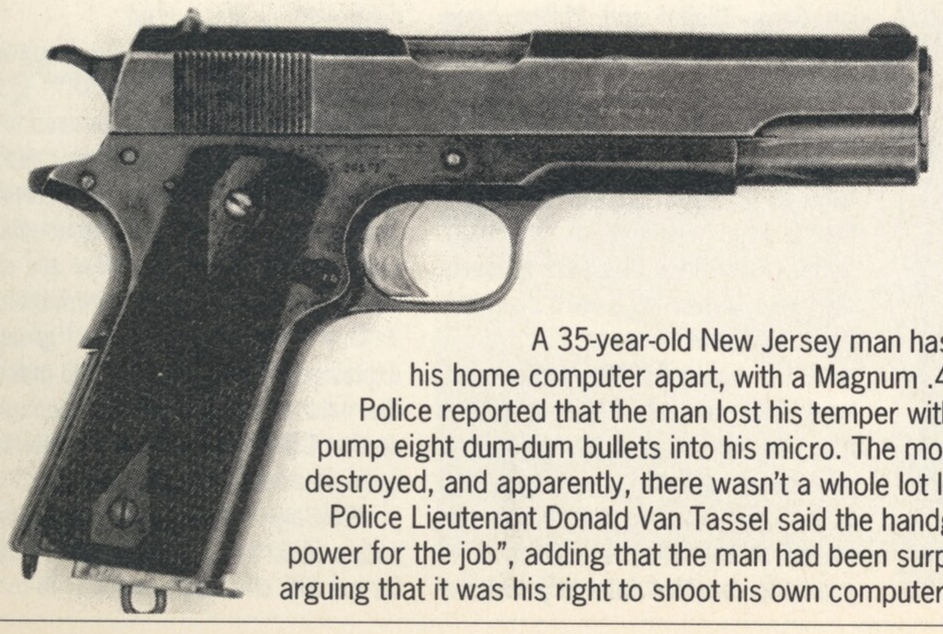
From the makers of Sim Earth



Maxis, currently riding high following the successful launch of planetary creation game *Sim Earth*, has announced that its next project will be a multi-player affair based on violent robot wars.

***Robosport* will be making its first appearance on the Macintosh later this year. Players must design and control their own team of robots, which battle with other metallic creations in any one of 24 arenas. You can tear each other apart by connecting computers via a serial or modem port, or through the AppleTalk network.**

A US launch date of late March has been fixed, so UK gamers could be in for a treat by the summer. ■



On-screen shoot out

A 35-year-old New Jersey man has been arrested after blowing his home computer apart, with a Magnum .44 automatic.

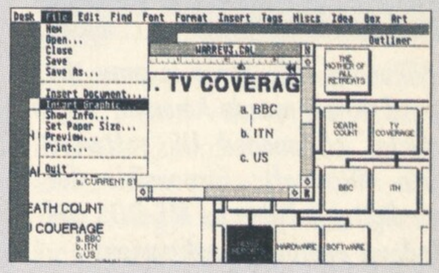
Police reported that the man lost his temper with the computer and decided to pump eight dum-dum bullets into his micro. The monitor was completely destroyed, and apparently, there wasn't a whole lot left of the main unit either.

Police Lieutenant Donald Van Tassel said the handgun was "quite a lot of fire-power for the job", adding that the man had been surprised when he was arrested, arguing that it was his right to shoot his own computer in his own home. ■

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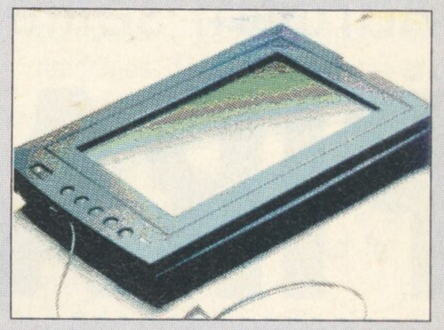
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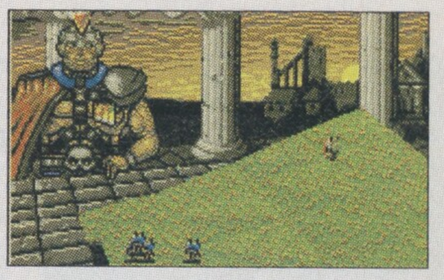
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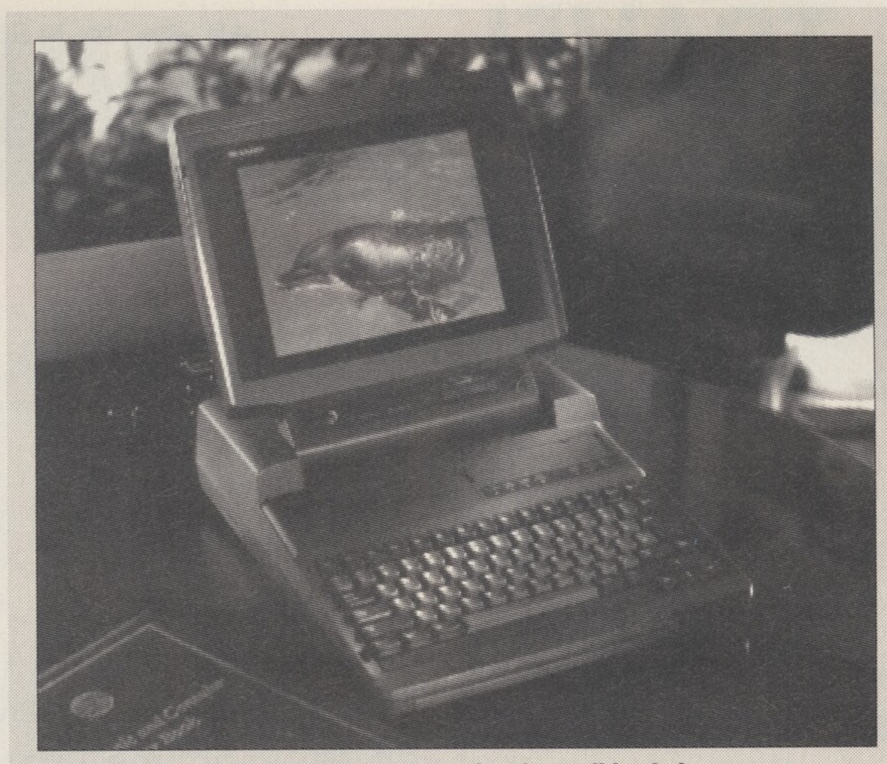
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• *Billionaire Bill Gates is now the second richest man in America.*

Gates co-founded US software house Microsoft, responsible for such digital delights as MS-DOS and Windows operating environment.

Gates was worth just $2 billion dollars last April, but with Microsoft's sales booming, he's now worth $4 billion, but he only pays himself a paltry $261,000 pa.



• *Sharp move: The PC-8051 is stricty for the well heeled*

Sharp colour

Sharp claims that its latest colour laptop will set the benchmark by which other colour portables will be measured.

The PC-8051, which will begin shipping in spring, is a high-end machine aimed at business users, and uses the latest Thin Film Transistor (TFT) liquid crystal display technology to produce clear, precise colour graphics. The screen provides VGA graphics resolution and can support up to 256 simultaneous colours from a palette of 262,144.

Weighing 15.2lbs the PC-8051 will cost around £8,000. Aside from its graphical capabilities, it is also a high quality laptop , based on a 32-bit 80386DX processor running at 20MHz and comes with 2Mb of RAM as standard.

Software bundled with the PC-8501 includes MS-DOS 4.01, GW-BASIC 3.23 and Shell 1.01.

Sharp believes its machine will be a catalyst in the growth of the market for colour business software. Glyn Davies, Sharp's product marketing manager, said:

"Sharp's first generation of colour portables has featured strongly. We expect this to be a significant growth area given the portability and power of the PC-8500 series." ■

Marconi settles out of court leads to corporate software clean-up

PIRACY-BUSTING DISK PLANNED FOR EUROPE



• *Peter Smith, managing director of Marconi, has promised that the company will work alongside the BSA and FAST to stamp out piracy.*

The Business Software Alliance (BSA) and the Federation Against Software Theft (FAST) have dropped allegations of software piracy against Marconi Instruments following an amicable out of court agreement.

Marconi, which has consistently denied the charges of unauthorised copying of software, is now working with the two organisations to develop a programme to control the use of software in large corporations.

The BSA and FAST brought the charges against Marconi last December on behalf of four leading PC software companies, Ashton-Tate, Lotus Development, Microsoft and Wordperfect. The proceedings were the first part of a larger, pan-European campaign by the two organisations to curb software theft. The BSA is also currently taking action against companies in France, Spain and Italy.

The UK dispute was resolved when Marconi consented to work alongside FAST and the BSA, both in carrying out a review of the company's existing software controls and developing a model system for the use of software in other major companies throughout Europe. A court hearing in January had already been postponed because an agreement was felt to be close.

"We believe that this approach will ensure that our company continues to use legal products which protect our computers against possible viruses, while satisfying the software companies that their programs will receive the protection they deserve," said Marconi's managing director Peter Smith.

Unauthorised copying is thought to be costing software companies about £3 billion a year in Europe, but the BSA believes its campaign is proving successful. It reckons significant rises in software sales last year in Italy and Spain can be attributed to action it has taken.

FAST believes that the Marconi case "has made a lot of companies very nervous," according to Nick Hayes of FAST. He claims that over 700 companies rang up with enquiries about the audit programme in the wake of the original news about the charges. He added that FAST would have no hesitation in taking legal action again against companies it suspected of using pirated software, hinting that such new cases are, indeed, imminent.

● As part of the audit programme FAST has developed a special pirate-busting disk designed to seek out illegal copies of programs. It can detect 730 of the most popular business programs in the country. If you want to get hold of a copy, FAST can be contacted on 0628 660377. ■

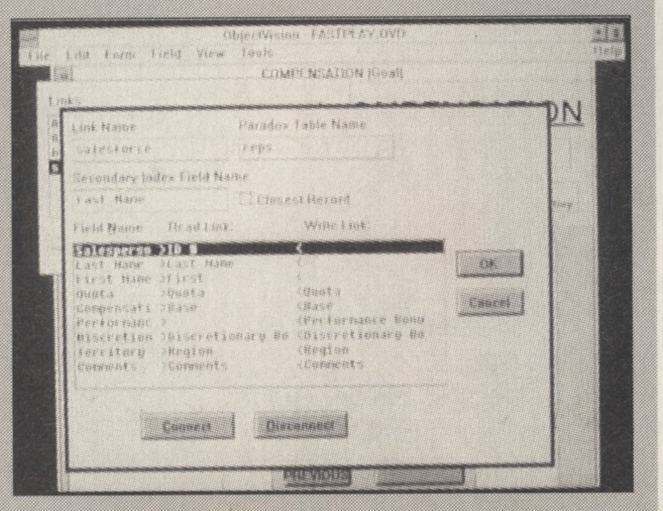
Visual object of desire

Borland International has entered the world of Windows 3 with a new programming tool called *ObjectVision*.

Like HyperCard on the Macintosh, *ObjectVision* is aimed at the person with little or no previous programming experience. Using what Borland calls a 'visual' system, rather than straightforward command lines, it is said to enable users to create interactive applications on the PC.

Not only is the system visual, it also makes use of elements drawn from other business software systems such as databases, word processors and spreadsheets.

ObjectVision is not expected to be available in the UK until the early summer. But as a price guide, it will be on sale in the United States for $495. ■



• ObjectVision: *programming without the pain*

CD format out soon

Leading high-tech companies including Sony, Digital and Philips have decided to agree on a single standard for emerging 'write once' CD-ROM format.

The so-called 'Frankfurt Group' is keen to promote Compact Discs as the storage medium of the near future. Write-Once CDs work in much the same fashion as a hard disk, but have distinct advantages:

● A CD holds 650Mb, while most hard disks are only 20Mb or 40Mb. Also, the disc itself is an exceptionally cheap medium.

● A CD, like a floppy disk, can be stored at the owner's discretion. If you keep sensitive data on your hard disk there's more chance of it being destroyed, or discovered.

● Distribution of information is made smoother with a 5.25-inch CD.

Write-Once CDs could be used for storing masses of information, such as newspaper back issues, technical manuals or long term accounts. Unlike 'read only' CDs, users are at liberty to store their own information.

One member of the group explained: "We've attempted to make the data structures general enough so that CD Write-Once will be able to emulate a hard disk drive."

Most agree that a swift standardisation could bring the Write-Once CD format into circulation quickly. ■

Bigger, faster and better games set for autumn release

AMIGA GAMES IN CARTRIDGES

Amiga gamers are to be offered a fantastic new way of playing bigger, faster and better games later this year.

Software publisher System 3 is working on the first Amiga cartridge game, due to be launched in the autumn. The innovation could have far reaching effects on games software publishing with the possibility of creating a whole new quasi-console market.

The aim of the project is to give Amiga gamers the option of fast loading games, hitherto restricted to dedicated games consoles. Cartridges have the additional benefit of expanded memory, and there's none of the fuss associated with multi-disk titles. Also, the cartridge is a much safer medium than delicate magnetic disks. It is an extremely difficult and costly process to pirate a games cartridge.

The first Amiga cartridge will be System 3's own *Silly Putty*, a cutesy platform arcade game. If the project lives up to expectations, we can expect to see games of a quality and depth which even the Amiga has yet to deliver.

System 3's cartridge boasts a massive 2Mb capacity, each will cost £35. Vivid Image Developments, which programmed System 3's *Ninja II*, is working on the technical side.

The cartridge plugs into the hard disk port on the left of the Amiga, but users will probably have to buy an "inexpensive" adaptor in order to make the system work.

System 3's boss Mark Cale told *Express*: "Cartridges are a far better option than disks. At the end of the day you're trying to create a dream, a fantasy for the end user. If the disk access keeps kicking in it distracts and frustrates you.

"With a cartridge we can do spectacular introduction sequences, movie quality sound tracks, and spectacular graphics without forcing the player to load all the time. Using a cartridge system on the Amiga means you can quite easily match the quality of 16-bit games consoles."

Amiga manufacturer Commodore is not involved in the project, although the firm is understood to have looked seriously at the possibilities of launching a cartridge based Amiga console.



• Amiga: soon this computer will double up as a games console.

Cale added: "The benefits of cartridges are enormous. If you can have the benefits of a computer as well – that certainly is the way forward."

Software publishers are known to be eyeing System 3's developments with interest, although some are sceptical. Ocean's software development manager Gary Bracey said: "Two megabytes for £35 would be wonderful. Whether it is achievable remains to be seen. I find it difficult to accept that price-point, knowing the price of chips and what's involved."

At Mirrorsoft, managing director Peter Billotta said: "It sounds good in theory, but we'd have to look very carefully at the products we could put on it." He pointed out that many licensing deals for Amiga games do not make allowances for cartridges.

Even so, if System 3 manages to fulfill its promises, there can be little doubt that gamers will jump at the chance of fast loading cartridges featuring sophisticated games. And it follows that independent software publishers will come around to Cale's way of thinking. ■

Games arcade pervert jailed

A perverted teacher set up a video games arcade in his home, to lure young lads into sex and indecent photo sessions.

Last week Guildford Crown Court heard how Alan Ackers, 47, had spent £10,000 on an amusement arcade in his home. The biology teacher had invited local boys to play the games absolutely free. Ackers had even issued membership cards for what he called the 'Dempster House Video Club'.

The prosecution said: "Most of the rooms in his house were quite normal, but one contained an amusement arcade full of computer games and slot machines. They were all free and he had filled the room to lure young boys.

Ackers claimed the photographs were taken for "artistic" purposes. He was jailed for 21 months. ■

You're never too old

Computing and word processing courses are being held at Lancashire Polytechnic for retired and elderly people, after pensioners rang in and demanded more attention.

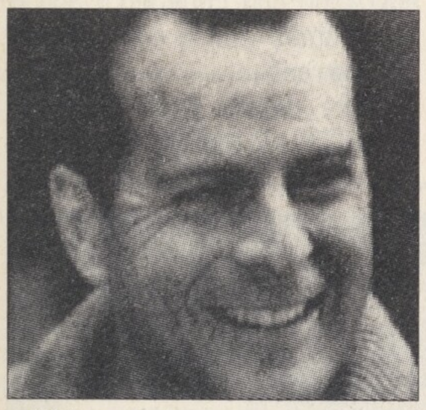
A three-day word processing course covers most aspects of producing documents. While on a five-day general computing course students can learn about a variety of applications, including word processing, graphics, databases and spreadsheets. The courses cost £14 each.

Diane Oxley of the Polytechnic's Life Long Learning Centre said: "Elderly people were ringing us asking if we could run a course on information technology which they could attend. We would set up more if we could, but we're limited by resources. Even so, this course could be unique since it's only for the retired or elderly."

Course co-ordinator Jim Soulsey explained: "The courses are aimed at two groups: elderly people who haven't a clue about computers will attend to satisfy their curiosity. They can then understand what their grandchildren are on about.

"The other people are those who have access to computers but find the manuals too technical. We'll just show them what they can do with computers and how to use them to their advantage. If they haven't got a computer at home, local libraries have computer facilities." ■

● See The Week in View on page 6.



• Willis: adventure.

Die Harder game due

Grandslam is to release a game based on action movie *Die Hard II*, this spring.

The game will feature levels based on the Bruce Willis movie, currently at number one in the video charts.

You play Bruce Willis and your task is to chase fiendish drug pushing terrorists around an airport in order to right wrongs and generally beat people up. Available on all formats. ■

IBM kits out Kuwait

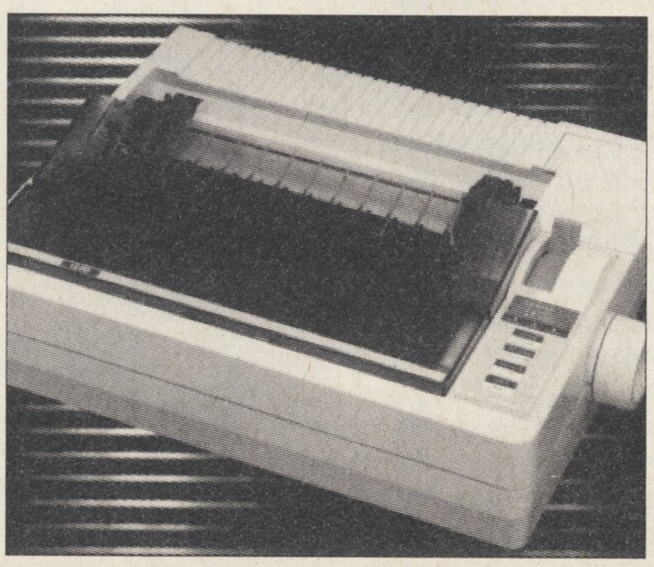
IBM has signed a major deal with the Kuwaiti Government, to replace stolen computer systems.

Thousands of Kuwaiti computers were seized by Iraq following their invasion of the emirate last August.

Ian Mills, technical manager of the Kuwaiti Computer Company commented: "Iraqi soldiers started in the centre of Kuwait City and moved outwards, removing everything they could find. The soldiers threw the computers into the back of trunks. It's unlikely they survived the journey to Baghdad." ■



• Saudi troops celebrate their hard fought victory.



• Model Citizen: a better deal.

Bowling out ninepins

Citizen has cut £30 from the price of its124D 24-pin dot matrix printer bringing the price down to £249.

The 80 column 124D has been made more affordable in an effort to persuade entry level users to opt for a 24-pin machine instead of the more usual 9-pin printer.

The 124D can print at up to 140cps and has two resident fonts. Citizen sales manager, Richard Scotto said: "Many price conscious users are sticking with 9-pin technology. The price cut is an incentive to convert them to the benefits of 24-pin printing." ■

THE WEEK IN VIEW

Brian Godfrey, from the Age in Action group, says computing is an ideal for the elderly...

We spend a great deal of time not only persuading leisure organisations to take the elderly seriously, and also letting those of us who are young at heart find new challenges.

You may read in the press about "Supergrans" who water-ski every week and jog ten miles each day. Fortunately, these are exceptions to the rule. Most pensioners are happy to watch the TV, or complete a crossword.

Computing doesn't require physical exertion. I believe computing has a lot to offer the elderly. All that's needed is some encouragement, and a spot of myth blowing.

To so many pensioners, learning to make use of a computer seems as unlikely, and about as useful, as learning to speak Bulgarian.

But we've found that computing is an ideal pastime, and so have so many others. It is very absorbing, and everyone is bound to find an aspect which appeals. That may be simple word processing, messing around with paint packages or, as is often the case, just playing computer games.

I know of many pensioners who have invested in a PC just for word processing, and are now dabbling in programming and playing games. Favourite titles are as you would expect – thought provoking games, military simulations and word games. Some have had the pleasure of being introduced to computers through their grandchildren wanting a partner to play computer games.

The notion of a computer course at Lancashire Polytechnic, completely devoted to pensioners, is a good one. Some might say that the elderly should simply go along to the normal, everyday computer courses with everyone else. But it's difficult for someone who has never really used a computer – but who wants to satisfy their sense of curiosity – to believe that they will not make a bit of a fool of themselves

With friends and like-minded people about that's not such a problem. The elderly want to be able to get stuck in, not be left on the sidelines while others pursue computer courses – so often just for commercial gain.

Lancashire Polytechnic has started the course because of local pressure from the elderly. I think that's a lesson all of us should learn from.

Interactive phone system blames BT for its closure

MUD SYSTEM SLIDES UNDER

After six years of orcish fun, elfin pranks, treasure, valour and blood, one of Britain's biggest interactive play-by-phone systems has closed.

The Multi-User Dungeon MkII, or MUD as it is affectionately known, has been in business since the mid 1980s using British Telecom as its host. Now the system has been forced to shut down.

Sources close to MUD claim that BT closed down the game. The reason stated is that new regulations make it illegal for BT to allow non-profit making business using its lines.

Dr Richard Bartle, the creator of MUD, commented: "It's rather off-putting the short time we have been given to leave has caught us rather unprepared."

However, a spokesman for BT told *Express* this week: "There are no new regulations which have come into effect. BT did not shut this system down. There is no reason for us to have done it. It is certainly not up to Telecom to look into the finances of its users."

Whatever the story behind the closure, the wizards, dragons and dwarves might have their final demise forstalled.

On the search for a new home, Bartle said that all that was needed was "a 486-based server with about 16 to 20 lines and we're back in business".

Bartle, who also wrote and instigated British Legends which runs on Compuserve, claims that MUD has evolved vastly since its inception. The main reason for this is the fact that once a player has attained the much-vaunted title of Wizard, he or she can then create extentions to the game. A wizard can in fact develop whole new landscapes, monsters and rules for dealing with them.

So, if you have a 486-based machine and a score of telephone lines, and if you would like orcs crawling over your bus, you should call Dr Richard Bartle on 0206 272633. ■

Big blue's lightning chip

IBM scientists claim to have developed the world's fastest high capacity memory chip.

The Static Random Access Chip (SRAM) can send or receive eight billion bits of information per second. The single chip holds 512K bits and can replace the contents of its register 15.6 million times every second.

IBM has dubbed its latest creation 'Lightning' because of its phenomenal pace. It can read one bit of data in four billionths of a second. Big Blue will probably make use of Lightning in high-end mainframe computers. ■



• *Samsung's latest PC AT clone.*

Samsung smasher

A £599 AT clone with on-board VGA has been launched by Samsung. The SD620 runs at 12MHz, has 1Mb of memory and basic serial and parallel ports.

A hard disk version with a 40Mb hard disk is also available for £899. The machine is aimed at a broad spectrum of the market including corporate, education and commerce and it also comes with a one year on site warranty.

More details from Samsung on 081-391 0168. ■

New Proxima DTP package

A new DTP package for the ST, TT and Mac is due to be released by Network News Services this autumn.

Proxima 2 is claimed to offer all of the features found in high level DTP programs. Not only is colour support offered, but DTP industry standard PostScript fonts can also be displayed.

The program further allows for files created using many major Computer Aided Design (CAD) programs to be incorportated without losing any of their individual attributes.

Priced at under £200, *Proxima 2* can be obtained from Network News Services on 0375 859103. ■

The next starfighter

If you're in the mood for a piece of high powered, celestial straffing and diving, then you'll be pleased to hear that a sequel to the acclaimed *Wing Commander* space combat game is soon to hit the screen.

The new version, called *Vengeance of Kilrathi* , is currently under development by Origin software in Texas. It is said to include 'fully orchestrated' stereo sound, and even speech synthesis. As an added bonus, and following along with recent trends in high quality games production, the designers have decided to use airbrushed backgrounds which are then digitised into the game.

Wing Commander and its offspring use a massive 10Mb of code and are for the moment only available for the PC. However, sources close to the developers say that 16-bit console versions of the game are planned for later this year.

Wing Commander II (The Vengeance of Kilrathi) will be available for PC only in the spring. Current price is only quoted in US dollars at $69.95. We can only hope that the exchange rate stays in our favour. ■



• Wing Commander : *the sequel is coming your way*

Innovator Bushnell back in control

Nolan Bushnell is the man who brought the world *Pong*, the two paddle, one ball, video tennis game which changed the face of the leisure industry. He then went on to found Atari.

Now he's at Commodore as general manager of its Interactive Consumer Products division and he has a great deal to say about CDTV.

As far as Bushnell is concerned, Commodore Dynamic Total Television, is not just a new step in computing it's "the next phase in the evolution of consumer electronics".

More than this, he is convinced that it is also "the next generation in Compact Disc development. It's true multimedia".

In Bushnell's driving vision, CDTV goes even further than simply being a consumer electronics product. Not content with redefining consumer electronics and Compact Discs, he also wants to change entire cultures. CDTV, he says, "will truly change the way people learn, are entertained and educated. It's the new media of the 90s".

Looking towards the not too distant future with a nod in the direction of the video games industry which he effectively instigated, he also comments: "The CDTV player and the interactive multimedia category that it is launching will create an entirely new software industry. Interactive multimedia will become a billion dollar business within five years, rivalling the PC software and video game software industries".

With the UK launch of CDTV planned for the middle of this year, we will all have to wait and see. ■



***• CDTV: Bushnell's latest obsession. It's a far cry from* Pong.**

Budget action games trio

Three budget 16-bit games have been launched by Action 16, offering chances for strategy and intuition.

The action is packed into *Sherman M4*, a 3D tank simulation based in the European battlefields of the Second World War. Your intuition comes into play with *Kult*, a futuristic adventure game controlled by a simple icon system that drags you graphically through five different ordeals in a bid to rescue your partner.

And the American Civil War is the setting for *North and South*, a strategy war game with cartoon-like visuals.

The games are priced at £7.99 each and are available on Amiga, ST and PC. ■

Power link from Sage

A Local Area Networking system exclusive to high end 386 machines and with a sub £800 starter price is available from Sage.

Mainlan386 works on a minimum of a 386SX machine as a file server. Individual machines on the network connect via an Ethernet board and can take advantage of a customised filing system that gives disk access many times faster than conventional operating systems.

A two user system is £795 and a starter kit for £1,295 includes all that's needed for a server and three slaves. An unlimited user system costs £1,995. More information from Sage on 091 213 1555. ■

Language to aid processing

A new computer language that replaces the 256 character ASCII set with over 65,000 characters has been developed by several major computer companies.

The language, called Digicode, can aid processing in all computer languages and offers a character palette over 105 times larger than the ASCII set. The consortium which includes Apple, IBM, Microsoft and Sun has promised that the code will be ready during spring 1991.

With so many characters in the set, it will be possible for often used words to have their own characters. Thus, data transmission could be speeded up by up to six times using modems equipped to encode and decode it. Whole chunks of code could be assigned to a single character resulting in very small libraries of utilities for programmers. ■

Graphics on CD-ROM disc contained sex scenes

PORN SCANDAL HITS PC TODAY

A library of pornographic images has been uncovered on a CD-ROM disc, which has been sold alongside *PC Today* magazine for the last five months.

Two young children had been exploring one of the discs which their father had bought for £24.95. They accessed the Graphics directory to discover what Database Publications, *PC Today* publisher, describes as: "Pictures of men and women in various sexual poses".

The CD was supposed to contain word processors, spreadsheets, games and libraries of photographs. The pornographic images surprised both the magazine staff and publishers.

Commenting on the digitised smut, Derek Meakin of Database admitted: "We are legally responsible for what we sell, but checking an entire disc is virtually impossible. This is a continuing dilemma we will have to accept. The disc contains such a huge amount of data that the offending pictures are like grains of sand on a beach".

Even so, Database took the unusual step of issuing a press release detailing the extraordinary episode – before news had leaked out of the company's Stockport headquarters.

It is a fact that an average CD contains more than 550Mb of data, enough storage capacity to hold 2,000 novels.

Japanese and US companies are carrying heavily funded research into low cost Read/Write optical media, and the industry is looking to CD technology as the future of data storage. Database's experience illustrates the potential difficulties that CD-ROM publishers will face. The time it takes to check such a vast amount of data increases the potential for mistakes.

To check 550Mb for the presence of a virus could take as long as a week. As Meakin says: "We scanned through the contents but didn't find anything out of the ordinary. After all, it came from a reputable American publisher and to read every part of it would take many weeks". ■

Match makes learning light

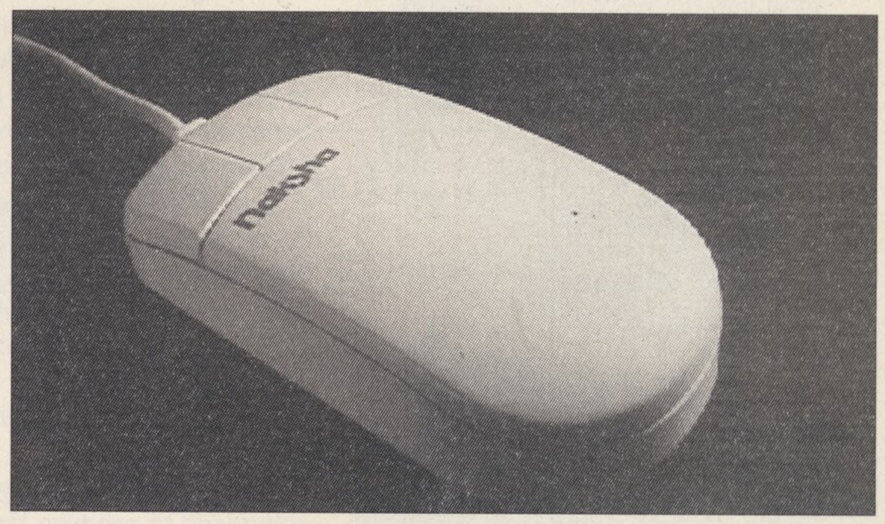
Scottish education specialist Scetlander has released the latest in a series of learning games for children.

Mix and Match with Maggie aims to teach the very young, and older students with learning difficulties, to match and remember pictures, shapes, letters and numbers. Maggie the Monster is one of the characters on hand to accompany the user through the learning process.

Scetlander has targeted the program on the complete beginner to education. *Mix and Match* is being pitched as a skill development program, ideal as a pre-reading and writing module.

The program can be customised by parent or teacher to suit the abilities of the student, matching the difficulty with the percieved user skill and graduating the difficulty to suit an individual's tastes.

It's available for the PC, Archimedes, Spectrum and Nimbus. More details from Scetlander on 041-357 1659. ■



• Naksha has announced that it will be dropping the price of its popular Upgrade mouse.

With immediate effect the price will dive from £39.99 to £28.95. The Upgrade mouse is Amiga and ST compatible. For more information call Naksha on 0925 574439.

The Amiga cartridge system – what does the industry think?

NEW AMIGA FORMAT

by Gary Penn

Leading software publisher System 3 has announced that it is to release the world's first Amiga cartridge game before the end of this year. The advent of the Amiga cartridge should result in bigger and better games with none of the trials and tribulations of disk loading.

The cartridge Cale is proposing has a two megabyte capacity and will retail for £34.99 when it makes its debut in September. The first release will be System 3's *Silly Putty*, a platform-based affair concerning the exploits of the bouncy, stretchy stuff that kept kids amused over a decade ago.

Amiga manufacturer Commodore's involvement with the cartidge is minimal. "This is an independent thing," says Cale. "Commodore isn't actually responsible for what we're doing – other than they produce the Amiga. The benefits of cartridges are enormous. If you can have the benefits of a computer as well - that certainly for me is the way forward".

VIVID IMAGES

The technical side of this venture is being handled by Vivid Image Developments, the team resonsible for programming *Ninja* and *Ninja II* for System 3 and which has proved such a key factor in the duplication of Commodore 64 cartridges. The cartridge plugs into the hard disk port on the left of the Amiga. The reason for this is that the software on the cartridge cannot be activated from any other port without using a floppy disk.

This does raise a small problem for owners of Amigas other than the A500 and A1000. They are the only models which feature external expansion ports. So does the publisher ignore this slice of the pie or release a inferior floppy disk version of the cartridge?

The nature of the expansion port in question means that a maximum of 128 megabits (16 megabytes) of ROM could be used in a cartridge, though the cost would be prohibitive to all but the biggest spendthrift. Even so, VID's John Twiddy feels that even the smallest cartridges (512K) could be used to good effect as ROM disks of sorts. Data would be compressed in pretty much the same space-effective way as it is on floppy disk. The advantage is that while data is being decompacted from the cartridge's ROM to the computer's RAM, small programs could be running from the cartridge to remove those rough edges associated with floppy disk loading.

The information stored on diskettes is easily corrupted or, worse still, erased. Diskettes are also susceptible to data destructive viruses. With a cartridge it takes more than a magnetic field to destroy its contents.

PERCEIVED BENEFITS

On the face of it the benefits of memory-abundant cartridges are enormous. For a start, programmers, designers and end users alike can have the games they have always dreamed of.

Graftgold's Andrew Braybrook, distinguished programmer of *Paradroid 90* and *Rainbow Islands* on the Amiga, is enthusiastic about the prospect. He says: "It's tremendous – two megabytes would be a luxury – it'd be hard to fill it at first, although from a design point of view it certainly means there'd be more of everything. You could probably take better advantage of the Amiga's facilities with the extra RAM. At the moment you have to write for the basic 512K machine. I just hope publishers don't penny-pinch the developers to help pay for it."

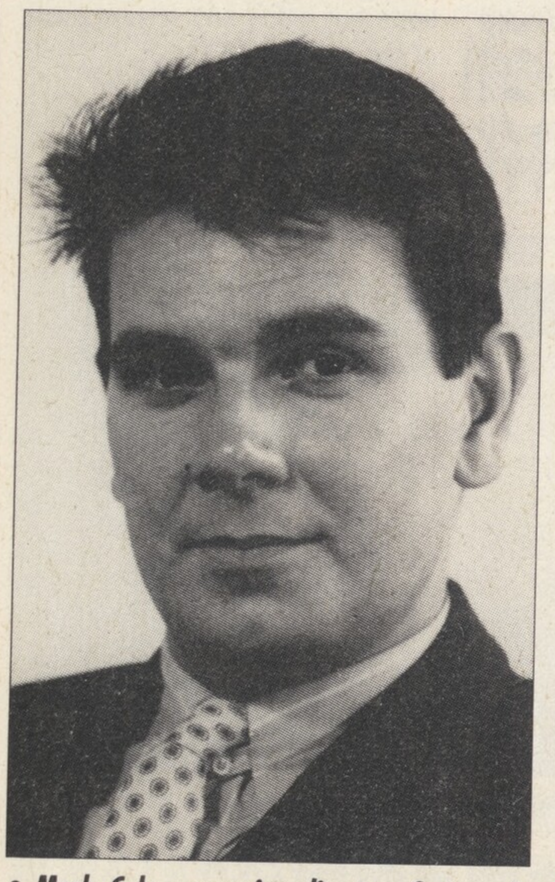
Ocean's product manager Gary Bracey, on the other hand, is equally enthusiastic, but sceptical: "Two megabytes for £35 would be wonderful. But you're talking about custom interfacing on the expansion port and that can't be cheap."

MASCULINE ADAPTORS

This is true. The expansion port in question is of a masculine persuasion, which means anything that's stuck into it has to be of the opposite gender – in this case costly edge connectors. The solution according to VID comes in the form of the one-off purchase of an inexpensive adaptor. This piece of hardware is attached to the expansion port to allow those traditional and considerably less expensive PCB-based cartidges to be plugged in.

But Mirrorsoft's managing director Peter Bilotta, although attracted by the idea, remains to be convinced: "We'd have to look very carefully at the products we could put on it of course. But we'd also have to look carefully at the products we actually have the rights to put on it."

Now there's a thought. If you are authorised to produce the floppy disk version of a product, when it comes to putting this software onto ROM where do you stand? On Nintendo or Sega's toes more than likely and that's not good for your health.



• ***Mark Cale, managing director, System 3: "Cartridges will force people to think about quality rather than quantity."***



• ***The Amiga – set for a new future with a cartridge system.***

"I mean, what is it? A computer or a console?" asks Bilotta. "Legally I'm sure there'd be companies producing stuff which they wouldn't have the rights to."

One point raised by a leading technical expert is that the cost-effective ROM which is widely used in cartridges is marginally slower than RAM. Having to continually access the cartridge means that the Amiga would effectively run every so slightly slower. Not so, contends John Twiddy: "Ultimately that can be true, but I don't really think it needs to be a problem. The difference in cost between those chips is neglible." It's not so much the parts that cost as the labour. Cale concedes that the process is not cheap.

"One of the disadvantages with cartridges is the lead time and the costs. If you are putting software onto a cartridge you can't just throw it away, it costs a lot of money to put it together. The cost of producing a three-disk product, with a box and a manual is around two pounds. The equivalent 16-megabit cartridge with the box and manual would probably cost about £13."

But Cale sees a positive side to this. "Cartridges will force people to think about quality rather than quantity. With those costs some of our friends in the industry who don't produce such high quality will probably steer away from it. Now is the time when the cowboys really are going to be forced out of the market. They're going to have to put their money where their mouths are – pay up or shut up as they say. At the end of the day its the end users who will benefit from this."

It all sounds smashing so far. There's also the favourable fact that cartridges are far more difficult to pirate than magnetic media, a point immediately and consistently raised by programmers, publishers and the developers themselves.

But you can't always get what you want. Cale reckons that "penetration into the shops is the biggest problem with cartridges. Retailers do not want to support them. My costs are higher so the retailers get less of a margin. I don't think a lot of people realise just how much retailers make on software – it's almost half of the retail price. I think it's disgusting that the retail trade is really limiting the market. Nintendo and Sega were only really supported originally by the demand for them. Software retailers should have their margins in line with every other retail business – working on a 25 to 30 per cent discount structure. Then there's more incentive for a publisher to go ahead and produce these more expensive units and produce something of a higher standard."

Cartridges for computers are nothing new though. Atari's 400 and 800 series computers got the ball rolling early in the decade. Sinclair tried and failed with its special user interface a few years later. And of course Commodore has been doing it for years, with the VIC 20, C-16, Plus 4, and now the Amiga.

This doesn't surprise Peter Bilotta though: "To a certain extent it's a different market place and a different buyer. Maybe the real computer players aren't interested in console-type entertainment. To make a cartridge is obviously more expensive than a disk. We're willing to produce Sega software because we know the market's there. Amiga owners would have to be re-educated.

The possibility of a similar system for other 16-bit machine such as the Atari ST is unlikely - at least it is from System 3. "Why would you want to support the ST?" says Cale. "I'm here to support the end user. I don't believe in supporting a machine which is not really designed to play games and be as flexible as an Amiga. I see the ST as a MIDI controller and little more."

Cale is confident of achieving his ideal on the Amiga though. "At the end of the day it's going to be down to product quality and the marketing ability of publishers. In the meantime, it's just a case of finalising the board, getting it working properly and getting a sample back.The blueprints are now out and we're expecting boards back soon".

Any such publishers should contact Mark Cale at System 3 on 081-864 8212. ■

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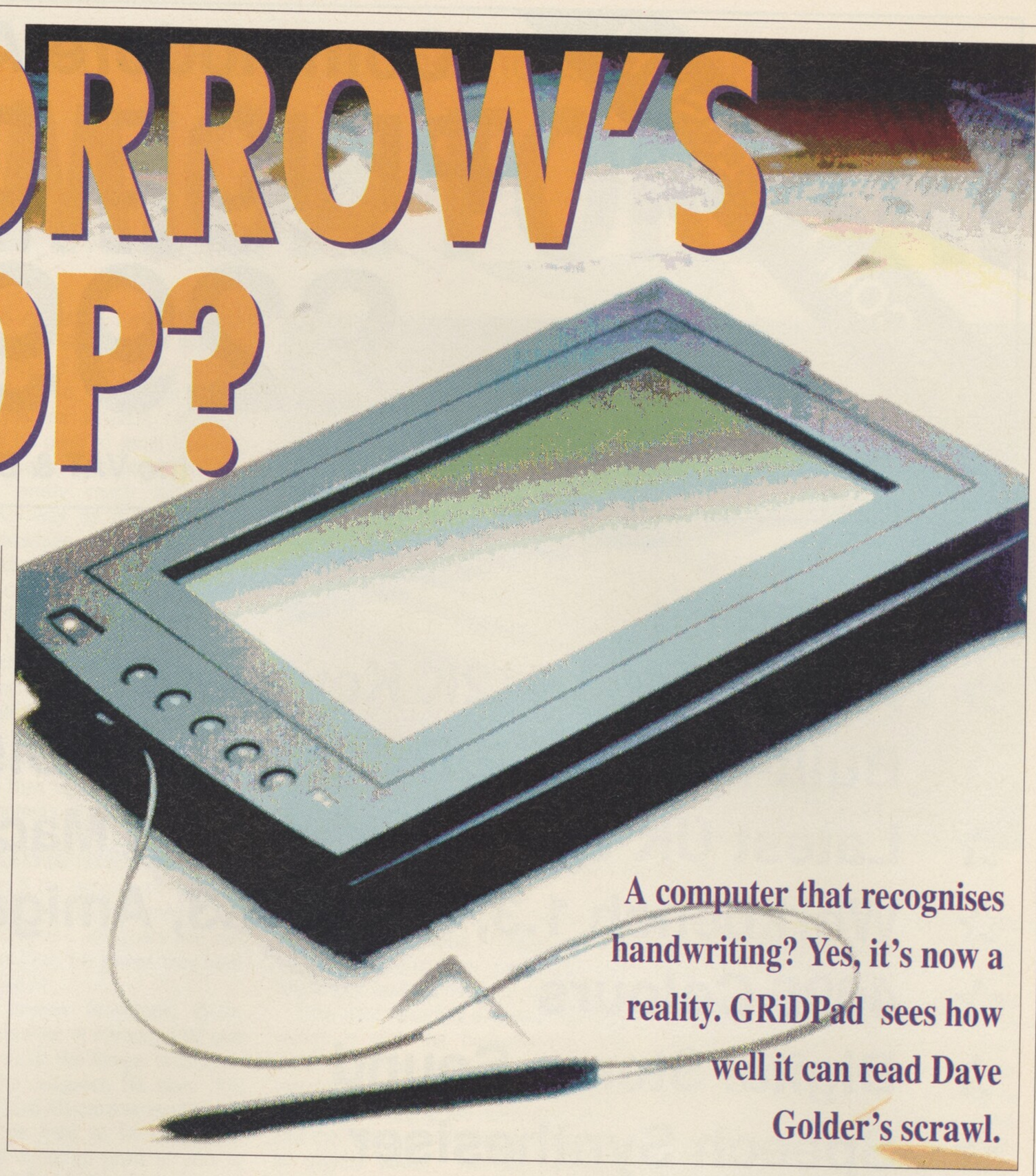
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TOMORROW'S LAPTOP?



A computer that recognises handwriting? Yes, it's now a reality. GRiDPad sees how well it can read Dave Golder's scrawl.

While computers you can talk to which will understand your voice and enter information directly are some way off, the machines that recognise handwriting are already here.

GRiDPad is a portable PC compatible unit which will operate under Microsoft's DOS. It is about the size of an A4 sheet, but there is no keyboard. Instead, attached to its side is a stylus which you use just like a pen to write data or commands directly onto the screen.

You can use the stylus to draw in free hand rather like an Etch-A-Sketch, or it can be used as a substitute mouse to select items from lists, click on commands and drag elements across the screen. But the GRiDPad goes one stage further than this by actually reading the upper case alphabet and numbers written on the screen using the stylus. Write down your name in wobbly block capitals and seconds later GRiDPad will translate it into neatly printed letters and, more importantly, data which will be compatible with any PC.

Thus, information such as names or production figures can be written directly into the GRiDPad's memory for storage or processing. The information can then be swiftly transferred directly onto a database or mainframe; this cuts out the need for retyping data from paper forms and eliminates the possibility of transcription errors.

SPELLING MISTAKES

Not that you won't make errors when originally writing down the information, of course, either through your own spelling mistakes or because the GRiDPad has incorrectly translated one of your numbers or letters. Not to worry, though, because without the need for messy Tippex or smudgy erasers you can easily correct mistakes with a couple of vertical or horizontal strikes through letters or words.

You will probably find that the Pad translates some of your letters and numbers incorrectly quite regularly to begin with. You need to be fairly precise in the way you write letters or if, say, your Hs taper at the top the machine might read it as an A.

But don't worry that you will have to alter your whole writing style, because the Pad will probably only object to a few of your letters and you should be able to learn how to write them in an acceptable way with the minimum of fuss. And you don't need to be particularly neat; it just seems to become confused when you write, say, a 9 starting from the bottom instead of the middle.

Another useful feature is that the Pad can store bitmapped images, such as a signature. This means that a form brought up on the Pad's screen can also be signed on the screen. In the US, where the system is already in use, these bitmapped signatures have been accepted as legally binding.

Other bitmapped images, such as maps or road signs, can also be stored in the Pad's memory and reproduced on screen at a touch of the stylus. This can be useful for, say, a police officer reporting a road accident. The Pad can have stored in its memory different road types – straight, bend, junction etc – different types of vehicles and various road signs. The officer can then use these to recreate a visual representation of an accident on the Pad's screen.

RUGGEDLY DIFFERENT PORTABLE

While other companies, including Sony and the Active Book Company, are working on similar systems the GRiDPad from US-based GRiD Computer Systems, is the first to become commercially available.

It weighs just two kilogrammes and is based on a 80C86 processor running at 10MHz with 1Mb of RAM. The screen has a resolution of 640 by 400 and is slightly coarser than VGA. It also has a built-in MNP 2400 baud modem. It has been designed as a rugged portable for heavy duty or continual use; it is water resistant and the battery pack will last for 10 hours.

Instead of floppy disks the computer uses two removable 1Mb RAM cards to stor data. This may seem a bit of an inconvenience as floppies are so easy to use, but it is these RAM cards which give the Pad such a long battery life. The company also points out that since the Pad will be used for specific applications there will be no need to keep removing the cards; the information can be collated over the course of a few days and downloaded to the PC at the end of each week by a RS232 cable.

Information on the screen can also be downloaded as a PCX graphics file so that it can be produced as hard copy on a PC compatible printer.

GRid is marketing the Pad in a similar way to the Psion, selling it to clients with a specific application already programmed. Typically these applications won't be in the office – they will be for surveyors at a site, the military on patrol or factory engineers on the shop floor. It meant to be a portable PC on which users can run various software or spreadsheets, but there is an on-screen keyboard which can be used with the stylus.

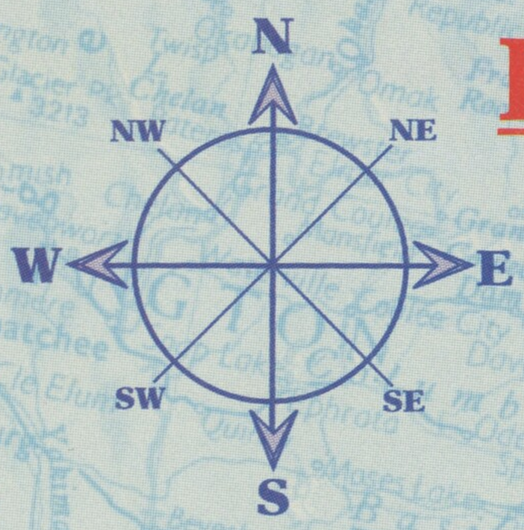
GRiD will do the programming themselves or there are other third party companies producing software for the Pad. Tangent, which produces surveying systems, has released an electronic theodolyte which downloads information onto the GRiDPad which can then be annotated while Touch has produced a quality control system on the Pad which is used by Jaguar cars.

JUST LIKE OLD TIMES

One of the main advantages of the GRiDPad is that it closely resembles the traditional clipboard in the way it is used. The Pad can be programmed so that the screen display looks just like a form, with boxes to fill in and dotted lines to write on, the only difference is that you use the stylus instead of a pen (and it can be programmed to tot up figures as you fill them in if you want). If nothing else it will be a useful way of surmounting technofear among non-computer literate staff.

But GRid Reckons the Pad will really come into its own "in the field" where its robust nature will make ideal for surveyors mapping out a sight or council workers keeping records of broken lamposts and potholes in the roads. GRiDPaD is just slightly too bulky making it uncomfortable to carry for long stretches. But GRiD is aware of this and an A5 version should be available by the end of the year, as should a colour version.

The cost of the package varies according to the application for which it will be used, but an average price is around £2,500. Interested parties can call GRid direct on 081-897 6565. ■



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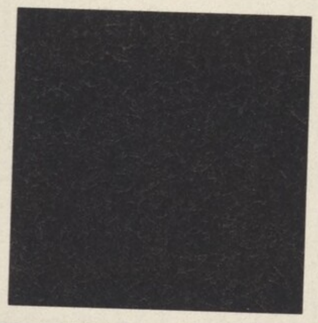
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■ Hearbeat plea

ONE OF HAYDN'S £5 WINNERS

I am one of a few deaf Sysops of a disabled text service called Heartbeat. We have had to close the bulletin board for the time being as a result of financial problems. Comms has always been a very expensive hobby – even though a text service for the deaf and speech impaired can hardly be described as a hobby. Many of us depended on the system for communication over the telephone lines with our friends and others.

Please can you pass this information on to all your readers – Hearbeat has gone off-line for the time being until we can raise the money needed to finance the board. Can we also use your pages to thank all the wonderful guys who have helped us with our problems in keeping the service running. Without the help of Duggy Holmes, Sysop of TAS we could not have lasted as long as we did.

We'd like all our friends to stay in touch with letters – we promise to reply to them all. We regret having to close Heartbeat down – it was three years that included many happy moments. If any companies would like to sponsor the Heartbeat text service for the deaf and speech impaired, we hope they can contact us through your pages.

Bernadette McLoughlin, Susan Wearing, Samantha Steere, Tricia Howieson

Sadly, ladies, I am not Captain Cash, but a mere letters columnist, so all I can do directly is send you one of my postal orders. But I've also passed your letter on to our technical editor who will be writing to you to find out what else *Express* can do to help. Meanwhile any manufacturers or individuals who can help Heartbeat should write to Bernadette at 24 Rupert Square, Reading, Berkshire RG1 3HE. **H F-W**

■ Price sensitive

Software houses could do more to bring down the price of software. Take a look at the average price of a 16-bit game: £24.95. What else could you attain for this sum? You could buy an electric kettle, an electric iron, a toaster, or a sandwich maker – durable goods that are built to last a lifetime. Each has had a lot of money spent on their design, while a piece of software, in material terms is just a piece of plastic.

Phillip Muldoon, Dyfed, South Wales

Try loading a sarnie maker into your Amiga! **H F-W**

■ Education debate

It's interesting to see that a new study has been published stating that £319 million will be needed in Britain's schools over the next five years for information technology. Where do they get these figures from? The report also says that the money should be spread more fairly.

Honeywell! (Oops - sorry about that out-of-date joke.) The main problem is that people just aren't interested any more. Computers were the big buzzword in schools in the early 1980s and everyone started raising money and buying up Beebs by the hundred. All the kids started programming and managed to get some pretty neat stuff out of what they had.

Now, however, the computer is nothing new. Whatever new technology is brought onto the horizon, people are going to have very little or no interest. Computers are also, with their increased complexity, becoming less interesting. Remember back in 1983 when the BBC 'A' with 32K RAM turned up in school? Of course you do. And what did you do with it in your word processing lessons? You walked up to it and banged in a BASIC program to print 'Hadyn is the best' a few billion times, disabling BREAK and ESCAPE thus the teacher's only means of stopping the program.

Try doing that on an ST. You walk up to it. It's sitting there with a blank desktop. Want to print a program that says 'Hadyn is the best'? You've got to get a disk from the teacher, and he or she is going to want to know why you need GFA BASIC when you should really be learning how to use a spreadsheet.

You try using a Nimbus on a network. Because it's a protected network, you can't use the computer for anything but word processing and a simple database program. Even to get into BASIC you have to nick someone's password or hack into it most illegally. Given the potential for programming on a PC, you have to wonder whether teachers are interested in anything like that any more.

Our school has something like 60 BBC machines and 10 Nimbus computers. Guess what the Beebs get used for - wordprocessing. On *WordWise Plus*. Not really very inspiring, is it?

Guess what the Nimbus machines get used for - wordprocessing. On Write. Or sometimes flamboyant doodles of nothing in particular achieved in PC *Paintbrush*.

The STs? We actually have *Calamus*. Yep, it's about as easy to get into as a two-foot-high Mini Metro, but our IT teacher swears by it (along with everything else ST), even against *PageMaker*.

It's time to give the entire system the benefit of a totally new approach. More money is always a help, but if all we're going to get taught is how to word process, we may as well stick with what we've got. And spend that money on textbooks – or possibly on the Poll Tax.

Geoff Winkless, Leicester

I was long out of school by 1983 Geoff, so have to admit that I wasn't enraptured by the arrival of the BBC A. From the way you describe it, though, it hardly seems that your school is making the most of its computer kit. But I have always thought that the root of the problem was that politicians always mouth off about the importance of computers in education and then fail to make the funding available. Perhaps I was wrong...

I wonder if any teachers would like to offer their opinions on the way computers are being applied in our educational system. **H F-W**

■ Joystick jockey

I was fascinated to read the announcement in *Express* 119 of the forthcoming joystick chair from Sega.

I'm sure your readers will be just as fascinated to discover that the idea is not new! I have been adopting this idea for some time now, and would like to offer some hints to those not able to afford the predicted £100 price tag.

I simply take my current standard joystick and sit on it whilst manoeuvring to the game being played. This technique adds an exciting new dimension to any game – so much so that at times I've forgotten to switch my computer on!

Marcus Turvey, Crowborough

Er yes. Resisting the temptation to award you 50p to squander on a jar of Vaseline, I think it's time to move swiftly on to my next correspondent.... **H F-W**

■ Very proud owner

***Express* 120 contained a letter from Andrew Cooper, titled 'TV Sillies'. As a very proud owner of an Amstrad 6128 I would like to respond to his question about why the streetwise kids in the adverts always have Amstrad CPCs.**

The reason is simple. Of all the 8-bit micros, it is the best all-round computer available. On this range of machines you have access to the following:

1) CP/M (+) which is probably the most elegant operating system ever created.

2) Databases, including *dBase II* and relational databases.
3) Spreadsheets, such as *MasterCalc* and *Matrix*.
4) Word processors, including the original *Protext* (created on the CPC) which is now considered to be the best WP available on home machines.
5) DTP - OK so *Stop Press* isn't in the same league as some of the 16-bit jobs, but it's the best you'll find on the 8-bits.
6) Games - myriad and far too numerous to mention.
7) Miscellania, including programs as diverse as stock market and share analysis, pools predictors and graphology analysis.
8) Languages – including C, Prolog, Lisp, Logo, Forth, Pascal, Stoic, COBOL - all of which are generally not available on the other 8-bit machines and cost a fortune for 16-bit computers.

That is why streetwise kids always have an Amstrad CPC in the adverts. And more than a few small businesses are run using (and needing) no more that a 6128 and readily-available software.
Simon Warford, London

Just because you look streetwise with your new 16-bit wonder, you're not necessarily smart is what you're trying to say I suppose Simon. I further suppose that it depends on what you want a computer for... **H F-W**

■ Media baron

For the final part of my GCSE business studies course I have set up a profitable mini enterprise, and I have decided to produce a fanzine for the PC with EGA graphics capabilities. (*A first for fanzines - a covermounted EGA monitor with every copy - H F-W*)

I would be grateful if your readers would write to me at The Cottage, East Lutton, Malton, North Yorkshire YO17 8TG with any ideas as to what should be included in this fanzine, along with any hints and tips on their favourite games. I'm thinking about selling the mag for between 50p and £1 – and I'd be more than interested to know if people would be prepared to pay this price for a monthly or possibly bi-monthly fanzine.

On a begging note, are there any retailers or publishers out there willing to donate or loan recent software that I can review? If the magazine is successful, I intend to continue producing it in my own time as I feel that there is a lack of reading matter with regards to games on the PC.
Peter Foster

I wish you luck, Peter. Magazine publishing, at whatever level, is not easy and it's sad to say that the fanzine market has been sullied by rogues who have pretended to set up a fanzine so they could scrounge software.

Send me a copy of the first issue when it's published – I'd be interested to see the results of your work. **H F-W**

■ More than demos

In response to 'Shadow' of the Dynamic Duo's letter in *Express* 120 I find he has put forward a well-written defence of the raison d'etre of demos in general. My original letter attacking the long, long, long (!) lists of demos that take up most PD libraries' listings was not motivated by jealousy, Mr Shadow, but was voicing concern that demos may be the finite limit of many young, talented programmers' work.

Demo writing is an excellent vehicle for displaying technique and displaying the versatility of a good machine, and as Roger Musson's letter (Art Critic) of the same issue points out – the possibilities of multi-media artwork are very exciting.

Perhaps the real culprits are the PD houses, many which have simply become demo shifters. A bit more discernment on their part as to what they will or will not include in their libraries might be the answer. The same games (and few at that) appear repeatedly, nay endlessly, in PD catalogue after PD catalogue.

My appeal is still to all those up-and-coming programmers of tomorrow - demos by all means, but not just demos.
Eddy Morrison, Flanshaw, Wakefield

It's a bit harsh trying to blame the PD libraries, Eddy. After all, their catalogues can only reflect what's out there in the public domain, and surely a good library should offer as wide a range of programs as possible?

And because people don't get paid for writing programs that go into the public domain, they are bound to write what they want to write rather than what people might prefer. Market forces drive everything according to some people, and the public domain is a very special kind of free market – one in which the rewards are little more than a boost to the ego. And demos are an ideal vehicle for the egotistica, I suppose. **H F-W**

■ Official Amiga line...

Following the letter you printed in *Express* 121 I would like to clarify, definitively, the present situation on the enhanced chip set (ECS) for Amigas. Currently the A3000 is the only Amiga to offer the ECS. No date is set for its availability on the Amiga 2000 and 500. Kickstart 2.0, similarly, is not yet available and a release date will be announced in due course. What your reader was undoubtedly referring to is the enhanced Amiga chip which is available with a full 2Mb of chip RAM - upgrades are indeed available now.

I must admit to having been a bit confused by your reader's letter – and assume that in the desire for upgrading to Kickstart 2.0 and the full ECS someone has got the wrong end of the stick.
Andrew Ball, Press and PR Manager, Commodore UK

Well 'thanks for that' as a Scouting chum of mine is always saying. Confusion cleared up all round. **H F-W**

MAIL SHORTS

■ A young dude

Yo! I would like to put myself forward as the youngest reader of this magazine - I am 16 but have read it since the tender age of 15.

I would also like to start the ball rolling on the My Computer Has A More Inexperienced User Than Your Computer debate as I am the proud owner of a sparkling A500.
Stephen Payne, Sunbury

You're about twelve years too late – check out Darren's story elsewhere on this page. And I don't think that debate will catch on...

H F-W

■ Demotion shock

I want to know why you have been demoted to the recycled Pop section of the magazine. Have you commited some teribble sin, or is this move paving the way for an increase in the number of fivers being dished out? I wish to complain in the strongest possible terms.
Matthew Holbrook, Bath, Avon

Complain, Matthew, complain? Why ever should you do that... it's not the paper you are printed on, it is the words that you use as my old gran would say. (Again and again.)

H F-W

■ Award nomination

What a wonderful idea - an award for the best user group. The PC1 Oligram group will win without a doubt. I was at my wits' end after buying an Olivetti PC1, then help came in the form of a small advert and within weeks I was the proud owner of the first Oligram disk. Each disk contains so much information, and help is always at the end of the telephone line in the form of Mark Blackall. So there's three cheers for him, too.
R Read, Luton, Beds

Nominations are still open - let's hear from more user group members.

H F-W

■ Computer kip

Your story about the Japanese computer system that helps you get a better night's sleep set me wondering (*Express* 121). Why spend all that money, when you just need an Oric and a friend? Get into your jim-jams, play a game or two to get you drowsy then ask your chum to hit you on the head with the Oric. Bingo! Big Zeds.
Ian Harper, Northampton

Hmm. I prefer counting sheep.

H F-W

■ Youngest Express reader 'pulls the girls'

Hi there! Here is my photo. My name is Darren and I will be four in March. As you can see, I'm reading *Express* (snatched it while the old girl's making a cup of tea in the kitchen) and I'm smiling as I'm reading the story about Atari dropping the price of the STE. ha ha!

We have an Amiga. Mummy bought it after she split up with Daddy and says that apart from having me, it's the best thing she ever did. Keeps her company when I've gone to bed and doesn't answer her back.

I have started to learn the basics and really enjoy it - I love the *Fun School* proggy that I got for Christmas. Anyway, Haydn, *Express* is brill, but to be honest Mummy enjoys it more than me. I prefer the glossy mags with more pictures in them – no, not *Playboy*. *Amiga Format* is my favourite.
Darren
PS. I'm a big hit with the girls round here. My simple chat-up line is 'Come round and play with my computer some time.' They all do.

Looks like you might have cleaned up on the 'Youngest *Express* Reader' front Darren. A fiver is on its way to you. HF-W



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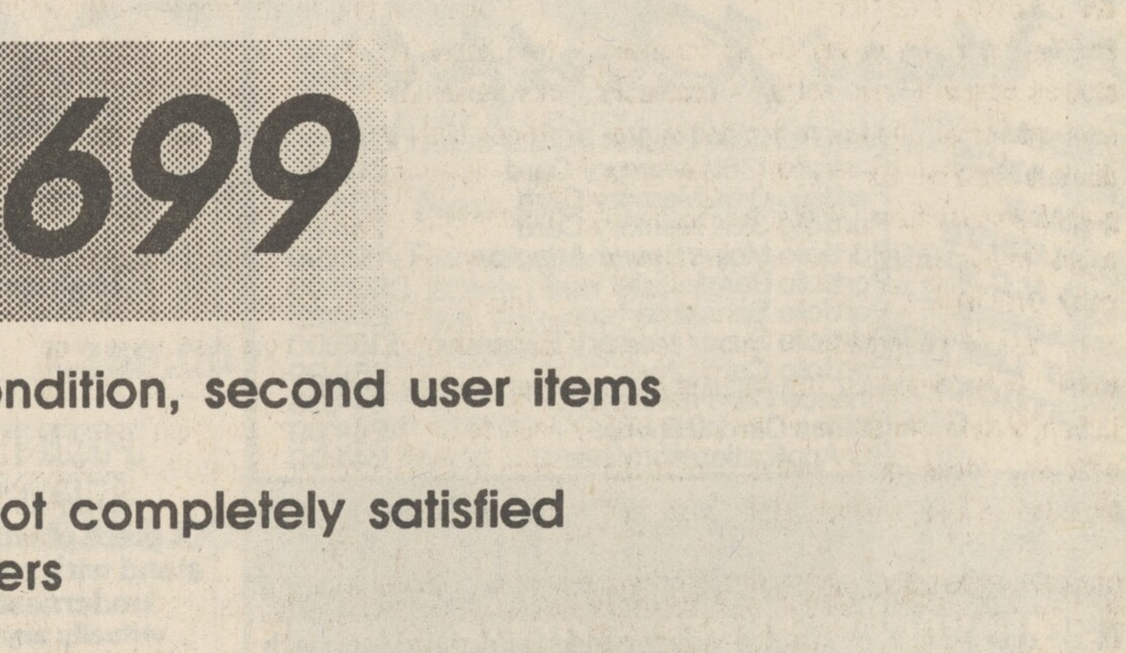
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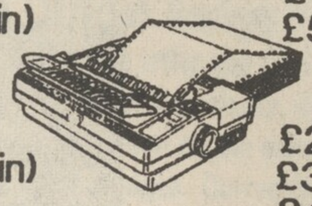
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Macintosh

GET IT WHILE IT'S NOT HOT

If you don't yet have a copy of *ResEdit*, it's probably worth getting hold of one fairly soon. *ResEdit*, you may recall, is that wonderful piece of software which allows you to customise your Mac's menus, icons, the name of the wastebasket and so on.

Rumour has it that Apple is soon to withdraw the software's 'freely distributable' status, because the company is getting a little brassed off with customised scroll bars, menus with abusive entries and so forth. In future, it's possible that *ResEdit* will only be available to authorised Apple software developers – which means that the likes of you and me won't be able to get near it. So pick yourself up a copy while it's still available. You have been warned...

RIDICULOUS NAME

A new book from Microsoft Press was dropped on to my desk a couple of weeks ago and made a dirty great dent. *The Big Book of Amazing Mac Facts* is a 514-page monster which, thankfully, has contents which are rather more impressive than its title.

Essentially, this is Microsoft Press' answer to the *Macintosh Bible*, which I've mentioned before. It's full of (surprise, surprise) amazing facts about the Macintosh, which will theoretically help you to get the most from your machine. The author is Lon Poole, who writes a monthly column called 'Quick Tips' for the American version of *MacWorld*, so he should know what he's talking about.

And, indeed, he does. The book has a lighter feel (in content, not in weight) than the *Macintosh Bible*, and is very readable. Of course, not all the information will be relevant; for instance, most of us don't really care how to convert a Mac 512K to a 512KE. But the book is up-to-date enough to cover the Classic, LC and IIsi, albeit in a fairly superficial way. It even mentions System 7, although it's clear that the details it gives are based on rumours and pre-release facts about the product, and are not written from personal experience. Still, most readers will find the majority of the book relevant to a greater or lesser extent, and it would make a good buy, especially for someone who wants to become an 'instant power user'.

Personally, I'll stick to the *Macintosh Bible* – but that's just my own taste. I'd say that you will have a definite preference for one or the other, so have a browse at both in the bookshop before you decide which you want.

The Big Book of Amazing Mac Facts by Lon Poole costs £22.95; its ISBN is 1-55615-252-3, and is published by Microsoft Press.

TAP TIPPY TAP

Here I sit at my Macintosh, touch typing away. I can stare out of the window and watch the builders opposite swinging from the scaffolding and making monkey noises, and still key in my column. (Which is probably why some of it reads a little strangelylook at that what a moron he isfrom time to time.) And how did I learn the miraculous art of touch typing? With the aid of one Mavis Beacon, that's how. *Mavis Beacon Teaches Typing*, to be precise.

Before I came across the program, I'd tried to learn to touch type from books a couple of times and failed dismally. Fascinating key combinations like ads sfd afs fdf don't exactly make for interest, and I'd tend to give up after about two lessons.

But Mavis is rather better than that. You still have to be willing to spend 15 or 20 minutes a day for a few weeks, but the lessons are decent enough to keep your interest.

The program has two parts: the lessons themselves, and what the manual describes as a "high performance road racer", with graphics which will "make you feel like you're at the video arcade". In fact, this latter

POSTCARD FROM AMERICA

I'm still flying high from the wondrous sights of the San Francisco Macworld Expo. This lightness of foot allows me to skip over the piles of press releases, schlocky bags and used biodegradable paper coffee cups still in residence around my desk.

The best game at the Expo was the latest release from Mike Saenz, the creator of the notorious and sexually explicit *MacPlayMate*, and *Virtual Valerie* programs. His company, Reactor Software, was showing *Spaceship Warlock*, a CD-ROM based interactive game/movie.

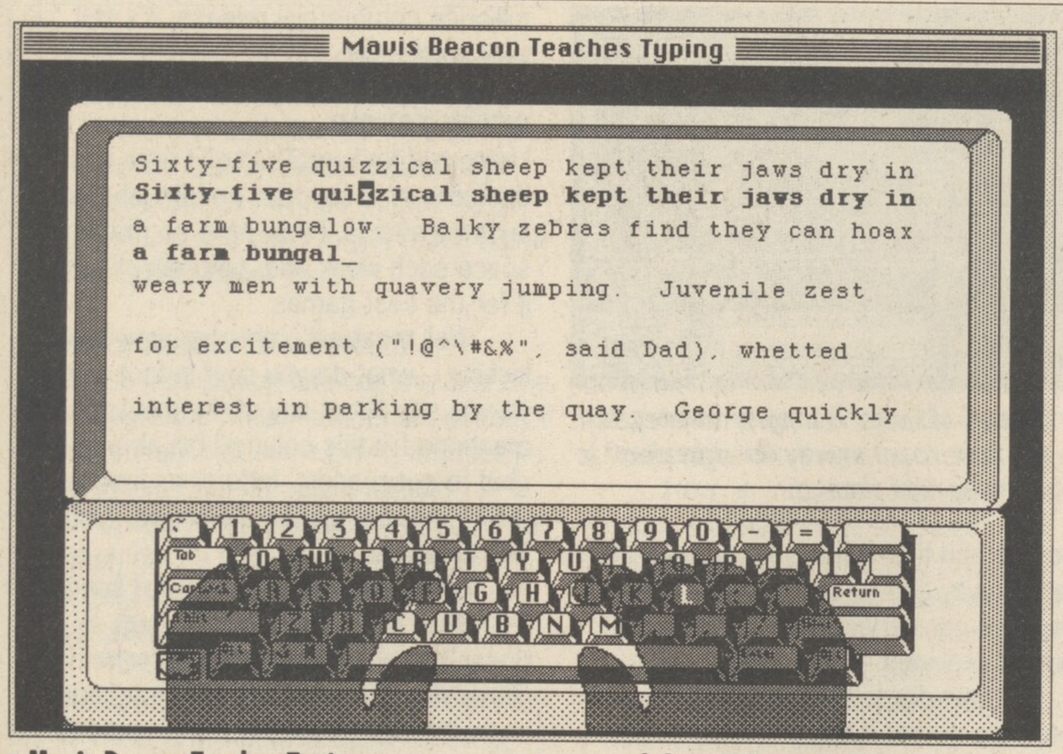
His artwork is fantastic, with alien pirates, spaceships, great 8-bit colour and lots of action. It even has an original score! I don't know if I would spend $85 on a game, but this one will be on the must-buy list for new CD-ROM drive owners.

Compression was a hot topic at the Sigma Designs booth. The company showed a $229 compression card called the DoubleUp. The software front end that controls the specially designed 40MHz Stac processor is a version of the *DiskDoubler* utility. It automatically decompresses files when they're opened, and squeezes them back when they're closed. This compression procedure is 'lossless', so that data is fully restored throughout the process.

Aladdin, the company behind *StuffIt Deluxe*, was showing a prototype of a fancy board called the Cheetah. It uses a more up-to-date chip than Stac-based products, and transfers your data with a high speed NuBus interface. It may be better technology, but it's still in development, and the inexpensive DoubleUp card is here now.

Your MacFortuneteller: Several Middle East war-inspired weapons of mass computer destruction will work their way through the EC and across the Atlantic to the US. The Mac community will be spared the byte of this viral terror, since the attacking hackers can only afford DOS-based launchers.

David Morgenstern



• **Mavis Beacon Teaches Typing:** ***you too can gaze out of the window while you're working.***

description is a bit of a joke. You type the words on the screen, and the faster you type the faster your car moves. That's it. Not exactly *Super Galaxy Invaders* but still, better than nothing.

The program uses what it describes as 'artificial intelligence' to teach you, customising the lessons to concentrate on your weaker points. It's quite effective, and the phrases which it gets you to type are interesting enough – if a little surreal at times.

The actual program is a bit dodgy in some respects – it tends to fall over if you have *MacroMaker* on your machine, for example – and could do with a little more bug testing. But if you're prepared to put up with its little foibles, and you want to learn to touch type, it's probably worth looking at. Just check with the vendor that it's compatible with your model of Macintosh before you buy it. (Something which you should always do, incidentally – some software is incompatible with the new Macs, and some won't even run on any of the Mac II family.)

Mavis Beacon Teaches Typing costs £29.99, though you may find it cheaper from some of the bulk software suppliers like MacLine or Softsel.

MACHUMOUR

The best Mac cartoon yet to appear was in *MacWeek* the other month. It showed a new guy being introduced to half a dozen people in a Mac software company's marketing department. The caption read: "This is our product naming team: NiGel, GraHam and StePhen". Well, I thought it was funny.

Ian Wrigley

PC

LOOPZ

Imagine a cross between *Tetris* and *Pipe Mania* but more addictive than both put together and twice as playable as either. Well, Audiogenic already has, and the result is the company's latest release, *Loopz*.

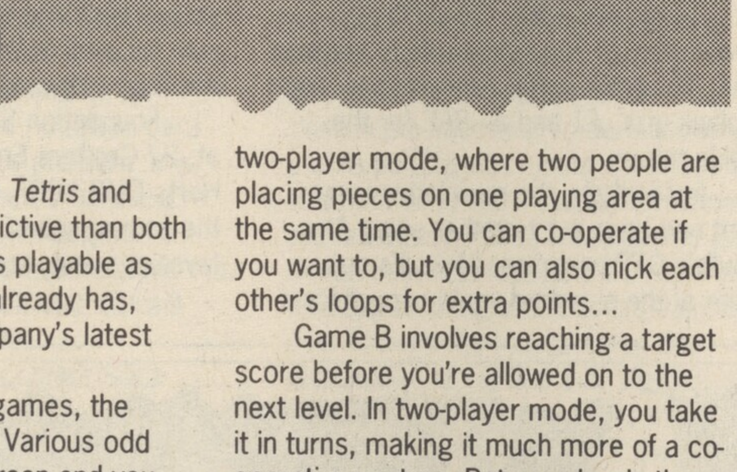
As with all the best games, the principle is a simple one. Various odd shapes appear on the screen and you have to place them on your playing area end-to-end in such a way that they eventually come back round to form a loop. This loop then disappears.

It's a lot like *Tetris*, in that your whole aim is to keep the pieces disappearing to give yourself as much space as possible to manipulate and place the new ones. And as with *Tetris*, your aim is simply to keep going as long as possible, your score rising with every loop you form.

At least, that's how *Loopz* plays in its simplest form. There are, in fact, three types of game you can play – Games A, B and C. Game A is the one I've just described, the simplest, although even this has an extra twist. This is the simultaneous two-player mode, where two people are placing pieces on one playing area at the same time. You can co-operate if you want to, but you can also nick each other's loops for extra points...

Game B involves reaching a target score before you're allowed on to the next level. In two-player mode, you take it in turns, making it much more of a co-operative venture. Between levels there are two special bonus screens which will test your looping to its limit. In the first, completed loops are not erased and in the second, you have to produce one massive loop large enough to beat the target score given on its own.

Game C is a test of memory. You're shown a completed loop on-



• ***As the playing area fills up, in* Loopz *finding space for those new pieces gets tougher...***

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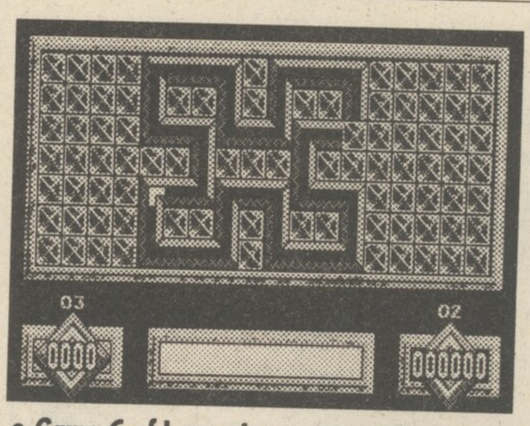
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• Game C of Loopz is a nasty memory test – you have to put exactly the right pieces in exactly the right places...

screen and then various key pieces are taken away one by one and you then have to reassemble the loop from the pieces provided. Nasty, nasty stuff.

Loopz doesn't impress immediately because at first it looks like yet another rather boring puzzle game. But after a while you realise that it's got you well and truly hooked. It's one of those rare games you simply can't put down. You have to keep coming back for just one more go...

What's its secret? The graphics are clean and crisp, but nothing special, while the soundtracks are good without being memorable. It may just be that the whole thing is a rather polished and well put together package. And it all works so well.

Warning: *Loopz* is horribly dangerously, nastily addictive. Don't say I didn't warn you.

SCULL LATEST

Just time for three bits of news from the Scull PD Library:

- The library is no longer supplying software on cassette.
- Soon to become available is the Amstrad world's first public domain DTP program! Watch this (creative white) space...
- Scull PD has moved. The new address is: 9 Barra Wynd, Broomlands, Irvine KA11 1DB.

To receive a free Scull PD newsletter, all you have to do is send an SAE. To obtain some software too, send a blank disk, £1 and an SAE for the disk's return.

Incidentally, the newsletter I was sent had been put together using Alan Scully's DTP program. While it's not quite of the standard you'd expect for a full-price commercial release, it's still very impressive.

GET IN TOUCH!

I have suddenly realised all I ever do in this column is say how good such and such a game is. I only have so much space each week and, naturally , I save it for the best games.

Well maybe it's time I gave a few a kicking – what do you say? In fact, what do you say about any of the things mentioned in this column? I'm always glad to get readers' letters, as long as they're not completely deranged... oh, OK, deranged ones too.

And another thing. I mean, I know it's rather annoying that Bloggsoft doesn't do a 24-pin printer driver with its *StodgeSpread* accounts package, and I know it's difficult finding the pin-outs for a reverse-coupled trunnion spigot double-duplex expansion nodule, but there must be more to life than that...

So let's have some **scandal!**

STRONG FOUNDATION

About 18 months ago, a phenomenon appeared on the CPC scene. A small, little-known company called Foundation Software produced the one and only step-time MIDI sequencer for the CPC.

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- Also included is the *MIDI Song Linker*, which allows several songs to be played one after the other.

The only thing that might stick in your craw is the price; £34.95 is a tidy sum for a bit (a lot, in this case!) of Amstrad software.

Foundation Software can be found at: 27 Crofters End, Sawbridgeworth, Herts CM23 0DF, or you can telephone the company on 0279 725788 (evenings and weekends only).

Rod Lawton

Amiga

CHEAPER PC

Those of you considering buying Bitcon's KCS Power PC board will be pleased to hear that, owing to the recovery of development costs, the company has dropped the price by an astounding £70 to just £230.

In direct contrast to the ATonce card, the KCS card comes complete with MSDOS 4.01, MSDOS Shell and *GWBASIC*. Because of its very clever design, it also doubles up as a half megabyte RAM expansion with a further half megabyte which can be used as a RAM disk.

KCS has also just released version 2.0 of the Power PC's emulation software which includes a number of significant improvements over the previous 1.32 release. Among these are enhancements to screen emulation which now allows the full 16 colours to be used during CGA emulation. And, despite the fact that the KCS card offers the fastest screen update of any Amiga PC emulator (including both ATonce and Commodore's own Bridgeboards), KCS have speeded things up still further.

Other enhancements include faster reading and writing of PC-format floppies, a greater level of serial port compatibility (including support for the parity bit) and, most importantly, full support for the Commodore A590 hard drive under PC emulation. The A590 can now be split between the Amiga and PC, therefore allowing larger

applications to be used without the hassles of constant disk swapping.

More information on the KCS Power PC board can be gleaned by phoning Bitcon Devices on 091 490 1919. Oh, and don't forget to tell them that *Express* sent you!

THEY'VE GOT THE POWER!

Digital Distribution International is a new name on the Amiga scene, but already it has announced some pretty impressive releases. Digital doesn't actually produce its own products; instead it has taken on the task of distributing products from the prolific German software house Demonware.

New from Demonware are a number of games including *Carchrodon White Sharks* (a horizontally scrolling shoot-'em-up), *The Power* (a cutesy puzzle game), *Gem'X* (a '*Columns*'-like puzzle game with some great graphics and sampled speech) and *Oops Up 2*.

There's some good news for Amiga musicians, too. Digital has announced the development of a professional version of Demonware's acclaimed music package, *TFMX*. According to a spokesman for Digital, the new program provides direct support for MIDI, plus improved editing (no more having to enter Hex numbers) and comprehensive drum and score editing. *TFMX* Professional should be available later this year (look out for the exclusive review in *Express*).

ADSPEED BLOWS A TURBO

US-based ICD, a company which is probably best known for its range of AdSCSI hard drive controllers for the Amiga 2000, has encountered problems with its recently released AdSpeed processor accelerator card for the Amiga.

According to the company's UK distributor, Silica Systems, the problem involves interrupt timing when the AdSpeed card is used on a machine equipped with a GVP hard drive.

ICD is already working on an updated version of the AdSpeed card which should solve this problem. It is currently unknown whether existing users will be able to exchange their faulty AdSpeed for a corrected unit, but it seems almost certain that ICD will make provisions for this.

For further info, contact Silica Systems on 081 309 1111.

COUNTERFEIT AMIGAS

As you'll probably already know, there are actually two different version of the Amiga 1500 – an official Commodore B2000-based machine, and Checkmate, Digital's alternative, based on the Amiga 500. Both offer pretty much the same, so it can be all too easy to get them confused.

You've probably been wondering how this come about. Well, rumour has it that Commodore was more than a little miffed with Checkmate for stealing the A1500 name, so they decided to get their own back by giving their new machine almost exactly the same name. Obviously the company couldn't call it the A1500 (Checkmate had the name registered), so they decided instead to call it the Amiga 1500 PHC (which is near enough to cause confusion).

Now, in a move that is sure to cause a considerable amount of annoyance at Commodore HQ, there are rumours that Checkmate may settle the score by renaming its soon to be released machine, the IQLR-500 Tower, to the Amiga 3500. Once again, both machines are visually very similar (both are tower systems), so it seems almost certain that Commodore will kick up a fuss.

When I phoned Checkmate's Steve Jones, he refused to either confirm or deny the rumours, although he did admit he had been considering such a move when development began on the IQLR-500.

As Steve was quick to point out, Commodore had previously never taken action against such name clashes until the release of the A1500. Even when Acorn released its A3000 Archimedes machine, which many believed would cause problems between the two companies, as far as I am aware nothing came of it (despite the fact that Acorn is selling its machine into exactly the same markets that Commodore has positioned the Amiga).

INOVATRONICS RUNDOWN

Staying at Checkmate, Steve went on to announce that the company had taken on the exclusive distribution of products from US-based INOVAtronics. For those of you who are unfamiliar with INOVAtronics' impressive range of products, here's a quick rundown of what it has to offer.

- *CanDo* – This is a powerful multimedia authoring system allowing you to pull together pictures, animations and sounds to form complex multimedia presentations. Using an advanced icon-driven user interface, *CanDo* requires no programming at all, so it's easy to use. Checkmate has taken on the distribution of version 1.5, which is said to offer many enhancements that take advantage of version 2.0 of the Amiga's operating system.
- *CAPE 68k 2.5* – If you're looking for a high performance assembler development system, then look no further than *Cape 68K*. This latest release includes *HLink*, Cape's own custom-written linker that is both smaller and faster than the official *BLink* linker, plus *HProf* profiler and *PMD*, a



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program module 'dismemberer' (*sic*). Cape's integrated editor/assembler offers assembly speeds of up to 70,000 lines per minute, making it one of the fastest assemblers around.

● *PowerWindows* – If you program *Intuition*, then you just can't afford to be without INOVAtronics' *PowerWindows*. The program allows anyone to interactively design user interfaces consisting of standard *Intuition* screens, windows and gadgets and then have the results dumped out to disk as source code for inclusion within your own programs. It supports C, Assembler, Modula-2, True BASIC, Forth and even AmigaBASIC.

● *Hyper Helpers* – This is a selection of tools that make the Amiga an easier machine to use. These include *DosHelp* (a hypertext-based on-line help facility which supports both 2.0 and 1.3 operating systems), *LaunchPad* (a program which allows you to add a nice friendly front end to your hard disk), *Run-'N'-Play* (an 'I wish' file requester that runs executables, plays sounds, shows IFF pictures, displays text files and much more besides).

Jason Holborn

Archimedes

ARCTERM GETTING ON-LINE

ArcTerm 7 is the latest incarnation of Hugo Fiennes terminal emulation package for the Archimedes, and like the earlier pre-RISCOS *ArcTerm 601* is available from The Serial Port. It costs a pricey £80.

So far, this is the only fully multi-tasking comms package for RISCOS: although both Beebug's *Hearsay* and Longman Logotron's cheap 'n' cheerful *ArcComm* both use a windowed style, neither allow other applications to run while they are on-line. However, both *Hearsay* and *ArcComm* are currently being re-written, so *ArcTerm* is unlikely to hold the torch alone for long.

ArcTerm 7 installs on the icon bar in the usual fashion, and you click on it to open a terminal window. A complex menu is used to set up your modem type, the comms parameters and so on that you require, and you can save any particular configuration as the default. There is a long list of modem drivers built-in, including both a Tandata TM512 DTI modem and a Dataphone Pro4/High Tech EC2400.

Providing you have one of the supported modems (eg a Hayes standard, WS3000, or even an Amstrad SM2400), and you set them up as detailed in the manual, getting on line can be as simple as plugging it together and selecting Dial from the menu.

The feature list for *ArcTerm 7* is as long as your arm, and then some: there are options on the menus that I have never heard of, never mind know how to use. But there's a host of terminal emulations (excuse the pun), including a very good Prestel one; Vasscomm and MNP level 2 error correction are useful if you have only a 'dumb' modem; all the different protocols for file transfer are there, along with a few thoughtful touches like an on-line clock and an easy way to upload text files. The only thing I could find missing is support for the German Bildschirmtext (a sort of super-Prestel with nice graphics that *ArcComm* does very nicely indeed).

While on-line, the real multi-tasking nature of *ArcTerm* comes to the fore. You still have full access to the desktop, you can still do things like prepare messages to upload in Edit then drop them on the Upload icon, or do anything else that doesn't involve the serial port.

ArcTerm also has a scripting language (these are definitely a fashion of the moment). You can develop simple scripts to log on to your favourite on-line services automatically, and more complex ones to log on, download your mail and log off again. The language is pretty complex, but there are examples on the disk to do most of the stuff you'll want all you need to do is put in your own particular phone and ID numbers.

There's little doubt that *ArcTerm* is the best comms package around for the Arc right now, and the forthcoming upgrades of *ArcComm* and *Hearsay* will have a hard job to overhaul it.

The Serial Port is on 0243 531194

AN OMINOUS SILENCE

Despite saying semi-publicly there would be more information in February, Acorn has gone strangely quiet on the forthcoming Archimedes portable.

All the signs are that the new machine launch is now slated for the early autumn, and that it will be a machine aimed primarily at the educational community.

NEW DRIVERS, NEW C-LIB

The new RISCOS printer drivers released with Schema are also available separately from Acorn's SID bulletin board, from dealers and from Acorn Direct (for an expensive £20).

One advantage of these new drivers that I discovered accidentally is that you can queue several files to print at once; drop four Edit files on the driver icon and all four will print out one after the other. You can drop *First Word Plus* files directly on the driver icon too, so for the first time you can use *First Word Plus* with a PostScript printer.

Acorn has also released Shared C Library module 3.66. This comes with Longman Logotron's *Revelation* and a number of other new applications are beginning to use it. Again, this is available from SID, Acorn Direct or many dealers, but you don't need to buy it; it will come free if you buy any new software that needs it.

You can contact SID on 0223 243642.

PC GRAPHICS

There are two accepted ways of porting graphics from other machines to the Archimedes; using the *Translator* application available from many shareware libraries, or via *ChangeFSI* from Wild Vision. My own preference is for *ChangeFSI* despite the more limited range of picture file formats it will accept, because it has a neater and more comprehensible 'interface'.

However, there is little to choose between them and *Translator* is definitely more flexible and is usually much quicker.

But there's a group of file types that neither can accept: encapsulated PostScript (EPS) files. These are widely used on the Mac and more rarely on the PC, and are generated by programs like Aldus' *Freehand*.

This week, I needed to port several EPS files from a Mac to an Arc. Stumped? Well, not quite. Computer Concepts' *Showpage* PostScript interpreter may be just the job when it's released (which should be quite soon) but the way I did it took advantage of a peculiar quirk of EPS files: they contain two copies of the picture.

One is a PostScript program to generate the image (which is the part that could probably be read by *Showpage*). The other is another version of the image tacked on the end of the PostScript. This is there so that Mac or PC DTP programs like *Pagemaker* can show a version of the image on screen, even though they can't understand the PostScript. Macintosh EPS files have a version at the end which is essentially a PICT file (rather like an Archimedes Draw file, but not *Translator*-compatible), whereas PC EPS files have a TIFF image tacked on.

So I loaded the images into *Freehand* on the Mac,and saved them in a form as if I were about to export them to a PC. The PC-style EPS file was transferred to a PC disk, and read onto the Arc using Minerva's *PC Access*, and loaded into Edit. Using Edit, the PostScript can be deleted to leave only the TIFF image, and this can be dropped into translator and saved as an Archimedes sprite.

It worked, but the resulting image was bitmapped only, whereas the PostScript version contained smooth curves and text. What's needed is an EPS to Draw converter. I'm sure someone has one; how else did all that familiar-looking clip-art appear?

Wild Vision is on 091-519 1455.

Ken Coumarin

PC

ADOBE BENDS FOR WINDOWS

Adobe, inventor of PostScript, innovator of electronic type and all round OK company, has once again narrowed the gap between the smooth, object-oriented world of the Apple Macintosh, and the clunky bitmapped PC. Adobe *TypeManager* brought smooth screen fonts and PostScript quality text to ordinary PC printers, now Adobe *TypeAlign* adds the ability to curve and distort type.

TypeAlign lets you draw a line and then attach text to it, the text bending to fit the line. It can also colour text, or make it appear scaled in proportion.

To use *TypeAlign* you need *ATM*, and Windows 3.0. It costs £89, but it is available in a bundle with *ATM* and 35 fonts for £229. Adobe is based in Holland on 010 31 20 767661.

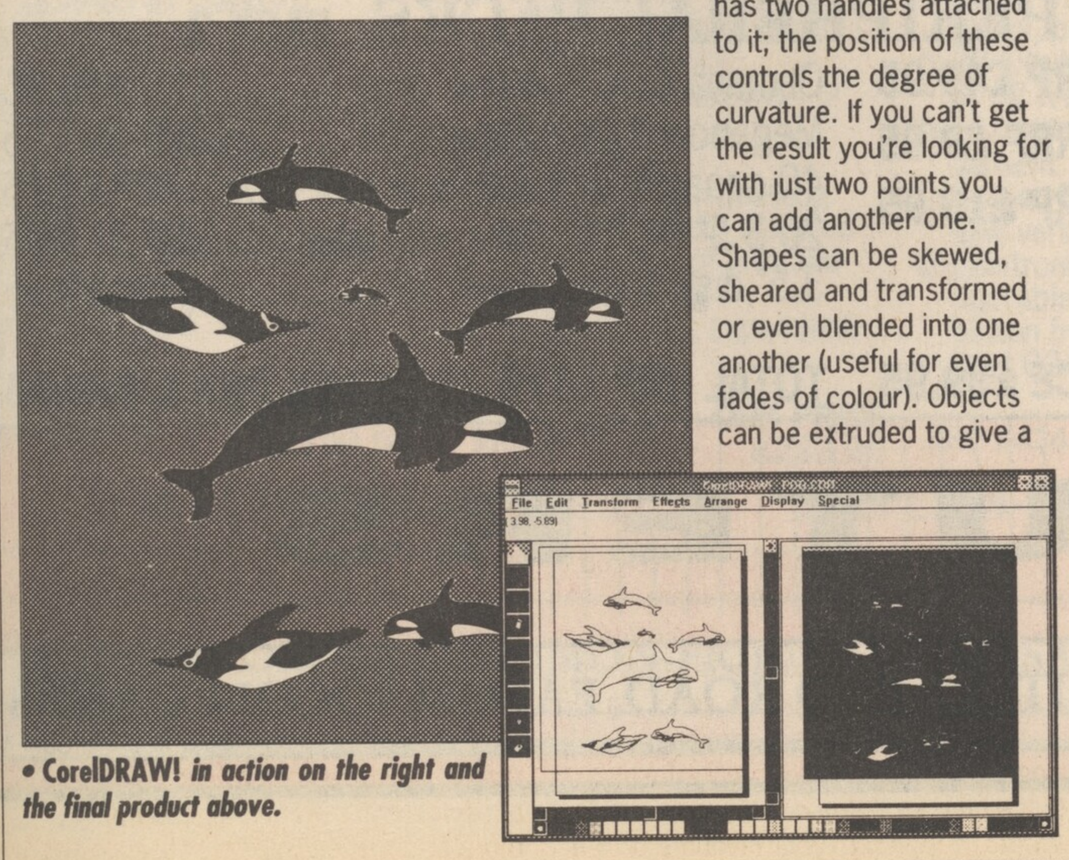
OK COREL

CorelDRAW! has been the premier drawing program on the PC for many years. In fact for many people the only reason for having Microsoft Windows installed on their machine was the fact that *CorelDRAW!* needed it to run.

Now with Windows 3's vastly improved memory handling features the time is ripe for a new version of *CorelDRAW!* which really makes the most of the new found power of the PC. So ladies and gentlemen please welcome... *CorelDRAW!* 2.0!

Now I've done a fair amount of illustration work on the Apple Mac, a platform which is supposed to be the best there is when it comes to drawing. *Illustrator, FreeHand, Cricket Draw*; there's not one that can hold a candle to *CorelDRAW!* when it comes to ease of use. The beginner can get started easily enough, especially as there's a 'getting started' video included, but the advanced user won't be disappointed when it comes to power.

The basic unit of drawing is the Bezier curve. If you haven't come across this before it can take a bit of getting your head around, but once you have it's simple to produce complex curves. Each point on a Bezier curve has two handles attached to it; the position of these controls the degree of curvature. If you can't get the result you're looking for with just two points you can add another one. Shapes can be skewed, sheared and transformed or even blended into one another (useful for even fades of colour). Objects can be extruded to give a



• **CorelDRAW!** ***in action on the right and the final product above.***

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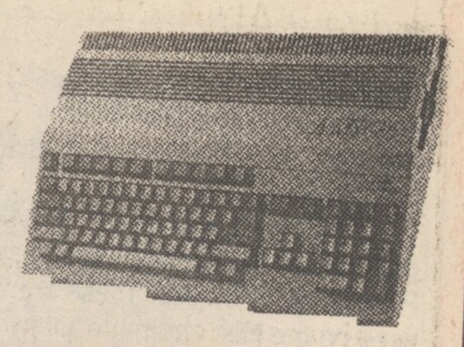
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3D effect. Text can be attached to objects and made to curve around an irregular line. Letters can be converted to outlines which can then be edited as graphic objects, allowing to total flexibility for designing logos. In short, *CorelDRAW!* is a high-quality fully-featured drawing program.

The add-ons which come with it are worthy of mention in their own right. For a start there are an incredible 150 fonts. And they're not crappy bitmapped display faces either, but proper outline fonts of typefaces you've heard of, such as Garamond and American Typewriter. You can even convert them from *CorelDRAW!* format to Adobe Type 1 PostScript fonts, so that any application can use them, and Adobe *Type Manager* will let all your Windows applications print them to any printer.

Then you have the tracing program *CorelTRACE!*, which can turn scans into outlines which can be edited in *CorelDRAW!*.

And last, but not least, there is a truly vast library of clip art, all of it well drawn and, being object-oriented drawings, of a high quality when printed. The picture which accompanies this column was created using several of these pieces of clip art.

In summary then, if you have a PC which can use Windows sensibly, and you want to do any kind of drawing, save up for *CorelDRAW!* It costs £535, but it's worth it.

CorelDRAW! is available from Softsel on 081-5688 8866.

NEARLY A NEW DOS

Microsoft has shown a few lucky people DOS 5.0 and Windows 3.1, so it shouldn't be long before we catch sight of them.

DOS 5.0 sounds exactly like DR-DOS 5.0 in its features list, so I look forward to DR-DOS 6.0 soon. As for Windows 3.1 it remains unclear if it will incorporate the new TrueType font technology as promised. If it does it will give everyone from the humblest dot-matrix owner to top-end laser printer buffs access to the same high quality fonts. Here's hoping.

Stuart Anderton

64

C2 END

It's been a quiet week for the Commodore 64 and its ilk. So quiet, in fact, that cartridge versions of Domark's *Badlands* were discovered on shop shelves without so much as a press release having passed the way of the likes of me.

I haven't seen it and don't know if any changes have been made to the disk/cassette version released last autumn. But it's one more step along the road to the ROM regime Commodore seems to want for one of its oldest machines.

There have been reports recently that Commodore is planning to cease production of the C2N cassette recorder that has for the last nine years been the standard means of data input/output for hundreds of thousands of C64 users. It's the only data storage device that's ever been bundled with the customer's first purchase – the computer itself. But its unreliability and inflexibility are legendary. Commodore has never done anything to the device that would improved its performance significantly and must have wanted to replace it altogether for some time. But replace it with what?

It's my guess that at least one of this year's C64 Christmas packages will not contain a C2N, and a number of cassette based games but an assortment of what by then might be nearly 18 month old cartridge software. Any package that does contain a C2N will be marketed as having appeal to potential programmers simply by virtue of the package's data storage capacity.

Otherwise, the apparently obvious distinction between the C64GS console system and the fully fledged C64 itself will begin to disappear. Commodore is doing and saying nothing to suggest that a disk drive might become the C64's new standard data storage medium, and that's hardly surprising. It would almost inevitably make a C64 bundle more expensive and it's difficult to see why Commodore would want that.

The C64, its variants and its peripherals are regularly hit by price cuts by most of the major retailers. For the C64 to continue to survive while attractively priced Atari STs abound, Commodore will practically have to give disk drives away to continue to undercut the opposition.

But it's hard to imagine many more potentially productive or creative neophyte computer hobbyists buying C64s if and when the C2N disappears. And how might the plans of a company like US Gold be affected by such a turn of events? US Gold hasn't announced any plans to release any cartridge-based software whatsoever. If the C2N goes for good, software houses will find the release of cassette-based software increasingly unattractive. It then only becomes a matter of time before such support itself disappears.

Considering that the budget software scene almost exclusively consists of tape-based software, many companies would feel the impact of



• The 1541 disk drive: long in the tooth but still the infinitely preferable alternative to loading from cassette.

the C2N's removal, sooner or later. And eventually, of course, it will be felt by the users.

The end of the C2N won't mean the end of the C64 or even the end of creative user activity. There are enough bulletin boards, user groups and aspiring programmers to see to that. But increasingly, new C64 owners are going to view the capabilities of their machine differently.

It's likely that they'll see it more as a games machine with themselves as passive end users, unlike those people who bought their machines over the last four or five years who might at least have imagined themselves becoming enthusiastic and proficient programmers or graphic artists or whatever when they bought their 64s (whether or not they ultimately did).

CHAIN LINK

Meanwhile, this week's most interesting new game is Audiogenic's visual puzzle package, *Loopz*.

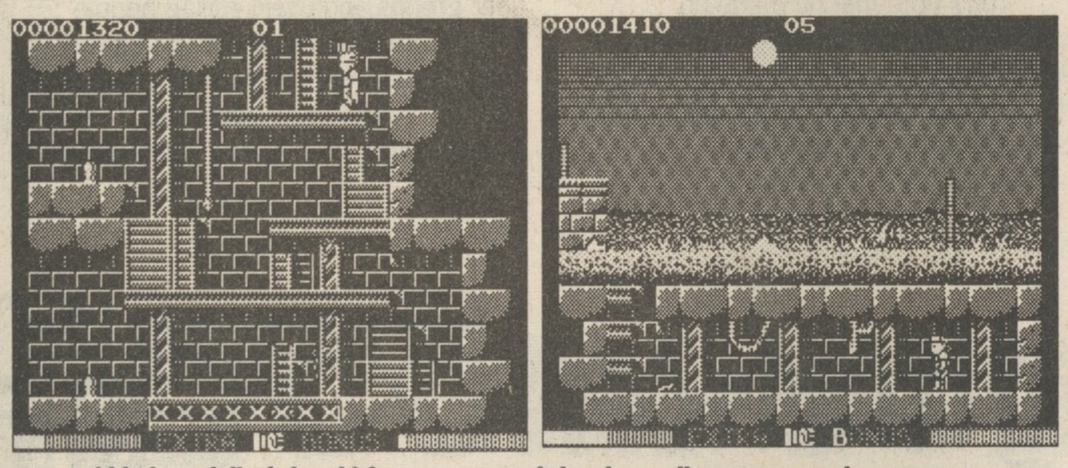
Loopz actually consists of three one-player and two two-player games based on the theme of connecting sections of pipe on a board so that they form a loop. So far, it may sound suspiciously like *Pipemania*, but in *Loopz* you can work on as many loops at a time as you like, so long as there's room on the board. The larger the loop you make, the more points you get. However, there's only a certain amount of time you can spend finding a place to put down a piece of pipe and the pieces themselves are generated randomly.

Sometimes, instead of getting a piece to put down, you get a symbol which allows you to kill any one continuous length of pipe. The only other way of removing pipe from the board is to make a complete loop, as then the entire loop disappears to leave you some work space.

Limited in the long term it may be. Similar to other recent games it certainly is. But it does the business.

Sean Masterson

Spectrum



• **Switchblade *is full of the old fantasy game cliches but still a pretty good game.***

THE COMPLETE SPECCY MAG

A new magazine serving Speccy and SAM owners is due to roll off the photocopier very soon.

Sinclair and SAM Computing is the name of a new mail order publication from Garner Designs that effectively replaces its highly thought of Plus 3 Users' group. The sad death of the Plus 3 has prompted a broadening of horizons to cover all Speccies and the SAM, with coverage of the QL and Z88 to follow, in a monthly magazine aimed at serious users.

Apparently each issue will have more articles and more 'serious' reviews than any other Spectrum or SAM Coupé magazine. Rabid games-playing types need not despair though. *S&SC Extra*, a tape or Plus 3/Coupé disk-based electronic mag with reviews, screen shots and free programs bunged on it is promised for an addition sum.

All in all *Sinclair and SAM Computing* looks like being a veritable boon to all serious Sinclair people. Each issue will apparently have a minimum of 48 pages and the first one will pack them with a MasterDOS review, an article by Gary Rowland (author of *Music Writer*) on getting the most out of the 128K's AY sound chip, a programmers' guide for making use of the extended memory of the 128K SAM and an All Formats Show report. That's as well as regular sections for news, tips and public domain.

The launch date is March 23 at the All Formats Fair and the price £1.75. You'll find the publisher at Garner Designs , 57 Lovers Walk, Dunstable, Bedfordshire LU5 4BG. Look forward to seeing the first issue!

"COCKEROONY MEGA FANTASTIC"

Gremlin has been supplying Speccy owners with some top notch games of late. Its latest offering, *Switchblade*, continues the strato-spheric aly high standard of *Shadow of the Beast* and *Lotus Esprit Turbo Challenge*.

It's a platform-based arcade adventure style game with some groovy graphics and causes sweaty palms a plenty in the game play department. The idea is to guide your hero around a dark cavernous playscape trying to find pieces of a magic sword that have been scattered all over the place (as mystic items usually are in computer games).

It'll probably take a while as the game is huge and your exploration is hindered by the clever way only rooms you've been in are visible. Unexplored areas are pitch black.

No room for further enthusing but a close industry associate of mine reckons it is: "Absolutely corkeroony mega fantastic! (Basically)."

ENIGMATIC SAM

While it's lovely to hear about all the serious software for the SAM, it's no good denying we really want to see how

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wizzo the games are. When you've lived with colour clash and bleeps the promise of glorious technicolour and stereophonic sound is enough to induce spasms of delight.

Unfortunately the main purveyor of games for the SAM, Enigma, has decided it doesn't want to be my friend anymore since I took the obviously unacceptable step of saying some of their games were, well, not up to par, shall we say. But luckily a SAM fanatic by the name of Nigel Kettlewell has no such problem and recently wrote to tell me what he's been playing recently:

"The first game worthy of note is *Pipemania*, the Spectrum version of which scored 90 in *Your Sinclair*, and the SAM version is far better, especially in the graphics department.

"Secondly, I bought *Sphera*, a totally original game not available on any other format. It is quite simply incredible. The scrolling (multi-level parallax) is pixel perfect without a trace of Spectrum-style flicker and the background graphics are brilliant.

"Basically it's a three level shoot-'em-up with some huge end of level monsters, each of which must be beaten several times. The in-game music is quietly unobtrusive but creates a superb background to the game. I strongly recommend this game to any Coupé owner willing to shell out £15 for a game the likes of which are more often seen on a 16 bit machine for twice the price."

You liked them then Nigel! Good to see Enigma's standards are improving.

If you've bought any software recently you'd like to wholeheartedly recommend or slag off, why not write in with your comments to Robin Alway, Spectrum Column, *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

A DIFFERENT KIND OF FANTASY

It's good to see some people out there are still writing adventures for the Speccy. Tartan Software has long served the need of troll bashing types who feel the desire to 'GO NORTH', 'RUB MAGIC KNOB' and so forth.

The company's latest offering, *The Lost Dragon*, isn't quite as much of a Tolkien-inspired, elves and pixie populated quest as you might think from the title.

In fact it's based rather bizarrely around a convention for readers of *Adventure Probe* magazine. This excellent fanzine attracts enthusiastic support from adventure playing fans all over the world and in a few parallel dimensions as well. In the game your aim is to find a lost dragon, but in the process you have to take on a wizard, who has gained control of the third floor of the hotel in which the convention is being held.

It's all a bit confusing but Tartan's adventures are usually excellent and the inclusion of a freebie, *Magic Treasure*, with the main game all for the bargain sum of £2.95 doesn't sound too bad to me. *The Lost Dragon* is available from Tartan Software, 61 Baille Norrie Crescent, Montrose, Angus DD10 9DT.

Robin Alway

ST

SAM TRAM SPEAKS

The head honcho at Atari, Sam Tramiel, recently took part in an on-line conference. The exercise was part of Atari's efforts to shrug off its image as a company which doesn't care about its customers.

Users from all over the US logged onto Compuserve, the computer network and fired questions at Mr Tramiel. During the course of the conference several interesting comments were made.

Tramiel revealed that the Atari Unix will be launched at the Hanover Faire in Germany on March 13. The version plumped for is V.4 and will be bundled with X-windows, Motif and a user-front end called 'Wish'.

On the subject of the much-rumoured games machine, the Panther, Tramiel said:

"It will be a 68000 game machine running at 16MHz which we will probably begin shipping in early 1992. Software is now being written for the Panther. It will even allow for the Lynx to network with some games."

You'll note that he made no comment about whether this machine will be based on ST technology, though it seems unlikely that they'd ignore the ST's massive software base.

On the subject of peripherals, Tramiel revealed that Atari is currently developing a 1.44Mb drive which will be available as an upgrade for Mega STEs and TTs. This would bring the top end Atari machines into line with the fast developing industry standard for high capacity floppy drives.

One on-line conferencer noted that he'd seen STEs selling in the States for as little as $379 (about £200). Tramiel replied that this was simply part of Atari's efforts to remain competitive in the marketplace, but this also adds weight to the argument that the STE is due for a price cut in this country.

One of the most interesting comments of the conference was made as a joke. When asked whether we'd see a return to the old days of Atari in the 80s Tramiel retorted:

"We hope we will NOT be like Atari in the 80s. We want to be like Commodore in the early 80s.

"Joking aside, we have great aspirations in the US, you are right. The only way we can change this perception is through marketing, ie, advertising and user groups and users telling people that Atari makes more than just great video games. In Europe today we are definitely known as a computer company that also makes video games."

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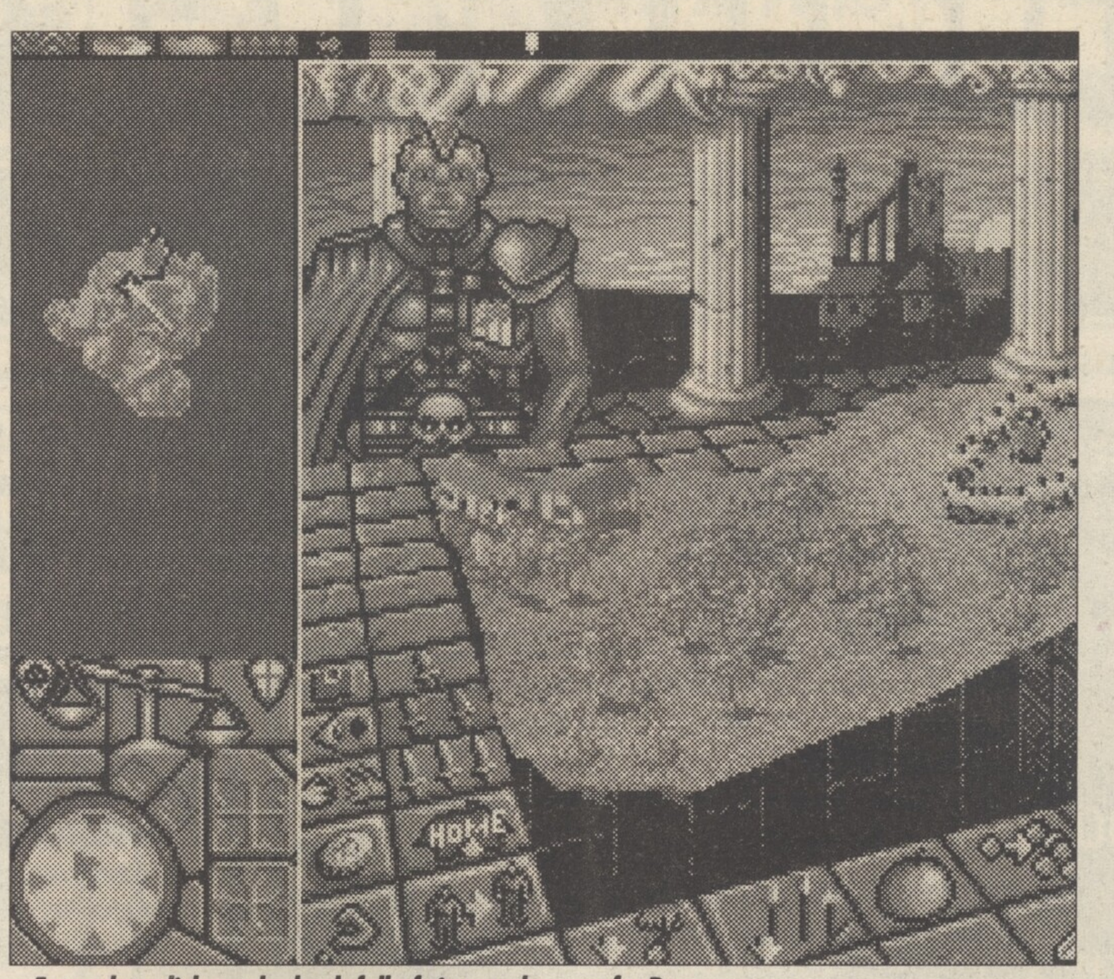
Condor Computers has just announced a revolutionary and extremely competitively-priced colour animation package for the ST and TT. It is aiming the package at "graphics houses, video production companies and TV stations".

The package, named Phase 4, is modular and comprises four main elements: *Prism 24 Paint*, *Chronos 3D Keyframe Animator*, *Rosetta 3D Translator/Viewer* and *Prism Render*. These modules, which can be controlled either with a mouse or a tablet, can be used in the production of commercials and videos.

The company tells me that it can install complete graphic workstations including all the necessary peripherals such as high resolution cards and monitors, genlocks, graphic processors and output devices. *Prism* costs £80, *Chronos* £200, *Rosetta* £90 and *Render* £90. These should all be launched by the time you read this.

Condor will also be releasing a 24-bit graphics card for the ST in June. This revolutionary board will enable the ST or TT owner to play with up to 16 million colours, though you'll need a pretty large monitor to see them all on screen at once.

Supercharger is one of the company's better known hardware devices, and I'm told that the company has an update board ready now for this PC emulator. The board, which is actually a co-computer, emulates a 286 PC. It runs at 16MHz and has a Norton rating of 14.



***• Extra data disks and a book full of tips on the way for* Powermonger.**

If you already own Supercharger, the upgrade will cost £150, or you will be able to buy Supercharger in a bundle with the new the new board for £469.

For more information on Phase 4, the colour card or the new emulator contact Condor Computers can be contacted on 0734 810066.

BUDGET ADVENTURING

Magnetic Scrolls has been responsible for some of the best adventure games ever to grace the ST. However, since the company split with Telecomsoft, its games have not been available in their original packaging at a reasonable price.

But never fear because Special Reserve is here!

It will be releasing all the Magnetic Scrolls adventures at budget prices. So if you want to play *Pawn*, *Guild of Thieves*, *Jinxter*, *Corruption* or *Fish* for just £6.99, then I suggest you get in touch with Special Reserve at PO Box 847, Harlow, CM21 9PH or telephone 0279 600204.

CARRY ON MONGERING

There's little doubt that *Powermonger* is one of the best games to be released for the ST. Now frustrated generals can update their game disk, because Electronic Arts is planning to release some data disks.

These add-on disks will probably retail at £9.99. They are likely to comprise a gameplay editor and a graphics editor. There's also a tips book on the way.

WHAT A HOTWIRE

The American program launcher, *Hotwire* has just received a major update, to version 3. The revised *Hotwire* enables you to launch up to 74 files straight from your desktop.

The program installs itself at boot-up and enables you to click on predefined menu choices to run a program. This means that you don't have to root around inside folders and drives to find the item for which you're looking.

Bundled with *Hotwire 3* is a screen saver/mouse accelerator, both of which are fully configurable. Within *Hotwire* there is an alarm, a ledger, password protection, a command line interface and a clock.

Hotwire 3 costs $44.95 (about £20). Contact Codehead at P.O. Box 74090, Los Angeles, CA 90004 or phone them on 0101 213 386-5735, fax 0101 213 386-5789.

Andy Hutchinson

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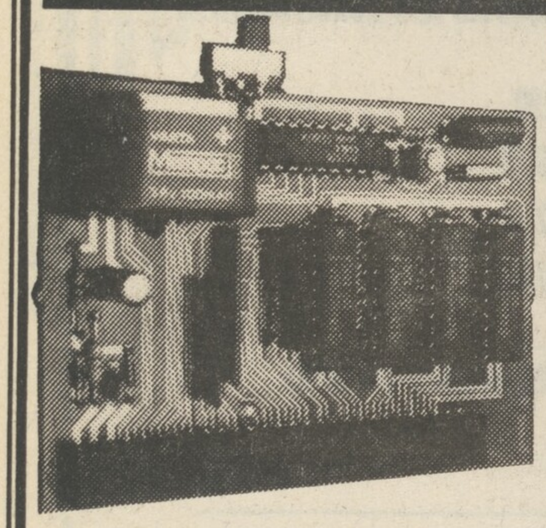
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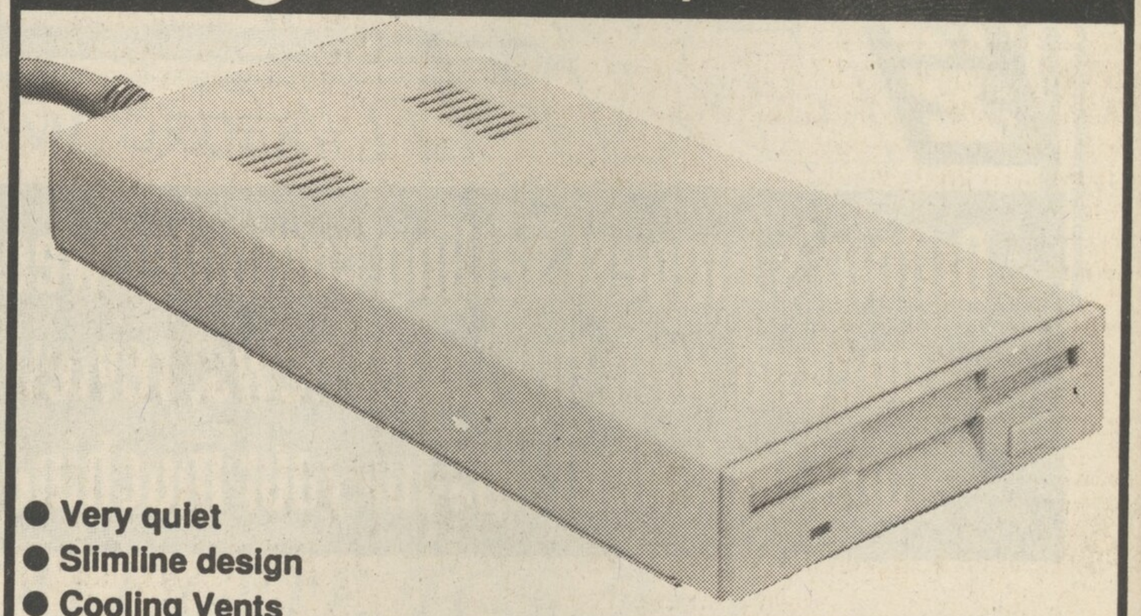
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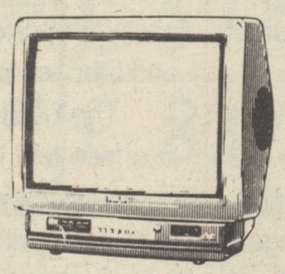
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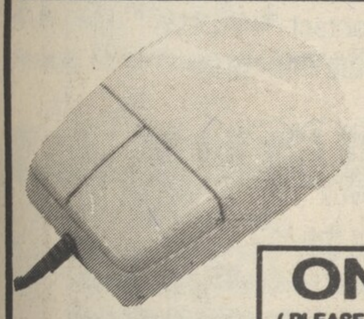
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WHOLE WIRED WORLD

Our regular jaunt around the globe with Steve Gold is a bumper week for the ST, with new MIDI, DTP, graphics and fast access packages all being launched.

HOTWIRE 3.0 FOR ST

An updated version of the fast access Hotwire package for the Atari ST has been launched by Los Angeles-based Codehead Software .

Hotwire 3.0 is faster and more flexible than before, and is now capable of single-key accessing up to 74 applications. Not bad.

Retailing for $44.95 (plus $6 international shipping), the package is billed as a super fast method of accessing up to 5,000 applications (with two clicks) on a single disk from anywhere within the shell program.

Bundled with the package is *Hotsaver*, a screen saver program for the ST which, according to the company, will speed up the work rate of an ST mouse.

In addition to its shell facilities. Hotwire includes a number of *Sidekick*-like facilities. First reports suggest that the package will go down a storm and existing users can upgrade for just $10.

Contact: Codehead Software, PO Box 74090, Los Angeles, CA 90004, United States. Tel: 0101-213-386-5735 Fax: 0101-213-386-5789. BBS: 0101-213-461-2095.

ODYSSEY LINKS INTO TYMNET

Odyssey, one of the more adult-oriented (wink, wink, say no more) on-line services, has just done a deal with BT's Tymnet International network to allow callers to log in on a host-paid basis.

The deal means that subscribers to Odyssey can use the Tymnet network – which has around 20 dial-up points in the UK – to call Odyssey and access some pretty raunchy material.

You pay via credit card and while the service doesn't come cheap, the material available is, um, interesting.

Odyssey should also be available through the Compuserve network soon so UK users will be able to access the service using Compuserve's London dial-up ports, as well as via BT's DialPlus network, at standard rates.

Odyssey costs $15 for subscription plus an on-line hourly charge of £24. That may sound expensive, but modem users should remember that Tymnet's London ports can be accessed at 9,600 bps (bits per second) which allows for very fast downloads.

One interesting feature of Odyssey is that the service has a dial-out facility, allowing onwards connection to a variety of services, including the Official Airlines Guide (OAG) and several local Californian bulletin boards.

If you're feeling adventurous, then you can direct dial to the service in the US. This will cost as little as $2-10 an hour for the on-line charges, though you have to pick up the tab for the phone call. Contact: Jim Hughes, Hughes Associates, Tel: 0101-818-359-9526.

SUPRA MODEM UPGRADES

Supra is offering users of its old 2400bps modem the chance to upgrade to the MNP Class 5 or V42Bis version for a modest fee.

Upgrade costs range from $105 to $155, depending on which modem you're upgrading from and to. The Supra 2400 modem was a good seller in 1989/90 when it could be bought in the UK for under £200. Amazingly, Supra is offering users the chance to upgrade their old modem even if it's not working!

Contact: Supra Corporation, 1133 Commercial Way, Albany, OR 97321, United States. Tel: 0101-503-967-9075.

ST ANIMATION FOR $30

ST users will have the ability to create professional-quality graphical animation. with Surface Master, a new graphics package from talented programmer/artist Louis Markoya.

Supplied with the $30 package is a manual detailing how to manipulate the ST's attributes and texturing facilities, along with a disk full of IFF images. Attributes for surface qualities such as chrome, glass, gold, brass, diamond and emerald are included in Markoya's package, which is receiving critical acclaim in the on-line ST community in the US.

Contact: Louis Markoya, Surface Master Computer Imagery, 49 Walnut Avenue, Shelton, Conneticut, 06484, United States.

DMC READIES CALAMUS SL

With the West German Cebit computer show almost upon us, word is that DMC, the West German creator of Calamus, is working on Calamus SL, a second generation DTP package for the Atari ST.

According to Ron Kovacs' Z-Net on-line newsletter, Calamus SL is a complete recode of the old Calamus package. The new package includes colour separations and the use of modules to allow maximum flexibility, on a standard 520ST.

Two versions of the Calamus SL package will be launched at Cebit – a basic version (Calamus S at DM 700) and the full SL version (Calamus SL at DM 900). The SL version includes linotype fonts, while the S version will only run in monochrome, although it will still be possible to produce colour outputs.

APPLE LISPS PROFESSIONALLY

Apple US has unveiled a new version of its CommonLISP development environment. The company claims that Macintosh CommonLISP 2.0, formerly marketed as Macintosh Allegro CommonLISP, is a full implementation of the current industry-standard CommonLISP programming language.

The updated version now offers support for the CommonLISP Object System (CLOS), the standard object-oriented extension to the language. According to Apple, users will be able to take advantage of CLOS by writing portable object-oriented code that can easily be ported between the Apple Mac and other computer environments.

The package also includes a handy interface tool kit that allows users to produce applications which have a Mac look and feel without having to generate source code.

Mac CommonLISP costs $495. The package requires a Mac with a hard disk plus at least 2.5Mb of RAM (4Mb is recommended). Contact ADPA by telephoning 0101-408-562-3910.

COVOX MIDI FOR THE PC

Oregon-based Covox has produced a cheap MIDI card for the PC.

Retailing for just $189.95, the card fits into a single PC expansion slot and provides a score print program, plus a 64-track MIDI sequencer that samples at arate of 600 beats per quarter note.

Covox claims that the sampling rate even allows for the playback of snare drum rolls without the usual associated choppiness and distortion.

Contact: Covox Incorporated, 675 Conger Street, Eugene, Oregon, 97402, United States. Tel: 0101-503-342-1271 Fax: 0101-503-342-1283. ■

ATARI GETS THE HOTZ



• *The Atari ST has proved to be the most popular computer when it comes to MIDI.*

In order to make sure that the ST retains its position as the leading computer when it comes to making music Atari US has released the Hotz Box, a new MIDI-based system for the Atari ST with what the company describes as a "radically different keyboard layout."

When used with an ST as the driving computer, the system allows musicians to compose, edit, sequence and perform creative projects.

It can also be used to control several linked MIDI instruments from a single designated keyboard. Or you can join a number of Hotz systems together and use one of them as a conductor in a musical session.

The system comes with an extensive library of chords and scales. Used with MIDI sound modules, it can reproduce the sound of any instrument.

The technology to reach number one on *Top of the Pops* doesn't come cheaply, however. Each Hotz Box is built to order and will set you back a wapping $5,500.

Contact: Atari Computer, 1196 Borregas Avenue, PO Box 3427, Sunnyvale, California 94088, United States. Tel: 0101-408-745-2000 or fax: 0101-408-745-2088.

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CAX 354: Amiga 3.5" drive.	*£64.99*
ST Internal drive upgrade.	*£64.99*

The Cumana, ST internal drive requires the ST's case to be modified (full instructions supplied). The external ST drive is a high quality, slim, quiet drive which comes complete with integral PSU and so does not draw power from the ST which could cause problems. Add £3 P&P for drives.

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150	£ 66.99	£ 83.99 Includes x150 Posso Stackable disc box	£ 125.99

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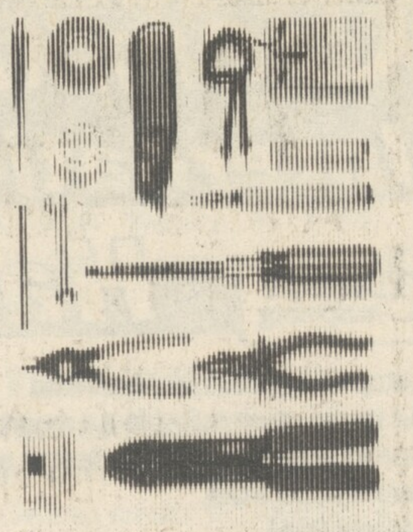
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CIRCUIT CITY



IBM's PC just begs you to open it up and add bits. Keith Pomfret prised off the lid to see what he could add to his machine.

To those used to using a home computer, the idea of opening a machine up and messing about with the circuit boards within must seem daunting. When IBM put together the personal computer that has become the blueprint for all PCs, it realised that people's needs could differ and the system came ready made for expansion.

The early IBM PCs and the ill-fated IBM PC Jr were small memory machines that needed some sort of expansion to utilise their potential. The PC evolved to a machine that incorporated some of this expansion and the 'standard' PC is the XT clone with 640K of memory, a display standard of at least CGA and either hard or floppy disks. The true IBM XT has a hard disk drive, however clone manufacturers have tended to force the standard of IBMs down to a floppy-based machine.

After the XT standard came the IBM AT which ran on a faster processor and had various other improvements. Beyond the AT processors such as the 386 and 486 have offered PCs even more power.

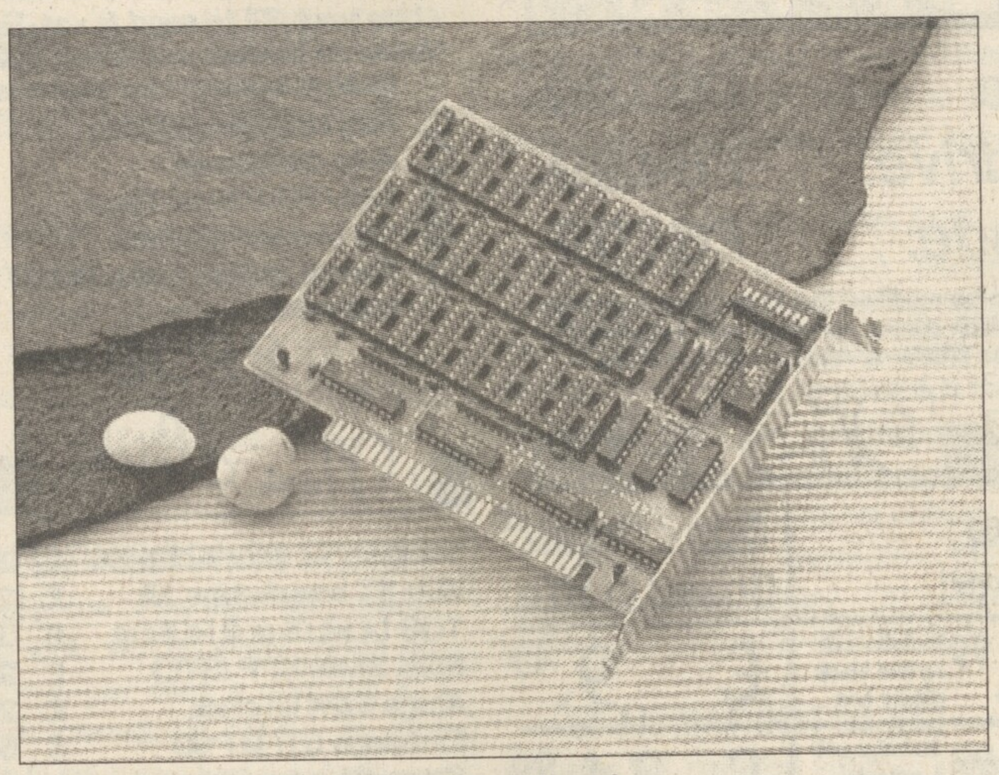
Starting with a basic PC XT with CGA display and a floppy drive, the first logical upgrade is via the PC expansion slots. When the cover is removed from your PC, there should be a row of slots that allow you to add expansion boards. These boards sit in the slots and most have some sort of interface that is accessible from outside the machine. Some of the most basic PCs have no serial or parallel ports and in order to communicate with the world (or even a printer) it's necessary to add one.

This is one of the simplest upgrades to undertake. It is possible to add serial and parallel ports separately but each time you do that you use up one of your valuable slots. On a small PC, you may only have three spare slots and if you use one each for a serial and parallel card, you will only have one slot left.

A popular expansion card for the PC is the serial/parallel/games card. This generally has a serial port, parallel port and a connector for a PC style analogue joystick. It only takes up one slot and some of the more elegant variations are only half length. Slotting the combined card in is simplicity itself. All you need to do is to is unscrew the end blanking plate and replace it with the card. The edge connector on the bottom of the card should locate in the appropriate track and the end plate should secure with the screw that previously held the blanking plate.

If you have an AT or an AT clone, the slots for expansion will be longer and have an extra section. This is because the internal architecture of a PC AT is 16-bit rather than the 8-bit architecture of the PC. Putting an 8-bit card into a 16-bit slot shouldn't be too much of a problem as the additional data lines won't be implemented. However, trying to persuade an XT machine to run a 16-bit AT card will certainly cause tears and wasted money.

An important thing to check when buying a PC or planning to expand one is how many expansion slots there are and whether they are full length. Some smaller deskbound PCs don't have full length slots and some have a couple of half length slots.



• A simple memory upgrade for your PC is on the cards.

If the only thing that you can add is on a full length card and the only spare slot is half or three quarter length, you will have a problem. If you only find this out after you've purchased the card, you'll have an even bigger problem. When installing expansion cards, it may be necessary for you to set dip switches or links to configure the card or even alter links to stop cards trying configure themselves into the same location already occupied by another card.

As well as various user ports, cards can enhance the graphics standard of the PC, add more memory communicate by providing the hardware for networks and communications and even expand the system to a higher specification. It is possible to add a more powerful processor on a card, but there would be little point in putting a 32-bit 486 processor into an 8-bit slot. Other possible expansion cards could control scanners, pointing devices, faxes and there is one that combines a fax machine, answerphone and modem on a single three quarter length card.

Also in the simple modifications stakes are co-processors. A maths co-processor is a chip that exists purely to do the mundane number crunching tasks. There are math co-processors for all the common processors and they can make mathematically intense programs run more efficiently. They don't so much speed things up as take on board the tasks that delay the normal processor and do these in parallel, leaving the main processor free for other jobs. Most PCs nowadays are being made with a socket for a co-processor, but earlier ones can still be upgraded with an add-on board.

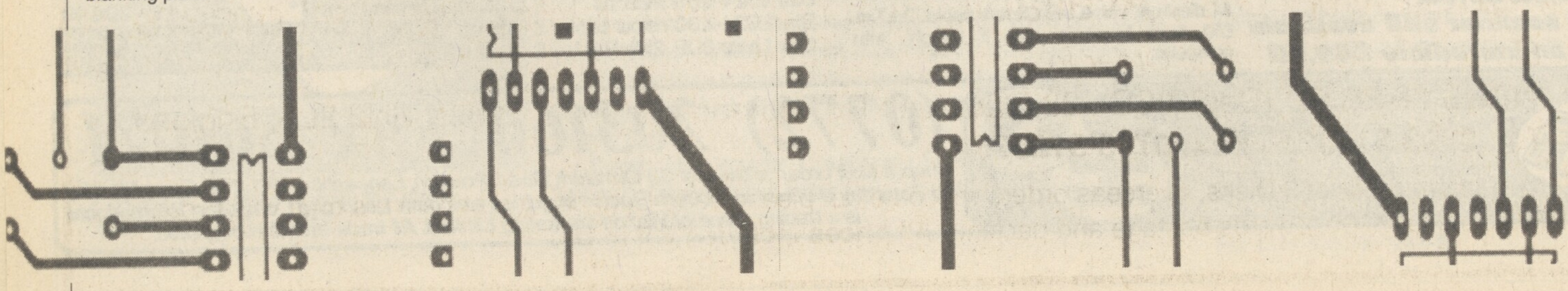
Digging deeper into the machine and planning more serious surgery, it's possible to replace the complete system board. By doing this you may be able to traverse from a humble XT to a mighty 486 by the simple expedient of changing the main system board or motherboard.

A typical upgrade board might replace the XT board with the 286 based AT board and offer five 16-bit slots and an 8-bit slot for further expansion. There would probably be memory slots for further RAM expansion too.

This sort of upgrade is more difficult than adding a simple expansion card and can involve complications. The motherboard is essentially a complete PC on a board and must be compatible with the rest of your existing PC or you will end up having to replace components and peripherals. First things first, check that the new board will fit into the existing location. It may sound elemental, but the locating holes of a motherboard may cause problems that may even involve re-drilling the case.

If you don't feel happy about this sort of warranty bending surgery, get an expert to do the job. When you are choosing the upgrade card, be sure to tell the vendor exactly what your system is and what peripherals you have. Get confirmation that the board that you wish to add is compatible.

The many other possible add-ons for a PC include disk drives, monitors, scanners, modems, mice, etc. Circuit City will be looking at the various PC upgrade paths over the next few months and will be covering the various expansion possibilities in greater depth and on an individual basis. ■



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OPENING TIME

I'm back again, just when you thought that you'd seen the last of the Centre, or Fold depending on how you wish to look at it.

This week we have two specials for you. Firstly, the results of the independent industry poll of polls. And secondly, a special computer art walkthrough with our ordinateur artiste special et moins excellent du les brushes peinture, Mademoiselle Lisa Scuzzy.

The idea behind the walkthrough is to give Centrefold readers a grounding in the finer side of DTP and computer art. We think that it worked – we certainly paid through the nose for it!

Do you have any ideas for useful, computer-related classes which might bring knowledge into the lives of other Centrefold readers? Write in and tell me about them soon.

I'll keep Opening Time short this week for the simple fact that we need to fit a great deal in. So it's time for you to get out of here and never return with your complaints that MS-DOS is nastier than a rotweiller with attitude problems.

FACTS ALOT

FSK is the abbreviation for Frequency Shift Keying.

Mr Zero was the name of the chief character in Elmer Rice's *The Adding Machine* (1923). Mr Zero has often been used by anti-computer lobbies as a symbol.

It has beeen estimated that at the start of this decade the Pentagon would spend 10 per cent of the entire US defence budget on software programming.

THE GEEK



This week the Geek realised that the only thing which separated homo sapiens from animals is the fact that we have the capacity to be depressed when our hard disks corrupt.

THE POLL OF POLLS.

Remember way back in issue 113 (that's January 5 this year) I proposed the Change The Face of Computing in the 1990s Awards. The response was tremendous – well, we got one or two replies in the post bag. So now, sit back and see who and what the Centrefold readership thinks rates or falls short in the UK computer industry:

- WORST GAME 8-BIT: *Escape MCP*
- WORST GAME 16-BIT: *Teenage Mutant Hero Turtles*
- WORST GAME (CONSOLE): *Golden Axe*
- WORST SOFTWARE (OTHER THAN GAME): DOS 4
- WORST HARDWARE OF 1990: C64 GS
- WORST SOFTWARE PACKAGING: Domark *TNT* compilation
- WORST HARDWARE PACKAGING: Sam Coupé
- COMPANY MOST LIKELY TO SUCCEED IN THE 90s: IBM
- MOST DEEPLY LOVED INDUSTRY FIGURE: Alan Sugar
- MOSTLY DEEPLY EMBARASSING INDUSTRY FIGURE: Bob Gleadow
- MOST USED 'BUZZWORD' OF 1990: Virtual Reality
- BEST SOFTWARE HOUSE OF 1990: Microprose
- WORST SOFTWARE HOUSE OF 1990: Ubisoft

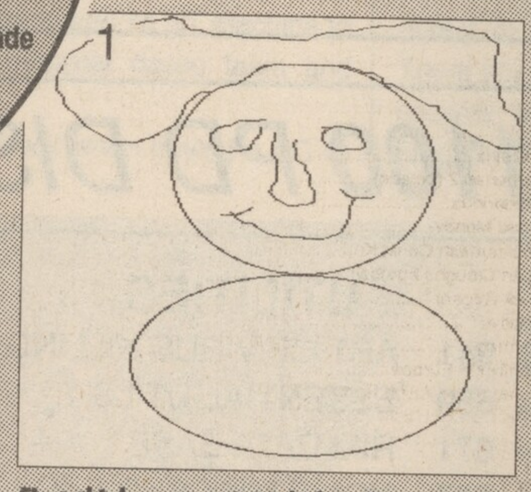
And the winner of the prize for having the most pleasant name, and for not voting me most embarassing figure is: ... Clive Goodman of Kingsbury. Thank you and goodnight.

DTP CLEVER CLASS with LISA SCUZZY

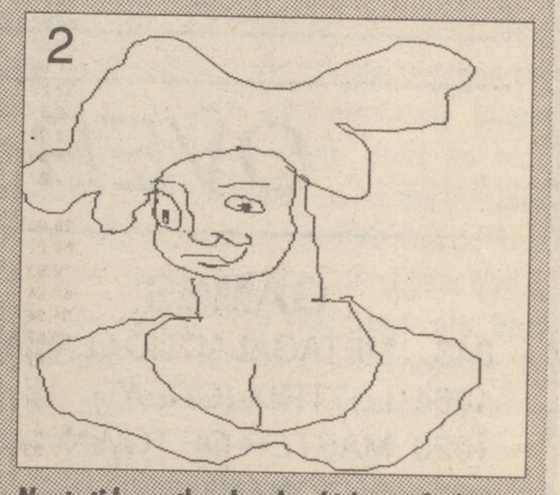
This week I will show you how to create great art with the simplest, and cheapest, tools. All you need is *WonderPaint 8*, (£430), a Yacatoru XIIx with 256 colour monitor (£11,000) and the slightest wisp of imagination.

Lovies, you don't even need to be able to draw! Isn't it wonderful.

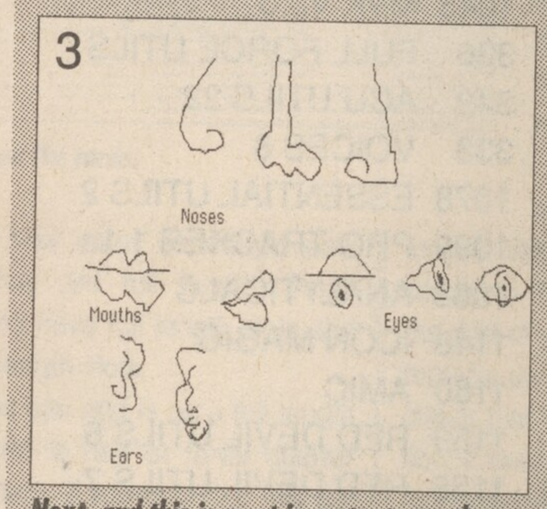
As usual with the clever classes, I have decided that the best thing education-wise is to use that miracle of visual-media, the walkthrough. So, here we go then:



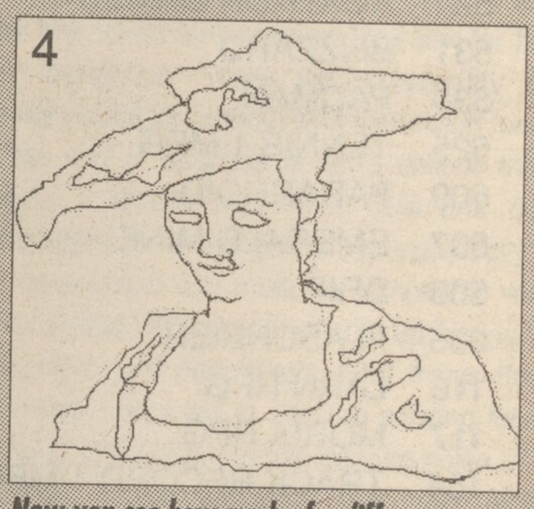
First think up your initial idea. You can draw this on screen using what is technically known as the 'Pen Icon'. This is cleverly resembles the shape of a pen. Don't be afraid if the first few sketches look like work of an educationally sub-normal three year old on mogadons, the computer will help you out here.



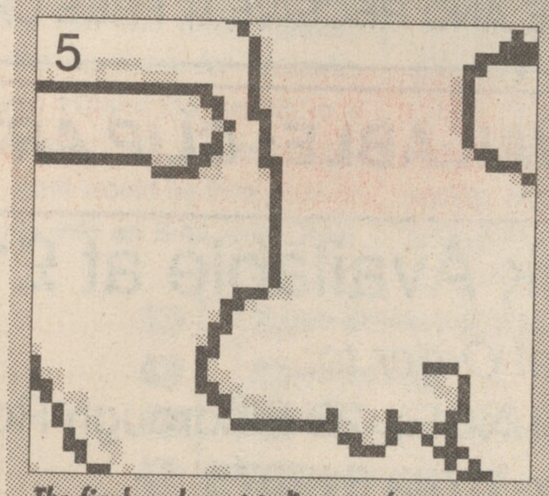
Next, tidy up the sketch which you feel is closest to that chimeric concept, 'art'. You don't have waste to much time on this if you make good use of the 'Tidy Up Icon'. This is made in the shape of Georges Braque.



Next, and this is most important, get those details right! Draw each facet and asset with precision and a love for form. You can make use of the 'Gray's Anatomy Icon' which is made in the shape of Dr Drew Frip, consultant surgeon at Saint Lambada's Croydon, for this.



Now you see how much of a difference those details have made. Quite wonderful, and so far we have only used 30Mb of storage, a few minutes of working time and the merest hint of a mouse



The final, and most tedious to the non-professional, stage is the pixel prefect working process. You need to make use of the Close Up Screen which allows you to edit to quarter pixel detail.



Voila! The finished product before your very eyes. This only took 20 minutes from conception to final product. Gleeful, isn't it? And so simple. Make sure to have an art gallery present when you finish.

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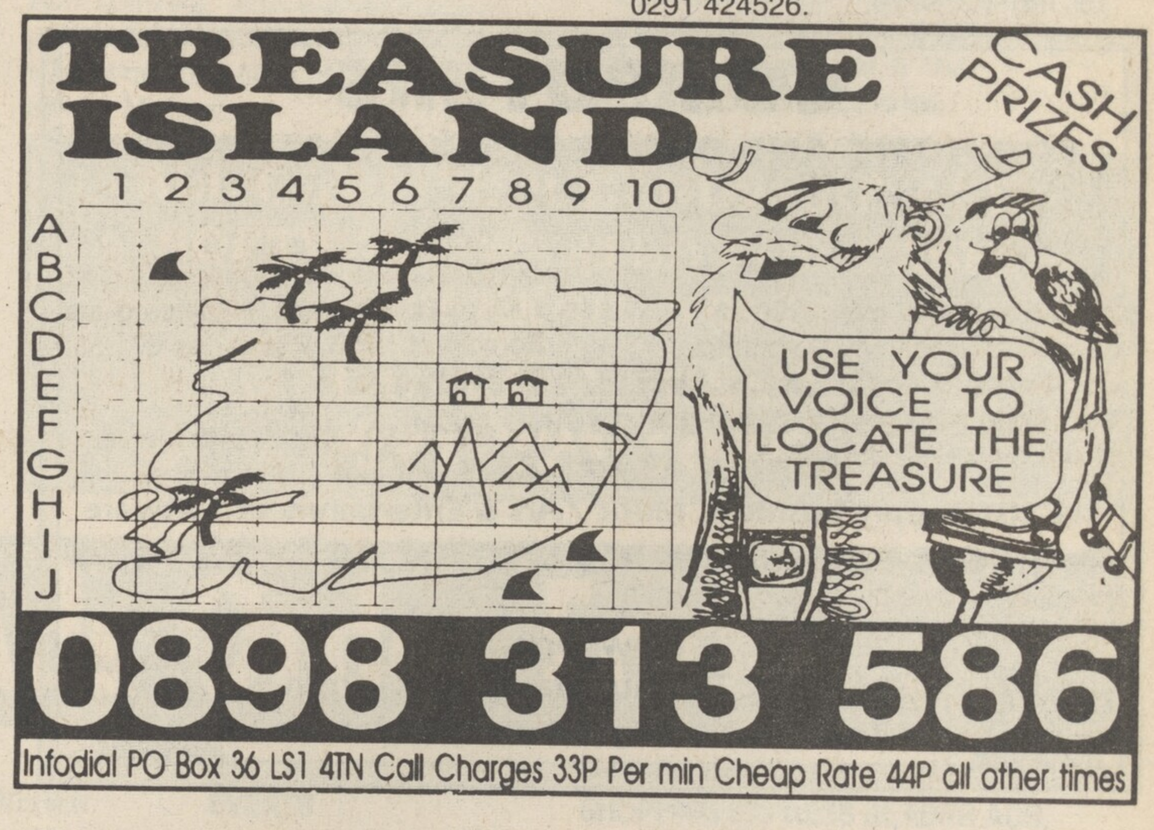
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■ Help! Amiga CAD

I am shortly going to purchase an Amiga A500. The on going, 'my Amiga is better than your ST is better than my Amiga is better than ... etc', has shown me that for what I want, the Amiga has far superior graphics. But is there any application software for producing accurate architectural designs which can easily add or remove a wall or window without the associated time wasting of doing it on paper. The stones etc, that could be redrawn to scale would also be an advantage.

3D modelling of a finished plan would be nice too, but as that may be much more expensive it would have to come later.
Stephen Jones, Clwyd

X-CAD Professional, from CADvision at around £300 will probably do what you want, but you must understand that computer aided design (CAD) is a mathematically intensive application that requires a fast processor, loads of memory and a hard drive to make it viable.

You could buy your A500, add a couple of megabytes of memory, attach an A590 hard disk and have a system capable of doing basic CAD. A more elegant solution would be a Commodore 1500 with a hard drive and more memory added. This would be a one box solution that lends itself to further expansion without spreading itself out all over the desk.

If you want the sort of CAD manipulation that is regularly demonstrated at computer shows with three dimensional graphic images whizzing all over the screen, you'll need some serious processing power.

For a true professional solution, the ideal Amiga is the 3000. It was designed as a graphics workstation and with the large memory and faster processing, is the true Amiga graphics solution.

■ HELP! JVC monitor

Thanks to your great mag, I got my son an AMIGA 500 about £30 cheaper than I had expected. About half the games software that came with it is, at the moment, not booting up - but I will chase this up with the supplier.

My problem is that the portable TV that my son has to use for his new Amiga isn't much good – but we can't afford a monitor yet. However, we do have an old monitor called an Electrohome, model number 38 G12003, 60 dated May 1982, which was made by Victor Company of Japan. Is it possible to use this? Even though it has no sound, we could put the sound through a hi-fi. There is a 15-pin male and a 7-pin female DIN at the rear, with a dual plug set for this going into a single cable terminated in a 6-pin DIN.

Any help or advice you could give would be appreciated.
Ian Clements, East Sussex

We don't have any specific information on the monitor that you mention and can't find any reference to it as a computer orientated product. The Victor Company of Japan is the Sunday name for JVC, the home video and TV giant, so there's a chance that the monitor was originally part of some domestic entertainment system.

If you want to attach it to the Amiga, it will need to have some sort of RGB inputs for you to get a colour signal to show on it. The composite output of the Amiga 500 is monochrome.

You could try ringing JVC on 081-450 3282 or alternatively contact your local JVC agent who may have a manual for it or engineering staff who remember it. If you don't have any joy with your monitor, remember that the Amiga can, with the right lead drive a Scart TV or video. If any of the equipment that you have conforms to the European Scart/Peritel standard, you'll be able to get the Amiga to drive it.

■ HELP! Dying Beeb

I am the owner of a BBC model B (issue 7) which I use for Communications with bulletin boards. I bought it second-hand about a year and a half ago and until two months ago have had no problem with it.

When the problem started the BBC would reset itself or would hang up with the screen blank. When the computer was turned back on it would sometimes make a continuous beep and the screen would stay blank. Now all I get is the continuous beep and the blank screen. Also the light that would normally light up on the keyboard stay off.

At first I thought it was the power supply. But when trying the BBC with a spare power supply it did the same thing. I now believe it is a chip that has blown or is damaged in some way.

Could you advise me as to what is wrong? If it is a chip, which one would be causing the problem and where would it be located on the circuit board?
Simon Round,North Yorkshire

Much as I'd like to, I can't attempt diagnosis by letter. You wouldn't trust a surgeon to guess through an operation by phone from a set of symptoms so you shouldn't expect us to do a similar thing.

If troubleshooting isn't your forté, take your ailing machine to an expert. The cost of a diagnosis shouldn't be great and then you'll know whether or not you want to go ahead with the job.

If the job is beyond your capabilities but within your budget, you'll have solved the problem. Whatever the case, you should have your machine looked at before you attempt to use it again.

● The above letter is indicative of several that arrive at *Express* every week. If your machine is seriously dead or making expensive noises, stop using it and get it looked at. No amount of guessing or well meant advice will be be a substitute for a defunct machine.

■ HELP! Crack up

Could you please help me, I have just bought an Osicom Executive 386/SX computer. One of the main PCBs is cracked, but the floppy disk and hard drive look OK. The monitor seems OK too.

Is there any way I can connect them to my Atari 1040 STFM? Both drives have IDC plugs on the back plus power connectors, the hard drive has a 40 way ribbon, the floppy drive has a 34 way ribbon and the monitor has a high density 15-way D type socket on the back.
J Simpson, Canterbury.

Firstly, before you consign the PC to the scrapheap and utilise it for spare parts, it may be repairable. The specification that you describe means that if you can repair it and make it work, you have a pretty powerful PC.

If one of the PCBs is cracked, there's a chance that you can repair it. If you aren't competent with electronics, get a competent person to look it over. because of the small size of the pulses, currents and voltages on a PC circuit board, you have be careful not to alter the resistance or capacity of a track.

Check the PCB and if the crack is across tracks and not components, you should stand some chance of sorting the problem out. The simplest way, but a method to avoid, is to solder a piece of wire across the break. This is can alter the electronic conditions on the track.

Using PCB track transfer or conductive paint, the transfers can be matched to the approximate width and gauge of the affected track and laid over the break. The paint can be brushed over the gap but it's important not to be sloppy with the brush. If you are going to use paint, try to mask the area around the break and use the minimum amount of paint possible.

If the PCB is cracked, it will have lost some of its lateral strength and it may be that a repair will break if the board is flexed. If this is the case, you must find some way of rigidly supporting the PCB so that it doesn't flex and break the repaired tracks.

If you cannot repair your board, it may be possible to get a replacement board, either bare or populated. A repaired and working 386 PC would have quite a resale value and you could use that to buy the required peripherals.

To answer your other questions, there's no simple way to interface monitor and drives to your ST. Like most jobs, I'm sure that it can be done but the hassle involved in doing isn't worth it.

■ HELP! Spectrum printer

As a regular reader of your column, I wonder if you could shed some light on the hope of resolving a few problems that I've been having.

My present set up comprises; a Spectrum Plus 2, Tasman Interface, Brother HR5 printer and other various peripherals. Over the passed two years, I've managed to load the tape, I created files and considering it's limitations, I found it pleasing. Alas when it came to printing my results, my printer chose to ignore it completely – it did not even blink.

Faced with this unsocial behaviour and lack of dialogue between my database and printer, I sought advice from Microsnips, Transform Ltd., and Campbell Systems. The latter did send me a few magic instructions to try out and I followed them scrupulously, but my printer shrugged its shoulders, swore at me and

printed some gibberish garbage.

I have since sent the offending article back to those nice people at Microsnips who understandably enough, sent me the money back. A A A H! Oddly enough, I also have a Speccy version of *Mini office* that does load and my printer behaves more friendly towards these applications. Can you recommend me a similar solution to my other print problems.
Mr E Muliette, Worcester.

The answer to your problems is most certainly some sort of printer driving software. Whether it is an integral routine that amends the code of a program or a stand alone driver that does the job generically, you'll probably find the best way to run it to ground is to contact one of the Spectrum user groups in the Express on-line section. Someone will most certainly have a solution.

■ HELP! Star student

I am a student and just before Christmas I was fortunate enough to be able to buy an Amiga A500 with 1 Mb expansion, a Star LC-10 (mono), and the word processing package *Scribble* (Platinum Edition), but I have come up against two problems.

The first is that, however much I fiddle with the printer drivers provided on the Extras disk, I cannot seem to get a set up which will allow my printer to type in bold. I am currently using the EpsonXOld driver, as this will work with all but the bold type. As the Star is such a popular printer, surely there must be a dedicated driver around for it somewhere, could you please provide me an address.

The second problem is worse. I cannot seem to extend the default value of *Wordmem* from 16K. This is a problem, because 16K works out at around 2,000 words and essays are usually 3,000 or more. I have tried the way suggested in the manual (using tool types in icons) but it doesn't seem to work.
Richard Speight, University of Warwick, Coventry

Try installing the EpsonX[CBM_MPS-1250] driver from the Extras disk instead. This should persuade your LC10 to do the business.

To get the *Wordmem* up from 16k, click once on the scribble icon, choose info from the Workbench menu and change the *Wordmem* to a value of your choice. Then save and everything should be OK. For this implimentation to work though, the disk that you boot from must have info library in the LIBS directory.

■ TIP! Arch modulators

This is my first letter to your very fine magazine. I have been prompted to write because of a letter in *Express* 116 requesting information about a TV Modulator for an A3000. The above mentioned piece of kit can be obtained from Orion Computers, Dept Bau2, Units18e/18f, Boxer Place, Moss Side Employment Centre, Leyland, Presston PR5 3QL, (0772) 421984 at a price of £65 excluding VAT (I have not had any dealings with this company so I cannot vouch for this equipment or for the services provided by it).
Paul Houghton, Paignton

And keep the tips coming in. If anyone out there has had trouble obtaining a piece of kit , but has now found a supplier, let Tech Tips know. You might be able to save someone else a long and fruitless search.

■ HELP! Syncing fast

I have a Samsung CM4531 EGA which I was hoping to use with my Spectrum Plus2. I made up a cable as instructed in the manual (photostats enclosed). Unfortunately all this produces is a compressed logo (I think) scrolling up the screen. Can you help please?

Has any progress been made on the Spectrum/PC emulator?
Harry Harper,Walsgrave,Coventry

It sounds as if you've some problem with the signal synchronisation. If you've checked and re-checked the cable and all appears to be OK, contact one of the specialist lead companies for an alternative or assistance. In this instance, I'd suggest Simpson Electronics on 0332 760353 as it is a company that tends to offer a service ideal to a hobbyist such as yourself, providing the necessary cables and connectors and often the technical know how to impliment them.

We haven't heard about the PC Spectrum emulator for some time but no doubt it will surface again soon.

■ HELP! 64 questions

A Commodore 64 with all of its original manuals and still in the box seemed too good to miss at £25. I used to share a C64 at college and although everything is as I remember, there was a manual that took ages to get that we needed to find documentation of the sound and graphics registers. It may have been published by Commodore itself, but I'm not sure.

The local bookshop is willing to try and get it if I can tell them what it is called. any ideas?
Angela Wilding, Kirkham, Lancs

The book that you're looking for is the Commodore 64 Programmers Reference Guide, published jointly by Commodore and Howard W Sams. I haven't seen a copy for years so I can't give you the ISBN number, but the title should be enough for your bookshop to check if it's still in print.

If it's not, try one of the enthusiasts computer shows such as the All Formats Fair or the Northern Computer Show at Leyland. The All Formats might be a shade expensive to go to (BR day return £82 if you go before 8am, £28 if you leave after) but it's a nice day out and I've seen some pretty good bargains there. For details of your local show contact David Batty at Sector Software on 0772 452414

■ HELP! Babbling Babylon

Listening to a lecture on Radio 4 recently (you know, the long wave bit that hasn't gone to war) I heard a professorial sounding man extolling the virtues of a Babylonian computer. The chap running the discussion thought that he meant a Babbage computer and the discussion got quite heated as that obviously wasn't what he meant.

What is a Babylonian computer and why could it be so good.
Martin Norton, Mablethorpe

You certainly know how to ask the obscure ones, don't you? The only reference that I could find to Babylon in terms of computing was in the orbis Computer Course. The Babylonian number system was an advanced system based on the number 60 instead of 10. Whether the number system evolved because of the convenience of seconds in a minute, minutes in an hour or vice versa isn't clear, but there would be some advantages to calculating in this base.

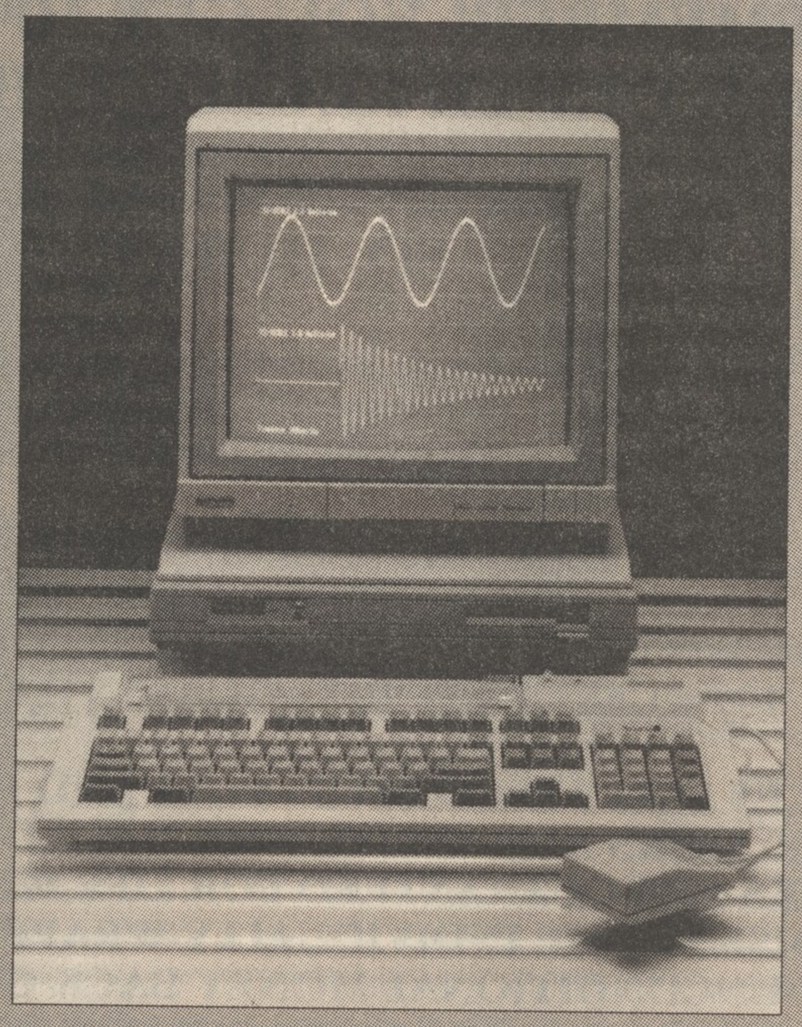
As for anyone a computer that works in the base of 60, I've never heard of one but it might not be a bad idea for the interface of a navigational system as there are many aspects of navigation that would fit into base 60. ■

■ Warning! Archimedes virus

I have discovered a virus on the Archimedes. It hides inside a module and calls itself "Extend 1.56 (08 Jul 1989)". It works by starting a wimp module task, like the filer or Task Manager, but has a null length task name. The wimp task allows the module to check Wimp`Poll codes and is notified when a new application is about to start. At this point the module then looks at the application's !Boot file and checks for the presents of an &FF byte at the end. If this byte is present the virus just ignores the application. Otherwise it saves itself inside the application under one of eight names. They are: MonitorRM, CheckMod, ExtendMod, OSextend, ColourRM, FastMod, CodeRM or MemRM.The virus then appends some lines to the !Boot file, or creates one if it is not present. The fill will contain something like this: RMEnsure Extend 0 RMRun <Obey$Dir>.xx<&0 D> ||<&FF> Replace the 'xx' with one of the randomly chosen names from above.

Note also that the module uses &0D not &0A to end lines with. Not only does Extend do this but it also grabs some RMA space, about 1K, every time but doesn't release it – even when it doesn't manage to create a new copy. This is hardly noticeable until you start running out of memory and programs start complaining. Opening a filer window will also grab some memory. It is quite easy to destroy all copies of this virus but it is not practical to go around deleting every copy found, especially if you have a 100Mb SCSI hard drive full of applications!

Because of this I am in the process of writing a Virus Killer application, which by the time you read this will have been finished. It will kill this and any other virus that uses this same method of duplication and self recognisation. For a copy, send a disk to me with a stamped addressed envelope. Disks with Public domain software on them will be returned quicker. Disks without a stamped addressed envelope will be fed to the AmigaWell, that's the letter Keith. My address is: Tim Gladding, 25 Lawns Crescent, Little Downham, Ely, Cambs CB6 2TT. If you don't understand anything reply to me here please.



Now that's the sort of letter that we like to get. A problem, a description and a solution all rolled into one. Just for once, I've allowed the name and address to remain in the letter in order that any Archimedes owner with a similar viral infection can get swift remedy. If anyone else has discovered any virus problems, let us know at *Express*.

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* Orders received 18th March and after will not qualify for free disks.

PERFECT PRINTING

MAKING THE MOST

Sharp, clean and impressive. These are the qualities you can get if you chose the right printer for the right job. Damien Noonan helps you find the one that's best for you.

Whatever you use your Amiga for, it's pretty certain that at some time you're going to want to get something printed out. It may just be the listing of a program that you're writing, in which case you won't be too fussed about the quality of the printout, providing that it's legible. However, it is generally true to say that you'll want to get the best quality possible, so that the results are clean, sharp and look impressive.

There are two main types of printout that you may need – words and pictures. Most modern printers are pretty adaptable and can print either words or graphics and are available in both mono and colour versions.

When it comes to printing out words, particularly for something that you want to make a good impression with like business letters, it's important that it is clear and neat. Your word processor may be a lot easier to use than a typewriter, but if the printed results look shoddy you might as well do it the old-fashioned way.

The measure of how effective a printer can be is summed up in the phrases 'letter quality' or 'near letter quality (NLQ)'. If a printer provides NLQ results, then it means that your printout will be sufficiently sophisticated in appearance to be used in a professional environment such as for business letters.

Remember that the prices quoted here are the recommended retail prices, so you can usually get a reduction of up to 40 per cent by shopping around.

DAISY CUTTING

The oldest kind of letter-quality printer is the daisywheel printer. This type works in very much the same way as an electronic typewriter, each letter being printed onto the paper through the inked ribbon by the impact of a raised letter shape. The letters are arranged on the end of prongs radiating out from a wheel at the centre, which spins round to position each letter when it is needed, and the whole thing looks vaguely like a daisy.

Daisywheel printers are very noisy and can only be used to print text, so they are going out of fashion somewhat, but if you just want to print text the quality obtained is very good. Different 'fonts' or typefaces can be used by fitting different daisywheels, but if you want use more than one font in asingle printout it gets a bit complicated. Three daisywheel printers to look at are the Brother HR-20 (£445 Tel: 061 330 6531), the Olympia ESW 1000C (£378 Tel: 0789 415875) and the Qume Sprint 11/55 Plus (£850 Tel: 0635 523200).

DOTTY ABOUT IT...

Currently the most popular kind of printer is the Dot Matrix printer. These use an arrangement of pins that stamp through the ribbon onto the paper to form the shape of the letters. Because they are not tied to any pre-set shapes, dot matrix printers can support a variety of different fonts or print graphics with equal capacity.

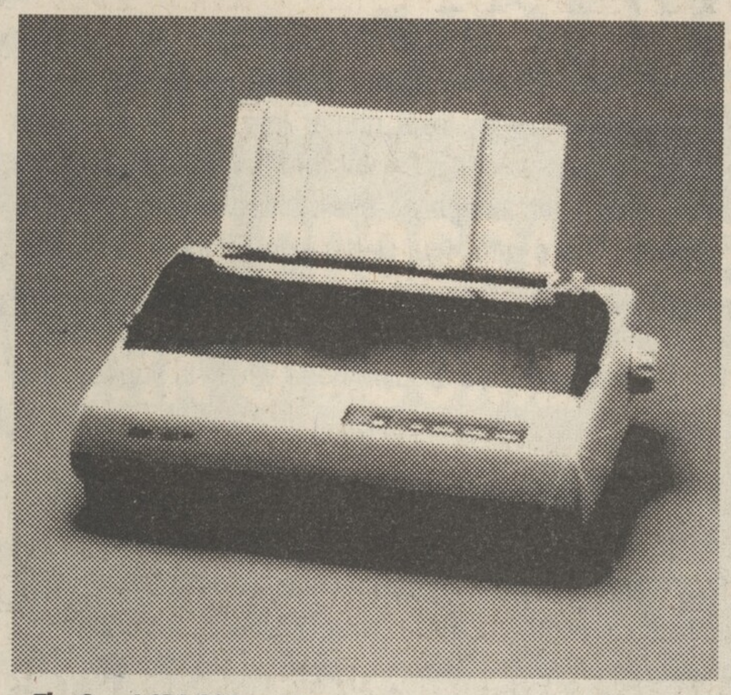
The cheaper versions of dot-matrix printers are the 9-pin models, which use (obviously enough) an arrangement of nine pins to make up the printed shapes. Although this may not seem to be sufficient for letter quality to be achieved, nearly all these printers have a 'draft' mode in which they just print a rough and a 'NLQ' (near letter quality) mode in which each printed character is overprinted a second time in a slightly offset position to fill in any gaps. A near letter quality printout from a 9-pin dot matrix printer is generally of a pretty high standard.

The more expensive big brother is the 24-pin dot matrix which, because it uses an arrangement of 24 pins, naturally enough prints in a higher resolution. This makes printing quicker, too, because it removes the need to go over the characters again.

Finally, not only can dot matrix printers print graphics, but they are also very often available in slightly more expensive versions that will print in colour. This is achieved by having different-coloured ribbons that print the three 'process' colours from which any other colour can be made up – Cyan (Blue), Magenta (Red) and Yellow. The cost of this kind of colour printer is relatively low, but the results are good.

If you make regular use of a basic DTP package or one of the flash modern breed of word processors that allow considerable use of graphics amongst your words, then a dot matrix is the only relatively inexpensive way of getting decent results. 9-pin dot-matrix printers you might want to look at include the cheap Amstrad DMP 3160 (£171 • Tel: 0279 454555), the very quiet Mannesman Tally MT81 (£183 • Tel: 0734 788711), the Epson LX-400, one of the fastest of the 9-pin printers (£199 • Tel: 0442 61144) and the Citizen 120-D (£229 • Tel: 0895 72621), one of the lightest and smallest around. Recommended is the Star LC-10 – it is the best designed and is available in a very good colour version, too (£229 • Tel: 081-840 1800).

MORE PINS, MATE



• The Star LC24 200 printer.

There are numerous choices of 24-pin model too. Star makes a 24-pin version of the LC-10, called the LC24-10, which is popular in this price range and is available at very competitive prices, often for as little as its smaller brother's RRP. Epson's LQ range includes some relatively inexpensive models that provide good letter quality print, if lacking some of the frills. IBM and NEC both produce machines that may be worth the comparison. Also check the Seikosha SL-92 (£389 • 0753 685873), the Panasonic KX-P1124 (£399 • 0753 73181), the Brother M-1824L (£595 • 061 330 6531), the Fujitsu DL 3300 (£599 • 081-573 4444) and the Olivetti DM-324 (£619 • 081-785 6666), all of which have been recommended in independent reviews.

TOP OF THE HEAP



• High-end quality with price, that's a laser.

Laser printers are a real step up in quality when it comes to printing crisp, clear black-and white, but of course this does not come cheaply. The mechanism is similar to that in a photocopier: instead of ink, powder is picked up on a roller which is electrostatically charged where the print needs to be and is transferred onto the paper from there. Once on the paper the powder is fused in by heat. Where the laser comes in is in scanning across the roller to charge it up in the right places.

Laser printers fall into two main categories, the cheaper category lacking one crucial thing that the more expensive machines have: PostScript support. PostScript is a high-quality print definition language used by sophisticated graphics and DTP programs, such as Gold Disk's *Professional Page* and *Professional Draw,* it ensures that no matter what the display on-screen, the finished result is of the highest possible quality.

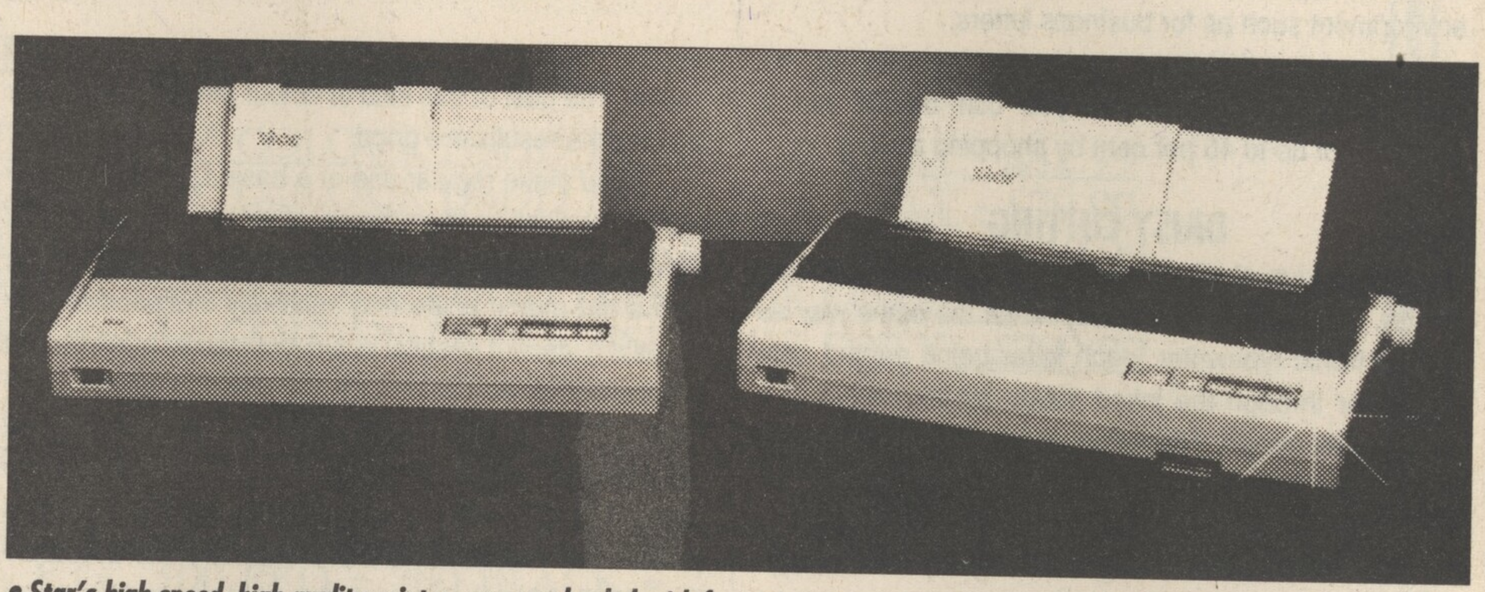
Laser printers tend to be too expensive for the home user, coming in at between £1,300 and £2,000 for the cheaper models and anything up to £6,000 for a PostScript version. They are also limited in the main to black and white work. They do, however, have several big advantages for professional use. Firstly, they are very quiet: the only noise is a low whine when actually printing. Secondly, they are very quick, producing up to about eight full pages a minute. And perhaps above all they are of a very high quality, very nearly up to the standard of professional typesetting.

Because laser printers are so expensive, it makes little sense for us to look at any in detail here. If you do intend to buy one, there are many factors, such as repair and maintenance support, that you will want to take into account. The big names are Apple, Qume and Hewlett Packard, so look at their machines first. ■

ST EXTRAS IN PRINT

MAKING THE MOST

A printer is a popular extra for an ST. You can print letters and documents, lists from programming languages, pages from DTP software and more. Mark Higham sorts out the good ones from the bad and the ugly.



• Star's high speed, high quality printers are overloaded with features.

Printers come in three sorts – dot matrix, laser and inkjet. There are also daisywheel printers though these are slow and incapable of producing any graphic output so they've largely become redundant.

Dot matrix printers are the cheapest of them all, but they also produce the least impressive results. A dot-matrix printer constructs each letter using a series of dots. A 24-pin printer produces more dots than a 9-pin so the characters look more realistic. Most dot-matrix printers have an NLQ mode – near-letter quality – which demands that each line of text is printed twice. Although it takes longer to produce a page, the output is clearer.

Laser Printers offer the most superior output quality but they're also the most expensive, by far. They're really best for DTP work where high-quality output depends on the sharp quality of your printer.

Inkjets are less common. They work by squirting a jet of ink onto the page. Since they steer away from the traditional typewriter method of striking an inked-ribbon, inkjet printers are capable of an exceptionally high quality output. Using a set of four colour cartridges, you can obtain a full colour output.

Before buying any laser or inkjet printer, check that your desktop publishing or word processing package can support the printer you're buying. This is particularly important when you are buying a colour printer since many ST DTP packages cannot output in colour. You may need to invest in Public Domain printer drivers to make the most of these printers.

9-PIN PRINTERS

STAR LC-10 • £228.25 • 0494 471111

There are a number of elements about the LC10 (and the rest of the Star breed) which show some good design sense. For a start, the mains power button is located at the front of the printer rather than round the back where you can't reach it. The Centronics port is also located on one side so that it doesn't interfere with continuous paper hanging down the back. One of the most useful features is the way you can set the printer to ignore style commands. This is handy if you're printing out ASCII documents which can change italics, sizes and styles.

The front panel buttons are used in combination to control a number of effects. For example, paper feed, fonts and style commands are all changed by hitting the three buttons.

Print quality is very good with three distinct fonts: Courier, Sans Serif and Orator. In addition, the Orator font can be set up to print with lower case characters as true lower-case or smaller upper-case.

The LC-10 is particularly fast in draft mode though in near-letter quality it's slower than average. All the codes are Epson compatible except the commands to switch into double-height mode which are unique to Star. Output is clear and crisp. With Epson compatibility, this is one of the best supported printers around.

24-PIN PRINTERS

STAR LC24-10 • Star £299 • 0494 471111

This is Star's entry-level printer into the 24-pin range and in many ways it's the big brother of the LC10. It's the same basic shape as the LC10 except it is slightly bigger. There are four letter-quality fonts available. Graphics printing modes enable you to address 360 dots per inch but the definition can't rival laser printers.

The printer has a quiet mode which is supposed to print the lines quieter by printing half of each line twice. There's little difference between them except that the second round of printing bombards your eardrums for twice as long.

The LC24-10 also has a RAM card slot which enables you to add either a 7K RAM buffer or an extra font. The RAM buffer enables you to spool incoming data to the RAM, freeing up your ST quicker.

This is a printer simply overloaded with features. With IBM and Epson-compatible modes, you're certain to be able to find a driver to suit it. Speed and print quality rivals printers in a much higher price bracket.

LASER PRINTERS

ATARI SLM804 • £1,379.99 • ATARI • 0753 333444

Atari's 300dpi laser printer is vastly different from others because it doesn't have its own memory, processor or built-in fonts. It plugs into the ST's DMA (direct memory access) socket rather than the serial or parallel port.

A4 paper is fed to the laser via a 250-sheet cartridge sliding in at the base of the machine. A slot just above the cartridge accepts single-sheet paper. Delving inside the printer reveals the drum and laser engine. It's all very accessible, which is handy since you need to change the toner and printing drum after a few thousand sheets.

Because the laser has no memory of its own it uses the ST's RAM to build images before printing them. This means your machine must boast at least 1Mb of memory and more if you want to run programs like Calamus at the same time.

Two printer fonts and a Diablo printer emulator are supplied. Once they've been installed, any program using GDOS can output pages to the laser.

The SLM makes a lot of noise due to its loud internal fan but all things considered, it's the best choice if

IN THE PUBLIC DOMAIN

There are a number of public domain printer drivers available for obtaining output from some of the more obscure printers. The SouthWest Software library is your best source of supply. The drivers listed below are just some of those available.

FLEXIDUMP (DISK 537) – An excellent program for printing screen dumps in any size. This updated demo version supports most colour and 24-pin printers and many obscure models. Differences from the full version include a limited range of sizes and no spooler.

HARDCOPY (DISK 862) – Prints a high-resolution Degas picture out to an Epson compatible printer.

RAW2PS (DISK 538) – Produces Postscript code as an .EPS file for output to any Postscript laser printer.

DESKJET PLUS DUMP (DISK 643) – Prints a Degas picture out to an HP DeskJet Plus printer. Three sizes are available. C source code is provided. The utility can be run as a .TTP file.

24-PIN SCREENDUMP (DISK 383) – This is intended to be used as a replacement for the ST's screen dump utility (Alt+Help). It can be used for Epson LQ and Star NX compatible printers.

DESKJET PLUS DUMP ACCESSORY (DISK 862)
This handy utility prints a Degas picture to a Hewlett Packard Deskjet or Laserjet in any of three sizes. Also comes with C source code.

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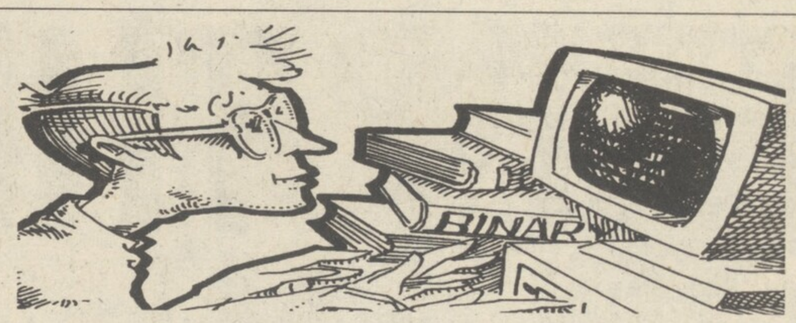
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FULLY FUNCTIONAL



Functions are used frequently in programming languages, so why does functional programming seem so off-putting? Mary Branscombe makes things clearer.

Most functional languages, such as Hope, Haskell, ML and Miranda, have been developed in Universities and are seen as specialised and complex, in a similar way to Prolog. They are perceived as off-putting because they are based on the lambda calculus, but the terseness of the syntax should not blind us to the fact that the functions available in Lisp and Miranda are the same as those we use in the Pascal language. The only difference between them is that they are the main tool in functional languages.

Lisp (LISt Processing) is the most familiar functional language and it is not restricted simply to artificial intelligence, despite the rumours. Pure Lisp does not allow computations to have any side effects – evaluating an expression in a program should return a result but not make any other changes at all. This limitation can prove very restrictive and inefficient; if you can cause two effects with one function, you can obviously save computation. For more details, see the box on side effects.

A similar restriction is enforced in Pascal, where functions can only return results and not cause any changes, but Pascal also provides procedures, which can cause changes, to get around the restriction. Lisp provides only functions and the restriction on side effects is frequently abandoned in practical programming, which means that Lisp cannot strictly be considered a functional language at all, although it is usually treated as such.

In a functional language, the value of an expression is calculated by the application of the function to its arguments and the context of the expression within the program has no effect. This means that the order of program statements has little effect on the execution of the program. Programs are collections of equations that define the functions and data structures that they work with.

Because they are based around functions, programs in functional languages are modular by nature. Modular programs are easier to understand and to debug because they are broken down into small independent sections. The main program is a function that takes the program input as an argument and produces the program output as a result. This main function is made up of other functions, which are made up of further functions and of primitive program statements. All of the functions are expressed as equations.

The functions can be composed of one, general definition that works in the simple cases and several specialised definitions, for unusual cases. This means that functions which can have only one form in conventional languages can have several forms, all with the same name; the particular function required is selected by pattern-matching.

Another advantage is given by lazy evaluation. Because an entire program is a function, it can easily be called by another program. This allows a number of programs to be linked together very easily. The main disadvantage of this is that very large temporary files are needed to store the output from the programs called by the main program. Lazy evaluation means that any programs called by the main program are only run when the main program actually requires their result and they are only run to produce a single result. If the main program finishes without reading in the result of a subordinate program, the execution of the subordinate program is aborted. If the subordinate program is an infinite loop, it will be terminated once it has produced a result. If functions produced side effects, this would not be possible, because the interdependence of the programs would have to be considered, interfering with the modularity of the programs; this is the main advantage of functional programming over conventional languages. ■

- **The modularity of functional languages makes them powerful, but...**
- **Functions can return a result but must not produce any side effects.**
- **Functions should capture a single, well defined task.**
- **In a functional language, even the main program is a function.**

SIDE EFFECTS

The advantage of allowing functions to produce side effects can easily be seen in the algorithm for calculating the numbers of the fibonacci series. The first two numbers are zero and one; the other numbers are produced by adding the two previous numbers, so that the third number is one (0+1=1), the fourth is two (1+1=2) and further numbers are 3,5,8,13,21,34,55,89,233 and so on.

Each number will be calculated three times; twice to calculate the two subsequent numbers and when it is itself calculated as a term in the series. If the term were stored in the program's database the first time it was calculated, as a side effect of the function, then it would be available when needed and would not have to be recalculated, saving a considerable amount of repeated processing.

Without the side effects, the algorithm would be:

```
fibonacci(1) =0
fibonacci(2) =1
fibonacci(n) =
  fibonacci(n-2) + fibonacci(n-1)
```

If the numbers calculated are stored, the last definition becomes:

```
fibonacci(n)=f;
    fibonacci(n-2) = f2
    store (fibonacci(n-2) = f2)
    fibonacci(n-1) = f1
    store (fibonacci(n-1) = f1)
    f = f1+f2
```

This can also be seen in lambda expressions. The expression:
((lambda(x) (/(+(*xx)(*xx))2))5)
is in Reverse Polish Notation (RPN), where the operand is given before the arguments it applies to and it means: for x=5, $((x^2) + (x^2))/2 = 25$

The expression (*xx), or x^2, has to be evaluated twice, which is obviously inefficient. If we could use assignment to put the value of (*xx) into a temporary storage area, the variable temp, the value of x^2, 25, would be stored when it is first calculated and would not have to be worked out again. This would look like:

```
((lambda(x) (define temp (*xx))
(/(+ temp temp)2))5)
```

This temporary storage is a side-effect and makes it more difficult to express the program as a sequence of logical statements, in the lambda calculus for example, in order to reason about the program and to check whether it does what it was intended (program verification).

LAMBDA CALCULUS

The lambda calculus is a formal language with explicit facilities for defining functions and how they can be applied to their arguments. Looking at this in a slightly different way, we can say that the Lambda calculus is actually a theory of functions, which means that it can easily form the basis of programming languages based on defining and manipulating functions.

The syntax of the Lambda calculus, which tells us how we can write sentences in the language of the calculus, also tells us how to write functions. The axioms of the calculus, the sentences which are always true, tell us how to apply functions to their arguments. This means that we can use the calculus to specify and verify programs that can be written as statements in the calculus; this does not include side effects, which are extremely difficult to express in a calculus.

The calculus treats functions as first class objects, not as simply a set of the pairs of arguments passed to the functions and values returned.

Lambda expressions consist of two terms. The first is the lambda abstraction, based on the argument of the function, expressed as a variable such as x: for example, lambda x would be the abstraction for a function with one argument. The first term is applied to the second, which forms the definition of the function itself. The lambda expression:

```
(lambda (x) (lambda (y) (xy)))
```

defines a function which takes two arguments, x and y, and returns their product, xy.

To evaluate and compute with the terms of the lambda calculus, we use rewriting rules that assign the values of the arguments to the variables of the functions, simplifying expressions until they can be calculated by the compiler.

THE PD COLUMN

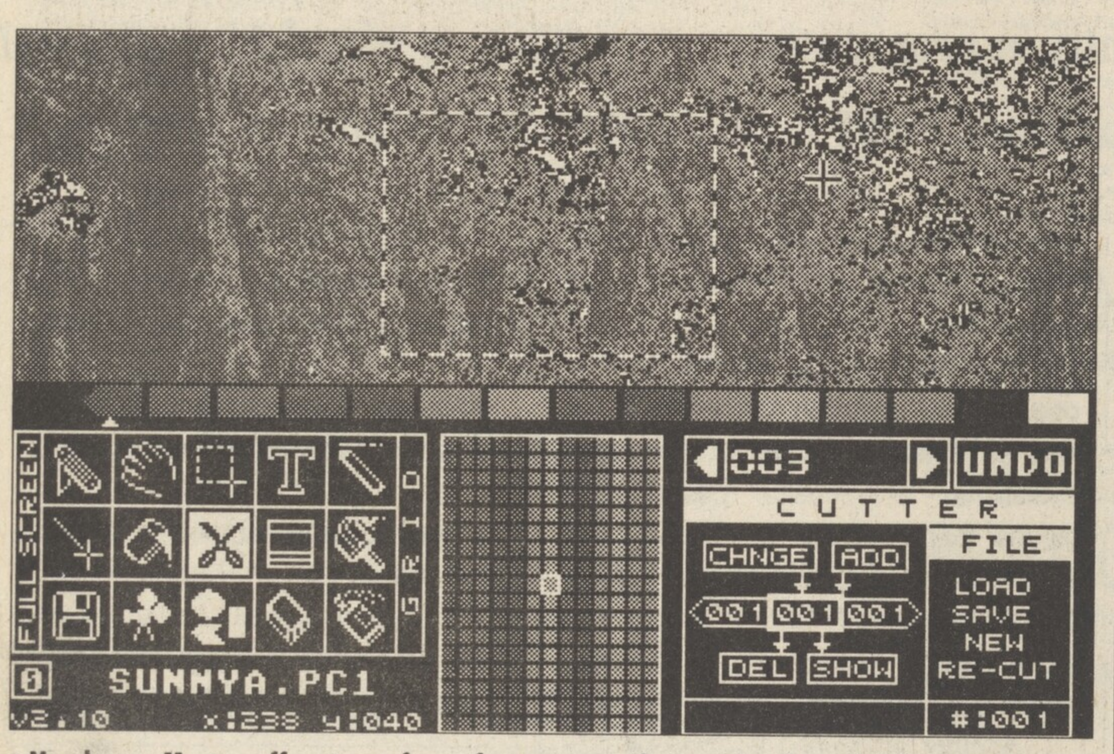
Surely no public domain DTP software could offer the same quality as its costly commercially available competitors? Adam Waring reviews at one that just might.

Neochrome Master 2.10 • ST • Sphinx Software • P/Art 25

ST owners are spoilt for choice when it comes to art packages for their machine. Most of these are, of course, commercial releases, costing a fair amount of money. And while a PD program can easily beat such programs on price, it couldn't possibly beat them on features and usability. Or could it...?

Atari gave its machine – and the public domain – a real helping hand when the ST was launched. A number of PD programs were commissioned by the computing giant to ensure that the ST had readily available software to encourage potential users. These were written by programmers of the highest quality, and put into the public domain so that every ST owner could use them.

Among these is *Neochrome*; an art package that is extremely easy to use, yet offers features to knock newcomers' socks off. It allows you to draw 16 colour pictures, choosing your colours from any of the computer's palette of 512. You can draw with a variety of pens, brushes and spray cans. Manipulating your picture is a piece of cake with the cut and paste features. For anyone who has upgraded from an 8-bit ST *Neochrome* is like a dream come true.



• **Neochrome Master** ***offers tons of new features to make your doodles a doddle.***

But the program has never stopped being developed. It was always designed to be updated as improvements, modifications and new features were added by the programmer. These new versions were put into the public domain as and when they became available. A selection of boxes on the lower half of the screen hold all the drawing tools that are available. In these early versions of *Neochrome*, however, some of those boxes are empty.

But in the program's latest incarnation, called *Neochrome Master*, all these boxes have been filled. Many of the established tools have extra functions – cutting and pasting of odd shaped boxes for example.

Neochrome Master has been written by a PD group called Delta Force, better known for its demos rather than for writing useful programs. One or two twists have been added which bring *Neochrome* slap bang up to date. In fact, *Neochrome Master* has some features that put many of the more expensive programs to shame...

Up to 10 different work-screens are now available, as opposed to the single screen previously offered. The number of screens that *you* can use depends on the amount of memory available on the machine you're using.

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when a simple key-press will do the job. For example, now you can press 'P' to select the pencil, 'SHIFT 1' will select ink colour one, and so forth. Everything can still be driven by mouse, though, so *Neochrome* remains the ideal painting program for beginners.

Sections of the screen can now be rotated through any angle. Previously only increments of 90 degrees could be used. This is done at the cut and paste stage. The program takes a couple of seconds to calculate the new angles, but the results are spot on.

The program can automatically provide a smooth spread between two chosen colours. This is possible across a range of as many colours as you like (from three to the maximum of 16 in your palette). The program will even save an ASCII file of the colours for you. This means you can save the ink colours as assembler or C source code!

Pictures can now be saved and loaded in a variety of file formats. No longer are you limited to *NEO* programs, so you can freely interchange files between *Neochrome* and *Degas Elite*, for example.

By the use of 'raster scanlines' up to 512 colours can be displayed on a standard ST simultaneously. This is achieved by the computer switching to an entirely new palette as the screen is being displayed. Each vertical line can have its own palette – that's 200 in total. And here's something that STE owners will smile about; using the same method, their machine is capable of up to 3200 colours at once. Pretty nifty, eh? (And pretty colourful too!)

To show off this feature, a picture that uses loads of colours is included. It features a rather cool and laid back fish, and looks more like a photograph than something drawn on a computer screen.

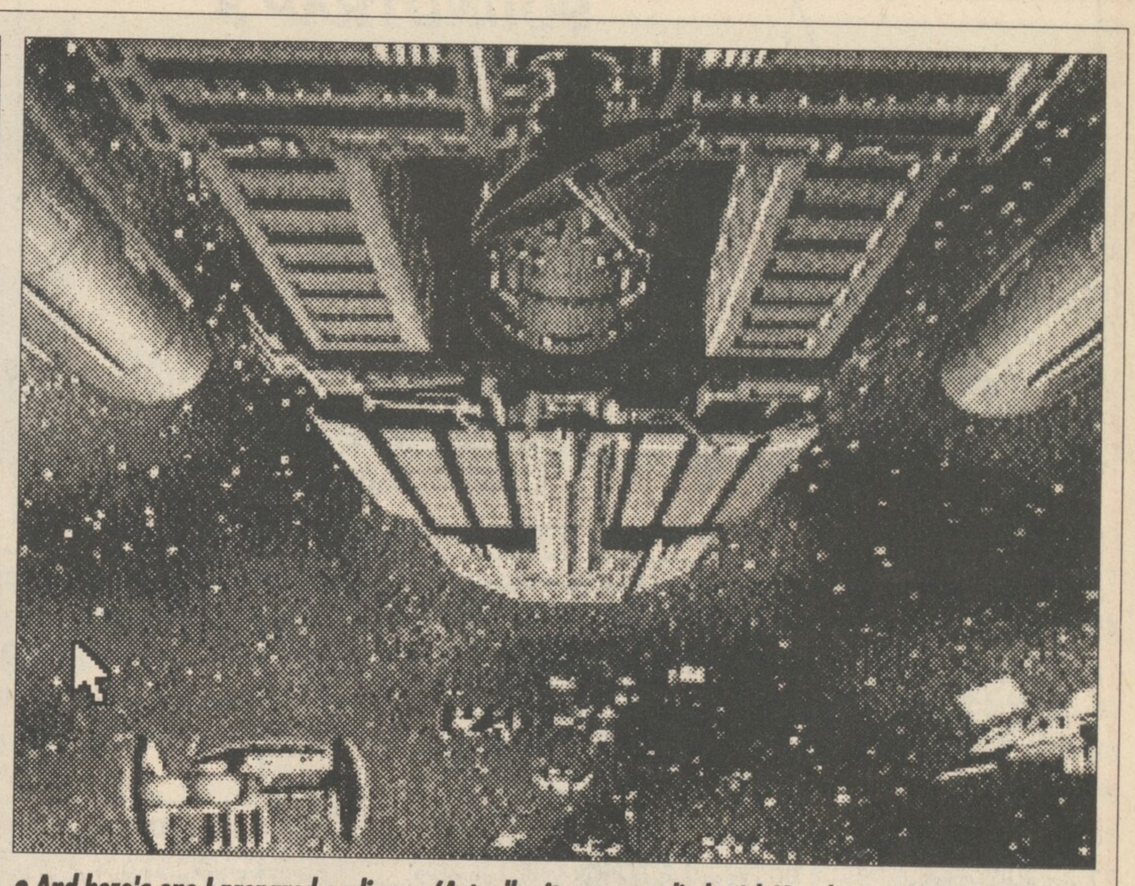
A special format, IFF (Interchangeable File Format), is used to save and load this type of picture. A picture saved on IFF has a special header that contains information about the type of file, the number of colours used, and so on.

One of the friendliest features of *Neochrome* has always been the large magnifying window in the lower section of the screen. This follows the cursor around and you can see what you're doing close up at a glance. This feature always used to be lost when full screen mode was selected – after all, where was there to put it?

But now, by using some pretty clever programming tricks, this magnifying box appears in the border! As you can imagine, this is incredibly useful. You can view the whole screen to get everything in context, and see what you're doing at the same time!

And this is just a taster. There are many more features that I have not had the chance to play around with properly yet, such as animation. All the details are, of course, documented in the comprehensive 'help' file that is provided with the program.

Neochrome Master isn't guaranteed to make you a better artist, but the wide variety of new and innovative features combined with the program's legendary ease of use should go a long way to help. Some of the new features are rather complicated, and may take a while to get used to, but the basics are still there and the program is still as intuitive to use and as friendly as it ever was. ■



***• And here's one I prepared earlier... (Actually, it was supplied with* Neochrome Master).**

WHERE TO GO

Sphinx Software
Erw Fynydd, Carmel, Llanelli SA14 7SG. Sphinx has loads of stuff for your ST. Most disks in the library are designed for single-sided machines, but you may request a 'double up', with two programs on the same disk. Prices are £1.75 for a single sided disk, and £2 for double sided. If you supply the disk the price plummets to just 75 pence.

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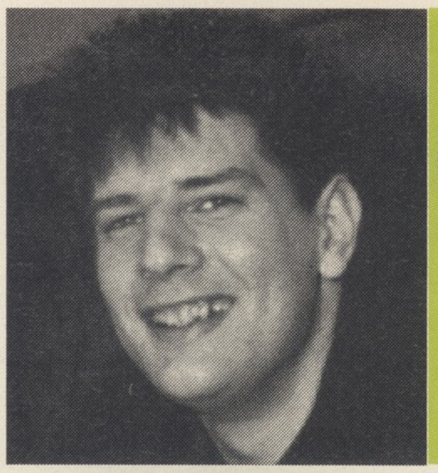
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GAMES WEEK

Neil Jackson gives you the low-down on the latest games, playing tips, cheats and hot news.

There's a real mixed bag of previews on offer this week. First up is ***Spirit of Excalibur***, from Virgin Games, and it's a pot-pourri of games styles itself. Virgin calls it a blend of fantasy role-playing, adventure and combat simulation, which just about covers the lot, really. You play the part of Lord Constantine, King Arthur's successor, and your task is to reach Camelot to take your place on the throne and defend your loyal subjects from the dangerous advances of the Saxon hordes. You can delegate certain tasks to the knights, lords, wizards and clerics who inhabit Camelot, and in the process they will interact with peasants, warriors and nobles as they go. You control the gameplay using an icon interface which allows you to issue orders, check character stats and zoom to areas of the map. Sounds familiar? Not surprising, as it's the work of Synergistic Software, the team responsible for ***War in Middle Earth***. Look out for it during April, on Amiga and 1MB STs, for the princely sum of £29.99, or IBM compatibles for £34.99.

Next up is a Lucasfilm game, ***Secret Weapons of the Luftwaffe***, set in Germany during the Second World War. The USA's 8th Air Force is mid-campaign, attempting to cripple the industrial might of wartime Germany and destroy the incredible new weapons which the Allies suspect are in development. You play an American pilot, and you have the option to buzz around in classic American planes, or you can switch sides and fly the weird and wonderful Messerschmitt 262, a twin-engined, jet-powered plane which was at that time on the cutting edge of aviation develoment. The game features many different flight modes and detailed graphics, complete with explosions, oil-smears and flaming engines, and is due out for the IBM PC in April or May. ST and Amiga versions are being written separately and are therefore destined to reach the UK a little later, sometime in September!

Staying in the air for a moment, Games Week spots Mindscape's ***Blue Max*** whizzing by. This game, from developers Three-Sixty, puts you back in the cockpit again, but this time in the era of the First World War. Attempt to stay airborne as Fokker biplanes hurtle out of the blue in an attempt to shred your canvas wings. There are eight classic fighters to get strapped into and many tricks and tactics that can be used once aloft. The game is a 3D vector-style affair, complete with the now-expected multiple viewpoint cameras. There are extra features like instant replays (for those near-misses), two-player modem and keyboard links (for venting your anger on your mate), and fully-animated, digitised sequences with sounds from the original film. The PC version has just hit the streets (for £34.99), but the ST and Amiga versions are still waiting in the hangar. Look out for them during March, for around £30.

And finally, news reaches Games Week from a distant distress beacon, somewhere on the planet Hewson, where ***Moonfall*** is taking shape. This new game puts you back in the pilot's seat yet again, but this time in deep space. You fly the starship Daedalus 1 to a small red star, some 8.1 light years away from Earth. On your way, you find a curious moon named Frontier Alpha, which used to orbit a planet, but doesn't anymore, for some strange and irelevent reason. On Alpha you get to meet several alien lifeforms of variable friendliness, and trade with them. They give you tough missions to complete while you get cash in return. And, if you can afford it, you can buy the whole moon and become the supreme leader. Look out for this during March on the Amiga, at £24.99. ➤

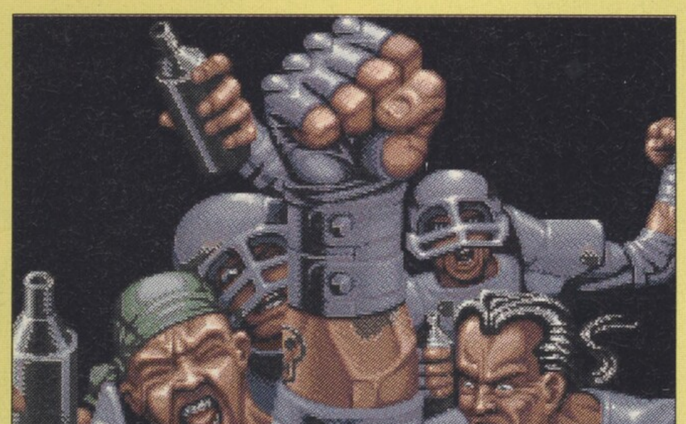
TOP 10 SIXTEEN-BIT GAMES

THIS WEEK	LAST WEEK	CHART WEEK	TITLE	PUBLISHER	MACHINE
1	1	2	*Lemmings*	Psygnosis	AG
2	2	11	*Speedball 2*	Mirrorsoft	ST AG
3	6	4	*MiG–29 Fulcrum*	Domark	ST AG PC
4	5	7	*Steve Davis World Snooker*	CDS	ST AG
5	3	6	*Final Whistle*	Anco	AG
6	4	31	*F–19 Stealth Fighter*	Microprose	ST AG
7	7	11	*Fantasy World Dizzy*	Codemasters	ST AG
8	NE	1	*Fists of Fury – 2*	Virgin	ST AG
9	11	2	*Treasure Island Dizzy*	Codemasters	ST AG
10	8	56	*World Class Leaderboard*	Kixx	ST AG PC

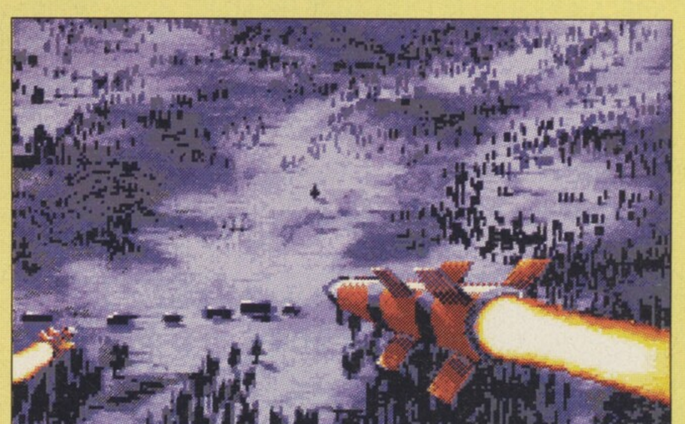
ST = Atari ST AG = Commodore Amiga PC = IBM PC or compatible OT = Other
Chart compiled by Gallup. © European Leisure Software Publishers Association.



1 • **Lemmings** *clambers its way into the Number One slot. Not bad, considering it's only been in the chart two weeks! But does Psysnosis have its umbrella ready for the eventual drop?*



2 • **Speedball 2** *remains static at Number Two, after having peaked some weeks ago. Looks as if the Mirrorsoft marketing team (above) might have something to say about this!*



3 • **MiG-29 Fulcrum** *flits about at Number Three after a few weeks of climbing and diving. Thankfully, Domark's Soviet fighter performs better in the charts than it did in the Gulf.*

PLAYING TIPS

TOP 3

CHARTBUSTIN' TIPS. Take the lid off the top three chart games with these cheats, tricks and tips.

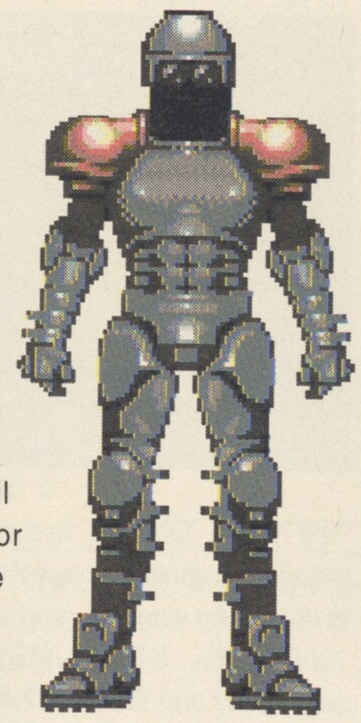


LEMMINGS. Level One – Turn the second lemming into a blocker and then make the first one a bridge-builder. While he's busy, speed up the drop rate to get all the lemmings in play. When the bridge is built, turn the builder into a sideways basher when he reaches the boulder. He'll go right through and head for the exit door. Blow up the blocker lemming to let all the others through.

Level Two – The two trapdoors mean twice as many lemmings to deal with. Turn the first two lems to drop from each door into blockers at the edges of the ledges. Turn a lemming from each trapdoor into a digger to make 45 degree slopes into the earth. When they start dropping through, make the first lemming from the left-hand bunch into a climber. He'll go over the boulder, and you must turn him into a builder to clear the hazard. Do the same again just before the exit door, and he'll then trot off happily. It's now safe to turn one of the lemmings from each bunch into a sideways basher to clear a path through the boulder. Then you're home free.



SPEEDBALL 2. When you enter the league, you kick off with around 1,100 credits in your pocket. Don't give in to the temptation and spend it all at once. There's no point in going to the gym and spending it in training. Just wait, as all good managers do, until the star players come up for transfer. Then you can use the same amount of cash to much better effect.



When fighting a team of wimps, collect as many 100 credit icons as possible. It's even worth going the wrong way down the field for no other reason than to earn them!

When you get around to buying your stars, choose a Goalie, Centre Midfielder and Centre Forward, as these are the most influential players in the game.

Don't bother controlling the defensive players, as there is a risk involved. If the ball gets too close to the goalie, you automatically take control of the him. If this happens without you realising, and you were previously controlling a defender, you'll probably end up moving the goalie out of the goalmouth! Just concentrate on working the goalie alone, and leave the defenders to the computer.

MiG-29 FULCRUM. To get the 500 points you need win in order to attempt the final mission in this game, try this little tactic. Complete one of the easier missions, such as the submarine reconnaisance, then land and hit Control-D. This takes you to debriefing and you'll be awarded 100 points. Select the same mission next time, but hit Control-D before you take off. You get the same message and the same number of points. Do it a few more times and you have your required 500, and the final mission is yours for the starting.

To make sure your save-log is updated properly, you must press Escape whilst viewing the pilots table, which causes a save operation.

To cheat at the submarine mission, all you really need to is overfly the sub (hence spotting it) and bail out once you've passed it. Press Control-D while you're sailing down in your chute, and you'll be awarded the 100 points you need.



PLAYING TIPS

POWERMONGER

Electronic Arts • Amiga and ST

Now you've got the Power

Everyone say "Yeah!" and thanks to Phil 'Zuggy Zuggs' Chan for this impressive list of advanced tips for the Bullfrog's recent hit, *Powermonger.*

● When moving troops across water, use the zoom function at maximum closeness, as this makes them move faster for some reason.

● Make sure you have enough food before embarking on any major travel, as this causes the army to consume heavily. An army marches on its stomach. If they're empty, they'll desert.

● If you have a captain on a spying mission, don't ever give him any more orders. It's a dead giveaway to the enemy, who'll top him straight away. Instead, wait until you conquer the village and then he'll return safely.

● If your small army is threatened by a huge army, panic not. Switch your posture to passive and run away. Don't laugh! It sometimes works!

● Good equipment, like catapults or cannons, is hard to make, so steal it! Find a tooled-up village, change to passive and bribe the villagers. Then form an alliance, change back to aggressive and select Equip Invention. The hardware's yours!

● On some lands, you're outnumbered by a major army which holds the balance of power. Find a small village and attack it. Once it's yours, grab all the food, recruit all the people and equip all the inventions you can. Then kill all the sheep in the neighbouring woods before the big army gets there. Go on and attack the next village, leaving nothing behind. Use this 'scorched Earth' policy until you become large enough to invent a cannon or a catapult. You may then be able to defeat the large army.

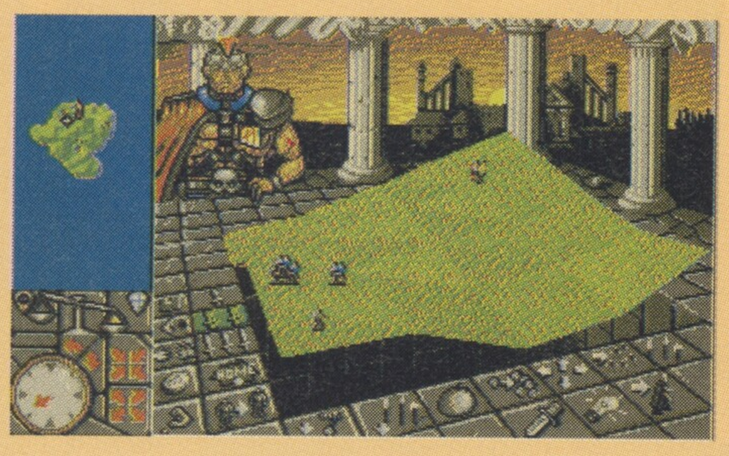
● If your captain is in trouble and his health drops during a battle, you must act fast. Click the right button on his figure to locate him. Click on attack and then click on his attacker,which will force the rest of your army to rally to your defence.

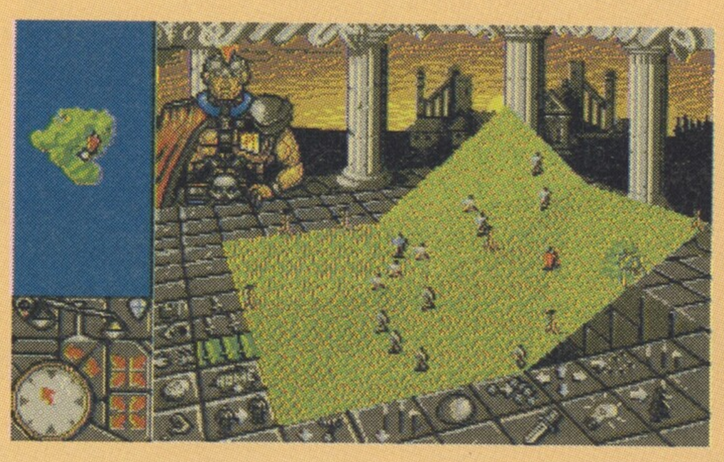
● It's possible to track large enemy armies, by first locating the enemy captain. He'll be the one standing away from the battles. Click on him and a window will appear. Don't close the window. Keep it there indefinitely. Now, whenever you need to find that enemy army, just click on the Eye icon. It's worth noting that ordinary soldiers are not very useful for this, as they tend to get killed, causing the window to disappear. Captains are more likely to survive. You can also use this technique to assasinate enemy leaders, as they are crucial to the enemy's strategy. Without leaders, enemy armies cannot regroup, reform and re-attack!

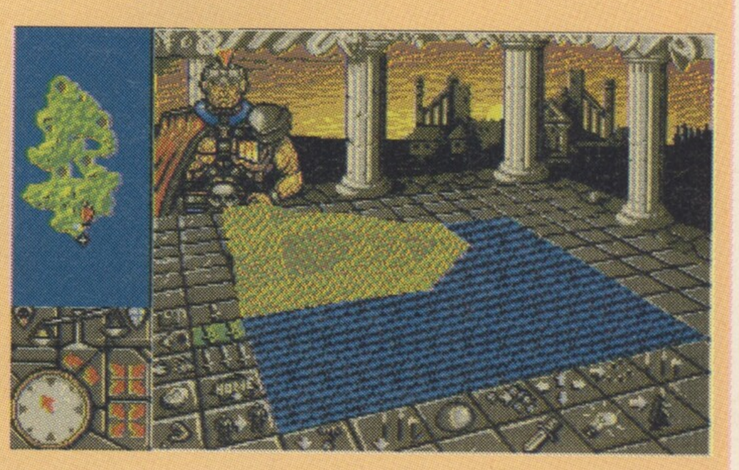
● Don't attack villages if you have just come across water to get there. You're at a disadvantage as you can't use any land-based weaponry. You can be targeted in water as easily as you can on land, but it's more difficult to get out of the line of fire.

● If you've made an alliance and you want to keep it, don't be tempted to attack any sheep near the allied villages. It can bring a fruitful friendship to a halt. Thou shalt not covet thy neighbour's ewes.

● Keep an eye open for enemy-vs-enemy clashes. These can be beneficial to you if both enemy captains are killed. Dead captains drop their stockpiles. These may be claimed by another army, but not if you get there first.







VIZ

Virgin • Amiga and ST • £19.95

It's incredible, isn't it? The most popular anti-establishment magazine of the last couple of years has been *VIZ*, the scrappy-looking bit of bog-roll with just about every racial, sexual and regional stereotype lampooned in kids-comic style. *VIZ* even knocked *Private Eye* from its seemingly unshakeable pedestal as number one alternative organ (fnarr, fnarr), as it plumbed new depths (gnnkk!) of depravity and debauchery. Every couple of weeks new, but foul or foolish fellows would receive their come-uppence (snurk!), or give everyone a hard (ooer!) time. Swearwords littered every page, toilet-jokes, rude pictures and schoolboy humour filled the gaps (snigger, snigger) in-between.



Stranger still, that *VIZ* should transcend the bounds of it's limp (hmmmpf!) paper pages and spin-off onto the TV (in the form of a Billy the Fish cartoon) and now onto home computer. *VIZ*, the computer game is the work of software house, Probe (gaaaak!) and it's immediately obvious that they are *VIZ*-readers themselves. Like the mag, the game is the product of a sick, and wonderfully deranged imagination, ripe with innuendoes, blatant swearing and all forms of sordid nastiness.



As well as an animated dictionary of swearwords and unkind things to say to your half-deaf aunt with the fur boots, there is actually a point to this game. A small, almost irrelevant point, but a point nonetheless. You play the part of one of three popular *VIZ* characters, Johnny Fartpants (of gaseous emissions fame), Biffa Bacon (the Geordie who divven't care) or Buster Gonad (the testicular giant). Your task is to make it across the town of Fulchester without getting creamed (guffaw!) by the many other *VIZ* characters who stand in your way. No mean feat, considering that the Fat Slags, Parkie, Big Vern and Bertie Blunt's parrot are all out to get you, and they're not exactly what you'd term nice or passive people!



After you've selected your character, you have a specific task to complete. Biffa has to walk down the high street, deflecting bricks with his well 'ard hands and his even harder head. Bonus tokens are scored for each successful deflection, and these are used later in the game to purchase protection against *VIZ*'s nastiest characters. Johnny Fartpants attempts to inflate balloons using his trouser-troubling mustard gas, in return for his share of tokens. He may also elevate himself to a higher plane by launching himself off the ground using his patented egg-and-cabbage rocket fuel, for similar reward. Buster, too, tries to attain new heights by leaping up and down, using his not insignificant plums as a giant space-hopper. Nice work if you can get it!

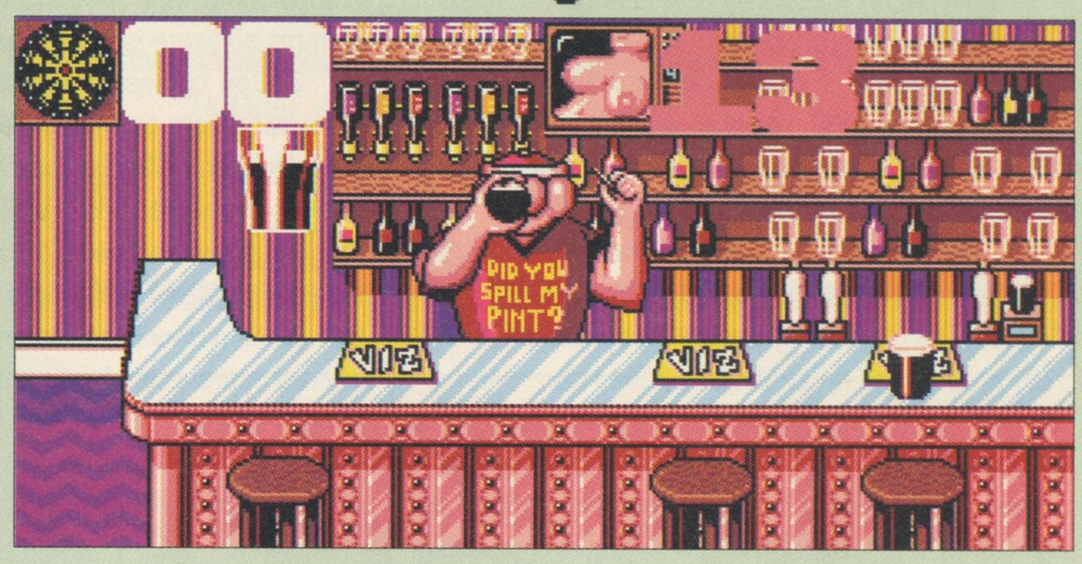
Once the bonus rounds are completed, you move onto the first of the many races. Your character lines up at the starting line while TV presenter Roger Mellie introduces the race and shows why the likes of Terry Wogan handle family programmes. On walks Roger Irrelevant to blow himself up, signifying the start of the race and they're off (gnng!). All three characters leg it across, dodging bird-doo, bricks, cliffs and jobsworths as they go. Last one out of town is a rotten egg, unless it's Johnny, who's already several.

It's not big. It's not clever. It's infantile, foul-mouthed, crude and below you. But buy it anyway. It *is* fun. It's also well-designed, beautifully drawn and scripted, and it's guaranteed to have you laughing out loud. Unless your mum's there, in which case you'll be tutting and saying things like "Well, really!", and "Good lord!", before you run off and wet yourself! ■

Vice and viciousness



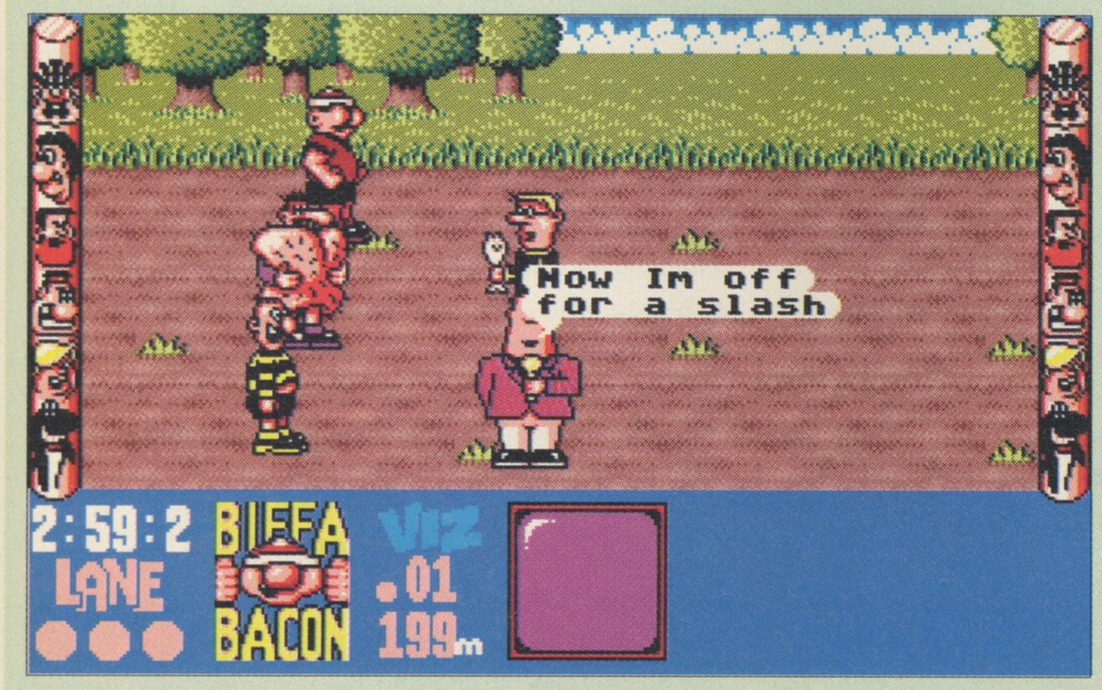
• Bounce your way to the top, revealing Biffa up to his tricks.



• Catch the Guinness as it whizzes across the bar, and wiggle your stick to drink it all down.



• More wiggling as you shake your cheecks to pump up the balloons in your bottom.





• The Fulchester cross-country race is a TV sports highlight, but you're unlikely to catch it on the BBC. Stay tuned to FTV for the full results and more mirth than you'd think was healthy!

THE COMPLETE COMMUNICATOR

A decent modem, fax and answering machine could cost you a four figure sum. Keith Pomfret looks at a £595 PC card that does all three.

Any busy office nowadays has a Fax machine. Most have some kind of answering service for the quiet hours and the need to rush sensitive data around the world is making a modem a necessity on the purchasing order.

The communication equipment in the *Express* office cost over £1,400 and takes up a lot of valuable desk space. However this is not the only choice – you could take £595 plus VAT and invest it in a single three quarter sized PC card that acts as a modem, fax and answering machine. The Complete Communicator or C-Comm claims to be able to handle all three tasks and adds features not normally seen this side of the Atlantic.

The installation procedure in the C-Comm manual proved quite simple – a nine point installation plan puts the C-Comm in your PC, ready to go. It is an 8-bit card that takes a 3/4 slot and has a minimum system requirement of a 640K PC with one spare 3/4 8-bit slot, a 720K floppy for installation, an 80 column monitor, Hercules, CGA, EGA or VGA graphics and at least 4Mb free on a hard drive. The Operating system requirement is MS DOS 2.1 or later and an analogue phone line.

As well as the card, connections and manuals, a touch tone telephone was provided in the pack and with the phone connected to the card and the card to an analogue phone line, hardware installation is complete.

A scanner socket on the board allows a C-Comm specific scanner to be added to the system. This can prove to be a Godsend in a PC where expansion slots are at a premium. Whereas before, a fax, answerphone, modem and scanner could have taken four valuable expansion slots, the whole set up fits into one.

Now for the software. Installation is from the supplied floppy disks to the hard disk. The procedure is covered in a simple 14 point plan and there is an appendix at the back of the manual for extra guidance.

MODEM

The modem is a generic 2400 chip set that contains the extended Hayes AT set and is similar to any desktop or card modem that operates up to V22bis. The supplied Comms software is BitCon and that itself is a big plus.

BitCon comes on a diskette with 34 files covering everything from the essential communications engine to help files and various patches for terminal emulation and file protocols. It is a well specified program and the manual allows the user to configure the system for their own use. The only problem I had was that at times there can be too much to do in BitCon. It's specification offered more than I needed, but that can't be a bad thing. For those who have their own favourite comms program, the modem in C-Comm seemed happy enough with *Express'* copies of Pro-Comm and Mirror.

FAX

A fax machine comprises a scanner, printer and software to turn visual images into what is known as modified Huffman code. The most common and quickest fax format is Group 3 which runs at a minimum of 2400 baud. Group 3 on the C-Comm is in its modified form running at the four times as fast 9600 baud. In terms of specification, the card on its own can never be a true fax without the addition of peripherals. To input pre-prepared hard copy, a scanner must be added and to view incoming faxes other than on the screen, a printer must be attached. A good scanner and a laser printer will produce better results than a head scanner and a DMP3160 printer. A card fax comes into its own when taking documents that are already held as files and manipulating the sending and receiving of them. The fax benefits from the processing and memory power of the PC and manipulation of single and multiple files at pre-determined times is possible.

Another important feature is two way polling. The C-Comm fax can dial another fax machine and 'poll' it for documents. The remote fax can then send faxes back to C-Comm. This works both ways with an incoming fax machine identifying itself to C-Comm and being allowed to take pre-prepared files in fax form.

With the right peripherals, C-Comm provides a fax machine with power features only normally found on desktop machines. That, plus the ability to work from files held on a hard drive makes it valuable equipment.

ANSWERPHONE AND VOICE MAILBOX

Imagine ringing an answerphone that could ask you who you are, check your password and give you personal messages. Or it could offer you the option of leaving a message for any employee, coded so that the right person would get it and if you didn't want that, it could transfer the call to someone else.

It's not artificial intelligence, but a clever system that scans the incoming voice line and prompts you to push buttons on your phone. To the user, it offers a whole host of features for storing and diverting calls and opening voice mailboxes. The most useful feature we found was the ability to take a message and immediately ring a pre-set number to pass it on. This meant that when out of the office, an important message could be sent to the carphone seconds after it had been sent.

The C-Comm software performed the dial out to the mobile phone and on answer, offered the option of retrieving the message. This was password protected so without using the tone dial of the car phone, the messages were safe. The fact that C-Comm required a specific input before it would part with the messages meant that they weren't inadvertantly dumped on divert or no reply answer service in the car.

VERDICT

It's exceptional value if you consider the total cost of the three individual components would be about £3,000. The build quality is fine and the documentation is more than adequate. C-Comm comes from MUMPS Software Consultants on 081-593 5243. ■

COMPLETE CAPABILITIES

THE MODEM ON THE C-COMM OFFERS:
- **V21,V22,V23,V22bis.**
- **Extended Hayes AT set of commands.**
- **Data transmission up to 2400 baud.**
- **Compression for increased efficiency when accessing a similarly equipped system.**
- **BitCom suite of Comms software.**
- **Menu bypass for unattended use support for up to 4 serial ports.**
- **132 column by 44 or 25 row display (with adapter)**
- **Autodial, auto answer and auto log on.**
- **Terminal emulation.**

THE FAX IN THE COMPLETE COMMUNICATOR CAN:
- **Receive Faxes.**
- **Send Faxes immediately or at a pre-programmed date and time.**
- **Send Faxes to one or many people simultaneously.**
- **Automatically send customised cover sheets.**
- **Print incoming faxes to a dot matrix or laser printer.**
- **Interface directly to a scanner to input documents.**
- **Organise frequently used numbers into directories.**
- **Convert faxes to and from text and graphic formats.**
- **Send, build and look at faxes from within DOS.**
- **List faxes that can be polled by another machine.**
- **Poll another machine for faxes.**

ON THE ANSWERPHONE AND VOICE MAIL:
- **C-Comm will answer the phone, play a digitised greeting and time/date stamp each incoming message.**
- **You can create a library of greetings on your disk.**
- **Messages can be retrieved from any touch tone phone or via a tone and from anywhere in the world .**
- **Your PC can call you to deliver messages either at a specific time or as messages come in.**
- **If the caller doesn't want to leave a message, there's a facility to transfer the call to another number or extension.**
- **Assign voice mailboxes. Allow callers to check, amend or delete their messages on line.**
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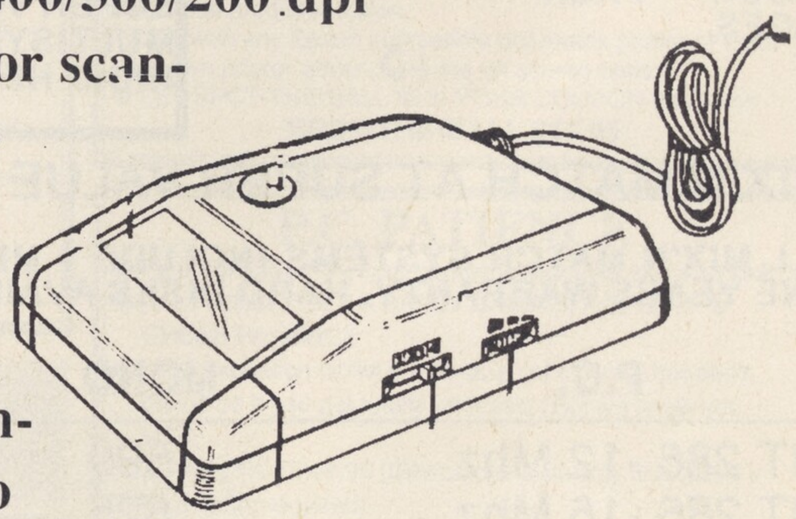
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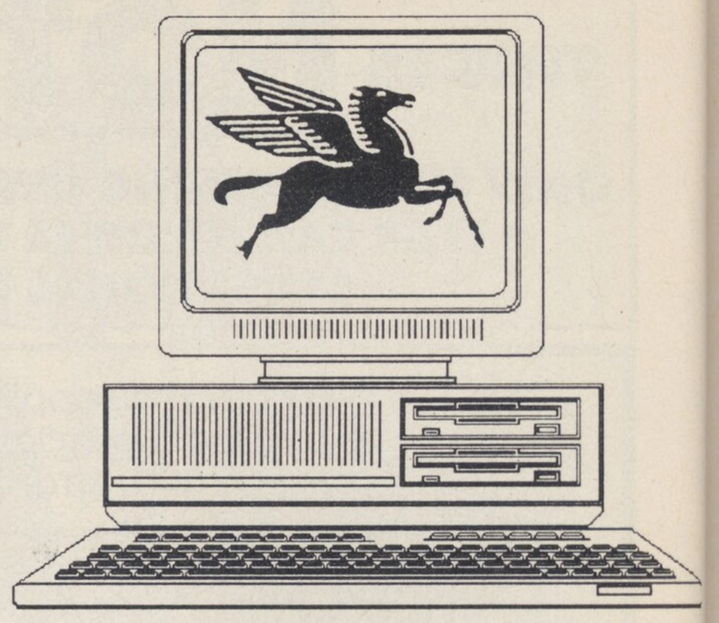
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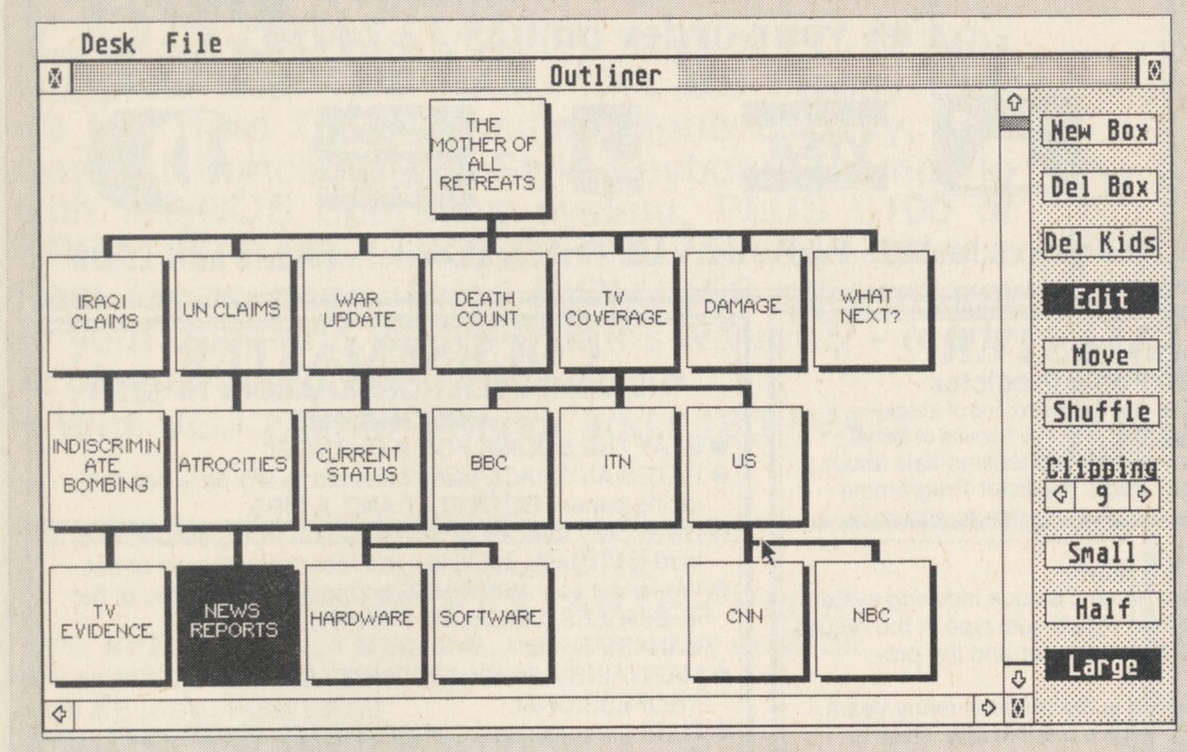
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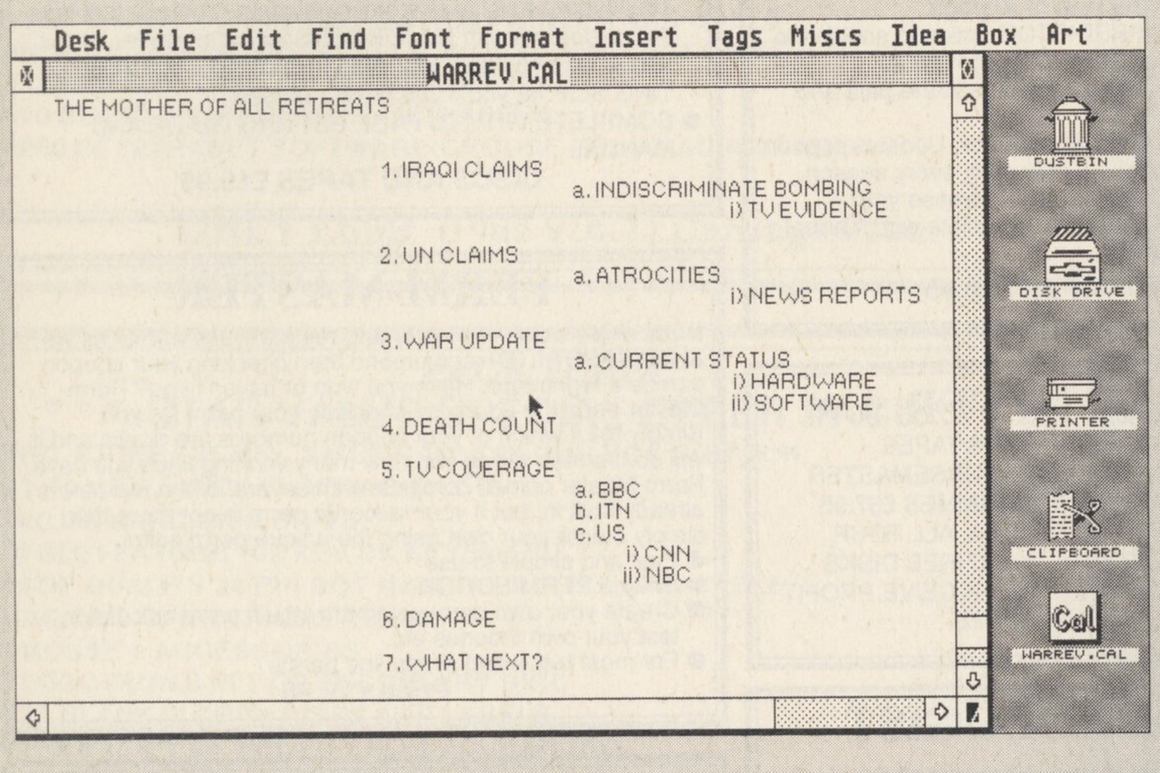
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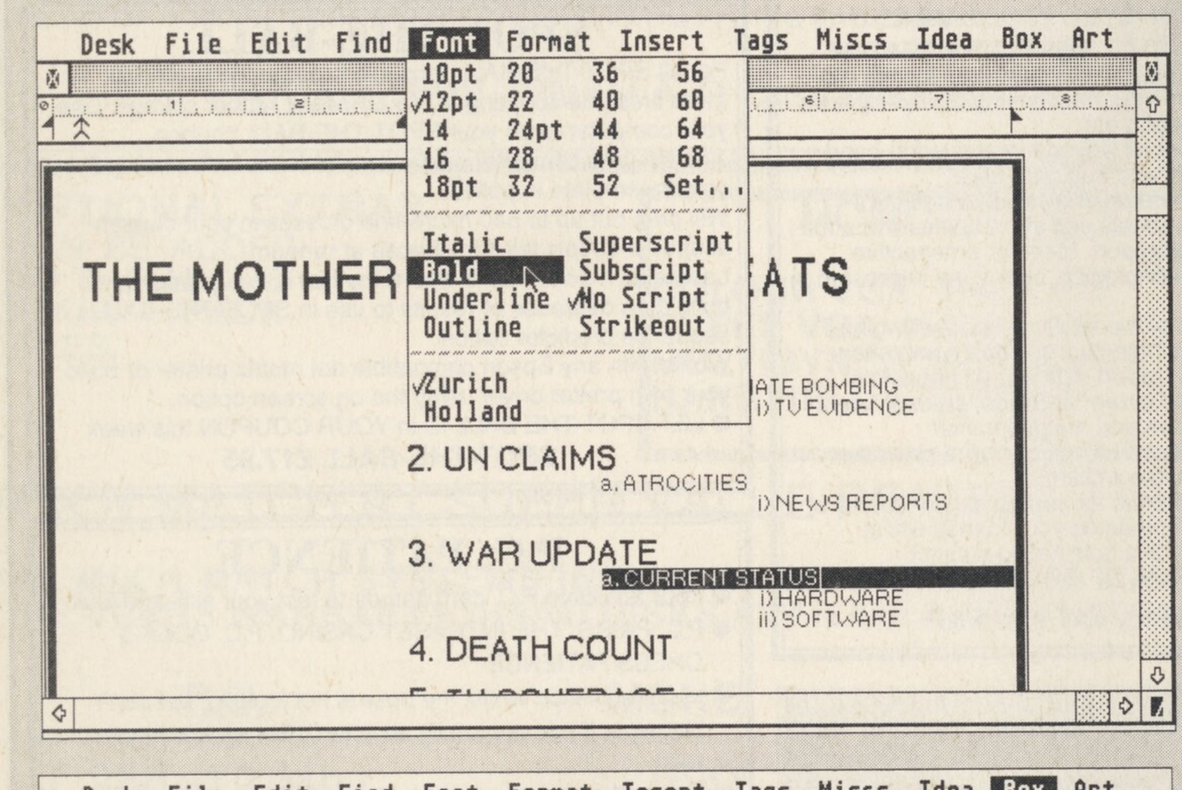
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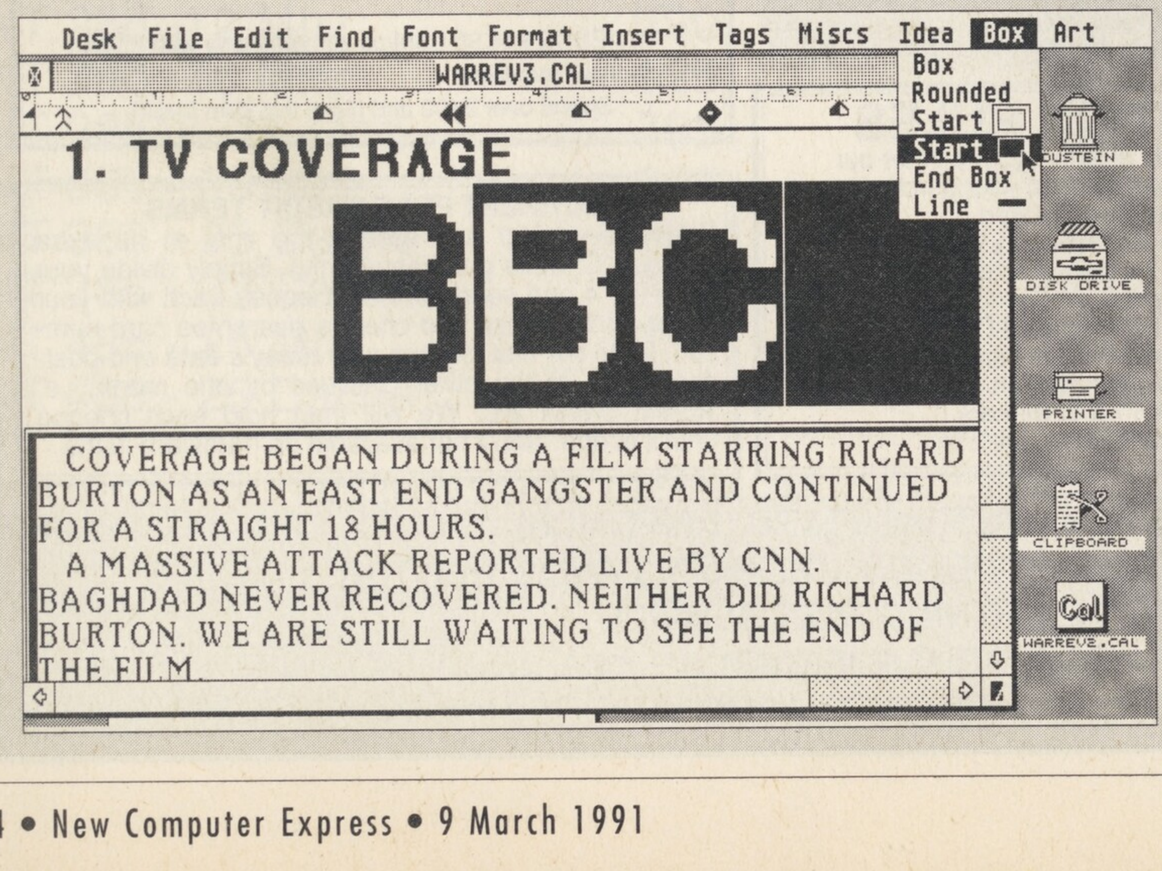
• *Using the Outliner is easy. All you do is plan a tree structure with linkages. You are then in a position to modify the links as your idea develops. Each 'parental' box here could represent a chapter heading with its dependents or 'kids' signifying specific sections*



• *After clicking on Outline Paste the overview is neatly transferred to your working document. Behind the document lie icons for file management, printer and clipboard calls which considerably speed up these essential functions.*



• *The resulting text can then begin to be styled. Here, Chapter sub - headings are being emboldened. In the near future the list of fonts will increase to offer a possible range of 800.*



• *Boxes can be set up to contain elements of text or picture. The letters BBC are set at 128 point and appear jaggy but on printing, Calligrapher's vector outline fonts will remedy this.*

After six years there's now a fair number of word processors and a few desktop publishing packages available for the ST out there. But while *Protext* is arguably the premier word processor and *Calamus* the top DTP pack, one could argue there's still a niche to be filled in between.

Why should you have to fork out for two packages to do most of the things you could achieve with one? Put it another way, why, after writing a 10,000 word manual or a 50,000 word book using a word processor, should you have to export the file to DTP software for laying out and printing?

The answer is to provide a package that has most of the features of both and more besides. Then you're onto a winner aren't you? Swiss developers, Eclectron would appear to think so since it's been working on the product for nearly five years now. And if you want to use your ST for serious writing then *Calligrapher* looks like your best bet.

Described as a document processor, *Calligrapher Professional* takes the standard features of a text engine and adds a host of functions more usually associated with desktop publishing packages. As well as multi-column layouts, graphics import, mail merging, variable fonts and type sizing, *Calligrapher* also comes with an Outliner.

INSTALLING

The *Professional* version requires any ST with at least 1Mb of memory and a double-sided disk drive to run and can be configured for one or two disk drives or a hard disk.

The installation process is completely automatic and users are guided through options as to screen display type – although low resolution mode is not supported. A range of printer drivers are also included with emulations for Epson and 24-pin printers, as well as Hewlett Packard LaserJets, Epson GQ3500 and Atari SLM804 laser printers.

During the installation you can also specify whether you want on-line help, image conversion and ASCII import/export modules included. Image conversion of both Degas and Neochrome files is supported so that picture files can be brought into documents. Degas format is an almost universal output file type for ST image files and many scanner and digitising packages support it. As such, various types of picture data can be imported and manipulated. Useful too is ASCII support – meaning that text from any word processor running on any computer can be uploaded either by wire or 3.5-inch disk after appropriate conversion.

Once installed, the *Calligrapher* desktop closely resembles that of GEM, with icons for printer, clipboard and working files as well as disk devices. Opening a new document window means that you can flip between word processing and file operations easily and quickly, simply by clicking on the appropriate icon.

You can have up to seven documents open at any one time and switch between them simply by clicking in their respective windows, on their icons on the desktop, or by assigned function keys. Icon launching is especially useful if you have several documents which are very similar in content – as it could otherwise be very easy to get confused over which document you are working on. The title bar pull-down menus also support keystroke assignments which, as any one who uses DTP software will be aware, are a lot faster than mouse operations. Perhaps most useful of all in this department is the fact that the default keystrokes are identical to the Macintosh environment.

PLANNING

Whereas writing a simple letter can usually be accomplished by starting at the beginning and finishing at the end, more complex tomes such as dissertations, reports

THE IDEAL ST WRITING TOOL

It's been a long time coming but it's finally here – Calligrapher Professional for the ST. Simon Walsh outlines this excellent package that takes you from perception to print...

manuals and books require pre-planning to arrive at a much more ordered structure. Consider then a package that allows a user to create a graphical representation of the main parts of a document.

In *Calligrapher*, boxes containing text headings can be linked to form an overview of the flow of a document. These links can be easily edited and quickly transferred into a text document where the same headings appear as paragraph or chapter headings. There is no limitation as to the required 'depth' of outliner either since the Outline window can be selectively scaled to include individual notes within chapters or paragraphs.

For the professional writer, this feature alone makes the package worth buying, but there are other excellent features on board too.

WRITING

As is common with most WIMPs based word processors, all text manipulation is achieved with the mouse selecting areas of highlighted text by dragging over the letters. *Calligrapher* is perhaps not as fast as a dedicated word processor like *Protext* in this department, but it is a damn sight faster than a DTP package. Cut, Copy and Paste routines function quickly, and Search and Replace operations handle smoothly too. Indents and alignments, column creation and differential line spacing are all achieved equally as easily.

CHECKING

Calligrapher comes with a 160,000 word spelling checker with both phonetic and alphabetic guesses built-in. And if you wish, you can command the checker to follow your word input as you type, pointing out spelling errors as you make them. While this may be of some use to the trained typist who only makes occasional mistakes, for the likes of journalists it's a feature best turned off!

Interestingly, there are also multi-language 200,000 word dictionaries for French, German, Spanish and Italian available for an extra £25 each. These can all be installed simultaneously on hard disk systems and only consume 3K of RAM when not being used.

There's also a thesaurus which recognises 18,000 headwords and 200,000 synonyms. This can be installed on a floppy disk system and can run in as little as 17K. While it does not use memory until it's selected the heavy compression involved requires 1Mb of memory to get the most out of it.

STYLING

Perhaps this far, *Calligrapher* may appear to be a rather sophisticated word processor with outliner, thesaurus and spelling checker included but its text styling attributes push it firmly into DTP territory.

The package comes with five typeface families: Zurich – a Helvetica clone, Holland – a Times clone, MathSymbols, Ornaments and Unitype. Eclectron will be making available a further 800 typefaces shortly after signing a licensing deal with URW of Germany which has a library of 3,000 typefaces. The plan is to release additional fonts on a monthly basis which users can purchase as packs. However, the supplied typefaces are neat enough for starters with 10 different styles available including italic, bold, superscript, underline and outline. Point sizes can be selected from a menu of 19, or manually specified up to 128pt. Combinations of font, size and style can be assigned to Style Tags which act as templates which can be called at any time to predetermine a page design.

The secret to this degree of manipulation lies in *Calligrapher*'s use of proportional fonts on screen. Although other processors use bitmapped fonts, these are usually only printable in one size and on one printer. GDOS fonts usually contain information only about three character sizes – 12, 18 and 24 point text – actually stored as pictures, bitmapped pixel for pixel, dot for dot. So if you want to increase their size, it is akin to magnifying that picture. The result? Jagged edges both on screen and on print-out paper.

Calligrapher gets around this by using vector outline fonts which are installed in its Auto folder at startup by its Line Arc program which modifies GDOS – the graphics handling element of the ST's operating system. What this means is that if a font resident in the system is not available in the size or style selected, then an outline vector font is substituted which describes how to draw the character rather than what the character looks like.

The advantage is that when printed, the characters can take full advantage of a printer's resolution. The results are very impressive. Whether on laser or dot-matrix, even 128 point italicised character sizes come out well-defined and sharp.

CREATING

A package that can combine word processing functionality with picture import, manipulation and layout is almost bordering on dedicated DTP territory. But perhaps the main difference between *Calligrapher* and a professional DTP package like *Quark Xpress*, running on the Mac which has been used to produce this page, is that Quark can flow text automatically around irregular picture objects whereas images within *Calligrapher* are confined to column width frames.

However, pictures, in either GEM, IMG, Degas or Neochrome formats, can still be manipulated – either re-scaled, cropped or dithered. It's possible to both re-scale images up to the maximum resolution of your printer and adjust horizontal and vertical scales. Cropping is achieved simply by dragging the mouse over the area of the image to be kept and releasing the button – the area outside the selected portion is then removed. There are three levels of dithering with the maximum substituting 16 re-mapped pixels for each original pixel. The effect is a progressive smoothing of the live image which can result in high quality ouput, but exactly which level to use in conjunction with blending and smoothing options is a question of trial and error.

Of course, you're not only confined to using images culled from paint packages and scanners. Line drawings, diagrams and models pulled from packages supporting GEM vector graphics can also be imported to great effect.

And it is perhaps these last types of image file which are best suited to *Calligrapher* since the results of most ST paint packages don't produce results of high enough definition to match the quality it's capable of handling.

Finally there are are also a range of drawing tools and fill patterns with which you can annotate imported graphics or create your own from scratch. Layering is offered in this respect in order that you can overlay different graphic elements on top of each other – again a feature you're only likely to find in good DTP packages.

CONSIDERING

So is *Calligrapher* the answer to an ST-owning author's problems? The answer has to be an unqualified yes. It's a professionally produced product at an attractive price with an impressive range of features. The outliner and print output quality are both first class as is the simplicity of use.

If you're a professional or semi-professional writer then it should be right up your street but the irony is that you probably won't own an ST. It's a great pity that this package couldn't have been released in the UK back in '87 when it was first beginning to see the light of day.

The effect it may have had on sales of the ST and in assuring the machine's future as a serious platform can only be guessed at. It'll no doubt do a storm in Germany where Atari gives Apple a run for its money in the DTP stakes. In the meantime it should be on any serious ST user's shopping list. ■

Calligrapher Professional *costs £139 and is available from Working Title on 0865 883233*

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a) Doppler-effect Terminal Pipeline
b) Does Tim Postulate
c) Desk Top Publishing
d) Display Trimmer Polarisation

2) Which is the industry standard DTP computer?
a) Cray 11
b) Apple Macintosh
c) Babbage Difference Engine
d) Sinclair C5

3) Which company distributes loads of goodies including STs, Amigas and PageStream and has the telephone number 081-309 1111?
a) Saab-Scania
b) British Aerospace
c) Silica Systems
d) Uncle Joe's Mintballs PLC

4 Which famous Russian city that isn't Moscow only has four Amigas within its boundaries?
a) Tasmania
b) Vladivar
c) Fleetwood
d) Leningrad

5) Which page size is the largest?
a) Tabloid
b) Broadsheet
c) A4
d) M6

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Commodore A500 Flight Of Fantasy

£399 INC VAT



A500 BATMAN PACK



The Commodore A500 Batman Pack must surely rank as one of the most popular computer packs ever! The pack features the **Commodore Amiga 500 computer** with **mouse controller** and **TV modulator**, plus four top software titles. The software includes: **'Batman The Movie'** - Rid Gotham City of the cunning joker, in Ocean's top selling title based on the blockbuster Batman film; **New Zealand Story** - high quality conversion of the leading arcade game; **Interceptor** - Dogfight with two F-16's in this leading flight simulator; **Deluxe Paint II** - top quality Amiga graphics package which set the standard for others to follow. Return the coupon for further details.

PACK INCLUDES:

A500 Computer & Mouse	£399.99
A520 TV Modulator	£24.99
Batman The Movie	£24.95
New Zealand Story	£24.95
Interceptor	£24.95
Deluxe Paint II	£49.95
TOTAL RRP:	£549.78
Less Pack Saving:	£150.78
PACK PRICE:	**£399.00**

£399 INC VAT

AMIGA 2000



For the more serious or professional applications user, Commodore have a selection of systems based around the expandable Amiga 2000, at prices from £1295+VAT. The A2000 features a full 1Mb RAM (expandable to 9Mb), 9 system expansion slots, plus IBM compatibility with the use of PC-XT or PC-AT bridgeboards. Complete and return the coupon, putting a tick in the A2000 box, for details of A2000 computer systems.

£1295 +VAT= £1489.25

FLIGHT OF FANTASY

Flight of Fantasy is the very latest Amiga 500 pack from Commodore, featuring BRAND NEW software releases, to make this the most spectacular A500 pack ever! The pack features the Amiga 500 computer with mouse controller and TV modulator, as well as four top software titles. These include the following:

DELUXE PAINT II:

The high quality graphics program that set the standard for other Amiga art packages. Deluxe Paint II includes powerful, easy to use tools that bring out the artist in you. Create masterpieces, presentations, 3D perspectives or just doodle.

ESCAPE / ROBOT MONSTERS:

Here's something completely different - a science fiction story with comic book style graphics. Our heroes Jake and Duke are on the Planet X rescuing Humans who have been captured by the Robot Monsters and forced to create an evil Robot Army to DESTROY EARTH! Jake and Duke fight their way through hordes of evil Robots to help the Humans escape.

RAINBOW ISLANDS:

Slip on your magic shoes, practise throwing a rainbow and you're ready to go island hopping. From the Island of Doh to Monster Island, you will encounter Doh himself, stinging insects, lethal combat machines, mechanical assailants, the formidable beings of legend and folklore. Finally enter the world of darkness and its inhabitants.

F29 RETALIATOR:

The ultimate in flight simulation with a choice of two aircraft and four battle environments with dozens of different tactical missions. Aerial combat, strategic bombings, interactive ground based battles, seagoing carriers ... the list of features is endless. Real time cockpit displays, including 'true radar' enhance the realistic feel of this stunning simulation.

PACK INCLUDES:

A500 Computer & Mouse	£399.99
A520 TV Modulator	£24.99
Deluxe Paint II	£49.95
Escape/Robot Monsters	£19.99
Rainbow Islands	£24.95
F29 Retaliator	£24.95
TOTAL RRP:	£544.82
Less Pack Saving:	£145.82
PACK PRICE:	**£399.00**

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Before you decide when to buy your new Amiga computer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Amiga, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new products? At Silica Shop, we ensure that you will have nothing to worry about. 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 and begin to experience the "Silica Shop Service".

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- **UNIQUE INFINITE LIFE/TRAINER MODE - NOW MORE POWERFUL**
Allows you to generate more and even infinite lives, fuel, ammo, etc. Perfect as a trainer mode to get you past that "impossible" level. Very easy to use.
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The full Sprite Editor allows you to view/modify the whole sprite set including any "attached" sprites. RANGE OF IMPROVED FEATURES.
- **VIRUS DETECTION**
Comprehensive virus detection and removal features to protect your software investment. Works with all presently known viruses.
- **SAVE PICTURES AND MUSIC TO DISK**
Pictures and sound samples can be saved to disk. Files are saved directly IFF format suitable for use with all the major graphic and music packages. Samples are displayed as screen waveform.
- **SLOW MOTION MODE**
Now you can slow down the action to your own pace. Easily adjustable from full speed to 20% speed. Ideal to help you through the tricky parts!
- **RESTART THE PROGRAM**
Simply press a key and the program will continue where you left off.
- **FULL STATUS REPORTING**
At the press of a key now you can view the Machine Status, including Fast Ram, Chip Ram, RamDisk, Drive Status, etc.
- **POWERFUL PICTURE EDITOR**
Now you can manipulate and search for screens throughout memory. Over 50 commands to edit the picture plus unique on screen status "overlay" shows all the information you could ever need to work on screens. No other product comes close to offering such dynamic screen handling of frozen programs!!
- **MUSIC SOUND TRACKER**
With Sound Tracker you can find the complete music in programs , demos,etc. and save them to disk. Saves in format suitable for most track player programs. Works with loads of programs!!
- **AUTOFIRE MANAGER**
From the Action Replay II preference screen you can now set up autofire from 0 to 100%. Just imagine continuous fire power? Joystick 1 and 2 are set separately for that extra advantage!
- **DISKCODER**
With the new "Diskcoder" option you can now 'tag' your disks with a unique code that will prevent the disk from being loaded by anyone else. 'Tagged" disks will only reload when you enter the code. Very useful for security.
- **PREFERENCES**
Action Replay II now has screen colour preferences with menu setup. Customise your screens to suit your taste. Very simple to use.
- **DISK MONITOR**
Invaluable disk monitor - displays disk information in easy to understand format. Full modify/save options.
- **DOS COMMANDS**
Now you have a selection of DOS commands available at all times - DIR, FORMAT, COPY, DEVICE, etc.
- **DISK COPY**
Disk Copy at the press of a button - faster than Dos Copy. No need to load Workbench - available at all times.
- **BOOT SELECTOR**
Either DF0 or DF1 can be selected as the boot drive when working with Amiga Dos disks. Very useful to be able to boot from your external drive.

PLUS A MACHINE CODE FREEZER MONITOR WITH EVEN MORE POWER!!

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REMEMBER AT ALL TIMES YOU ARE INTERROGATING THE PROGRAM IN IT'S "FROZEN" STATE WITH ALL MEMORY AND REGISTERS INTACT -
INVALUABLE FOR THE DE-BUGGER OR JUST THE INQUISITIVE!

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