

**ALL
THE
NEWS
FOR JUST
70P**

COMPUTER EXPRESS

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

THIS WEEK

AMIGA

PageStream 2 is here — but is it the best Amiga DTP package you can buy?

ATARI

It's cheaper and better — Lynx 2 arrives at Las Vegas

PC

Where can you get a 286 with a laser printer for less than £1,000?

ARCHIMEDES

Hypermedia for only £39!

CPC

Fancy a 24Mb hard drive?

AMAZING ATOM CHIP ANNOUNCED

Why Hitachi's breakthrough will transform computing forever...full details on page 7

PRIVATE EYE

Just how good is the monitor you can wear?



THE DIGITAL WAR

How combat computers are being used in the Gulf War

GAMERS

**REGULAR TIPS
& TRICKS FOR
MEGADRIVE
NINTENDO
ATARI LYNX
GX-4000
& 40 PAGES OF**

SHOPPING EXPRESS

BARGAINS !!!

LOOKING FOR CHEAP PC DTP?

EXPRESS REVIEWS THE £100 AVAGIO PACKAGE



frontend

edited by Colin Campbell

VIRUS BLOCKS EXOCET MISSILES

French scientists have designed a computer virus which could stop aggressive nations using military hardware bought from that country, including deadly Exocet missiles. It emerged last week that

France – formerly Iraq's major Western arms supplier – had secreted 'Trojan horse' programs in missiles, fighter aircraft and radar equipment. The French can activate these tiny routines at any time.

The viruses were inserted to prevent any country attempting to use French equipment against France or her allies. According to the Paris daily newspaper *Liberation*, the viruses could be used to detonate French Exocet missiles before they hit a target.

One military expert told the French newspaper: "Not only the French, but also the British, Americans and Russians have prepared dispositions to make sure their arms cannot be used against them. We have the means of countering any equipment we have sold."

The virus could be used to prematurely explode missiles, render radar installations useless and send aircraft out of control. However, this so-called 'computer warfare' is a new business – viruses could only have been planted in equipment sold during the last three years. ■

Twin Peaks game sinks



Take a dead girl on a beach, a whacko FBI man, drugs, sex, weirdos, cherry pie and David Lynch. Mix them with lashings of hype, add a faint whiff of cash and what you've got is one hell of a computer game.

At least that's the theory US games publisher Hi-Tech Expressions came up with as it relentlessly pursued the licence for TV soap *Twin Peaks*. However, after weeks of sweet talking, planning, promising and otherwise doing business with television people, the whole project was dropped.

It seems we are to be denied a *Twin Peaks* game because (a) the asking price was too high and (b) Peaks peaked too early. ■

Through the spying glass

Pilkington Glass has come up with what could be the perfect solution for those corporations worrying themselves silly over 'computer spies'.

The firm is to launch a special new glass which is totally 'computer spy proof'. According to various officials and authors, it has become easy to spy on other people's data by 'tuning into' the electromagnetic radiation emitted by a computer screen. Pilkington says companies should change their current windows for new spy proof glass, a process the firm admits is not inexpensive.

Already major corporations, including British Telecom, have been approached. A Pilkington spokesman offered: "We know there is a genuine concern about this and therefore there will be demand for the glass. Certain organisations will see a definite advantage in securing their buildings." ■



FRISCO COMPUTER FIRMS REBEL

San Francisco's business community has reacted furiously to new 'computer workers protection' laws which were passed in the city last month (*Express* 113).

Big companies are complaining that the total cost in upgrading equipment will exceed £30 million. New computers will have to be bought where necessary, but the bulk of the cost will be in paying for anti-glare screens, adjustable chairs

and better lighting facilities. VDU operators will also be allowed 15 minutes break from their terminals every two hours.

The laws were passed following complaints from computer operators that conditions were intolerable, and were causing them pain and discomfort. The business community had agreed to the legislation at first, but its benevolent enthusiasm has cooled considerably since seeing the bills. ■

Smart spreadsheet learns by experience

A PC spreadsheet has been launched which can 'learn' to forecast financial performance using Artificial Intelligence. Instead of relying on strict programmed rules *Braincel* can extract expertise automatically.

Developed by Connecticut based Land Technologies, *Braincel* relies on a neural network sunk into the program. It can base its predictions on its own expertise, in broadly the same fashion as a human. If it makes a mistake it will learn

from the lesson.

Land Technologies president Stanley Dalnekoff enthused: "*Braincel* is the first neural network program to be embedded into a spreadsheet. It's a breakthrough because it can be used by any PC user – no knowledge of neural network technology is required."

Braincel is out this week in the States priced at \$249. A UK distribution deal is expected soon; meanwhile call 0101 203 562 7335 for more details. ■

CHEEKY SPY RETURNS LAPTOP

Remember that portable? You know the one. It was lifted from the back seat of a car a few weeks back, contained tons of military secrets, and had the Government wetting itself.

It seems that the mysterious machine in question was none other than a Zenith 286 (pictured) which would normally set you back about £800 on the dodgy second-hand portables market.

The thief had the good sense to send the machine back to relieved officials, although he appears to know a thing or two about computers – an "impertinent message" was left on the hard disk. ■



GAMEBOY GETS SERIOUS

So, you thought the Nintendo Gameboy was just another hand-held games machine. Not so...

US firm Gametek has launched the first business and productivity programs for Nintendo's wonder-gadget. Called the InfoGenius series, the five programs will work on the £69 hand-held without the aid of any peripherals.

They include a spelling checker which can correct spelling errors of over 70,000 words and comes with a calculator; there's Spanish/English and French/English translation programs; a travel guide providing information on hotels, restaurants and sights; and there's a personal organiser which enables the user to enter daily appointments via on-screen keyboards.

The programs cost \$39 each and will be available by September. No UK plans have been announced although Nintendo is likely to press for launches around the world. ■



Computer wipe out

UK peripherals manufacturer Cheetah has launched an interactive control unit based on the common skateboard.

Aeroskate is a base unit on which you can place your own skateboard or Cheetah's own model. By moving around on the board you can control up to six different games, due to be launched later this year.

French software house Titus is working on skateboard simulators, ski run games and even shoot-'em-ups which will work with Aeroskate. The base and Cheetah's own skateboard will work with the Nintendo, Sega, C64, ST, Amiga and PC. Price has yet to be fixed; Aeroskate should be out by the summer. ■

Programming kid is African king

A teenage computer programmer who has built a million pound software business has been crowned king of a huge tribe living in Ghana!

David Bolton, 17, who owns Surrey based software house Associated Computer Entertainment was born in Britain. But his African mother was next in line to take over the Abrazie tribe.

Bolton was crowned late last year, and now becomes Nana Akwku Kyemaanu VI. But he says he is better at sorting out people's computer problems

than running a tribe, and relatives in Africa will take care of kingly duties.

ACE specialises in writing software programs which will solve specific problems for companies. Since leaving school Bolton has been making a fortune with his low-cost, but efficient programming expertise.

After the three-day crowning ceremony in Africa Bolton decided to open an African subsidiary of ACE. The company has already won a contract to computerise Ghana's ageing income tax system. ■



CONTENTS

FEATURES

Military computing

Armed forces at war in the Gulf are using the latest technology – Express investigates – page 14

Private Eye

A small screen with a different kind of display – page 70

REVIEWS

Avagio PC desktop publishing

Take a look at a budget package with extra features – page 63

ST Series

Graphics packages come in all shapes and sizes – make sure you get the right one – page 64

Amiga Series

Power at your finger tips with all aspects of Amiga graphics – page 68

EVERY WEEK

Games Week

Hot tips and news, plus MiG-29 Fulcrum review – page 58



News	4-8
Opinion	10
Letters	12
Console Zone	60
Tech Tips	66

SHOPPING EXPRESS

Mac	18	Centrefold	36
CPC	19	Whole Wired	
Amiga	20	World	39
Archimedes	22	PD Column	42
PC	23	Circuit City	44
C64	24	Programming	53
Spectrum	30	On-line	54
ST	31		



• *Madonna: make some changes*

Interactive pop

People are forever whingeing about pop records. If they don't like so-and so's voice they're whining about the repetitive beat. Soon, they'll be able to make some desired changes of their own.

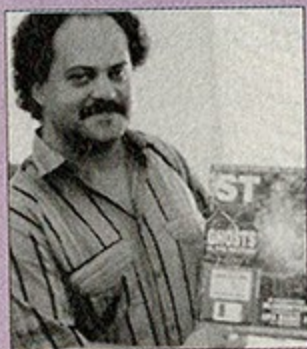
Warner Brothers was showing off a new kind of music CD which will allow you to change aspects of a song you don't like. The CD has three channels, one of which is like an open MIDI channel, which allows you to get inside the song and mess around.

It's CDTV compatible and is being described by Warners as being "one step beyond sequencing". There are no problems with copyright either. ■

Only in America

In the thoroughly bad taste stakes there were two companies making impressive runs. Both had hit upon the idea of launching games based on - you guessed it - the Gulf Conflict.

The first, from Bunchgames appears to be a strategy game which soon degenerates into a run of the mill beat-'em-up. It's called *Saddam*. If arcade action is your bag then there's always *Attack Iraq* from Megasoft. Thankfully, neither are coming to the UK. ■



• *Tramiel: Lynx changes*

Fighting spirit

Sam Tramiel, Atari's ebullient boss, was in pugilistic form at CES. Announcing a savage price cut for the Lynx (down to \$99) he boasted: "We will not abandon the video game industry this company founded. We're going to win back the American video game playing public from off-shore competitors. We'll do it with features no-one else offers - full colour, fluid graphics and multi-player action. ■

AMERICA: WHATE

Everything from the innovative to the plain crazy was shown at last week's Consumer Electronics Show in Las Vegas. *Express* turned up to view the impressive as well as the baffling...

American computer entertainment has gone soft in the head. The Winter Consumer Electronics Show in dizzy Las Vegas proved that the whole show is finally, undeniably, certifiably, stark raving bonkers.

Here were assembled such a gaggle of gadgets, mad peripherals and loony software that, for the innocent, it must have seemed like a bleeping, luminous asylum. And it was.

Anyone who asks the timeless question, "whatever will they think of next?" would have found some satisfaction in these vast halls.

For those of us with more than a passing interest in interactive entertainment, emerging media and neat devices, here were a few answers and a lot of questions.

Real computers such as the PC and Amiga have retired to darker corners, but their lack of profile has done nothing to dim the remarkable software coming from the west coast of America.

One title to dampen console mania was offered by a company called Interplay. *Castles* is pitched as a cross between *Populous*, *Sim City* and *Railroad Tycoon* (all of which are marvellous pieces of software). You get to set up a castle in dangerous Medieval times, develop surrounding dwellings, establish communications with necessary outposts and then defend the lot from marauders. It takes strategic skill, financial acumen and more than a jot of common sense. We reckon on *Castles*

making an appearance here in the autumn.

CDTV TIMES

Unfortunately for the PC and Amiga, entertainment based computers (as far as entertainment goes) are regarded as being terribly 1980s in American entertainment based computer shows. They lust after handhelds and salivate uncontrollably at the mere mention of the words Compact Disc. This is why Commodore has found itself in the unfamiliar position of being well regarded.

These were a sunny few days of spring for CDTV, which has spent the past few months shivering from the cold and calculating scrutiny of a cynical industry. Just when it seemed like CDTV was heading for hardware hell, Commodore put on such a fantastic show that all exhibitors went away babbling uncontrollably about having seen the future and how well it works.

Even better for the boys from company C was the dismal showing from rival Philips. If CD-I was there it spent the whole four days hiding in the toilets.

This time last year people were carefully predicting that Commodore "just might" pull off a surprise victory (à la Woking versus West Brom) against the Dutch Masters. Now Philips, not so long ago the hunky standard bearer of interactive home entertainment, seems like a sad and bloated has-been.

Judging by CES, Commodore and CDTV are in the ascendant,

but fortunes change ever so quickly and Commodore's honeymoon could come to a sharp end if Philips does manage to finish the job.

For now, though, the Americans are ultra enthusiastic about CDTV, and who can blame them? The least interesting CDs on display were bright and colourful arcade games which your average ST or Amiga owner would go gaga over. Then there were interactive encyclopaedias and atlases (stop yawning, these are a good deal more fun than they sound), and even a Muybridge 'Women in Motion' CD from UK publisher CRL. This is basically a load of animations taken from stills shot in the last century by the guy who proved that a horse does leave the ground when it's galloping.

Instead of horses you get naked women, but thankfully, CRL has refrained from treating us to interactive pornography. OK, so we don't know what the point is, but at least publishers are being given a carte blanche to come up with interesting ideas, be they good, bad or just plain weird.

Commodore is far too liberal to be a Nintendo and for that reason CDTV is as frail as it is fascinating

NINTENDO GO-GO

Apart from being the event where consumer electronics firms show off, CES is also the place where Nintendo shows just who is boss.



• *Centre stage: Nintendo is still the boss.*

In the same week that Nintendo announced more monstrous sales figures it imperiously took centre stage once again. Nintendo barons must have noticed though, that console and hand-held pretenders such as Sega, NEC and Atari were happily doing business, attracting punters and otherwise growing in confidence.

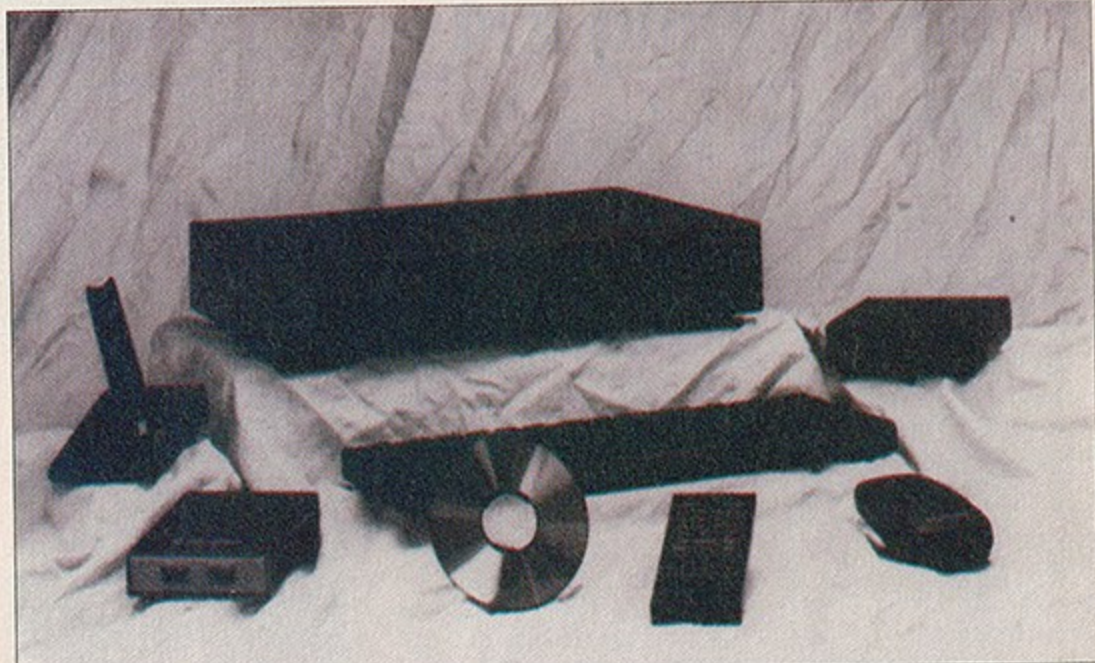
Last year Sega's stand was completely eclipsed by Nintendo's. This year it was just over-shadowed.

America is definitely still mesmerised by Nintendo, never more so than with the Game Boy. Here were dozens of games from countries around the world. Ocean came up with

What's on Lynx

Some have complained that the Lynx software library is too limited. Atari last week counted 15 games that are ready and waiting. They are:

- Rampage
- Roadblasters
- Zarlor Mercenary
- Rygar
- Ms Pac-Man
- Todd's Adventures
- RoboSquash
- Blue Lightning
- Chip's Challenge
- Electrocop
- Gates of Zendocon
- Gauntlet
- Klaxx
- Slime World
- California Games



• *CDTV: a happy event*

VER NEXT?



the best of British games with a few Game Boy offerings including *Robocop*.

If the software wasn't good enough there were always the crazy peripherals. Try the Light Boy which is a lighted magnifying glass which can be fixed to the front of your Game Boy screen. It enlarges the image and brightens it, so you can play in those hitherto inaccessible dark places.

And Megaplay is a jukebox for the Nintendo Entertainment System. All you do is stick all your cartridges in the box, and choose your game by pressing the right buttons. It looks impossibly expensive but no price has been fixed as yet.

ATARI SHRINKS

Atari knows better than to show an ST in a place such as this. In America it's a cheap and not particularly impressive Macintosh alternative.

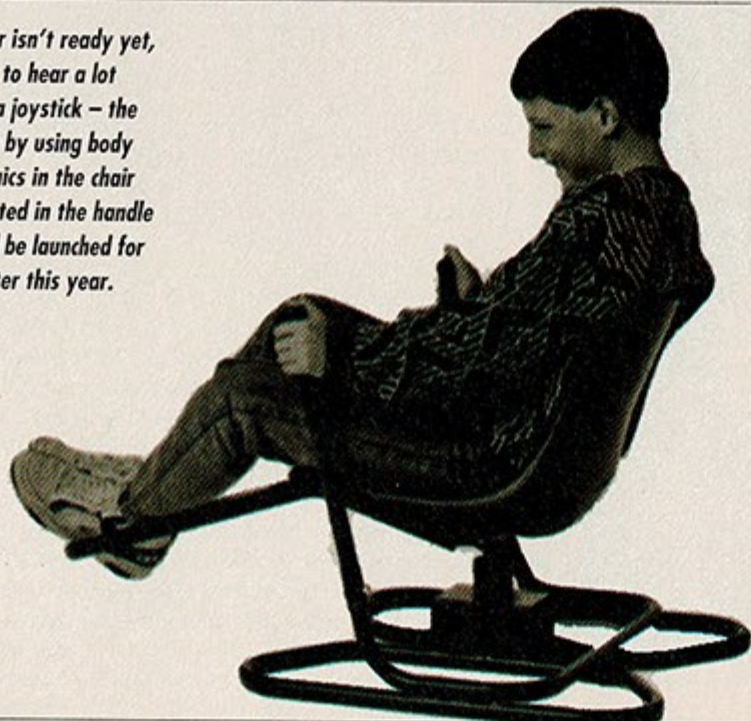
At CES the firm was showing off its smartly redesigned Lynx (see news) and, a little implausibly, was attempting to foist the Portfolio on an alien wasting public. However, it was behind closed doors that the best of Atari showed itself.

There, a dozen software publishers good and true assembled to get the low down on forthcoming product. The subject which apparently attracted the most discussion was the super-console codenamed Panther.

Only last week Atari was hinting that the games playing world might get a peep at the dear beast. Then, at the show, Atari suddenly shut up shop and denied that anything called the Panther had ever existed. Atari sometimes has these fits of pomposity and self-importance, but who can deny this admirable company a few indulgences?

Trusted games publishers have been warned not to blab any Panther details to press nor public. The official line is that Atari is "an innovative company" which isn't wont to give its secrets away. *Express* will bring you all the Panther details just as soon as someone else gives Atari's secrets away. ■

• *The Imulator Action Chair isn't ready yet, but when it arrives expect to hear a lot about it. The seat acts as a joystick – the player creates game action by using body motion to activate electronics in the chair base. Fire buttons are located in the handle grips. The Action Chair will be launched for the Megadrive and NES later this year.*



NEC in the fray



NEC's TurboExpress was launched officially and takes its place as the fourth hand-held games machine from a major company. It can run any of the 50 TurboGrafx games currently available, boasts 512 colours and costs \$250. NEC has yet to decide whether or not to launch in the UK. ■

Sega sums up

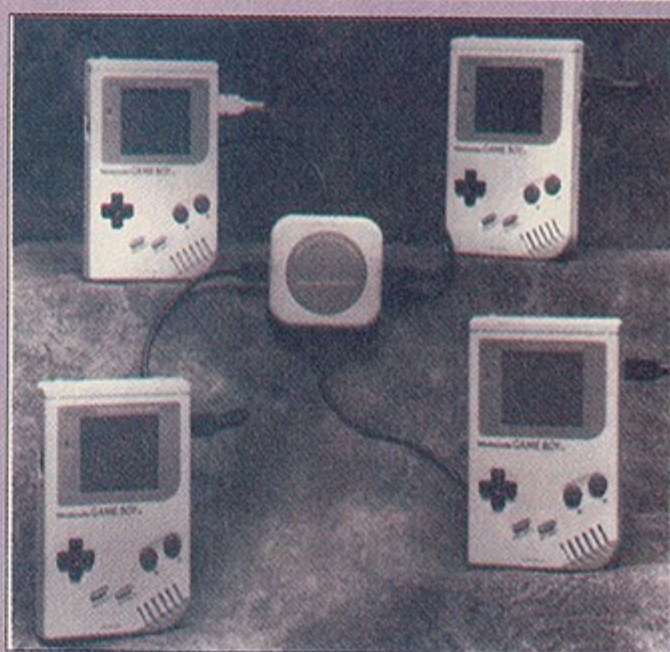


• *Game Gear: colour in demand*

Sega has been doing its sums. While the colour hand-held Game Gear was being launched, the company came up with a few interesting figures for all you data fiends.

According to market research undertaken in the States:

- 33 per cent of Game Boy owners will consider trading up to a colour hand-held.
- 30 per cent of first time buyers say they are prepared to pay more for a colour machine.
- 1,400,000 people will buy a colour hand-held in America this year. ■



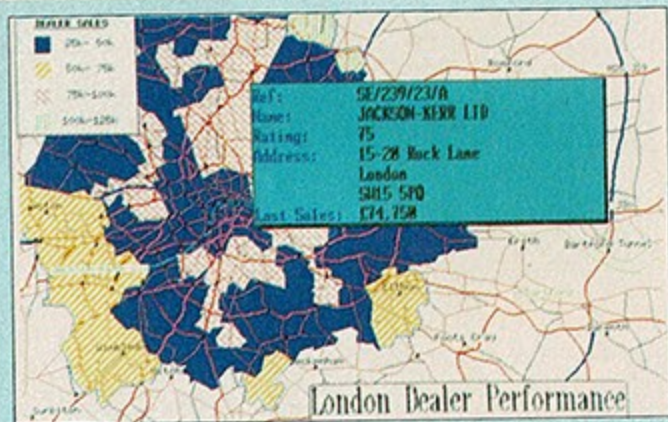
• *Gamelink: get the whole family involved.*

Fun for four

Nintendo has a vision. It sees the whole family sprawled across the living room playing the same Game Boy game at the same time. The firm says this is a "new version of family board game entertainment".

Nintendo reckons 34 per cent of Game Boy owners in the US are over the age of 18 and that 87 per cent of all owners want games that appeal to adults and youngsters. With this in mind a four player adaptor has been launched (inevitably called Gamelink).

It costs \$29.95 but, for the moment only works with one game *F1 Race*, which is bundled with the adaptor. ■



• Autoroute: Continental style.

Autoroute upgrade

A new "Windows style" version of the hugely successful *Autoroute Plus* software has been launched by NextBase. Version 4 comes with a pan-European full-screen map with improved curved roads.

Along with the large European maps, there are two more detailed charts showing France and Great Britain. The useful 'costing' module which allows the user to tot up the price of a journey has also been incorporated into the main body of the program.

On top of this, the *Gazetter* module now allows users to add and then manipulate new sites, symbols and even opening hours which can be used to warn users if bridges, tunnels or roads are closed. PCX formatted pictures can also be added, and will pop-up on screen as well as printing out. Printer support has also been ramped-up with more printers being supported.

Price for the PC version is £345 for the English and French versions. If you wish to make use of the European system you will need to pay £945. For more information call 0784 460077. ■



• Hyatt: chips are up.

Chips make man millions

The man who the US Patent office say invented the microchip 23 years ago is finally set to become a millionaire as he prepares to sue for royalties.

After nearly a quarter of a century Gilbert Hyatt, 52, last year convinced the US Patent Office that a prototype he developed in the front room of his Los Angeles home was indeed the granddaddy of all the microchips in the world today. Now he intends to use the money from royalties to help fund developments he is currently working on.

The Patent Office ruling means that Hyatt can claim millions of dollars from all the computer companies which use his idea and he intends to sue any that refuse to reimburse him.

But he insists that the money won't change his life, and that he'll continue to live in his modest home and drives an ancient - but reliable - Toyota. ■

Forgers foiled

A computer system which will prevent passports and other ID documents from being forged has been patented.

American inventor Peter Tal has based his system on a computer and a camera. By creating a mathematical equation of a person's face the system reduces it to a set of ratios which can then be checked in a matter of seconds. ■

Atom-scale super-fast processors come a step

ATOMS ARE K FUTURE TECHI

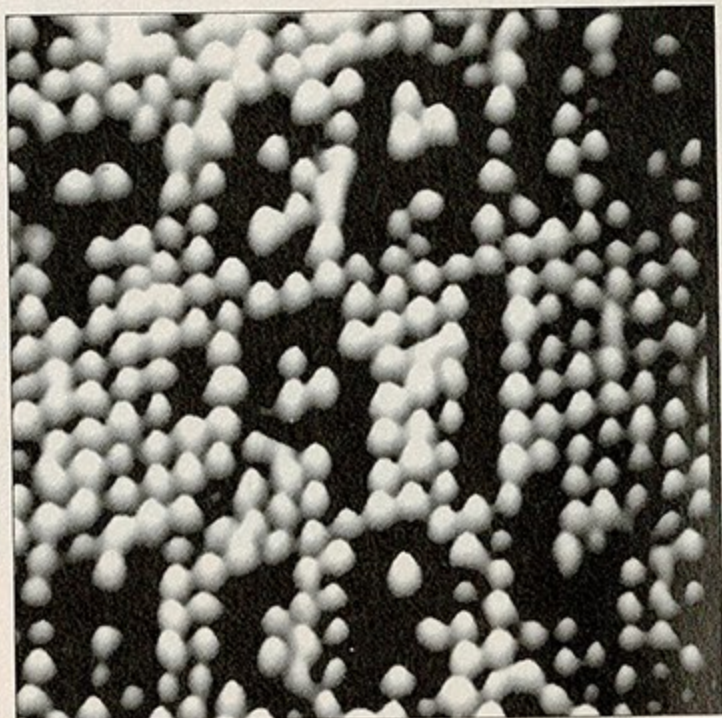
By Stuart Anderton

In an experiment which could have wide-ranging implications for computing, Hitachi has succeeded in manipulating individual atoms to write a message.

In an appropriate gesture for the times, scientists at the Hitachi Central Research Laboratory (HCRL) wrote "PEACE '91 HCRL" by removing sulphur atoms from the surface of a crystal of molybdenum disulphide.

The technology used to write the message could be used to create tinier microchips than ever thought possible which would run at extraordinary speeds. Alternatively individual atoms could be used to store data in an extremely compact memory device.

The device used for manipulating the individual atoms was a scanning tunnelling electron microscope. This machine suspends a metal probe just 0.00000001mm (10 Angstroms) away from the surface of the crystal; the probe has such a fine tip it is only a single atom wide at the end. The probe is

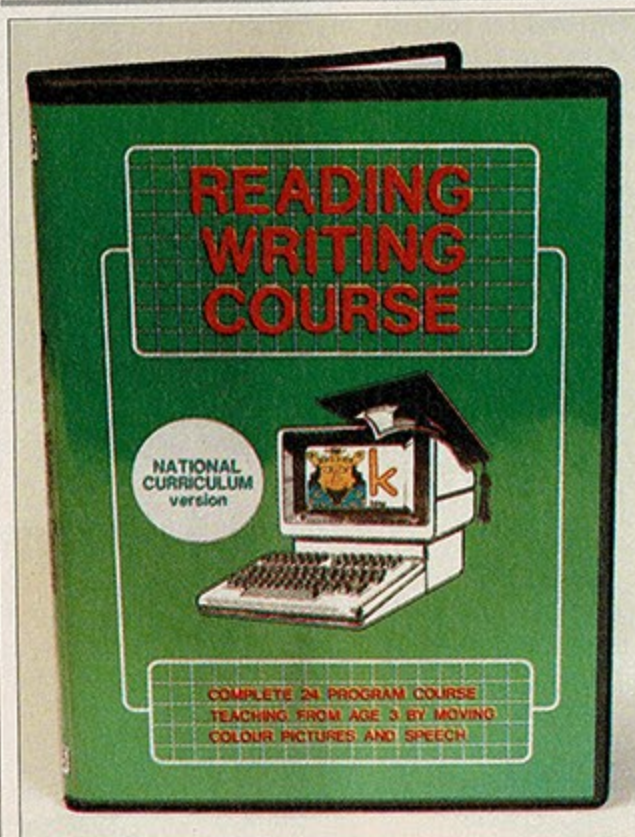


• The world's smallest message, written in atoms of sulphur..

moved using piezo-electric crystals like those in electronic lighters. In a lighter, pressure on the crystal produces a voltage which makes a spark - the reverse is done in the tunnelling electron microscope; a voltage is applied to the crystal which then expands fractionally. Using this remarkable device, Hitachi

scientists applied a voltage to the probe which 'evaporated' the individual atoms in the crystal.

This technology differs radically from that used by IBM when it created its more corporate "IBM" message last year. The IBM message was formed by firing xenon atoms at a surface cooled to near absolute zero so



• Read and write with your Amiga.

Learning with an Amiga

Educational software house LCL has released what it reckons is the first Amiga program aimed at teaching children how to read and write.

Aimed at three to eight year olds, *Reading Writing Course* comprises 24 programs, two books and an audio tape for £24. With music and colourful graphics it covers attainment targets for the National Curriculum including the alphabet (both lower case and capitals), spelling and word recognition.

The program also contains programs to encourage children to write their own stories and poems as well as reading books.

The course can be easily adapted for use in the classroom and is also suitable for dyslexics.

LCL can be contacted on 0491 579345. ■

Spot an Oric

Oric users desperate to swap tips and anecdotes with like minded people will be interested to learn of the second Oric User Monthly meeting on February 9th.

It's to be held at Rivetts Sports Club in Aylesbury, Bucks, from 10am until the early evening. Organiser Dave Dick promises loads of demos as well as a chance to link Oric's to more mainstream micros.

"We had about 30 people last year, but they came from all over the place. We're even expecting a few members from France."

Dick said it was all very friendly and suggests drinks at the bar after the meeting. ■

• If you have an Oric or another ancient computer why not drop us a line to Outrageous Machines at the usual address. Enclose a photo and you could win £50.

nearer to reality

KEY TO TECHNOLOGY

they did not fly off again. Hitachi's technique operates by removing atoms, and works at room temperature.

Hitachi believes that this atom removal technique is much more applicable to creating atomic scale computing devices as it is analogous to the current etching techniques and is inherently more controllable. Using this technology Hitachi hopes to be able to build processor chips many times smaller than at present. Size is important, as the limiting factor in computing speed is increasingly becoming the time it takes for an electron to move around the circuits; clearly the smaller the device the less time it takes for the electrons to move around it.

Computing at this scale opens up huge possibilities, but also huge complications as well. For example, when the wires down which electrons flow are so narrow, the electrons start to exhibit quantum mechanical effects; for example they stop behaving as particles and start acting like waves.

You can no longer think in terms of voltages and currents, but instead of refractions and interference. A whole new way

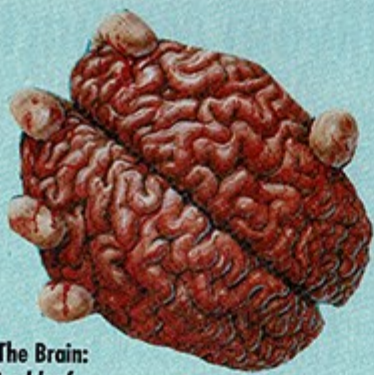
of designing chips will be needed.

Atom scale processors are still a distant dream, however. A more immediate application of this technology is as a memory storage device. At present data is stored as magnetic orientation of crystals in a disk, or as pits on an optical disk. In theory data could be stored atomically on a crystal - an atom indicating a 1, the absence of an atom indicating zero. Even with built-in redundancy and huge amounts of error checking it would still be possible to build a compact storage device with many hundreds of times the capacity of existing technologies.

The announcement of the ability to move individual atoms was made last week at Hitachi Technology '91, an exhibition of the Japanese giant's current research and development effort. ■

● In next week's Express we will be looking at some of the other developments Hitachi plans for the next century, including a superconducting microprocessor, levitating cars and high-definition television.

Brain drain game

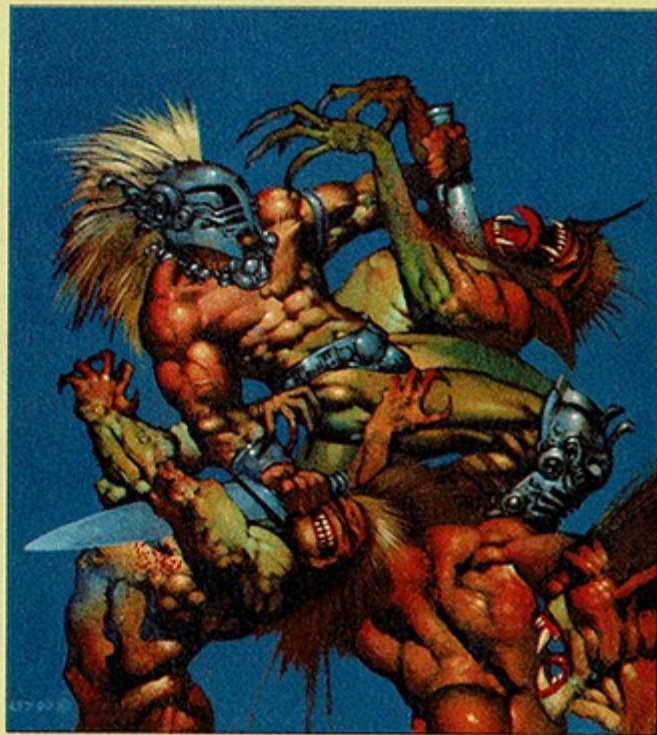


• The Brain: sliced loaf.

Some people like to spend their spare time pottering about the garden. Others enjoy cooking up some nice food. But there are a select few who love nothing more than the chance to ram some sharp instruments into a big fat juicy brain.

That's why Mindscape has decided to release *Life and Death II - the Brain*. The plot is simple enough; you are a brain surgeon who is presented with someone's dodgy grey matter, it's your job to make it better by slicing and cutting offending bits away.

This is of course interactive entertainment at its very best. Gamers may remember the original *Life and Death* which gave us all the chance to reach for the scalpel (not to mention the sick bag). Budding neurosurgeons and frustrated psychopaths will be pleased to learn that *Brain* is out now on the PC for £29.99. ■



• Gods: link to musicians.

Dancing with the gods

You may not be familiar with the pop group Nation 12, but pretty soon you'll be hearing their music, if not only in the charts then on the latest game from the Bitmap Brothers.

Gods, due in March from Renegade, follows in the tradition of previous Bitmap Brothers game *Xenon 2* which used a tune by Bomb the Bass on its soundtrack.

A horizontally scrolling arcade adventure based on the story of the seven tasks of Hercules from Greek mythology, *Gods* will feature

a track from Nation 12 called *Into the Wonderful*. Nation 12 comprises ex-Ultravox man John Foxx, Simon Rodgers of the Fall and DJ Streets Ahead. The track will be released through Rhythm King Records, co-founder of Renegade with the Bitmap Brothers, later this year.

So ST and Amiga owners will be able to get on down while battling minotaurs for £24.99, while PC users can look forward to getting funky with the supreme being for £29.99. ■



• Crown: going cheap.

Cheap laser

If you're looking for a great printer at a reasonable price, check out Crown Computer Products.

The Lancashire based dealer is selling Ricoh laser printers for £599. Lasers usually start around the £1,000 mark.

This Hewlett Packard LaserJet II compatible features 1.5Mb of memory and can muster a 300 x 300 dots per inch resolution. It has an average life of 600,000 pages. Call 0704 895815. ■

Leo lined up

Centerprise has launched a 386sx laptop for power hungry business types on the move.

The Leo Sport costs £1,999 and features 2Mb of RAM, a nippy 16MHz processor and a very useful 40Mb hard disk. Display is basic 16 grey scales and battery life is four hours.

Interfaces include one serial port, one parallel port as well as ports for an external full keyboard and extra floppy disk drive.

Leosport measures 12.8-inches by 12.3-inches by 2.3-inches and it weighs a mere 10.9 pounds. For more information call 0256 463754. ■



• Leo Sport: 386 on the move

Computer stops the traffic

Computer-based toll booths could be installed in British cities to combat horrendous traffic problems.

Worcester local council says that it will be first city to install booths, and it is waiting to the technology to be completed. The city has to cope with over 40,000 cars a day just as soon as the technology is completed.

Instead of the old fashioned toll booths motorists will have to buy special cards containing microchips to put in their windcreens. The cards will work like phonecards, units being wiped from them as the car passes special sensors at the sides of the roads.

Any cars not displaying a card will have their registration numbers automatically photographed. The owners will then be sent a quarterly bill.

Research on the system is still being perfected in universities in Europe and America, and the council want to make sure that it will work 100 per cent before committing itself. ■

For more of this week's computing news turn to Whole Wired World on page 39

Mighty mice device

A new range of "ergonomically designed" three-button mice has been launched by Logitech.

The MouseMan series of input devices comes in both conventional and cordless forms which are both compatible with IBM PC, PS/1 and PS/2 computers.

The cordless version works via low range radio transmissions enabling the user to be out of visual contact with the computer.

Both the corded and cordless versions come in right and left-handed form. They are compatible with Windows and MicroSoft mice routines. The mice are available in serial, mouseport, and bus configurations for the right hander. Left handed users lose the bus version.

Along with the hardware comes

MouseWare software. This includes LogiMenu, the pop-up control panel, Mouse 2-3, and a new version of GoMenu, a utility which enables users to create their own mouse menus.

Mouseman corded costs £65, the cordless version retails at £120. For more information call 061-480 9811.

Not content with mice, Logitech has also produced a new trackball device for the Macintosh. Called Trackman, this latest Logitech pointing tool has three buttons and comes with what the manufacturers call "hand conforming shape". It interfaces via the ADB bus, is X-Windows, Macintosh and A/UX compatible. Trackman costs \$149 and is only currently available in the United States. ■

• Mouseman: hands on.



Computer thief's sentence halved

A man who was jailed for two years for handling thousands of pounds worth of stolen computer hardware has had half of his sentence suspended. Stuart Thompson, a businessman from Chesham saw one year of a possible prison term suspended because he co-operated with the authorities.

Information given to the police by Thompson led to the arrest and successful prosecution of two other people; the burglars themselves.

The thefts occurred between April 1988 and July 1989 during which time over £130,000 worth of hardware was stolen from colleges and universities throughout the London area.

Thompson claims that he thought something was amiss when he was asked to handle a computer worth nearly £40,000. It later transpired that the machine had been taken from Imperial College in Kensington, London, and had contained a great deal of sensitive information.

The information was later recovered after Thompson handed the computer to the police (which also helped towards reducing his sentence).

Aside from the Imperial College robbery, computers were also taken from King's College - where many sensitive scientific experiments take place - and the London School of Economics. Hardware from both of these robberies were also handled by Thompson. ■

On-line service finally switched off

MICROLINK SCRAPPED

Veteran on-line service Microlink is to be closed down after a lean three year spell during which subscribers dwindled from over 12,000 to less than 4,000.

Loyal subscribers are being offered free membership to rival service CompuServe. The Microlink network, which was originally set up by magazine publisher Database, featured access to a number of databases but was mostly used

for information relating to computers specifically.

Database had transferred the service from the care of Telecom Gold to AT&T Istel two years ago. However, the transition was not comfortable. Sources suggest that of the 8,000 members on-line before the transfer, only 3,000 followed the service across.

A spokesman for AT&T Istel said that Microlink members would find much the same ser-

vice with CompuServe: "We looked hard for a service which would fit our original criteria," he said. "CompuServe filled that role."

Microlink subscribers will be informed of the change over the next few weeks. Meanwhile, other services are hoping to pick up ex-Microlinkers. The Direct Connection in London is offering free sign-ups plus two months free usage. To qualify call 081-853 3965. ■

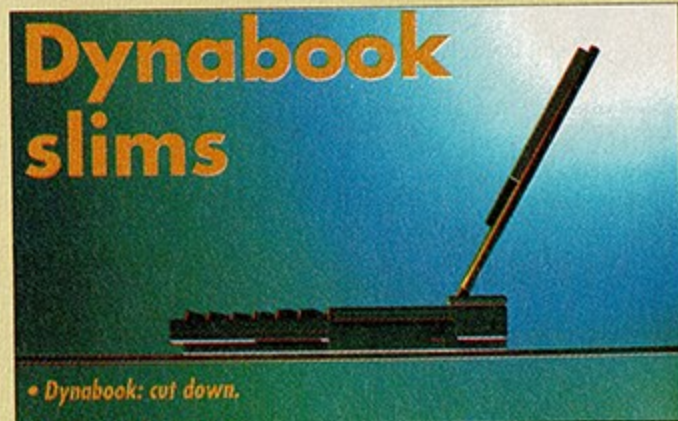
BT hits PC user group

British Telecom has cracked down on the PC Independent User Group for distributing a public domain disk containing telephone codes.

Although the codes can be found in any telephone book, BT says they are copyright material which cannot be reproduced without permission. The PC Independent User Group claimed the program was not making anyone any money, but was still ordered to withdraw the PC disk.

The disk contained STD numbers (area codes) and was a basic piece of software. It is possible to subscribe to a PC based phone book through official third party licencees, although these can cost up to £100 a year.

A PC Independent insider told Express: "We'd had the disk on our books for a long time, but BT suddenly got very annoyed about it, so we had to withdraw the disk." ■



• Dynabook: cut down.

Good news for PC owners looking for a portable computer which doesn't require you to pump iron first. The ultra-slim, ultra-small and previously rather expensive range of Dynabook laptop computers has gained a new addition and is celebrating with a price cut of nearly 50 per cent.

Dynabook Technologies Europe launched the machines, which weigh in at an amazing 5.3 pounds and yet pack a 16MHz punch, last year to some critical acclaim. The recently announced 45 per cent price cut brings the cost of the 20Mb and 40Mb versions down to £1,795 and £1,995 respectively. The new member of the family is a 110Mb hard disk version priced at £3,295.

Also launched are several add-ons such as a 5.25-inch drive, an AT3 keyboard, and an MS-DOS compatible mouse. Call 0628-473363. ■

Olivetti compact printers

Olivetti has launched two compact printers aimed at the home and small business user.

The 9-pin DM109 and 24-pin DM124 are IBM PC compatible, offering three print speeds and a wide variety of fonts. A colour version, the DM124, offering full seven colour printing, is also available.

The 9-pin machine prints at 36 characters per second (cps) at its highest quality while the 24-pin printer will turn out sharp letter quality material at 60 cps. Both print at draft speeds of 200 cps.

Prices for the range are £209 for the DM109, £299 for the DM124 and £319 for the colour DM124C. ■



• New prints: Olivetti's latest.

Atari redesigns games machine

LYNX II ARRIVES



As first predicted in *Express* (Issue 97) Atari has launched a 'shrunk' version of its Lynx hand-held games machine.

The announcement coincides with drastic price cuts for the machine in the US. Some \$50 was sliced off the machine, and Atari UK is expected to follow suit later this year with a straight £99 price-point. Lynx currently costs £120 in the UK.

The new Lynx is slightly more

compact and easier to hold, although it is still not as small as either the Sega Game Gear or Nintendo Game Boy.

Atari says it has redesigned the machine to make it "easier to carry around". A spokesman offered: "It's a normal trend to reduce the component count and make a product smaller." Graphics chips and the like have been 'glued together' in order to make the case smaller. The new case is a good deal more stylish

than the original, which had been criticised for being ugly and unwieldy.

Atari boss Sam Tramiel claimed that the price cut had been brought in because of cheaper manufacturing process, although a more likely explanation is Nintendo's huge success with the cheaper, but technically inferior Game Boy.

"In addition to cosmetic and

ergonomic changes, new developments have lowered our manufacturing cost for the new system," said Tramiel. "These savings are being passed on to the consumer."

Tramiel also promised to double the amount of games for the Lynx (currently 16). Titles in the offing are *World Class Soccer*, *Checkered Flag*, *Shanghai* and *Tournament Cyberball 2072*. ■

• *The new Lynx: smarter, smaller and cheaper.*

Sony changes its tune

Sony aims to muscle in on Disney and Universal territory with a proposed series of 'Sonyland' theme parks.

The Japanese giant has given its Columbia Pictures wing the go-ahead to start work on developing the high-tech amusement parks. Information about when and where the first park will be opened will not be revealed until the end of this year although Southern California is tipped.

"We anticipate multiple locations, but none have been identified. The outlook has not been limited to southern California, but it is clearly being considered," said a spokesperson from Columbia.

The parks are likely to be based on a futuristic world with plenty of amazing gadgets to keep visitors jaws dropping. ■

Packed with programs

Micro Haus Limited has released a mega CD-ROM disk so packed with programs that the file list alone takes up more than 1Mb.

Based on the Valentes bulletin board, the disk comprises 10,000 files for just £65. Micro Haus claims that all the files are unique with no duplicates or earlier versions of the same program.

A specially prepared demo of Quantech's speech package SoftSpeak introduces users to the disk and its contents. Software includes everything you need to set up your own BBS and other UK shareware unavailable elsewhere. You also get free access to Valentes BBS.

Micro Haus, which also sells CD-ROM hardware, can be contacted on 0452 371707. ■

Computer chess champ censored



• *Chess champion: banned by humans.*

A new term might be creeping into the language, along with ageist, sexist and racist we can now add 'computerist'.

Computers, especially not successful ones, are still not being accepted in many spheres of life, certainly not within the staid world

of provincial club chess.

Recent world champion and holder of the Personal Computer Blitz Chess title in Lyon, France, Chess Champion 2175X has been banned from appearing at a local chess event.

Organisers of the Kidlington

Chess Congress, a two day club chess event held from February 2 and 3, decided that "some entrants might be unhappy if others with whom they were competing were drawn against the computer and were able to score an easy win".

Chess Champion is rated at 170/175 which places it more in the league of the Grand Master than village champ. The reason for the Kidlington Committee's refusal is probably better summed up in this extract from a letter sent by club member Tony Williams to programmer Chris Whittington: "Basically we don't, at present, have to be innovative and take risks in trying new ideas".

Normal practice at tournaments such as this is for the programmers to announce to players that a computer or piece of software has been entered. All prize money is declined by the microchipped Kasparovs, and human players are given the option not to play. This has not happened in Kidlington. ■

Telephone look-in

Videophones enabling people to see and hear callers may be on sale for less than £100 in the future.

A team of scientists at Edinburgh University have built an electronic video camera with a plastic lens, sensor and processing circuits. The tiny camera uses common chip technology and could be up to 100 times cheaper to produce than current cameras.

"The cost of the camera is usually the most important thing preventing the development of new vision and sensor products," Professor Denyer, the team leader, said. "With the new technology we expect to be able to build a camera for £20 to £30 pounds." ■

Citizen sees the light

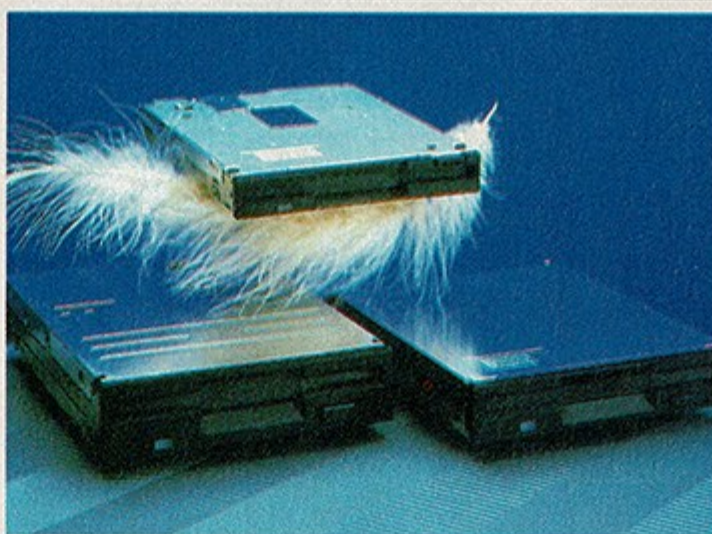
A tiny disk drive weighing just 168 grammes has just been launched by Citizen Europe.

The diminutive V Series drive is aimed at notebook, portable and laptop computers. The first of the series is a 1 or 2Mb, 3.5-inch drive. Using EEPROM (electrically erasable programmable read-only memory) the drive also makes use of a side mounted ferite head, aluminium plate frame and control

circuit board. It measures 15mm high, 96mm wide and 126mm deep.

The drive is not aimed at the end-user and is only intended to be sold in large numbers to developers. However, Citizen says its developments will help make laptops and portables ever smaller and lighter. ■

• *Citizen light drive: the laptop shrinker*



Cheapest 286?

Digital Matrix has launched what the firm claims is the cheapest 286 PC on the market.

The AT7 retails at a very tempting £381 - DM reckons the only other computer which comes close in the price stakes is CAS's £440 286. In comparison Dolan's popular 286 retails at £519, while Amstrad's dual drive model costs £799.

DM's basic system features a single 3.5-inch floppy drive, 1Mb RAM, serial and parallel ports, a 14-inch white screen monitor. Hard drives are also available. Call 021-722 3828. ■

THE WEEK IN VIEW

Computer viruses have the potential to break down enemy military communications, says the US Department of Defence. Edward Wilding, editor of *Virus Bulletin*, explores the possibilities for new warfare tactics.

In February 1990 the US Department of Defence issued Program Solicitation 90.2 Project A90-217. The project, for 'exploratory development' was a feasibility study to determine: "The potential for using computer viruses as an ECM (electronic counter measure) technique against generic military communications systems/nets."

The research project stressed that efforts should be focused on radio frequency atmospheric signal transmission such as that performed in tactical military communications. The theory that CVCM (computer virus countermeasures) might replace traditional ECM methods (jamming and spoofing) has been propounded in the United States, notably in an article in *Defence Electronics* which appeared in October 1989. The attraction lies in the fact that self replicating code transmitted by radio wave, once embedded in a processing centre, can be programmed to perform any number of subversive operations (from scrambling enemy data transmissions, to redirecting or blocking them). Thus there is more control via this method than merely suppressing enemy communications. Moreover, self-replicating code continues to attack and disrupt more than just one target - CVCM can initially attack the weakest element in an enemy communication network and gain subsequent access to the intended target(s). The theory of CVCM depends on two imponderables: is it possible to transmit virus code directly to a hostile receiver? Will the enemy be operating with a machine code intelligible to the virus? At the moment such theo-

ries can be placed firmly in the sphere of science fiction.

No official studies on the military use of self-replicating code (virus and worms) have been made public; although most observers are certain that studies are being conducted in both the US and Europe. Implanting virus code and Trojan horses (programs which perform functions beyond their specifications) into software intended to be used on enemy processing equipment is a highly feasible tactic. For this reason, highly sensitive software supplied to Western intelligence and military units is usually supplied as source code and is vetted (line-by-line) before being compiled 'in house'.

The idea of implanting destructive or information divulging code (particularly that which exploits covert channels on computer processors and which is nearly impossible to secure against) into communications or weapons systems intended for sale to a prospective enemy is also feasible, although no incidents of this have been publicised. This is analogous to the classic guerrilla warfare tactic of supplying the enemy with exploding bullets and bugged radio transmitters.

The feasibility of CVCM increases with the trend towards communications standardisation, software standardisation, standardisation message formats, distributed processing and networking in many armed forces. However the only computer viruses likely to be causing troops of either side in the Gulf any inconvenience in the coming months will invariably attack the faithful old PC. The latest prank from Israel is just such a virus, appropriately named Saddam! ■

Hey! Get in touch with us! *Express* is always on the look out for news leads and tip-offs - and we'll pay you for passing them on too!

Also, if you have any burning ideas for features or surveys then drop us a line - remember, we cover every aspect of computing.

You can contact us directly on :

Voice : 0225 442244

Fax : 0225 446019

(All news leads and tip offs will be treated in strictest confidence)

Or you can leave E-Mail for us on :

CIX @ astorer

GOLD @ 84:TXT152

COMPUSERVE @ 100012, 1075

PRESTEL @ P McDonald

Express Access



EDITOR • Andy Storer
 DEPUTY EDITOR • Stuart Anderton
 NEWS EDITOR • Colin Campbell
 TECHNICAL EDITOR • Keith Pomfret
 SUPPLEMENTS EDITOR • Tim Smith
 EDITORIAL ASSISTANT • Dave Golder
 PRODUCTION EDITOR • Julie Tolley
 ART EDITOR • Amanda Cook
 CONTRIBUTORS:
 Robin Alway • Jason Holborn • Rod Lawton • Hadyn Fitz-Williams • Adam Waring • Richard Frederick • Sean Masterson • Ken Coumarin • Steve Gold Mary Branscombe • Ian Wrigley • Steve Patient • Neil Jackson • Andy Hutchinson
 CIRCULATION DIRECTOR • Sue Hartley
 ADVERTISEMENT MANAGER • Helen Kirkhope
 AD EXECUTIVES:
 Tim Partridge • Cheryl Beesley • Siobhan Kennedy-Coyne
 AD PRODUCTION • Frances Wasem
 AD TYPESETTING • Terry Turner
 PUBLISHER • Graeme Kidd

ABC audited circulation
 January-June 1990:
 21,251 copies per week

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

While every care is taken in the preparation of *New Computer Express*, Future Publishing cannot be held responsible for the consequences of any errors that may occur.

© Future Publishing Ltd • 30 Monmouth Street, Bath BA1 2BW • Tel: 0225 442244 • Fax: 0225 446019
 • Subscriptions: The Old Barn, Somerton, Somerset (0458) 74011
 • Printed by Redwood Press, Melksham, Wilts
 • Distributed in UK and Eire by MMC Ltd (0483 211222), rest of world by Comag (0895 444055)

COMING NEXT THURSDAY

Future formats

What storage devices will replace today's magnetic media? - would you believe holographic EPROMS?

Smashing grabs

G2's amazing new 24-bit frame grabber for the Amiga put to the test.

Tomorrow's whirl

Hitachi's plans for superconducting computers and flying cars!

PLUS

- Hot news
- Front End
- Games Week
- The Console Zone
- Whole Wired World
- Centrefold
- Tech Tips
- Circuit City
- Express On-line
- Express Mail
- The PD Column
- Programming
- Columns for: Amiga, Arc, CPC, C64, Macintosh, PC, Spectrum and ST

AND

Another super duper competition

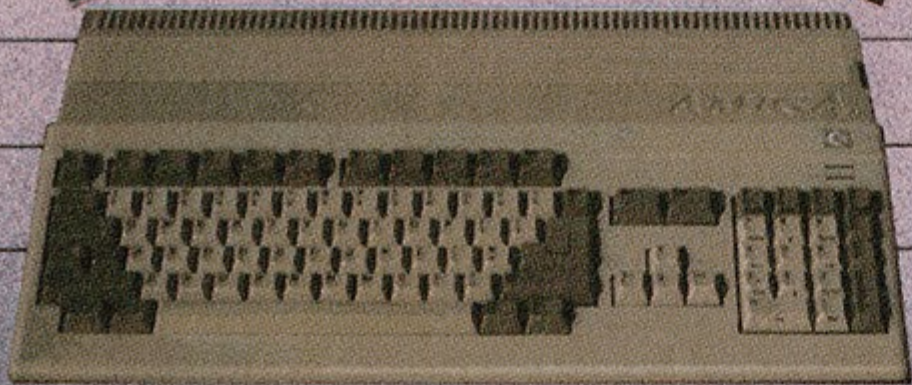
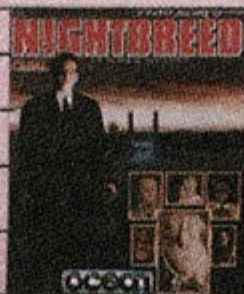
AT YOUR NEWSAGENT ON THE 31st

NEW

Commodore

SCREEN GEMS

**AMIGA™
500**



**SCREEN GEMS is
the only NEW
Official Amiga A500 pack
from Commodore!**

pack includes

- ☐ Amiga A500 Computer Keyboard
 - ☐ 512K Random Access Memory
 - ☐ Built-in 1 meg double-sided disk drive
 - ☐ Superb 4096 Colour Graphics
 - ☐ 4 Channel Digital Stereo Sound
 - ☐ Speech Synthesis
 - ☐ Multi-Tasking Operating System
 - ☐ Kickstart 1.3 and Workbench 1.3
 - ☐ Three Owners Manuals
 - ☐ Extras 1.3 and Tutorial Disk
 - ☐ Amiga BASIC Programming Language
 - ☐ Notepad Mini Word Processor
 - ☐ Commodore Mouse
 - ☐ Power Supply Unit with mains plug
 - ☐ TV Modulator
- ..and all connecting cables to get you up and running on your home TV set!

plus

- ✓ Shadow of the Beast II
- ✓ Days of Thunder
- ✓ Back to the Future II
- ✓ Night Breed
- ✓ Deluxe Paint II Art Package

plus FREE DIGISTAR pack

10 great solves files and accessories worth over £25 - Only from DIGICOM!

- | | |
|--------------------------|----------------------|
| ☐ Microprose Soccer | ☐ Grand Monster Slam |
| ☐ RVF Honda | ☐ Powerplay |
| ☐ Kid Gloves | ☐ Tower of Babel |
| ☐ Datastorm | ☐ Shufflepuck Cafe |
| ☐ Dungeon Quest | ☐ E-Motion |
| ☐ Microswitched Joystick | ☐ Mouse Mat |

and exclusive to DIGICOM!!!

F-19 Stealth Fighter

The Ultimate Flight Simulator game from Microprose worth £34.99!

**Total package price includes VAT and Next Day Delivery by Courier*
Don't delay - Order now! 24Hour Credit Card Hotline Telephone (0908) 378008**

How to Order

By Phone - Call our Credit Card Order line on (0908) 378008 and quote your card number and expiry date along with the details of the goods you require. We accept ACCESS, VISA, EUROCARD, MASTERCARD, AMEX the new Direct Debit cards like Barclays Connect and we also accept Lombard CreditCharge Cards.

By Mail - Simply write down your requirements and send in your order to us by post along with a personal cheque, bankers draft, building society cheque or postal order made payable to "DIGICOM COMPUTER SERVICES LTD".
*Please note - Personal cheques require 7 days clearance before despatch.

Catalogues!

Ring or write in for our latest Amiga catalogue listing hundreds of products available for this versatile Home Computer. We stock COLOUR PRINTERS, STEREO COLOUR MONITORS, EXTERNAL DISK DRIVES, MEMORY EXPANSIONS, HARD DISK DRIVES, AMIGA BOOKS, FRAME GRABBERS, DIGITISERS, SCANNERS, WORD PROCESSORS, DATABASES, SPREADSHEETS, ACCESSORIES and of course hundreds & hundreds of games and all at well below recommended retail prices!

Service you can depend on!

Digicom offer you the very best in customer after sales support with 12 month warranty on all Computer Hardware. All units are full UK specification with 30 day replacement guarantee on faulty items and FREE collection of the defective units within this period. And should you ever need any technical advice our experienced and helpful staff are available on the telephone or in our showroom. Remember - there are no hidden extras all prices are fully inclusive of VAT and next day courier delivery. Prices & Specifications are subject to change without notice E&OE.

only.....

£399

** or spread the cost with our finance facilities - written details on request.*

DIGICOM

36-37 Wharfside Watling Street
Fenny Stratford Milton Keynes MK2 2AZ
Telephone (0908) 378008 - Fax (0908) 379700
Showroom Hours - Mon to Sat
9.00am-5.30pm

■ Out of order

Imagine my excitement when I opened *Express* 110 to find that the letter I had sent you a couple of weeks earlier had been published. Thrill of thrills. I was so jubilant at the prospect of receiving £5 early in the New Year that I immediately drank it several times over. Imagine, then, my further excitement when you published my reply to your response to my original letter in *Express* 113. Another fiver!

But... as yet... still no fivers have materialised. Imagine then, the horror of seeing a new symbol appear in this week's *Express* indicating that only two of the letters featured on the page had actually been awarded a 'Hadyn Fiver'. Couple this with the fact that your sister publication *Amiga Format* has admitted that they don't really give away a binder and T-Shirt to every letter that 'escapes the origami treatment', but only to those identified as a prize letter and 'rip off' springs to mind.

I realise, of course, that the head of your letters page does not claim to pay a fiver for every letter published. It only infers it (sic). Technically, if you say I was not awarded a fiver, I can do little about it.

What I have done is cancel my subscription to *Amiga Format*. If I do not shortly receive my fivers from you, I will also cease buying *New Computer Express* and will, instead, browse through the bits I'm interested in in my local newsagents.

That way, I will still get the benefits of what you write without Future Publishing getting anything in the way of cash in return. Just as Future Publishing got the benefit of my (and other people's) letters to help them fill the magazine without the writers of those letters getting anything in return.

Kevin Patton-Smith, Scarning, Norfolk

Well, you're a bit of a plonker, aren't you Kevin, despite the impressive double-barrelled name?



All you have to do is read the letters pages, including my replies, and it is plain as the sky above you that not every letter printed wins its sender a fiver. And the words '...the man with the fivers to give away' in the panel at the top of the page, to my mind, doesn't even come close to implying that there's a fiver for every letter printed.

That's why I always mention in my reply whether a correspondent has won any dosh - I'd hardly go to the effort of mentioning prizes in my replies if every single letter printed won its sender a fiver, now would I?

The idea of the new logos is to draw attention to winners so readers can go straight to the more interesting or witty letters on the page.

Still... 'there's nowt so queer as folk' as my old granny used to say. I just hope your granny makes good and sure to send you a fiver each time you write her a letter.

H F-W

EXPRESS MAIL

With your host
Haydn - the man
with the fivers to
give away

Write and tell HF-W what you think about anything under the Sun! Reach him at: *Express Mail*, 30 Monmouth Street, Bath BA1 2BW. Sorry, no personal replies, even with an SAE, as we're too busy writing the magazine.

■ Virtual Reality I

I read Glenn Proctor's letter in *Express* 114 with interest, and without going over the top, would like to express my agreement with the principle of what he was trying to say about Virtual Reality.

We already have a very real problem of youngsters truanting so as to play fruit machines and arcade games. I am genuinely worried about the possible outcome when these arcades are offering Virtual Reality adventures in totally enclosed environments.

There is only one argument against the abuse of VR which has not already been used against arcade addiction, and that is cost. The businessmen behind these ventures will tell us that the kids won't be able to afford to get hooked on them - but we all know that is rubbish. Youngsters are already turning to crime and other seedier pursuits to fund their addiction to amusement arcades; all they need to do is set their targets higher and they'll be paying £3 to £5 a go with the rest

of 'em in the VR arcades.

I'd be interested to know what other readers think - are my fears well-founded, or am I just getting paranoid over a few harmless games machines?

Ian Heath, Upton, Merseyside

Not paranoid, Ian, just a little too concerned maybe? There is not a massive problem with arcade addiction - a problem, yes but one nowhere near as serious as underage smoking and drinking. I'm not convinced that the arrival of Virtual Reality arcade machines will up the ante significantly - but let's hear from the readers...

My next correspondent has another angle on VR, also prompted by Glenn's letter on the subject...

H F-W

■ Virtual Reality II

Some people seem to think that everyone will have CDTV. Can these same people envisage the public at large all sitting in

■ The history of computing according to beards and glasses...

I have become increasingly aware of a trend amongst programmers and general computer folk. Have you ever noticed how all the best programmers and hardware engineers (most famous or rich ones, at least) have beards and wear glasses?

Here are a few examples off the top of my head...

Clive Sinclair

Founder of Sinclair Research - and father of the Spectrum

Jay Miner

Father of the Amiga

Brian Kernighan

Creator of C and Unix

Dennis Ritchie

also helped to create Unix

Seymour Papert

Little-known originator of Logo

Jonathan Sachs

Created the original Lotus 1-2-3

Bjarne Stroustrup

Developed C++

John Warnock

Founder of Adobe and programmed something famous but I can't remember what

Paul G Allen

Co-founder of Microsoft

Niklaus Wirth

Author of Pascal, Modula-2 and Oberon

Rupert Goodwins

PCW journalist/programmer

And the honours list...

Jeff Minter

Writer of psychedelic games and founder of Llamasoft. I'm not too sure if Jeff still has the beard, though. (Almost certainly - H F-W)

Bill Gates

Co-founder of Microsoft. He's got the glasses, but has probably stopped programming, so giving up the beard

Grace Hopper

Inventor of COBOL (and I think it's about time we all forgave her - it was a long time ago, after all). As females really should be encouraged more, I'll just accept the glasses.

Keith Pomfret

Hero and veteran of *Express*. Very half-hearted beard, though. (Well, just a moustache, really - H F-W)

I think this is all pretty conclusive then, don't you? And there must be a lot more people I can't remember. So I've got the specs and am busily growing my beard now. I can almost feel the tension of pure binary surging at my fingertips, opcodes whizzing around my head and that deep-down feeling of compilation or possibly assembly in the depths of the stomach. I'll go now, and start work on dBase V...

Simon Butcher, Ely, Cambridgeshire



• Beards and glasses make you brainy, a potential computer whizz and irresistible to women. Maybe? Well look at Sir Clive....

Nice ideas there, Simon - and worth not one fiver but two! And if other readers can help fill the gaps in your list of beardies, I might be persuaded to part with further fivers... H F-W

■ Back to skool?

That Colin Campbell bloke is a real prat. (*Why not come straight out with it, and say what you mean?* – H F-W)

What does he think is so amazing about a dedicated arithmetic computer that can compute the ratio between the diameter and the radius of a circle to one thousand million decimal places in a matter of seconds?

My Spectrum can calculate it to infinite decimal places in less time than that, and so can I for that matter. The answer is 2.0 recurring.

And don't tell me it was a printing error – either that Campbell matey never went to school or my Speccy and I are on a par with Einstein! I may not have a ARM processor between my ears, but at least I know a circle when I see one!

Clive Masri, Twyford, Reading

Well spotted, Clive. Colin must have been asleep throughout his elementary maths classes at school – or dreaming of playing centre forward in the English World Cup squad.

Everyone but Colin knows that the real hard sum you need to



do with circles is calculating the ratio between its radius and circumference.

As you will see from the picture, appropriate remedial action has already been taken against Colin – by our esteemed publisher, no less...

H F-W

their Virtual Reality chairs wearing a RoboCop-type helmet watching Virtual TV, mowing their Virtual lawn, playing a Virtual game of squash with their Virtual neighbour – or even Virtually procreating the human race?

Imagine walking down to the Virtual shops – everyone you meet could look like Madonna or Richard Gere. Virus writers would have a field day!

This is a frightening view of Virtual Reality's future, and a scenario on which a sci-fi writer could write a cracking novel. As with all novels, it is pure fiction and not to be taken seriously.

By the way – the *Tomorrow's World* demo was done on an Amiga 3000.

D W Smith, Eccles, Manchester

Interesting perspective Mr S, but I disagree with you about novels. Was *1984* 'pure fiction and not to be taken seriously'? Or *Gulag Archipelago*? Or even *Animal Farm*? I think not...

H F-W

■ Domain debate

With reference to the current debate on demos in the public domain, I think there are a couple of points which have been missed. The first is that the demos are not really meant for public consumption – they are meant for coders to communicate messages to one another and to say 'hey, look what I've done – can you do better?' Often, it's not what is on the screen that counts, it's the programming behind it. So for the public to criticise a demo is like reading another person's private letter and commenting on that!

The second point is that the demos should really be viewed as an art form, just like a painting in an art gallery. The medium is a VDU and the artist's materials a computer. Whether you like them or not then becomes a matter of taste. Personally, I wouldn't want to wander around the Tate Gallery all day, but some people do.

I wonder what Picasso, Rubens or van Gogh would think of the art produced

by Red Sector, The Silents and Fraxion and co if they were around to see it?

Paul Cuipek, NBS, Isle of Wight

I'm not sure quite what you're getting at here, Paul. If the demos are not meant for public consumption, then why put them in the public domain? If they are so private, why not send them to their target audience in the mail?

And surely, for them to be viewed as an art form like a painting in an art gallery, then they must be put on public view – and thereby be fair game for independent criticism...

Any demo coders out there care to contribute to the debate?

H F-W

■ I wish I had...

I recently witnessed another amazing application for a home computer which I'd like to be able to use on my Amiga.

It was featured in a film called *The January Man*, starring Kevin Kline in the lead role as the hard-bitten-cynical-rough-tough-but-likable-too-with-a-heart-of-gold homicide cop. (Is that a cliché or what?) As usual, said homicide cop is given 24 hours to close his case or the chief is gonna 'bust his ass' or 'throw him out the force' or 'kick him so hard he ends up wearing his ass for a hat'.

The interesting bit comes when Kline enlists the help of some loser art-student friend of his (they were probably in 'Nam together) who turns out to be a bit of a home computer hobbyist. He knocks up a program in a couple of hours which not only catalogues all the previous serial killings, but produces a three dimensional map of their locations in Noo Yawk (to scale). For some unknown reason the killer is trying to murder people to produce a star pattern on the city. Kline tumbles where the last missing piece of the pattern is about to fall in place, steams off to the scene of the crime and kicks ass. Suspect is booked for murder! The Chief gets off Kline's case and Kline doesn't need to go in the men's room and punch lockers.

The point I'm trying to make is: where can I get hold of the program that produces a three dimensional map of a city and which, presumably, has a menu option on it somewhere that says 'enter the time and location of your murder'. And how did the bastard knock it up in two hours?

Nick Booth, London SE19

Amazing, isn't it, how useful and friendly computers can be to the writer struggling for a plot device that can be used to get out of a tricky corner...

H F-W

■ Right to back up

I totally agree that backing up software is a necessity, especially when some companies charge £10 for a replacement! I mean, if you bought a new house and the solicitor gave you the keys, telling you it's illegal to make spares but if you do lose them we can replace them for £10 – I am sure that you would nip down the shops and get a copy done for £1 (saving £9 and a lot of time).

For every commercial game I own, I have a 'pirate version' – the back up that I use. Yes I know that it is illegal, but I feel it is justified for the following reasons:

- a) some of these can be loaded on to my hard disk
- b) the 'codeword' has been removed so I can get straight into the game without having to look up word 24 para 3 page 14
- c) if something happens to the disk then I can quickly make a backup without any hassles.
- d) the software companies don't lose out, as I bought the original.

I usually get a pirate copy of a game first; if the game is crap then the disk is formatted. On the other hand if it's good then I will buy it. If companies release software as bug-ridden as *F-24* then they deserve everything they get. In my mind this is the same as piracy.

In short if the game is worth playing it's worth buying. If it sucks leave it be and maybe they'll get the message.

The Dream Master, Havoc

MAIL SHORTS

Semantic debate

Your reply to Alan Gilhom (*Express 114*) may have missed the real meaning of the phrase 'Rich bastards'. It was not meant humourously, but was 'obscene' in the sense that it was pandering to the emotion that prevents enjoyment of earned goodies – envy, no less.

Pedantically, if you use 'low budget' the alternative is 'high budget'. As you have commented before, piracy has many causes, but envy and a desire to 'get back at' the organised commercial sharks with the apparatus available makes it happen.

David Gregory Mayne, Armagh

Well, my dictionary defines 'obscene' as 'filthy: offensive to the senses or the sensibility, especially in a sexual sense', so I still think the word is being misused in the context of our 'Rich bastards' faux-pas.

But you're quite right, David – envy and greed are certainly responsible for a lot of the unpleasantness in the world, and we may have added such a message subliminally. Sorry.

H F-W

Chess master

I enjoyed the Chess Kings article in *Express 114*. Regarding Fred Felkers' offer of free copies of Delta – where does one contact Fred? Has anyone written a good chess program in Forth?

Alan Jones, Oakford, Devon

The honest answer is that we can't help on either question Alan! Over to the chess fans amongst our readers – I'll print any helpful answers I get.

H F-W

69 going on 70

I couldn't help having a good laugh at your reply to Older Reader in which you thank him for being 'the first of our older readers to drop me a line. Two whole years ago, you printed a letter from a then-67 year-old asking advice.

69 year-old reader (70th birthday 25/12/91), St Lawrence, Jersey

Hardly fair of you – me and my lflx weren't looking after the letters pages in those days... But are you our oldest reader? I think we should be told.

H F-W

Getting in quick...

Could I just be the first to say Happy New Year to you all on Express?

Gus Chandler, Nottingham

Er no. Not by a long chalk!

H F-W

Over the last ten or twenty years, computer technology has become so integrated into weaponry and strategic planning for combat that wars could not now be fought without it.

This integration has speeded up over the preceding five years or so due to huge advances in the technology, so that the present Gulf conflict is already being dubbed 'The First Microchip War'. With this in mind, we decided to take a look at the sort of technology which the armed forces can call on, both at headquarters and 'on the front line'...

BACK AT BASE

America in particular has vast computational resources at its army's disposal. In military headquarters at various locations across America, huge supercomputers – far faster than anything available in the civilian world – run endless battle simulations. Seen the film *WarGames*? Well, it's not at all far from the truth. Some of the best computer programmers in the world work in total secrecy to perfect the programs which, in the final analysis, will win or lose any war.

Some of the computers known to be used by the military include the latest Cray machines; although Cray can no longer claim to make the world's fastest civilian computers, rumours have it that the company produces incredibly fast machines in total secrecy – machines which are only purchased by the American military. One estimate is that over 50 per cent of the computers made by Cray are purchased by the armed forces.

Another supercomputer used by western armies is the Touchstone, manufactured by Intel. This machine – which costs the equivalent of the entire military budget of some small countries – contains up to 2,000 Intel i860 processors, each of which is as powerful as a Cray 1. The Touchstone operates at over 130,000 MFlops (million floating point operations per second), is shipped with 128 gigabytes of RAM as standard and has over a terabyte (a million megabytes) of disk storage. Most of its uses are so classified that the military won't even confirm that they use the machines, but one known use is in the design of the so-called 'Smart Weapons' – combat missiles which communicate with each other during flight for the most effective 'hit' on the target.

TERRAIN MAPPING

Another major use of the supercomputers is 'terrain mapping'. This is the process of taking reconnaissance photographs and turning the data they contain into three-dimensional representations. These realistic views can then be used to create more realistic battle plans – and also to program 'terrain following' missiles. The graphics front-ends on these GISs (Geographical Information Systems) would put the best arcade games to shame.

COMPUTERS AT WAR

Both on the front line and back at base, the armed forces are using the latest technology in the Gulf. Express takes a closer look at the kind of hardware and software the Western forces have at their disposal.

PROVE IT!

The main programming language used by the military is ADA, although there are still FORTRAN programs in existence, controlling some of the older hardware. For the 'intelligent' missile systems, the Artificial Intelligence language Lisp is often used.



• Husky's ruggedised PC's – available to the public, but also widely used by the military.

There is a great deal of work going into the field of 'formal methods' – essentially, 'proving' that a program is correct. Because such complex programs are present in, say, a missile guidance system, it is virtually impossi-

ble to make sure that there are no errors (we all remember that television footage of a submarine-launched missile spiralling elegantly back into the sea on top of the sub because of a software failure). To try and prevent programming errors which could potentially be disastrous, mathematicians and computer scientists are working on ways to prove that programs are correct without having to run them. Look out for 'OBJ' – a formal methods language – becoming more prominent in the next few years.

RADIO WAVES

Although not as sophisticated as the computer hardware way back behind the lines, front-line computer technology is still extremely powerful. If you imagine, for example, radio operators sitting, tapping away at Morse keys, forget it. These days, a typical military radio will cost more than the soldier operating it will earn in his lifetime – and contain computer technology far in advance of what most people will ever see.

To avoid detection, radio signals are not transmitted on a fixed frequency. Instead, transmitter and receiver are 'synced', and a code key (which changes every day, or even every hour) is entered by the operator. The key is used to generate a pattern of different frequencies, so that the radio is only on one band for a second or two before switching to the next. This makes it effectively impossible for enemy agencies to monitor more than a fraction of any message.

Even assuming that a message were intercepted, the encoding techniques used are so complex that it

WARS OF THE FUTURE

Vast amounts of time and effort are expended on the collection of information to assist the field units.

● AWACS (airborne warning and control system) planes patrol, constantly monitoring the radio waves and scanning the area with radar, gathering information which is sent not only to ground-based command posts, but also to aircraft currently flying, giving them the most up-to-date information possible.

● Satellites contain cameras powerful enough to read car licence plates (this was claimed years ago, but is now most definitely true).

● Reconnaissance aircraft have incredibly sophisticated camera units, with which they take detailed pictures of the landscape for later conversion into computer-based models of the terrain. These units contain both infra-red and high-powered conventional cameras, which can be 'locked on' to a target. The plane's pilot selects the target through a viewfinder, and then the cameras tilt and swivel automatically to remain trained on the selected area, taking photographs for as long as possible.

● Spies (now there's an outdated word!) behind the enemy's front line gather data

and transmit it back using high-powered radios which transmit the messages in short bursts, foiling radio direction-finding units.

Because accurate information is so vital to an army's success, and because the vast volume of information being gathered needs to be analysed on computer, much work is now being done on how to sabotage the enemy's computer systems. One way to do this is to introduce viruses or Trojan horses into the systems. As discussed in Comment this week, the US government is already known to be working in this area. And it is

already being speculated that the French have introduced Trojans into the Exocet missile guidance system which means that it can never be used against French equipment; indeed, speculation is rife that the French could even take control of an enemy Exocet in flight and turn it back against its owners.

Although very few details are being released by governments – for obvious reasons – it is clear that more effort is going into 'anti-computer warfare'. For, as one leading military figure put it: "At the end of the day, the side with the best intelligence will be the winners."



• On the battlefield, customised terminals such as the FPC 2000 are invaluable for keeping commanders updated with information.

would take even the fastest computer a lifetime to decode the messages. Although the American military use the DES (Data Encryption Standard) algorithm for non-classified transmissions, it is rumoured that the CIA can break the code – and if the CIA can do it, the thinking goes, so maybe the enemy can. So for classified messages, far more sophisticated methods are used – just printing the names of the methods in *Express* could get the editor and the publisher locked up for life!

WEAPONS TECHNOLOGY

Weaponry is the area where the advances in computer technology are the most impressive. Because a missile's size and weight are critical, much of the miniaturisation technology which is now being seen in commercial devices was pioneered by the military, in order to be able to fit more sophisticated computers into the same space in the projectile.

Whereas 20 years ago a missile was merely fired at a fixed trajectory with a set power – that trajectory and power being calculated by massive computers so that the missile would (hopefully) land on the designated target, nowadays missiles can guide themselves, locking on to targets and even distinguishing 'friendly' from 'enemy' vehicles.

A number of different methods are used for missile guidance. Some of these are:

● **Semi-active pulse radar.** These missiles require that the aircraft from which they are fired retains the enemy in its radar until the missile hits. Thus they are controlled from the plane – should the pilot lose radar contact with the enemy, the missile becomes useless.

● **Active radar.** Missiles with active radar guidance actually contain their own radar in the nose cone. The missiles are known as 'fire and forget', since once launched they home in automatically on a target. Most of these missiles use 'Doppler radar', which uses a variation of the Doppler effect to ascertain the distance to the target.

● **First generation infra-red.** Now almost obsolete, first generation IR weapons can only home in on the engine of an aircraft, which means that they are easily 'fooled' – simply by turning the plane so that the missile does not have a direct 'line of sight' to the engine.

● **Second generation infra-red.** Far more sophisticated, second generation devices not only home in on the heat of the engine, but also on other surfaces of the aircraft which have been heated by air friction. The lat-

est missiles have such sophisticated computers that they can recognise – by the infra-red 'signature' the make of aircraft, thus ensuring that they are aiming at the correct target.

● **Anti-radiation.** Missiles containing this technology home in on radar signals – thus targeting any vehicle or installation which is using its own radar. This technology is still fairly new, but there are already missiles which, when launched, will circle round until they detect a radar emission – thus foiling the technique of shutting down all radar equipment when directly under attack.

● **Terrain following.** Some missiles have 'maps' of the terrain built in to them. After being programmed with the target and launched, they can recognise the countryside over which they are flying via a mixture of radar and infrared imaging, and match this information with the maps which they contain, correcting course as necessary. Highly efficient, these missiles can fly extremely low over the ground, thus avoiding radar detection.



• Data input terminals such as the Trend 611 shown here are linked to communications equipment for ultra-secure data transmission in the field.

FRONT-LINE SUPPORT

Because wartime scenarios are now so complex, commanders in the field must have access to computers to plan their manoeuvres. But it's no use just shipping an Amstrad PC into the battlefield; conditions are somewhat more rigorous than in the average office. So some companies have developed 'battle-ready' comput-

ers and data entry devices for use in the front line. These are designed to cope with extremes of heat and cold, be weatherproof – everything from sandstorms to tropical typhoons – and to avoid emitting any electromagnetic radiation (any emitted signals can be detected and read by the enemy; someone 50 feet away could read what is on your computer screen with the right radiation-detection equipment).

Husky is well known as a company which produces a range of extremely rugged portable computers which are available to the public as well as to the military. The Husky Hunter, for example, is an MS-DOS PC with a 3.5-inch disk drive capable of running all the standard software – and, of course, the extremely non-standard programs used by the military. It is designed to be as sturdy as possible, and costs a hefty £3,444.

As well as 'ruggedised PCs', some companies produce specific-purpose military computers, such as the Thompson-CSF FPC 2000 which, according to the sales literature, is a "data entry device for communications networks management, logistics processing and control, weapons systems command centres and electronic warfare command posts."

THE BAD NEWS

Front line kit is vital. A computer going down at the wrong time could mean the difference between a battle lost and won. And yet the machines are not treated well – they are banged about, dropped, stood on, thrown and generally mistreated to such an extent that it's a miracle that they work at all. But the physical damage is only a minor worry compared to the damage that could occur during a nuclear attack.

Not, surprisingly, just the blast. A computer could be well out of blast range and still be completely unusable, due to a phenomenon known as EMP – Electro-Magnetic Pulse. If a nuclear weapon should be dropped, a huge surge of electromagnetic radiation would effectively 'blow out' any electronic machinery within a huge radius. The problem facing the designers of battlefield equipment is that it's extremely difficult to simulate this (without actually dropping a bomb), so no-one knows quite how much equipment would be effected, or whether it's possible to design electronics which would be immune.

But then, if a nuclear missile was launched, the last thing that most of us would be concerned about is whether the PC was working. ■

24-HOUR SERVICE
OPEN: MON - FRI 9.00 - 5.30
SATURDAY 10.00 - 2.00

Business Technology Centre

PHONE OR FAX: 0282 831900

SEIKOSHA SL92
 24 PIN 42K BUFFER 9 FONTS
£299 INCLUDES ON-SITE WARRANTY

DOT MATRIX PRINTERS

9 PIN 80 COLUMN		draft/nlq	£
STAR	LC-10	144/36	125
STAR	LC-10 colour	144/36	166
STAR	LC-10 colour comm 64	144/36	166
CITIZEN	120D PLUS	120/25	105
CITIZEN	120D PLUS comm 64	120/25	105
CITIZEN	PRODOT 9	300/60	265
SEIKOSHA	SP2000 (21k buffer)	200/40	199*
SEIKOSHA	MP1350	300/50	359*
PANASONIC	KXP 1180	192/36	139
MAN. TALLY	MT 81	130/26	104
OLIVETTI	DM 100SPR	200/30	119*
EPSON	LX 400	180/30	135

9 PIN 136 COLUMN			£
STAR	LC-15	180/45	255
CITIZEN	PRODOT 9 x	300/60	345
PANASONIC	KXP 1592	216/45	255
SEIKOSHA	MP5350	300/50	499*

24 PIN 80 COLUMN			£
STAR	LC24-10	170/57	195
CITIZEN	SWIFT 24	192/64	239
CITIZEN	PRODOT 24	200/60	369
PANASONIC	KXP 1124	192/63	219
SEIKOSHA	SL92 (42k buffer)	240/80	299*

24 PIN 136 COLUMN			£
STAR	LCX24-15	200/67	325
STAR	XB24-15	240/80	510*

ALL DOT MATRIX PRINTERS MARKED WITH A INCLUDE A ONE YEAR ON-SITE MAINTENANCE CONTRACT.

A ONE YEAR ON-SITE MAINTENANCE CONTRACT IS ALSO AVAILABLE FOR MOST OTHER DOT MATRIX PRINTERS - ONLY £16.

A FULL RANGE OF SHEET FEEDERS, TRACTORS, ACCESSORIES AND CONSUMABLES ARE ALSO AVAILABLE FROM STOCK - CALL FOR DETAILS.

SWIFT 24 COLOUR
 24 PIN PRINTER INC. COLOUR KIT
£269

NON-IMPACT PRINTERS

		£
SEIKOSHA	OP105 LED (desktop size, takes legal paper)	1299*
STAR	LASER 8	1179*
STAR	LASER 8 DUAL BIN	1599*
H. PACKARD	LASERJET II	1199*
H. PACKARD	LASERJET III	1299*
OLIVETTI	PG 306	899*
CANON	BJ130 INK JET	519

ONE YEAR ON-SITE MAINTENANCE IS INCLUDED IN THE PRICE OF ALL THE ABOVE PRINTERS MARKED WITH A*.

A FULL RANGE OF TONERS, FONTS, MEMORY CARTRIDGES, INK CARTRIDGES AND OTHER ACCESSORIES ARE STOCKED - PLEASE CALL FOR FURTHER DETAILS.

OLIVETTI PG306
 LASER PRINTER
£899 INCLUDES ON-SITE WARRANTY

PLOTTERS AND SCANNERS

HITACHI	681 A4/A3 PLOTTER	520
HITACHI	674 A4/A1 PLOTTER (includes one year on-site warranty)	2149*
PANASONIC	FX-RS505 SCANNER (with I/F card, cables, IMAGE AND OCR software)	919
NISCAN	HAND SCANNER	139
NISCAN	OCR software	189

DRIVES

CITIZEN	OSDD 05A-WD 3.5" 720K in 5.25" KIT	59
CITIZEN	OSDA 39C-WD 3.5" 1.44mb in 5.25" KIT	69
CITIZEN	OSD 76A-WD 3.5" 720K AMSTRAD KIT	59
INTERNAL	5.25" 1.2mb	59
INTERNAL	5.25" 360K	69
JAVELIN	HC20 20mb XT HARD CARD	185
JAVELIN	HC30 30mb XT HARD CARD	199
FILECARD	HC40 40mb AT HARD CARD	229
KYOCERA	KC 20B(s) 20mb XT/AT DRIVE, 3.5"	138
KYOCERA	KC 30B(s) 30mb XT/AT DRIVE, 3.5"	158
KYOCERA	FRAME 5.25" kit for 3.5" hard drives	5

DRIVE CONTROLLERS AVAILABLE - CALL FOR DETAILS.

CABLES AND ACCESSORIES

PRINTER CABLE	1.8 metre	8
PRINTER CABLE	3.0 metre	9
SERIAL CABLE	1.8 metre	10
T SWITCH	2 way serial	18
T SWITCH	2 way parallel	18
T SWITCH	2 way serial crossover	25
T SWITCH	2 way parallel crossover	25
BUFFER	64k in-line	79

ACORN A3000
 1Mb RAM KIT
£89

COMPUTERS

ALL OUR COMPUTERS INCLUDE A MONITOR.

COMMODORE
 ALL MODELS INCLUDE ONE YEAR ON-SITE MAINTENANCE

	MONO	CGA	VGA MONO	VGA COLOUR
	£	£	£	£
PC 10 SD	485	615	635	725
PC 10 DD	535	665	685	775
PC 20 HD20	675	795	845	945
PC 30 HD20			967	1128
PC 40 DH40			1229	1379

COMMODORE SPECIAL
 PC 10SD INC 40MB DRIVE & MONITOR
 INCLUDES ON-SITE WARRANTY
 MONO CGA MONO COLOUR
 VGA VGA
£699 £829 £849 £949

SAMSUNG
 ALL MODELS INCLUDE ONE YEAR ON-SITE MAINTENANCE

	MONO	VGA MONO	VGA COLOUR
	£	£	£
SPC 3000 SD	483	589	789
SPC 3000 DD	569	659	859
SPC 3000 HD20	739	839	1039
SPC 6512 DD		919	1119
SPC 6512 DD HD40		1109	1309

	MONO	EGA	VGA MONO	VGA COLOUR
	£	£	£	£
16TE SD	419	699		
16TE DD	459	759		
16TE HD30	619	919		
286x SD			639	819
286x HD40			939	1119

HYUNDAI 16TE
 MONO XT AND MONITOR
£419

HYUNDAI 286X SD
 HD 40 AND VGA MONITOR
£1099

PORTABLES

SHARP	4602 DD	789
SHARP	5541 286 HD40	2099
SAMSUNG	S5200 286 HD32 (includes on-site maintenance)	1707*

NOW IN STOCK
 SHARP 8041 & 8081 386 LAPTOPS - CALL FOR PRICES.

SHARP 5541
 HD 40 286 LAPTOP
£2099

THIS IS ONLY A SMALL SELECTION OF THE PC'S THAT WE SELL - CALL FOR FURTHER DETAILS.

PHILIPS CM9053
 EGA MONITOR
£249 INCLUDES ON-SITE WARRANTY

MONITORS

			Price	£
MONO	HYUNDAI	HMM1200	12"	65
MONO	PHILIPS	BM 7513	12"	69
MONO	PHILIPS	BM 7913 FST	12"	80
MONO	SAMSUNG	MA 2671	12"	81
MONO VGA	PHILIPS	BM 7749 FST	12"	107
MONO VGA	SAMSUNG	ML 2611	12"	81
MONO VGA	SAMSUNG	ML 4571	12"	95
MONO A4	SAMSUNG	MP 5671	A4	634 (includes card and software)
CGA	PHILIPS	CM 8833	14"	199
EGA	PHILIPS	CM 9053	14"	249
EGA	PHILIPS	CM 9073	14"	289
EGA	SAMSUNG	CM 4551	14"	281
VGA	PHILIPS	3CM 9809	14"	325
VGA	SAMSUNG	CJ 4581	14"	281
MULTISYNC	SAMSUNG	CT 4581	14"	340

ALL MONITORS INCLUDE ON-SITE WARRANTY EXCLUDING THE HYUNDAI HMM 1200.

MDA/CGA CARD with PRINTER PORT	45
MDA/CGA/EGA CARD	99
VGA CARD	129

UPGRADES AND ENHANCEMENTS

MDM2400 PC CARD MODEM
 INCLUDING SOFTWARE
£135

AKHTER	MDM 2400 PC CARD MODEM	135
FAXTEL	FAX SWITCH (auto switches calls to fax or phone)	69
KEYBOARD 84	84 KEY UK LAYOUT XT	41
KEYBOARD 102	102 KEY UK LAYOUT XT/AT	52
RAM CARD	576K - XT	27
RAM CARD	2Mb - specify XT or AT	93
SERIAL MOUSE	includes DR Halo III software	38
MULTI I/O CARD	XT - RS232/printer/clock/games/floppy	54
I/O CARD	AT - RS232/Printer	54
I/O CARD	XT RS232	19
UPS	250W	199

MEMORY - call for prices of SIMM's, SIP's and DRAM's.

SUPERDEALS

SCHNEIDER	220 AT MONO PC SYSTEM	909
SCHNEIDER	20mb HARD DRIVE KIT	199
HYUNDAI	360K DISK DRIVE	45
YE DATA	720K DISK DRIVE	49
SHARP	JX 9300 LASER PRINTER	949
SHARP	JX 720 INK JET PRINTER	649
MICROVITEC	1431 DS4 - BBC MONITOR	169
MICROVITEC	1451 MS4 - BBC MONITOR (metal case)	229
MICROVITEC	1456 DL2 - NIMBUS MONITOR	249
MIRACOM	COURIER HST MODEM 9600/ V22bis/V22/V21/V23 & MNP	539
IBM	MODEL 30-021	849
IBM	MODEL 50-061	1599

WE ARE AN ACORN EDUCATIONAL DEALER - CALL FOR PRICES.

TERMS

ALL PRICES EXCLUDE VAT. PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. CALL TO CONFIRM BEFORE ORDERING. STRICTLY CASH WITH ORDER. ACCESS, VISA AND AMERICAN EXPRESS WELCOME. POSTAL ORDERS, CHEQUES AND BANKERS DRAFTS ACCEPTED. OFFICIAL ORDERS FROM EDUCATIONAL AND GOVERNMENT ESTABLISHMENTS, CORPORATES AND PLC'S WELCOME.

DELIVERY

ALL GOODS NORMALLY DESPATCHED WITHIN 24 HOURS FROM RECEIPT OF CLEARED PAYMENT - subject to stock availability.
 PC'S AND LASERS £15.00 NEXT DAY DELIVERY
 OTHER LARGE ITEMS £10.00 NEXT DAY DELIVERY
 SMALL ITEMS £5.00 4 DAY DELIVERY

WARRANTY

ALL GOODS CARRY MANUFACTURERS WARRANTIES. ON-SITE WARRANTY AVAILABLE ON MOST DOT MATRIX PRINTERS AND PC'S - CALL FOR DETAILS. TECHNICAL SUPPORT AVAILABLE. E. & O.E.
 Goods not offered on trial basis.
 Goods are offered for sale subject to our standard terms and conditions of sale - available on request.
 WE STOCK MANY MORE PRODUCTS - CALL FOR DETAILS.
 LARGE STOCKS OF FLOPPY DISKS AND RIBBONS CARRIED.

Business Technology Centre

HOLE HOUSE FARM, BURNLEY RD, CLIVIGER, LANCS., BB11 3RF
 Tel. & Fax: 0282 831900 (24 HOURS)



PHILIPS MONITORS

FACTORY REFURBISHED STOCK

Inexpensive solution for:-

- ★ Upgrade or additional monitors
- ★ Laptop external colour display
- ★ Service replacement for faulty units

Ex-démo and display units in good condition.
Factory tested and repacked to specification.

WARRANTY - Six Months

14" VGA Colour	9CM 082	(0.31 dp)	£160
	3CM 9609	(0.39 dp)	£150
14" EGA Colour	9CM 073/9073	(0.31 dp)	£130
	9CM 053/9053	(0.39 dp)	£120
14" CGA Colour	8CM 852/8052	(0.39 dp)	£80
	8533 & 8832	(0.42 dp)	£80
14" VGA Mono	7BM 749	Paper White	£60

Data cable terminations:-

- VGA Colour - 15pin D shell (plug);
- EGA Colour - 9pin D shell (plug);
- CGA Colour - DIN & SCART sockets;
- VGA Mono - 15pin D shell (plug).

CARRIAGE & INSURANCE:

for next (working) day delivery: **£12.50**

All prices quoted are subject to VAT
All items offered are subject to availability

Information sheet available on request
TELEPHONE ORDERS TAKEN USING



COMMONSIDE

Unit 13, 193 Garth Road,
Morden, Surrey. SM4 4LZ
Tel: 081-330 7533 Fax: 081-330 4838

Macintosh

USELESS COLOUR

Brilliant. Absolutely brilliant. My heartfelt congratulations go out to Strata Inc, an American company based in St. George, Utah, which has already won the 1991 prize for the most pointless Macintosh development of the year.

The company has proudly announced that it is soon to be shipping a product called *StrataVision Paint*, which - for a mere \$695 - will offer users a palette of 281.5 trillion colours. This is, indeed, 64-bit colour - twice the 32-bit standard that Macs presently use.

According to the company's director of corporate communications, Ken Perkins, "The usefulness of the program is that in some cases, when you go to output a 24-bit colour image there might still be some banding. With 64-bit colour, instead of making a jump between colour gradations, there's more of a range in between."

The problem with all of this? Ken Perkins again: "The practical limitation right now is that there is no way to display it or output it."

Yep, that's right, ladies and gents. No monitor is capable of displaying that many colours, and no output device is capable of printing them. But apart from that, I can see that the program will have hundreds of uses...

If you're the sort of person who finds products like the above irresistible, you can get hold of Strata Inc by phone on 0101 801 628 5218, or by fax on 0101 801 628 9756.

GOING DOWNMARKET

Presumably the reason that you bought a Macintosh was that you wanted to get away from that hideous monstrosity that PC users call DOS. And you didn't want to be stuck with feeble imitations like those invented by Atari, Commodore

and the like. Or, even worse, Windows, which is a little like the Macintosh experience must appear to a myopic user with a boxing glove on the hand controlling the mouse.

No, this isn't going to degenerate into one of those MCIBTYDSJNSCXB pieces with Hayden Fitz-thing loves so much. What this is all leading up to is an announcement that Insignia Solutions has released a special version of *SoftPC* for the Macintosh Classic and LC.

Yes, having last week told you how to make your Macintosh look like a rather pale-coloured NeXT machine, this week we go to the other end of the market and look at how to persuade your Mac that it's a lowly IBM PC-compatible machine.

SoftPC has been around for some time, but the new version just announced has been specially tailored for the Classic and LC - it won't work on Macs other than the Classic, LC, SE and Portable - and has a price somewhat lower than the original version (which still exists for anyone with 'higher-end' Macs). Oh, and you'll need at least 2Mb of RAM.

Essentially *SoftPC* provides complete 80286 PC compatibility for your Macintosh. The tech specs of the emulation are: emulates the Intel 80286 processor (Real Mode), 256-640K of PC RAM, CGA, two serial ports, one parallel port, drives A: floppy drive, C and D: hard disk documents, E: Mac folder access. MS-DOS 3.0 is supplied, pre-installed.

The application runs entirely in software, and although I've not had a chance to use the new version, we've had the original *SoftPC* in the office for a while and it really does provide excellent compatibility. We even managed to get PC games up and

POSTCARD FROM AMERICA

The new year is at hand and everyone's glowing with an overwhelming flood of optimism, tempered with a liberal splash of industry realism. Or is it leftover Schnapps? There are so many things to look forward to - hard drive crashes, funky interfaces, and lots of fun. You can imagine my mixed frame of mind when the postman dropped off the Version 1.01 update of *Astrix*, Microseed's digital astrologer.

The upgrade was done to fix "astrological miscalculations." Their technical support reported that the "Ascendant was off by several degrees." Thank heaven they've fixed the program!

When I thought of the many world leaders using the program, believing in good faith that they were getting the most accurate prediction science available, and basing important decisions of international consequence on the results, it made my knees turn to marmalade. I'd say that Saddam Hussein's invasion of Kuwait was off by several degrees. Easily.

Astrix would be a lot of fun at parties, or perhaps a new Mac business opportunity. It creates daily and natal horoscopes, as well as charts for users.

Predictions are divided into subjects, career/finance, family/friends, conflicts, and romance.

The accuracy of the predictions mean little to me. I've always been off by degrees.

The weekly meeting of the Berkeley Macintosh Users Group has been featuring Top-Ten lists. I must take the blame on this one.

The Top Ten computer pickup lines:

10. Is that a modem in your pocket, or are you just glad to see me?
9. Of course our formats are compatible!
8. I've had all four eyes on you, Baby!
7. Why do you think they call them "X"Commands?
6. Mmmm, you smell nice! Is that musk, or flux remover?
5. You've got the booleans I've been searching for.
4. Spread sheets are my speciality.
3. I can bench press four Mac Portables!
2. You know what they say - hard drive, hard ...
1. Sure I'm a user, Baby - but aren't we all?

David Morgenstern

running – although that's where the one problem really did show itself; the emulation is sloooooow. While some reduction in speed is to be expected – after all, the poor Mac is having to be a Mac and a PC at the same time, all from the one CPU – some games really were unplayable, even when played on the Mac IICI, the second-fastest machine in Apple's range.

Still, if you have a vast collection of PC programs that you want to run, and you don't mind playing them at a rather lesser speed than you're used to, SoftPC offers a reasonable answer to your prayers. Couple it with another program from Insignia, AccessPC Version 1.1, which allows you to mount 3.5-inch PC disks on the Mac by just slamming them in the disk drive – no messing about with Apple File Exchange – and you could easily forget that your Macintosh was anything other than a PC. After all, that's why you bought it, isn't it...

Both programs will ship on February 7th from Insignia Solutions (0494 459426). Retail price for SoftPC is \$199.95, and \$129.95 for AccessPC Version 1.1.

HURRY, HURRY, HURRY

If you rush, you might just be in time to catch the tail end of MacSolutions' January sale.

If you need a disk drive, these are the people to see; you can get an external 20Mb unit for £240 plus VAT, if they have any left. Prices rise to £575 plus VAT for a 210Mb drive, for the memory hogs among you. The company also tends to have small quantities of software at radically reduced prices; for example, in the latest price list they had eight copies of MacPaint at £50 each.

Contact MacSolutions on 0535 690001; it's open until 7pm, Monday to Friday.

Ian Wrigley

HIGH QUALITY DISKETTES

PIN NUMBERED QUALITY DISKETTES 100% CERTIFIED AND GUARANTEED 100% ERROR FREE. MANUFACTURED AND QUALITY ASSURED BY AN INTERNATIONAL BRAND NAME

3 1/2 DS COLOURED
39p EACH

3 1/2 DD 35p EACH
RED, WHITE, BLACK, YELLOW, ORANGE, GREEN. **ORDERS OVER 100 RING FOR PRICE**

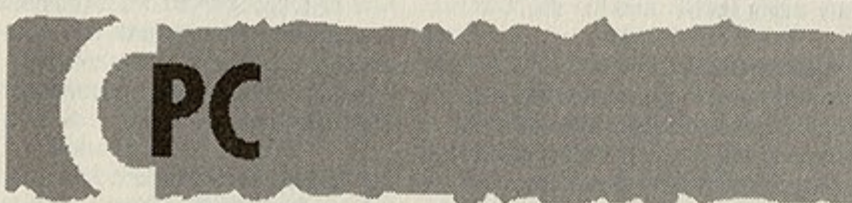
3 1/2 DS HD 75p **5 1/4 DS COLOURED DD 28p**
5 1/4 DS DD 22p **5 1/4 DS HD 42p**

EA STORAGE BOXES
3 1/2 PLASTIC LIBRARY 89p 3 1/2 40 cap...£4.20 3 1/2 80 cap.. £4.60
5 1/4 CASES 5 1/4 50 cap...£4.40 5 1/4 100 cap £4.90

EURODATA
12A QUAKERS YARD
ADAM AND EVE ST
MARKET
HARBOROUGH
LEIC LE16 7LT
TEL: 0858 433992
FAX: 0858 432549

LIFETIME GUARANTEE
ALL PRICES INCLUDE DISKETTE LABELS ENVELOPES AND VAT
ORDER NOW WITH POSTAL ORDER OR CHEQUE MADE PAYABLE TO EURODATA, OR TELEPHONE YOUR ORDER USING MASTERCARD & VISA. SUBJECT TO AVAILABILITY
ADD £3.20 P&P

RING FOR MEMOREX BRANDED PRICES



YOU'VE NEVER HAD IT SO GOOD!

The latest word on those Amstrad prices (although you probably already know it if you've been sniffing around the shops) is that the major stores have cut £20 off the price of the GX4000 console to sell it at the £80 mark, while the 6128 Plus is down from £430 to £380!

It's all great news if you've been dithering around, not sure whether to buy one of the new machines or not – not so good, of course, if you've already bought one at the full launch price. Yes, there are going to be a few people a bit miffed with Amstrad right now, but the Brentwood company is obviously more worried about achieving a big market penetration quickly than anything else.

HARD TIME FINDING A HARD DRIVE?

Does anyone remember the news story about Siren Software and the company's planned hard drive for the CPC? Think of the advantages... 20Mb of data storage in one unit... no more floppies to fiddle with... no more desktop clutter... no more lost files... no more sign of a hard drive in the event, either.

To be fair to Simon Cobb of Siren, he did make it clear that the hard drive was only an idea, and wasn't actually planned in any real and concrete sense, er ahem... (think I've got myself into enough trouble by now)

Well anyway, those still longing for a hard drive for their Amstrad will be interested in this snippet from Glen Scott of Great Yarmouth:

"...you can purchase a 24Mb hard drive from Fritz Obermeier Computing Ltd. The cost is about £380. Telephone on 010 495732 3246..." (A German number.)

NORTH AND SOUTH

French software houses have always had a bit of a reputation of original, innovative and, well, weird games. And the latest offering from Infogames,



• North and South: Your tactical map, and the nerve centre of your whole campaign.

North and South (£9.99 cassette, £14.99 disk), is no exception.

Actually, N & S is more original and innovative rather than weird, based as it is on a real-life historical conflict, the American Civil War. It's a tactical war game at heart, but what sets it apart from most computer war games is that it's actually interesting... no, sorry, I mean graphically interesting. (Phew, close one that.)

The strategic part is a map of the Eastern USA which helps you move your armies from state to state. The aim is to capture enemy forts, pillage trains and wipe out the enemy's forces wherever. Forts and railways are the key, because whenever you capture and hold these two you get bags of loot with which to buy new armies.

The fort and train-bagging sections are pure arcade action. You control a single character racing along the roofs of the carriages (or the fort's, er, fortifications) armed only with a large supply of throwing knives and his fists. As if this one-man crusade wasn't enough, you've got to complete the assault within a time limit...

The third part of the game involves the battles between armies. Each army consists of an infantry section, cavalry and artillery. You can control each independently, and it's up to you to find the best tactics on the battlefield.

N & S's graphics are quite superb. They're colourful, detailed, well-



Your computer is the only teacher which YOU CONTROL!

Whatever your age, whatever your subject - let your computer help you learn.

Subjects include ...

French, German, Spanish, Italian, English History, Geography, Science, General Knowledge, Football, First Aid, Sport, England, Scotland, Natural History, Junior Spelling and Arithmetic

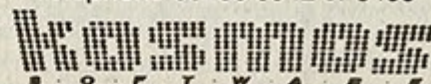
Available for most popular home & business computers



Kosmos are specialist producers of Educational Software designed to help you enjoy learning from your computer. Our programs even allow you to add your own lesson material.

Write or telephone for a FREE 20-page BROCHURE of our Educational & Leisure software
Please state your computer type

Kosmos Software Ltd, FREEPOST (no stamp needed)
DUNSTABLE, Beds. LU5 6BR
Telephone 05255 3942 or 5406



NEW LOW PRICES FROM BCS

INCL FREE LABELS

BULK BUYERS

50 3 1/2 DS/DD.....£20
100 3 1/2 DS/DD.....£33
150 3 1/2 DS/DD.....£47
200 3 1/2 DS/DD.....£60
400 3 1/2 DS/DD.....£115
500 3 1/2 DS/DD.....£135
1000£CALL

Price incl VAT & P&P

DS/DD

3 1/2

DISKS & BOXES

50 Disks + 80 Box£23
100 Disks + 80 Box£37
150 Disks + 80 Box£50
200 Disks + 80 Box£63
400 Disks + 80 Box£118
500 Disks + 4 80 Boxes.£148

Price inc VAT & P&P

5 1/2 DS/DD.....20p
5 1/2 DS/HD.....38p

SONY BULK **38p**

3 1/2 High Density **60p**

KAO BRANDED **69p**

3 1/2 40 Cap Box£4
80 Cap Box£4.30

3 1/2 150 Cap Posso Box **£15**

5 1/4 50 Cap Box£5
100 Cap Box£5.75

STAR LC-200 Colour Printer **£199**

STAR LC-24-200 Colour Printer **£320**

Philips CM8833 MKII Monitor **£209**

ADD £3.50 FOR 3 DAY DELIVERY (FROM DESPATCH) ADD £9 NEXT DAY

AMIGAS

Screen Gems£355
+ Astra Games£385
Class of the 90's£510
First Steps.....£510
Dust Cover£5
1/2 Meg Upgrade.....£32

1/2 Meg + Clock£37
Cumana Drive£63
Mouse Mat£2.50
Zipstick.....£11
Jetfighter£12
Printer Lead.....£8

ATARIS

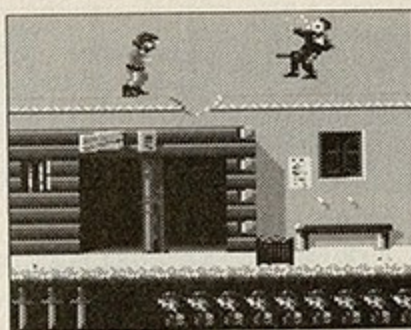
Lynx£118
Discovery£259
Turbo Pack£350
Cumana Drive£68
Dust Cover£5

Call or Send cheques/Postal Orders to

BCS LTD, 349 Ditching Road,

Brighton E.Sussex BN1 6JJ

Tel 0273 506269 or 0831 279084



• North and South: You've got to capture the fort single-handed within a time limit!

animated and very humorous (they're done by famous French cartoonist Lambil, apparently). Even better is the sound, interspersed with various Civil War dixie-type tunes.

The whole package is really quite remarkable. The various sections of the game are excellent in their own right, but have been put together into a varied and rivetting whole. Just because it's a Civil War 'simulator', don't expect a history lesson! Expect instead a fun and challenging epic that'll keep you busy for a long time.

NARCO POLICE

I'm still trying to get to grips with this one. Basically, Spanish software house Dinamic's New Year release is a rather complicated tactical arcade blast that threatens a darned sight more gameplay than most - including Dinamic's usual offerings. (Oops - only kidding, folks.)

The idea is that way in the future the drug barons have become so powerful that conventional law enforcement bodies are incapable of dealing with them. Thus a special squad of elite crime-busters has been put together from the world's best, and sent to infiltrate and destroy the junkie base, situated on a tropical island.

This is where it gets complicated. There are five tunnels into the base, all guarded to varying degrees. You have three groups of five men, armed with a variety of weaponry which you choose yourself. You send in one man at a time, but can switch from one group to another at will, as well as carry out a variety of other actions via your Personal Intercom Unit, which is displayed on the right of the screen.

Is that the lot? Nope. You can also opt for a teleport unit which will let you beam in reinforcements at the appropriate moment.

Now for the even more complicated bit. You can reach computer terminals at certain places in the tunnel network, and activating these will let you open doors in other tunnels to let your other groups through.

In play, your man moves a little bit slowly, but the graphics are otherwise excellent and very atmospheric. It's a bit too easy to be killed, but otherwise the game is pretty playable. If I ever get to plant my demolition charges in the heart of the enemy stronghold, I'll let you know, but in the meantime, you might want to give *Narco Police* a whirl. It's rather nicely done, rather deep and very different. I'm not sure yet whether it's a great game or just a good, tough one, but either way, I'm giving it a thumbs up.

SATAN POKE

While we're on the subject of Dinamic games, the devilish Satan will no doubt have been giving a few of you problems. Fear not! - here is an infinite lives poke (disk version) for both parts from Andy Price. Oh, and the access code for part 2 is 01020304

1 / SATAN Cheat *Disk*

2 / by ANDY PRICE

3 /

10 DATA 21,00,01,11,00
20 DATA 00,0e,41,df,83
30 DATA 00,21,00,01,11
40 DATA b0,a9,01,c0,01
50 DATA ed,b0,21,6c,00
60 DATA 22,7c,aa,21,65
70 DATA 00,22,c0,aa,c3
80 DATA be,a9,21,6e,00
90 DATA 22,4e,03,c3,00
100 DATA 00,3a,df,6f,fe
110 DATA 3d,20,07,af,32
120 DATA df,6f,c3,84,03
130 DATA af,32,ae,6c,c3
140 DATA 84,03,3c,c0,07
150 FOR a=&40 TO &85
160 READ x\$:x=VAL("&1+x\$")
170 POKE a,x:y=y+x:NEXT
180 IF y(<)&1850 THEN 210
190 PRINT Press any key
200 CALL &BB18:CALL &40
210 PRINT DATA error!

Rod Lawton

MICRO FIELD MAINTENANCE

BEST PRICES EVER



DON'T LOSE IT!! SAVE IT ON QUALITY 3M DISKS AND DATA CARTRIDGES

Order Qty.	DISKS 3M	1 BOX of 10	5 BOXES of 10	10 BOXES of 10
<input type="checkbox"/>	5.25 3M DSDD.....	£7.19	£34.95	£68.95
<input type="checkbox"/>	5.25 3M DSHD.....	£10.95	£52.95	£99.95
<input type="checkbox"/>	3.5 3M DSDD.....	£8.95	£43.95	£85.95
<input type="checkbox"/>	3.5 3M DSHD.....	£18.95	£89.95	£169.95

Order Qty.	DATA CARTRIDGES 3M	1 BOX of 5	5 BOXES of 5
<input type="checkbox"/>	DC 1000.....	£77.95	£369.95
<input type="checkbox"/>	DC 2000.....	£82.95	£394.95
<input type="checkbox"/>	DC 300 XLP.....	£87.95	£419.95
<input type="checkbox"/>	DC 600 A.....	£99.95	£484.95
<input type="checkbox"/>	DC 6150.....	£103.95	£499.95

Order Qty.	LASER TONERS	EACH
<input type="checkbox"/>	KYOCERA F1010.....	£35.50
<input type="checkbox"/>	MANNESMAN TALLY 910.....	£28.50
<input type="checkbox"/>	ATARI SLM804.....	£37.50
<input type="checkbox"/>	RICOH 4080/4150.....	£114.50
<input type="checkbox"/>	RICOH PC6000.....	£27.50
<input type="checkbox"/>	APPLE WRITER 2.....	£69.50
<input type="checkbox"/>	CANON SERIES 2.....	£69.50
<input type="checkbox"/>	CANON SERIES 1.....	£69.50

All prices INCLUSIVE of VAT and UK delivery.

All goods normally despatched within 48 hrs of cleared payment.

Indicate the quantity required in the box provided, cut out and send the order form with your cheque/PO made payable to: **Micro Field Maintenance.**

Micro Field Maintenance, 15, The Brampton Centre, Brampton Rd. Wath Upon Dearne, Rotherham, S63 6BB. 0709 879236.

Amiga

DTP WONDER

It's finally here. After months of waiting, SoftLogic's PageStream 2 desktop publishing system has finally been released in its all new 'official UK' guise. Thanks to those nice people at Silica Systems, I've been playing with this new program for a few of weeks now, and can safely say that I'm very impressed.

PageStream has been floating around for just over a year now, but previous releases failed to impress. The original PageStream was about as stable as a South American government, but this latest release seems very stable indeed. In about three days solid use, I managed to crash it only twice!

For those of you who have never had the good fortune to use

PageStream, it is a professional-standard desktop publishing system that can handle anything from simple business cards to entire magazines. Version 2 of PageStream includes full support for outline fonts, such as those used by Professional Page, therefore allowing you to produce text which will print at the highest possible resolution without jaggies. PageStream supports Compugraphic CS-format fonts and Adobe Type 1 and 3 PostScript fonts, as well as Soft-Logic's own brand of outline fonts.

Soft-Logic very generously hands out a total of ten different fonts (of which two are of Compugraphic format), so there's plenty from which to choose. Not only that, but it should also be able to take advantage of fonts designed for

ProPage and PC-based DTP packages. Even if this weren't enough, Soft-Logic is already hard at work on fonts packs which will further enhance PageStream.

One very nice feature is PageStream's unique Text Object facility, which takes full advantage of the power of outline fonts. As the name suggests, Text Objects are very similar to structure images; as a result, they can be easily stretched, rotated and distorted without having to mess around with font attributes.

For example, if you wanted to add a headline to a particular layout, all you would have to do is to position the text cursor anywhere on the page, type the text required, select it and then stretch it to the required size. What could be easier? This is one area where PageStream leaves ProPage for dead!

You can, of course, handle text in the traditional manner by first opening a text box (or by defining text columns). You can then set up all manner of different attributes which will effect how the final text appears. PageStream gives you control over font type, size, style, spacing, kerning, tracking etc.

Images in various formats can be pulled in and cropped with ease. As well as the usual support for IFF ILBM images, PageStream can also import graphics in a number of different formats including Encapsulated PostScript, Mac, PC and Atari format bitmapped images and even clip files from Gold Disk's Professional Draw system

I used to be a great fan of Gold Disk's Professional Page 1.3 (my review copy of 2.0 still hasn't arrived!), but PageStream has tempted me away. No other DTP program on the Amiga will let you knock up complex layouts with such ease. With PageStream 2, it's possible to create layouts in half the time it would take with the current release of ProPage (but I'll reserve my final judgement on which is best until ProPage 2.0 arrives).

As soon as my review copy of Professional Page 2.0 turns up, you can expect to see an in depth head-to-head between these two DTP heavyweights. Until then, more information about either of these products can be extracted from Silica Systems who are on the other end of 081 309 1111.

DTPPRO PACKER ARRIVES

Acclaimed PD programmer Nico Francois has launched a vastly enhanced version of his well respected

Amiga cruncher program, PowerPacker. PowerPacker 3.0 (or PowerPacker Professional as it is also known) claims to work up to 50 times faster than the previous release, 2.3b.

Some quite substantial changes have been made to PowerPacker now it has gone commercial. For starters, programs that use overlays (DPaint is an example) can be crunched. The most major change, though, is definitely in the speed department - although Nico claims speed increases of around 50 times, you can reasonably expect one of about 35 times, which is still nothing to be scoffed at.

Also distributed with PowerPacker Pro are a number of utilities which exploit the program's crunching power. These include PPSHOW (for crunched IFF ILBM files) and PPAAnim (for animations).

As an added bonus, Nico has moved all crunching/decrunching routines used by PackerPacker into a library which can be freely distributed and called from your own programs. Full instructions and files for both C and assembler are included, so there's no reason not to use them. Perhaps now we'll see other commercial software using Nico's routines!

PowerPacker Professional is available from Softville PD for just £7.99. You can contact Softville on 0705 266509.

VIDEO G SPOT

Hot on the heels of the Amiga Centre Scotland's Harlequin board is the Masterboard, from G2 Systems of Farnham in Surrey. G2, which is better known for the G2 VideoCentre genlocking system, has moved into the realms of 24-bit graphics with its new framebuffer.

The Masterboard, which fits internally to just about any Amiga above an A1500 (both types!), so A500 owners are out in the cold (for the meantime). The board can display 16.7 million colours on screen simultaneously in resolutions of 512 x 512 and standard Amiga resolutions. The price is expected to be around £2,000 which puts it on par with Harlequin. There will be a first look at this amazing machine in next week's Express. G2 can be contacted on 0252 737151.

MULTITASKING SHOWDOWN

The past couple of weeks have seen the Express letters pages littered with numerous letters from people either condoning or singing the praises of the

PageStream 2



The Amiga's 7.14MHz clock speed may seem pretty impressive to those users you have upgraded from the aging 8-bits, but sooner or later most users come to the conclusion that it still isn't fast enough. If you're using your Amiga for applications such as DTP, CAD or even Ray Tracing, the Amiga's poor old processor seems to operate at an almost snail-like pace. The answer of course is a processor accelerator

accelerators which I could mention! Another advantage of this approach is that the card works on all Amiga models - even the A1000 - so if you upgrade your Amiga 500 to something like a 1500 or a 2000, the ICE card will continue to be

performance on a 7MHz fall-back. The card itself is given on 081 309 1111. E-mail us as soon as my sample arrives. Users of Vortex' acclaimed A T Emulator, A Tonce, will be pleased to learn that there's yet

another software upgrade nearing completion that offers two new screen modes - EGA and VGA. Before you get your hopes up too high, however, the news is that they are

PageStream

• PageStream 2 redefines the standards of Amiga.

BLITZ AMIGA!

BACKUP SYSTEM

THE BACKUP DEVICE THAT AMAZED THE WORLD OF ST USERS IS NOW AVAILABLE FOR YOUR AMIGA!

BLITZ is Powerful!

- * Custom-designed backup circuit.
- * Backs up many Amiga Disks.
- * Bypasses Amiga Disk Controller.
- * Backs up from internal to external drive.

BLITZ is Fast!

- * High speed backup software.
- * Copies disks in as little as 40 seconds.
- * Reads and writes in a single pass.

BLITZ is Versatile!

- * Copies to up to three drives at once.
- * Backs up other format disks (Atari, PC).
- * Works on both A500 and A2000!

BLITZ is available *only* from

POWER COMPUTING DESIGNERS OF BLITZ ATARI

- Blitz Amiga£25
- Blitz + PC880 Power Drive.....£85
- Blitz + Power Dual 3.5" Drive...£130

Blitz Amiga and Power Drives may be ordered by postal mail order or by telephone. **POWER COMPUTING LTD** 44a Stanley Street, Bedford, MK41 7RW

0234 273000

We accept Access and Visa

(5 lines)

Please make cheques & POs payable to Power Computing Ltd

Prices include VAT and delivery. We accept credit card orders by fax on 0234 270133. We reserve the right to change prices and product lines without notice. Blitz is sold on the understanding that it is not used to contravene the 1988 Copyright Act.

COMPUTER REPAIRS

G B SYSTEMS — LINK The Repair Specialists

Sinclair 16K,48K,128K,+1,+2,+3
Commodore VIC20,16,64,128,Amiga
Amstrad 464,664,6128,8256,8512,9512
Acorn Electron,BBC,Master,Archamedies
Atari 400,800,ST520,ST1040

All the above are on a fixed labour charge plus the cost of the parts

IBM PC,XT,AT,PS2
Amstrad 1512,1640,2086,2286,2386
IBM Clones Any make / model undertaken

The above are charged on a hourly rate

Most printers and monitors repaired
Spares we can supply most parts from single ICs to complete exchange boards
Sales(new/secondhand)-Installation-Cabling

Why not save hassle and send us your computer for repair by post

Phone 081 979 5638

86 Walton Road East Molesey Surrey KT8 ODL

150 Space public car park at rear of shop

☆ sinclair QL ☆

EEC LTD MAIN SUPPLIER OF Sinclair QL COMPUTERS & PRINTERS.
QLs FROM £125. PRINTERS FROM £130.

THE EXPANDABLE SYSTEM FOR SMALL BUSINESSES, BEGINNERS, AND EXPERTS
QLs COMPLETE, JM fully tested and with 6 months warranty. £125
TV lead, QL software 2.35. QUILL - Word processor, ABACUS - spreadsheet,
ARCHIVE - records, EASEL - business graphics ABOVE WITH JS ROM £150
CUSTOMERS BUYING ONE OF THE QL COMPUTERS ARE GIVEN ONE YEAR'S FREE
MEMBERSHIP TO QUANTA (Help, Newsletters, & 400+Library Programs - most free).
QUANTA MEMBERS CAN OBTAIN A £5 DISCOUNT

★ The JM QL can run all Programs available for the QL system ★ SEND FOR SOFTWARE AND SPARES LISTS.

★ SPECIAL OFFERS ★ WHILE STOCKS LAST

NEW PHILIPS COLOUR MONITORS
14in high resolution enhanced graphics,
85 chars, RGB input. Complete with tilt
& swivel stand, and QL lead ready to
plug-in and go. RRP £379.99



£220
inc VAT

UNIVERSAL DISK DRIVE
1mb 3.5 in cased, complete with built-in
power supply, mains switch & 13 amp
plug. EXTERNAL dip switches adapt
drive for QL, PC, Atari, Amiga, etc.
Comes with full instruction book, plastic
cover and free DS/DD disk P&P £6

£75 inc VAT QL LEAD £10
TWO DRIVES £140. LEAD £15
UNCASED DRIVES
NEC FD1036A 1mb 3.5in
1/3 height £35 INC VAT
LEAD FOR DISK I/FACE £12

★ PC/QL KEYBOARDS AND INTERFACES ★

Standard QL keyboard & base£6
Epson 102 key keyboard complete with spin connector.....£25
PC to QL keyboard interface£69

MANNESMAN TALLY DOT MATRIX PRINTER Centronics Heavy duty
printer. 130 cps, 26 cps, near letter quality - Epson and IBM compatible £130
PARALLEL INTERFACE available if required £24.00

PRICES INCLUDE VAT. TERMS CWO
Minimum order £10. Carriage £8.00 for printers & QL
(overseas £20.00). Other items £3.00 (overseas £6.00)

EEC LTD

18 - 21 Misbourne House, Chiltern Hill, Chalfont St Peter,
Bucks, SL9 9UE. Tel: 0753 888866. Fax: 0753 887149

Amiga's multitasking environment. Some have been fair, others have just been utter gibberish.

Contrary to what most people seem to think, the Amiga doesn't just lock up and die willy-nilly. In the vast number of cases, the Amiga will first display a 'Software Failure' requester which halts operation of the task that caused the error.

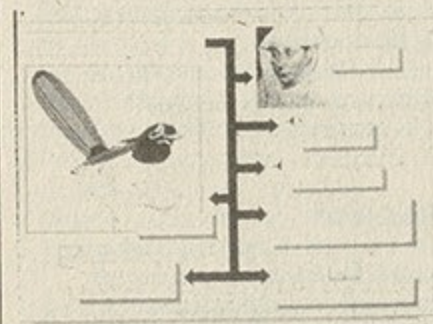
What this does not do is to stop all other tasks - this is merely a requester that informs you that a task has crashed and it would be a very wise thing indeed if you were to save whatever you are doing within other tasks. In most cases, the only data you lose is the data held within the task that actually crashed; all the rest can be

saved before you select 'CANCEL' on the Software Failure requester (this then brings up the old Guru). In many cases, it's perfectly possible to carry on working long after another task has keeled over.

If you feel unsure about the stability of your system, you may well want to invest in a handy little utility called Gomp, which supposedly stands for 'Get Outta My Face!'. Gomp (which is NOT a PD program) is a sophisticated error handler that manages to trap and control most potentially lethal system crashes. In the vast majority of cases, Gomp will allow you to kill off any rogue tasks before they get a chance to do any harm.

Jason Holborn

Archimedes



• Magpie: "hypermedia" with a bookish stance.

FROM GENESIS TO MAGPIE

Whatever happened to Jenny Hanley? Longman Logotron's Magpie flies to hand this week. It's a new 'hypermedia' package, very similar in principle to Genesis from Oak Solutions (formerly Software Solutions).

In contrast to Genesis, but following the earlier Bookbinder from Musbury Consultants, Magpie takes a deliberately bookish stance; the analogy goes as far as having little icons for dog ears and curling page edges and buttons for turning the pages forwards and back.

It looks good on screen, as it uses the outline fonts and colours, and the dialogues are enhanced with Computer Concepts' 3D-style buttons and borders.

So what can you do with it? There are two separate applications; Magpie itself for creating books and MagpiRead for just browsing through. Magpie is, if anything, simpler to use than Genesis. As you create a new book, a contents page is automatically set up. This allows you to create sections for the book, and pages within the sections. On a page, you can draw frames, then drag in any combination of text, sprite, Maestro music and drawing files. Or you can add sound samples from Clares' Armadeus. Magpie also has a simple tape recorder application that uses the Armadeus or Armadillo sampler boards.

Frames can be made into buttons. If you click the mouse over a button, it can turn to another page of the book, or another section, or make some other action happen (such as playing a sound or making a picture appear). There's a simple text search facility too, though it doesn't find text in drawings, only plain text.

All in all, it's very much like the first Genesis, but it looks slightly better and is a bit easier to use.

One innovation in Magpie is the use of data compression. Much of the data stored within a Magpie book is compressed to take up less room on disk and speed up loading from floppy. This is a feature of the upgraded Genesis 2 as well, and it allows Magpie books or Genesis applications two or three times larger to be stored on a floppy disc.

Genesis 2 looks a very worthwhile upgrade to the original, which (thanks to its inclusion in the Learning Curve bundle) has become one of the Arc software 'standards'. In particular, it adds a few new data types like Armadeus sound samples and tweaks the others.

Text is now much prettier; it handles different fonts and colours in a single frame, more like a DTP package. And the button script language of the original has grown into a full programming language - you can add your own menus, dialogues and so on.

Genesis now has more right to claim the trendy 'multi-media' tag too, as it can control the Next Technology CD-ROM drive and some software-controlled video disk players. Rare beasts indeed.

The upgrade from Genesis 1 to 2 is £60; buying the whole kaboodle is £150. More details when I've had more of a play with it. Magpie is simpler but much better value at £39 until the end of March when it goes up to £54).

ELIMINATE PODULE ENVY...

...with this simple to fit appliance. Baby Arc owners with hardware heartache can stop sighing. There are lots of expansion boxes around to let you make the most of that lone external podule slot on the A3000. The latest comes from Wild Vision, normally known as a purveyor of Arc genlock cards, video digitisers and framestores.

It looks a little ungainly, rather reminiscent of the Electron Plus 3 in fact, but is certainly less overwhelming than the Pres or Watford 'skyscraper' boxes.

The 160 expansion box has it's own power supply so as not to place too great a load on the micro. It's

chunkily built and takes two full-width modules or three normal size (half width) cards. But it's strictly modules only; the box lacks the potential for holding the hard disk or extra floppy drive that Pres and Watford's models accommodate.

PROTEXT UPGRADE

Some while ago, Arnor announced that it was making a splash in the Archimedes market - OK, dipping a toe in is more the gist of what was said. Well, it must be refraction or something, but the toe looks so much smaller under water than it did out in the open air.

But as good as its word, Arnor has released *Protext version 5* for the Arc as well as the PC, Amiga, ST, Oric, Memotech... OK, I'm lying about the Oric. And the Memotech.

Protext comes in a £150 box with three generic manuals and three disks. There are virtually no differences between the versions of the program, so a single set of manuals is fine, but the style is almost unreadable. It is too much like an academic textbook.

Installation is fine, though the process is interminable if you go through all the configuration carefully. Take a tip and miss most of it out: the defaults work just fine. The *Protext* application appears in a filer window on the desktop, but as soon as you double-click, the world disappears. It's strictly full-screen, non-multitasking, and character-based. There are no graphics, no pretty fonts, no WYSIWYG. Just how silly can you feel? Having shelled out for an Archimedes, you're still stuck there looking at a nice blue screen with white text, a status bar across the top and a crib-sheet for all the key commands by your side.

What's left? In fact, rather a good word processor. It's fast (but then it should be!). It's capable: footnotes, endnotes, indexing, nice as-you-edit reformatting, 110,000 word British dictionary for check-as-you-type and a command line for things like search and replace (and automation via command files). You can move the cursor and

highlight blocks with the mouse and undo an accidental block deletion.

Two documents can be shown on screen at the same time, and you can cut and paste between them. The page layout commands are stored in the text like *Wordwise*, and you can do very sophisticated mailmerging should you wish. But it doesn't integrate well with any of the RISCOS databases around.

It comes with a set of printer drivers for most types of common printers, but no PostScript support (strange, as it's the only word processor I've seen that supports the Compugraphic scalable fonts on a Hewlett Packard LaserJet 3), and no printer driver editor.

Conclusion: a real 'programmers' word processor' that just doesn't cut the mustard in the RISCOS environment. It has all the same drawbacks as *First Word Plus*, and many of the same qualities. It's the sort of word processor the people in the PC world have been buying for years.

To Arnor's defence, it hasn't tried for a RISCOS desktop-style; presumably the reasoning is that it will if *Protext* sells well enough. But because Arnor didn't, it probably won't.

HANDY HARDWARE HINTS

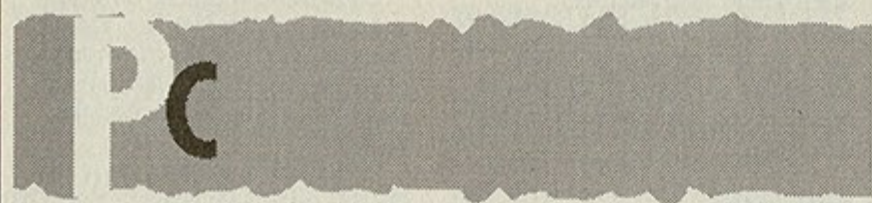
Got an early 310 or 440? Proud that you were the first on the block with a new Arc? Here's a tip; replace the batteries.

There's two AA-sized cells inside, and they don't last forever. The usual symptom of battery failure seems to be mixed-up CMOS RAM check *Status but the clock (also battery powered) seems to keep going.

WHERE TO GO

For further information Longman Logotron is on 0223 323656, Oak Solutions is on 0532 502615 and Wild Vision is on 091-519 1455. Arnor can be contacted on 0733 68909. AA-size Duracells are available at the corner store.

Ken Coumarin



HARD TIMES

If you've already got a hard disk then you take it for granted. You turn on your PC, it boots from the hard disk, big deal. Until one day it doesn't. There can be various reasons for this, the worst being the one heralded by the error message 1701, which means that the hard disk itself is on the way out if not already dead. But other things can go wrong to, especially on AT-type computers.

One of them is a deadly embrace between two programs that both want control of the high memory areas of the PC. The result is a lock up. If you can't boot up to change the entries in *CONFIG.SYS* it's hard to put it right. Other problems are caused by programs that walk all over the CMOS settings, either by accident or on purpose. This can leave your PC not knowing it has a hard disk at all.

But perhaps the commonest reason for failure is that the user has

inadvertently deleted one of the three essential system components. These are *IO.SYS* (or *IBMBIO.SYS* or something else ending in *IO.SYS*), *DOS.SYS* (or *IBMDOS.SYS* or similar) and *COMMAND.COM*.

The first two are hidden, but most disk utilities will show them. The user sees them, knows they're not theirs, and deletes them. No more boot up after that until MS-DOS is re-installed. *COMMAND.COM* more often gets overwritten by the wrong version than deleted - usually after copying everything from a friend's floppy disk - a boot disk. Make sure you always know what you're deleting from or copying to your hard disk.

PAGEMAKER FOUR EVER

The seemingly interminable wait for *PageMaker 4* for Windows is nearly over. Aldus is promising delivery of the top-notch DTP package in 'the first quarter of 1991'. Aside from murdering

SEGA

UK MEGADRIVE

MASTER SYSTEM

Megadrive + Altered Beast.....	£179.99	Aerial Assault.....	£29.99
Power Base Converter.....	£29.99	Alex Kidd in Shinobi World.....	£29.99
Arcade Power Stick.....	£34.99	Altered Beast.....	£29.99
Control Pad.....	£14.99	Battle Outrun.....	£29.99
TAG 50 Joystick.....	£17.99	California Games.....	£29.99
Alex Kid In Enchanted Castle.....	£29.99	Chase HQ.....	£29.99
Arnold Palmer Tour, Golf.....	£34.99	Columns.....	£24.99
Budokan.....	£39.99	Eswat*.....	£29.99
Columns.....	£34.99	Gain Ground*.....	£29.99
Cyberball.....	£34.99	Gauntlet*.....	£29.99
Eswat.....	£34.99	Ghostbusters.....	£29.99
Forgotten Worlds.....	£34.99	Golden Axe.....	£29.99
Gain Ground.....	£34.99	Gold Mania.....	£32.99
Ghostbusters.....	£34.99	Great Football.....	£24.99
Ghouls 'n' Ghosts.....	£42.99	Impossible Mission*.....	£29.99
Golden Axe.....	£34.99	Indiana Jones*.....	£29.99
Herzog Zwei.....	£34.99	Jungle Fighter*.....	£29.99
John Maddens American F.Ball.....	£39.99	Paperboy*.....	£29.99
Last Battle.....	£34.99	Parlour Games.....	£17.99
Mystic Defender.....	£34.99	Pro Wrestling.....	£22.99
Phantasy Star II.....	£59.99	Operation Wolf.....	£29.99
Populous.....	£39.99	Shinobi.....	£29.99
Rambo III.....	£29.99	Submarine Attack*.....	£29.99
Revenge of Shinobi.....	£34.99	Super Monaco G. Prix.....	£29.99
Space Harrier II.....	£34.99	Thunderblade.....	£29.99
Super Hang On.....	£34.99	Ultima 4.....	£39.99
Super Monaco Grand Prix.....	£34.99	Wonderboy.....	£24.99
Super Thunderblade.....	£34.99	Wonderboy in Monster Land.....	£29.99
World Cup Italia 90.....	£29.99	Wonderboy III.....	£29.99
Technocop.....	£39.99	World Cup Italia 90.....	£24.99
Zoom.....	£26.99	Y.S.....	£32.99

* Soon

Compute-iT

151 HIGH STREET
TEWKESBURY, GLOS
TEL (0684) 290097
OPEN MON-SAT 9-5.30

All items subject to availability.
Prices subject to change.
PRICES INCLUDE VAT. ALL ORDERS
OVER £20 POST FREE. (under please
add £1). Payment by cheque or



CALLERS WELCOME UK MEGADRIVE ENQUIRIES ONLY

What did you get your Amiga for Christmas?

Commodore 1084 monitors record.....	£190.00
Philips CM8833 II Stereo Monitor.....	£249.00
Citizen 120D + Printer.....	£165.00
Star LC-10 Printer.....	£180.00
Star LC-200 Printer.....	£250.00
3.5" External F.D.D.....	£75.00
3.5" DS DD Various Colours (state!).....	each 42p
3.5" DS DD Normal!.....	each 40p
3.5" 40 Capacity Case.....	£4.00
3.5" 80 Capacity Case.....	£4.60
1/2 Mb Upgrade.....	£35.00
1/2 Mb Upgrade with clock.....	£40.00
Cheetah 125+ Joystick.....	£8.50
Quickshot II Plus Joystick.....	£9.00

Many other items in stock from mouse mats and printer ribbons to Educational software and Laser printers. Call for details!

DELIVERY

Add £8 for large items, £4 for others. Goods released upon receipt of cleared payment.

PAYMENT

Strictly cash with order. Cheques/PO's to:
Technical Support Services, Unit D3,
Northbridge Centre, Elm Street,
Burnley, Lancs BB10 1BR
0282 25556

36p
inc VAT

3.5" DISKS inc LABELS

These disks are 100% error free and fully guaranteed with a 2 for 1 replacement. Send SAE and we will send you a free disk to try. Limited quantity only. We're sure you will order from us in the future.

P&P: 50 disks & over is free. Under 50 disks only £1.50
All prices include VAT. Send Cheques or Postal Orders to

KYC Disks

51 Barmouth Road, Wandsworth, London, SW18 2DT.

Telephone 081-870 0469



Open Mon - Sat from 10am-7pm



COMPUTER REPAIRS

☛, AMSTRAD, IBM, SINCLAIR

FIRST AID FOR TECHNOLOGY

- * Commodore Registered repair centre.
- * Amstrad/Sinclair Registered repair centre.
- * Over 20 engineers at your disposal.
- * Fast Turnaround, will typically be 24/48 hours.
- * Many repairs at fixed prices, including parts, labour & VAT.
- * Repairs warranted.
- * Trade prices available.
- * For a fast efficient service, with the peace of mind you would expect, simply hand deliver or post your machine to the workshop address detailed below and we will do the rest.
- * Please phone for further details

TELEPHONE: 0582 491949 (4 lines)

**WTS Electronics Ltd, Studio Master House,
Chaul End Lane, Luton, Beds. LU4 8EZ.**



• PageMaker 4 on the Mac: PC version due any day.

the English language with such Americanisms, Aldus is not renowned for being reliable when it comes to these pronouncements, but this time I believe it (if only because it first told me it would ship last September).

The new features of PageMaker 4 transform it from being the best DTP package on the PC to, well, the best DTP package on the PC with a pretty good claim to the best document processor as well. A story editor is added which gives full word processing functions at word processing speeds – spelling checker, search and replace and the rest.

Typographically you can rotate, compress and expand text – even on a non-PostScript printer, thanks to the bundling of Adobe Type Manager, which also ensures a superb screen display.

There are dozens of features to help with creating long documents, such as indexing, dynamic links to document files and the creation of multi-chapter books. A Table Editor allows tables to be designed and placed easily.

The only down point to PageMaker 4 is that it requires 2Mb of memory to run – but if you have a PC running Windows with only 1Mb buy more memory tomorrow, it makes a huge difference.

Interestingly Aldus will continue to sell and support PageMaker 3.01, which doesn't have the 2Mb requirement. 3.01 will sell for £615. As befits the best program of its type, PageMaker 4 will cost £650 plus VAT, or £80 to upgraders. Aldus is on 031-220 4747.

FOUR AGAIN

Another program which has just gone on to version four is the route planner

AutoRoute. The main change is the addition of a mouse-driven drop-down menu system which makes the program much easier to use. Version 4 can also handle several maps without having to quit and launch a second version of the program. The maps currently

available are France, Britain, and Europe.

The gazetter editor now contains database-like search options, and the ability to place this information in windows on the map. Pictures can be added to maps in the same way. Printouts of maps are improved thanks to EMS support.

The UK version costs £345, with the European one coming in at £945. NextBase is on 0784 460077.

Currently in development at NextBase is an add-on module which will allow the program to interface with a satellite-based positioning system. The exact location of the vehicle can then be used to update the route and ETA, and this information can be relayed back to base to allow a coach firm, say, to keep track of all its vehicles.

FOUR MORE

What is it about version fours? Here's another one: PC Globe 4.0. PC Globe is an atlas and gazetter program which includes copious information on every country in the world.

The new version is pretty up to date – including information on the unified Germany for instance. Other new features include climate graphs, flags of the world and the ability to play the national anthems of every country on the planet.

Still there, of course, is the point-and-shoot map interface and statistical information on everything from numbers of doctors to potato production, with the option of graphing comparative figures.

PC Globe is available direct from the USA for \$69.95 plus \$13 P&P. Call 0101 602 730 9000.

Stuart Anderton and Steve Patient

64

RANDOM NUMBER GENERATORS

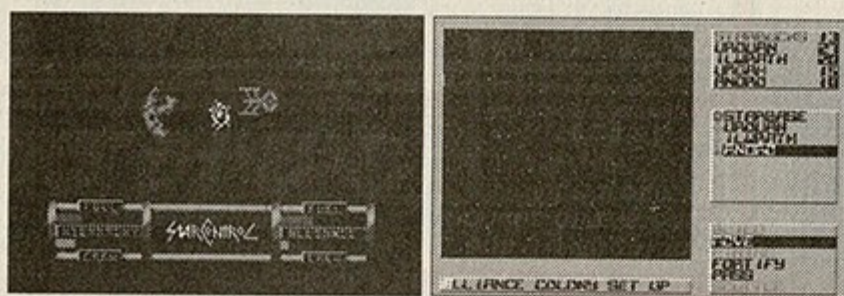
There are lies, damned lies and press releases. In a recent trip to these parts, Commodore's Andrew Ball told us that he reckoned in the region of thirty thousand C64GS units had been sold over Christmas. Within a day or two I received a Commodore didn't-we-do-well press release claiming that a more modest "nearly twenty thousand" of the machines had been picked up by punters.

Commie's arch rival Atari couldn't resist getting in on the act and said the

figure was closer to 14,000. Either way, these aren't the kinds of numbers Big C was hoping to be quoting. Nevertheless the company remains confident about the machine's prospects for this year, with the impending release of even more cartridges.

LETS NOT GET VINDICTIVE

And on that subject, I was wrong to be optimistic about Domark's first post-Cyberball(oon) release. While it isn't bugged into oblivion (unlike Cyberbug),



• Two screen shots from Star Control which combines elements of strategy games and a good dose of healthy arcade action. Bet you can guess which is the most fun.

it's about as exciting as John Major's style in spectacles.

Vindicators is a one- or two-player tank bash, set in the vast space stations of some evil empire. The interior decor of these ships epitomises the most xenophobic of tastes. Revolving gun emplacements and mines get in your way as you try to collect fuel supplies and strangely important shining stars. Should you be lucky enough to come across a rather large key, you can escape to the next of the game's 14 levels.

Only other hostile tanks and boredom stand in your way. The whole affair is phenomenally tame and uninspired.

HEDGEHOG FLAVOUR

Almost alone among the recent releases as an example of what you can do in a game, even without all that expensive ROM, is *Creatures from Thalamus*.

You play a fuzzy little bloke called Clyde whose friends have been captured and placed in a torture chamber by some demons who co-habit the small Pacific island where they live. Now Clyde has the unenviable task of rescuing them. He uses a number of breath weapons in his progress through the archipelago, eating energy beasts and dodging the demons' various minions along the way.

Creatures from Thalamus is a gorgeously colourful horizontally scrolling game. The animation is the best you'll have seen in a long long time and is brimming over with funny details (such as Clyde's use of a fan to propel his lily pad across rivers).

At the end of each of the four challenging levels is a torture chamber in which some bizarre device is being employed on one of Clyde's captured companions. It's worth watching what will happen to the victim should you not lift a finger to help. Their deaths are varied, graphically grisly and really funny. This should win an award for the most blood in a C64 game and is the best reason I've come across for not having a GS.

WE ARE NOT ALONE

Just converted down from intimidatingly large IBM compatible-type machines is Accolade's *Star Control*. It's a space colonisation and conquest strategy game with arcade-style moments thrown in for good measure. These come whenever there's a confrontation between ships of the Hierarchy (boo) and the ships of the Alliance (hurrah).

Each side starts with only one space station and must build ships, explore nearby worlds, mine them for income, fortify them for defence, colonise them because otherwise the colonists would have nothing to do and eventually undo all the hard work the other side has done.

When ships from both sides meet, the play leaves the stellar map screen used for most of the game and replaces it with a four-way wrap-around screen which forms the arena for the forthcoming space battle.

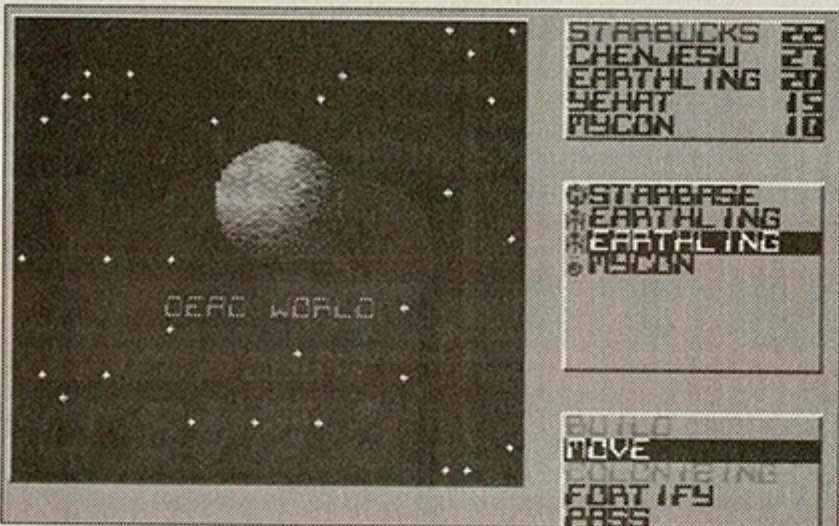
Each side can build ships with different capabilities and weapons so early battles are exciting and difficult to win but only one ship per side ever meets in a given battle.

The strategic element is predictably unappealing visually but the arcade head-to-head bashes are fine. What's more, a host of in-game options give the game extra depth.

Control of either side can be given over to the computer to a lesser or greater degree (this is unusual as normally you have a choice of either a human or a computer opponent and that's it). Each side can be made better or worse than the other and there are practice modes to help you get used to the different kinds of vessel which you can build.

The main faults of *Star Control* are that only one player can use a joystick and the manual follows the tradition of being both disproportionately large without conveying essential information clearly, and disproportionately naff in terms of its self-indulgent and hackneyed science fiction content. Other than that, it makes a challenging strategy bash.

Sean Masterson



• Yet another world which you have to colonise before your opponent does in Star Control.



LASER PRINTER with in-built PHOTOCOPIER

RANK XEROX 4045R

- ★ Personal photocopying facility
- ★ 10 ppm fast Laser Printing
- ★ HP LaserJet+ Diablo, Xerox 2700 (FX80/IBM Pro. text)
- ★ 512KB & 1MB RAM versions - RAM memory expandable.
- ★ Resident, cartridge & Downloadable fonts - portrait and landscape.
- ★ Parallel and Serial Interface
- ★ 250 sheet Paper Tray A4
- ★ Cheap toner refills (4 supplied) £10 each, approx 5000 copies.

WARRANTY - 3 months on-site Service/Maintenance by Rank Xerox.

£650	£750
512KB RAM	1MB RAM

NEXT DAY DELIVERY/ INSURANCE £30

TELEPHONE ORDERS, ACCEPTED

All prices exclude VAT

Factory Refurbished/Exdemo stock
Current model, normally £3,995 + VAT

PHONE: 081-330 7533

FAX: 081 - 330 4838

**COMMONSIDE
HARDWARE SERVICES LTD**

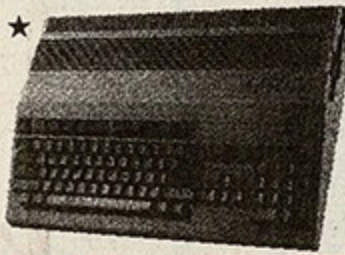
**Unit 13, 193 Garth Rd,
Morden, Surrey, SM4 4LZ**

AMIGA DEALS

AMIGA 500 STANDARD PACK

- ★ A500 computer ★ 512k RAM ★ 1Mb disk drive ★
- ★ mouse ★ modulator ★
- ★ power supply ★ operation-manuals ★
- ★ workbench disks, etc. ★

ONLY **£339.95**



AMIGA

1/2 MEG

UPGRADE BOARD

- ★ Uses latest 4 chip design
- ★ Memory on/off switch
- ★ Option of battery backed clock
- ★ Full 12 month guarantee
- ★ New super low price

£29.95

Clock Version

£34.95

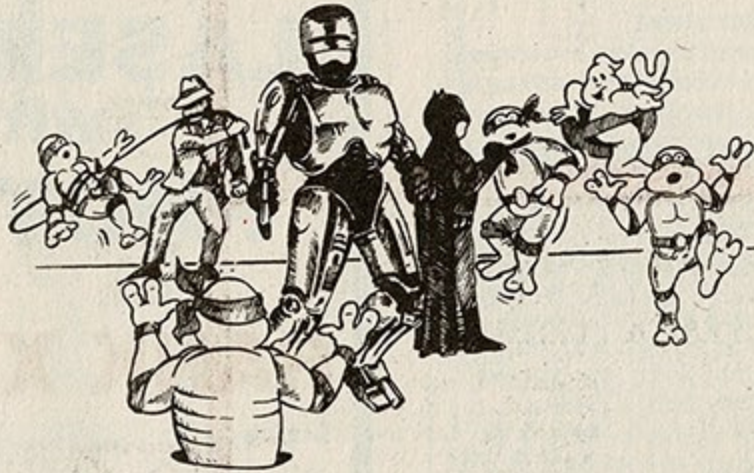
A590 HARD DRIVE

- ★ Official Commodore hard drive
- ★ Sockets for 2Mb RAM
- ★ Complete with free software pack
- ★ Built-in P.S.U./cooling fan

£269.95

MOVE OVER TURTLES - ROBOCOP AND HIS PALS ARE IN TOWN!

ROBOCOP



BATMAN

INDIANA JONES

GHOSTBUSTERS II

AMIGA SCREEN GEMS PACK featuring ROBOCOP AND FRIENDS

Just Look At What You Get

- ★ Amiga as in standard pack
- ★ Days of Thunder
- ★ Shadow of the Beast II
- ★ Back to the Future II
- ★ Nightbreed
- ★ Deluxe Paint II

PLUS exclusive to Dowling

- ★ ROBOCOP
- ★ BATMAN the Movie
- ★ GHOSTBUSTERS II
- ★ INDIANA JONES and the Last Crusade

All for the incredible price of **£369.95**

THE ALL NEW ULTIMATE GAMES PACK

Take the pack on the left featuring Robocop etc and add the following:

EXCLUSIVE DOWLING MEGA TEN GAME PACK comprising RVF HONDA, DATASTORM, DUNGEON QUEST, E-STORM, GRAND MONSTER SLAM, KID GLOVES, POWERPLAY, SHUFFLEPACK CAFE, MICROPROSE SOCCER, TOWER OF BABEL.

Total RRP of games over **£229**

PLUS

- ★ Megablaster Joystick ★ High Quality Mousepad ★ Dustcover

All for the unbeatable price of **£399.95**

AMIGA "FIRST STEPS" EDUCATION PACK

- ★ Amiga as in standard pack
- ★ A501 0.5Mb upgrade
- ★ Pro-write 2.5
- ★ Deluxe Paint II
- ★ Deluxe Print II
- ★ Infofile
- ★ Music Mouse
- ★ Amiga Logo
- ★ Talking Turtles
- ★ Lets Spell at Home
- ★ BBC Emulator
- ★ Ten CBM disks

All this for just **£529.95**

NEW COMMODORE 64 NIGHTMOVES/MINDBENDERS PACK

Comprises:

- ★ The worlds best selling home computer - the Commodore 64
- ★ C2N cassette unit
- ★ 2 joysticks PLUS:- Nightmoves games
- ★ Nightbreed
- ★ Shadow Warriors
- ★ Midnight Resistance
- ★ Secret Agent Sly Spy
- ★ Mindbenders games
- ★ Trivial Pursuits
- ★ Snare
- ★ Confuzion
- ★ Split Personalities

ALL FOR JUST £149.95
Plus FREE exclusive to Dowling
"Music Studio Software Pack"

Whilst stocks last!

THE NEW 200 SERIES FROM **star**

"The best printers just got better!"

LC200 FACT FILE

- ★ Multi-purpose 9-pin, 80 column dot matrix printer with colour
- ★ Black and colour ribbons included as standard
- ★ Electronic dip switches (see LC24-200)
- ★ 180 cps draft elite/45 cps Near Letter Quality
- ★ High speed draft facility 225 cps at 12 cpi
- ★ Swivel selectable push or pull tractor
- ★ Bottom feed
- ★ Advanced paper parking with sheet feeder installed
- ★ Eight resident NLQ fonts: Courier, Sanserif, Orator, Script and italic versions

RRP **£297.85**

OUR PRICE

£199.95

LC24-200 FACT FILE

- ★ Versatile 24-pin 80 column dot matrix printer
- ★ 200 cps in draft elite/67 cps in Letter Quality mode
- ★ 10 Resident LQ fonts
- ★ A high speed draft facility of 222 cps at 10 cpi
- ★ Swivel selectable push or pull tractor
- ★ Bottom feed
- ★ Advanced paper parking with sheet feeder installed
- ★ The economy of first and last line printing
- ★ 7 K-byte buffer expandable to 39 K-bytes
- ★ 11.7" carriage (A4 in landscape format)
- ★ Multi-part mode for 1 + 4 copies

RRP **£366.85**

OUR PRICE

£239.95

LC24-200 COLOUR FACT FILE

- ★ Multi-purpose colour version of the 24-pin LC24-200
- ★ Seven colour printing - black, purple, orange, green, pink, blue and yellow
- ★ 30 K-byte buffer expandable to 62 K-bytes
- ★ 10 resident Letter Quality fonts: Sanserif, Times Roman, Courier, Prestige, Script and Italic versions
- ★ Electronic dip switches operable from the push button front control panel (as the LC24-200 mon version)
- ★ Optional font cards including Russian
- ★ Standard black ribbons available for economy purposes

RRP **£424.35**

OUR PRICE

£279.95

DOWLING

COMPUTERS

UNITS 48-50 TYNE ROAD, SANDY, BEDS, SG19 1SA



Being Star registered dealers we only sell official UK machines which come with a full 1 year guarantee. Beware of inferior imported products.

PRINTERS

	RRP	OUR PRICE
Star LC10 Mono 144/36 cps	£229.95	£149.95
Star LC10 II 25% faster version	£263.35	£169.95
Star LC10 colour, 7 colours	£297.85	£189.95
Star LC24-10 - 24 pin multifont	£343.85	£229.95
Star LC24-15 wide carriage version of LC24-10	£573.85	£389.95
★ Star FR10 300/76 cps, 31K buffer, 16 NLQ fonts	£527.85	£369.95
★ Star FR15 wide carriage version of FR10	£688.85	£459.95
★ Star XB24-10 professional 24 pin series, 27K buffer	£688.85	£459.95
★ Star XB24-15 wide carriage version of the above with 41K buffer	£907.35	£599.95
★ Star LS08 LASER PRINTER 1Mb Ram, 300 x 300 dpi	£2172.35	£1399.95
Star LC10 sheet feeder (auto)	£74.75	£59.95
Star LC10 mono ribbons	£5.95	£3.95
Star LC10 colour ribbons	£7.95	£5.95
Star LC24-10 ribbons	£7.95	£5.95
Star LC10 quality dust cover	£7.95	£5.95

★12 months on-site maintenance



HOW TO ORDER



BY PHONE

Simply call our head office quoting your Access/Visa number on

(0767) 681760

(8 lines)



BY POST

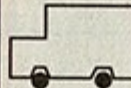
Make cheques, building society drafts or postal orders payable to:

Dowling Computers



DELIVERY (UK Mainland, most areas)

Please add £6 courier delivery for orders over £100, add £2 p&p for orders under.



ATARI ST DEALS - Choose your own pack

DISCOVERY PLUS PACK

- ★ Atari ST Computer
- ★ Bombjack ★ Carrier Command
- ★ Outrun ★ Space Harrier
- ★ First Basic ★ Neochrome
- ★ STOS Games Creator
- ★ ST Tour Tutorial
- ★ Discover the Atari ST
- PLUS -exclusive to Dowling
- ★ Konix Megablaster Joystick
- ★ High Quality Mousepad
- ★ Dust Cover

TURBO PLUS PACK

- ★ Atari ST Computer
- ★ Anarchy ★ Blood Money
- ★ Dragons Breath ★ H.K.M.
- ★ Impossible Mission II
- ★ Indiana Jones ★ Outrun
- ★ Super Cycle ★ First Basic
- ★ Hyperpaint II ★ Music Maker II
- ★ STOS Games Creator
- PLUS - exclusive to Dowling
- ★ Konix Megablaster Joystick
- ★ High Quality Mousepad
- ★ Dust Cover

ULTIMATE GAMES PACK

- ★ Atari ST Computer
- ★ All software listed in "Turbo" pack PLUS - exclusive to Dowling
- ★ Drivin' Force ★ Asterix
- ★ Trivial Pursuit ★ Skweek
- ★ Pipemania ★ Rock 'n' Roll
- ★ Rick Dangerous ★ Onslaught
- ★ Live & Let Die ★ Chess Player 2150
- PLUS - exclusive to Dowling
- ★ Konix Megablaster Joystick
- ★ High Quality Mousepad
- ★ Dust Cover

	520STFM	520 STE 512K RAM	520 STE 1 MEG RAM
DISCOVERY PLUS PACK	£259.95	£329.95	£369.95
TURBO PLUS PACK	£299.95	£339.95	£379.95
ULTIMATE GAMES PACK	£329.95	£369.95	£399.95

UPGRADED 520 STE DEALS

520 STE
with
1 MEG RAM
£349.95

520 STE
with
2 MEG RAM
£419.95

520 STE
with
4 MEG RAM
£499.95

3 1/2" HIGH QUALITY DISKS

- Box of 50£19.95
- Box of 100£37.95
- Box of 250£79.95
- Roll of 1000 labels£5.99

- ★ 100 % certified ★ Individually wrapped
- ★ "Made in Japan" Media ★ Fully Guaranteed

CUMANA CAX 354 DISK DRIVE "SCOOP"

- ★ Latest slimline design
- ★ High Speed Access
- ★ Acknowledged as "the best"

RRP £89.95 SCOOP PRICE **£59.95**

ATARI ST VERSION £69.95

MUSIC X SCOOP

- Music X Junior£79.95£34.95
- Music X 1.1£149.95£59.95
- 4 Port Midi Interface.....£29.95£14.95

HURRY STOCKS LIMITED

COMMODORE 1084S OR PHILIPS 8833 MKII

- ★ Stereo Colour Monitor
- ★ Can be used as a TV with Tuner
- ★ includes Amiga/ST cables

RRP £299.00 OUR PRICE **£249.95**

★★★★★★★★★★★★★★★★★★★★
GOLD CLUB SERVICE

- ★ 7 day money back guarantee if not completely satisfied
- ★ 30 day exchange for new policy should a fault occur
- ★ 1 year guarantee giving FREE collection and delivery service should a fault occur
- ★ Exclusive gold card with personal membership number entitling you to special offers
- ★ All this for a nominal £10 per item over £100

PRICE PLEDGE

We know the majority of you prefer to buy from us but are sometimes tempted by smaller companies offering a £1 or so price difference. That is why we have now introduced our

"PRICE PLEDGE"

"WE WILL MATCH ANY PRICE OFFERED ELSEWHERE ON A SAME PRODUCT BASIS"

★ Subject to stock

WHY CHOOSE DOWLING?

- ★ **ESTABLISHED OVER 4 YEARS**
With a growing reputation for "putting the customer first". We intend to satisfy many more customers for years to come
- ★ **TECHNICAL SUPPORT/ON-SITE ENGINEERS**
Employing over 20 specialist staff, we are equipped to deal with the majority of queries
- ★ **FULL TESTING PROCEDURE**
All computer hardware is tested prior to despatch, proving Dowlings commitment to customer care

So choose Dowling and put our reputation to the test!

TELESALES ORDER LINE 0767 681760 (8 lines)

PRINTER RIBBONS

All of our ribbons are GENUINE manufacturer ribbons - NO copies!

1 x LC10 Black Ribbon	£3.50
5 x LC10 Black Ribbons	£16.95
1 x LC10 Colour Ribbon	£5.20
5 x LC10 Colour Ribbons	£24.95
1 x LC24/10 Ribbon	£4.75
5 x LC24/10 Ribbons	£22.00
1 x LC200 Mono Ribbon	£5.00
5 x LC200 Mono Ribbons	£25.00
1 x LC200 Colour Ribbon	£10.00
5 x LC200 Colour Ribbons	£50.00
1 x LC24-200 Mono Ribbon	£5.00
5 x LC24-200 Mono Ribbons	£25.00
1 x LC24-200 Mono Long Life	£7.50
5 x LC24-200 Mono Long Life	£37.50
1 x LC24-200 Colour Ribbon	£11.00
5 x LC24-200 Colour Ribbons	£55.00
Swift 24 Mono Ribbons (each)	£5.00
Swift 24 Colour Ribbons (each)	£13.95
1 x Panasonic KXP1124 Ribbon	£8.95
5 x Panasonic KXP1124 Ribbons	£39.99

ATARI LYNX THE SPECIALISTS!

Lynx Games Machine (with free California Games)	£119.00
Blue Lightning	£22.50
Chips Challenge	£22.50
Electrocop	£22.50
Gates of Zendocon	£22.50
Xenophobe	£27.50
Road Blasters	£27.50
Ms Pacman	£27.50
Gauntlet 3	£25.00
Slime World	£25.00
Klax	£27.50
Paperboy *NEW*	£27.50

GAMES COMING SOON

3D Barrage	Rampage
720 Degrees	Robo Squash
A.P.B.	Fygar
Basketbrawl	Scrapyard Dog
Blockout	Shanghai
Cyberball	Stun Runner
Flying Ace	Super Soccer
Grid Runner	Superbowl
Lynx Casino	Turbo Sub
Mercenary	Vindicators
Ninja Gaiden	World Cup Soccer
Pacland	War Birds
Pinball Shuffle	Xybots
Rampage	

HP DESKJET 500

- * 120 cps in LQ, 240 cps draft
- * Non impact silent printing
- * 75 to 300 dpi
- * 100 x A4 sheet feeder
- * Optional plug in font cartridges
- * Optional Epson FX emulation
- * Notator V3 compatible
- * Calamus compatible
- * Cubase V2 compatible

£499
inclusive

AS USED TO PRINT THIS ADVERT

PRINTERS

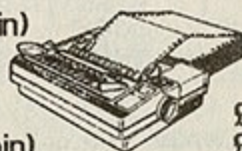
All of our printers come with a parallel cable to suit Atari ST, Amiga and all standard PC etc (other cables available at extra cost - ask for details). All printers carry a full 12 months warranty. We only sell genuine UK stock - we do not offer inferior "grey imports".

Star NEW PRICES FOR 1991

Star LC10 Mono (9-pin)	£155.00
Star LC200 Colour (9-pin)	£230.00
Star LC24-10 Mono (24-pin)	£POA
Star LC24-15 Mono 15" (24-pin)	£POA
Star LC24-200 Mono (24-pin)	£265.00
Star LC24-200 Colour (24p)	£295.00
Star XB24-10 Mono (24-pin)	£POA
Star XB24-15 Mono 15" (24-pin)	£POA

Panasonic

Panasonic KXP1124 (24-pin)	£249.00
Panasonic KXP1624 15" (24-pin)	£399.00
Hewlett Packard Deskjet 500	£499.00
Citizen 124D (24-pin) + s/feed	£225.00
Citizen Swift 24 (24-pin)	£299.00
Canon BJ10E Portable B/Jet	£339.00



PRINTER ACCESSORIES

Swift 24 Colour Kit	£34.95	Deskjet - FX85 Mod	£59.00
Star XB Colour Kit	£34.95	Deskjet - Ink Cart	£17.95

ATARI ST ACCESSORIES

SM124 Mono Monitor	£99.99
Megafile 30 Hard Disk	£449.95
Megafile 60 Hard Disk	£619.95
Roctec 1MB External Drive	£75.00
Forget-Me-Clock II Card	£24.95
ST Monitor Switch Box	£14.95
STE Stereo scart lead	£12.99
STFM standard scart lead	£7.95
STE MKII 8833 lead	£12.99
STFM MKII 8833 lead	£9.99
Atari CX40 Joystick	£4.95
Joystick/Mouse extension lead	£4.75
Replacement Mouse lead	£3.75
Standard Parallel Lead	£5.95
Mouse Mat	£3.50
2 x coiled Midi leads	£6.95
14 Pin Din Plug (ST disk drive)	£2.25
14 Pin Din Socket (ST disk drive)	£2.95
13 Pin Din Plug (ST monitor)	£1.95

MIDI SOFTWARE

Sequencer One (ST)	£69.95
Dr.T Tiger Cub (ST)	£59.00
C-Lab Notator V3.0	RING
C-Lab Notator Alpha V1.0	RING
C-Lab Creator V3.0	RING
C-Lab V3.0 Upgrades	RING
Steinberg Cubase V2.0	RING
Steinberg Cubeat V1.0	RING
Steinberg Editors :	
D110/10/...	RING
Kawai K1	RING
Roland MT32	RING
Yamaha DX/TX	RING

MICE

Contriver - ST & Amiga compatible	£21.00
Contriver - ST compatible	£18.95
Contriver - Amiga compatible	£19.95
Contriver - PC compatible	£23.50
Contriver Trackball ST	£29.99

DUST COVERS

Atari STF or STE computer	£6.99
Atari SM124 Monochrome monitor	£7.99
Amiga A500 computer	£6.99
Philips 8833 colour monitor	£7.99
Star LC10 colour or mono printer	£6.99

PHILIPS 8833 MKII

STEREO COLOUR MONITOR

The 8833 MkII is the perfect colour monitor for all ST and Amiga owners. With its high quality picture and stereo sound it really makes the STE or Amiga perform to it's full.

12 months on site warranty FREE!
with this monitor

£ 249.00

Ring today for details.
Supplied with 1 cable free of charge. Options are :-
Atari STE Stereo cable or Atari STFM cable or Amiga stereo cable

including vat and delivery

BLANK DISKS NEW PRICES FOR 1991

All of our blank disks are guaranteed and supplied with labels. Our 3.5" unbranded disks are of the highest quality double sided media. All Sony Branded disks are boxed and supplied with labels. All disk prices include vat and delivery. Ring for prices on larger quantities.

QUANTITY	10	20	30	50	100
UNBRANDED 3.5" DS/DD	5.99	10.99	15.99	25.99	44.99
SONY BRANDED 3.5" 2DD	9.50	18.50	26.50	42.50	80.50
UNBRANDED 3.5" HD	14.95	27.95	39.95	59.95	114.95
SONY BRANDED 3.5" HDD	26.50	50.50	74.50	115.50	227.50
UNBRANDED 5.25" 360K	3.25	6.25	9.25	14.95	28.25
SONY BRANDED 5.25" 2D	7.95	14.95	21.95	34.95	68.95
SONY BRANDED 5.25" HDD	12.99	23.99	34.99	54.99	99.99

AMIGA

AMIGA A500 SCREEN GEMS PACK

A500 cpu, mouse, tv modulator, manuals, Workbench, Dpaint 2 and Days of Thunder, Back/Future II, Nightbreed and Shadow/Beast II **£359.00**

AMIGA A500 BASE PACK

A500 computer, mouse, tv modulator, manuals, Workbench, etc supplied 'bare' with no games software **£339.00**

AMIGA A500 CLASS 90's FIRST STEPS

A500 computer, mouse, 1Mb Ram Expansion, manuals, Workbench, etc comes with DPaint II, Dprint II, Pro Write 2.5, InfoFile, Music Mouse, Lets Spell, Logo, BBC Emulator, 10 Blank disks and mouse mat **£539.00**

AMIGA A1500 PACK

A1500 1Mb ram computer with 2 x 3.5" drives, mouse 1084S Stereo Colour Monitor, and software : Platinum Works, DPaint 3 Populous, Simm City, Battle Chess, Their Finest Hour and 2 books **£1099.00**

Astra Pack - 10 games		512K Ram Upgrade with clock	£39.95
See opposite page	£29.95	A590 20Mb Hard Disk drive	£279.95
Photon Paint version 1	£9.95	Roctec external disk drive	£73.00
Photon Paint version 2	£39.95	Vidi Amiga video digitiser	£99.99
Deluxe Paint version 3	£59.95	Amiga Stereo Scart Lead	£9.99
Screens Gem software	£19.95	Mouse Mat	£3.50

All Amiga prices include VAT and delivery

ATARI STE + STFM

ALL ATARI STE PRICES INCLUDE VAT AND UK DELIVERY. ALL PRODUCTS CARRY A FULL 12 MONTH WARRANTY. ALL MACHINES ARE CHECKED PRIOR TO DESPATCH. PLEASE RING US BEFORE ORDERING TO CHECK STOCKS AND CURRENT PRICES. WILL YOU EVER WANT TO EXPAND YOUR STE'S RAM? ALL OF OUR ATARI STE COMPUTERS HAVE THE "PLUG-IN" RAM SOCKETS - OUR PRESENT STOCKS DO NOT REQUIRE A SOLDERED IN RAM UPGRADE UNLIKE THE MACHINES OFFERED BY OTHER MAIL ORDER COMPANIES. OUR PRESENT STOCKS ALSO HAVE THE NEW DMA CHIP SET FITTED ALLOWING TROUBLE FREE OPERATION WITH ATARI HARD DISK DRIVES.

520STE STANDARD PACK. consists of the computer with mouse, tv lead, manual and all connecting leads etc. The Standard Pack is supplied with NO software.

520STE TURBO. consists of Standard Pack and STOS, Basic, Hyper Paint II, Music Maker II, 8 games (Indiana Jones, Impossible Mission II, HKM, Super Cycle, Outrun, Dragons Breath, Anarchy & Blood Money) and a joystick

520STE BUSINESS. consists of Standard Pack and also comes with K-Word 2 word processor, K-Data database, K-Spread spreadsheet and Metacomco Basic programming software.

520STE TENSTAR. consists of Standard Pack and Asterix, Chess Player 2150, Driving Force, Live + Let Die, Onslaught, Pipemania, Rick Dangerous, Rock n Roll, Squeek, Trivial Pursuit II and a joystick

520STE DISCOVERY. consists of the Standard Pack and STOS, First Basic, NeoChrome and 4 games (Carrier Command, Space Harrier, Outrun, Bomb Jack) and a joystick

520STFM STANDARD PACK. consists of the computer with mouse, tv lead, manual and all connecting leads etc. The Standard Pack is supplied with NO software.

520STFM TENSTAR. consists of Standard Pack and Asterix, Chess Player 2150, Driving Force, Live + Let Die, Onslaught, Pipemania, Rick Dangerous, Rock n Roll, Squeek, Trivial Pursuit II and a joystick

520STFM DISCOVERY. consists of the Standard Pack and STOS, First Basic, NeoChrome and 4 games (Carrier Command, Space Harrier, Outrun, Bomb Jack) and a joystick

520STFM BUSINESS. consists of Standard Pack and also comes with K-Word 2 word processor, K-Data database, K-Spread spreadsheet and Metacomco Basic programming software.

	512k	1mb	2mb	4mb
520STE STANDARD PACK	£349.00	£375.00	£419.00	£529.00
520STE TURBO	£369.00	£389.00	£439.00	£549.00
520STE BUSINESS	£385.00	£405.00	£459.00	£565.00
520STE TENSTAR	£369.00	£389.00	£439.00	£549.00
520STE DISCOVERY	£365.00	£395.00	£439.00	£555.00
520STFM STANDARD PACK	£265.00			
520STFM TENSTAR	£295.00			
520STFM DISCOVERY	£279.00			
520STFM BUSINESS	£310.00			

REMEMBER
WE ONLY SELL ATARI 520STE MACHINES WITH THE PLUG IN RAM SOCKETS. WE DO NOT OFFER STE MACHINES WITH SOLDERED IN RAM. RING US NOW FOR FULL DETAILS AND PRICES!!

SPECIAL OFFER !!

We are offering:
a Mouse Mat, 10 Blank 3.5 disks and labels, Atari ST dust cover, Atari CX40 joystick and a joystick mouse extension cable, for only £17.50 when purchased with any Atari STFM or STE. Ask for the STARTER PACK.

NO DESK SPACE ??

Are you running out of space on your desk? If so, we may just have the answer. We now have in stock a large quantity of MONITOR/TV PLYNTHS. These plynths are made of high quality metal, fully painted and will house either an ST or A500 underneath, while having your Monitor/TV standing on top. Call us now for full details.
only £20.00 inclusive

520 STFM + STE SOFTWARE PACKS

TENSTAR PACK	£29.95
DISCOVERY PACK	£19.95
TURBO PACK (STE only)	£24.99
BUSINESS PACK (No Basic Language)	£59.99
HYPHER PACK (Call for details)	£14.95

All software pack contents are detailed above with the computers. The software packs do not come with a joystick. All pack prices are fully inclusive of vat and delivery. Any pack can be purchased at any time.
No other purchase required!

STE RAM KITS

WE WERE THE FIRST COMPANY TO OFFER YOU THE STE RAM KITS

DIY 1 KIT - 520STE to 1MB (2 x 256K cards) SIMMS or SIPPS	£34.99
DIY 2 KIT - 520/1040 to 2MB (2 x 1MB cards) SIMMS or SIPPS	£109.00
DIY 4 KIT - 520/1040 to 4MB (4 x 1MB cards) SIMMS or SIPPS	£205.00

All RAM prices include VAT and delivery and come with instructions. PLEASE CHECK YOUR STE CONFIGURATION BEFORE ORDERING SOME STE MACHINES SUPPLIED BY OTHER COMPANIES REQUIRE SOLDERING!

AMIGA GAMES LESS THAN £3.00 EACH ?

Datastorm, Dungeon Quest, E Motion, Grand Monster Slam, Kid Gloves, Powerplay, RVF Honda, Shuffle Puck Cafe, Soccer and Tower of Babel. All of the above games are available in the Astra Software pack for only -

£29.95 - thats less than £3 each!

BEST PRICES MAIL ORDER

(DEPT NCE), UNIT A, GRAFTON PLACE,
WORTHING, WEST SUSSEX. BN11 1QX

(0903) 700714

TELESALES 10am till 12 midnight



All prices include VAT and UK delivery unless otherwise stated. All prices / specifications / special offers are subject to change without notice. Goods usually despatched same day as cleared payment is received. Please make cheques/P.O's out to BEST PRICES. Mail order only. No callers. Thank You.
ADD £6.50 INC VAT FOR NEXT WORKING DAY UK DELIVERY, ADD £32.50 INC FOR SATURDAY UK DELIVERY

ALL PRICES INCLUDE VAT AND DELIVERY
WHERE THE CUSTOMER COMES FIRST AND THE SERVICE COUNTS
BEST PRICES MAIL ORDER

Spectrum

CLASSICS OF THE FUTURE?

Call me a biased old git but I still think the Spectrum's one of the best machines to buy if you want to play games. Entertainment software for our computer, which includes some all time classics in the back catalogue, is incredibly plentiful and doesn't cost £25 a go.

The games might not look or sound as sexy impressive as their 16-bit rivals but programmers' familiarity with our computer often means that Spectrum versions of multi-format titles play the best.

There are some very promising sounding titles ready to hit the streets in a shower of breaking plastic soon. Something I'm looking forward to is US Gold's novel reinterpretation of an old arcade fave *Gauntlet 3D*.

Like the original it's a one- to four-player game but instead of using an overhead view to show the *Dungeons and Dragons*-inspired action the whole thing looks more like a classic *Ultimate 3D* isometric arcade adventure.

Apparently everything's fairly similar to the original with the same collection of bad monster-types out to stop our four heroes completing their quest. Sounds good, look out for a full review in *Your Sinclair*.

NOTHING ROUGH ABOUT OUTLINE

Another issue of *Outlet*, another plug. Number 41 of this excellent electronic mag for Speccy and SAM users has just arrived and it's another great load.

The regular screens full of letters, utility reviews, news and comment are, as usual, interspersed with a diverse mix of programs. In this issue these include *Dziner* (a simple art package), a home security quiz, 128K music, clip art, a Plus 3 boot sector modifier, giant scrolling message utility, an excellent basic listing scanning routine and *Ultimate Warrior*, a 3D isometric arcade adventure. Just about something for everyone, I'd say.

If you haven't tried a copy yet it's high time you did. *Outlet* costs £2.50 to newcomers on Plus 3, Microdrive, Opus, Disciple/Plus D and tape. There's a special version for SAM owners on disk. To order your copy by write to Chezron Software, 605 Loughborough Road, Birstall, Leicester LE4 4NJ.

NEW NAME, SAME QUALITY

The highly acclaimed and thoroughly spectastastic *Enigma* Tapezine is now showing at a software shop near you. It's had a name change since I last heard from them and they've somehow managed to wrangle a nationwide

distribution deal so you no longer have to go through the hassle of sending off every month in order to sample its multiplicity of delights.

The new title to scan the shelves for is *ETM* and the first issue should be in the shops even as I speak. Already reviewed in a past column, the latest edition includes *Jekyll and Hyde* the adventure game and budget blaster *Hyperlane* as well as loads of reviews, columns, tips and news. It's well worth buying and I wish the Anglo Scottish production team the best of luck with its new circulation-boosting venture.

As it happens, E.T.M.'s expansion provides more situations vacant for would be journos who want to experience the excitement, glamour, fast cars and beautiful girls all found in the world of computers. They're looking for reviewers and someone to write part of the adventure column. Ideally, assistant editor Graeme Robertson tells me, applicants "should be over 16, own a 128K Speccy, be familiar with the wide range of entertainment software available for our rubber keyed chum and have A level/Higher English to their name." That probably puts most of the country's current hacks out of the running.

Successful contributors will be paid "a fair wage", supplied with review software and, obviously, become famous. If you're interested send a sample 600 word review of a recent game and a current CV to Graeme Robertson, E.T.M., 17 Louisville Avenue, Aberdeen. AB1 6TT.

IN CONTACT WITH COUPES

You may remember me mentioning the SAM Coupé user group Contact a few columns back but neglecting to give you an address to write off to. Well through tireless research I've managed to find where the group resides.

So if you want details of their regular very up to date newsletter and various Coupé goodies in their public domain library send an SAE to Contact, The SAM Coupé User Group, 10 Ricardo Road, Old Windsor, Berkshire SL4 2NU.

GRASPING INFINITY

If you're the owner of a Romantic Robot *Multiface* you'll doubtless be filled with an overwhelming feeling of joy when you see the following collection of seemingly insignificant figures that, when inserted into the appropriate game, will give various infinite benefits. They were all sent in by the smashtastic Jon Rose (editor of *ETM*) who has helped to keep this column fully stocked with hints and tips over the years.

- *Chubby Gristle* (YS tape) - 29851,0 - Infinite lives
- *R-Type* (Hit Squad) - 34474, x.... x = Lives (1 - 255) 37374, 0 - Infinite lives, 37525, 0 - Infinite credits
- *Target Renegade* (Hit Squad) - 63760, x....x = Time 62936, 0 - Infinite time, 63160,50 - Infinite lives
- *Back to the Future* - 47998,0 - Infinite lives
- *Power Drift* (Wheels of Fire compilation) - 47336,0 - Infinite credits

Robin Alway

AMIGA PUBLIC DOMAIN SOFTWARE

We have in stock over 1000 PD disks including games, music, utils, animations & demo's, at only £2.00 a disk.

Catalogue Disk Available only £1.00

NOW AVAILABLE!
Amazing Tunes 2
3 disks!!

Buy any ten PD
disks and choose
another five
FREE!!

15 PD disks = £20.00 inc 5 FREE
Only £1.00 for each successive disk eg.
16 PD disks = £21.00
17 PD disks = £22.00
20 PD disks = £25.00

DEMOS

- 990 Demons Slides 3
- 989 Fractal Factory 2
- 960 Tetragon Mega
- 930 Robert Merc 2
- 942 Raiders Lost Ark
- 917 Crypto Burners
- 890 Artistik Slides
- 891 Unique Demos
- 875 Rave Demo 1 Meg
- 852 Viz Slides
- 823 Juggette Anim
- 822 Bruce Lee
- 821 Golem Gate Slides
- 801 Crionics Mega Demo
- 800 Cult Mega Demo
- 799 Alcatraz Mega Demo
- 609 Fractal Flight
- 610 Multi Tasking
- 617 Hi Fi Demo
- 637 Freedom Force
- 636 Loonimations
- 639 Blood Sport
- 667 Max's Art Disk
- 675 Operation Vark
- 730 Power Connection
- 731 Avenger Mega Demo
- 732 Silents Mega Demo
- 736 Gate Mega Demo 2

UTILITIES

- 008 Intro Maker
- 010 Mash Booter Disk
- 031 Space Writer
- 067 Ghost Writer 1 Meg
- 089 IFF Fonts
- 132 Mash Booter Disk 2
- 260 Best of Virus Killers
- 337 Ultimate Utilities

BLANK 3.5" DISKS

- 10. £7.00
- 20. £13.00
- 50. £25.00
- 100. £40.00

- 343 E Soundtracker
- 364 Fonts & Font Utils
- 392 Strange Utils
- 393 Ultimate Icon Disk
- 488 Boot Makers etc.
- 516 Red Devil Utils 4
- 521 Printer Utils
- 689 Darkstar Utils 2
- 690 Darkstar Utils 3
- 691 Darkstar Utils 5

MUSIC

- 453 Quadlite C64 Demo
- 464 The Power
- 472 Tera Tunes 2
- 473 Poem Music
- 551 Vocal Attack II
- 565 D Mob Music 3
- 566 Bungalow Remix
- 575 Vocal Attack
- 581 To the Safe House
- 594 Popeye/Beachboys
- 600 Funckey Dee 1 Meg
- 606 Tecnotronic Mix
- 629 Bacteria Music
- 633 Chaotic Sounds
- 641 Roger Ramjet Rap
- 642 Vision House
- 647 Glidescope Music 2
- 664 Donalds Trousers
- 677 Cue X
- 678 Dexion Music Disk
- 737 Pan III
- 749 RAF Mega Mix 1
- 752 Sound Edition 2
- 762 Off the Head 1 Meg
- 770 Betty Boo
- 790 Byterappers 6
- 807 Sound Explosion 1
- 813 Pace Music 2

ANIMATIONS

- 604 Fleet Maneuver
- 812 Jet Animation
- 1037 Virus Free Anims
- 1077 Silly Animations
- 762 Off The Head
- 763 Piano Animation
- 614 Sex Video (18)
- 607 Bra Busters (18)
- 556 Noize & Optix 1
- 550 Show Time
- 546 Not Boing Again
- 474 Fraxxion Horror
- 415 Police Chase
- 413 Coke & Smurf
- 405 Zues
- 394 Newtons Cradle
- 313 Tree Frog
- 277 Ghost Pool
- 259 Huey
- 248 The Gymnast
- 009 Unicycle
- 014 Walker
- 015 Walker II
- 929 Sick N Sexy (18)
- 914 Stealthy II
- 882 Fillet The Fish
- 761 Noize & Optix 2
- 809 Billiard

Vogue
A 4 disk version of
Madonna's Hit
Single.
Only £4.00 inc P&P

Chart Mixes 90

Mamma Gave Birth
If Only I Could
The Power Remix
Feel The Rhythm
Hear The Drummer
Groove In The Heart
London Beat Mix
What Time Is Love

8 1 Meg Disks
ONLY £7.00 inc P&P
with any other purchase



Now available: Essential Utilities 2 (1078)



AMIGA BLAST volume 1.
only £2.99

90 minutes of the best Amiga music around, recorded onto top quality TDK Audio cassettes. Includes tunes from Red Sector, Noize & Optix, Scoopex, Rebels, Kefrens, Gate and dozens more. All for only £2.99 inclusive of postage & packing. Exclusive to us!



DOUBLE SLICK

I mentioned last week that Double Click software had been at the 16-bit computer fair showing its increasingly large range of productivity software. I have now acquired the company's revised *DC Utilities* and the eagerly awaited *DC Desktop*.

DC Utilities V2.0 is a selection of programs designed to combat all those horrendous problems you run into when using your ST for something other than games. Nine programs are included on the disk: a fast RAMdisk, compression and extraction utilities, a macro program and a screen grabber. The most useful is *DC Xtract Plus*. This nifty program enables you to decompact or compact in four formats, extremely quickly.

The *DC Desktop* looks set to rival *Neodesk 3*, that other professional-looking GEM replacement from Gribnif. It has all the main features of *Neodesk* but is still lacking in some areas. Icons and folders can be placed on the desktop. Unique icons can be created for files, folders and drives. A virtual disk drive (called the cabinet) lets you quickly access often-used files. Picture files can be viewed from the desktop. Trashed files can be recovered. Keyboard shortcuts speed up desktop usage.

A SOUND EDUCATION

C-Lab, that purveyor of quality music software and hardware to the gentry, has released some new titles. The most interesting is *Midia*, a MIDI education package. Taking a very "hands on" approach to MIDI functions, *Midia* lets you see the result of each key press on your synthesiser. For example, when you move the pitch bend, a graphic and a textual explanation appears on screen. Thus you can learn just by playing around with the ST and the synth. The manual is well written and leads you through the program. If you're baffled by music technology then give the program a go. It costs £65.

Aura works along very similar lines to *Midia*. However this program deals with standard musical

conventions. The program sets you a series of exercises on subjects such as intervals, chords, tunes or rhythms. This program would be of particular interest to schools as it combines technology and musical education in a very professional, versatile package. *Aura* costs £99.

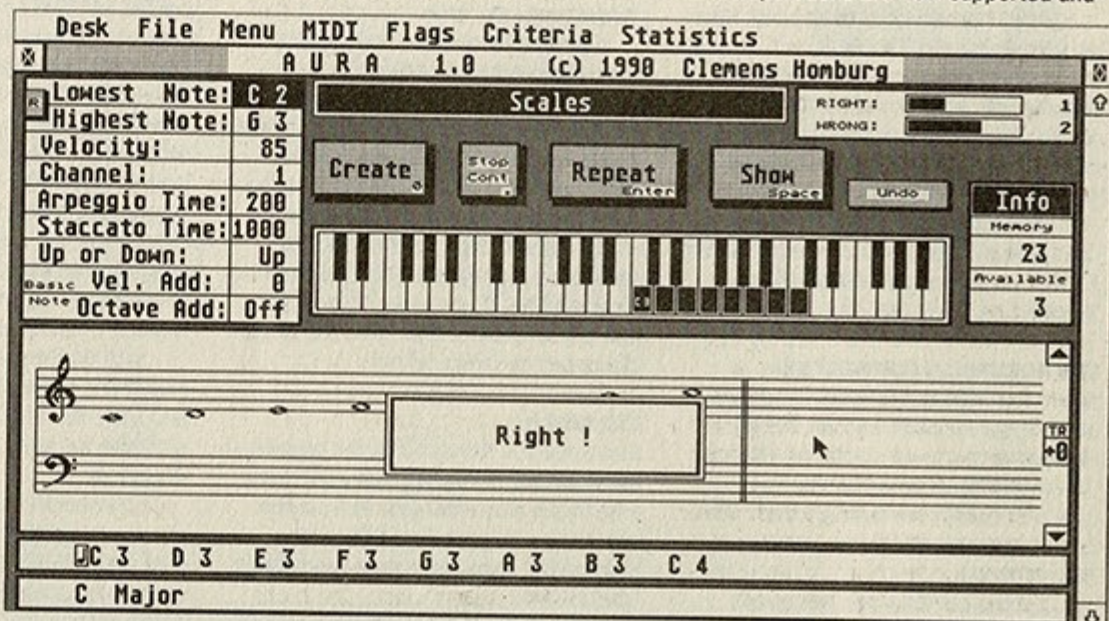
As a special offer you can buy these two plus *Alpha Notator*, which retails for £199 on its own, in a bundle for just £349. All are available from Sound Technology on 0462 480000.

LET'S TALK MAC

Gadgets by Small, producer of the *Spectre GCR* Mac emulator, has been

quiet for the last year. However it has just burst back into the limelight with two new products and some revised software. The *Spectre GCR* was acclaimed for its excellent compatibility with Mac software, you could simply place a Mac disk in the ST's drive and run the software.

Version 3.0 is now ready and it boasts some extremely impressive features. The menus have been completely updated and include the options of switching in and out of SCSI, choosing a partition before Mac boot and extra memory availability. Drive functions have been overhauled. 16 hard disk partitions are now supported and



• *Aura*: one of two new musical education software packages from C-Lab.

OVER 1000 PD DISKS CATALOGUED

DEMOS

- 1077 Silly Animations 1
- 1072 Frog Anim 2 (16)
- 1066 Amos Demo II
- 1061 Northstar DDT
- 1059 Coding Exhibition
- 1058 High Voltage M/D
- 1051 Anthrox Comp
- 1037 Virus Free Anims 1
- 1030 Competition Pics

OVER 18

- 929 Sick 'n' Sexy
- 615 Bedroom Olympiad
- 614 Sex Video
- 607 Bra Busters
- 071 Party Games
- 778 Twisted Dreams
- 375 Jack The Nipper
- 344 Mayfair Slides
- 257 Sam Fox Show
- 1045 Porno Movies
- 1036 Hot Girls
- 1026 Betta Latex
- 1023 Hot Girls 2
- 1022 Topless Girls
- 1008 Compu Porn
- 1004 Every Inch A Lady
- 918 Perverse Slides

GAMES

- 656 Xenon 3
- 650 Breakout Con Kit
- 643 Metagalactic Llamas
- 1064 Lettrix (Great)
- 1020 Master of Town
- 936 Autobahn 3000+
- 849 The Holy Grail
- 850 Breakout Con Kit
- 830 Quiz Master
- 670 Monopoly
- 595 Cave Runner
- 592 The Lost Occrest
- 832 Agatron Games
- 531 Blizzard
- 530 Pacman
- 525 Tennis 1 Meg
- 509 Paratroid
- 507 Emerald Mine
- 505 Drip
- 255 Flaschbier
- 116 Lam RPG
- 117 Moria RPG
- 154 Track Record 1 Meg
- 534 Games Disk 1

UTILITIES

- 941 Art of Virus Killing
- 940 Atari To Amiga GFX
- 923 Printer Drivers
- 901 Viruscope
- 659 Essential Utils 1
- 679 Loads Music Utils
- 671 Rim Data Base
- 652 Med
- 643 Uedit
- 567 Noisetracker etc
- 152 Quick Base
- 312 Word Wright
- 337 Ultimate Utils
- 334 Le'Copiers
- 613 202 Utilities
- 249 Freeware Utilities
- 341 57 Utilities
- 1001 Disk Master V3.0
- 1049 MVK V2.0
- 699 Darkstar Crunch
- 335 Esa Utils 1
- 336 Full Force Utils
- 342 Acu Utils 22
- 333 Voices 8

TOP TEN

- 999 London Beat
- 558 The Power Remix
- 859 Essential Utils 1
- 599 Groove In Heart
- 567 Noisetracker
- 920 100 C64 Tunes
- 990 Demons 3
- 1001 Disk Master V3.0
- 1077 Silly Anims 1

MUSIC

- 1071 Glidescope 4
- 1062 Drifters Muzak 2
- 1060 Gate Music Disk
- 1057 Dexion Music
- 1044 608 State Remixes
- 1041 Passion Music II
- 1003 Sun Tracker 2
- 252 Ke'frenz Jukebox
- 920 100 C64 Tunes
- 347 Demons Live 4
- 368 Electronic Sonic
- 411 Byterappers II

PD STARTER PACK

New to PD then send for our GREAT 5 DISK starter kit
 THE ESSENTIAL UTIL DISK
 DYNAMIC DEMO'S 3
 ARTISTIK SLIDESHOW
 REFLECTIONS MUSIC
 AND OUR CATALOGUE
 Only £5.00 inc P&P

Digital Concert Collection

Digital Concert disks 1 to 6
 Only £5.00 with any other purchase

For just £1.00 you can receive our highly praised catalogue disk, giving details of over 1000 Public Domain disks. Or order 3 or more of the above and receive it free of charge.

NOW AVAILABLE: CLIP ART Vol. 1 3 DISKS ONLY £5.99

Catalogue Disk Available at £1.00 sent FREE with all orders
 Send Cheque or Postal Order to:

**VIRUS FREE PD (Dept NCE), 23 Elborough Rd, Moredon, Swindon, Wilts, SN2 2LS, England.
 Tel: 0793 512321 Fax: 0793 512075**

* Minimum order of 3 Disks, Overseas orders welcome but please send Eurocheque or Bankers draft with order. Please add £3.00 towards postage and packing. All prices include P&P in UK.

these can be any size. An uncrasher puts you straight back into your program. Perhaps best of all is that the keyboard support has been totally renovated to cater for all Mac keys. The upgraded software costs \$20.

On the hardware front, Gadgets has released a new hardware board called Megatalk. This PCB, which will only fit inside Mega STs, enables you to plug straight into Apple networks or hardware. For example, you can slot straight into an Appletalk network or print straight out to an Apple printer. The board has two serial ports and a Mac SCSI port and operates at a blistering 921,600 baud.

The ST is no slouch at moving data, but with Gadgets' new 68030 accelerator board you can operate at close to light speeds – or up to 40MHz anyway. The technical specifications of this board are astonishing, leaving all, yes all, other computers in the shade.

The unit costs \$599, but expect to see a British dealer importing it for about £350. You can contact Gadgets by Small Inc on 0101 303 791 6098.

THE PORTFOLIO CONNECTION

Atari's Portfolio is a handheld computer of exceptional power and versatility. However it has been of little interest to ST owners because up to now you couldn't connect the two together. This has all changed with a new package from America.

Artisan software has released a program which enables the ST, STE or Mega ST to import data from the

Portfolio. *Transport* retails for \$24.95 and requires a null modem lead which costs about £10. You can then transfer data both ways. If this sounds like an interesting program then write to Artisan Software, P.O. Box 849, Manteca, CA 95336, USA.

STE TRACKER

It's all very well having a wicked computer like the STE, but there's very little software out there that takes advantage of its superb facilities. In fact, about the only programs around at the moment which make some attempt to harness the STE's sound and graphics are demos. One such demo has recently plopped onto my desk.

The Fingerbobs is a demo group which has produced an STE sound tracker program. Trackers are programs which let you play samples four at a time so allowing you to create tunes. This sound tracker is STE only and as such comes in glorious stereo. The version which I have is playback only, but the tunes are exceptionally good and well worth a listen. If you fancy showing off your STE's facilities then give The Demo Club a bell on 0790 53741.

STE FARCE

Just when you thought that the problems associated with the STE had gone away, a fresh surprise emerges. Not content with releasing a batch of STEs with dodgy DMA chips, Atari now has another treat in store.

One of the biggest selling points of the STE is that it's easy to upgrade the

memory. Atari plumped for a SIMM arrangement, whereby you simply plug in extra memory cards up to 4 Mb.

However, it has recently come to light that Atari is now soldering its memory boards in place. This would make it extremely difficult for the average STE owner to add any more memory. In fact the only course of action left open would be to have a dealer upgrade the STE at quite considerable expense.

This incident is just the kind which does nothing to improve Atari's image. When will it start treating its public like customers and not mugs?

A NEW LAPTOP?

Rumours abound in America about Atari's new laptop. Information revealed in the *ST Report* on-line newsletter in America, suggests that the computer will be based on the STE. The latest Atari technology will be included along with a new longer lasting battery and all the usual ports and connectors. First reports also suggest that the unit will be considerably lighter and smaller than the existing STACY computer.

Still on the rumour circuit, some interesting news reached us about TOS and Desktop. Atari may release this software for retail at an estimated price of \$49.95.

This would mean that existing ST owners could check out the very latest TOS and use its sophisticated facilities. It may also convince a lot of ST owners to upgrade.

Andy Hutchinson

CHECK OUT ALL THE OTHER ESSENTIAL COLUMNS IN NEW COMPUTER EXPRESS

- WHOLE WIRED WORLD
 - TECH TIPS
 - GAMES WEEK
 - CONSOLE ZONE
- AND OF COURSE THE NEWS AND FEATURES PAGES. THERE'S SOMETHING FOR EVERYONE IN EXPRESS EVERY WEEK

ATARI ST ★ ATARI ST ★ ATARI ST ★ ATARI ST ★ ATARI

A brilliant offer for readers of New Computer Express!

Devpac ST 2

FROM HISOFT ONLY £44.95

Devpac ST Version 2 is widely regarded as the most powerful assembly language development system for the Atari ST. It incorporates a debugger, stand-alone assembler and a fast linker

IT INCLUDES:

- **GenST** Assembler is a high-performance, full-featured, two-pass Motorola standard macro assembler at up to 75,000 lines per minute. It has multiple modules and sections, repeat loops and macro calls that maybe nested as deeply as memory allows.
- **MonST** Debugger is an advanced symbolic monitor, debugger and disassembler. Now in addition it can offer Multiple window display, full expression evaluator, up to 22 significant characters in symbols, viewing of source files and conditional breakpoints.
- **Example Files** of a wide variety including a full GEM type windowing application and an example desk accessory.

The package comes complete with an extensive ring-bound manual plus notes on the various operating system levels and debugging strategies.

Order now by phone from the NCE mail order service or send the coupon to our FREEPOST address.

HOTLINE NUMBER 0458 74011

DevpacST 2

version 2

Complete Assembler/Debugger System for the Atari ST Computers

SAVE £15

Yes, I would like to order a copy of Devpac ST 2

Name _____

Address _____

Tel No _____

I would like to pay by Access Visa Cheque PO

Please debit my credit card

No _____

Expiry Date _____

Tel. No _____

Send & make cheques payable to Future Publishing, FREEPOST, The Old Barn, SOMERTON, Somerset. TA11 7BR

DISKS DISKS DISKS DISKS DISKS

3 1/2"

NEW LOW PRICES 3 1/2" DS/DD DISKS

THESE DISKS ARE ALL:

- ★ Certified error free
- ★ PIN NUMBERED
- ★ INDIVIDUALLY WRAPPED
- ★ MADE IN W. GERMANY
- ★ COME COMPLETE WITH LABELS

**From
33p
each**

ds/dd SPECIAL OFFER ONLY WHILE STOCKS LAST

QUANTITY	10	25	50	100
	.38p	.37p	.35p	.33p

PRICES ARE PER DISK - CALL FOR PRICES FOR LARGER QUANTITIES

3 1/2"

ds/HD .87p per disk

5 1/4"

QUANTITY	10	25	50	100
ds/dd	.26p	.25p	.24p	.23p
ds/HD	.45p	.44p	.43p	.42p

5 1/4" DISKS ARE SUPPLIED WITH WRITE PROTECT TABS, LABELS & ENVELOPES

EXTRA LABELS - 5 1/4" and 3 1/2" Labels
100 labels £1.50 per pack 1000 labels £8.50 per pack

LOCKABLE STORAGE BOXES

3 1/2" 40 Capacity.....	£4.50 each
3 1/2" 50 Capacity.....	£4.95 each
3 1/2" 100 Capacity.....	£6.25 each
5 1/4" 50 Capacity.....	£4.50 each
5 1/4" 100 Capacity.....	£5.75 each
Amiga and Atari keyboard Dust Covers.....	£3.00 each
Mouse Mats.....	£2.00
Mouse House.....	£2.40

LIBRARY CASES

3 1/2" 10 Capacity.....	£1.05 each
5 1/4" 10 Capacity.....	£1.05 each

BANX BOXES

Lockable, stackable, great space saver for horizontal or vertical stacking holds approx 70 disks.....£9.00 each

2 OR MORE BOXES.....£8.00 each

Cleaning Kits

3 1/2" & 5 1/4" Disk & Fluid.....£2.00



To: **Media VALUE**
 Northumberland House,
 Dept NCE 25/01,
 Drake Ave, Staines,
 Middlesex TW18 2AP

☎ (0784) 466744
 FAX. (0784) 450845
CREDIT CARD
HOTLINE (24 hours)
 (0784) 451011

I enclose a cheque/P.O for

Credit Card No.....
 Expiry Date.....
 Signature.....

Quantity	Description	Total

VAT included Postage and Packing £2.75 Postage
 Next Day £10.00 (UK) only TOTAL

Name.....
 Address.....

 Postcode..... Telephone.....

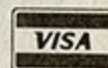
NCE/01

**WE OFFER A NO QUIBBLE
 REPLACEMENT OR MONEY
 BACK GUARANTEE**

**PRICES ARE SUBJECT
 TO CHANGE
 WITHOUT NOTICE.
 ALL PRICES INCLUDE VAT.
 EDUCATION AND GOVERNMENT
 ORDERS WELCOME.**

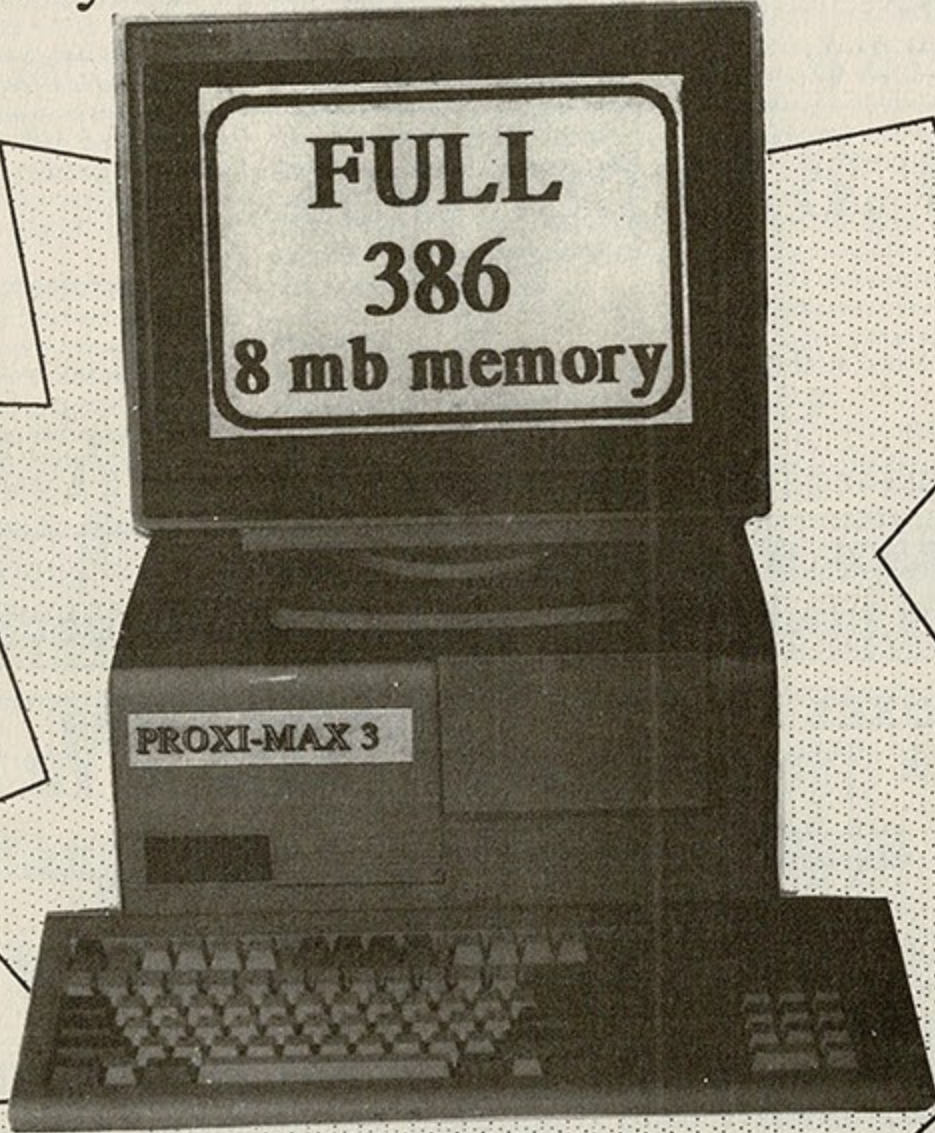
**CREDIT CARD HOTLINE
 (24 hours)**

0784 451011



STOP!**JUST CHECK THESE PRICES****STOP!***AFFORDABLE power from Network*

Network enters the full PC-compatible arena with quality machines direct from its US subsidiary.




**FULL
386
8 mb memory**


PROXI-MAX 3
*The FULL 386
model*

A massive EIGHT mb. of memory is standard. So is the clock speed of 25 mhz (33 mhz available). 14" super VGA colour monitor. 45 mb hard drive. Choice of floppy drives. 102 key board. Real time clock with battery. 2 x 8-bit expansion slots, 6 x 16-bit. This model can be customised by us to suit individual requirements.

**ONLY
£1525**



**286
4 mb memory**



**286
TOWER
4 mb memory**

PROXI-MAX 1 & 2

These are our 286 machines. They come with FOUR mb of memory and a clock speed of 16 mhz. 14" super VGA colour is standard, as is the 102 key board. 40 mb hard drive, choice of floppies. There are 3 x 8-bit expansion slots and 5 x 16-bit slots. They have real-time clocks, with battery back-up. PROXI-MAX 2 is a tower system.

**ONLY
£1045 & £1095**

All Network computers are fully warranted for 1 yr for parts and labour. Servicing is executed in the U.K.

N.B. Network welcomes dealer inquiries.

*VAT should be
added to prices.*

GO! THE TOPS FOR DTP GO!

You can buy dtp packages anywhere; you may even get good support for the software from the dealer. What you certainly WON'T get is what all Network's customers are used to: a FREE "forever" help line, running till 11 p.m. EVERY night (including weekends). And FORTY years' experience in all aspects of printing, publishing and print-finishing. The help line covers not only what we've sold to you, but the commercial jobs you are doing with our hard and soft-ware. We'll also set you up in business as a printer/publisher/typesetter, supplying all the equipment and continuing to advise you--FREE-- for as long as you wish. We've done this for people all over the UK and abroad. We'll be happy to refer you to them. On top of that, our prices are invariably cheaper. DTP is about professional printing and publishing: at least, it is *supposed* to be. Isn't it CRAZY to go to ANYONE other than the experts? Network News Services is the ONLY professional printer and publisher supporting dtp packages. Send for our brochure today.

For the PC:

Network presents the most powerful dtp package on offer anywhere for the PC. Based on our PROXI-MAX 3 386 25 mhz/8 mb memory/ super colour VGA system (see facing page for full spec.). You get the computer, monitor, mouse, the superb PageMaker; the fabulous Corel Draw graphics/text-handling program, with one hundred and thirty-five (!!!) scale-able fonts, colour separation, twist, rotation and everything you care to throw at it; Microsoft's Windows and MSDOS. All this will cost you £2500 plus VAT. At this point, comparison shoppers are invited to get out their bargain-basement magazine ads. Okay? Broken our offer down and itemised the NORMAL prices? Now see if you can beat the package! And don't forget our professional back-up.

For the Atari:

We are Atari dealers and will sell you ANY Atari product at virtual trade-prices. For dtp, there's our world-renowned PROXIMA system. Still unbeatable by ANYTHING for the Atari. Again, we'll be happy to supply you with referrals, mainly from professionals using our Proxima system. Business users should not be deterred by the Comic Cuts' activities of most Atari-dedicated magazines. Despite their largely-moronic approach to "publishing" (God help us!), the fact is that the Atari is a most-excellent *business* machine, at very reasonable cost. Our complete system (including computer, monitor, software and a top-quality laser printer, with the necessary 2 mb memory) is only £2188 plus VAT. PROXIMA software alone, the RELIABLE, UNCRASHABLE program, perfected and supported by Network's own programmers, costs only £135 plus VAT. Again, don't take our word for it: let us pass you on to umpteen delighted users, who have been earning money with the program for nigh on two years. **AND A BONUS!** Everyone who buys PROXIMA from now on will get a voucher for a FREE copy of PROXIMA 2...a new, multi-system dtp program, currently being written by our own programmers. It will have everything and has been devised from suggestions made by existing PROXIMA users. For a full specification of this marvellous new program, just drop us a line.

PRINTERS: Again, you can't beat Network. **SHARP POST-SCRIPT**, the fabulous ultra-fast machine, with several emulations and ample memory, ONLY £1500 PLUS VAT (rrp £1995).

HP LASERJET 111 plus Post Script plus extra memory, ONLY £1500 PLUS VAT (rrp £2000+).

OUR OWN professional machine, 800 x 800 dpi. 135 fonts, ONLY £2250 (rrp £3500). IBM and PC only. A4 colour scanners from £1050.

NETWORK NEWS SERVICES TILBURY ESSEX UK 0375:859103

Like our dtp packages, Network covers all the angles

OPENING TIME



Can computers be intuitive? I only ask the question because it recently arose at a convention of computer theorists and philosophers. The scene was as follows:

A large dark room in the east wing of the manse. Mineral water (alcohol has been given-up until March 22nd), a large overhead projector, an open fire roaring in the grate, and 15 eminent computerheads grating in the.... The initial question for debate was "Are Computers Going to Take Over the World or What?". All went smoothly until the fateful question was raised. Then all hell broke loose.

"Point of order! Point of order! Define your terms. Define intuition!", yelled Professor Amford Clammerhammer of the Svenska Institutiat of Microelectronics.

"Hear, hear, hear!", snored Sir Jonquil Borington-Spraggs, Emiritus Professor of Theory at Cambridge.

I leant back happy in the knowledge that intuition was a noun relating to knowledge or perception not gained by reasoning and intelligence, instinctive knowledge or insight. Or was it anything learnt or perceived this way? Or it could have been the power of the mind by which it immediately perceives the truth of things without reasoning or analysis?

Whatever it might be the once erudite conversation began to deteriorate, with phrases such as "Is!", "Isn't", "Is infinity times" "Isn't infinity times and one", "Can't have infinity and one!", "Can", "Can't" ad nauseam shooting from once educated mouths.

Well, being an empiricist at heart I decided to put the whole thing to a test.

"OK let's play chess. You lot play white and I will go into the other room, where my own personal laptop Mephisto is sulking and take its moves for black."

"What's that going to prove then eh?" They spoke in one voice.

"Wait and see," I said mysteriously. I set up the board and they moved queen's pawn to queen's pawn three. I didn't even bother switching Mephisto on but came back with king's rook one to king's rook two. The game continued with me making daft moves and them being convinced that the computer was creating some intricate strategy. I sacrificed a rook for a knight. They thought for an hour before sacrificing a bishop for a pawn. The game degenerated into a draw. I went back into the room to be met with wide eyed awe. "How did you get it to play like that?"

"I didn't. That was me playing. Didn't anyone realise?"

"You said it was the computer" So much for computer intuition. Most people don't even have it.

Now get out of this column with your guesses as to why Agent Cooper always orders 123 doughnuts but only ever eats half of one.

Tim Smith's

Write to 30 Monmouth Street, Bath BA1 2BW (peace and paper)

CEN

LETTER SPRAY



Keeping in touch with each other is such a wonderrrrrrfully marvellously, super duper thing to do. That's what Letter Spray is all about. So what's in the lucky bag this week? For the first time in living memory, it includes a letter of common sense and decent punctuation, and another one.

Dear Tim Smith,

I can answer your question about plugs not being supplied with electrical items.

Some years ago, all electrical sockets had round holes. Then the powers that be (not them again) decided to change them to the rectangular version due to safety reasons - young children were shoving their fingers in the holes and getting electrocuted (no comment).

However lots of people did not bother to change the old sockets for the new. So the companies didn't supply plugs with the equipment because supplying new plugs would have been no good to people with old sockets and vice versa.

Since then there are still many people with these old types of sockets and so it would not be cost effective for the companies to give away plugs.

The batteries are a different question. That is due to the leakage of dangerous chemicals. If the equipment is standing on a shelf for a particular amount of time the batteries inside would leak and damage the equipment.

I used to work in an electrical shop for a time and was asked the same question so I tried to find an answer. The above was the answer I got.

Yours faithfully,
Ashley Price, Lewes, Sussex.

Dear Ashley,

Thanks very much for your this info. I have only two comments. Firstly, why don't the electrical retailers ask what type of plug you use? Secondly, why don't these same shops hand over packaged up batteries with the message: "Here we go Mr or Mrs or Ms or Lord or Sir X, here are the batteries you need to run that highly over-priced machine you have just paid out on extortionate credit terms for. Have a nice day"? Anyway Ashley please write and tell me what machine you use as I think you deserve a prize.

Dear Mister Tim,

I write this letter in answer to your answer to the letter from Thomas Hawtin (issue 114) on the subject of programming in RISC code.

I too have never programmed in RISC and therefore consider myself just as qualified as Thomas (for new readers, Thomas had never programmed in RISC but complained about my views on the subject) to judge the funfulness of RISC programming and therefore have to agree with everything you both say.

Having also never used Pascal, Fortran, C or GFA-BASIC I really must say that they are great fun.... just like

the games my doctor likes to play with me, like hide and seek. He locks the door and hides the key while I seek a way out of my white quilted room. I also think that pouring custard in a keyboard is more fun than programming, but my psychiatrist gets upset.

I must finish now, as it is time for me to put my lovely white jacket with sleeves that go alllllll the way around.

Yours

Long John Silver, AKA Adolf Napoleon-Bonaparte (The Second) AKA Ian Heath, Merseyside

Dear Long,

Do I note a hint of derisive humour in your missive? Speaking as someone who takes every human being at their word, I would prefer to think not.

A COMPUTER WRITES

What with all the talk of intuition and artificial intelligence we thought it was about time that a computer got the chance to talk back. (Well if the Mail can get away with a dog who's to say we can't try a computer?) This week we hear from an Amstrad PC200.

"Retry, Abort, Fail? Er, pardon. Sorry you'll have to speak up a bit. What was the question? What do I think of humans? Well they're quite cuddly sometimes aren't they? I especially like Retry, Abort, Fail.... sorry, like the ones who take me back to that nice ship, er shap, er store. I do feel however that beating my keyboard senseless at the merest sign of a break in interaction is going a b-a-bi-a-bi-a-bit, far don't you? After all I do try my best. I did come from a broken home as well, so it's not my fault really, don't you think? I really feel..... FATAL ERROR.

FACTS ALOT

In 1988 Sir Clive Sinclair launched a £149.95 Cambridge satellite receiver dish. Alan Sugar's Fidelity dish £228.85 at the time.

The current high-score for *After Burner* on the Sega Master System is 51,187,170 and is held by Marc Galletly of Ickenham. Source *Sega Power*.

FACTS ALOT

In 1963 the Electronic Industry Association (EIA) established a standard for interfacing computers using serial communications. The latest version of this is known to one and all as RS232C and came into effect in 1969.

The Voice was a portable PC which you could talk to. It weighed 3.5 pounds, came with a 16 line LCD display, 4Mbs of RAM.

THE GEEK



This week, he signed on at a computer dating agency in order to find out how old his CPC was.

CENTREFOLD



List. It's what we all did at Christmas when trying to walk home from the pub. It's nearly the name of a famous composer. It's also the quickest way to waste information. Here are four lists.

TEN USES FOR A MODEM

- 1) Making bad Cynthia Payne puns
- 2) Starting World War III
- 3) Screaming down the phone when you're too lazy to do it yourself
- 4) Singing arias from Wagner operas
- 5) Light shows for very small discos
- 6) Funding BT staff holidays
- 7) Shoulder pads for dated soaps
- 8) Downloading jargon
- 9) Not quite making palindromes from
- 10) Pretending they're tricorders

TEN JOBS AND THE QUALITIES REQUIRED TO DO THEM

- 1) System Analyst = ability to assess limits and limit assessments
- 2) Programmer = ability to count to F
- 3) Professor of AI = ability to believe Star Trek
- 4) PR Person = ability to drink more than journo's
- 5) Microengineer = very small hands
- 6) Sales Manager = good handicap
- 7) High Street Salesperson = knowledge of the word "Er..."
- 8) Sys Op = ability to take abuse
- 9) Computer Journalist = knowledge of the English language and how to avoid it
- 10) Hero of Thralig = ability to be created by computer owning hippy

TEN OBVIOUS HEADLINES

- 1) Sun Sets New Prices
- 2) Sharp edges forward
- 3) Ocean Makes Waves
- 4) Sugar's sweet success
- 5) PC The Action
- 6) All At C64
- 7) The LAN Lies Down
- 8) Right Little Modem
- 9) RISCY business
- 10) Phew What A Scorcher (?)

TEN PEOPLE WHO COULDN'T LIVE WITHOUT COMPUTERS

- 1) Air traffic controllers
- 2) Roy Walker (and Catchphrase)
- 3) American football statisticians
- 4) *New Computer Express*
- 5) Jean Michel-Jarre
- 6) Jean Luc Pickard and the Crew of the Enterprise
- 7) Edward Singh
- 8) Sir Clive Sinclair
- 9) Ivan Boesky's accountant
- 10) Benoit Mandelbrot

"MY COMPUTER IS THE DEVIL'S CHILD", CLAIMS MAN

A CENTREFOLD EXCLUSIVE

It can be exclusively revealed that a man from Kent, England, has been living a nightmare with his 286 computer.

At the recent 16-Bit Computer Fair, where Mr G H Harbinger of 17 Bugoigne Court, Bromley was "Trying to escape the wrath of Satan's babel!", he was able to give a Centrefold reporter the full story before being carried off in a demonic black taxi!

Over a glass of holy wine the whole dreadful tale was spilled out, including:

- Error messages which, when read backwards, said "The Devil wants you for his mailing list"
- Floppy disks which mysteriously reformatted themselves into 1.44Mb pentagrams.
- Music from the Old Spice advert playing through the mouse port.

"I knew something was not quite, as they say, right when my new PC began to fly around the room of its own accord. Before that all it had ever done was

crash", said an ashen Mr Harbinger, "It was also a bit strange when the keyboard lead wrapped itself around Uncle Herbert's neck and strangled him to death this Christmas Eve. My dear lady wife and I put that down to a lucky accident".

When we asked if Mr Harbinger had in anyway lead Beelzebub to believe that he could enter the computer he replied: "Absolutely not. Admittedly my password was 666 and I had been designing some leaflets for my local black mass, but I never ever used pirated software nor did I listen to Judas Priest records. I firmly deny any fault. I do have one warning for all other users though; never, ever, ever put..."and with this he disappeared.

We phoned the Archbishop of Canterbury (a Mr Carey) for a comment and received the following prerecorded message: "I'm sorry I'm not here at the moment but if you leave your name and number, I'll try to get back to you. Have a good day and God Bless".

"The further afield thee seek, the more thee will find that will awe you, and the greater chance of misdirected luggage shall be thy burden" So said John Jones of the brig Sebastian when shipwrecked off South America in 1765. He would have made an excellent reporter for the Centrefold. As it is, we must stick with Joe Sixpack from the United States yet again.

FACTS ALOT
The common punch card was 80 columns measuring 7-and-3/8 by 3-and 3/4 inches.
Dr Hans Berliner once wrote a chess program called PATSOC. This stood for Plays A Terrible Sort Of Chess.

I WISH I'D SAID THAT

Every week there's fun and games as people say the funniest things about computers. Send your contributions in now.

"A professor of computer science recently (said) that he was glad to have flown on a small plane with a human pilot in control of almost everything, 'because that's safer than what we're creating with our profession.'" (Donald MacKenzie In *The Independent*)

DESPATCHES

Hoo-eee boy!

It's been quite a time hasn't it? But never fear, a whole heap of thangs have been happening. Me and Cindybeth-Billy-Loo Mountsainthelens, the newest love of my life next to my Sega Genesis and John Madden football game, headed out to a small place outside Tuskegee Alabama in order to check up on AI - Mad As A Moonie - Johansson.

AI, as you may know, has been a technology advisor to four presidents as well as Jimmy Carter. He's a well respected man and as crazy as a tourist in Beirut. We had heard that he was working on a new mainframe so big that it would take up the whole of Abe Lincoln's head at Mt Rushmore. The project is co-funded by NASA, the CIA and a large fast food chain which rhymes with Jacktonalds. The working title for the project is RedNeck V. According to AI, RedNeck is the first step in a truly American renaissance in computing.

Based on a Japanese 386 laptop, the mainframe will, and I quote: "Be the biggest goddam computer statement since Three Mile Island." The essential idea is that it is big. Huge. Enormous. Vast. Try and wrap your cognitive senses around the concept of a mouse port which is 14 feet by 12. Or a QWERTY keyboard

from which Stealth fighters could take off. Or a 120,000,000 Mb, hard drive. You get the idea.

AI has already been getting great reviews from several major art critics. The computer industry however, keeps raising objections based on unworkability and the fact that the monitor will only show three colours - red, white and blue. AI's response to all this is that. "That's just what you'd expect to come out of the mouths of soccer playing, faggoty atheist half-breeds with as much patriotism as an armed Puerto Rican in Dallas. My damn car is three blocks long, my TV is 96 inches, and my beer gut is a dry ski slope for two months of the year. That's what America is all about". You just can't argue with that kind of commitment can you?

There is a problem as far as software is concerned. It's not to do with size as you might expect. It's more to do with the fact that, according to the Federal Bureau of Fax'n'Figures-Y'all, every software house this side of the Atlantic is either suing or being sued; what this means is that no new development is being carried out, and nor will it until one of them wins a case.

See ya for now. An remember to keep your head down. Send payment in Yen.

MAIL ORDER

0908 564369

Amiga A500 Screen Gems Pack £379 inc VAT & Next day Courier

Screen Gems Pack includes:

Amiga 500 512K keyboard with built in 1 Meg disk drive • Free TV Modulator worth £24.99 allowing you to use the Amiga with a normal TV • Joystick, mouse mat + 10 blank disks, mouse + mains plug • Amiga basic, Amiga extra's 13 workbench 13 PLUS Amiga step by step tutorial • With a further four new releases • Shadow Beast II, Back to the Future II, Nightbreed and Days of Thunder • Deluxe Paint II

Amiga A500 Screen Gems Pack Extra £399 inc VAT & Next day Courier

Screen Gems Pack includes:

Amiga 500 512K keyboard with built in 1 Meg disk drive • Free TV Modulator worth £24.99 allowing you to use the Amiga with a normal TV • 10 free games PLUS software has a potential RRP of £200 • Joystick, mouse mat + 10 blank disks, mouse + mains plug • Amiga basic, Amiga extra's 13 workbench 13 PLUS Amiga step by step tutorial • With a further four new releases • Shadow Beast II, Back to the Future II, Nightbreed and Days of Thunder • Deluxe Paint II

Amiga 1500

The Amiga 1500 Personal Home Computer is the ultimate in Personal Home Computers for the whole family. Platinum works - integrated - Word Processor, Database and spreadsheet. Deluxe Paint 3 - the ultimate in paint packages. Populous and Sim City - State of the Art strategy games. Battlechess - the chess programme amongst all chess programmes. Their Finest Hour - The battle of Britain brought to life in a technical flight sim. A1084's stereo colour monitor to get the best from your Amiga. The Amiga 1500 has been designed around the already popular Amiga A500, but with hardware facilities that would put any mid range business machine to shame.

Please call for further details
£1049.00 inc VAT + next day courier service.

AMIGA A500 CLASS OF THE 1990's BUSINESS + EDUCATIONAL PACK £499.00 inc VAT & next day courier

FEATURES

Amiga A500 TV Modulator • Midi Interface Software • Kind Words II wordproc'or • Page Setter DTP • Super Base Personal Database • Maxplan 500 spreadsheet • Amiga Logo BBC Emulator Deluxe Paint II • Mouse mat 10 Blank Disks and disk wallet

AMIGA A500 SOUND & VISION PACK
£399 inc VAT & next day courier
Amiga A500 512K keyboard with built in 1 Megabyte Disk Drive • Free TV Modulator worth £24.99 allowing you to use the Amiga with a normal TV • Deluxe Paint II Graphics Package • Shadow of Beast II horizontal scrolling games software • Back to the Future film action software • Nightbreed state of the art graphical arcade action • 10 free games worth £200 • Free joystick, mouse mat & 10 blank disks • Amiga Basic Amiga Extras 1.3 Workbench 1.3 PLUS the Amiga Step by Step Tutorial • All leads, manuals PLUS Mouse and Mainsplug • PLUS Days of Thunder serious fast action games software • Deluxe Paint II

HALF MEGS - Quality four chip ram board with complete utility disk support with software on/off switch.
£34.99

AMIGA + ST DRIVES - A powerful 880K formatted drive with an external on/off switch, anti clicking and daisy chain facility.
£59.99

MONITORS

Commodore Amiga A1084 Stereo Monitor inc lead £269.00
Philips CM8833 stereo colour monitor inc lead for ST or Amiga £259.00
4096 coloured stereo monitor with first class reproduction including leads for ST & Amiga £259.00

Naksha Mouse - Quality micro switched, accurate Amiga ST
£26.00

Contriver Mouse - The perfect direct replacement mouse for the ST or Amiga
£18.00

PRINTERS

Star LC24 200 24PIN including ST/Amiga £259.00
Star LC200 including lead for ST/Amiga £210.00
Star LC10 colour including interface lead for ST/Amiga £219.00
LC10 - The most popular letter quality printer on the market only £219.00 with all Amiga + ST leads

Tel: 0908 564369, Fax: 0908 560040

MICROSMART 24HR HOTLINE (24 HRS) TELEPHONE 0908 564369

TITLE

COMP

PRICE

Have you ordered from us before? YES NO

NAME:

ADDRESS:.....

TEL NO:

TOTAL COST £:

Please send this to Microsmart, 125 High Street, Stony Stratford, Milton Keynes. MK11 1AT



WHOLE WIRED WORLD

Globetrotting Steve Gold this week files a special report on the CES in Las Vegas and has news of an exciting innovation for couch potatoes.

DIGITAL COMPACT CASSETTES

Philips and Sony have put their heads together and come up with a digital tape system that draws heavily on the technology the two companies developed for the compact disk in the early 1980s.

Called the digital compact cassette, (DCC) the tape recording system uses tapes the same size as existing analogue cassettes, allowing your favourite C90 to be played in a DCC machine. The advantage, of course, is that DCC uses a variation on the digital recording technology seen in the digital audio tape (DAT) cassette system.

Initially, DCC is seen as a consumer item although Sony officials say that computer applications are possible once

the price of tapes falls. It's worth noting that DAT cassette technology has made some inroads into the computer market.

The key question is, of course, whether the industry really needs DCC. DAT is, at last, establishing itself as a digital tape format, so we could have a rerun of the Beta versus VHS video tape format wars on our hands. It's a great pity that DCC was not released a couple of years ago instead of the DAT system.

I could be cruel and say that both Philips and Sony have produced cassette 'turkeys' in the past. Philips developed the abortive V2000 video format in the 80s, while Sony produced the Elcassette elephantine audio cassette in the seventies.

Shipment date for reel (sorry) DCC products is a year from now say Philips and Sony. That's more than enough time for DAT to firmly establish itself in the market.

ATARI FIRES ALL US SALES REPS

Atari has issued redundancy notices to its six full-time national sales representatives, according to the ST Report newsletter.

The sales reps have been used in the past to promote Atari's products to dealers across the US. Word is that, in a bid to cut costs, Atari plans to service its dealers directly from headquarters. A strange thing to do in the middle of an effective relaunch of the company's games products.

COMMODORE US CUTS JOBS

Meanwhile, Commodore US has announced that around 60 of its 600-strong workforce are to be laid off. The staff cuts are primarily on the administrative and factory side of things and do not affect the 2,400 other staff employed outside the US.

Officially, the layoffs are due to the reorganisation of functions within Commodore US, as well as the result of improved operating efficiencies. But reaction from the on-line community reveals that the cuts were not entirely unexpected.

MAC PORTABLE MK II NO-SHOW

John Sculley, Apple's CEO is reported to have been "furious" with his technical support staff when they failed to get a working version of the Mac Portable MK II up and running in time for Mac World Expo in San Francisco earlier this month.

According to the Byte Information eXchange (BIX) on-line system, the machine is now pencilled in for a launch at Uniforum in late January, although it's no great shakes in the technical advances department. The LCD screen

is now backlit and the weight has been reduced slightly.

This has been made possible, say Apple sources, by the inclusion of single inline memory modules (SIMMs) in place of standard RAM chips on the Portable. This cuts down battery consumption to the point where a backlit screen is possible.

All of this is merely a stop-gap, however, as Apple is reported to be feverishly working on a true successor to the Mac Portable for launch later this summer. My money is on a Comdex Spring launch this June.

INTERACTIVE TV COMING SOON

The Federal Communications Commission (FCC) in the US has announced that it has licensed the radio frequencies necessary to support a system known as interactive television.

Interactive TV works without the need for a phone and allows any TV viewer to key in commands on a special keyboard. The commands are transmitted to the TV station which then sends back the required information to the viewers television set in the form of a still picture.

The technology is very simple and bears a passing resemblance to the interactive teletext service seen on the Oracle and Ceefax systems, except that standard TV definition images are used.

The FCC reckons that handsets with a suitable radio transmitter can be produced for around \$100. The console plugs into your TV and the TV aerial plugs into the console. Simple.

The idea is that viewers could access simple information on their television screens - such as pictures from estate agents, bank statements and the like - using a cheap gizmo, and charged similarly to a telephone bill.

BUT the FCC dismisses the idea that television audiences could vote using the system; there simply isn't the channel capacity available. ■

PANTHERS, LYNXES AND CDTV AT THE LAS VEGAS CES

PANTHER AT CES

Atari presented a private showing of its new Panther console at the CES in Las Vegas this month. A 68000 microprocessor-based games console it is reportedly backwards compatible with the Atari ST and the Lynx hand-held console. Little else is known about the machine except that it is expected to be launched at the Cebit Faire in Hanover, West Germany, in March. Don't expect shipment until the summer, however.

BUDGET LYNX

Undoubtedly in response to the major threat posed by the Nintendo Game Boy, Atari rolled out a budget Lynx at CES. Priced at \$99.95 - compared with the standard \$149.95 machine - the budget Lynx has a redesigned case and a slightly smaller colour LCD screen.

What about the existing Lynx? Atari

is approaching the machine from the same sales angle as it did with the Portfolio at last November's Comdex Fall by marketing it with a variety of add-ons such as Com-Lynx cables, mains adaptor and two game packs. The Lynx 'comprehensive' kit will continue to sell for \$149.95.

LOADS OF LYNX SOFTWARE

Atari announced five more games for the Lynx at the CES, taking the total of available titles to 16. The titles are *Rampage* from Bally at \$34.95; *Road Blaster* from Atari at \$39.95; *Zerlor Mercenary* from Epyx at \$34.95; *Rygard* from Temco at \$39.95; and *Ms Pacman* from Namco at \$39.95.

Other Lynx titles announced for release later this year included *World Class Soccer* (Atari); *Ninja Garden* (Techmo); *Blockout* (California Dreams);

Xybots (Atari); *Warbirds* (Atari); *NFL Football* (Atari); *Shanghai* (Mediagenic); *Grid Runner* (Atari); *Turbo Sub* (Atari); *Checkered Flag* (APB); *Scrapyard Dog* (Atari); and *Tournament Cyberball 2072* (Atari).

CDTV FINALLY UNLEASHED

As expected, Commodore rolled out its Amiga CDTV system at CES. Shipment to six US cities is promised for next month, with volume shipment in the US following on in May and June.

The \$999 system is being pitched as an interactive CD-ROM disk reader for simple control as a standalone unit, or for onwards connection to other machines. It can also double as a compact disk player.

By the time the CDTV system appears in the US shops next month, Commodore reckons there will be 35 to 40 CD-ROM disks produced specifically

for the machine. By Christmas, the company expects this figure to have risen to around 100.

DISAPPOINTING SALES

All the major computer game console companies were agreed about one thing at CES: sales of games consoles are up on last year, but way below what industry experts had predicted.

This is blamed on the recession and the current Gulf crisis as causing the reduced rate of growth in the market. The computer games biz in the US was worth \$4,000 million last year, compared to projections of \$5,100 million. The 1989 figure was \$3,400 million.

Nintendo admitted that its sales fell short of predictions. The Japanese giant reported US sales of \$3,400 million, compared with a forecast of \$4,100 million.

Cadbroke Computing International



**12 Months On Site Warranty,
featuring 24 hour response time
is available as an option on all
ST's for just £29.99 extra.**

Please Read: Terms of Sale.

We are the longest established Atari dealer in the U.K. We have developed an extensive customer service policy which means that we test all Hardware/Software prior to despatch to ensure that goods arrive in working order. Although our prices are not always the cheapest we do endeavour to offer consistently good service and backup. This isn't just our opinion, we were voted "Best Dealer 1989" by the readers of ST World magazine, not for "the number of boxes shifted", but for quality service.

On Site Warranty: We have recently changed our backup programme by offering 12 months on site warranty as an extra with all ST's therefore giving the customer a wider range of options. We already offer on site warranty on all Star printers and Philips monitors listed at no extra charge.

All prices are correct at copy date 17/01/91, and are subject to change without prior notice. All prices are accurate while stocks last. Phone for up to date prices. All prices include VAT, there are no hidden extras (WYSWYG). Delivery (in Mainland UK) is free, on orders over £100 (add £10 for next day courier delivery. All prices available on Mail Order Shop prices may differ.

Atari Packs

20STFM Discovery Pack	£ 279.99
20STE Turbo Pack	£ 369.99
1Mb STE Turbo Pack	£ 399.99
2Mb STE Turbo Pack	£ 474.99
4Mb STE Turbo Pack	£ 549.99
Plus pack: ten games, J/stick, Dustcover	£ 30
lynx + California games	£ 129.99
Portfolio pocket PC	£ 199.99

Amiga Packs

A500 Batman Pack	£369.99
A500 Screen Gems	£369.99
Plus pack	£30
Includes Tenstar, Photon paint II, joystick, mouse mat	

Service Centre

Diagnostic service £15

Our Engineers can repair ST's and Amiga's in minimum time at competitive rates. We also offer a diagnostic service for which the customer is given a quote for the total cost of repairing the machine.

ROM switch + TOS 1.4 £49.99

This switch allows two sets of ST ROM's to be fitted to an ST and switched between to ensure compatibility with all software. Machines must have TOS 1.09 in two ROM form. If six sockets are fitted, no soldering is required. TOS 1.4 (2 ROM's) and two extra sockets are supplied.

Exchange ST PSU's £59.99

We can offer fully compatible PSU's for ST's at this price in exchange for the damaged PSU. Our engineers can fit any STFM memory upgrades for £20. We can also fit SMM's, TOS, Blitter chips, PSU's for just £10. Phone for details.

Star Printers

Star LC-200 £219.99 7 Colour printer Colour + mono ribbon supplied 225 cps 5 Resident NLQ fonts Bottom feed Push or pull tractor feed Paper parking	Star LC24-200 £249.99 24 Pin printer 222 cps 5 Resident LQ fonts Accepts font cartridges Bottom feed Push or pull tractor feed Paper parking	Star LC24-200 Colour £319.99 New 24 Pin printer 222 cps 5 Resident LQ fonts Accepts font cartridges Bottom feed Push or pull tractor feed Paper parking
Star LC24/10 £209.99	Star Laser 8DB, 2Mb RAM £189.99	All Star Printers carry 12 months on site warranty (Mainland UK). All printers include IBM Centronics cable. Phone for ribbons, paper and printer stands.
Star LC-10 £189.99	Star LC-10 Mk II £189.99	64K buffer 3 input switch £79.99
Citizen Swift 24 pin £319.99	Citizen 1200+ £139.99	256K buffer 3 input switch £149.99

Monitors

Atari SM124 Hi-res Mono monitor	£ 109.99
Philips 8833 MK II Colour, Stereo monitor	£ 249.99
Cmdr 1084S Colour monitor * limited offer *	£ 269.99
Philips 15" FST TV	£ 269.99

The Philips 15" FST TV includes: remote control, Scart input, 60 tuner presets, sleep timer and Fastext. All displays include Scart cable. Deduct £10 from Monitors only, if bought with computer. The Philips 8833 comes with full 12 months on site warranty.

Trust PC's

AT 12Mhz Desktop	£449.99
AT 12Mhz VGA Mini tower 40Mb	£799.99
AT 16Mhz Desktop	£499.99
AT 16Mhz VGA Mini tower 40Mb	£849.99
386SX Mini tower	£699.99
386SX VGA Big tower CK66 40Mb	£1099.99
386SX-20 VGA Mini tower 40Mb	£1129.99
386-25 VGA Mini tower	£1194.50
386-25 VGA Big tower CK66 40Mb	£1599.99
386-33 VGA Big tower CK590 40Mb	£1699.99
486-25 VGA Big tower CK590 210Mb	£POA
Mono Monitor	£99.99
VGA Colour Monitor	£299.99

PC Emulators

PC Speed, XT Emulator	£99.99
AT Speed, AT Emulator	£199.99
ATOnce, AT Emulator	£199.99

Midistudio Master

- ❑ 100 tracks storage, 20 tracks playing simultaneously.
- ❑ 240 ppq resolution.
- ❑ Realtime mix-down via mouse.
- ❑ Realtime scrolling arrange window.
- ❑ 11 levels of quantise, including humanise.
- ❑ Pipeline/Module system.
- ❑ Loop record.
- ❑ Midi soft keys.
- ❑ Works on 1040STF(M)(E)

**Master
£129.99**

**Midistudio
£49.99**

Midistudio is a 20 track sequencer which can operate on a 520STFMEI, in medium res. Midistudio is an easy to use, low cost introduction to Midi music composition.

ST FAX/Modem

Now you can use your ST to send faxes. Uses a fully featured modem so you can also access Bulletin boards and commercial communication systems.

- ❑ Fully Hayes compatible modem
- ❑ Auto dial/ Auto answer
- ❑ 300/1200/2400 Baud
- ❑ Mix text and graphics.
- Cannot receive faxes.

£200

Software Sale

**Up to 35% off ST, Amiga
and Atari 8 Bit titles
Phone for details**

Ladbroke
Computing**Low cost Hard Drives**We use only top quality, brand new, CDC or Quantum mechanisms.

We use American Military Standard quantum mechanisms in some of our Hard drives which are very high quality and come with a 2 year manufacturers warranty (from date of manufacture)

52HD- 52Mb 11ms**Uses Quantum drive £429.99**

32Mb Supra drive Special offer £ 399.99

61HD - 61Mb 24ms Special offer £ 429.99

84HD - 84Mb 24ms Special offer £ 549.99

We can assemble any of above Hard drives with ICD boards which include a clock for just an extra £15.

Phone for other capacities

Peripherals

MCS Mouse (ST) 270 Dpi, microswitched	£ 20.99
Golden Image Mouse (ST or Amiga) 290 Dpi, microswitched	£ 20.99
That's a Mouse (ST and Amiga)	£ 24.99
290 Dpi, microswitched, Switchable between ST and Amiga	
Contract Ball (ST or Amiga) Trak ball	£ 34.99
Topstar Joystick	£ 23.95
Golden Image Hand scanners (ST or Amiga)	£ 224.99
Golden Image scanners feature 100, 200, 300, 400 Dpi resolution.	
105mm scanning head, 64 grey scales and Excellent "Migraph Touch up" software.	
Forget Me Clock	£ 24.99
40 disk box, lockable	£ 6.99
80/100 disk box lockable	£ 9.99
Mouse mats from	£ 5.99

A4 Scanner

- 200 Dpi scanner.
- 16 grey scales or Black/White mode.
- High quality thermal image printer.
- Acts as photocopier.
- Works with ST, Amiga, PC, requires 1Mb RAM.
- Amiga version includes Photon Paint II.
- Comes complete with software, cable, thermal paper.
- Thermal paper available ex-stock at £7.99 per roll.

ST or Amiga Version
£449.99PC version + board
£479.99IMG scanner
£49.99

The IMG scanner is a device for scanning photocopied material at horizontal resolutions of up to 1000 Dpi on an ST, when used in conjunction with an Epson compatible printer.

CUMANA 3.5" Drives

CSA 354: ST 3.5" drive. £69.99

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 power supply and so does not draw power from the ST which could cause problems. Add £3 P&P for drives.

How to Pay

You can phone your Access or Visa card details or send a cheque/postal orders made payable to Ladbroke Computing International. Please allow sufficient clearance time for cheques.

33 Ormskirk Road, Preston, Lancashire, PR1 2QP Open Monday to Saturday 9:30am to 5:00pm. Phones answered from 9:00am. Dealer enquiries welcome. Ladbroke Computing International is a trading name of Walton Marketing Limited. All trade marks recognised.

- Autoparking 3.5" mechanisms.
- Full metal case suitable as monitor stand.
- On/off button and DMA device selector mounted on front.
- Integral PSU.
- DMA Out port for daisy chaining.
- Megadrive controller, low power, controls up to 8 SCSI drives.
- Compatible with emulators such as Spectre GCR, AT Once.
- Up to 255 partitions, up to 1 Gigabyte in size.
- Selection of Accessories/boot partition with boot editor.
- Backup & utility software provided. Also includes Midstudio demo software.

New Prices

Upgrades**Amiga boards**

Includes Enable/Disable switch

512K upgrade board £34.99

512K board with clock £39.99

STE SIMM's

512K SIMM's upgrade £39.99

2Mb SIMM's upgrade £119.99

4Mb SIMM's upgrade £239.99

512K STFM, 16 or 4 chip kit	£ 39.99	512K ST board+chips, kit	£ 59.99
2Mb ST board+chips, kit	£ 159.99	4Mb ST boards+chips, fitted	£ 344.99
TOS 14 kit (6 or 2 ROM's)	£ 39.99	STFM Blitter chip, kit	£ 39.99

Please check the configuration of your machine with our staff before ordering any upgrade. See service centre for fitting charges. All upgrades carried out by our service centre carry a 90 days parts and labour guarantee. Please add £1.50 P&P for upgrades priced under £100.

Spectre GCR**"Power of the Mac, without the price."**

- Reads, writes and formats Mac disks.
- Supports Hard drive and second floppy.
- Compatible with STE, Stacy.
- 30% bigger screen area than Mac Plus.
- Runs 20% faster than Mac Plus.
- Software upgrades available.
- Send SAE for Spec' sheet.

Spectre GCR
With 128K ROM's
£369.99

We are the consistently longest serving supplier

Quality Disks

Qty	Bulk Sony or Kao		Sony Brand
	Loose	Boxed	Boxed in 10's
10	£ 5.99	£ 6.99	Includes x10 Ryford black plastic box £ 9.49
40	£ 20.99	£ 26.99	Includes x40 Lockable, disc box £ 34.99
100	£ 48.99	£ 57.99	Includes x100 Lockable, disc box £ 84.99
150	£ 66.99	£ 83.99	Includes x150 Posso Stackable disc box £ 125.99

All bulk disks are top quality Sony or Kao, not cheap seconds. All disks carry an unconditional lifetime guarantee. Please add 75p P&P for each 10 disks.

Ladbroke
Computing
International**(0772) 203166 Fax 561071**

PD NEWS

Commisionware is a new PD-related service which promises to give programmers rewards for their efforts. The new label has been launched recently by Trust PD, who will exclusively distribute the software.

The scheme will give the programmer a 50p royalty on every disk sold. Though the disks will sell for normal PD prices - £3 a disk - they aren't actually public domain. So if your mates fancy your latest Commisionware program, they will have to purchase their own copies, and won't be able to take a quick copy from you.

If you think you have any software worth flogging through the Commisionware label, you should write to David Pullin, 3 Beacon Road, Standish, Wigan, WN6 0SB.

THE PD COLUMN

Relive the psychedelic Seventies, teach the kids how to count and blow up an alien civilisation all for the price of a few blank disks. Adam Waring tells you how.

If, on the other hand, you're a punter rather than a programmer, you may like to buy some software that's beneficial to the person who's gone to the trouble of producing the software. (Indeed, you may be interested in flicking through the *real* PD section.) Sales are at Trust PD, 18 The Park, Southowram, Halifax, HX3 9QY. Telephone 0422 341606.

Kozmic • ST • Floppypshop ST
Wow man, that's like really far out. I think I'll just sit here, under this tree, and mellow out for a while...

Kozmic is a phsycedelic pattern generator. You draw geometric shapes, splodges and patterns with a simple set of icon-based commands. The colour palette can be changed, and when you're happy with your mind-blowing

image, you switch on the colour cycling and sit back and enjoy the 'experience'.

It's dead easy to create the patterns. When you've come up with the hippest pattern available, it can be saved to disk, ready to be loaded up when you want another 'experience'.

Exodus • ST • Budgie UK • BU41
Exodus is a shoot-em-up from the darkest reaches of the galaxy (well, actually it's from Budgie, but there is such a thing as artistic licence). Set on the surface of a metallic planet, you have a mission to fulfil: kill everything that moves and leave the planet devoid of life.

This may seem a bit rough. After all, they've done nothing to you, and you are visiting the planet with the express purpose of destroying them. But they are aliens, and deserve to be annihilated.

Your ship can travel in eight directions. Robots roam the planet's surface and gun towers try and shoot you out of the sky. You have to weave through the

WHERE TO GO FOR THAT ESSENTIAL PD SOFTWARE

The programs mentioned on these pages are available from many PD libraries including...

TRUST PD, 18 The Park, Southowram, Halifax HX3 9QY. Tel 0422 341606. If you're stuck for software for your ST, then you can trust these good people to sort you out. Single sided disks are £1.75, and double sided are £2.50.

RIVERDENE PDL, 30a School Road, Tilehurst, Reading, Berkshire RG3 5AN. Telephone 0734 452416. Riverdene boasts PD collections for both the ST and Amiga. Most of its disks £2.50, they also have special PD packs for just over £5.

BUDGIE UK, 5 Minster Close, Rayleigh, Essex SS6 8SF. Although synonymous with the PD scene, Budgie's programs

aren't actually PD at all! A small royalty goes to the programmer for each game sold. Most programs cost £2.95, and are available from many other PD outlets as well as direct from Budgie.

FLOPPYSHOP ST, 5 Stewart Crescent, Northfield, Aberdeen. Tel 0224 691824. Piles and piles of floppies for your Atari ST. And the charge? £2.70 to you squire.

AMIGANUTS UNITED

169, DALE VALLEY ROAD, HOLLYBROOK, SOUTHAMPTON, SO1 6QX
0703 785680 - 10am to 6pm Mon-Fri

WE ARE THE OFFICIAL UK DISTRIBUTORS OF THE FANTASTIC T.B.A.G. DISKS FROM U.S.A.
THE VERY LATEST ARE ALWAYS AVAILABLE FROM US FIRST



- | | | |
|---|---|--|
| 284: PICTURE PUZZLES Can you connect the adult pictures? £1.50 | 813: A-GENE Genealogy (FAMILY TREE DATA). (1 MEG Min). £2.00 | |
| 287: OFFICIAL NASA space pictures. £1.50 | 814: AEROTOON ANIMATION. With Great Sound efx (1 MEG). £1.50 | |
| 389: PUGS IN SPACE Hilarious animation £1.50 | 855: INNERSHIP An excellent new version of breakout. £1.50 | |
| 394: ALCATRAZ MEGADEMO III An excellent set. (3 Disks). £4.00 | 861: GENOCIDE PICTURE SHOW (FOR ADULTS ONLY!) £2.00 | |
| 481: BREAKOUT construction game. With game editor. £1.50 | 864: MOD PROCESSOR Want to make executable picture/music progs? This will even work with MED music modules. A MUST! £2.50 | |
| 521: ALL NEW STAR TREK, AUTHORISED English Ins. (2 Disks). £4.00 | 865: The great Scoopex CHROMIUM demo + four others (1 MEG). £1.00 | |
| 576: EDUCATION packed with progs for the children. £2.00 | 873: FRAXIONS latest slideshow called FUTURE VISIONS £1.50 | |
| 581: SID - Finding the CLI. Slog? Prog? £2.00 | 901: AMI-FX - issue 2 - A must for Fractal Fans. 2 disks (1 Meg) £4.50 | |
| 639: C MANUAL by Anders Bjerin. A three disk set, 200 pages of instructions on opening windows/screens/graphics/gadgets/sprites. Loads of examples. (FULL KNOWLEDGE OF THE CLI IS REQUIRED). £5.00 | 905: PAIR IT. An excellent educational game for kids £2.00 | |
| 649: BUDBRAIN TWO DISK MEGADEMO, (FOR ADULTS ONLY). £3.00 | 906: DYNAMITE DICK - Dig for treasure. Avoid the bats. Good at £2.00 | |
| 640: 8 GAMES INC TRAIN SET, A MUST for the kids. £2.00 | 908: ANAGRAMS. A fantastic version at a realistic price £2.00 | |
| 680: WORD SQUARE SOLVER - Solve magazine puzzle squares. £2.00 | ***** THE LISTING BELOW IS FROM OUR LICENCEWARE PROGRAMS ***** | |
| 681: AMI-FX ISSUE 1 3 DISKS (FRACTALS) (1 MEG MIN). £5.00 | 705: AMIBASE PROFESSIONAL. A very good database prog. £2.50 | |
| 700: D-COPY D1 EXCELLENT copier program, full instructions £2.50 | 876: QUIZMASTER Think you know it all? Well now you can PROVE it. Each player enters their name and is represented as a racing car, the first to answer all the questions, crosses the winners grid. With save and re-load facility. (1-4 players) EXCELLENT. £3.00 | |
| 706: 3 GAMES BY PH SOFTWARE. The TURN, TRICKY, MARBLE SLIDE. £2.00 | | |
| 707: EIGHT COLOUR ICONS. All ready for your use. £1.50 | | |
| 717: MUSIC DISK 53 tracks, 90 MINS! (For the collection). £2.00 | | |
| 727: SLINTERS TALE II Rude, but funny. (2 Disks/Drives). £3.00 | | |
| 728: UTILS The Famous BOOT-SHOP, BOOT-KIT + others. £2.50 | | |
| 740: MED V2.13 A TOP quality version of this FANTASTIC music utility, a host of new additions, including synth sounds. £2.50 | | |
| 741: NorthC V1.3 The VERY LATEST from Steve Hawtin, this set is on TWO DISKS, packed with extra examples & advice on bugs. £5.00 | | |
| 755: SUPER C COMMANDS FROM TWILIGHT (FASTER C DIR PROGS). £1.50 | | |
| 758: BOOTBENCH This one is packed with bootblock utils. £2.00 | | |
| 760: Letter writers disk. Set up and ready for your letters. £1.50 | | |
| 790: PROFESSIONAL SOUNDTRACKER V1.0 is here!, just press HELP key, whilst running, for full instructions, ALSO latest Ntracker V2.12, by Exolon And the FINAL version of DISKMASTER (V3), CLI TOOL. £2.50 | | |
| 798: ROB BAXTER'S AMIGADEUS (Mozart), classical music disk. £1.50 | | |
| 799: ROB BAXTER'S CLASSICAL MUSIC, (HANDEL & BACH). £1.50 | | |
| 805: The Fantastic WRATH OF THE DEMON Animation Demo. £1.00 | | |
| 812: STAR TREK U.S. Version. GOOD! (1 MEG) (2 Drives). £4.00 | | |

AMIGANUTS HAVE PESTERED US ABOUT THIS AND NOW IT'S HERE.
IF YOU ARE A CROSSWORD PUZZLE ENTHUSIAST, THIS IS A MUST!

877: 1 ACROSS 2 DOWN Crossword program. A data disk is also supplied with EIGHT different crosswords for you to play, new data disks will become available approx every Month. (2 DISKS) £5.50

INTO CODING? - WANT TO LEARN? THE AMIGA CODERS CLUB IS FOR YOU

ACC 1-4: The first compressed issues of a great disk for coders, even if you are new to computers, get this one, if you want to learn assembly, (devpac). 1 DISK. INTRODUCTORY PRICE £1.50

ACC 5: PACKED WITH SOURCE, HINTS TIPS FROM MANY OF THE WELL KNOWN CODERS THAT ARE ON THE AMIGA SCENE TODAY. £3.00

ACC 6, 7 and 8: Now available. (ACC disks are £3.00 for each issue)

* FREE! - When you order 15 or more programs from the ABOVE list you will receive an Amiganuts pen + Hypnosis 6 Demo disk - FREE *

FREE DISKS + FREE PROGS + FREE MEMBERSHIP - THERE ARE OVER A THOUSAND DETAILED PROGS LISTED ON THE MAIN CATALOGUE DISK. ONLY £1.00

shower of enemy fire, blasting the robots to bits as you do so. Finish your merciless task and you're whisked off to another world, with another civilisation for you to destroy.

It's a pretty game – the background looks like it's made in Sheffield, with the bas-relief surface shinning where light picks it out, and in shadow where the rays don't reach. The sound is appropriately shoot-'em-up-ish, consisting of lots of explosions and laser fire.

ST Programmer • ST • Riverdene PDL • ISS1

ST Programmer is yet another magazine on a disk. The difference with this one is that it's aimed at those who really know their sugar, and at those who'd really like to. There are plenty of techie articles in the first issue, coving topics like STOS Basic programming and 68000 coding.

A six issue subscription will cost you £12. Overseas readers need not feel left out – £18 will ensure that they receive the mag too.

Three Games • ST • Trust PD • Educational 10

It's time you were taught a lesson and this disk could do just that. It has three games on it, written with the purpose of making learning fun.

Learning to tell the time is the purpose of *Time Teller*. You're presented with an analogue clock face, and have to

convert it to digits on a digital watch. It uses the 24 hour system, so you'll have to be a bit of an advanced time-teller.

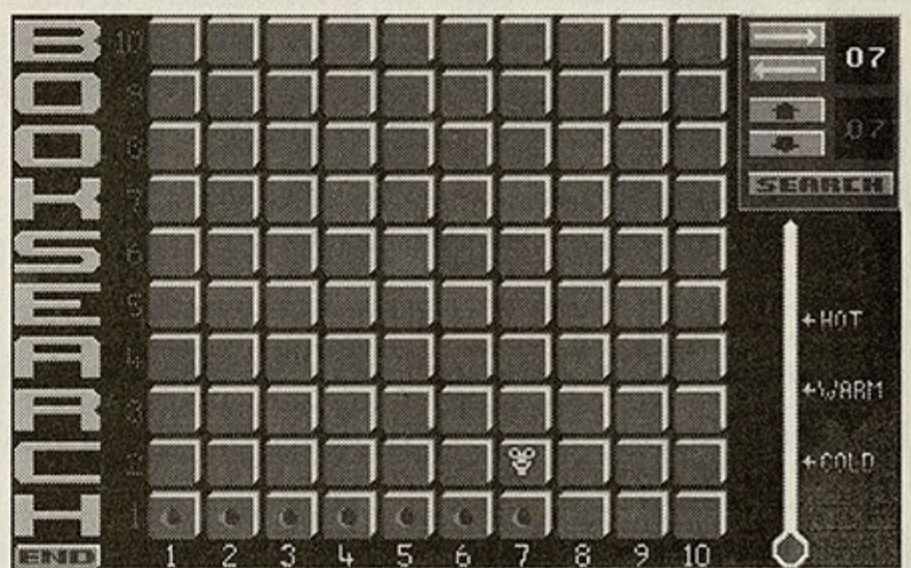
Train tests your counting and adding skills. An engine has to pull a certain number of people in various sizes of rolling stock. The thing is, you're only allowed to use certain configurations of coaches. So you may be offered two- and three-person carriages to take 10 passengers. A bit of a tricky beggar, I can tell you.

Make a complete pig's ear of the whole thing, and you're told that you're really a very stupid child indeed and can jolly well sit here 'til you've got it right. Only joking – the computer explains to you how it should be done, by showing you an example that *does* add up.

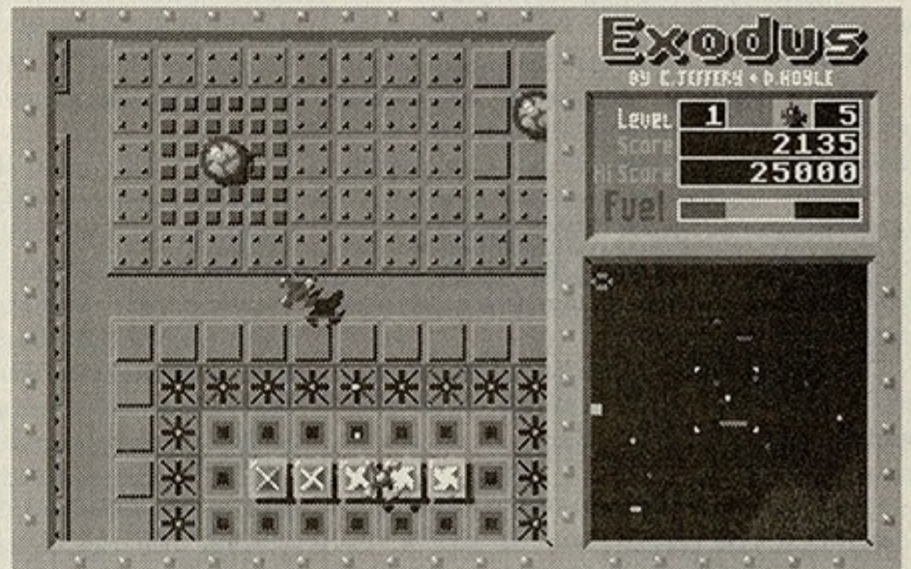
Search puts you on the hunt for your missing girlfriend who's stuck inside a book... ah, maybe I should have mentioned that you're both bookworms.

You have to chomp your way through the books to find her. The trouble is that there are one hundred books in all so it will take you ages to search through the whole lot. Luckily, you're given a clue. A thermometer tells you whether you're hot, warm or cold. You can use this clue to home in on the correct area until eventually you find the missing mite.

Then the daft thing only goes and gets lost again. So you have to do repeat the whole thing. ■



• Exodus: Crash! Bam! Wham! Zap! Die horrid alien chap. But it's educational! Really!



• Trainyour kids to count with this program on the Three Games educational disk

Lorenzo's Domain
Amiga P.D. & Shareware

OUT NOW NEW MEGA MAGAZINE/CATALOGUE DISK
Free with every order or 75p without order

PD TITLES

- 135 Digital Concert by Flash Productions. Their latest mix.
- 138 Sound of Silents. A collection of great songs from the Silents.
- 141 Dmob Music 3. Definitely their best mix so far.
- 145 The Kefrens Jukebox. 8 excellent songs with Jukebox loader.
- 158 The Crusaders music disk. Oct 90. Some well wicked new songs.
- 160 Glideascope 4 by Cryptic. The latest excellent Glideascope disk.
- 222 Budbrain Megademo (X). (2 disks). One of the best this year.
- 247 Cronics Neverwhere. (1 meg). This one deserves to be called MEGA.
- 248 Cronics Megademo. Only 3-parts but all are outstanding.
- 250 Brainstorm Megademo. (2 disks).
- 254 No Brain No Pain. (2 disks). Cool Megademo from Flash Productions.
- 255 The Motola Halloween Conference Demos. 4 wicked demo winners.
- 256 Compussylation 100. Collection of cool demos from Pussy.
- 257 Turtle Power Demo.
- 321 The Ripped Picture Show. Selection of familiar screenshots.
- 322 Agatron Slideshow 8. Reflections Ray Traced Slideshow. Brilliant.
- 323 Future Visions Slideshow by Fraxion. More great fantasy artwork.
- 324 The Star Trek Slideshow By Hellraiser. Digitised Trek photos.
- 432 Donald Duck Animation. (1 meg). Fantastic Disney reproduction.
- 435 Dragons Lair 2. Time Warp. Brilliant demo for new game.

AMIGA GAMES

- Indianapolis 500.....£19.99
- The Spy Who Loved Me.....£19.99
- Cadaver.....£19.99
- James Pond.....£19.99
- Badlands.....£15.99
- Rick Dangerous 2.....£19.99
- Powermonger.....£24.99
- Populous.....£19.99
- Corporation.....£19.99
- Kick Off 2.....£19.99
- Shadow of the Beast 2.....£27.95
- Wings.....£23.99
- Midnight Resistance.....£19.99
- Shadow Warriors.....£19.99
- F-29 Retaliator.....£19.99
- Lost Patrol.....£19.99
- Days of Thunder.....£19.99
- Operation Stealth.....£19.99
- Turrican.....£15.99
- Battle of Britain.....£23.99
- AMOS.....£39.99
- Midwinter.....£23.99
- Shadow of the Beast.....£27.95
- BSS Jane Seymour.....£19.99
- Battlemaster.....£23.99
- Imperium.....£15.99
- The Immortal.....£19.99
- Back to the Future 2.....£19.99
- Gremlins 2.....£19.99
- Heroes.....£24.99
- A500 1/2 Meg upgrades.....£34.95
- A500 1/2 Meg upgrades with clock.....£39.95
- A500 1 1/2 Meg upgrade.....£129.95
- External Disk Drives.....£79.95
- Replacement PSU.....£45.95
- Stereo Sound Systems.....£35.95
- Datalink (Null Modem) Cables.....£5.95

ALL PD DISKS 99p each

ONE PD DISK FREE WITH EVERY 10 ORDERED

No membership. FREE catalogue with every order. When you choose from Lorenzo's Domain you can be sure of getting the best VIRUS FREE P.D. around. We aim to have your order back in the post within 2 hours. Delivery on PD disks 50p on total order. Delivery on other items £1.50 on total order. Send your order with a cheque or P.O. to:

LORENZO'S DOMAIN
30 COLQUHOUN SQUARE, HELENSBURGH, G84 8AQ



RUTLAND COMPUTER SUPPLIES LTD.



30 Buckminster Close,
Melton Mowbray, Leicester, LE13 1ET

Telephone: 0664 500878 Fax: 0664 500878
(please ring for our full price list)

open until 7.00pm

- 3 1/2" DD disks 39p each
- 3 1/2" HD disks 99p each
- 5 1/4" 96tpi disks 25p each
- 5 1/4" HD disks 49p each

All disks are certified 100% error free and are complete with labels & envelopes

STORAGE BOXES

- 40 x 3 1/2£4.49
- 50 x 5 1/4.....£4.49
- 80 x 3 1/2.....£4.95
- 100 x 5 1/4.....£4.95
- 100 x 3 1/2.....£5.95
- 120 x 5 1/4.....£5.95
- 120 x 3 1/2.....£6.95
- Posso boxes£14.95

LASER PRODUCTS NOW AVAILABLE

- Star LC10 Ribbons £2.50
- LC10 Colour Ribbons £5.00

Large range of top quality ribbons in stock.
Please ring for prices

Prices include VAT. Carriage £3.50, Courier £9.00

Open Mon - Fri 9am - 7pm. Sat 10am - noon.
Collections welcome, please ring first

24 Hour Despatch

CIRCUIT CITY

If you enjoyed the ready made project kit and would like to take circuit building further, here's part one of a breadboarding project for understanding electronic circuits.



Like the kit, the breadboard modules will have components built on them and the components will be connected together without solder. If you're competent with a soldering iron though, the components could benefit from a blob or two to secure them to the board.

This is a ground-up project and you will manufacture the breadboard and all of its associated modules. Power for the various projects will be by batteries initially and later a mains transformer will be added. For the first stage of the project, a main general purpose board and a power board will be made. Later on, specialised modules for integrated circuits and other logic components will be added.

The main board will contain the building blocks of any electronic project. Resistors, capacitors, transistors, switches, variable resistors diodes, and many other useful components.

The power supply board will contain batteries wired so that power from 1.5-12v can be supplied in 1.5v increments. This means that there will be 1.5, 3, 4.5, 6, 7.5, 9, 10.5 and 12v available for the projects. The battery board will carry 16 AA sized batteries.

MAIN BREADBOARD

For the main board, I chose a piece of shelving, available from all DIY supermarkets. I used two pieces measuring two feet by nine inches each. They were about half an inch thick. These were laid together on the bench to form a surface 24-inches x 18-inches. I painted these white using ordinary housepaint (it doesn't matter whether you use gloss or enamel, but I find gloss easier to keep clean.)

A piece of pine baton 1.5-inches x 0.5-inches x 36-inches was cut into two equal lengths and glued two the shorter perimeters of the main board. This made a breadboard 24-inches x 18-inches that would sit 0.5-inches proud of the table on the pine batons when completed.

With the batons still facing upwards, I measured 2-inches in from the perimeter of the breadboard on all sides and marked this with a fibre tipped pen. This area, 20"x14", formed the main component area for the board.

In this 20-inches x 14-inches area I drew a matrix of two-inch squares. This matrix of 70 squares formed the basis for location of components on the board. The next part was a little tricky and there are a couple of ways that it can be done. The 88 points where lines of the matrix meet or cross are the locations of the component pins.

If you want a quick, cheap and cheerful way of making the board, the simplest thing to do here is hammer 88 two inch nails through the board at the points where the matrix lines join and meet.

This is a sure way to black your thumb, teach your family a few new expletives and split the wood. It can be done, but expecting the wood to accept that amount of stress without splitting is as sure as expecting to predict the winner of the National with a computer program.

If the cheaper nailed option is still your choice you can make life easier by drilling a small pilot hole for each nail. This must be sufficiently smaller than the diameter of the nails to allow them to grip. To hammer the nails through, you'll need a table with some sort of well in it (like a woodworking bench or Workmate) or you'll need to support the work on blocks to allow the nails to be hammered through without spearing the table below.

If you've the time and you don't mind spending a bit of cash to do the job properly, you can follow the course that I took. The local electronic hobbyist's shop provided threaded screws, nuts and washers. Each hole was drilled to the diameter of the threaded screws. A washer was placed on the screw and the screw was inserted through its hole from the baton side. Another washer was placed on the protruding end and a nut was tightened on to the thread. A second nut was placed loosely on the thread - 87 screws later, the completed board looked quite business-like.

POWER BREADBOARD

The power board was a lot easier to manufacture than the main board as it was simply a case of attaching ready-made components to the base. For the base I again used a piece of shelving 24-inches X 9-inches.

This was for uniformity more than anything and I could have used a much smaller board.

A local hobbyist's supply shop had a stock of single AA battery holders at 25p each. I bought sixteen of these and drilled their bases with a fine drill bit before screwing them to the board in a line. At the head and tail of each battery holder, the board was drilled and had screws secured with washers and nuts as on the main board. Soldered links were made between the terminals on the battery carriers and the appropriate screws. Although it is possible to manage without soldering by simply wrapping the wires around terminal and screw, this is one occasion where a few minutes with a soldering iron can pay off.

After constructing the battery carrier board, there was still enough room on the board to add a mains transformer and power supply at a later date.

With all of the battery carriers separate, it is possible to wire them in series and/or parallel to provide the required voltage and current for the circuit being built.

ELECTRONIC COMPONENTS

Most of the electronic components that you'll come across have a couple of 'legs'. To attach them to the main board, choose a couple of the protruding screws and wrap the legs of a component around them. Add a blob of hot solder to hold them in place. This works fine for the two legged components such as resistors, capacitors, switches and rheostats, but those with three or more legs such as transistors need a different approach.

I found after trial and error (and a lot of that too) that the best way to locate a transistor was to drill another hole in the board just below a screw. The transistor was passed through the hole and located with its head still proud of the board. Careful choice of the size of drill bit meant that the legs would fit through the hole without fouling each other and the main body of the transistor sat on the board. The board was turned over and the central pin of the transistor was located to the nearest screwhead with a blob of solder. Some transistors had legs long enough to reach the two nearest adjacent screws. Where this was the case, they were connected with solder as with the central leg. Other transistors had shorter legs and had to have wires soldered to their legs in order to reach.

This method of attaching components can be adapted for most simple electronic components. Integrated circuits and other multi-legged beasts require a slightly different procedure so we'll be constructing a purpose-built board especially for those.

Next week, We'll look at what components you can include on your breadboard and what each of them does. We'll also start to plan other modules for adding later and I'll show you a novel way of setting up your electronics lab without taking up much space. ■

COMPONENTS FOR CONSTRUCTION

MAIN BOARD:

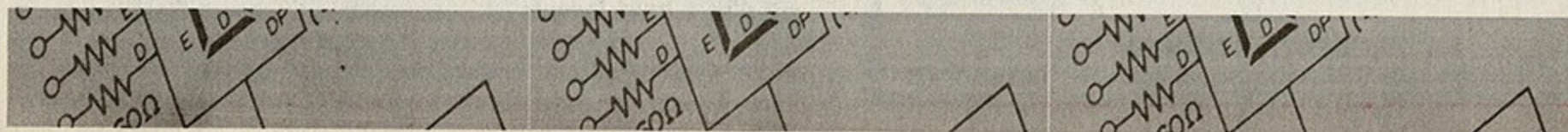
2 x DIY shelf 24-inches x 9-inches
1 x pine baton 36-inches x 1.5-inches x 0.5-inches

Either:

88 x 2-inch nails
or
88 x 2-inch threaded screw
176 x washer for screws
176 x nut for screws

TOOLS

Tenon saw
Drill
Screwdriver
Miniature spanner
Wood glue
Two-inch paintbrush
Paint
Woodworking bench or similar
Soldering iron and solder (optional)





SOUNDTRAP 3 AUDIO SAMPLER

1. HIGHEST QUALITY
2. SMALLEST ON THE MARKET
3. FITS A1000 OR A500/2000
4. PRINTER PASS-THRU
5. GAIN CONTROL
6. SOFTWARE, SCREWDRIVER & LEAD INCLUDED.
7. COMPREHENSIVE MANUAL

Unless otherwise stated, all our products carry a 12 months warranty, plus Omega Projects prided UNLIMITED SUPPORT

MINI-MIDI INTERFACE + ---SOFTWARE---

1. HIGHEST QUALITY
2. SMALLEST ON THE MARKET
3. FITS A500/2000/1000**
4. DATA INDICATORS FITTED
5. 2 METRES CABLE BUILT IN
6. FULLY OPTO-ISOLATED
7. TRIED & TESTED DESIGN

**A1000 requires special adaptor



24.99
MINI MIDI
19.99

A500 replacement int. drive	£54.95
A2000 internal drives	£59.95
A3000 internal drives	£59.95
45Meg SCSI 3.5" hard drives	£239.95
90Meg SCSI 3.5" hard drives	£349.95
136Meg SCSI 3.5" hard drives	£475.95
182Meg SCSI 3.5" hard drives	£535.95
A590 CMOS RAM chips (512K)	£25.00
B2000 18 pin DRAMS (2Meg)	£109.95
256*1 DRAMS 150ns	£1.25
1.3 ROMS	£34.95
68000 chip (8MHz)	£12.95
68000 chip (16MHz switchable)	£29.95
68010 chip	£24.95
68020 chip (20MHz)	£79.95
68030 chip (25MHz)	£195.95
68030 chip (33MHz)	£275.95
68881 co-pro (12MHz)	£49.95
68881 co-pro (16MHz)	£54.95
68881 co-pro (20MHz)	£75.95
68882 co-pro (20MHz)	£99.95
68882 co-pro (25MHz)	£149.95
68882 co-pro (33MHz)	£179.95
68882 co-pro (50MHz)	£399.95
A3000 RAM 256*4 80ns 1Meg	£65.95
A3000 RAM 1024*4 80ns 4Meg	£299.95

512K with clock + switch	£32.95
IN500 with 1.5Meg installed	£99.95
SIN500 OK	£85.95
SIN500 with 2Meg installed	£175.95
X-RAM OK (for A500/1000)	£175.95
X-RAM with 2Meg installed	£279.95
X-RAM with 8Meg installed	£529.95
Octabyte OK (for B2000)	£140.95
Octabyte with 2Meg installed	£249.95
Octabyte with 8Meg installed	£499.95
Inmate OK + SCSI + 68881 Soc	£284.95
Inmate + 2Meg + SCSI + 68881 Soc	£350.95
4 channel audio mixer + mic	£34.95
Sound Trap 3 + Mini-Midi	£47.50
Sound Trap 3 + Audiomaster 2	£54.95
Sound Trap 3 + Audiomaster 3	£84.95
Mini-Midi + Music-X	£94.95
Audiomaster 2	£29.95
Audiomaster 3	£54.95
X-Copy Professional v3.1	£32.95
Byte 'n' Back (h/disk backup)	£19.95
1081 RGB monitor	£187.95
3.5" ext. drive + on/off switch	£59.95
3.5" ext. + track counter	£88.49
A590 hard disk OK	£299.95
A590 hard disk 2Meg	£354.95

Accelerator cards	from £399.95 (call)
68030 25MHz OK (A500/2000/1000)	£479.95
68030 + 1Meg + 25MHz 68882 co-pro	£629.95
68030 + 1Meg + 33MHz 68882 co-pro	£659.95
68030 + 1Meg + 50MHz 68882 co-pro	£879.95
68030 33MHz OK	£579.95
68030 + 1Meg + 25MHz 68882 co-pro	£729.95
68030 + 1Meg + 33MHz 68882 co-pro	£759.95
68030 + 1Meg + 50MHz 68882 co-pro	£979.95
2Meg 32-bit fast RAM for above	£259.95
4Meg 32-bit fast RAM for above	£454.95
8Meg 32-bit fast RAM for above	£799.95
512K of static RAM (Shadows Kickstart)	£99.95
Amiga 500 Screen Gems Pack	£379.95
At-once card (PC/AT Emulator)	£195.95
5.25" ext. disk drive (40/80 TRK)	£109.95

OMEGA PROJECTS
14 DERWENT CLOSE
CULCHETH, WARRINGTON,
CHESHIRE, ENGLAND,
WA3 5DY

23way connector no hood	£1.99
23way connector + hood	£1.49
X-Copy hardware	only £9.95
3.5" blank disks	0.49
10 capacity disk boxes	£1.50
40 capacity disk boxes	£4.50
80 capacity disk boxes	£4.95
Dynamic microphones	£9.95
Condenser microphones	£14.95
Pair Hinari speakers	£19.95
Pair Panasonic speakers	£29.95
Joystick extension lead	£2.50
1.2 metre midi leads pair	£2.95
3 metre midi leads pair	£3.95
5 metre midi leads pair	£4.95

**ALL CHEQUES,
P.O.'s etc should be
made payable to
OMEGA PROJECTS**
We also take
Access,
Visa,
Mastercard
& Eurocard

**1 ONLY
EX DEMO 2630 CARD**
features 68030 processor running at
25MHz + 2Meg RAM & a 25MHz
68882 maths co-pro
£699.95
genuine COMMODORE
90 DAY WARRANTY

**FATTER AGNUS CHIPS
NOW IN STOCK AT ONLY
£59.95**
WHILE STOCKS LAST



GENUINE CBM
A1010 EXT. DRIVE
£49.95
WHILE STOCKS LAST



0925-763946

FOR ORDERS & TECHNICAL QUERIES



0860-795260

IF WE ARE OUT OF THE OFFICE

0204-884230
FOR ORDERS ONLY

ALL PRICES INCLUDE VAT



ROUTE PLANNER
FOR THE AMIGA
GRoute
£39.95

NEW

Evesham Micros

**ALL
PRICES
INCLUDE
VAT AND
DELIVERY**

Buy with confidence from one of the longest established companies in their field, with a reputation for good service and prices. We have invested heavily in a computer system to enable our Telesales staff to provide up-to-the-minute stock information, coupled with highly efficient order processing. Our fully equipped Workshop enables us to carry out almost any repair on our premises. We feel sure that you won't be disappointed if you choose Evesham Micros.

**LOOK WHAT ELSE YOU GET
WHEN YOU BUY AN AMIGA
FROM Evesham Micros**

THESE FABULOUS GAMES:
Tracksuit Manager 90 Subbuteo Treasure Trap
Block Alanche Lost'N Maze Discman
Battle Squadron Diet Pilot Tank Battle
Tennis Cup Jaws
PLUS! A wordprocessor and spreadsheet

**A
M
I
G
A**

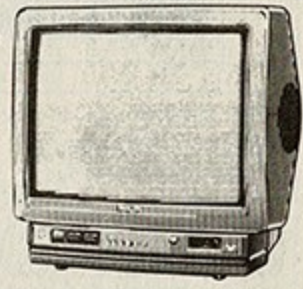
**AMIGA 500
SCREEN
GEMS PACK**
Top-selling A500 package includes 'Night Breed', 'The Beast 2', 'Back to the Future 2', 'Days of Thunder', 'Deluxe Paint II' and TV modulator.
A500 SCREEN GEMS PACKAGE £ 379.00
SPECIAL! A500 Screen Gems Package inc. 512K RAM Clock Upgrade ... £ 399.00
A500 Screen Gems Package PLUS 3 1/2" Drive £ 430.00
A500 Screen Gems Package including 512K RAM/Clock Upgrade AND 3 1/2" Drive £ 450.00

**AMIGA 500 CLASS
OF THE 90'S PACK**
Includes A501 512K RAM Upgrade, TV Modulator, 8 software Titles, 10 Disks, Mouse Mat, Video Tape and more
A500 CLASS OF THE 90's Package ' £ 549.00
A500 Class of the 90's Pack PLUS 3 1/2" Drive £ 600.00

**AMIGA 1500
STARTER PACK**
Includes A1500 computer (1Mb RAM, 2 x 3 1/2" Drives, 8 expansion slots), Commodore Hi-Resolution Colour Monitor, plus Software including: 'Deluxe Paint III', 'Battle Chess', 'Sim City' and 'The Works' (business software).
AMIGA 1500 STARTER PACKAGE £ 999.00

**SPECIAL
DEALS**

PHILIPS 15" FST TV/MONITOR
With its dedicated monitor input, this model combines the advantages of a high quality medium resolution colour monitor with the convenience of remote control Teletext TV - at an excellent low price!
£ 269.00
Inc. VAT, delivery & cable

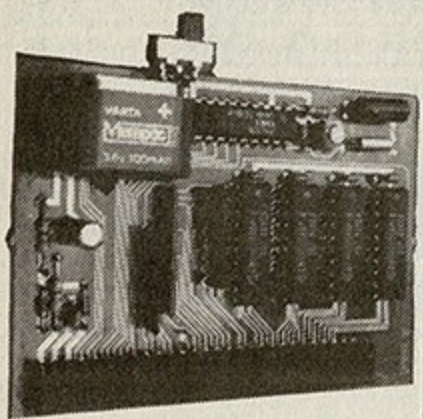


LYNX Portable Games Console
Now Only **£119.00** including VAT and delivery

LYNX GAMECARDS	Electro Cop	£19.95	Ms Pacman	£19.95
	Slime World	£19.95	Xenophobe	£19.95
	Klax	£19.95	Blue Lightning	£19.95
	Roadblasters	£19.95	Gates of Zendocon	£19.95
	Paperboy	£19.95	Chips Challenge	£19.95
	Rygar Warrior	£19.95	Rampage	£22.95
	Zaxxon Mercenary	£19.95	Gauntlet 3	£22.95



A500 SOLDERLESS RAM UPGRADES



**512K
MEMORY
UPGRADE
ONLY £34.95**
including VAT & delivery

512K RAM/CLOCK EXPANSION FEATURES :
☆ Direct replacement for the A501 expansion
☆ Convenient On / Off Memory Switch
☆ Auto-recharging battery backed Real-time Clock
☆ Compact unit size : Ultra-neat design
☆ Only 4 low power consumption FASTRAMs

512K RAM expansion without clock only £29.95

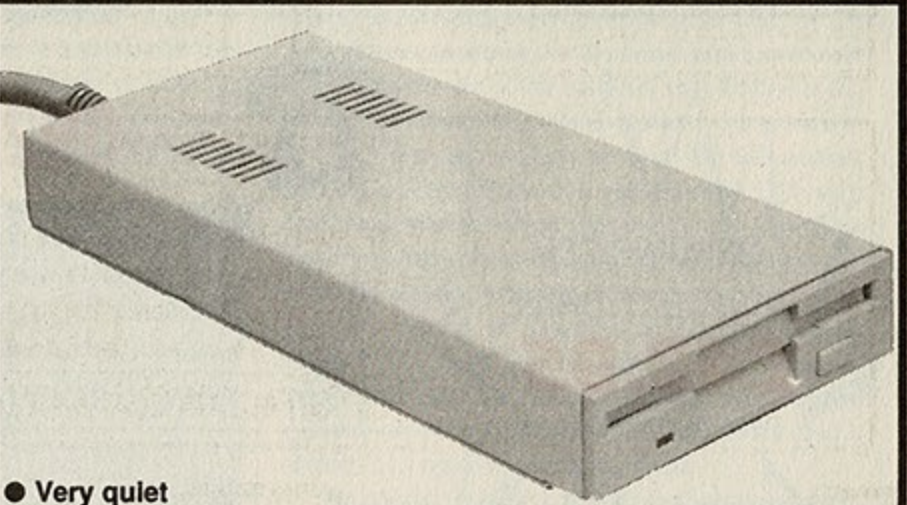
A500 1.5MB RAM BOARD
☆ Fully populated board increases total RAM to 2MB !
☆ Plugs into the trapdoor expansion (as with 512K unit)
☆ Auto-recharging Battery Backed Real-Time Clock
☆ Socketed FASTRAM ICs for accommodation up to 1.5MB
Unpopulated RAM Expansion Board with Clock £39.95
RAM Board with Clock, with 512K FASTRAM installed £59.95
RAM Board with Clock, with 1 Mb FASTRAM installed £74.95
RAM Board with Clock, with full 1.5Mb FASTRAM installed £89.95
N.B. Requires Kickstart 1.3 to operate - Kickstart 1.3 Upgrade available from us for £29.95
Please Note: The Upgrade Requires Internal Connection to the Amiga GARY chip.

AMIGA & ST HARD DRIVES

AMIGA
CBM A590 20Mb Hard Disk £ 279.00
A590 Hard Disk, 40Mb SCSI version .. £ 399.00
A590 Hard Disk, 100Mb SCSI version £ 599.00
A1500/2000 40Mb Hard Disk Card £ 395.00
A1500/2000 100Mb Hard Disk Card ... £ 595.00

NEW! 'REFERENCE' SCSI HARD DRIVES FOR THE ATARI ST
Incorporates fast NEC SCSI autoparking mechanisms with ICD H/D interface. Includes external PSU, throughput and cooling fan. Compact metal case.
40MB VERSION ONLY £ 399.00
100MB VERSION ONLY ... £ 599.00

Amiga & ST 3 1/2" Drives

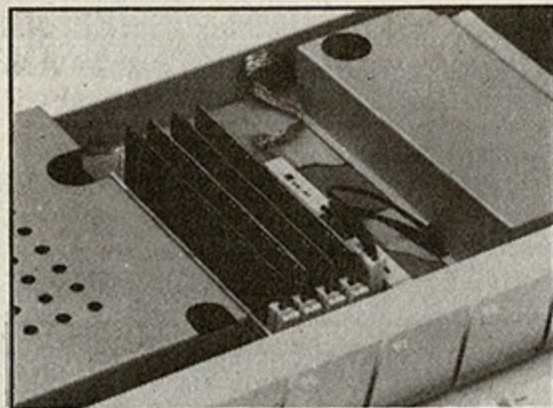


- Very quiet
- Slimline design
- Cooling Vents
- Sleek, high quality metal casing
- Quality Teac / Citizen mechanism
- On / Off switch on rear of drive
- Throughport connector (Amiga)
- External plug-in PSU (Atari ST)
- Full 1Mb unformatted capacity
- Long reach connection cable

**ATARI ST VERSION :
£59.95**
**AMIGA VERSION :
£54.95**

5 1/4" External 40/80 Track Drive also available, only £99.00

SOLDERLESS MEMORY UPGRADES FOR ST's



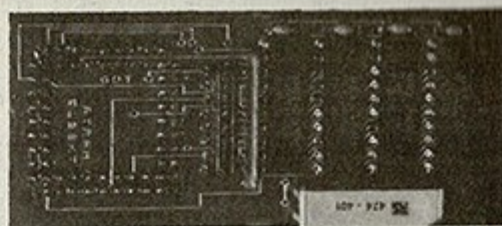
Upgrade the memory of your ST quickly and easily with our new, fully software compatible RAM upgrade board. Designed for pre-STE machines, the unit accepts SIMMS slot-in memory modules, making RAM fitting simplicity itself. No electronics knowledge needed! Available with or without RAM modules. Allows upgrade in stages of 1Mb, 2 / 2.5Mb and 4Mb, as and when necessary. Straightforward installation - full, comprehensive instructions provided.

- ✓ Fits any STF, STFM or MEGA series machine in minutes!
- ✓ Uses SIMMS RAM Modules for Effortless Upgradeability
- ✓ Probably the neatest ST RAM Upgrade available!

RAM Upgrade with board unpopulated	£59.95
RAM Upgrade With 512K RAM Installed - upgrades a 520 to a total of 1Mb RAM	£89.95
RAM Upgrade With 2Mb RAM Installed - upgrades a 520 1040 Mega1 to 2 2.5Mb	£174.95
RAM Upgrade With 4Mb RAM Installed - upgrades a 520 1040 Mega ST to 4Mb	£284.95

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

PLUG-IN, SOLDERLESS RAM UPGRADE FOR ANY ATARI 520 ST



Now there is a simpler, faster and more effective method of upgrading your humble 520 ST to 1Mb RAM ! Our new plug-in 512K memory upgrade unit offers excellent value for money, requiring no soldering or special technical know-how. (Not suitable for STE machines.)

ONLY £69.95 including VAT and delivery

PRINTERS

Prices include VAT, delivery and cable



- SPECIAL OFFER -

EVESHAM MICROS SPECIAL OFFER - ALL STAR PRINTERS INCLUDE 12 MONTHS ON-SITE MAINTENANCE !

Star LC24-10 SPECIAL NEW LOW PRICE	£ 215.00
Star LC-10 best-selling 144/36cps printer	£ 159.00
Star LC-200 NEW replaces LC10 Colour model, 180/45cps (faster) & with bottom feed facility, push/pull tractor ...	£ 209.00
Star LC-15 wide carriage version of LC10	£ 299.00
Star LC24-15 wide carriage version of LC24-10	£ 369.00
Star LC24-200 NEW updated version of LC24-10; bottom feed facility & push/pull tractors, 200/67cps speed	£ 249.00
Star LC24-200 NEW 7-colour version of LC24-200	£ 289.00
Star FR-10 Professional 9 pin 300/76cps, 31K buffer, 16 NLO fonts, EE-PROM configuration memory	£ 369.00
Star XB24-10 Professional 24pin; 27K buffer, 4 SLQ & 25 LQ fonts, EE-PROM configuration memory	£ 429.00
Hewlett-Packard Deskjet 500 Inkjet 300dpi printer	£ 459.00
Panasonic KXP1180 super 9pin, over 3400 typesyles	£ 179.00
Panasonic KXP1123 NEW 24pin successor to KXP1124 ..	£ 235.00
Epson LX400 popular 10", 180/25cps	£ 159.00
Epson LQ550 good 24pin printer 150/50cps	£ 349.00
Olivetti DM100S 9pin, 200/30cps, inc.on-site maint.	£ 129.95

Western Digital Filecards

Upgrading your PC to hard disk? Look no further, we offer the best prices on top quality filecards, with ultra-competitive speed ratings. Thorough documentation supplied, low power consumption, with free XTree file management utility software and Speedread. For Amstrad PC1512 / 1640 / 2086 users we supply filecards tested and formatted, with our simple software installation procedure. Probably the best packages available!

PRICES

21MB £209

32MB £229

41MB £259

inc.VAT/Delivery

ATARI

EVESHAM MICROS PRICE PROMISE - WE WILL BEAT ANY GENUINE ST COMPUTER OFFER ON A LIKE-FOR-LIKE BASIS

All our ST prices include mouse, user guide, etc. PLUS 5 disks of Public Domain software including paint program, wordprocessor, games, graphics & sound demos, desk accessories and utilities.

KICK OFF WITH THIS DEAL FROM EVESHAM MICROS !

'Kick Off 2'
'Tracksuit Manager'
'Subbuteo'
Quickshot 3 Turbo Joystick

FREE WITH EVERY STE or STFM PACKAGE !!

520 STFM 'DISCOVERY PACK'

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

STOS Games Creator
Carrier Command
Space Harrier
FIRST BASIC

Outrun
Bomb Jack
Neochrome
Atari ST Tour

£269.99 inc.VAT and delivery

ONLY £299.99 WITH 1MB RAM FITTED

plus 'Discovering your Atari ST' Book

520 STE 'TURBO PACK'

Includes an Atari 520 STE with 1Mb Drive, joystick, plus a high quality selection of software including :

Indiana Jones & Last Crusade
Impossible Mission 2
Human Killing machine
Dragons Breath
Hyper Paint 2 (STE version)
Music Maker 2 (STE version)

Blood Money
Super Cycle
Out Run
Anarchy
FIRST BASIC
STOS

£359.99 inc.VAT and delivery

ONLY £389.99 WITH 1MB RAM FITTED

ONLY £439.99 WITH 2MB RAM FITTED

ONLY £519.99 WITH 4MB RAM FITTED

1040 STE 'EXTRAS PACK'

Superb starter package, consisting of a 1040 STE with an excellent selection of starter software. The package includes :

Kuma Wordprocessor
Kuma Spreadsheet
Kuma Database
Kuma Business Graphics

FIRST BASIC
Hyper Paint
'Prince' game
STAC Advent. creator

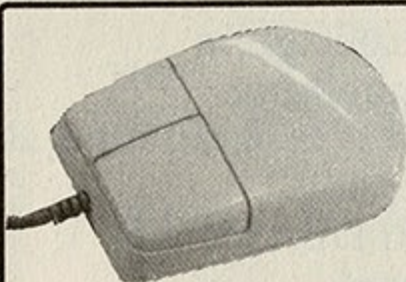
£449.99 inc.VAT and delivery

ONLY £529.99 WITH 2MB RAM FITTED

ONLY £609.99 WITH 4MB RAM FITTED

520STFM 1Mb Memory Upgrade Kit, requires soldering	£ 59.00
520STFM 1Mb Drive Upgrade kit with full fitting instructions	£ 54.95
SM124 Monochrome Hi-Res Monitor	£ 99.00

SC1224 Colour Monitor	£ 279.00
Philips CM8833 Mk.II 14" Colour Monitor including cable	£ 249.00
Monitor Switch Box - switch between colour/mono monitors ..	£ 13.95



TRUEMOUSE

(ST OR AMIGA)

WE GUARANTEE that this is the smoothest, most responsive and accurate replacement mouse you can buy for the ST or the Amiga. Excellent performance, amazing low price !
(Please state model when ordering)

SATISFACTION GUARANTEED ! ONLY £17.95

GOLDEN IMAGE HANDY SCANNER WITH TOUCH-UP (ST or AMIGA)

Top value package including 100-400dpi handy scanner with dither options. Scanner includes start/stop button, and viewing window with backlight. Either line-art or greyscaled images may be scanned at up to 400dpi. Also supplied is the amazingly powerful TOUCH-UP graphics package which drives the scanner directly as one of its many facilities. Requires 1Mb RAM Minimum.

ONLY £169.00 including VAT/delivery

Evesham Micros

RETAIL SHOWROOMS

Unit 9 St. Richards Road
Evesham
Worcs WR11 6XJ
☎ 0386 - 765180
fax : 0386 - 765354
Open Mon - Sat, 9.00 - 5.30

5 Glisson Road
Cambridge CB1 2HA
☎ 0223 - 323898
fax : 0223 - 322883
Open Mon - Sat, 9.00 - 5.30
IBM Dealer • Corporate Specialist

1762 Pershore Road
Cottrelidge
Birmingham B30 3BH
☎ 021 - 458 4564
fax : 021-433 3825
Open Mon - Sat, 9.00 - 5.30

ALL PRICES INCLUDE VAT AND DELIVERY
Same day despatch whenever possible. Express Courier Delivery £5.00 extra.

MAIL ORDER DEPARTMENT

Unit 9 St Richards Road, Evesham, Worcs WR11 6XJ

Call us now on ☎ 0386-765500

Lines open Mon-Sat., 9.00 - 5.30. Fax: 0386-765354
Technical support (open Mon-Fri, 9.30 - 5.30): 0386-40303

Send an Order with Cheque, Postal Order or ACCESS/VISA card details. Please allow 5 working days for Personal Cheque clearance.

Government, Education and PLC orders welcome
All products covered by 12 Months Warranty
All goods subject to availability, E. & O.E.

VISA

MAKE THE BREAK IN 1991

TECHNODREAM: Are looking for experienced programmers and artists to help develop 1991's best software.

If you want an exciting and profitable year then contact us on 061 766 4879 or 0860 853680 (mobile) - Fax 061 761 7509

C.V.'s and demos to:-
Zach Townsend
Technodream Software
CBS Bury Business Centre
Unit 24, Kay Street, Bury BL9 6BU



Requires young, enthusiastic staff (18-25) to instruct children in all aspects of computing, at our residential centre in Shropshire. Experience of BBC and/or IBM computers preferred plus an ability to communicate well with children of all ages. Full training programme given to all successful applicants. Board and lodgings provided.

If interested, please write enclosing full C.V. to:

**MARTIN WILSON,
KINGSWOOD CENTRE LTD,
BARN LANE,
NR ALBRIGHTON,
WOLVERHAMPTON,
WV7 3AW
Or phone on 09074 6141**



Production Co-ordinator

Enthusiastic, well organised person required for a friendly production team to work on two monthly magazines.

● launched in 1985

A good telephone manner is essential, as you will be responsible for the day to day running of the magazines. This involves contacting clients for advertising copy and liaising with colour reproduction houses and printers.

● Now over 160 staff

A knowledge of web offset printing an advantage.

● 11 national news stand magazines

Experience preferred, but not essential, as training will be given.

● Market leader in computer titles

Apply in writing with your Curriculum Vitae to Tracy O'Donnell at the address below.

Office Junior

● Exciting launch plans

A vacancy also exists for a young, bright, enthusiastic office junior within our busy advertisement production department.

● Britain's fastest growing publisher

Duties will include general clerical work as well as a substantial amount of customer liaison, therefore a good telephone manner is essential.

The ability to type would be an advantage.

If you are interested please telephone Terry Mackereth for an application form.

Proofreaders

We would also like to hear from anyone offering freelance proof-reading services. For further information please telephone Terry Mackereth.

Future Publishing Ltd., Beauford Court, 30 Monmouth Street,
Bath, BA1 2AP. Tel: (0225) 442244

DO YOU WANT TO BECOME A PROGRAMMER?



Established 1968

Move across to the rewarding world of IT

We have a series of short and long term training programmes in Computing and Information Processing.

- * C & G 424/425 Certificate in applications programming.
- * C & G 418 Computer Programming & Information Processing.
- * Evening courses in DBASE, WP, Spreadsheet Analysis.
- * Evening courses in Pascal, BASIC & COBOL.

Contact Central London College on
071-580 4596..

TRAINING FOR YOUR FUTURE

SOFTCELL SUPER SAVERS
PC Share Ware
£1.75 Per Disk Fully Inclusive

PC Type II (3)	£5.00
NY Word (3)	£5.00
PC File dB (3)	£5.00
PC File (3)	£5.00
Front Office (3)	£5.00
PC Type (3)	£5.00
PC Calc (3)	£5.00
PC File + V3 (3)	£5.00
Freeway Accts (3)	£5.00
Ford Car 11 (2)	£3.50
Super Astrology (3)	£5.00
Page Finc. Cont. (3)	£5.00
£5.00 Set £6.00 3.5	

EGA Pacman	£1.75
Deskjet Collection	£1.75
Educational Games	£1.75
Dr. Sleep	£1.75
Laser Letterhead	£1.75
Home Records	£1.75
Share Spell	£1.75
Bar Codes	£1.75
Windows Toolkit	£1.75
Windows Games	£1.75
dbase 4 Tutor	£1.75
Food Analysis	£1.75
+ 100's more	

**COMMODORE
STARTER
PACKS
FROM
£498**

**SCHNEIDER
COMPUTERS**
• Quality
• Value
• Free Software

10 5/14 Discs £16.00, 10 3 1/2 Discs £25.00
For further details write or phone
for a FREE catalogue!

Softcell Services, Dept NCE, 25 Maywood, Brynna, Pontyclun,
Mid Glamorgan, CF7 9PZ. Tel: (0443) 238630 anytime

RENDALE 8802 Genlock plus switch box £140. Pace series 4000S 2400 Modem £175. Commodore Vicmodem £35. Apricot PCXI computer with 10Meg hard drive monitor and keyboard £175. Tel: 0480 403888 after 6pm.

AMIGA 500 Commodore 1701 monitor, external disk drive, TV modulator, Lattice 'C' Ver.5, Photon Paint, £90 books, £150 games, joystick. Worth £1250 sell for £650. Phone Lee on 081 341 5545 after 7pm.

LIKE Amiga Art? For sale: Sculpt 4D software, as new. Need new machine £200. Phone anytime (South Humberside) 04698 559. ATARI ST magazines for sale. Over 100 to choose from. £1-£1.50. Tel Steven on 091 2674571.

TRACON - Air traffic control sim for PC. Received rave reviews. 5.25 and 3.5 disks. Speech synthesis on a standard PC! £18. Phone Windsor (0753) 864382.

PC Engine plus, CD Rom, 20 games on card, 6 games on CD. As new. Scart only £600 ono. Also IBM colour monitor £175 (20"). Contact Alan on 0932 820413 after 6pm.

IBM PC XT 10Mb HDD and twin floppy drives. IBM Quietwriter printer £600 the lot. May sell items separately. Tel: 0483 423846.

SUPERCALC 2 for Amstrad CPM plus, £20. DBase II for Amstrad PCW £20. Unwanted gifts. Phone 0695 21648.

GEMINI SHAREWARE (SOUTH EAST)

FOR ALL THE LATEST SHAREWARE

On the Amiga (over 1000 titles),
PC (over 1100 titles),
Macintosh (over 300 titles)
& Atari ST (over 700 titles)

Phone 0753 28183

For your FREE catalogue

Gemini Shareware,
10 Warwick Avenue, Slough SL2 1DX

C.V.L.S. Tel: 0742 884183

3.5" DS/DD disks from **32p**
5.25" DS/DD (Coloured) disks **30p**
Sega Megadrive power convertor
£29.00
Spectrum games from **50p - £2.00**
Other consumables available

P & P £3.00 per order.
Cheques/P.O.'s payable to:
**C.V.L.S., 92 Firtree Estate,
Thurgoland,
Sheffield, S30 7BG**

SEGA megadrive, with 5 games, Super Monaco GP, John Maddens Football, Shadow Dancer, Mickey Mouse and Afterburner 2. Worth £330 sell £230. VGC. Tel: 081 90 8901.

NINTENDO, plus five super games, excellent condition, lightgun, two control pads, robot and its accessories. Worth £200+ sell for £150 ono. Phone John for further details on 051 256 7728.

The key to a Happy Christmas

Roland

CM32LA, CM32PCM,
CM64, PC200, CN20,
CP40, CF10.

Now all in stock.
Ready to fill
your
Xmas
stocking.

Make your true love's
Christmas at:
BELL MUSIC
3 ROMAN SQUARE 0795
SITTINGBOURNE 425931

FOR
YOUR MUSICAL
MIDI REQUIREMENTS.

Try the Yamaha PSS590
keyboard at only
£149.99

The incredible EVSI Expander at
only £299.99

For all your home computer software.
If it's not in stock we will get it!

TRY US FIRST!

R.S.T COMPUTER MEDIA - AMIGA SPECIALIST
MAIL ORDER/HARDWARE/SOFTWARE
0582 872754

NEW YEARS OFFER

1 MEG AMIGA MEGAPACK £399 inc. VAT plus joystick
1084S MONITOR £240 inc. VAT & free delivery

Atari Lynx £114.00 + P&P

With EVERY Amiga A500: SCREEN GEMS
+ JOYSTICK ★ 1 MEG OF MEMORY ★ READY FITTED & TESTED ★
★ TV MODULATOR ★ WORKBENCH ★ MOUSE ★

SCREEN GEMS

- ★ Shadow of the Beast II
- ★ Back to the Future II
- ★ Days of Thunder
- ★ Knightbreed
- ★ Deluxe Paint II

**STANDARD AMIGA A500
SCREEN GEMS PACK**

£350.00 plus p&p
or £12.00 for next day courier

ALL USER GROUPS SUPPORTED

DISK DRIVES CUMANA 3.5 £59.00+P&P 20 MEG Amiga A590 Hard drive £270 + P/P

**RING NOW 0582 872754 OR WRITE R.S.T COMPUTER MEDIA,
57 RIDGEWAY, KENSWORTH, BEDS LU6 3RL**

WANTED FOR CASH

Amstrad PC's, PCW's, Amigas, Atari ST's. Printers,
Lasers, ANY QUANTITY CONSIDERED, working or not.
DMR ELECTRONICS: 0274 817889

Computer LYNX The AMIGA Disk Magazine

ISSUE 21: Zoom 4.0, Virus Checker 5.08, Sound Ripper, "The Brimble Experience", No Limits "Stranger" demo, Phenomena "Animation" demo, interview with "Renegade", news, reviews and more!!

Large range of Public Domain software available - send for info!
See us at the All Formats Show! - Plus why not order issue 22 out soon!

Computer LYNX costs just £1.50 + 50p P&P from:
187 Perrysfield Road, Cheshunt, Herts, EN8 0TL. (0992) 465366

TREASURE ISLAND



0898 313 586

Infodial PO Box 36 LS1 4TN Call Charges 33P Per min Cheap Rate 44P all other times

MULTIFACE 128 for ZX Spectrum very good condition. Tru' port. £25. Phone Philip on (0242) 251556 6.30pm - 9pm weekdays.

FREE C64 PD + list. Send SAE + disk to: PDW, 42 Chesterfield Road, Worthing, BN12 6DD. No catches, limited period only.

ATARI games: Power pack (20 games) £15: Kick Off 2 £10: World Class Leaderboard £2: Joe Blade 2 £1. All originals. Tel: 081 778 9851.

VARIOUS magazines mainly for Atari ST (ST User, World, Action etc). Make me an offer!. SAE to: Craig, 56 Downland, Two Mile Ash, Milton Keynes, Bucks, MK8 8HN.

ATARI ST mono monitor + cover. Boxed as new £70 ono or swap for an ST Eprom Blower. Write to Craig, 56 Downland, Two Mile Ash, Milton Keynes, Bucks, MK8 8HN.

AMIGA software for sale. 9 titles for only £45 plus postage. Titles include: Lotus Esprit, Wings, Rainbow Island, Shockwave, Pinball Magic, Stunt Car Racer etc. Call 0784 244614.

SONY 14" colour TV/monitor. Triniton tube for extra sharpness (FST), with teletext and remote control. Absolute brand new condition and still boxed. Six months guarantee remaining. £220. Tel: 081 571 5809 anytime.

CBM64 software, 15 mixed games titles plus Paddles £15. Programming guides books and utilities £10. Busicalc and 5 more packages £10. Tel: 0296 696140 evenings.

SINCLAIR QL, manual, books, Psion Quill, Abacus etc. Serial 8056 printer. Buyer collects £60. Phone 0730 816401 (West Sussex).

SWAP Amiga external drive + 1Meg upgrade with clock + 7 games incl: Ninja Spirit, Operation Thunderbolt, 10 blank disks. For any good digital drum machine with midi facilities. Please call Jamie on 081 886 6706 evenings.

AMIGA ext. disc drive 'Cumana' only £50 inc. Phone David on Derby 0332 517947 anytime.

IBM PC PS/2 model 30 for sale. 20 Meg hard disk, 3.5" floppy, colour monitor, graphics card, handles VGA mono and 256 colour modes, mouse, VGC. Phone on (0977) 552485.

BBC 'B' for sale. Disk drive, teletext receiver, ATPL expansion board, 16Kb sideways Ram, loads of Roms including Pascal, Dumpout 3 and ADFS. All cables, VGC. Phone on (0977) 552485.

MODEM Racal 2400 Baud £165. Call 051 480 7604. Ask for chris.

ATARI ST computer magazines, ST Format, ST Action, ST User etc. Tel 091 2674371 after 6pm.

DELUXE Paint 3. New, sealed, unopened. First £50 accepted. Call 021 459 7576.

AMIGA originals as new, but cheaper. SAE for list, 13 Bournville Lane, Stirchley, Birmingham, B30 2JY or tel: (021) 459 7576.

SAMSUNG VGA monitor £200. Includes delivery. Optima 1024 card £65. Datacomms modem 2400 £100. 220 PSU £45. 5.25" discs £1 for 10 shareware included. 3.5" £2 for 10. Ring 0308 23224.

MPS1230 printer still boxed as new. Will sell for £120 or swap for Citizen 120D+ in good order. Tel: 0274 306028 (Bradford).

REDRAM COMPUTERS
Custom Computer Systems

We assemble PC's to your specification. Here are some examples of our prices. All prices exclude VAT & delivery

286-12	£999
286-16	£1100
386-sx16	£1200
386-25	£1400
386-25 (32K cache).....	£1550
386-33 (32K cache).....	£1650
486-25 4Mb RAM	£2999

All systems include
1.2 or 1.44 floppy
40Mb IDE Drive
1Mb RAM
SVGA 800 x 600 Colour
Serial Mouse
DR DOS V5

CALL OR FAX (0252) 734543 FOR UP TO DATE PRICES
44 Middlefield, Farnham, Surrey, GU9 8QA

BBC, original cassette games for sale. Only £3 each. Send SAE for list to: Peter Rhodes, 68 Donald Drive, Chadwell Heath, Romford, Essex, RM6 5DU.

AMSTRAD CPC6128, colour monitor, disk drive, around £480 games, other software and hardware and extras. Altogether worth about £1000 sell £399. Tel: Letchworth (0462) 671864.

TANDY 1000SL + green monitor, 5.35" drive, Tandy DMP105 printer, paper, manual. Worth £700 sell for £250 ono or swap for Amiga. Tel: 0702 232 856 (Southend). Will split.

COMMODORE 64 computer, 2 joysticks, loadsa games, mega super ace condition, great grafix and playability, also dust cover + TV £130 ono. Less than 1 year old. Tel: Steve (0455) 616335.

AMIGA originals: Fun School 2, Populous, Millenium, Scrabble £6 each. New Zealand Story, Interceptor, Promised Lands £4 each. Buyer collects or plus P&P. All as new. Tel: 081 949 0240.

AMIGA A500 v1.3, A501 Ram upgrade 2nd drive, Action Replay MkII, Naksha mouse, £400+ software, mouse mat, holder & mags + more. All for £550 ono. Phone (0223) 880331.

CANON printer. PW1080A £95, Deluxe Print II (for Amiga) £25, Intellivision cartridges £4 each. Telephone M. Newman 0245 268063 (home) or 0277 264626 (office)

ATARI XE, XC12 joysticks, 100+ games, mags, leads all boxed, 5 manuals. V.G.C. All original, too much to list. Buyer collects. Worth £400 + sell £160. Tel: Basingstoke 477748 6-9pm weekdays.

CUSTOMISED CABLES
made to your specification

Many types of custom cables for business, home computers and peripherals.

- ★ Printer Cables
- ★ Monitor Cables
- ★ Extension Cables
- ★ Power Cables

FOR PRICE LIST WRITE:-

TECTEL LTD.

63 Upway, Rayleigh, Essex, SS6 8AA
Tel 0268 778162

No Hidden Extras!

Kensai 80386/25 PC, VGA Colour, 60Mb HD Includes: 5.25" Floppy, Colour Monitor, Keyboard, MS-DOS 4.0 1 Parallel and 1 Serial Port, GW Basic Many other systems/configurations available
Call or write today for details!

£1795

Kensai Computers
2 Lovatt Close
Edgware
Middlesex
HA8 9XG

+VAT
Call 081-958-1440 NOW!
Fax :081 958 1032

ATARI 520STFM, very good condition, includes Power Pack + Hyper Pack, joystick, mouse and all manuals, 12 months old. Phone Allan on 0977 797400 after 4.30pm.

SAM Coupe, disk drive, updated Rom and parallel/external drive interface. All leads and some software £160 ono. Tel: (0609) 778613.

AMAZING bargain: Spectrum 48K, plus modem, printer, joystick interface, speech synthesiser, datacorder, plus manuals, magazines. All boxed for only £175 including £200 of games. Phone Stephen on (051) 523 0031.

FOR sale: Sega Master System, 13 games, light phaser, joypads, games include: Wonderboy III, Golden Axe, R-Type, Phantasy Star etc. Worth £450 - asking £200 ono. Phone Murray (07048) 71728 after 7pm.

ST Public Domain

All disks are virus immunised and are supplied on double sided formats so you should get over 750K per disk, what value!!! Each and every disk has a certain topic of files on it, titles include;

Art, Midi, fractals, games, spreadsheet, wordpro, database, etc. And at only £1.29 for a double sided disk (or £2.50 two single sided formats).

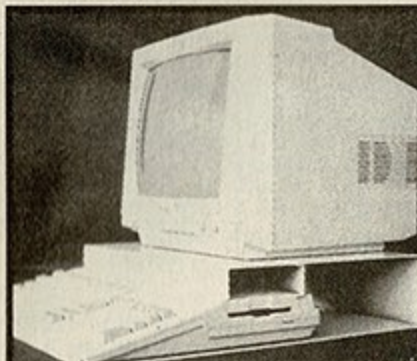
Send for an illustrated catalogue (SAE appreciated) or £1 for catalogue and demo disk, how can you go wrong?

EVPD, 15 Cleeve Road, Gotherington, Cheltenham, Glos., GL52 4EW

TRuST P.D.
Quality Public Domain for the ST

Also available Opus 2.2 (1 Meg) - ST Format's best PD program of 1990 Demo's, Games, Art, Music, Word Pro, STE, Demo's, Utilities, Educational, Clip Art, Programming, Slide Shows, Disk Mags
New commissionware labels, Plus over 80 Budgie U.K. games etc.

For free catalogue on disk send a S.A.E. and blank disk or £1.00 cheque/PO to:
TRuST P.D., 18 The Park, Southowram, Halifax, HX3 9QY.
Tel: 0422 341606.



AMIGA CONSOLE UNIT
 Monitor console and keyboard unit.
 Mousehole and second drive space.
 Keeps cables tidy.
 Non-magnetic aluminium.
 High quality texture finish.
 Plenty of ventilation.
 Easy to clean.
 Installed in minutes.
 Designed specifically for the A500.
 Colour co-ordinated.

Available directly from:
KONTAX COMPUTERS
 11a Waldeck House
 Waldeck Road
 Maidenhead,
 SL6 8BR
 0628 773212

**YOUR AMIGA
 LIKE THIS FOR ONLY
 £24.95 + £4.00 P&P**
 Cheques and Postal Orders only.
 Allow 28 days for delivery.
**Matching printer stand under
 development.**

APPLE II plus, green monitor, twin disk drives and software for sale. Bargain at £100 including postage. Call Paul on (091) 297 0541 anytime after 6pm. First come first served.

40 PC disks of shareware/public domain (5.25"). Utilities, games etc £35 incl. postage. Barry, 46 Shelford Road, Fulbourn, Cambridge, CB1 2EU.

FREE Eproms 27256 or 27512 also 27128. Just send an SAE to: Gordon Currie, 130 Harburn Avenue, Livingston, EH54 8NL marked Free Eproms.

SPECTRUM +3, data cassette recorder and joystick plus section of cassette and disk software. Boxed £120. Tel: (0495) 214825 after 2pm.

ATARI Lynx with California Games, PSU, Comlynx cable, immaculate condition, boxed as new £99. Also Electrocop £15, boxed with instructions. Tel: (0457) 865406.

THE 'C' programming language. K&R. Edition 2 £15. 68000 ref manual £5. Z80 ref manual £5. Hacker's handbook III £4. Programming the 68000 Sybex £10. Tel: (0572) 757890.

AMIGA amplifier for sale. 30 Watts per channel. Ideal for Amiga. Sell for £30. Tel. Simon on 0272 837252.

STAR LC10 colour printer plus ST lead. Boxed as new. Also new ribbons - 2 colour - 1 mono. £135 complete. Phone Keith on 0943 (Ilkley) 600413.



**IF YOU WANT
 NAKED LADIES
 CUT THROAT PRICES
 COWBOYS
 TRY ELSEWHERE,**

BUT IF YOU WANT

Good prices, good service and a good product range covering all leading Midi/Music packages, education, art and graphics packages plus business packages please contact us.

FOOD FOR THOUGHT

DON'T THINK CHEAPEST IS ALWAYS BEST
 DON'T BUY GREY IMPORTS
 DON'T PAY UNTIL YOU'RE SURE
 DO REMEMBER THAT AFTER-SALES SERVICE IS WORTH
 IT'S WEIGHT IN GOLD

REPAIRS: NO PROBLEM
 WE HAVE OUR OWN SERVICE DEPARTMENT
 Mon-Thurs 11am-9pm Fri-Sat 11am-7pm

SGM Electronics, 19 Charles Street, Wigan, Lancs WNI 2BP
TEL: (0942) 321435 FAX: (0942) 821273

Modems! Modems! Modems!

Modems for Amigas, Ataris & PCs

Technical advice a pleasure
 V22bis (2400 baud) Hayes compatibles from £99

Supply Solutions offer top quality, guaranteed new and second-user modems from major manufacturers at realistic prices.
 All modems are fully tested prior to despatch.

Ring 081-566-3639
Supply Solutions

Supply Solutions 187 Uxbridge Road, London, W13 9AA
 Lines open 10am to 6pm and till 8pm Mondays & Tuesdays
STRICTLY MAIL ORDER ONLY

**ALL COMPUTER HARDWARE AND
 SOFTWARE WANTED FOR CASH
 OR EXCHANGE**

NOTHING REFUSED!!

071 221 1075

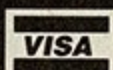
CASH FOR COMPUTERS

BUY! SELL! EXCHANGE! REPAIR!
NEW & USED!

B & B COMPUTERS
HUDDERSFIELD (0484) 430970



FAX: (0484) 430970



WANTED: DEAD COMPUTERS

CHEAP 286 SYSTEMS ETC

XT Motherboards, inc. 640K RAM on-board FDC£45
 16MHz 286, 20 Meg Hdd, 640K RAM, Mono Card, 101 KB...£699
 MITAC 286 20 Meg, 640K RAM, EGA/Mono Card.....£699
 Thomson 12" Mono Monitor£45

BRENTWOOD COMPUTERS 0277 230664

LOOK HERE

YOU MAY NOT GET A BETTER OFFER THAN THIS!
ALL PRICES INCLUDE VAT AND DELIVERY.

HARDWARE

Amiga A500£375.00
 Atari 520STFM£280.00
 Atari Lynx.....£120.00
 Nintendo Gameboy.....£65.00
 PC Engine (SCART)£190.00
 PC Engine (PAL).....£215.00
 Sega Mega Drive£180.00

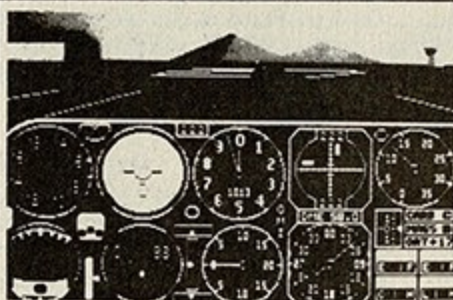
PERIPHERALS

Phillips CM8833 Monitor.....£290.00
 Star LC-10 Mono Printer£169.00
 Star LC-200 Col Printer£219.00
 Atari SLM804 Laser Printer.....£1320.00
 Seikosha Laser Printer.....£1500.00
 Replay 4 sound sampler£75.00
 Vidi Digitisers.....£99.00

A large selection of entertainment, business, and educational software is available at competitive prices. Send S.A.E. for list.

**CALL EPSILON FOR THAT EXTRA SPECIAL
 PERSONAL SERVICE.**

Epsilon Computers, Coventry Point, Market Way, Coventry, CV1 1EA
TEL: 0203 550707 / FAX 0203 228957



**LIGHT AIRCRAFT
 SIMULATOR**

The Light Aircraft Simulator provides an ideal environment to practice Visual procedures, Instrument appreciation, Navigation techniques and exhilarating Aerobatics.

SUPERB VISUAL DISPLAYS
PRECISION FLIGHT MODEL
REALISTIC INSTRUMENT PANELS

Chipmonk & Ceena Aircraft
 Inexpensive flying training.
 Compatible with Zoomer Yoke.

Trade Enquiries
To: Virtual Reality Ltd.
Fax: (0272) 411052

Amiga & ST versions available in March. SAE for fully illustrated details. Amiga Version £34.95

R.C. Simulations

Beehive Trading Estate,
 Crews Hole Road, St. George,
 Bristol BS5 8AY
RING NOW 0272 550900
 Fax: 0272 411052

DYNAMIC DATA

The data structures that we have already seen were static structures; the size and configuration of these has to be fixed before the program runs. This allows you to estimate memory requirements and performance more accurately, but not all data is input to a program in a suitable form for this. If you cannot be sure how large a structure will need to be to hold the relevant data, you will have to make it large enough for the worst possible case, which can eat into resources as it will increase the time taken to retrieve data.

Both the size and configuration of dynamic data structures can change during the program run, as the data storage needs of the program change. Another advantage is that a method of removing used data is frequently built in to dynamic structures, whereas arrays and hash tables will tend to provide only methods of storing and accessing data.

Where a program accepts data as input from the user, the data will often be supplied faster than the program can process it. Data read in from disk or typed on the keyboard needs to be stored in a buffer of some sort until the program is ready. If data could not be buffered in this way, you would not be able to type ahead in a word processor while the page was reformatting, for example. An area of memory is usually reserved for the keyboard buffer, but this may be inadequate; the keyboard buffer on an IBM PC has only 16 positions for storing characters.

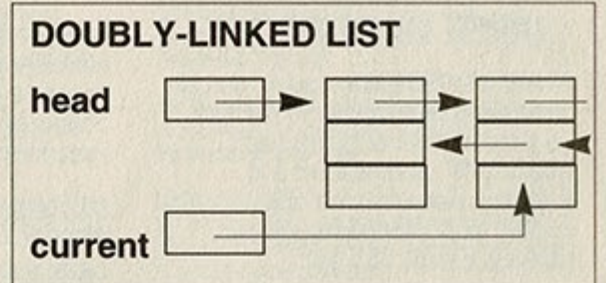
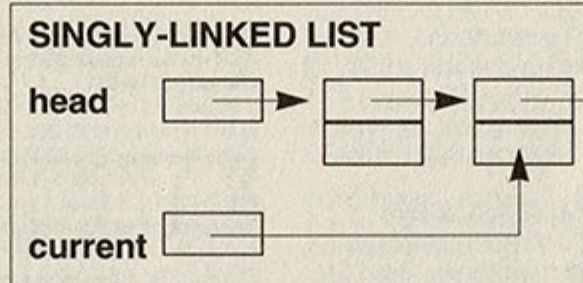
The volume of this data cannot be estimated in advance and the storage requirements will change frequently during the program's run, so that dynamic data structures are needed for any process that requires data to be buffered and resources to be allocated.

Dynamic data structures are self-referential. Each member of the structure also contains a pointer to the next member of the structure.

A frequent use is for calculating arithmetical operations; the data needs to be stored until the entire calculation has been entered, so that operators are applied in the correct order. The structure used for this is a stack.

A stack is a linear data type that provides Last In First Out (LIFO) storage. This means that the last item

The storage and structure of data can involve complicated calculations, so Mary Branscombe takes you through step by step.



placed on top of the stack must be removed first. A stack functions in the same way as a stack of plates or trays. Items are pushed on to the top of the stack, on top of preceding data, and popped off in reverse order. Stacks can thus be used to reverse sequences of data. The bottom of the stack is known as the base and the next free position in the stack is the top.

- Using dynamic data structures allows you to deal with situations where you cannot predict how much data you will need to store.
- Dynamic structures are used to store data input to the program, from the user, the CPU or a disk drive.
- Stacks and queues are used for many Operating System routines.

Most computers are stack-oriented machines and stacks are commonly used for saving the machine state while the routines that service interrupts complete their tasks, for passing parameters to functions and for keeping track of objects like overlapping windows.

Reversing the order of the stored data in this way is not always convenient. The queue provides First In First Out (FIFO) storage, so that data leaves the queue in the same order as it arrives. The oldest data in the queue is stored in the head of the queue and the most recent in the tail. An enqueue or join operation adds data to the queue and a dequeue or leave operation retrieves data from the head of the queue.

Queues are typically used as buffers for CPUs and disk drives and for event simulators.

A more complex form of the queue is known as the double-ended queue, the deque or the dequeue. This is a simple FIFO queue with two extra operations that allow data to join at the head of the queue and leave from the tail, if required.

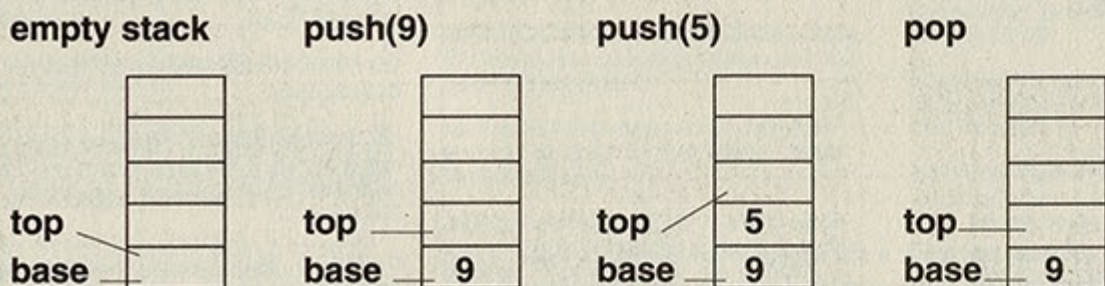
The length of a queue obviously limits the amount of data that can be stored at any one time and objects that need to optimise the amount of storage available are often implemented as circular queues, where the contents of the tail can be extended into the memory used for the head, as this is freed. One position in the queue is needed to store extra information and to mark when the queue is empty.

Each data item in a linked list has a successor, with a pointer to this. Moving backwards through a singly-linked list to find predecessors of items can be difficult, but a doubly-linked list can be used, where each item contains a link to both successor and predecessor.

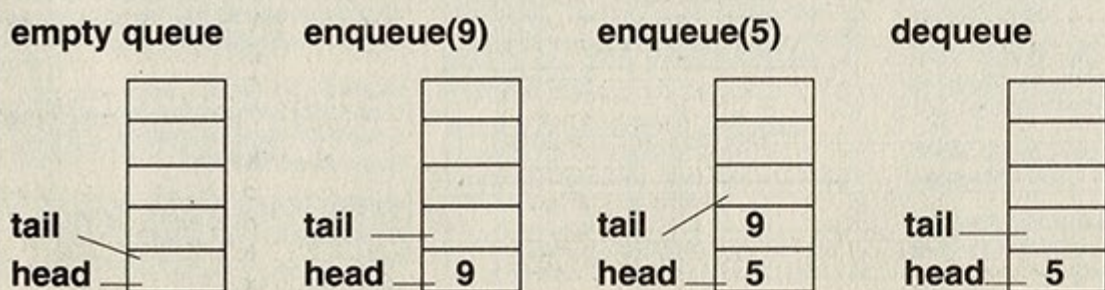
For data that needs to be organised into a hierarchy, a tree can be used. The initial data item is known as the root, other items in the tree are nodes and terminal data items are leaf nodes. The various specialised forms of trees are given by restrictions on the simple form. A binary tree, used, amongst many other things, to implement lists in Prolog, is a tree where each item must have two descendants, which must be either a null item, or a new data item.

A graph or network is a generalisation of a tree, where every item has a number of successors, which can be earlier items in the graph. Technically speaking, a tree is a Directed Acyclic Graph – the data hierarchy is given a direction, and paths through the tree must not loop or form circles. Again, specialised graphs are formed by adding restrictions to the original graph. ■

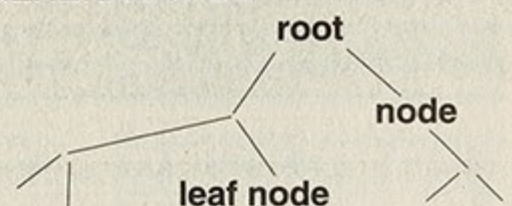
A FIVE POSITION STACK



A FIVE POSITION QUEUE



GENERAL TREE



GRAPH



CHOICE - on-line help. Tel 0308 23224

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

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

CID (Computers and Integration for the Disabled) is a registered charity. Tel 0467 24202

CLERGY/MEDICAL EDUCATION - Mr T Jones, FREE-ED Shareware/PD 85 Stoke road, Taunton, Somerset TA1 3EL. Tel 0823 321 481

COBOL LANGUAGE - Allen Reavie 22 Mourneview St, Portadown, Northern Ireland. BT62 3AW

COLECO ADAM - Keith Mamer, UKAS 33 Homer Road, Croydon CX90 7SB

COMMODORE ALL MICROS - Jack Cohen, ICPUG 30 Brancaster Road, Newbury Park, Ilford IG2 7EP Tel 081-346 0050 home: 081 579 1229 day

COMMODORE AMIGA - UK Amiga Users Group. Contact 144 Charles Street, Leicester LE2 00D. Telephone 0533 510066 voice; 0533 517615

COMMUNITY COMPUTING - Community Computing Network 2nd Floor, 35 Pink Lane, Newcastle, NE1 5DW. Tel 091-261 0317

COMPUCORP. Compucorp University users group c/o Compucorp, Cunningham House, Westfield Lan, Kenton, Middx

COMPUNET - write to Independent Compunet Club, 148 Furzehill road, Boreham Wood Herts. WD6 2DX

CONFERENCING - Compulink, suite 2, The Scantuary, 23 Oakhill Grove, Surbiton, Surrey KT6 6DU Voice 081-390 8446. CIX BBS 081-399 5252

CPM & MSDOS Users Group - 42 Birkbeck Road, Wimbeldon, London SW19 9NZ. Tel 081-543 0824

CRYPTOGRAPHY & CODES - Mike Barlow, American Cryptogram Association 5052 Chestnut Avenue, Pierrefonds, Quebec HBZ 2A8 Canada

DATAEASE USER GROUP - High-Tech House, 10 Blackfriars Street, Norwich, NR3 1SJF

ECONET - Michael Ryan, Econet User Gp, Balkeerie Cottage, Eassie by Forfar, Angus DD8 1SR

DATA PD LIBRARY for Amstrad CPC users. Send SAE, tape/disk and 50p to Kingsmill 202 Park Street Lane, Park St, St Albans, Herts AL2 2AQ

DISABLED - Jeff Hughes, Special Needs User Group, 39 Eccleston Gardens, St Helens WA10 3BJ 0744 24608

DRAGON - Paul Grade, National Dragon Users Group, 6 Navarino Road, Worthing, Sussex or tel 0903 207585

EDUCATION - Charles Shannon, TECUG, 35 Wellington St, Gravesend, Kent DA12 1JG. Tel 0474 567 931

EIGHT-BIT BACK-UP 8-bit user group for all. 25p plus SAE. to: 8-bit back-up, 1 Northolme Close, Grays, Essex.

EINSTEIN - Graham Bettany, UKEUG 80 Dales Road, Ipswich IP1 4JR

EINSTEIN PD USER GROUP - Help and advice for all Einstein users. Over 100 disks of PD software. Send SAE to SW Knowles, 23 Howldsworth Rise, Arnold, Nottingham, NG5 8HZ

ELMSOFT PUBLIC DOMAIN SERVICE for the ST any weekend at Camden canal market; Haven Street, London

EMULATE. For Amiga, Amex. Monthly newsletter. Write to Pat 12b Northbrooks, Halrow, N Essex

ENTERPRISE - William Creaser, 6 Provident Street, Shaw, Oldham, DL2 8AQ. Independent Enterprise User group. Tel 0706 881382 from 7pm to 9pm

ENTERPRISE - Tim Box, Independent Enterprise User Group, 50 Holdenhurst Avenue, Finchley, London N12 0HX. Tel 081-346 8032

ENET (like Econet) - T K Boyd, Enet (Amcom) User Gp, Seaford Cottage, Petworth, West Sussex

EXMOORE SOFTWARE - Queen Street, Lynton, N Devon EX 35 6AQ

FIND YOUR LOCAL CLUB - British Association of Computer Clubs. Database of all user groups in the UK. Banc y rhosyn, 14 Bron Y Glyn, Bronwydd Arms, Carmarthen SA33 6JB.

FORTH Language - Douglas Neale, FIG (FORTH Interest Group) UK, 58 Woodland Way, Morden, Surrey SM4 4DS

FRACTALS/CHAOS THEORY - Andy Lunness, 69 Bronte Avenue, Bury, Lancs BL9 9RN. Telephone 061-764 6469

GENEALOGISTS - Computer Group, Society of Genealogists, 14 Charterhouse Buildings, London EC1M 7BA. 071-251 8799

GENERAL AMIGA - disk based magazine for the Amiga. Only £1.50 per issue. Send order to 19 Earn Court, Alloa, Clacks, FK10 1PT

GENERAL HOME MICROS - Steve Winter, Chic Computer Club, PO BOX 121, Gerrards Cross, Bucks SL9 9JP 0753 884473

GEOS USER GROUP - for C64 and 128 owners. Disk based magazine with PD tips, articles etc. Send blank disk to GUG (UK) 110 Deansway, Woodloes Park, Warwick CV34 5DQ

GUNNING PD ST PD - 47 Auchingane, The Tryst, Edinburgh, EH10 7HX

GUAGE - Martin Houston CUG (UK) Houston Technology Ltd, 14 Arden Oak Rd, Sheldon Birmingham BS26 3LX. Telephone 021-722 3168

HITACHI MBE 16002 PC - Bruce Ainge HICUPS 16 Nine Acres Road, Cuxton, Kent ME2 1EL. 0634 715759

HOUSING ASSOCIATIONS - Caroline Maries, Micro Users Ltd, Beaver Housing society, 23 Lewisham High Street, London SE13. Tel 081-318 1126

HEALTH WORKERS - Sue Mckendrick, Healthlink, 164 Windsor Rd, Ashton-in-Makerfield, Wigan WN4 9ES. Voice: 0942 712 385

IBM PC USER GROUP - PO BOX 360 Harrow HA1 4LQ. 081-863 1191 BBS 081-863 6646

JOMAC USER GROUP - Spectrum and Amiga tips and pokes sent every month. Write with SAE to Jomac's, Filey Grove, Rhodes Street, Hull

JUPITER ACE - John Charter, Jupiter Ace Forth User Group, 17 Spring Wood Close, Dunston, Chesterfield S41 8BS. Tel 0246 237555

LOCAL AUTHORITIES - Local Authority Micro User Group, John New, Borough Engineer's Dept, Municipal Offices, North Quay, Weymouth, Dorset DT4 8TA. Tel 0305 785101 ext 272

LOTUS PRODUCTS - Lotus User Group, 79-80 Peascod St, Windsor, Berks SL4 1DH. Telephone 0753 841686

LYNX - R B Jones, Lynx User Group, 39 Ashton Close, Needingworth, St Ives, Cambs

LYNX DISK USER GROUP - J Koushappas. 172 Pasteur Gdns, London N18. Tel: 081 807 3859

MEGADRIVE CONSOLE CLUB - Megadrive games new, old, bought, sold. Also exchange games. Andrew Stanford (0789) 764039

MEMOTECH FILE - 93b StJohns Road, Biddulph, Staffs ST8 6LL

MEMOTECH - Phil Eyres - Memotech Owners Club, 23 Denmead Road, Harefield, Southampton SO2 5GS. Tel 0703 585106

MICROSOFT WORD - Lesley Port, Folly House, Madeira Walk, Bachelors Acre, Windsor, Berks. Tel 0753 831001

MICRO-DESIGN USER GROUP - a new group for those PCW owners requiring assistance and advice with this DTP package. Large clip art library available. Phone Phil on 0709 543390

MID CORNWALL COMPUTER CO-OP - Atari ST. 8 Victoria road, Roche, St Austel, Cornwall PL 26 8JF. Telephone 0726 890473

MIDI/MUSIC - Spectrum music machine/MIDI user group. Magazine on tape, plus programs and lots more. For more details contact Sean Sanderson on 05242 62258

MOTOROLA 68xxx MICROS - write to Rick Applegate, 68 Microgroup, 8 Great Cob, Springfield, Chelmsford, Essex. BBS tel 081-316 7402

MSX SYSTEMS - write to Keith Neal, MSX Link, Austerby House, 80 Austerby, Bourne, Lincolnshire PE10 9JL

NASCOM/80-BUS/CPM - Scorpio Systems, PO BOX 286, Aylesbury, Bucks HP22 6PU. Tel 0296 624868

NEWBRAIN - Ron Bury, NewBrain Support Grp, 70 Cranberry Lane, Darwen, Lancs BB3 2HL. Tel 0254 771891

NIMBUG - write to 13 Belle Vue Ave, Gosforth, Newcastle-upon-Tyne NE3 1AH. Tel 091-285 7806

NW ARCHIMEDES USER GROUP - Meets every Friday at Citizens Advice Bureau, next to Spectrum arena in Birchwood, Warrington. Ring Paul on 051-426 3915 after 6pm

OS/2 - Karen Burns, OS/2 User Group, Cecily Hill Castle, Cirencester, Glos LG7 2EF. Tel 0285 655888

OSBORNE/CPM/MSDOS - write to Jeremy Browne BOOG, 102a Aldershot Road, Fleet, Hants GU13 9NY. Tel 0252 621745 voice or 626233 BBS

PC/PD CLUB - write to 48 King William Drive, Cheltenham, Glos, GL53 7RP

PC SOFTWARE - PC Serve, 1147 Greenford Rd, Greenford, Middx UB6 ODP. Tel 081-864 2611, BBS 081-864 2633

PHILOSOPHY APPLE - G Haines, Chinese Room Club, 43 Cornwallis Gdns, Hastings, East Sussex TN34 1LX. Tel 0424 714 102

PICK OPERATING SYSTEM - Hugh Kellit, UK Pick Users Assocn, PO BOX 907, London N10 2SB. 081-462 4666

POTENTIAL PD - for the Atari ST. Public domain to sell and swap. SAE to Helenville, School Road, Coldingham, Berwickshire TD14 5NS.

PRESTEL - Andy Leeder, ClubSpot 810, Church Farm, Stratton St Michael, Norwich, Norfolk, NRQ15 2QB

PSION ORGANISER - Mike O'Regan, IPSO, 130 Stapleford Ln, Beeston, Nottingham NG9 6GB. Tel 0602 735482

RESEARCH MACHINES - Steve Rochford RM National User Group, George Stephenson High School, Southgate, Killingworth, Newcastle NE12 0SA. Tel 091-268 2002

REVELATION (PICK) - write to Malcolm Frame, UK Revelation User Group, 136 Saint Albans Road, Watford WD2 4AE or Telephone 0923 35515

R:BASE - write to Mrs Tansy Beal, R:Base User Group c/o Room A2044 BBC Woodlands, 80 Woods Lane, London W12 0TT. Telephone 081-576 7187

S&T PD for the ST. Large selection of PD from £1. Send £1 or a disk and 50p for a list. All prices include postage and packaging. Send cheque or PO to Simon Eve, S&T PD, 6 Crediton Road, London, NW10 3DU

SA40 User group - write to Roy Williams, 17 Grove Road, Acton, London W5 6AW.

SANYO MBC-550 - M H Syed, Wistaria, 53 Acacia Grove, New Malden, Surrey KT3 3BP. Tel 081-942 9009

SCHNEIDER EURO PC - Alex Kefford, SEPUG, 11 Crabbet Road, Three Bridges, Crawley, West Sussex RH10 1NF

SCIENTIFIC PC USERS - write to Tim Bunning, SPCUG PO BOX 17, Retford, Notts DN22 6BQ Tel 0777 709009

SEGA SWAP CLUB - Exchange your old megadrive/master system carts -10 Sandwith Road, Todwick, Sheffield, S31 0JP

SERIOUS GAMER - Flat C, 43 Colvestone Crescent, London E8 2LG. Telephone 071 241 5446.

SERVICES USERS - write to Squadron Leader G Howson, Services Personal Computer Association, Stik Eng 15a HQSTC RAF High Wycombe, Buckinghamshire

SHARP USERS CLUB - contact Andrew Ferguson, 11 Harcourt Close, Henley-on-Thames, Oxon RG9 1UZ. Tel 0491 574850 evenings only

SIRIUS - Simon Sheppard, ISSUE PO BOX 222, Brighton BN1 3BR

SHREWSBURY AMIGA USER GROUP - informal meetings and lots more planned. Write with SAE to A Preece, 1 Haughmond Court, Featherbed Lane, Harlescott, Shrewsbury, SY1 4NU.

SOFTWARE EXCHANGE - send an SAE for info to 13 Bourneville Lane, Birmingham, B30 2JY or phone 0860 444594 from 12pm to 10pm

SOFTWARE EXCHANGE SERVICE - buy/sell/swap Amiga, ST and PC. SAE for info to 13 Bourneville Lane, Birmingham B30 2JY or call 0860 444594.

SOLITUDE MOUNTAIN - Friendly new Amiga user group. Send blank disk or 50p to 565 Heathway, Dagenham, Essex

SORD M-23 - B Nicholson, Schlumberger Norge A/S Bjergstedveien, 4007 Stavanger, Norway. 474 657002

SMART SYSTEMS USERS - write to Francis Barton, Basement Holy Rosary church, Louis Street, Chapeltown, Leeds LS7 4BP. Tel 0532 629202

SOUTHERN AND DISTRICT. PC and ST user group. Tony Lowes 61A Broadway West, Leigh on Sea, Essex S59 2BX

SPECTRUM PLUS 3 USER GROUP - monthly magazine. 57 Lovers Walk, Dunstable, Bedfordshire, LU5 4BG

SPECTRUM DISCOVERY CLUB - magazine on disk for the Opus Discovery Disk Drive and the Sam Coupé. BD Mumford, 57 St Saviours Road, West Croydon, Surrey, CRO 2XE

STEN - the ST enthusiasts newsletter. Dave Mooney, 14 School Road, Morningside, Newmains, Lanarkshire. Tel 0698 382380.

STOS magazine, out every month. Send an SAE for full details to 11 Shore Crescent, Bishops, Waltham, Hants SO3 1DZ

STUPID FLOWER PD - new library for ST users. Send an SAE for a free catalogue to SFPD, 3 Read Mead, Glastonbury, Somerset BA6 8ON or call 0458 35027 and ask for Matt.

SUPERPROJECT - Geoff Groom, 3 Sunnymead Ave, Carshalton Beeches, Surrey, SM5 4JA. Tel 081-643 3336

SYNCRISOFT - Exclusive 64 computer information. Hardfacts, trouble shoots, pocket book. £2.95 to join, including p&p. Make cheques to Syncrosoft and send them to 9-10 Morland Gdns, Southall, Middx UB1 3DY

TAS (DATABASE) - Neil Hegarty, TASUG C/O Solutions for You, 1st Floor, 2 Lytton Rd, New Barnet, Herts EN5 5BY. Tel 081-441 1133, BBS 081-449 4171

TCS PD - over 250 disks to select from only 99p. Send SAE to 40 Upton Gardens, Tarring, West Worthing, Sussex.

TANDY/MS-DOS - Roger Storrs, NATGUG Oakfield Ldge, Ram Hill, Coalpit Heath, Bristol BS12 2TY. Telephone 0454 772 920

TEXAS T199/4a - Peter Brooks, International TI User Group 96 Banbury road, Oxford OX2 6JT. Telephone 0865 510822

THUNDERNEWS - CBM 64 user magazine on disk/tape. Send sae for details and competition to 159 Hough Road, Wallsall, West Midlands WS2 9BG

TIUGUK - T199/4A user group UK for S/W on disk, tape and module. Offers magazine and help. Write with SAE for more details to Peter Walker, 24 Bacons Drive, Cuffley, Potters Bar, Herts EN6

TRANSPUTER - Howard Oakley, Transputer User Group, Brooklands Lodge, Park View Close, Wroxall, Ventnor, Isle of Wight

TYPECAST! - PD library for the ST/STE. DTP, WP, clip art and art programs. Paul Sealy, 31 Hartfield Crescent, West Wickham, Kent BR4 9DW.

UNIX USERS - UKUUG Secretariat Owles Hall, Buntingford, Herts, SG9 9PL. Tel 0763 73039 /73255 (fax)

VENTURA PUBLISHING - VPU (Ventura Publisher User group) Linda Liddell VPU c/o LLA Lound House, Forncett St Mary, Norfolk, NR16 1JP. Tel 0508 41580

WAKEFILED AND DISTRICT AMIGA USERS - interested in forming a local Amiga users' group? Contact Eddy on 0924 361101.

WORDPERFECT - Michael Norman, Wordperfect User Group (UK) Dove Barn, Manor Farm, Wootton Woodstock, Oxon, OX7 1DX. Tel 0993 812 670

WORDPERFECT - Dr Ian Barton, A Perfect World, High Rigg, Alma Rd, Tideswell, Derby SK17 8LS. Tel 0298 871 925

• BBS

THE MK BOARD - 0908 671289. All speeds up to 2400 baud. 24, seven days a week. Over 60Mb of files on-line for IBM, Atari, Amiga and over 200 GIF pictures. No download restrictions. Call now.

DESERT BBS - 0604 758126. Speeds V21, 22, 22b. Runs on Amiga 2000. Has over 800 files including PC area. Net mail. No fees. 7pm to 6am weekdays. 24 hours.

SCOTHELP ST - 031 343 6368. The board is the UK support site for QuickBBS ST software and also provides a mail interface to the public for a (private) BBS at Atari UK for hot line support. We also supply a voice helpline on 031 332 9323 evenings

PARADISE BBS - 0635 248622. Times 9pm to 7am. Speeds, 300 to 2400.

SPUDS XANADU - 0203 695266. The only known BBS to be run by a kitten supporting V21, V22, V23, V23b. Open 24 hours. The emphasis is on a relaxed atmosphere (no rules, no silly questions) and conversation into the surreal. Over 10Mb of software including Bizarre Citadel V3.3

STEVE AND JACKIE'S BBS - 0703 650037. V21, V22, V22b, V23. 24 hours. Messaging, files, entertainment, on-line games, shopping, second hand, adult sections. All free. User groups welcome.

CYBERSPACE AMIGA BBS - 0295 275045. V21, V22, V22bis. 24 hours. Cyberpunk sig plus only UK horror sig. Fidonet 2:252/120

01 For Amiga	071-377 1358	V21/22/22b/23
061 Pc Support	061-443 1529	V21/22/22b/23
4/abc	0460 64511	V21
Above Board	0254 682862	HST
Absolute Zero Obbs	081-741 7233	V21/22/22b/23
Advance Opus Hull	0482 28367	V21/22/22b/23
After Hours	0276 52096	V22/V22bis
Airtel	0342 717800	V21/22/22b
Aix-386	0905 52536	V21/22/22b/23
Ajl Electronics	0452 309125	V21/22/23/23v
Alan Solomon's Bb	0494 724946	V21/22/22b/23
Alchemist	0666 504597	
Alternate Reality	0352 856626	V21/22/22b/23
Alternative Reality	0959 76695	V21/23/23v
Alternative V/data	081-761 8220	V21/23/23v
Almac PC Board	0324 665371/300-2400	MNPS 0324 665460 HST 0324 665449 Hayes V 9600
Amiga Board	0268 510495	V22/22b/23
Amiga Connection	081-981 9289	V21/23
Amiga Shack	0737 361178	V21/22/22b/23
Amiga South-east	0293 28464	V21/22/22b/23
Amlink Bbs	021-778 5868	V21/22/22b/23
Amtech Support	0202 294716	V21/22/22b
Andromeda Galaxy	0243 379430	V21/22/22b/23
Apple Crackers	0268 781318	V21/22/23
	0268 780724	V22/22b
Apricot Tech Sup	021-456 2402	V21/22/22b/23
	021-456 2401	V21/22/22b
Arport	0252 737065	V21/23
Arena	0625 539063	V21/22/22b/23

Argus Project	091-490 0327	V21/22/22b/23
Arkham Bbs	081-952 5128	V21/22/22b/23
Aspects	061-792 0260	V21/22/22b/23
ASTon-line	081-847 5389	
Atavachron	0480 412884	V23v
Attic	081-308 0466	V22/22b
Auld Reekie	031-663 9924	V21/22/22b/23
Avalon Northeast	091-564 0009	V21/22/22b
Babble Bbs	0532 785964	V21/22/22bis
Babbs Tower	0394 276306	V21/22/22b/23
Banat Board	081-783 1151	V21/22/22b/23
Bar	0904 642560	V21/23/23v
Barnabas	0708 852526	Hst
Barney's Rubble	021-441 1801	V21/22/22b/23
Basingstoke Opus	0256 728331	V21/22/22b/23
Bath BBS	0225 83584	1/840060
Bath BBS	0225 840060.	

Bay BB	0227 741528	V22 Bis/MNPS
Bbs09	0705 736025	Hst
Bbz	081-663 3732	V21/22/22b/23
Beeb-tec	0472 276476	V23v
Betelgeuse 5	0463 231339	
Beyond Belief	0642 787898	V21/23
Bexhill Com Centre	0424 224417	

Big Bang Burger	081-420 6356	V21/22/22b/23
Bike Shop	0705 827764	V22/22b
Bibox	0634 200931	V21/22/22b
Blackpool College	0253 57941	V21/22/22b/23
Blindin' Bbs	01 764-0954	V21/23
Blitter	0292 671638	Hst
Body Matters	071-603 7581	V21/22/22b/23
Boggin	0532 483563	V23/23v
Boog Bb	0252 626233	V21/22/22b/23
Boroughbridge Q	0423 324532	V21/22/22b/23
Bradford Bb	0274 480452	V21/23/23v
Braindead Opus	0823 254352	V21/22/22b/23
Breakthrough	051-734 5817	V21/22/22b/23
Brown Bag	071-404 0897	V21/22/22b
Brunel Bbs	0272 584352	V21/22/23
Buz Board	081-202 9175	V21/22/22b
Buzby's Grapevine	041-762 2000	Hst
Bye Back!	081-959 8105	V23
Cargo BBS	0420 475462	V21/22/22bis
Campus Ros	0223 357445	V21/22/22b/23
Castle Bbs	0276 691872	V21/22/22b/23
Cats Board	0628 824852	Hst
Catweazle	081-428 9476	V21/22/22b
CC4	0482 655798	V23/23v
Central Bbs	021-711 1451	V21/22/22b/23
Chase Wildcat U.g	0543 871562	V21/22/22b/23
Chequers	0622 891308	V21/23
Chiba City	0501 44262	
Chipboard	0532 320225	V21/23/23v
Chronos' Lair	021-744 5561	V21/22/22b/23
Cix	081-399 5252	V21/22/22b/23
Clapham Junction	0234 64261	V21/22/22b/23
Cliff's Corner	0502 518274	V21/22/22b/23
Club 1512	081-204 8755	Hst
Co-op Board	081-316 6488	V21/22/22b/23
Co-op Board (ors)	061-832 1961	V21/22/22b/23
Co-op Board (nicc)	0509 826339	V21/22/22b/23
Co-op B'Mouth	0202 532701	V22/22b
Co-op P'Mouth	0705 754851	V21/23
Codeomatic Bbs	0472 250690	V21/22/22b/23
Communitel Demo	081-968 7402	V23v
Compass!	0942 896661	
C'center Opus	071-928 2005	V21/22/22b
Computers 4 Christ	0926 428294	V21/22/22b/23
Connection	071-978 8540	
Connections	081-903 1309	V21/23/23v
Connex	071-431 3922	Hst
Consett Forum	0207 506179	Hst
Corby Town Opus	0536 205113	V21/22/22b/23
Cornwall Gate Opus	0752 848806	V21/23

Cp/m User Group	0753 868196	V21/22/22b/23
Critical Mass Bbs	0727 56939	V23/23v
Crown Green	071-245 1512	V21/22/22b/23
Crystal Tower	081-886 2813	V21/22/22b/23
Cure	0604 27865	Hst
Cv Database Bb	0427 810211	V22/22b
Cymrutel	0492 49194	
Cynotel	081-346 2816	V23v
D.i.e.	061-434 9907	V21/22/22b/23
Dabbs	0846 693067	V21/22/22b
Dambusters	0203 333195	V21
Dark Crystal	081-207 2989	Hst
Dark Halo	0392 434477	Hst
Dark Side	0446 33729	V21
Darkhaven	0604 413716	V21/22/22b/23
Data Network	081-478 5464	V21/22/22b/23
Datnet	0245 323693	

Datase/wanderland	081-680 5330	V23
Datasoft Opus Bbs	0460 54615	V21/22/22b/23
Datatrade Obbs	0536 725180	Hst
Dbase User Group	0532 842213	V21/22/22b
Doe Board	0296 88165	V21/22/22b
Dcs	081-879 7578	V21/22/22b
Deep Thought	0634 683696	Hst/V23
Desert	0244 550332	V21/22/22b/23
Diamond Opus	0791 86504	Hst/V23
Diggertel #1	0925 411265	V21/22/22b/23

Digital Matrix	021-705 5187	V21/22/22b/23
Direct-line 1	081-841 1847	V21/22/22b/23
Direct-line 2	081-842 2030	V21/22/22b
Domain Bbs	081-773 2422	V22/22b
Dragon'S Tower	081-202 0709	V21/22/22b
Dunedin Blackhole	031-669 2974	
Dwarfen Realm	0376 501036	V23v
Ebbs-1	0274 541156	V21/23/23v
Eddie'S Bbs	0635 71324	V21/22/22b/23
Edinburgh Castle	031 334 7043	HST
Empirical Research	0543675158	V21/22/22b/23
Empyriion	0792 580781	V21/22/22b/23
End To End	0376 84644	V21/22/22b/23
End Zone	0524 752245	V21/22/22b/23
Engineers Workbnch	051-327 7036	V21/22/22b

Eureka Gateways	0603 250689	V23/23v
Eureka li	081-683 0629	V21/22/22b/23
Exchange S/w	0767 5051	V21/22/22b/23
Eye-2	0525 715789	V21/22/22b/23
Fal Opus	0736 794827	V21/23
Falcon Bbs	081-527 4165	V21/22/22b/23
Family Skeletons	0480 812097	V22b
Fen Tiger	0954 210692	V23v
Fido Uk1	0734 713909	V22/22b
Firm	0273 513872	V23v
Flight Path	081-759 1957	V22/22b
Focus International	0905 795002	
Focus Tobs	0303 42690	Hst
Focus Uk	0905 774477	V21/22/22b/23
Forth View	031-660 3474	V21/22/22b/23
Forum-80 Hull	0482 859169	V21
Fox'S Den	0689 27085	V21/22/22b/23
Free Net One	0767 51972	V21/22/22b/23
Freelance Lymx	0480 406261	V21/22/22b/23
Friday The 13th	0642 224833	V21/22/22b/23
Fuzzy Logic	0634 200707	V21/22/22b
Gabbs	0705 524805	V21/22/22b/23
Gallery Obbs	081-847 2795	V21/22/22b
Game Over	0752 848070	V21/22/22b/23
Games Online	0273 699200	
Gaslamp	0706 358331	V21/22/22b/23

Gaugonzola Bbs	0453 511112	V21/22/22b
Gnome At Home	081-888 8894	V23v
Gods	081-994 9119	V21/23
Golly!	0734 320812	V21/22/22b/23
Goobtel	0602 706307	V21/23
Good Life	081-541 0187	Hst
Gopher'S Box	061-320-3208	V21/22/23
Gourmet	0474 536654	V21/22/22b
Grainstore	0905 770198	V21/22/22b
Grenadier	0825 762803	V21/22/22b
Hacker'S Delight	0702 523853	V21/22/22b
Hailwits Bbs	0272 340310	V22/22b
Hamnet	0482 465150	V21
Harlequin	061-945 3612	V21/22/22b/23
Hastings Bbs	0424 717919	V21/22/22b/23
Hawk'S Castle	0344 411621	Hst
Hazzard Bb	071-737 0505	V21/22/22b/23
Health-data	081-986 4360	V23v
Heartbeat	0734 352032	
Hilary'S Board	0277 233468	V21/23
Hot-air Opus	0579 70347	V21/22/22b
Humber Bridge	0482 850785	V21/22/23
Ichthus (trinity 3)	0734 461466	V21/22/22b/23
	0903 700771	V21/22/22b/23
	0227 770403	V21/22/22b

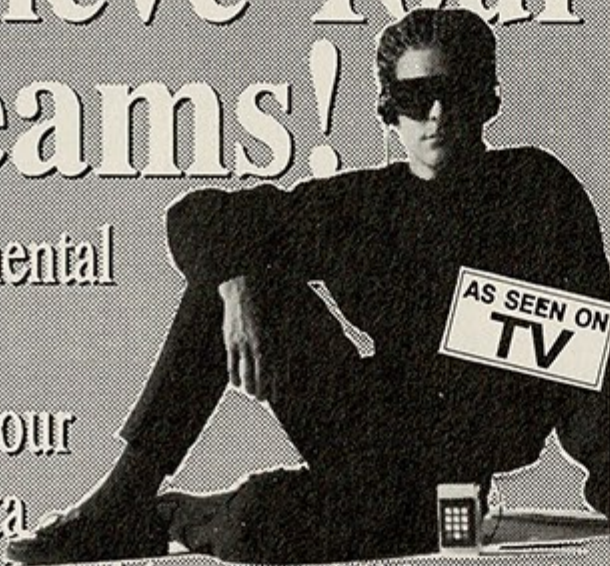
Index Linked	0895 72021	V21/V22/V22
Infocomm UK	0832 73003	V23v
ISiLington Bbs	071-704 0760	Hst
	071-226 1248	V21/22/22b/23
Jabulon Bb	0254 59352	V21/23/23v
Jersey Bbs	0534 37779	V21/22/22b/23
Jersey Opus	0534 39389	V21/22/22b/23
Jocks Away!	031-225 5368	V21/22/22b/23
Jolly Fisherman	0754 67796	V21/22/22b/23
Jolly Roger	081-742 1640	V21/22/22b/23
Jusavo	0324 32414	V21/23
Just The Place	0705 258694	Hst
K-wood	0608 83458	Hst
Kashmir'S Bbs	0472 347882	V21/22/22b/23
Kernow Bb	0209 821670	V21/22/22b/23
Key-board	0908 668398	Hst
Keydata	081-676 0072	V23v
Kidlington Bbs	0865 56703	V21/22/22b
King Of The Castle	0233 620228	V21/22/23
Kirklees Opus	0484 665415	V21/22/22b/23
Kleopatra's Pyramid	0602 384281	V21/23/23v

Komputer Knidge	0844 274066	V21/22/22b/23
Kybernesis	081-673 7294	V21/22/22b/23
Labyrinth	051-724 4458	V21/23
Lamplight Obbs	0705 811531	V21/22/22b/23
Laser Tobs	0532 438430	V21/22/22b
Lau'S Cl Bb	081-751 6096	V23v
Lightfinger'S Place	0202 485723	V21/22/22b/23
Lineight	0580 212043	V23v
Linx Bbs	0522 511277	V21/22/22b/23
Liquorice Allsorts	0633 279985	
Liverpool Mailbox	051-428 8924	V21/22/22b/23
Liverpool Ros	051-931 4271	V21/22/23
Loch lomond	0389 55762	V22/V22bis
Loft	0442 230461	V21/22/22b/23
Logical BBS	0772 623167	300-2400
Log On In Tynedale	0434 606639	V21/22/22b/23

London Bb	081-455 6607	V21/22/22b/23
London City Mag	081-468 7648	V21/23/23v
London Connexion	081-667 1313	V21/22/22b/23
London Embassy	081-366 1778	Hst
London Guest Hse	081-748 0974	Hst/V23
London Mail Centre	081-534 1200	V21/22/22b/23
London Metropolis	081-519 1055	V21/22/22b/23
Loony Bin	0703 787489	V21/23
Mabbs	021-444 8972	V21/22/22b/23
Mach II Bbs	0242 260 685	V21/22/22bis
Mactel Hq (gm Box)	0602 455444	V21/22/22b/23
Mactel Metro	081-543 8017	V21/22/22b/23
Mactel Phoenix	0473 610139	V21/22/22b/23
Madness Bbs	0603 300947	V21/22/22b/23
Magic Castle Bbs	021-430 3761	V21/22/22b/23
Magic Mushroom	0361 83641	V21/22/22b
Magnum	0274 547006	V21/22/22b/23
Magrathea	0376 24402	V23v
Manor	0980 863031	V21/22/22b/23
Marcel	081-346 7150	V21/23/23v
Matrix	051-255 0225	V21/22/22b/23
Mbbs Leonfield	0964 550745	V21/22/22b/23
Mbbs Mitcham lic	081-648 0018	V21/23
Medway	0634 280031	V21/22/22b
Mektronik Cnsltns	061-773 7739	V21/22/22b/23
Mercant	0203 611943	V23v
Merkinstead	061-434 7059	V21/22/22b/23
Merlin	0443 834179	

Achieve Your Dreams!

Amazing mental computer harnesses your Alpha/Theta brainwaves to achieve your lifes goals.



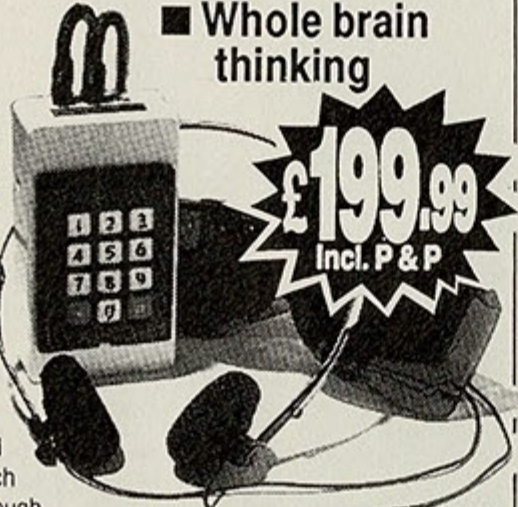
MC² In just minutes achieve:

- Deep relaxation
- Super learning
- Hidden talent realisation
- Mental clarity
- Focused problem solving
- Closer personal communication
- Whole brain thinking

Imagine having the power to induce deep relaxation, accelerate your learning abilities and change your behaviour patterns at the touch of a button!! At last tomorrow's technology can deliver your goals, fulfil your dreams, with the amazing MC2 Dream Machine.

Developed and patented in Arizona, USA, the MC2 is a computerised audio-visual component system which induces a state of deep relaxation through the use of synchronised light and sound patterns which are scientifically programmed to the theta 4-7hz brain waves. These waves are produced when we are in the creative and learning states. So by emitting light and sound in the 4-7hz frequency band, the audio-visual stimuli are designed to effortlessly lull you into a highly motivated yet deeply relaxed state. Thus, you achieve your goals by directing your sub conscious mind to work in co-operation with your conscious desires.

Simply select any one of the 10 convenient pre-sets for relaxation, learning or motivation. From 15 minute brain-storming high energy sessions to 75 minute dream enhancing and advanced visual-isation meditations.



£199.99
Incl. P & P

DREAM MACHINE™

MC2 Dream Machine is a patented integral component system with 10 preset options beta/theta. Stereo headphones, custom light scan glasses, 240v A/C mains adapter pack: option 100 learning/relaxation cassette tapes.

Achieve your dreams now and the success you deserve send for your home trial of the amazing MC2 Dream Machine today.

Card holders ring
091 477 2555 for express delivery.
J&M INTERNATIONAL UK LTD. (GO)
17 WHITEHALL RD., GATESHEAD,
TYNE & WEAR NE8 4EQ.

PROVE IT YOURSELF AT HOME! 14 DAY MONEY REFUND G'TEE

YES! Please send me the MC2 Dreammachine of 30 days home approval. I understand that if I am in any way dissatisfied I may return the system for a full refund without question. I enclose a cheque/P.O. for £199.99 Incl. P&P

Name

Address

..... P/code

Please debit my Access/Visa. No.:

Signature

COMPUTER EXPRESS

Britain's biggest selling computer weekly, packed with the latest news, reviews and technical tips for **your machine.**

SAVE OVER £6

off the news-stand price when you take out a subscription to New Computer Express today!

LIMITED OFFER
APPLY TODAY

54 issues for only £31.35

or to put it another way . . .
get your copy of NCE delivered to your door for the old price of just 58p a copy!

To take advantage of this extra special offer, complete the coupon below and return it immediately or, better still . . . telephone our credit card hotline right now on 0458 74011 to book your guaranteed copy every week.

Please enter my subscription to New Computer Express at the special discount rate ticked below.

- UK – 54 issues – £31.35
- Europe – 54 issues – £63.75
- Rest of World – 54 issues – £89.15

N.B. All overseas subs are sent by Airmail for speed and safety. Please make cheques/PO payable to Future Publishing Ltd and send with this coupon to:

NEW COMPUTER EXPRESS, FREEPOST, SOMERTON, TA11 7BR.

Name: _____
Address: _____

Postcode: _____ Tel: _____

I wish to pay by (please tick as appropriate)

- Access
- Visa
- Cheque
- PO

Card No: _____
Expiry date: _____

NCE/SP/1991

IS IT ALL MOONSHINE?



• *Drinking and driving? Driven to drink? Or just driving it?*

Now that the new year is well underway there are oodles of games waiting to be released.

Millennium has announced its forthcoming nutty racing game, *Hillbilly Moonshine Racers*, which puts you in the driving seat of an old jalopy. You're a good ole boy, earning a bit of extra dosh by driving an ancient pickup truck full of illicit moonshine whisky.

However, as you'd expect, the law (in the form of Fat Sam the Sheriff) is not happy with the situation. On your cross-country chase you have to elude Sam and deliver the moonshine to Tucker's secret moonshine hideaway in one piece. He'll cough up the dough for the run, helping you to buy maps, CB radios and upgrade your vee-hickle.

And boy, does it need upgrading! It gets bashed to



GAMES WEEK

Neil Jackson gives you the low-down on the latest playing tips and cheats.

oblivion and back on every run, with fallen trees, road-blocks and ambushes all taking their toll. And worse, other moonshiners will be pushing past you at every opportunity, ramming you off the road and smoking your motor!

Hillbilly Moonshine Racers is the work of the team that wrote *Chase HQ* and *Continental Circus*, so you can be sure that the racing part of the game is up to scratch. In addition, the game features three difficulty levels, each with five different routes and a whole host of tricky obstacles. Watch out for the Moonshiners burnin' rubber across Tennessee (and your computer) some time in March.

Another software house with lots to offer over the coming months is Gremlin, which will release three games between now and Easter. Due in March is *Switchblade 2*, the follow-up to, er...*Switchblade*. It's set

two hundred years after you (known as Hiro then) defeated Havoc in the original game. Sadly Hiro is dead, as Havoc was thought to be. But Havoc has risen again and Hiro's descendant is the only living person who can stop him.

The game features six levels, each containing over 100 screens of action. Redrawn graphics depict the various areas of the land, from the Switchblade Underworld to an explosive volcanic island. All manner of weaponry lies at your disposal, if you can lay your hands on it: spin blades, machine guns, firebombs, lasers, gas grenades and homing missiles all have a shelf in your armoury. And you need them too! Guards, droids, laser turrets, terminators and even eagles are waiting to destroy you.

Another Gremlin goody waiting in the wings is *Supercars 2*, follow-up to, er...*Supercars!* Created by the Lotus Turbo Challenge team, *Supercars 2* also offers simultaneous two-player racing action. The game features 20 improved racing tracks and an upgraded weapons system which includes machine guns and even homing missiles. Look out for this in April on the Amiga and Atari ST.

Perhaps Gremlin's biggest coup is the securing of another hot licence deal - *Hero Quest*. The best-selling board game of 1989 is destined to become a similarly hot title in its computer form.

It's a fantasy adventure where elves, wizards, barbarians and dwarves battle with dark forces in search of hidden treasure. There are more than ten different quests and a choice of characters to take on them. Each adventurer develops his skills as he progresses deeper into the quest and you can save your current abilities to disk as you go. Gremlin promises fantastic gameplay and superb graphics for (at least) the Amiga and Atari ST sometime this Easter. Watch out for the full review in a future Games Week. ■

TOP 10 SIXTEEN-BIT GAMES	THIS WEEK	LAST WEEK	CHART WEEK	TITLE	PUBLISHER	MACHINE
	1	3	4	<i>Fantasy World Dizzy</i>	Codemasters	ST AG
	2	2	5	<i>Powermonger</i>	Electronic Arts	ST AG
	3	2	6	<i>Teenage Mutant Ninja Turtles</i>	Mirrorsoft	ST AG PC
	4	11	38	<i>Treasure Island Dizzy</i>	Codemasters	ST AG
	5	4	6	<i>Robocop 2</i>	Ocean	ST AG
	6	10	2	<i>Fast Food</i>	Codemasters	ST AG
	7	8	4	<i>SCI</i>	Ocean	ST AG
	8	7	9	<i>Lotus Turbo Challenge</i>	Gremlin Graphics	ST AG
	9	6	8	<i>Hollywood Collection</i>	Ocean	ST AG
10	NE	1	<i>Golden Axe</i>	Virgin	SEGA OT	

For the week ending 5th January 1991
ST - Atari ST Ag - Commodore Amiga PC - IBM PC or compatible OT - Other
Chart compiled by Gallup. © European Leisure Software Publishers Association.

INDIANAPOLIS 500

This week, we have some in-depth tips for *Indy 500*, Electronic Arts' racing masterpiece. An all-round excellent game, *Indy 500* suffers from only one problem - it's incredibly tough! For better qualifying times, check this little lot.

- Fill the fuel tank to 10 gallons for qualifying, or full to the brim for a race greater than 30 laps.
- Set the rear wing on its top notch and the front wing one notch down from the top for qualifying. For a race, bring both wings down by 3 to 5 notches each, always keeping the front wing one notch lower than the rear.

- To qualify, use soft tyres on the left and medium tyres on the right. For races, harden them up, using a medium left/hard right combination.

- Set the stagger to plus one inch for qualifying and racing alike.
- Keep tyre pressures between 28psi (which is fast fast but makes steering difficult) and 24psi (which grips well, but is a bit slower) for both qualifying and racing.
- Shock absorbers should be set up two notches up from the bottom setting to maintain a steady grip through hard and gentle bends.

- The camber is best left at the default setting.

- Gear ratios affect different cars in different ways. For the Penske, set it up so first gear is at 10.00; for the Lola first gear should be two selections lower or the engine blows up.
- Set the front anti-roll bar to maximum stiffness. Set the rear one to two or three notches stiffer than the default setting. Never set the rear to maximum.
- The turbocharger should be set for maximum boost all the time. It eats fuel, so you may wish to reduce boost pressure if you're miles ahead and fuel is low.

- Yellow flags prevent you from overtaking (in the proper races), but you can minimise the boredom factor by moving the car over to the left of the track, and switching on the cruise control. At 90 mph, the camber of the bends keeps the car on the right lines without needing you to steer, but watch out for junked cars on the track ahead. It might not be a good idea to try this unless you're well in front.
- Remember, pit stops and yellow flag traffic jams cause the tyres to cool and the grip to reduce. Fuel also affects weight and therefore steering, so watch it when you race out of the pits after a fill-up.



C O N S O L E Z O N E

B-movie monsters and female Japanese wrestlers are among the crazy characters in Richard Frederick's overview of the world of console gaming this week.

PLAYING TIPS

SEGA MASTER SYSTEM

Go for *Galaxy Force* planets in this order: green, white, blue and red

NINTENDO ES

Thanks to Martin Wilson from Hereford for this *Bubble Bobble* passcode to level 57: FEJJJ

ATARI LYNX

The second instalment of *ELECTROCOP* door passcodes:

LEVEL TWO

1: 3287
2: 5409

LEVEL THREE

1: 9284 - Exit to Level Four
2: 7210 - Exit to Level Four
3: 3936 - Weapons
4: 7395 - Weapons
5: 8294

Have you got any playing hints for *Slime World*? Send them into the usual address.

NINTENDO GAMEBOY

Alan Colson from Birmingham has some more *Super Mario Land* hints. When Mario can't get into small tunnels try this: go to the tunnel entrance, hold down either [Left] or [Right] then rapidly press [Down] several times. Once you're inside the tunnel, keep [Left] or [Right] pressed and repeatedly press [Button A].

SEGA MEGADRIVE

Restart *Strider* by pressing [Button A], [Button C], [Button B], [Button C] and [Button A] when the Master is laughing at the beginning of the game.

NEC PC ENGINE

Play *Psychosis* sounds by simultaneously pressing [Button I], [Button II] and [Select] on the title screen, then push [Run].

NINTENDO ES



• *RollerGames*: violence 21st century-style.

Prepare to lace your skates and fine-tune your reactions because Ultragames' *RollerGames* has just infiltrated the net.

Set in the 21st Century, the Vicious International Punks and Eternal Renegades have kidnapped the *RollerGames* commissioner, twisted three teams into tools of destruction, and devised six levels of death traps for you and your own three teams of skate dudes to conquer.

Are you going to hand the city over to these creeps or will you take the fight to the streets, sewers, junkyards, highways and parks? Just watch out for the open manholes, man-eating dogs and

skateboard thugs... and that's before you get to the rough stuff!

SEGA MEGADRIVE



• *Endorsed by Japan's top female wrestler Ringside Angels will probably be the best, if not only, female Japanese wrestling sim you'll ever play.*

They're tough. They wear kinky boots. They're *Ringside Angels*!

In true Japanese off-the-wall style, Asmik has released a women's wrestling game endorsed by Suzuki, Japan's top female wrestling star. The game has some neat moves in and out of the ring and should appeal to any Mega pervies out there.

Ringside Angels features other famous fighting females from the orient and costs ¥6800 (£27).

NEC PC ENGINE

Do you feel like blowing away enemy soldiers using an Uzi 9mm with handy grenade launcher slung underneath? *Operation Wolf* is a blood-thirsty conversion of the Taito's popular coin-op.

Just one simple rule to this title... if it's on-screen shoot it!

SEGA MASTER SYSTEM

Forget *Robocop*. *E-SWAT* is the latest word in law enforcement.

Stay glued to your weapons through five gruelling levels. You have the ultra-

tech armour and weapons for the job. The question is, do you have the guts for the challenge? *E-SWAT* is available now for £29.99

NINTENDO GAMEBOY

Are you tired of *Tetris*? Tengen and Hudson Soft may have the answer. *Klax* is another simple but challenging arcade puzzle game which will test your dexterity and spatial perceptions.

You must catch shaded tiles with a paddle and flip them into bins to make rows of three same-shaded tiles in stacks or diagonals. Envision a conveyor belt which increases speed as you play.

Klax costs ¥3500 (£14) on the Gameboy and is also available on the Nintendo Entertainment System, Megadrive and PC Engine.

ATARI LYNX



• *Rampage*: relive those 1950's monster movies but this time from the point of view of the monsters.

Rampage, the game that has been promised since the launch of the Lynx, has finally been released.

Based on the Bally coin-op, *Rampage* allows up to four players to become one of four massive monsters with the object of advancing levels by destroying buildings and eating soldiers, tanks and helicopters.

It's a kind of B-movie arcade game for players itching to become a 60ft beast on a trail of destruction. Larry the Lab Rat is a new addition to the bunch of beasties. *Rampage* is available now retailing at £34.99. ■

THE TRADING ZONE

Are you confused by the huge range of video games out there? Have you ever been stung by a real turkey? Don't worry! Just sit back and let the Zone lead you through the greatest games available on your console. This week we reveal what's neat on Nintendo...

1 SUPER MARIO BROS

Simply the best platform arcade game ever invented and you have the choice of three titles! Travel through endless worlds of adventure as you search for the Mushroom Princess in the original. Join the brothers,

Mario and Luigi, in the sequel or play *Super Mario Bros 3*, the first 3Mb cart. Look out for the Mario movie coming soon.

2 LIFE FORCE

Conversion of Konami's masterblaster coin-op, known as *Salamander* in British arcades. A multi-stage horizontal and vertical shoot-'em-up filled with treacherous tentacles, bubble buffers and fierce fireballs. Collect power-up pods and reap the ripple lasers. You haven't hit the hi-scores till you've challenged the one-eyed brain with twin grappling hooks.

3 BATMAN

Stop the press, again. The Caped Crusader is back on the streets of Gotham City in a search and destroy mission to end the Joker's reign of terror. Built-in enhanced graphics chip produces dazzling displays.

4 BUBBLE BOBBLE

Bub and Bob, two crazy bubble-blowing dinosaurs, must search 100 screens of monster-infested platforms before their final confrontation with Baron von Blubba. Conversion of the cult Taito coin-op. Voted one of the best video games in

America for its 'attractive graphics, ability to hold players interest and high regard for positive human values'.

5 SOLSTICE

CSG Imagesoft, part of electronics giant Sony, pays homage to the Ultimate isometric-3D arcade adventures from the early 1980's. Take-on Shadax's quest as you search the deadly fortress of Kasterock for the six pieces of the magical Staff of Demnos, in a brave attempt to save Princess Eleanor from the evil mage Morbius.

RETURN THE COUPON FOR FREE COLOUR BROCHURES!

NEW! - AMIGA PACK

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
£399 INC VAT

FOR FURTHER DETAILS OF THE AMIGA RANGE, COMPLETE THE COUPON AND RETURN IT TO SILICA SHOP THE UK's No1 AMIGA SPECIALISTS

SILICA SHOP OFFER YOU

FREE OVERNIGHT COURIER DELIVERY: On all hardware orders shipped in the UK.
TECHNICAL SUPPORT HELPLINE: Team of Amiga technical experts at your service.
PRICE MATCH: We normally match competitors on a "Same product - Same price" basis.
ESTABLISHED 12 YEARS: Proven track record in professional computer sales.
£13m TURNOVER (with 60 staff): Solid and reliable with maintained growth.
BUSINESS/EDUCATION/GOVERNMENT: Volume discounts available for large orders.
SHOWROOMS: Demonstration and training facilities at our London & Sidcup branches.
THE FULL STOCK RANGE: All of your Amiga requirements from one supplier.
FREE CATALOGUES: Will be mailed to you with offers and software/peripheral details.
PAYMENT: By cash, cheque and all major credit cards.
CREDIT PAYMENT TERMS: Silica are licensed credit brokers - return coupon for details.

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".

RETURN THE COUPON NOW FOR FREE BROCHURES



MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-309 1111
Order Lines Open: Mon-Sat 9.00am-6.00pm No Late Night Opening Fax No: 081-308 0608

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA Tel: 071-580 4000
Opening Hours: Mon-Sat 9.30am-6.00pm Late Night: Thursday until 8pm Fax No: 071-323 4737

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-302 8811
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm Fax No: 081-309 0017

BUSINESS/EDUCATION: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-308 0888
Order Lines Open: Mon-Fri 9.00am-6.00pm Closed on Saturdays Fax No: 081-308 0608

To: Silica Systems Ltd, Dept NCE 019138, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX
PLEASE SEND INFORMATION ON THE AMIGA

Mr/Mrs/Ms: Initials: Surname:

Address:

Postcode: Tel:

Which computer(s), if any, do you own? A2000

£&O: - Advertised prices and specifications may change - please return the coupon for the latest information.

THIS IS **NOT** A MISPRINT

ONLY BY PURCHASING OVER 3 MILLION DISKS
A YEAR CAN WE OFFER THE FOLLOWING
SENSATIONAL PRICES...

Every diskette supplied by
Dial a Disc is certified and
tested 100% error free.

200 DSDD 3.5"
ONLY £60.00

3.5 DSDD 135TPI

50 £22	100 £33	150 £54	200 £60	400 £115	500 £125
-----------	------------	------------	------------	-------------	-------------

3.5" HD

ONLY 60p each

5.25" DSDD
ONLY

23p each

5.25" DSHD
ONLY

40p each

3.5" HD 100
FOR ONLY
£57.50

DISK STORAGE BOXES

3.5" 40 capacity	£2.95
3.5" 80 capacity	£3.45
3.5 100 capacity	£3.95

only if bought with disks

All prices include VAT & delivery

OUR PROMISE IS SIMPLE

100% SATISFACTION OR MONEY BACK

DIAL A DISC

203 Southborough Lane, Bromley, Kent, BR2 8AR.

081-467 0131

All offers subject to availability. E/OE.

PD & SHAREWARE

who do you get yours from?



There are many PD libraries around but do they offer you....

- ★ Huge collection, thousands of programs on over 3000 disks
- ★ Same day service - 1st Class post - GUARANTEED
- ★ Knowledgeable staff on hand (no 'phone after six and ask for fred!)
- ★ Three years experience collecting and distributing PD & Shareware to satisfied customers all over the world.
- ★ Send £1.00 for catalogue - free with order - please request and state MAKE of computer CLEARLY.

AMIGA

Currently over 800 disks in our catalogue, including Fred Fish, APDC, AMICUS, Panorama etc. Our own SOF collection is so good other libraries stock them now and of course we are exclusive distributors of the fabulous UGA disks. All are auto-boot, menu driven and so very easy to use, probably the best collection available! We also run an Amiga Club, ask for details.

ATARI ST

We currently stock over 800 disks full of PD/Shareware for these machines, containing every imaginable type of program! Choose from ALL the Public Domain, not just "a selection". If you are new to ST'ing why not join "Clubville", our popular user group, £6.50 gets you newsheets, offers, special prices on goods, 5% Off blanks/PD etc.

IBM PC

(and compatibles)

Thousands of the most popular Public domain and Shareware programs in our current catalogue, all available on either 3.5" or 5.25" format, if ordering (opposite) state which. Whatever type of program you may require, we've probably got it.

MEGA PACK - £19:50 (£14:50)

5 PD disks + 5 blank disks
plus a Library case

(Selection of current popular titles),
INTRO DISK - £1:50

(Atari or Amiga only)

VIRUS KILLER DISK - £1:50

(state machine clearly)

(prices in brackets for 5.25" disks, state preferred)

24 Hour orderline on

0705-266509

SOFTVILLE

Unit 5, Stratfield Park,
Electra Avenue, Waterlooville,
Hants. PO7 7XN

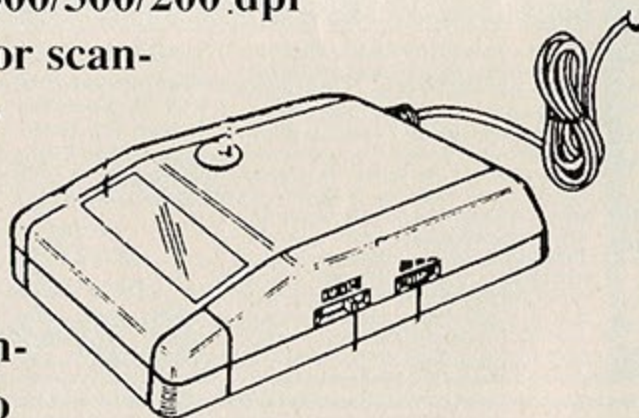
PC HAND SCANNER SCOOP

Manufactured in Korea by ACER. 3 resolution levels, 400/300/200 dpi selectable, Line Art & Halftones, 16 grey levels (Ideal for scanning Photographs). Now you can scan & edit logos, artwork, text, signatures, cartoons, photos etc. Files can be saved in .TIF (for Pagemaker).PCX(PC Paintbrush) and .MSP(for Windows Paint).

PLUS...Superimpose & Merge facility. The package contains the scanner, XT/AT scanner interface card, Studio Scan software, and full documentation. This product would

normally cost £129.95 plus VAT, but our special price is just £89.95p inc. VAT. (Postage £3.05p).

£89.95p inc. VAT. (Postage £3.05p)



"BEST BUY
FOR 1991"

Access

VISA/ACCESS orders welcome. Prices subject to change without notice. All transactions are subject to our standard conditions of Sale available upon request. Personal callers welcome by appointment. All prices include VAT.

VISA

UK HOME COMPUTERS

Unit 22, Cheney Manor Ind. Est. Swindon, Wilts. SN2 2PJ.

Tel: (0793) 695034 FAX: (0793) 541691

Avagio is a desktop publishing (DTP) program from Unison World in sunny California. In the UK it's handled by LTS. It runs on the PC - everything from an XT on up - but it does need a hard disk. Despite its attractions it has so far failed to impress those on a budget who continue to buy the more familiar *TimeWorks* from GST. In a bid to alter matters *Avagio* version 1.2 is selling not at the original £195, but at £119. Do the new features and lower price make it worth a second, more serious look?

Avagio uses neither Windows nor GEM, it does all the graphical support itself. However, it does employ the same basic working methods as programs based on those graphical user interfaces. You'll find scroll bars, pull down menus and dialogue boxes all activated via the mouse. Pulling down the File menu to make a start produces one surprise - no lower case letters. Strange to see a design program that only communicates in capitals.

The opening screen is a full page view of the selected paper size. Zoom views are also available to a point where only a few square inches of 'paper' are visible on screen. Also on screen is an optional mini-view box and toolbox which are both draggable - they frequently need to be moved when working on zoom views. The mini-view is used to move fast to any desired part of the current page.

Text entry on screen is practical for short runs of words, but not for entries of any length. The reason is that *Avagio* uses scalable outline fonts. (see Vector v bitmapped). This means that every time you type a letter it must calculate a bitmap for it and place it on the screen. A reasonable typist easily out paces it even on the review machine, a 16MHz 386SX. So, it's best to prepare text using a word processor and import it. *Avagio* will import from most well known word processing packages. It also keeps existing word styles, like bold or italic.

Text is imported into a text frame - indeed, despite its claims to using a paste board metaphor (like *PageMaker*) you can't drag anything off of the page and on to the background. A link tool chains frames together so that imported text will flow from one to another and from page to page.

Getting the imported text looking the way you want is best done using paragraph style templates. These tell *Avagio* what point size the text should be, what font to use and how to handle the paragraph beginnings and endings (indenting them, lines in between, bullet headers and so on).

Eight fonts are supplied with *Avagio* including the useful Dingbats, a Times Roman equivalent called Bay Roman and a Helvetica clone called Helcera. LTS will supply another 50 or so at a cost of around £10 each, though for *Avagio* Professional users genuine Monotype fonts are available. Fonts will display in around 16 different styles, including outline (hollow letters).

There is a utility that converts the more familiar Fontware outlines (and others) to *Avagio* format,

AIM HIGH PRICE LOW

With a lower price and more features is the *Avagio* PC DTP package all set to succeed? Steve Patient lays out a report.

though, oddly, it can't handle genuine Adobe PostScript fonts. For added interest *Avagio* will also convert some bit mapped fonts for its own use, though a 12-point bit mapped Helvetica from elsewhere is only usable as a 12 point font in *Avagio* after conversion.

Along with paragraph styles *Avagio* supports page templates - handy if you want to produce standard documents like dinner menus, memos or club newsletters week after week. A number of these come pre-defined. You can base yours on these or use them as a source of ideas and create your own.

Pictures are also imported into frames. *Avagio* will run text around them, though not by default; the default is to print right on over them. *Avagio* comes with a massive library of clip art from Artware Systems (who will sell you even more if you ask nicely). Most of these are in a proprietary vector format (UWI) though *Avagio* now

imports various vector and bit mapped graphics (see panel) including *AI* (Adobe *Illustrator* PostScript format), TIFF and PCX. It's worth sorting these out since they occupy some 2.5Mb of disk real estate. Fortunately they are also printed in the manual.

The manual comes in a ring binder and is quite good. There's a reasonable tutorial that's worth working through to get a feel for the program. It's when you get down to the unusual aspects, like the Mingle feature, that it can get a bit vague. Mingle enables the contents of boxes to interact. Each box has an effect on the other images. It's a clever feature and useful for logos (and for filling outlines of large characters) but that isn't what a DTP package is for. Pretty graphics are best prepared in a graphics package and imported as graphics. The authors would have done better to concentrate their efforts elsewhere.

For example, many DTP users employ their own printer as no more than a proofing device and have a print bureau take their files and produce high definition professional output from them. There is no provision for this at all and since PostScript or EPS files are not one of the output options, it appears to be impossible to achieve - laser printer quality is the best you can hope for. Still, at least *Avagio* makes a good, fast, job of printing, even on a dot-matrix printer.

So how does it stand up? *Avagio* v1 was slammed for its sloth - this one is still slow. On a 386SX you're left twiddling your thumbs while *Avagio* recalculates fonts every time you scroll the screen or move a box. On an XT it doesn't run - it crawls. All right, that's the price you pay for using scalable screen fonts. It's the price you have to pay if you want font sizes from six to 500 in one point increments without buying a 300Mb hard disk. *Avagio* is great for getting dramatic effects but it needs a really fast machine to do it justice. ■

LTS is on 0386 792617.

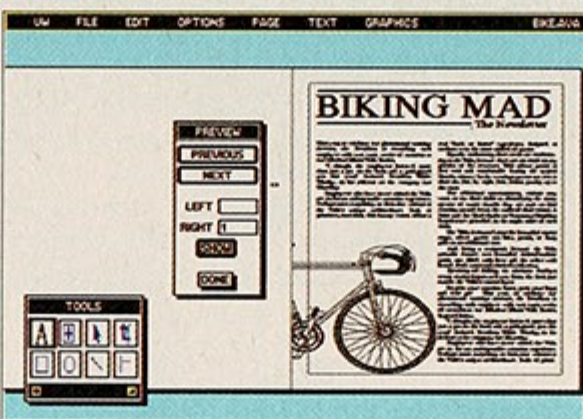
VECTOR vs BITMAPPED

Bitmapped graphics - like PCX files - have all the information represented as dots. Vector based graphics hold information in the form of mathematical descriptions. For example, a line is defined by its beginning and end position on the page, not as a series of dots. If a bit image is scaled down information is lost since bits are eliminated. If it's scaled up you get stepped edges on sloping lines. By contrast, a vector image can be scaled without loss of detail.

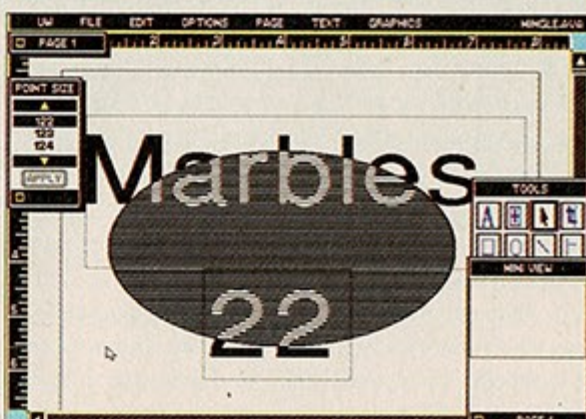
Fonts are held as either bitmapped or vector graphic images. Since *Avagio* handles all its fonts as outlines (vectors) rather than as bitmaps it can scale them precisely with no loss of detail, producing very clean displays at all font sizes. There is a massive saving in disk space too. Only one font outline is needed to produce every font size. A bitmapped font requires a complete set of bitmaps at each size used.



• Working on the first page of *Biking Mad*, note the use of graphic lines to bracket the headline and the way the picture bleeds off the paper edge.



• In preview mode you get a good look at the whole page - or two pages if you're working on a spread - essential viewing if you want your pages to balance.



• The Mingle feature is supposedly easy to use, but getting the most out of it takes a lot of practice. Worth persevering with for those interesting effects.

ST GRAPHICS



Before you splash out your hard-earned cash on any graphics package it's a good idea to decide exactly what you want. Are you interested in painting pictures, creating sprites, doing graphics for DTP, or do you want an all-purpose system? Is any one resolution more important, and how much money do you want to spend? There is a bewildering choice available and before you make the decision, it's important to understand how they work.

The ST operates in three different screen resolutions. High-resolution produces the best quality images at 640 X 400 pixels per screen but it only lets you work in black and white, and you need to buy an Atari monochrome monitor to use it. Low-resolution is the artist's choice because this provides you with a choice of 16 colours from a bewildering palette of 512, though the screen resolution is only 320 X 200 pixels. Medium resolution is a compromise offering 640 X 200 pixels with four colours from the same palette of 512.

There are packages which can expand this choice but if you're looking to use the graphics in your own programs, forget these. Getting those extra colours is extremely difficult. Consider how a picture is displayed: a beam of electrons scans across and down the screen; one frame consists of 200 lines of pixels, and 50 frames a second are sent to the monitor. That means one complete line of pixels is drawn every 1/10,000 of a second (every 100 microseconds).

The trick that these clever programs employ is to synchronise themselves with the scanning speed of the display. You can still only have 16 colours on screen but when the electron gun reaches the end of one line it flies back to begin drawing the next line down, so there's a very brief period during this flyback (a few microseconds only) when nothing is actually being drawn. The secret is to change the ST's colour palette during the flyback. So, one palette of 16 colours is being used to draw one screen-line, then an entirely different palette can be used for the next and other screen lines. You can only have 16 different colours per line, but you can change which 16 they are for every line.

In the graphics department, more than any other, there are a range of excellent Public Domain art packages and utilities which can rival many commercial programs. For example, *Ani-ST* is an animation program which cost in excess of £50 before it was launched into the PD. *Neochrome* is a PD drawing package which is still many games programmers' favourite for designing sprites. Breaking into the kaleidoscopic world of graphics can cost as little as £2.50

NEOCHROME

£2.50 • DISK 150 • SouthWest Software Library

This was originally with the ST and different features are now available for different versions. This particular version come with a full manual on disk. It is the chosen paint package for many programmers who want to design sprites or loading screens in games because its images are stored in a very simple format.

Although *Neochrome* only runs on colour STs, it has all the features found in *Degas Elite*. The work area is restricted to a small area of the screen with the *Neochrome* status bar underneath. You can expand the drawing window to take up the full screen, but then the status bar must be called up using a keystroke.

The commands on offer include standard painting

The variety of graphics packages available is ever increasing – Mark Higham helps you make the right choice at the right price.

and drawing tools. A list of sixteen colours are presented at the bottom of the display and you choose the one to draw in. This colour can be selected from a palette of 512.

One clever feature is the way the scalpel enables you to 'draw' an area of the screen you want to cut and then use it as a brush for making wild patterns.

An excellent package and if you're thinking of designing graphics to use in your own programs, you should be considering this one – however much money you've got in the bank.

CYBER PAINT

£29.95 • Electronic Distribution • 0480 496666



Although strictly speaking this is an animation package, it also has some excellent paint facilities. Its design as an animation system means it only works in low resolution and with a minimum 1Mb of memory.

What's useful about *Cyber Paint* is that you can use the animation frames to store different versions of an image. You could easily have 20-100 images in memory depending on just how different they are from each other. The animation compression system only stores the differences between images and not whole 32K blocks. Its load and save options are very comprehensive, loading screens and blocks in various formats as well as animation files, palettes and masks.

If it has any limitations they are that it can only deal with screen size images and it has no patterned flood fill – a strange omission. Great for animation, and good for painting pictures.

ANI ST

SOFTVILLE, Disk: ART 25 • 0705 266509

Ani ST, previously known as *Aegis Animator*, written by Jim Kent, gives you animation options not possible with any other package.

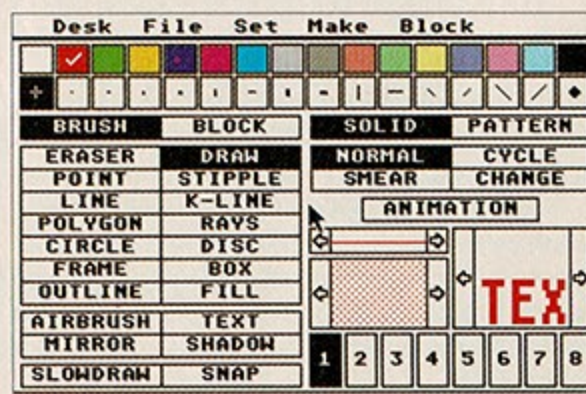
All other animation software on the ST uses sprites – drawn images – which you must generate in order to produce animation. *Ani ST* doesn't base its animation on sprites, though they may be included if you desire. Images are constructed from objects, lines, circles, stars and so on. The objects are stored in a list together with their size, colour and position and the animation is created by changing these factors. The software looks up a table of ingredients for each frame in the animation and creates that picture.

The things this system does best are transformations – from one shape to another. It achieves polymorphic animation using an in-built function called tweening. This means you only have to create the key positions in the animation and *Ani ST* generates all the frames in between.

Unfortunately it can't do detailed animations. You wouldn't consider trying to create a character animation using *Ani ST*, it's just not suitable. However, you can produce complicated sequences which occupy little memory or disk space.

DEGAS ELITE

£19.95 • Electronic Arts • 0462 420847



One of the earliest packages available for the ST, *Degas*, was soon followed by the more sophisticated *Degas Elite*. The style of *Degas* combined simplicity with functionality. Both programs were written by Tom Hudson, who has since gone on to write CAD and much of the acclaimed *Cyber Series*.

Degas Elite operates in all graphic modes and can convert images between them. It can load a large range of formats, but only exports screens in its own compressed or uncompressed *Degas* structure. This is not a problem, however, since *Degas* has become the industry accepted standard for picture files.

Among its plus points are a good zoom, keyboard shortcuts, block save in IFF and colour cycling to produce limited animation effects. On the negative side is reliance on the ST's built-in GEM functions for many facilities, making some graphic operations painfully slow. Apart from these complaints this is an extensive package with many supporters. ■

Mark Higham is editor of *ST Format* magazine. These articles are reprinted from his book, *Get the most out of your ST*, available from *Future Publishing Ltd, The Old Barn, Somerton TA11 7BR. Price £9.95.*

THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created ... affordability.

Silica Systems are pleased to present the new Atari ABC. The ABC is a 286 AT compatible that runs at over 5 times the performance of the IBM XT. This is achieved by combining the power and speed of a 16-bit 286 processor, with Atari Corp's development experience and engineering capabilities, which use the very latest in design technology. However, the Atari ABC's are available at 'XT prices' and many XT owners will wonder why they paid more, but got less!

The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state of the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance (8 hour response), you can rest assured that your ABC will be fully supported.

The ABC is the latest addition to a comprehensive range of both 286 (8Mhz or 12Mhz) and 386 (16Mhz and 20Mhz) PC's, from the Business Systems Division of Atari Corp. Atari's PC range offers an unsurpassed combination of reliability, compatibility and expandability, with unique features like Atari's 44Mb removable hard disk on their PC4. Return the coupon NOW for further details of the complete range of PC products from Atari's Business Systems Division.

**ABC
TURBO**

AVAILABLE: JUNE 90

To put the ABC even further ahead of the competition, we have introduced a special 'Turbo' version, which includes a super fast RLL hard disk controller to increase the data transfer rate from 150KBytes/s to 800KBytes/s, with a performance index of 4.801. Plus! to provide exceptional graphics with an outstanding colour resolution of up to 1024x768, we have included a Super VGA graphics adaptor and a 14" VGA colour monitor (which also supports 1024x768 resolution), all for an additional price of only £300. Check the ABC Turbo against the competition, at only £1299 (+VAT) with 30Mb hard disk, Super VGA colour graphics capabilities, plus 12 months on-site maintenance, it offers unbeatable value.

LOW PRICE - HIGH SPEC!

CPU+MOTHERBOARD	<ul style="list-style-type: none"> 8Mhz 80286 16-bit CPU Landmark Speed = 10.3Mhz, Norton SI Test = 9.0 Latest NEAT (New Enhanced AT) technology chip set Has user selectable bus, DMA speeds & wait states Programmable to operate at 0 or 1 wait states 640K RAM base memory (expandable) Motherboard expandable to 4Mb RAM memory Real time clock with battery back-up Full 16-bit data line capability Socket for 80287-8 numeric Co-Processor 3 16-bit AT expansion slots (max)
DISK	<ul style="list-style-type: none"> 32Mb RLL hard disk - 150KBytes/s transfer - 60ms access Fast disk controller - 800KBytes/s transfer - Turbo version 1.44Mb built-in 3 1/2" floppy disk drive Space for two 5 1/4" and two 3 1/2" drives (max)
I/O	<ul style="list-style-type: none"> Parallel port built-in (25-pin Centronics) Serial port built-in (9-pin RS-232) Mouse controller port built-in (9-pin serial)
GRAPHICS	<ul style="list-style-type: none"> Super VGA video graphics controller - 512K - Turbo vers Super VGA: 256 colours in 800x600 res - Turbo vers EGA video graphics controller built-in EGA: 16 colours available from a palette of 64 EGA: 256K of dedicated Video RAM built-in MDA, CGA and Hercules graphics controller built-in
PHYSICAL	<ul style="list-style-type: none"> Low noise operation Ergonomic small footprint (38cmx41cmx15cm) Keyboard - 102 key enhanced AT (12 function keys) Keyboard - has 2 position height adjusters
PLUS!	<ul style="list-style-type: none"> Fully OS/2 compatible (requires 4Mb RAM) Supports Industry Standard Networks MS-DOS 3.3 with GW BASIC 3.22 12 Months FREE on-site maintenance included

286 AT

WITH 30Mb HARD DISK & EGA MONITOR - £899

FREE! - ON-SITE MAINTENANCE
FREE! - TECHNICAL SUPPORT HOTLINE
FREE! - TEST/BURN-IN BEFORE DESPATCH
FREE! - OVERNIGHT COURIER DELIVERY

£899
 WITH +VAT
**30Mb
 HARD
 DISK**
 AND
**EGA
 MONITOR**



**ABC
 TURBO
 £1299** EXC VAT
 • SVGA COLOUR MONITOR
 • SVGA GRAPHICS CARD - 512K
 • 30Mb HARD DISK DRIVE
 • FAST DISK CONTROLLER

£899 +VAT= £1033.85

ATARI

	3 1/2" FLOPPY DRIVE NO HARD DRIVE	3 1/2" FLOPPY DRIVE + 30Mb HARD DRIVE
NO MONITOR	£599 +VAT = £688.85	£799 +VAT = £918.85
+ EGA MONO	£699 +VAT = £803.85	£899 +VAT = £1033.85
+ EGA COLOUR	£799 +VAT = £918.85	£999 +VAT = £1148.85
ABC TURBO AVAIL: JUNE 90	£1099 +VAT = £1263.85	£1299 +VAT = £1493.85

SILICA SYSTEMS OFFER YOU

ON-SITE MAINTENANCE (8 hour response): Available Free of Charge on all ABC's.
TECHNICAL SUPPORT HELPLINE: Team of Atari technical experts at your service.
100% QUALITY CONTROL: Every ABC is tested/burnt-in before despatch.
FREE OVERNIGHT COURIER DELIVERY: On all hardware orders shipped in the UK.
ESTABLISHED 12 YEARS: Proven track record in professional computer sales.
£13m TURNOVER (with 60 staff): Solid and reliable with maintained growth.
BUSINESS/EDUCATION/GOVERNMENT: Volume discounts available for large orders.
PRICE MATCH: We normally match competitors on a "Same product - Same price" basis.
SHOWROOMS: Demonstration and training facilities at our London & Sidcup branches.
THE FULL STOCK RANGE: All of your Atari PC requirements from one supplier.
FREE CATALOGUES: Will be mailed to you with offers and software/peripheral details.
PAYMENT: Cash / cheque / credit card / credit - we are licensed credit brokers - details on request.

Before you decide when to buy your new Atari ABC, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your ABC, 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 ABC products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. 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 Systems Service".



MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-309 1111
 Order Lines Open: Mon-Sat 9.00am-6.00pm No Late Night Opening Fax No: 081-308 0608

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA Tel: 071-580 4000
 Opening Hours: Mon-Sat 9.30am-6.00pm Late Night: Thursday until 8pm Fax No: 071-323 4737

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-302 8811
 Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm Fax No: 081-309 0017

BUSINESS/EDUCATION: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-308 0888
 Order Lines Open: Mon-Fri 9.00am-6.00pm Closed on Saturdays Fax No: 081-308 0608

To: Silica Systems Ltd, Dept NCE 019138, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND INFORMATION ON ATARI PC's

Mr/Mrs/Ms: Initials: Surname:

Address:

..... Postcode:

Tel (Home): Tel (Work):

Company Name:

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

TECH TIPS



Is your soundcard dumbstruck? Can't you put your Amiga in the picture? Does your Arch need a new driver? Is your vision blurry? Send your sorry stories to Tech Tips, Beauford Place, 30 Mogmouh Street, Bath BA1 2BW

■ HELP! Drive selector

I have an (old) Atari STM with two external drives. They are both double-sided drives, purchased from Evesham Micros. The drives have not got through ports and so only one can be connected to the computer at any one time – now you can see my problem.

I used to have an Atari SF354 single sided drive, this had a through port which allowed me to plug in an extra drive. This set up suited me for a while, but since I do a lot of programming (I'm a computer science student you see and poor at that) I needed to move on to bigger and better things. Unfortunately, I am now in a worse state than when I started.

Would it be possible to make (or preferably buy) a lead which plugs into the disk drive port on the ST which would split into two sockets to allow me to plug in both drives. I noticed in the ST Owner's manual that pins 5 & 6 select respectively, so I would assume that such a lead could easily be made to do what I require.

Additionally, how can I stop my computer from continually resetting when my mono (SM125) is plugged in? It resets when you least expect it and can be downright infuriating (that's putting it mildly), this letter had to be re-typed three times inside ten minutes.

Why not have a MSMHSKTYZXS

debate! (My Sord M5 has softer keys than your ZX Spectrum)

Yours (nail biting waiting in suspense, needing a solution pretty quickly before I fail my degree) faithfully,
Paul Gregg, Antrim, Northern Ireland.

The answer to your drive switcher is the Microstyle Drive Switch Cable. This is a two way switched cable that allows you to connect two drives to a single socket. Ring Phil Craven on 0274 636652 for more details.

The reset problem sounds like a hardware hassle best sorted by a competent engineer. Take the computer and monitor to the place that you bought them and get them checked.

■ HELP! Epson salts

I need a disk drive for my computer. The problem is I do not know where to buy one from. I asked in many shops but they did not have the model I need. Please help me to get this disk drive. The disk drive model is 3.5-inch Epson SMD 480L.

Thank you for your help.
Khurram Chohan, Middlesex.

You could try ringing Epson on 0442 61144 for the information that you require. I regularly get letters such as the one above with questions that can be

answered by a simple 'phone call to a manufacturer. Before you put pen or word processor to paper, think of the time that you could save if you did one of the following:

- 1 Ring the company
- 2 Read the manual
- 3 Check the installation and connections.

These three troubleshooting hints could get about 90 per cent of the people with problems started without the wait between writing letter and seeing it published.

■ THOUGHTS! PC purchase

Thank you for your helpful advice about the choice of an upgrade for my Commodore PC-1. In fact, the upgrade I have in mind is not an Amstrad but the latest Viglen Genie 1 which was given "Best Buy" rating in the latest *Which PC?* magazine.

However, despite the good value claimed for such a high spec 286 perhaps you will understand my reluctance to jump into the considerable expense involved when you compare it with the Amiga 500 with its very good graphics and sound. With the Amiga I'm currently helping a friend to learn to fly the Cessna 182 using Charles Gulick's splendid co-pilot book, *Flying Flight Simulator II*.

I bought the later FS4 for the PC, but it became apparent that in spite of all the extra features – random weather generator, plane design facility, Sailplane, and much finer graphics detail – nothing short of a 286 with Super VGA colour could make it come anywhere near FSII on the Amiga for realism and speed of graphics handling. This must surely have a lot to do with the more advanced technology of these machines – and reading about Windows 3.0, it seems that even this needs larger and/or better memory handling than 640K of even 1Mb can provide – the push is towards a 386. And even then, no sound and – Wow! what an empty pocket!

Perhaps we ought to wait until Acorn's RISC chip has found its way into a new low-price Mac Super Classic? But seriously though, what are the pros and cons of mail order purchase? My local dealer is so helpful and always on the spot
John Gray, Eastbourne, Sussex.

You've answered one of your own questions by saying that your own dealer is ever helpful and on the spot. On the down side, purchasing from a mail order house means that you aren't normally able to try your machine before you buy it and ask questions head to head with the person selling it to you. If there are problems at a later date, your local

■ HELP! True colour

I run an office newsletter for a small company. We have been gobbled by a new company and the new management want to expand the newsletter into a corporate paper.

By default I have been given the job as I'm the only person in the group with any experience of even a newsletter. The salary is fine and I've been given enough budget to buy an Apple Macintosh, laser printer and a lot of useful software.

A month playing with all of this stuff has made me quite familiar with the Apple and I'm progressing at a rate that suggests that the Mac is a fine productivity tool.

My only problem at the moment is illustrations. I am having to paste pictures, photos and diagrams on to the page and then send the page to the printer. The printer's chargehand says that a scanner will do this job, then I can send them a disk which is quicker. He said a colour scanner would be good as this would give us the opportunity to produce a professional-looking colour paper.

I want to go with this but the £4,000 I've been quoted

for a scanner is too much. I don't need to scan large areas, but the quality is important. Is there anything that would get me along as a stopgap? Mono would do, but colour would be better. I don't want to spend more than £800. Am I asking too much?

Wilf Townsend, Leicester

Cast your eye back to page 71 of issue 113 of *Express* and you'll see a review of the Sharp JX-100 colour scanner. This £545 colour portable scanner will do the job that you want and comes well within your budget. Software and cables to interface it with a colour Mac II or above is available from P&P on 0706 217744.

Unfortunately you'll also need special software to produce colour separations for the printers which costs several hundred pounds. If you want to know more about colour on the Mac our sister magazine *MACPUBLISHING* is running a series on the subject. Phone Cathy Audermars on 0458 74011 for details of selling a copy.



• The Sharp JX-100 colour scanner produces a professional job.

dealer is close enough and accessible enough to kick. If you have a problem with a mail order company, it can cost a lot in telephone calls and correspondence to get things sorted. A local dealer can be chivvied along by a regular (and cheap) call at the premises.

There are advantages of buying from a reputable mail order house, though. Mail order is generally cheaper than buying from a retailer. Quite often you will be able to buy a well specified piece of equipment for a reasonable figure. A mail order house may specialise in one particular area of computing and be able to supply a far greater range of its speciality from stock.

In the end, it comes down to your needs and cost. If you are likely to need constant and local support, stay with your tried and trusted dealer. If you have the knowledge and the ability to be a self-starter, and want to utilise your cash efficiently, maybe mail order is best.

■ HELP! Fallen Archies

Please! Please! Please!!!!!! Can you help me with this little problem of mine?

I am hoping to get an Archimedes A3000 at rock bottom price (I had better not tell you where I can get it from) I have not got much money to spare so I can not

afford a monitor until next Christmas (or whenever I can afford it) so I wanted to use it without a monitor,

In a previous issue of *Express* you had an article about a TV modulator for the Archie. This only came in a package from ZCL that cost over £600. As I have mentioned before I have not got that amount of money so I was wondering if you could help me find a firm that sells a TV modulator all by its lonesome self.

Give dear old Mr Simon Grierson an applause after his brilliant article in issue 109 and I also think that he deserves three cheers from every Archimedes lover.

Yours Hopefully,

Julian Robbins, Fordingbridge, Hants.

A 16-day safari to the fenlands around Cambridge was unable to run to ground the piece of kit that you require. If anyone out there knows of a modulator for the Arch that won't break the bank, drop us a line.

■ TIP! Fried enthusiast

Just point on safety in your Circuit City chip fettling article fit an ATonce card. Strapping yourself to a full earth (with whatever, you don't specify!) is extremely dodgy where electricity is concerned.

Being a BT maintenance (exchanges)

engineer I am equipped with wrist straps and nice curly cords, but the cords are 2 megaOhm resistant so that nobody gets fried in the event of a mistake.

Chaining yourself to a radiator or central heating pipe or even (God forbid) the ring main earth, may be OK for you, but I think you really should explain to the lesser tech type about ESP (electro-static precautions)

Also worth a mention is when using a soldering iron 'temperature controlled' is a byword. I have some badly wrecked kit which has had the attention of somebody's 2,000-watt heavy duty soldering iron.

Nice column, shame about the moustache. Keep up the good work.

Mike Jones, Skelmersdale, Lancashire.

Firstly, I don't advocate anyone working on live equipment unless it's their job and they're trained for it. All of the jobs to be covered in Circuit City are possible without mains power being present.

The point of wrist straps and self earthing is so that there isn't a build up of static in your body. To test for the effects of static, try walking around a room with a nylon carpet for a couple of hours and then earthing yourself on a central heating pipe or metal bannister support - ouch!. Imagine what that bolt of static

electricity could do to the insides of a microchip and you'll know why we use the wrist straps.

Temperature controlled soldering irons are a great idea and a convenience, but it's quite possible to manage without one. A former REME corporal of some 69 summers swears by his three pound weight iron that must be warmed to cherry red in a gas flame before use. To watch this chap deftly mending the insides of TVs and radios while dipping thick solder in powdered flux is a joy.

He says that he can't get used to the new fangled electric irons and does a better job with his prehistoric kit than I can do with my modern iron. Like many convenience products, the temperature controlled soldering iron makes the job easier and more precise. I can't help feeling though, that it's a better idea to learn to do the job with an ordinary iron and graduate to the temperature controlled one. This way, you will always be able to use an ordinary iron if that's all that's available.

A straw poll of my colleagues here at *Express* who have to look at my moustache every day suggests that there's nothing wrong with it although Production Editor Julie Tolley does insist on its regular trimming. ■

■ STOP PRESS! Christmas cheer

Now that Santa's gone back to the North Pole and the advertising men have put away their superlatives until the autumn it's time to have a look at some of the problems that turned up on the *Express* Christmas helpline.

The first cry for help came at seven in the morning on Christmas day and a puzzled voice told my answering service that he couldn't persuade his Amiga to part with any of its wonderful stereophonic sound. At that time of the morning I hadn't made the metamorphosis from duvet to dining room so the solution had to come later.

Between breakfast time on Christmas day and midnight on Boxing day there were over 70 calls of which nearly 40 were Amiga owners, over 25 ST and the remaining handful were made up of a couple of C64s, a couple of PCs some 8-bits and a peripheral.

AMIGA-PROBS

The most common problem with the Amiga was lack of sound. Most of the callers wanted no more than a bit of blood curdling sound to go with their favourite shoot-'em-up. The majority were using the Amiga with a modulator and the problem was caused by not connecting the audio output of the Amiga to the modulator. Where people had bought their Amigas second-hand, the small Y shaped cable was generally missing. Of those with a new machine, most hadn't realised that the cable was necessary.

Other Amiga problems included an incompatible monitor, a damaged modulator, and worst of all, a well meaning 'helper' who didn't understand the Amiga. This instance was caused by a neighbour (PC expert) being called in when the shiny new Amiga wouldn't work. The expert diagnosed a problem with one disk as a virus and insisted on virus checking the entire batch of 120 plus disks. Surely enough, the virus killer being used couldn't recognise the bootblocks of copy protected games and

the expert used the virus killer to 'fix' them all. Net result, over 80 ruined games. That's proof positive that you should make sure your 'expert' knows about the computer that you let them loose on.

ST STUFF

Proud owners of new (and newish) STs were almost unanimous in ringing in with application problems. The GEM environment was a puzzle to those more used to a command line environment and printer hassles came high on the list of problems.

This highlighted one of the growing problems with home machines becoming powerful enough to run high level applications.

Not enough trouble seems to be taken at the point of sale to ensure that new users are made aware that applications often need installing and configuring. Someone who has only ever run games and simple programs that merely involve the insertion of a disk can easily run into problems when they are confronted with a program with pages of installation and configuration options.

The installation of applications is generally covered in the manual but I still received several calls from people who were stuck. One caller had followed the installation menus for the *Protext* word processor, but had run into difficulty when his printer didn't appear in the default menu.

He was a sensible fellow and had backed up his program disks and so was using only working copies. With a little encouragement, he went through the installation procedure trying each of the available printer drivers in turn until he found one that would work.

He'd been wary of trying this at first but using only working copies, the worst thing that could occur was that he would have to re copy the disks if they became corrupt.

PC CALLOUT

PC users seemed to have catered for themselves very well with only two Christmas queries. The Rawcliffe family had settled down to play a game of *Jack Nicklaus Golf* on the PC (borrowed from dad's office over Christmas) but couldn't persuade the game to work. After having the complicated and pedantic copy-protection wheel explained, they were into the program but rang back when the super 386 VGA machine only offered four shades of black, white, blue and purple.

A trip through the manual had the game re-configured and the Rawcliffes teed off with the Golden Bear.

A slightly more serious problem was a PC that 'smelled of burning' and had sparks coming out of the back. After assuring that the machine wasn't plugged into the mains the owner opened it up. This is generally possible with a PC because of the expansion capabilities. Once inside a piece of metal packing strap was found causing a live short between two terminals. Once this was removed, the owner was advised to have it 'looked at' by an expert, but chose to power up again anyway. It worked and he was in business.

THE REST

The remaining calls were of all and sundry. A PCW owner wanting to get on-line with a modem, a CPC owner with cartridge problems to name but a couple. The final call came very very late on Boxing day from an imbibor who jush wanned ter wisher a merrykrissmus('hic!)

The volume of calls and the fact that we could solve most of the problems meant that it was worthwhile. Thanks to everyone who rang and especial thanks to Patricia for the Christmas pud recipe she swapped for my Amiga hard drive solution. Get writing the letters to Santa and all being well we'll run the Christmas helpline again in December 1991.

AMIGA GRAPHICS

There is no machine that can quite match the Amiga for powerful graphics, coupled with an ease of use that brings this power to your fingertips. You only have to look at the graphics in games for proof – and even these are created using one of the popular graphics programs.

The obvious place to start on the graphics scene is one which will be familiar to nearly all Amiga owners nowadays. If you bought your Amiga in any of the recent A500 bundles from Commodore, such as the Batman Pack, the Flight of Fantasy pack or the Screen Gems pack you will have acquired a copy of Electronic Arts' *Deluxe Paint II* with your machine. If your Amiga is older, you will no doubt have been unable to own it for long without being tempted to buy *Deluxe Paint*.

This really is one of the best graphics programs on any computer. Most games writers use it to draw the graphics for their games and, because it uses a standard file format common to all Amiga products – IFF (Interchangeable File Format) – to store pictures, they can be transferred between programs and even into your own programs with ease.

Deluxe Paint has done more for the Amiga than any other product – after tinkering with it, so many people who bought an Amiga just to play games on have realised that there is a whole lot more to their computer than just games. It has opened the door for many people to the other uses of the Amiga, known under the generic headings of 'productivity' or just plain 'creativity'.

A WORD ABOUT SCREEN DISPLAYS...

The Amiga has a total colour palette of 4,096 colours and a number of different screen modes or display modes. Before we go any further, it might be a good idea to explore these a little.

The basics can be explored by playing around a little in *Deluxe Paint*. On the opening screen you have options for three screen resolutions – low, medium and high, often referred to as low-res, med-res and hi-res. Normally in these screen modes a maximum of 32 colours out of the Amiga's 4,096 total colours can be displayed at one time.

The next two steps up are both a bit of a cheat. The first is Extra Half-brite (EHB) which allows up to 64 colours on screen at one time. In actual fact these are the same 32 plus another set of half the brightness of the original set, but it gives a workable extra 32 shades. The other cheat is Interlace mode, which imitates a screen of twice the resolution by flickering between two slightly offset screens.

The final display mode is HAM. This cheats completely, calculating each colour on-screen by comparison with the one next to it. It is very clever, though, and actually allows all 4,096 colours to be used.

BITMAPS AND PIXELS

The display on a computer monitor is, in effect, an array of tiny lights arranged in horizontal and vertical rows. Each light can be any one of a range of hues and shades, or off: so almost any image can be composed on the screen by varying these colours. The lights (or PIXELS – PICTURE ELEMENTS) are each controlled by the state of one byte in the computer's screen memory map: so the display is called bitmapped.

All graphics programs use the bit map to display representations of their final output, but paint programs



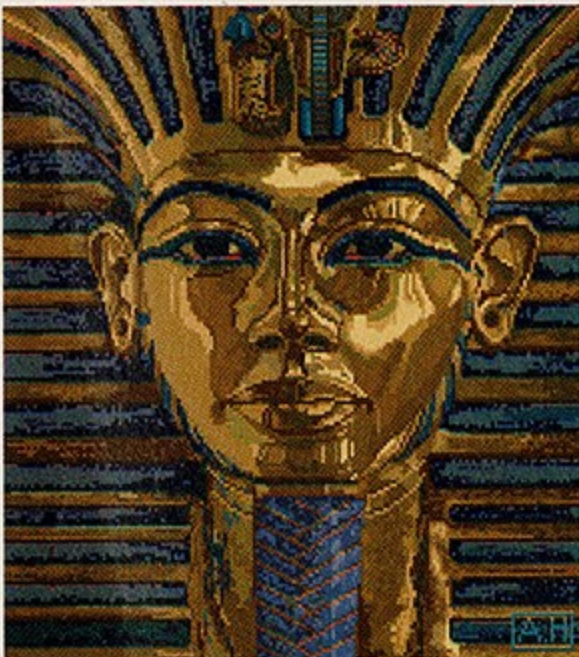
We take a look at all aspects of Amiga graphics from paint programs, HAM painting using 4,096 colours, 3D modelling and ray-tracing to animation.

operate by manipulating this map in a vast range of ways to transform the screen directly, usually almost immediately. This technique could be called screen painting.

Recent developments include surface and contour mapping where a section of the 2D bit map is 'bent' and re-mapped onto a representation of a 3D surface, with a range of shading to give the effect of texture and contours.

RECOMMENDED: SCREEN PAINTING

Deluxe Paint III • £79.95 • Electronic Arts • 0753 49442.



• *The familiar face of Deluxe Paint II. If you got version II free with your Amiga pack, think about upgrading to DPaint III for the amazing animation facilities it has.*

It really has no competition when it comes to straight Amiga paint packages. *DPaint III* operates in all Amiga screen modes up to 64-colour EHB and allows incredibly sophisticated techniques of shading and perspective to be used. Big change from the earlier versions is the animation facility, which makes it easy to construct complex little animations. If you have *DPaint I* or *II* already, get the upgrade from Electronic Arts at a reduced price.

RECOMMENDED: HAM

Photon Paint 2 • £89.95 • Software Business • 0480 496497. This has become one of the primary tools for screen painting in the Amiga's quirky 'omnicolour' mode, HAM. Equally, *Digipaint 3* (£69.95 Precision 071-330 7166) provides serious competition for *Photon Paint* in the HAM department, but the two programs are very closely matched.

Spectracolour • Oxxi/Aegis • UK distributor and price as yet unconfirmed. This is the latest release into the HAM market and promises to set new standards with its *Deluxe Paint*-style animation facilities,

including the use of the famous 'animbrush' method employed by *DPaint*. It's too early to say much about this, but it could have vast impact on the HAM paint market.

DIFFERENT BALL-GAME – RAY TRACING

Given the Amiga's great processing power and a huge amount of patience, you can move up to the state of the art in computer graphics. Ray tracing is the technique used to create flashy, shining steel and gold logos for television 'idents' and also to make the famous 'shiny silver ball bearing bouncing over a chess board' demos by which the Amiga's power is often identified.

It works simply by constructing 3D models based on co-ordinates, setting where a light source is to come from, and then calculating all the paths of rays of light by complex mathematical formulae. Ray-tracing can be an expensive hobby, so do a bit of research and talk to your local dealer before you get too keen.

RECOMMENDED: RAY TRACING

Sculpt-animate 4D • £368 • Byte By Byte



• *Something to aspire to. The possibilities afforded by ray-tracing vary from the realistic to the weird. This is Sculpt-Animate 4D, the classic package but expensive for beginners.*

Probably the most powerful 3D modelling system for the Amiga. It uses the same basic interface as all the *Sculpt* series, three windows corresponding to x, y and z or up/down, east/west and north/south. *SA4D* has many new modelling tools including helical spins, and the ability to build and store macros. ■

Damien Noonan is editor of Amiga Format magazine. These articles are reprinted from his book, Get the Most Out of Your Amiga, available from Future Publishing Ltd, The Old Barn, Somerton TA11 7BR. It costs a very reasonable £9.95.

Greater London Computers

Professional Computer Dealers for Professional Computer Buyers.

What We Offer

A wide range of computer equipment, that we think is hard to match anywhere.

30 Day Credit Accounts for our Business Customers.

Regular new Catalogues listing updated prices and all the new products.

A range of computer supplies, ribbons by original manufacturers only, no cheap imitations.

A range of general office equipment to augment your Computer, such as Telephones and Fax machines.

Regular calls from our friendly and helpful Sales team.

Telephone support helpline from our Technical Support department.

If you're not with GLC then you should be, call Nigel Hodson or Mike Sleath on 081-527-0405 today, or fill in the form below.

**Greater London Computers, 481 Hale End Road,
Highams Park, Chingford, London E4 9PT.**

Tel: 081-527-0405 Fax: 081-503-2341

Name:	What computer do you currently use?.....
Company:
Position:	What software do you currently use?
Address:
.....	What computer equipment will you require in the
.....	next six months?
Telephone:



ONE TO WATCH

Private Eye is the world's smallest monitor; so small you wear it. Stuart Anderton donned the headset...

• The headset sits comfortably with the monitor fitting over either eye.



Screen technology is becoming smaller and smaller. LCD systems can now deliver tiny colour screens – in the office as I write this two 3-inch TVs are relaying the news on the Gulf War – but the images are fuzzy and unsuited for computing, aside from arcade games.

Reflection Technologies has taken a different approach. Its device, called Private Eye, is monochrome, but has a much higher resolution than an LCD system, producing some of the clearest, sharpest text and graphics you are ever likely to see. And it is small; the display is about three-inches long with an inch-square cross section.

Having a display that small creates problems in itself; how do you get it close enough to your eye to see? Reflection has solved this by attaching the display to a headband which allows it to be suspended immediately in front of your eye. When you wear it the display appears to float before your eyes, about the size of a 12-inch monitor viewed from fractionally too far away.

LED ON

The technology behind the Private Eye is ingenious. At its core is a line of tightly packed light-emitting diodes; 280 of them in a vertical row less than an inch long. A mirror reflects the line of LEDs into a lens and from there to your eye. The clever part is the mirror; it vibrates at its resonant frequency which makes the line of LEDs appear to move rapidly from left to right, then back from right to left. By carefully timing the vibration of the mirror the pattern drawn by the LEDs can be controlled to draw the screen.

Because the LEDs are so tightly spaced, and the speed of vibration so fast, the light from the diodes does not appear as an array of dots but as continuous lines. Text in particular has an almost vector-graphics appearance to it rather than a bitmap, and the bright red LEDs

give an extremely high-contrast display with an amazing clarity and stability.

USING THE EYE

Because the array of LEDs is vertical and the scan of the mirror goes in both directions, the Private Eye cannot be driven by a conventional display system. Normal systems scan a single dot from top left to bottom right, not 280 dots backwards and forwards. The device therefore needs a dedicated video system, and the easiest machine to develop one for is the IBM PC, which has its graphics sub-system on a separate expansion card. A PC version is the one reviewed, but there is no reason in principle why an interface card couldn't be developed for any machine with an open architecture; Amiga Zorro and Mac NuBus cards should be particularly easy; STs would provide more of a problem.

Fitting the device to a PC is simple enough if the Private Eye is your only monitor; you plug in the graphics adapter card, set the PC up to expect a colour CGA card, attach the display and switch on. My PC refused to recognise the Private Eye as a CGA monitor, but it worked fine once I over-rode the error message. Any software which works with CGA will work with the Private Eye, although you lose some of the 720 x 280 resolution – only 640 x 200 dots are used. I ran *AutoRoute*, *PC Globe*, and even *Windows 3* without any problems. *Microsoft Works* was fine too once it was reconfigured for monochrome.

A few more complications arise when you attempt to run two monitors at once. MDA, Hercules, CGA and monochrome EGA systems can co-exist with Private Eye in its CGA compatible mode. Colour EGA and VGA systems require that the Private Eye is switched to its own proprietary 720 x 280 mode which is not compatible with graphics software. Various jumpers must be set to make the two graphics systems work together.

USES FOR THE EYE

So what would you use a high-quality extremely small display for? When attached to its headband the Private Eye acts as a head-up display which can convey any information which can be displayed on a computer screen. Applications suggested by Reflection Technology include displaying information as an on-line manual while working, building a pocket computer terminal in combination with a miniature modem, and building the display into palm-top computers. We'll have to wait and see if this kind of head mounted display catches on; the technology works and the display is sharp and clear but it will require a new way of thinking as far as software developers are concerned. The Private Eye is one to watch. ■

The Private Eye is distributed in the UK by EMMS on 0428 76241. Private Eye PC developers kits are available for £571.

TECH SPECS

Display type: LED array using vibrating mirrors.
Resolution: 720 x 280, 25 lines x 80 characters
Image size: 21.8° x 14.2°, equivalent to 12-inch monitor from two feet away.
Size: 1.2-inches x 1.3-inches x 3.5-inches
Weight: 2.25oz
Cable: 5 feet
Refresh rate: 50Hz
Data rate: 30 screens per second
Software compatibility: CGA software
Hardware compatibility: Co-exists with MDA, CGA, EGA, Hercules, VGA, MCGA

★ POCKET SIZED ★ PC-COMPATIBLE ★ PERSONAL ORGANISER ★



ATARI Portfolio

THE PC IN YOUR POCKET



The new Portfolio from Atari is the world's first pocket-sized electronic organiser that is also a powerful PC compatible computer, with a full QWERTY keyboard and scrolling 80x25 character display.

Portfolio includes everything you would expect from an electronic organiser - an address and telephone book, time manager, diary and sophisticated calculator.

Portfolio also includes several functions that you would not expect - a spreadsheet for your personal budget and expense records, as well as a text processor for typing memos and letters.

And, because Atari's Portfolio is PC compatible, it can communicate with your desktop PC at home, or in the office. You can transfer files from one to the other, to enable you to update your reports and figures with the Portfolio while you are on the move.

FOR ONLY **£199** INC VAT

SPECIFICATION

- ★ **Processor:** Intel 80C88 at 4.9152Mhz.
- ★ **Operating System:** Compatible with MS-DOS 2.11.
- ★ **Internal ROM:** 256K containing BIOS, operating system and applications suite.
- ★ **RAM:** 128K with an internal RAM disk, configurable from 8K. Externally expandable to 640K RAM.
- ★ **Keyboard:** 63 keys, QWERTY, IBM PC BIOS compatible. Buried numeric pad and function keys. Optional key click.
- ★ **Character Set:** Extended IBM ASCII (255 characters).
- ★ **Mass storage:** credit card sized memory cards (32K or 64K or 128K RAM).
- ★ **Display:** Graphics LCD, supertwist technology, MDA compatible, 40 columns x 8 lines, 240 x 64 pixels (with the option to window a full 80 x 25 character display). Keyboard controlled contrast.
- ★ **Peripherals:** 60 pin expansion BUS to take serial and parallel ports and memory expansion units.
- ★ **Size:** 8" x 4" x 1" (200mm x 105mm x 29mm).
- ★ **Weight:** 495 grammes (with batteries).
- ★ **Applications:** calendar and diary, address and phone book, Lotus 1-2-3 compatible spreadsheet, text processor, communications software.

5 BUILT-IN APPLICATIONS! TO GET YOU ORGANISED!

To get you started, Portfolio comes with a suite of five useful functions built-in, all accessible from a simple menu display.

TIME MANAGER

More than just an electronic diary, the Portfolio Time Manager enables you to plan your appointments via a comprehensive calendar and diary. It can even be programmed to sound an audible alarm at specific times to remind you of important appointments.

CALCULATOR

Your Portfolio will be invaluable in the office or at home as a powerful pocket calculator. It has a full range of functions, including factorial,

power and root calculations, all with multi display formats and memories.

ADDRESS BOOK & DIALLER

Portfolio has a complete address book facility that allows you to store hundreds of addresses and phone numbers. And, at the touch of a button, you can retrieve any one of them, or search for a specific grouping, such as "all Italian restaurants". And, when you are ready to book your table, hold your Portfolio to your telephone mouthpiece and use its special built-in tone dialler to dial the number for you.

TEXT PROCESSOR

The Portfolio's built-in text processor program

includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.01 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.

COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.



MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.



POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A "battery-low" warning and memory back-up ensure that information is not lost when the batteries are changed.



INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

SILICA SYSTEMS OFFER YOU

- FREE OVERNIGHT COURIER DELIVERY:** On all hardware orders shipped in the UK.
- TECHNICAL SUPPORT HELPLINE:** Team of Atari technical experts at your service.
- PRICE MATCH:** We normally match competitors on a "Same product - Same price" basis.
- ESTABLISHED 12 YEARS:** Proven track record in professional computer sales.
- £13m TURNOVER (with 60 staff):** Solid and reliable with maintained growth.
- BUSINESS/EDUCATION/GOVERNMENT:** Volume discounts available for large orders.
- SHOWROOMS:** Demonstration and training facilities at our London & Sidcup branches.
- THE FULL STOCK RANGE:** All of your Atari PC requirements from one supplier.
- FREE CATALOGUES:** Will be mailed to you with offers and software/peripheral details.
- PAYMENT:** By cash, cheque and all major credit cards.
- CREDIT PAYMENT TERMS:** Silica are licensed credit brokers - details on request.

Before you decide when to buy your new Atari Portfolio, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Portfolio, 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 Portfolio products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. 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 Systems Service".



MAIL ORDER:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	Tel: 081-309 1111
Order Lines Open: Mon-Sat 9.00am-6.00pm	No Late Night Opening	Fax No: 081-308 0608
LONDON SHOP:	52 Tottenham Court Road, London, W1P 0BA	Tel: 071-580 4000
Opening Hours: Mon-Sat 9.30am-6.00pm	Late Night: Thursday until 8pm	Fax No: 071-323 4737
SIDCUP SHOP:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	Tel: 081-302 8811
Opening Hours: Mon-Sat 9.00am-5.30pm	Late Night: Friday until 7pm	Fax No: 081-309 0017
BUSINESS/EDUCATION:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	Tel: 081-308 8888
Order Lines Open: Mon-Fri 9.00am-6.00pm	Closed on Saturdays	Fax No: 081-308 0608

To: Silica Systems Ltd, Dept NCE 019138 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

PLEASE SEND INFORMATION ON PORTFOLIO

Mr/Mrs/Ms: Initials: Surname:

Address:

Postcode:

Tel (Home): Tel (Work):

Company Name:

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

THE WORLD'S MOST POWERFUL FREEZER-UTILITY CARTRIDGE IS NOW EVEN BETTER

THE NEW **MK II** VERSION IS HERE!!

Amiga Action Replay

STILL ONLY
£59.99
POST FREE
FOR THE A500/1000

A2000 VERSION AVAILABLE
£69.99

PLEASE STATE WHICH COMPUTER YOU HAVE WHEN ORDERING

AMIGA ACTION REPLAY SIMPLY PLUGS INTO THE EXPANSION PORT OF YOUR AMIGA AND GIVES YOU THE POWER TO FREEZE MOST ANY PROGRAM, THEN YOU CAN...

JUST LOOK AT THE UNMATCHED RANGE OF FEATURES

- **SAVE THE ENTIRE PROGRAM IN MEMORY TO DISK**
Special compacting techniques enable up to 3 programs to fit on one disk. Now saves directly to disk as Amiga Dos - reloads independently of the cartridge - even transfer to hard drive! Works with up to 2 Megs of Ram - even 1 Meg Chip Mem (Fatter Agnus).
- **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.
- **IMPROVED SPRITE EDITOR**
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!!

EVEN MORE FEATURES INCLUDING 80 COLUMN DISPLAY AND 2 WAY SCROLLING:

- Full M68000 Assembler/Disassembler
 - Full screen editor
 - Load/Save block
 - Write String to memory
 - Jump to specific address
 - Show Ram as text
 - Show frozen picture
 - Play resident sample
 - Show and edit all CPU registers and flag
 - Calculator
 - Help command
 - Full search feature
 - Unique Custom Chip Editor
 - allows you to see and modify all chip registers - even write only registers
 - Notepad
 - Disk handling - show actual track, Disk Sync. pattern etc.
 - Dynamic Breakpoint handling
 - Show memory as HEX, ASCII, Assembler, Decimal
 - Copper Assemble/Disassemble - now with suffix names
- 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!

WARNING 1988 COPYRIGHT ACT WARNING

Datel Electronics Ltd., neither condones nor authorises the use of its products for the reproduction of copyright material.
The backup facilities of this product are designed to reproduce only software such as Public Domain material, the users own programs or software where permission to make backups has been clearly given. It is illegal to make copies, even for your own use, of copyright material, without the express permission of the copyright owner, or the licensee thereof.

HOW TO GET YOUR ORDER **FAST...**

TELEPHONE (24 Hrs) - **0782 744707** - CREDIT CARD ORDERS

WE WILL DESPATCH YOUR ORDER QUICKLY & EFFICIENTLY TO ENABLE YOU TO START RECEIVING THE BENEFITS OF YOUR PURCHASE WITHIN DAYS, NOT WEEKS.

ORDERS NORMALLY DESPATCHED WITHIN 48 Hrs. ALL PRICES INCLUDE V.A.T. ALL CHEQUES/POSTAL ORDERS MADE PAYABLE TO...



DATTEL ELECTRONICS LTD.,



GOVAN ROAD, FENTON INDUSTRIAL ESTATE, FENTON, STOKE-ON-TRENT, ST4 2RS, ENGLAND
TECHNICAL/CUSTOMER SERVICE 0782 744324