

Only
48p!

SAVE £££'s on any purchase page 51

NEW COMPUTER EXPRESS

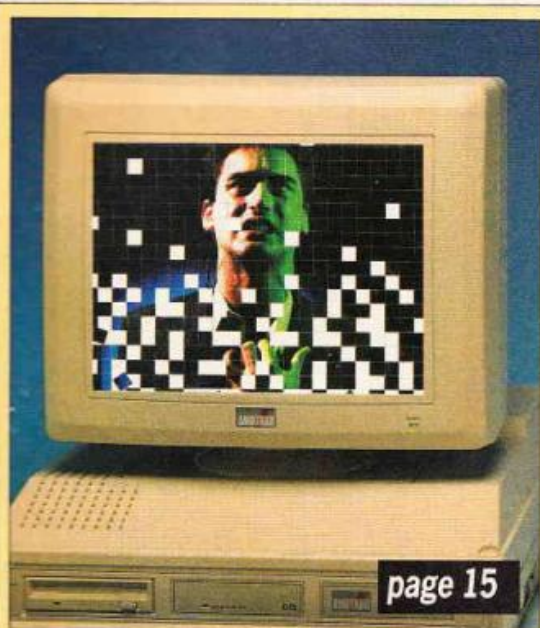
First news, first reviews - every week



HACKER HERO!

How this man
saved the West

page 31



page 15

AMIGA PACK ATTACK

Commodore reaches for the
sky with new bundle -p2

VIRUSES

Vital facts to stop you cracking up

Columns for YOUR machine

PC
Amiga
Atari ST
Spectrum
C64
CPC
PCW
QL
BBC
MSX

-pages 33-40



Game of the week

3D pool breaks off page 47

Greatest Show on Earth



Revelations from Hanover

page 28

AMIGA FLIES HIGH WITH NEW PACK

A new deal for potential Amiga owners has been strung together by Commodore, which offers freebies notionally worth £200 above the asking price.

This follows last week's exclusive news in *Express* that Atari is planning to rejig its successful ST Superpack with a line up of more

than twenty top games.

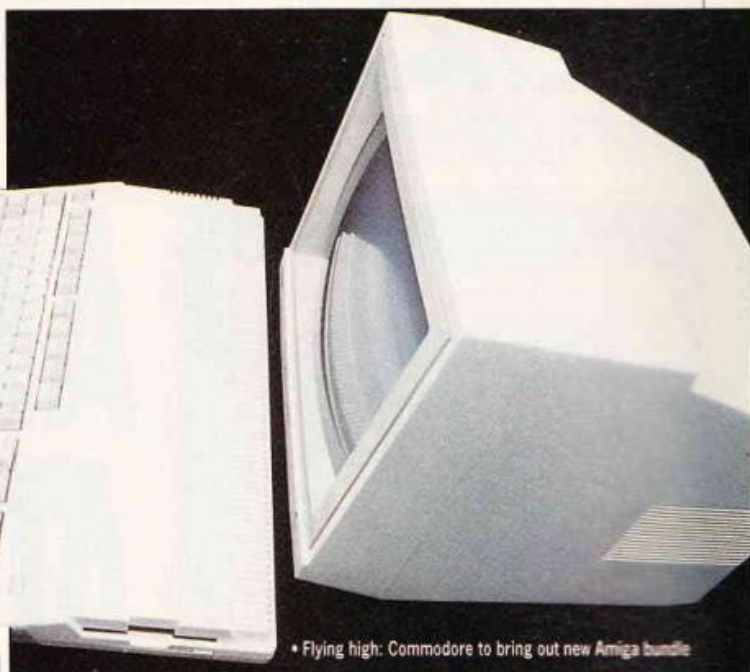
Commodore, however, is hoping to attract new punters with an offer of a different ilk.

The Amiga bundle costs £499 (£100 above the normal price) and comes with a TV modulator, three games, a disk wallet and a paint package. However, the company has also

thrown in an 'airmiles' voucher worth £160. In effect, Amiga buyers will be getting a return trip to Paris, Amsterdam or Brussels absolutely free. The offer kicks off on April 1st and should run through to the autumn, perhaps even up until Christmas.

Commodore has made no bones of the fact that it wants to attract the "yuppie" type to Amiga computing. An offer of free airmiles is sure to appeal to this audience many of whom are beginners to home computing.

One of the games is the graphically stunning *Who Framed Roger Rabbit* which costs £30. The other two are



• Flying high: Commodore to bring out new Amiga bundle

Logotron's *Starray* and Hewson's well received *Nebulus*. Best Publishing supplied the paint package *Spritz* which normally sells at around £50. In all the freebies are worth just under £300.

The standalone A500 will also be available at its normal price of £399. Atari has found that its Superpack - also £100 more than the standalone machine - has proved to be the most popular purchase. According to Commodore the special bundles put out over the past few months in conjunction with distributors will be discontinued.

"We had a fantastic Christmas with the Amiga and I think there's a lot of awareness about what the machine can do," commented Commodore's Dean Barnett to *Express*. "We're looking at the yuppie market but we've also found that many Amiga buyers are between the age of 18 and 24. Travel is obviously very important to them."

He added: "People know that the Amiga is not just for games but also for hobbyist type activities such as art and music."

Obnoxious creature in computer link

Slimy TV cult hero Gilbert the Alien is set to appear on a computer game courtesy of Again Again.

The snotty nosed creature will be available for mainstream machines within the next six weeks. The game itself is an arcade adventure affair pitting Gilbert against his jealous pals on the planet Drill.



• Bogey man: Gilbert's micro debut

Gilbert, something of an obnoxious beast, has attained enormous popularity through the Saturday morning kids TV show *Get Fresh* with his irreverent style and unpleasant habits.

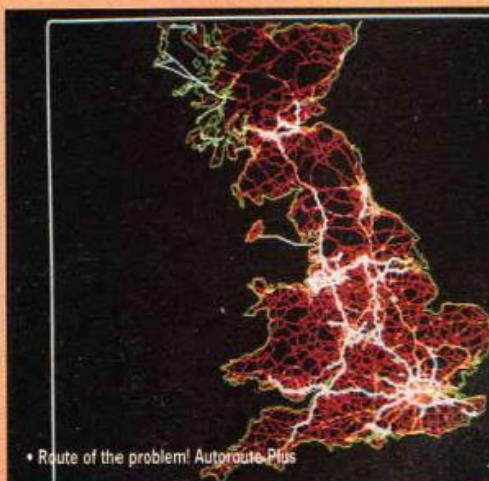
An Again Again spokesman told *Express*: "Tyne Tees gave us Gilbert's licence because they knew it would be a major project for us and not just another game." The game is being written by new outfit Enigma Variations. The firm plans to concentrate on licence characters for its games.

Take your PC on a spin

PC-owning drivers are being earnestly assured by NextBase that they really should take a look at *AutoRoute Plus*.

The £299 program is basically a colour computerised roadmap of Britain featuring 67,000 miles of roads and 33,000 place names. Users can zoom in on any area and take a print out.

The most interesting feature is a routing and scheduling system which finds the best route between two to 25 places. It is claimed that the optimising of stop offs via the program can "save up to 20 per cent of your driving time and cost".



• Route of the problem! AutoRoute Plus

AutoRoute Plus also offers printed out route directions. NextBase is pondering introducing

an ST version of the system in the near future. More info on 0784 460077.

No routes	
F1	Name road
F2	Name place
F3	Goto
F4	Next route
F5	Zoom out
F6	Zoom in
F7	Nearest place
F8	Gazetteers
F9	Overlays
F10	Options
SPC	Table ? Name
ESC	Menu ALT Name

ATARI REVELATIONS

The ever eclectic Atari has revealed a batch of new plans and new machines which will soon be storming into the computer arena.

At last week's CeBit computer show in Hanover Atari's UK boss Bob Gleadow told a select few journalists of far reaching plans covering the Folio Pocket PC, STacey laptop, Super ST, Mega ST 1 and the ST games console.

● **FOLIO POCKET PC:** In an unexpected move Atari is planning to produce a line up of at least five different pocket PCs for varying applications and users. These will include two A4 size PCs (the Folio 1 and 2) one of which will be a 286. Both machines will be the same size as Cambridge Computer's Z88.

Also, in a bid to attract the very low end PC user, the firm will be introducing a £60 model of the Folio. This is being dubbed the "dumb" Folio since it will only be capable of word processing. A slightly higher priced model will also be launched incorporating a word processor, clock and diary.

● **STACEY LAPTOP:** For the first time a working model of the ST laptop was on view to the general public. That will cost less than 3,000 Marks in Germany, which amounts to under £1,000 in the UK. However, Atari may choose a lower price point when the STacey arrives in the UK in June. Atari has spent the last few months "fine tuning" the machine, which cost something in the region of \$400,000.



● Mega 1: New mutant ST

The world's biggest computer show...

CeBit, the world's ultimate computer show, kicked off last week with more than half a million visitors expected to pass through the doors at the Hanover Messe over the seven days.

The figures behind the event are astonishing. The 3,125 exhibitors fill up 325,000 square metres of floor space. They are crammed into 17 different halls many of which are the size of Olympia. Our man was there to see the thousands of machines and to hear the latest on high tech PC technology. For a full report turn to page 28.

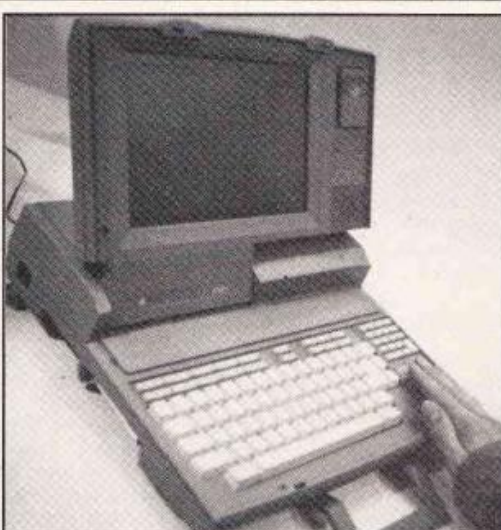
As expected, it features a tracker ball mouse. It runs an 8 MHz 68000 processor with 1Mb of dimensioned memory. The laptop weighs about 14 pounds.

● **SUPER ST:** Despite its long running claims that there is no such thing Atari will in fact be launching a souped up version of the ST in September. Dubbed the TT, it is claimed to be able to run at five times the speed of a normal ST. It has 2 Mb of RAM and runs a 68030 processor. Prices are likely to begin at £999. On the TT Gleadow vowed: "I want the Archimedes market".

● **MEGA ST 1:** As first predicted in *Express* (Issue 12) Atari has launched a Mega ST 1. In effect this is a 1040 inside the three-sectioned case of a Mega ST. The Mega casing is generally regarded as being more stylish than the normal ST. The machine costs £599 with monitor. Atari will be bundling it with word processing software within the next few weeks.

● **ST CONSOLE:** That will arrive in the UK next September. Atari has already suggested that it will cost less than £100. The firm says that although the machine will be ready by the middle of the year it will take three months for software to be put on ROM.

Many have wondered at Atari's policy of announcing future plans a long way off from any possible



● STacey: Dropping into your lap in June

launch. Gleadow explained that the firm wants to gauge public and press reaction to ideas before deciding to go ahead. "We're a people company," he said. He added: "Atari is a benevolent dictatorship so long as we're selling."



● Folio: New versions planned to suit all pockets

Slightly away from the computer market it is understood that Atari is also planning to launch a range of 14 different calculators which may be sold through selected petrol stations.

Portable computing: Size is everything

The size and weight of power portable PCs could be on the way down, following the announcement of a remarkable new hard disk drive.

The tiny 20 Megabyte hard disk has been unveiled by Colorado based PrairieTek. All the memory capability has been squeezed onto two magnetic platters, each only two and a half inches in diameter.

The drive includes a motor as well as read and write heads, and it can store the same amount of information as a normal 3.5 inch hard drive. PrairieTek is most likely to sell the gadget to PC manufacturers, who in turn will be able to offer powerful 20 Mb portables which are hardly any bigger than less powerful machines.

The main worry for portable owners is that their machines take a fair bashing in a normal working day. Hard disk drives are notoriously fragile creatures and they don't take too kindly to being knocked about.

PrairieTek says it has this covered. When the power is switched off the read/write heads switch back to a safe haven away from the delicate magnetic plate (in much the same way as a record arm). Whilst stationary the drive can withstand a knock of up to a hundred times the force of gravity without losing data.

Hardware manufacturers will no doubt welcome the breakthrough. The hard drive costs a reasonable \$400.

CONTENTS

FEATURES

VIRUSES	15
Don't let them crack you up!	
The <i>Express</i> guide to beat viruses	
HISTORY OF THE C64	25
How Commodore's baby stormed the world	
THROBBING HANOVER	28
First report from the biggest computer show on earth	
GOTCHA!	31
How one man caught the West German computer spies	

REGULARS

EXPRESS COMMENT	4
CHARTS	5
LETTERS	11
BEGINNERS	21
You can do everything at once! The beginner's guide to multi-tasking	
JOBS	42
TECH TIPS	43
GAMES	47-48
3D Pool, war in Middle Earth, Operation Neptune, Legend of the Sword, Goldrunner 2, Scorpion	
GAME PREVIEWS	50
Bomber, Ringside, Subway Vigilante, Street Cred	
Boxing, Aaaargh	
VOUCHERS	51
BACK PAGE	54

YOUR MACHINE

ST	33
PC	34
Amiga	35
Spectrum	36
Commodore 64	37
PCW, QL	38
BBC, MSX	39
CPC	40

NEW COMPUTER EXPRESS

COMMENT

Cracking Crime

The present fear over the spread of hacking is a sad but inevitable consequence of the spread of micros. Now anyone can afford one, and that includes the percentage of psychotics present in computer owners just as in the general population. Much arm-waving and table-thumping is currently going on as Mrs Thatcher is told that Something Must Be Done. But what?

Car theft is illegal, but that doesn't stop thousands of motors being taken every year. Likewise, criminalising hacking will not deter the determined computer crooks from their armchair robbery. It will only, say many hackers, bring prosecutions against a harmless comms enthusiast poking around who has the misfortune to be caught and tried in front of a computer-fearing judge ('A modem, Mr Smith?' 'Yes, Your Honour, a modem is device used to break into another person's computer using a telephone line...')

The way to beat car thieves is to make a car difficult to break into. No car is absolutely safe, but an alarm, centralised locking, carefully designed doors, steering wheel-clutch lock and so on make things very difficult for he would-be thieves, unless they have several hours to spare.

Many computers can be broken into with one password. But hacking into a computer you can take as much time as you wish; you just keep trying passwords with your special hacking programs. And getting into one often lets you into others straight away. Security should be much greater than it is: multi-level passwords, automatic alarms, verification routines changed daily, and no automatic gateways into other systems.

If the Government really wants to stop hacking, and not just lash out in technophobic panic at anything that dials on a modem, it must set up a similar scheme to the 'cracking crime' campaign (but preferably without those horrible kids) for organisations which operate on-line systems; perhaps draw up a list of security guidelines and offer free advice through a specially trained section of the local police. The people to stop hacking crimes are the very organisations whose security is presently so fragile. What they need is expert advice on how to tighten up their systems from the pros, not just fudged legislation against comms enthusiasts.

EDITOR.....Rob Ainsley
CONTRIBUTING EDITOR.....Peter Worlock
NEWS EDITOR.....Colin Campbell
REVIEWS EDITOR.....Andy Storer
TECHNICAL EDITOR.....Jerry Glenwright
STAFF WRITER.....Rik Haynes
ART EDITOR.....Julia O'Shea
ART ASSISTANT.....Harriet Athay
PRODUCTION EDITOR.....Rod Lawton
ADVERTISEMENT MANAGER.....Mark Salmon
AD EXECUTIVES.....Jennie Evans,
.....Andy Smith, Sarah King
AD TYPESETTING.....Terry Turner
PUBLISHER.....Greg Ingham

© Future Publishing Ltd 4 QUEEN ST, BATH, BA1 2EJ
TEL: 0225 446034 • FAX: 0225 446019

PM WARNED OF HACKING DANGER

The Prime Minister is to be presented with a special report later this month warning of the increasing danger posed by computer hackers.

The report, compiled by Emma Nicholson MP, will outline growing fears for sensitive data such as air traffic control, chemical plants and hospitals. Many computer experts are becoming convinced that a hacker could spark off a catastrophe.

Nicholson is pressing for a Government Bill to be included in the Queen's speech this autumn outlawing the increasingly popular pastime of computer hacking.

"We must persuade the Government to make unauthorised access to computers a criminal offence" she said. "We can't afford to delay three of four years before the English Law Commission reports on the issue."

The report has been put together with the help of the British Computer Society as well as banks,

police, hardware manufacturers and data security experts.

IBM's chief executive Tony Cleaver told *The Observer* newspaper this week: "Every month new instances become known. Computer misuse can and does compromise the security of society and the individual."

Computer security expert Martin Samociuk commented: "The biggest danger is that youngsters bungling around a system using a password to get in at a very high level could trigger a string of events which could cause a catastrophe."

"The motive may be intellectual curiosity on the part of a bright student, or mischief for an adolescent. But the knowledge being disseminated by these

Back to the Future

Yet another low cost 286 machine has been launched, bringing power computing closer to the home.

Future Computing's FS60 runs at 12 Mhz at a price busting tag of £1,096. A 30 Mb hard drive version costs £1395. More on 01 651 3541.



• Grand designs: Low cost 286 computing on the FS60

enthusiastic amateurs is coming into the hands of determined criminals with far more sinister motives."

Computer could have saved Purley lives

A computerised system due to be installed on the French railway network could have prevented the Purley train disaster.

The system provides a computer link between signals and all the trains on the line. A computer would be installed in the driver's cabin which monitors the speed of

the train. If the data between the points and the train suggest he is going too fast then the brakes automatically come on.

As it stands in Britain, the system sounds a horn if the train is going too fast. Drivers, though, often override this by pressing a button. The computerised system

would have warned the Purley driver to slow down. British Rail is looking at the new system but it is thought that the cost of fitting out Network South East alone could be as high as £200 million.

Swedish computer company Ericsson is one of the firms bidding for the contract.

Lore and disorder

MicroProse's *Times of Lore* on the C64 is experiencing loading problems and users are being urged to send faulty copies back to the software house.

The arcade adventure was sourced from Origin in the States. It seems that the master disk which was sent to the UK contained "a dodgy loader". MicroProse is to obtain a new Master and run out healthy copies of the game.

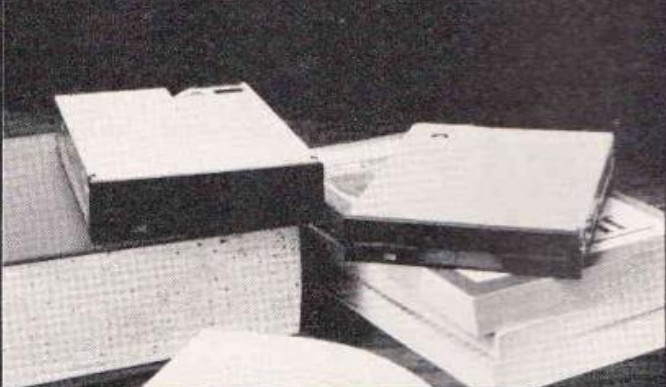
The firm is saying that the problem is one which only affects a small number of users. However, it would not say how many complaints had been received.

"This is a problem which happens from time to time. I just hope that users will send faulty games to us. We'll send them new copies with the new loader," offered a spokesman. MicroProse are on 0666 54326.



• In Trouble with the Lore: Loading problems for C64 owners

Citizen's micro floppy



• It's not the size that counts: The minute UODC 3.5 inch disk drive

Citizen have launched what is being touted as the world's smallest 3.5 inch floppy disk drive.

Measuring only 2 cm x 10 cm x 13 cm the UODC features 1 Mb of unformatted storage capacity. Citizen hopes that portable manufacturers will latch on to the tiny drives. The small drives were achieved by designing a side-mounting head. Space could be saved by repositioning the read/write mechanism.

"I'LL TEAR THEM LIMB FROM LIMB"

Bulletin board chief's fury at "childish" sabotage

The head of the London Embassy Bulletin Board has told of his anger at hackers who wiped out his bulletin board just for the hell of it.

Noel Bradford came home three weeks ago to find that the cruel hackers had accessed his 20 Mb hard disk and wiped out virtually everything. And, to add insult to injury, the mysterious group then accessed the back up disk and reformatted that as well.

A clearly upset Bradford told Express: "These are people with no brains and a sick sense of humour. I would guess that they're in the 14 to 15 age group. If I get some concrete

evidence I'll tear them limb from limb."

Bradford is convinced that it was a group effort rather than an individual. He has already put out feelers around the bulletin board world with 'bounty hunter' friends tracking down the culprits. He said that he had an idea who the hackers might be.

"I'm just waiting for someone to start boasting," he fumed. "After it happened I didn't sleep for four days because I was trying to replace the missing data." The complete bulletin board was wiped as well as contacts, passwords and other vital information. The bulletin board has been running for eighteen months and, at one time, boasted a library of 2,000 Public Domain and Shareware programs.

RUSSIANS DROP BRICKS ON UK

A game from the Soviet Union is currently being paraded around British publishers.

The Wall was written by a Moscow based gang of programmers who are also members of the famous Gary Kasparov Computer Club. The team are hoping that a British software house will take the game on here. The Wall itself bears many similarities to Microsoft's Tetris - also from Moscow - in that it involves logical management of bricks.

It's being represented by programmers agency Marjaq Micros in the UK. Boss Jacqui Lyons told Express: "It's a very simple game. Many of these Russian games are. They're very lateral thinkers over there." The Wall, if and when someone decides to publish it, will be available on the PC and ST.

The future arrives

An optical erasable disk system which can record as well as read data has been developed by Hitachi in Japan.

Optical erasable disks have been treated cautiously by the hardware manufacturers because, although their potential for holding data is enormous, they are said to be slow. However, Hitachi is adamant that its discovery is fast.

The advantages over today's magnetic media are enormous. Not only can optical erasables hold as much as fifty times more data than a normal disk but they are less prone to crashing.

Computer manufacturers will be receiving first batches of the Hitachi 5.25 inch in the near future at £2,500 a throw. UK availability will most certainly not be this year.

It is an unwritten rule amongst the bulletin board fraternity that sabotage is not on. This is mainly due to it being easy, childish, and of no gain to the instigators.

The biggest Beeb game since '86?

A small games software label has arrived on the BBC scene with big ambitions.

The Fourth Dimension's first release is a £15 golf game, *Holed Out*. The firm reckons 20,000 BBC or Electron users will buy the game over the next few months. Beeb games are doing very well if they attract 10,000 punters.



"This will outsell any BBC or Electron game since Repton in 1986," predicted the firm's Steve Botterill. "We've given the programmer a lot of dosh to do something good. Many good programmers who started on the Beeb have moved on to other things."

• *Hole Story*: BBC Golf game is driving for top spot

New portable for Mac users

Sir Clive Sinclair's Cambridge Computer is to offer Apple Macintosh owners a low cost portable.

The machine in question is called MacLite. But it is in fact none other than the beloved Z88 along with a fistful of bits and bobs. The machine is being bundled with Z88-to-Mac software and the relevant leads as well as a carrying case, batteries etc.

"There are currently an estimated 70,000 Apple Mac users in the UK and predictions are that this will grow by 100 per cent this year," said Cambridge's Alan Boxer. "They currently have no portable, we believe there's a significant demand for a low cost portable to use as an adjunct to the Mac."

• MacPortable: Z88 add-on to Mac



TOP 20 Full Price GAMES

- 1 Robocop** OCEAN
Spectrum, C64, CPC
- 2 WEC Le Mans** MAGNIE
Spectrum, C64, CPC, ST, Amiga
- 3 Operation Wolf** OCEAN
Spectrum, C64, CPC, ST, Amiga
- 4 Emlyn Hughes** AUDIOGENE
Spectrum, C64
- 5 Dragon Ninja** OCEAN
Spectrum, C64, CPC
- 6 Afterburner** ACTIVISION
Spectrum, C64, CPC, ST
- 7 Thunder Blade** US GOLD
Spectrum, C64, CPC, ST, Amiga
- 8 Falcon** MIRRORSOFT
ST, Amiga, PC
- 9 In Crowd** OCEAN
Spec, C64, CPC
- 10 Double Dragon** MELBOURNE HOUSE
Spectrum, C64, ST, Amiga
- 11 Barbarian 2** PALACE
Spectrum, C64, ST
- 12 Batman** OCEAN
Spectrum, C64, CPC, ST, Amiga
- 13 Giants** US GOLD
Spec, C64, CPC
- 14 R-Type** ELECTRIC DREAMS
Spectrum, C64, CPC, ST
- 15 Lineker's Hot Shots** GREMLIN
Spectrum, CPC
- 16 Heroes of the Lance** US GOLD
Spectrum, C64, CPC, ST, Amiga, PC
- 17 Football Manager 2** ADDICTIVE
Spectrum, C64, CPC, ST, Amiga, PC
- 18 Super Hang On** ELECTRIC DREAMS
Spectrum, C64, CPC, ST, Amiga
- 19 Middle Earth** MELBOURNE HOUSE
Spec, C64, CPC
- 20 Pacmania** SHANGHAI
Spec, C64, CPC, ST, Amiga, MSX

TOP TEN Budget Games

- 1 Treasure Island** CODEMASTERS
Spec, CPC
- 2 Joe Blade 2** PLAYERS
Spectrum, C64, CPC, BBC, C16, Electron
- 3 World Games** KIXX
Spectrum, C64, CPC, MSX
- 4 Werewolf** MASTERTRONIC
Spectrum, C64, CPC
- 5 Int. Rugby Sim** CODEMASTERS
Spectrum, C64, CPC
- 6 Ghostbusters** MASTERTRONIC
Spectrum, C64, CPC, Atari 8-bit
- 7 Leaderboard** KIXX
Spectrum, C64, CPC
- 8 SAS Combat** CODEMASTERS
Spectrum, CPC
- 9 Nightmare** MASTERTRONIC
Spectrum, C64, CPC
- 10 ACE 2** CASCADE
Spectrum, C64, CPC

RE re-entry • NE new entry • Last week's positions
Compiled by Gallup
The charts shown are based on the Open Market, that is retailers who stock a broad range of products. All charts shown are copyright of Gallup.

Japanese computer work all in vein

A Japanese scientist is designing a new breed of computerised surgical instruments so small they can be guided through your bloodstream, performing surgery on the spot.

Professor Iwao Fujimasa of Tokyo University has been content up until now with designing two artificial hearts. Now, with the help of major Japanese electronics firms such as Hitachi, he has begun work on his revolutionary new designs. The instruments will measure just a few nanometres across – a hundred thousand of them would be the width of a full stop – to enable them to cruise around the body. This requires chips hundreds of times smaller than the smallest currently available (a few thousandths of a millimetre at present) but Fujimasa is confident that Japanese technology is up to the job.

He has prepared plans for robots which can crawl through the circulatory system and zap away unwanted organisms or tissues with lasers. 'Emperor Hirohito died of internal bleeding from his cancer,' said Fujimasa. 'With a microbot, you could have simply injected it into a vein and used it to stop the bleeding.' He expects to succeed before the end of the '90s.

TOP OF THE PC POPS

Amstrad, the darling of low cost computing, is becoming more popular amongst PC buyers in the UK.

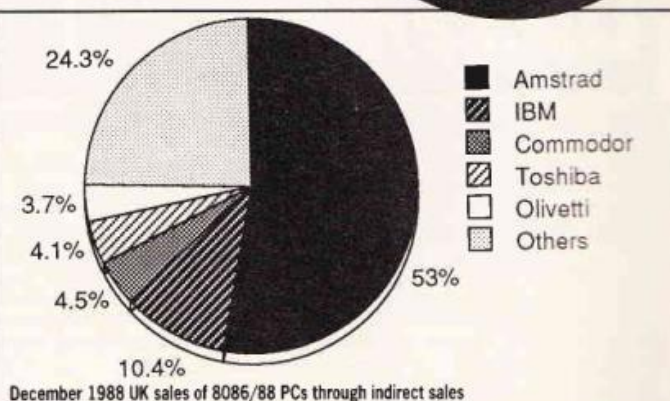
Figures sourced from market research firm Romtec suggest that the firm is selling more low cost PCs than all other manufacturers put together – an impressive 53 per cent slice of the PC pie. These figures cover the month of December 1988 and relate to sales through dealers. Amstrad had a 44 per cent share of when Romtec tested the market in June last year.

Amstrad's increasing lead is even more impressive given the firm's concentration on moving up market and the well publicised shortages. The news will bring a smile to Amstrad faces after months of setbacks and disappointments such as the recent financial results.

IBM, traditionally Amstrad's main threat in attracting the low cost PC buyer has slipped behind somewhat. That firm's share dipped from just under 20 per cent to 10.4 per cent. IBM's recent price restructuring in the low cost area will no doubt recover some of the lost ground.

Figuring it out

Demand for PC software is still on the up and up. According to the Software Publishers Association, PC owners bought 40 per cent more software last year.



Mac hacker cracks marijuana pusher

A London drug dealer has been jailed for eight and a half years after customs officials hacked into his Apple Macintosh and discovered details of how his unsavoury profits were being laundered.

The cannabis dealer – Ronald French, 37 – had kept details of 14 companies on the Mac under an "unbreakable password". The one time rag and bone man is a keen Country and Western fan, his password was the name of the song "Blanket on the Ground".

The officials broke into the computer and found 14 companies listed in such countries as Switzerland, Panama and Liberia. All the companies had been used to launder the money. Such was the size of French's computerised operation that the court saw fit to strip him of £1.7 million in assets.

DATAWORLD

13 Trinity Street, Gainsborough, DN21 2AL. Tel: Gainsborough (0427) 810151



CALLERS WELCOME AT OUR SHOP



ST	AMIGA	ST	AMIGA	ST	AMIGA
Afterburner.....16.99	16.99	Outrun.....13.99	13.99	TV Sports Football.....-	19.99
Wec Le Mans.....13.99	16.99	Captain Blood.....16.99	16.99	Spitting Image.....13.99	13.99
Elite.....16.99	16.99	Platoon.....13.99	16.99	Garfield.....13.99	16.99
Crazy Cars II.....13.99	16.99	Off-Shore Warrior.....13.99	16.99	Hits Disc Vol 1.....16.99	16.99
Starglider II.....16.99	16.99	Rocket Ranger.....-	19.99	Sargon 3.....16.99	16.99
Operation Wolf.....13.99	16.99	Joe Blade II.....13.99	13.99	Federation of Free Traders.....19.99	-
Robocop.....13.99	16.99	Alien Legion.....16.99	16.99	Triad.....19.99	19.99
Speed Ball.....16.99	16.99	Football Director II.....13.99	13.99	Hot Balls.....16.99	16.99

Please Telephone for titles not listed. Many Business/Utility titles held in stock.
QUICKSHOT II TURBO £8.50 **COMPETITION PRO EXTRA £12.99**

IBM

Many games/business/utility titles held in stock.
Telephone for prices

AMIGA SPECIALS

AMIGA 500 WITH MODULATOR
£359.99

3.5" DISKS

Lifetime Guarantee
3M Unbranded DS/QD
10 Disks with Plastic Case
£12.50

DISK BOXES

3.5" x 80
Lockable
£6.50

MOUSE MATS
£2.50

PRINTER STANDS
80cm **£9.99**

AMIGA
512K RAM Extension
£99.99



Order by Phone (0427) 810151 Goods normally despatched within 24 Hours.
All prices include VAT and FREE Delivery in UK. Overseas orders Please add £2.00 Per item.
Customers paying by Cheque, goods will be despatched when cheque is cleared.

*** CALLERS WELCOME AT OUR SHOP ***



Our Showroom is only 1 mile from
Junction 23. M6. Just Past, Haydock
Park Racecourse

COMPUTERS SADDLER COMMUNICATIONS

(Please ask for MO. Dept. quoting NCE)
Telephone (0942) 719122
Fax: (0942) 271226

Saddler Computer Services Ltd, 71/77 Warrington Road, Ashton-in-Makerfield, Nr. Wigan. WN4 9PJ

AMSTRAD PC1512/1640

PC 1512	SD MD	£366.00
PC 1512	SD CD	£444.00
PC 1512	DD MD	£444.00
PC 1512	DD CD	£522.00

SPECIAL OFFER - Buy an
Amstrad DMP 3160 Printer with
any PC1512 this month for only
£95.00

PC 1640	SD MD	£455.80
PC 1640	SD CD	£545.00
PC 1640	SD ECD	£630.00
PC 1640	DD MD	£519.00
PC 1640	DD CD	£608.00
PC 1640	DD ECD	£699.00
PC 1640	HD MD	£699.00
PC 1640	HD CD	£786.00
PC 1640	HD ECD	£875.00

TV ADAPTOR

NOW FOR THE
AMSTRAD PPC AND
1640 COMPUTERS

PPC	£36
PC1640	£41

**FULLY REFUNDABLE IF
UNHAPPY WITHIN 7 DAYS**

**EXTERNAL 5 1/4" D/D
FOR THE
PC 2086/PC200
ONLY £109**

AMSTRAD PORTABLES

PPC 512	SD	£372.90
PPC 512	DD	£482.90
PPC 640	SD	£456.71
PPC 640	DD	£565.71



**PORTABLE HARD
DISK DRIVES FOR
AMSTRAD PPC'S**

CUMANA 20Mb	£446
CUMANA 30Mb	£469

THE NEW AMSTRAD PC2086 RANGE

SD 12MD (SINGLE DRIVE WITH 12" MONO)	£565
SD 14CD (SINGLE DRIVE WITH 14" COLOUR)	£695
SD 12HRCD (SINGLE DRIVE WITH 12" HIGH RES. COLOUR)	£785
SD 14HRCD (SINGLE DRIVE WITH 14" HIGH RES. COLOUR)	£865
DD 12MD (TWIN DRIVE WITH 12" MONO)	£670
DD 14CD (TWIN DRIVE WITH 14" COLOUR)	£800
DD 12HRCD (TWIN DRIVE WITH 12" HIGH COLOUR)	£890
DD 14HRCD (TWIN DRIVE WITH 14" HIGH RES. COLOUR)	£970
HD 12MD (SINGLE DRIVE WITH 30 MEG HD AND 12" MONO)	£890
HD 14CD (SINGLE DRIVE WITH 30 MEG HD AND 14" COLOUR)	£1020
HD 12HRCD (SINGLE DRIVE WITH 30 MEG HD AND 12" HIGH RES. COLOUR)	£1110
HD 14HRCD (SINGLE DRIVE WITH 30 MEG HD AND 14" HIGH RES. COLOUR)	£1190

**THE AMSTRAD PC 2386 NOW IN STOCK !!
(CALL FOR PRICES !!)**

PRINTERS

CITIZEN 120D	£128
AMSTRAD 2160	£133
AMSTRAD 3250 di	£169
AMSTRAD 3500 di	£299
AMSTRAD DMP 4000	£260
AMSTRAD LQ5000	£388
CITIZEN HQP 45	£395
BROTHER HR20	£380

+BROTHER HL8	£1600
--------------	-------

WORD PROCESSORS

PCW 8256	£316
PCW 8512	£399
PCW 9512	£447



AMSTRAD VGA MONITORS!

12" MONO DISPLAY	£96
14" COLOUR DISPLAY	£240
12 HIGH RES. COLOUR MONITOR	£336
14" HIGH RES. COLOUR MONITOR	£432

HARD CARDS

MINISCRIBE 20Mb	£192.50
MINISCRIBE 30Mb	£203.50

**FOR THE OFFICE,
SCHOOL AND
HOME**

SINCLAIR PC 200

16 Bit Processor, 512K RAM,
Built in TV Modulator, 3 1/2 D/Drive
2 IBM Comp. Exp. Slots parallel
Cent. Port and more...
Call us Today!

ONLY

No. Mon	£275
Mono	£359
Colour	£439

SOFTWARE (PC 5 1/4")

AUTOROUTE	£102.00
TIMEWORKS D.T.P.	£95.00
ACCTS MASTER	£126.00
S.CALC 3.1	£66.00
S.CALC 4	£382.00
W.STAR EXP.	£60.00
INFO MASTER	£61.00
PAY MASTER	£43.00



Note: Please call us today for
our wide range of software on
5 1/4", 3 1/2" and Amstrad,
PCW Formats

THE
Star
COMPUTER PRINTERS

LC-10



**LC10
£185
LC10
COLOUR
£205**

**ORIGINAL UK VERSIONS ONLY!
NO CHEAP IMPORTS**

- ✓ Low cost 9 pin, 10" printer.
- ✓ 144cps Draft, 36cps Near Letter Quality.
- ✓ Centronics or Commodore versions available.
- ✓ 4K buffer (Commodore version 1 line).
- ✓ Automatic single sheet load, push tractor and "Paper Parking" standard.
- ✓ Colour Version Available.

LC24-10

£272



- ✓ Low cost Letter Quality, 24 pin 10" printer.
- ✓ 170cps Draft, 57cps Letter Quality.
- ✓ Industry compatible.
- ✓ 7K buffer expandable to 39K.
- ✓ Selectable font & RAM cards.
- ✓ Automatic single sheet-load, push tractor and "Paper Parking" standard.
- ✓ Eight Resident Fonts.

LaserPrinter 8



£1490

- ✓ 8 page per minute, series 2 laserprinter.
- ✓ 1 megabyte memory standard, expandable to 2 megabytes.
- ✓ Centronics and serial interfaces fitted as standard.
- ✓ 4 standard emulations: HP, IBM, Epson, Diablo.
- ✓ First toner cartridge included.
- ✓ 12 Months On-Site Warranty included.



REMEMBER:

Our knowledgeable staff are always willing to give help and advice to help you choose what's best for you!

SERVICE CONTRACTS AVAILABLE FROM ONLY £36 PER YEAR

EDUCATIONAL & EXPORT ENQUIRIES WELCOME

Please send cheque today, payable to:

Saddler Computer Services Ltd

or phone us with your Access/Visa number.

All items * will be despatched same day.

(Cheques over £500 subject to clearance)

*Subject to availability

PRICES SUBJECT TO CHANGE WITHOUT NOTIFICATION



**ALL PRICES
EXCLUDE
VAT & CARRIAGE**

CARRIAGE:

Value up to £100 (post)	£6.00
Value up to £100 (carrier)	£10.00
Value over £100	
Printer	£6.00
Computer	£8.00
Printer and Computer	£10.00



Digital Magic Software

YOU'VE NEVER HAD IT SO GOOD



As a highly trained Assassin you must blast your way along five zones on a crucial mission to annihilate King Rhizoflagellates, this is made seemingly impossible by hordes of repugnant creatures whose touches are fatal. To top that there is also a huge monster inhabiting each zone whose only purpose is to destroy all who try to pass.

50 Frames per second · Slick movement
Smooth scrolling · Scroll direction changes each level · Numerous animated sprites on screen · Five levels · True coin-op quality



As a Scorpion warrior journey through magical lands where time has no control, battle your way through the five domains in your quest to reclaim the princess of Scorpia.

Fight the numerous hostile aliens that hamper your path. Destroy the five enormous guardians, collecting weapons and abilities along the way to aid you in your desperate task.

50 Frames per second · 32 colour mode
Super-smooth animation and scrolling ·
Over 100 animated aliens · Five extensive levels · Sixteen skill giving pick-ups.



AVAILABLE ON:
AMIGA
£24.95
ST - SOON

Amiga Screenshots

DIGITAL MAGIC SOFTWARE
103 Mersey Road, West Bank
Widnes Cheshire WA8 0DT
Tel: 051-423 5943

ROCK STAR



Could you manage this
Rock Star ?



CodeMasters Software Company Ltd., PO Box 6, LEAMINGTON SPA, CV33 0SH

PUBLIC DOMAIN SOFTWARE AND SHAREWARE

Extensive ranges of Public Domain Software & Shareware available for the following Computers:

IBM PC & Compatibles

including Amstrads
£2.95 per 5.25" disk
£4.50 per 3.5" disk

COMMODORE 64 & 128

at £2.95 per 5.25" disk

Commodore AMIGA

from £3 per disk

Atari ST

from £2.80 per disk

CATALOGUES

Catalogues and lists are available for all the above. Please send SAE or phone if you would like us to send you one, or if you would like any further details. Please state clearly which machine(s) you are interested in. Please note that we have probably the largest and fastest growing collections of PD software for the Amiga in the UK. Details are included on TWO catalogue disks which are £3 each. These can be updated in the future FREE of charge.

ORDERING

Please note that the above prices are FULLY INCLUSIVE of VAT and postage. Orders are normally dispatched within two working days of receipt. We cannot accept payment by credit card

KINGSWAY COMPUTERS

140 Rushdale Road, Sheffield, S8 9QE

Telephone: 0742 588429

FUTUREPLACE COMPUTERS

TELEPHONE: 01-692 8700



12 Loampit Hill
Lewisham
London
SE13 7SW

ATARI ST & AMIGA OWNERS WHY PAY TOP PRICES ALL GAMES SOFTWARE AT 30% DISCOUNT

EXAMPLE PRICES	ST
F.O.F.T.	21.00
The Games	14.00
Lombard Rally	17.50
Double Dragon	14.00
Speedball	17.50
Pacmania	14.00
Hostage	17.50
Spaceracer	14.00
Falcon	21.00
LED Storm	14.00
Galdregon's Domain	14.00

3 1/2	DOUBLE SIDED DISKS
	DOUBLE DENSITY
	135 TPI GUARANTEED
	Price
10	£8.90
25	£22.00
50	£43.00
100	£84.00

Please add £1.00 P&P

Discount Chart

RRP	OUR PRICE
£12.99	£9.00
£14.99	£10.50
£15.95	£11.00
£16.95	£12.00
£17.95	£12.50
£19.99	£14.00
£22.95	£16.00
£24.95	£17.00
£29.99	£21.00

DRAGON'S LAIR £31.50

OPEN BANK HOLIDAY MONDAY

Atari 1040 Professional Pack	479.00
Atari Super Pack	349.00
Amiga 500 + Modulator	369.00
Star LC10 Colour Printer	245.00
Citizen 120D Printer Parallel Interface	138.00
Philips CM8833 Colour Monitor	235.00

Atari Mouse Extender	5.95
Atari To Scart Lead	14.99
Mouse Mat	4.99
Amiga Cumana Drive	99.99
Amiga 1 meg Upgrade	139.00
100 Cap Disk Box	9.95
50 Cap Disk Box	7.50

Shop Hours Monday to Friday 10am - 6pm
Saturday 9am - 6pm



CREDIT CARD HOTLINE 01-692 8700

ACCESS VISA DINERS CLUB AMERICAN EXPRESS



Free delivery on all hardware. Software add £1.00 per order. All prices include VAT. CWO to Futureplace Ltd. Also Available to order MOBILE PHONES and FAX MACHINES

AMIGA PC
MSX SPECTRUM
ATARI SEGA



SILICON

CONSULTANCY SALES INSTALLATION

Dreams

AMSTRAD
BBC CBM 64
APPLE



01 543 3420

NEW WORKBENCH 1.3 AVAILABLE NOW £14.00

OVER 30% OFF ALL SOFTWARE
PHONE US NOW
FOR BEST PRICES
AND FRIENDLY ADVICE
ON ALL COMPUTERS

AMIGA A500 WITH MODULATOR ONLY £359.00
WORKBENCH 1.3 WITH AMIGA ADD £10.00

ATARI 520STFM SUPER PACK INC:

£450 WORTH OF SOFTWARE
1 MEG DRIVE
ORGANISER
JOYSTICK

£345.00

(Inc VAT)



AMIGA TENSTAR PACK A500 + MODULATOR

IKARI WARRIORS
BARBARIAN
THUNDERCATS
AMIGAS + WIZBALL
ART OF CHESS
BUGGY BOY
TERRORPODS

MERCENARY
INSANITY FLIGHT

£375.00

(Inc VAT)

DRAGON'S LAIR£29.99
DRAGON'S LAIR + 1/2 MEG EXP.....£159.99
A501 1/2 MEG RAM EXPANSION + CLOCK .£135.99
SUPRA 20 MEG HARD DISC£569.00

CITIZEN 120D PRINTER£155.00
SEIKOSHA SP180 A1 PRINTER..£170.00
NEC P7 PLUS 24 PIN NLQ.....£559.00
COMMODORE 1084 STEREO£260.00
PHILIPS 8838 STEREO MONITOR£229.00



AMIGA A500 + DRAGON'S LAIR + 1/2 MEG EXP + TV MODULATOR+

IKARI WARRIORS
BARBARIAN
THUNDERCATS
AMIGAS + WIZBALL
ART OF CHESS
BUGGY BOY
TERRORPODS

MERCENARY
INSANITY FLIGHT

£495.00

(Inc VAT)

ATARI 1049 STFM SUPERPACK

£450 WORTH OF SOFTWARE
1 MEG DRIVE
ORGANISER
JOYSTICK

£429.00

AMIGA PRINTER LEAD£9.00
ATARI PRINTER LEAD.....£9.00
ON PHILIPS MONITORS ADD £9.00 FOR LEAD

PHONE FOR PRICES ON ALL HARDWARE AND PERIPHERALS

FREE DELIVERY ON ALL ORDERS

CHEQUES AND POSTAL ORDERS MADE PAYABLE TO "SILICON DREAMS"
SILICON HOUSE, 73 SOUTHPARK ROAD, WIMBLEDON, LONDON SW19 8RT

WHICH PC VOL. 261

I write to you with the utmost urgency. I am a student at a Polytechnic and I have decided to buy a computer for my study and on which my younger brothers can play games.

I have decided upon two options:

i) Atari ST: Can I obtain a good Pascal package which I can transfer on to my Poly's IBM PCs?

ii) Any PC: Can you recommend any good PCs? (Bearing in mind tight student budget!). Can my TV serve as a monitor (with or without modulator)? Specs: - 5.25" Disk Drive, IBM compatible (MS-DOS).

A most detailed answer would be much appreciated. Thank you in anticipation.

By the way, what do the terms DD, SD, etc stand for at the end of computer names?

Umair Malik, London

● I assume you want to be able to write a Pascal program on your ST and take the disk with the source code on it to a PC and use it there. You can do this (so long as your 3.5 inch disk has been formatted on the PC). Try HiSoft on 0525 718181; they have good implementations of Pascal.

For your uses an Amstrad PC1512 or 1640 is fine (though not as good a games machine as the ST!). Shop around for the best deal at Comet/Dixons/Currys etc.

DD means double drive, SD single drive.

SWEET COLUMN BIND

You appear to receive a lot of demands for machine specific columns which are not catered for, like the Atari 8-bit.

Would it not be a good idea to include columns on these machines simply when

there is enough information to warrant them rather than sticking rigidly to the same machines each week? Perhaps you could alternate each week say, MSX and Atari 8-bit?

I don't at present have a computer but maybe you could start an Aberdeen supporters column?

Barclay Thow, Aberdeen

● Important news about any of the machines not covered in the columns would go in the News section (Show details and so on). There are already as many columns as we can reasonably support in a mag of this price (people don't write them for free, you know!) and to start alternating one with another, or introducing irregular ones, would quite honestly be too much trouble. Sorry!

MSX MANUAL

I am very pleased to see a magazine that includes MSX. I have a big problem. I bought my MSX off someone I know. I have not got a manual for it and would dearly love one. Could you or one of your readers let me know how I could obtain one? I am at my wits' end. It is for a Sanyo MSX 64K Model MPC-100. Service ref. NO MPC-100-01. Looking forward to next weeks mag.

Robert Hudson, Pontefract, W. Yorkshire

● Try Sanyo's spares department on 0923 222244. They still have a few programming manuals (part no. 3-P02813) for £18.18, but have run out of user manuals. Anyone out there in MSXland help?

READERS, WRITE!

How about having a 'readers reviews' section, either in with the main reviews or in the 'your machine' columns? Also how

NOT THE SIZE OF YOUR CHOPPER

I agree heartily with Tim Gowen (Letters, Express 17 'Why the PCW is better than the Amiga'). I, too, live in the hope that one day we might see an end to all this computer 'X' versus computer 'Y' nonsense, but it's probably a forlorn hope. The drooling teenage techno-junkies will never understand that as far as home computers are concerned it's the quality of the programming that counts, not the theoretical capabilities of the machine.

As an extreme example, I have 'Winter Events' for the Commodore 16 and 'Winter Olympiad' on the Amiga - both very similar games. Now, the C16 is obviously vastly inferior to the Amiga but, amazingly, the C16 version is far superior in playability, and the graphics are just as fast if not as detailed. It gets played in preference to the Amiga version any time, so am I wrong? Is the C16 the better machine after all? Of course not. 'Winter Events' was simply written by a better programmer, or at least by one who knew his or her machine better.

I can see this letter getting the 'Salman Rushdie' treatment from some

quarters, but I don't care. Contrary to my resolution (which you published!), I recently bought an Amiga. It's a wonderful machine and I love it, but I don't kid myself that it makes me a member of some elite - except in the sense that I'm lucky enough to be able to afford one. It's only as good as the person using it, and I know that a really good programmer could achieve more with a Spectrum than I can with my Amiga at present. As Prince Andrew might say - 'It's not the size of your chopper that matters, it's the way you fly it...'

Stephen Mercer, Shaftesbury, Dorset

● Similarly, David Bailey or Helmut Newton can take good photos with a Box Brownie instead of a Canon or Olympus; Julian Bream can interpret a piece as well on a Woolworth's classical guitar as on a Ramirez; Nigel Mansell can drive a Ferrari or a Metro and still come second.

Anyway, for a good dose of common sense we think you ought to get our mystery prize - some software for your PC.



Dear Reader

More pages packed with another selection from our postbag and Rob Ainsley's replies. Have you got something to say? Make your voice heard in computing's liveliest letters page!

Send your contributions to:

Express Mail, 4 Queen Street, Bath, Avon BA1 1EJ

PS. Sorry, we just don't have the time to give personal replies, whether you include an SAE or not. We're too busy putting Express together!

about a page of hints and tips on the latest and best games?

David Deans, St Albans, Herts

● Hints and tips on the latest games go in the machine-specifics, which is one of the reasons why they're there. As for readers doing reviews, er, yes, um, most imaginative and, ah, interesting. Don't ring us.

HAPPY EVER AFTER

I read with interest the letter from P Bennett (But The Amiga Hardly Ever Cra...) in Express 17. It is an all too usual tale of suffering, inflicted by many computer dealers. However, my story is a happy one.

I bought an ST in January 1989, from Silica Shop (who also sell the Amiga). The machine worked fine for about a month when it suddenly stopped accepting mouse input, then the keyboard failed. I returned the machine under Silica's replace/repair guarantee. They repaired the machine and returned it within a week. But the machine failed again two weeks later. It was duly returned, repaired and returned this time within ten days. Three weeks later it failed for a third time and was returned and repaired. By this time I was becoming increasingly agitated by the machines inability to function for more than a couple of weeks.

Inevitably it failed again, within weeks, so I contacted Silica to let them know what had happened up until then. They accepted the fact that the machine must have had an inherent defect, and replaced it (even though it did get lost for a while by the Post Office) bundling several top titles with the replacement. This was an act way above the call of duty as I had owned the machine by that time for over six months, and they were not legally bound to replace the computer. So many thanks Silica, the initial problem was not yours, but you handled it admirably. By the way, the machine has now served me without a hiccup for over eight months!

Al Coward, Lancaster

● A pleasant reminder that the majority of mail-order companies are perfectly honest, businesslike and fair. Like used car dealers, they

must get well hacked off with the complaints about the odd rogue here and there which reflects badly on the rest.

CONFESSIONAL

OK, I'll come clean. Yes it was me (Express letters last week) a mere spotty faced 16 year old who goes to Raynes Park. Ten out of ten for your detective work.

I suppose you feel pretty smug, eh? Well let me warn all you at Old Commuter S-Express that there is a Network Virus at Raynes Park see PCW Feb 9-15 and it is spreading. What's that - is that your smile slipping or do you always look like that?

So you sexist tossers (you assumed it to be a male who wrote the letter) I've got news for you... er, well I will have and very soon!

By the way - have you got the results back from Bristol Police's Forensic department? Please publish them when you do!

The Beeb Bandit, South-West London

● Yawn. See this week's Beeb Box.

THE CLASS OF Z88

I think your magazine is excellent. The series written on Alan Sugar was in my opinion top class journalism by any standard. I also did like the way you dealt with the correspondent who praised your magazine and another in the hope of getting a prize.

There are however, two points that puzzle me about the information I have been able to glean week by week:

1 Why do you not have a machine-specific column for the Z88?

2 There must be a good reason why you do not rate the Amstrad PC1640 the best on the market for its price. I think I have read all the articles including Which PC in Issue 14, but I still cannot see a PC to match it where price and specification are paramount.

Maurice Baker, Leatherhead, Surrey

● The Z88 is a nice little machine but there is very little software for it (one database and one comms package at the last count) very few products coming out (most of them

NO MSX PLEASE, WE'RE 8-BITISH

I hope you will print this letter as this is the fourth draft. If you don't I'll tell the Ayatollah Khomeini that Mr Rushdie is hiding in your offices.

1. I want to buy an Amiga but Nigel Lawson won't let me. Can you print a full page picture of him so that I can stick it down my toilet.

2. Is there a voice editor on the Amiga for the Yamaha DX100 Synth. If so, how much is it?

3. How about inbuilt virus killers instead of laborious annoying copy protection routines?

4. Legalise piracy and you will get rid of it overnight ... just like CB radio.

5. Virus writers should be flogged, publicly. Although you've got to admire them in a way, just like the great train robbers. But then again, maybe not, more like Typhoid Mary.

6. Can we have less pictures of Alan Sugar?

7. Will I be MSXtremely unpopular by saying that there are more Atari 8-bit owners than MSXers. Not that it really matters.

8. We threw away our AMSTRAD PCs at work and bought TANDON PCs instead. This was because they:

- a) Were rubbish
- b) Had bits missing
- c) Broke down a lot
- d) Corrupted DAT@!R

9. After all the serious stuff can you now tell me why years ago I bought an Oric Atmos for £139.99? The only reasons I can now remember are

- a) It looked beautiful
- b) Had an excellent BASIC and
- c) I thought I could write games.

I've still got it, it's still crap, but I love it!

And finally (although I feel I could write a book right now) here are some anagrams produced with the aid of the finest computer made to date...the Human Brain v1.0:

New Computer Express = Excrement wip supper
Neil Barnes, Birmingham

● **Er, here goes. 1. No - it might block your toilet. 2. MCMLXXX distribute Dr T voice editing software though it's around £100. Try them on 01 724 4104. 3. How about them? 4. I doubt it. Software piracy is effectively legal in Iron Curtain countries and it hasn't stopped them at all. 5. Well, yes, just like you'd admire Dr Crippen for being good at Chemistry or Lee Harvey Oswald for being a good shot. 6. You mean fewer pictures. Yes. 7. Yes. 8. The views of this correspondent do not necessarily reflect those of the editor. 9. Is this a riddle? I give up.**

Your anagram doesn't work (and we couldn't print the Nicholas Ridley MP one as it was libellous). Surely there are only two letter ps in our title? How about 'women expect purses'?



● Let's have fewer pictures of Alan Sugar, says Neil Barnes

being linkup systems to other machines like the Mac) and not a very large user base (most of whom have other machines covered in the columns anyway, making it an uneconomic investment for us in terms of extra readers!). For the time being I can't see it, though of course we constantly review the coverage of the machine specifics. Maybe the new price cut on the Z88s will provide a boost in

ownership?

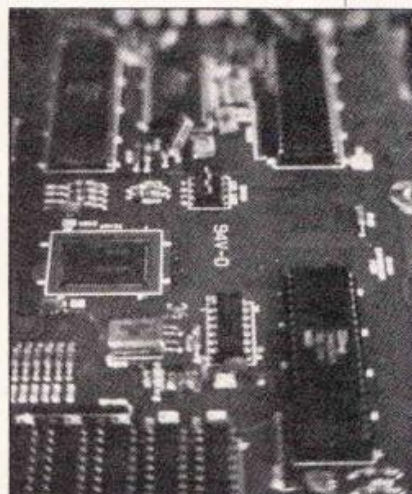
The Amstrad was the best for its price but a number of newer PCs are coming out for the home or small business user such as the Commodore PC1, Schneider Euro PC and so on. Many people feel the Amstrads are a bit clunky and built down to a price rather than up to a specification - see the final point of the 'No MSX please' letter.



● Is the Z88 worth a column? (The class of Z88)

MEMORIES LINE THE CORNER OF MY PCW

I read with interest in 'Computer Express', Issue 17 dated 4th March that it is possible to obtain a standard memory upgrade for an Amstrad 8256 at a cost of £20.



● Thanks for the memory: upgrades on a PCW (Memories line the corner of my PCW)

This information was contained in an article by Basil Pigg under the title 'The Mega PCW'. This was surprising to me as the only upgrades I have seen advertised have been priced at around £55 or so.

It has been my intention to try an upgrade for the very reasons mentioned in the article so would you be good enough to let me know who produces such an upgrade at the price mentioned? Dennis N Duro, Westbury, Wilts

● **Sorry, it was a bit misleading. The standard upgrade is as you say £55 or so (try Silicon City on 0209 891141 - they also do B drives). The £20 refers to the price of chips bought in an electronics shop and fitted entirely by yourself (no instructions of course).**

Locomotive now recommends the normal 256K memory upgrade as a matter of course for the 8256. And, by the way, they stress that you don't need the 1 megabyte memory to use LocoMail/ LocoFont/ LocoFile together - as the article stated, you would only need it if you use those three simultaneously with LocoSpell too.

FLOW OF ELECTRONS

I was interested to read the letter about the Electron (ish 17) hardware scene. Although mine packed in months ago I still read Electron User and there are several companies that still build add-ons for the Elk.

Try Slogger (0272 237496) for various add-on bits, such as the Master Ram Board (£49.95 - Kit), which gives the choice of either BBC speed or an extra 32K RAM. They also do repairs and sell various ROMs (Disassemblers etc).

Pres (0272 72046) sell the same sort of things and still stock their own versions of the Acorn interfaces (Plus 1 + 3). You can also get hold of the Music 5000 Synth for £113.85. Most BBC bits are available but you will probably need a Plus 1 or User port to run these.

You can get a 64K Electron for as little as £100, which makes it a bargain way to learn BBC basic. Check out Software

bargains (0532 687735 or 0532 687789) for re-conditioned Electrons selling for £60 and some cheap hardware packs (Plus 1, Acorn Logo, Viln, Viensheet + lisp on ROM for £117.45 - not bad value I must say).

By the way, Spectrum 48 owners who want to go mad should take a look at Galaforce, Kissin' Cousins, Frak and Impossible Mission (as well as others I could go on about). No colour clash there! Hope this helps.

Robert Henderson, Liverpool, Merseyside

● **Thanks for the info - hope Electron fans find it useful.**

DRAGON ON AND ON

I am writing about two things. The Dragon 32 and the GCD (great computer debate).

Firstly I own a Dragon 32 (remember those?), and I think it is one of the easiest and user-friendly computers to work with. For a tester, its merits are:

1 It has a useful reset button that doesn't reset the RAM, it literally resets the game back to the beginning.

2 It has cartridge capacity.

3 It works well as a WP.

4 It has good graphics.

5 It has extension ports for everything except MIDI (just about).

The question is, why did it die out? Anyway, back to the GCD.

As a (possible) end to the GCD, and proof of how mad everybody is here is the list to end all lists:

The C64 is superior to the Speccy, but punters generally prefer the Speccy. The Dragon is far superior to the BBC, but the Dragon became extinct.

The Amiga is superior to the ST, but more people program and buy STs.

Amstrad is basically a big bucks quick firm, but people still buy from them.

MGT is the best hardware mail order company, but virtually anyone I asked hadn't heard of it (even within the Spectrum), and finally

Special Reserve is the best and cheapest software mail order company (my games came 2-3 days after I sent my cheque), but punters are still sceptical about Jocky.

If you want cheering up, then read clue 441 of the Gnome Ranger's clue sheet.

And, finally, adventure games are played a lot because of the sense of achievement gained, for example the 'oh, of course, how stupid I've been' feeling when you suddenly realise how to pass a certain area or puzzle, and arcade games are played for the sense of power and superiority experienced (Express 16).

James Handley, Barnes, London

● **Why are things born, why do they die? I don't know, it's the way of all things. If someone knows what clue 441 of Gnome Ranger actually is, please tell us.**

PSION OF THE TIMES

Why don't you have the occasional piece in the mag about the Psion Organiser? There are a lot of us about and we're growing!

Please pass on our congratulations to whoever on your staff wrote the piece on the new Atari PC on page 54 of the most

recent Express (issue 17). I read it out to my wife in the car as we were travelling to London and we thought that it was one of the most amusing pieces that we have ever read. Keep up the good work!
Jeremy Holt (Chairman SPOUG), Swindon, Wilts

● **Thank you very much. We'll, er, give serious consideration to Psion Organiser articles.**

NOOKIE HOLE

After flicking through many glossy magazines, my colleagues and myself have still not been able to locate a stockist of the much flaunted 'nookie' games, Teenage Queen and Emmanuelle and so on.

Due to excessive use of Anglo-Saxon expletives in my general direction, I am forced to ask you for possible stockists.

A prompt reply would be greatly appreciated, as our investment in toilet rolls is blocking the stairs.
R M Johnson, Guildford, Surrey

● **Well, you can find them in the mail order ads of Express.**

I am thoroughly dismayed that no feminists (m/f) have written in to complain about our reviewing programs like this. Have they given up computer gaming as a bad job, irreparably shot through with stereotyped thinking? I hope not.

TO AT

First, I must thank David Carter in his letter in issue 16, for indicating a use to which I can put my QL, after I downgrade to a 386 PC. It will certainly be more comfortable than the Transform Keyboard Spectrum currently used for



• Teenage Queen: What's her hair dryer doing blowing that way? (Nookie hole)

SNIPPETS

A PEEK IN A POKE

How do you put something in memory and get it back out again and if so will it stay in if the computer is switched off? I've got a C64.

Lee Emmerly, Nailsea, Avon
POKE, PEEK, and No.

do with us except that they advertise in our pages a lot.

PCW PATCH: ONE AGAINST

Drop the PCW column, it is so dull.
Neil Barnes, Birmingham

...AND ONE FOR

My main interest is in Amstrad PCWs and IBM compatibles and the coverage you provide is brief, accurate and very much to the point in the Your Format section.

Maurice Baker, Leatherhead, Surrey
And my casting vote is for. So it stays.

NEW TITLE?

When will you drop the 'New' in your title?

Kevin McGahar, Belfast, Northern Ireland

We can't drop it as there is a computer stockist called 'Computer Express' - nothing to

this purpose.

The main reason for writing to you, is with reference to the PSsst! User Instructions on Tea Making Challenge.

I was very surprised not to see a contribution from the most proliferate author on the subject of Home Tea Making, namely, Miss Nial Clair Sin. It is generally agreed that her best work to date, is on the subject of Lap Top Tea Making, entitled, 'Home Tea Making with the Goblin Teasmade & Compatibles', now in its 10th Edition, and which has been translated into 34 languages.

For the TM professional, the Hardware manuals supplied with ITM machines are excellent. The most famous Tea Packages are Ashton-Tea TBase IV and Lotus Blossom 1-2-Tea.

Until recently ITM was the standard choice for corporate TM Departments (it

is well known that no-one was ever sacked for buying ITM).

Now, however, the new parallel Tea Makers based on the incredibly powerful INTMOS CTMUs are beginning to make a real impact. A prototype at the Which Tea Maker Show was able to make 96 different teas simultaneously, and serve over 800 remote TPUs, with sub 1 second response. Conservatively rated at 1600 CPM, this machine represents the first major step forward in Tea Making for 10 years.

With extreme cynicism
Douglas Ian Holland, Crawley, West Sussex

● **Now I brace myself for the requests for a Goblin Teasmade column...**

MERRYMODOE

**BUSINESS, UTILITY
EDUCATIONAL GAMES
& PERIPHERALS**

**MAIL ORDER
133 TUDOR ROAD, HAYES, MIDDXX UB3 2QF
TEL: 01 573 4314**

**ALL PRICES
INCLUDE VAT P&P**

GAMES

	AMIGA	ST
Falcon.....	21.95	18.95
Operation Wolf.....	18.95	15.50
TV Sports F/Ball.....	21.95	—
Dungeon Master.....	18.95	18.95
Stos.....	—	21.95
Elite.....	18.95	18.95
Afterburner.....	18.95	15.50
Batman.....	18.95	15.54
Speedball.....	18.95	18.95
Baal.....	15.50	15.50
Obliterator.....	18.95	18.95
Double Dragon.....	15.50	15.50
Captain Blood.....	18.95	18.95
Sword of Sodan.....	21.95	—
Falcon.....	21.95	18.95
Purple Saturn Day.....	18.95	18.95
Thunderblade.....	18.95	15.50
Flying Shark.....	18.95	18.95

**MERRYMODOE
GIFT VOUCHERS
SOLVE THOSE GIFT PROBLEMS
£5, £10 & £20
POSTAGE FREE**

**AMIGA 500
WITH MODULATOR
PHOTON PAINT
WORKBENCH 1.3
ONLY
£350
INCLUDING
VAT & POSTAGE**

**PLEASE NOTE
THIS OFFER EXCLUDES ALL
EXISTING OFFERS**

AMIGA UTILITIES

Animator.....	39.95
Audio Master.....	32.95
Amigafile.....	34.95
Digi Paint.....	42.50
Digicalc.....	29.95
Drum Studio.....	29.95
Excellence.....	149.95
Express Paint.....	50.95
Superbase Personal.....	69.95
Wordperfect.....	172.50

**TELEPHONE OR WRITE FOR FREE
PRICE LIST AMIGA, ATARI ST, C64,
AMSTRAD, SPECTRUM,
IBM & COMPATIBLES**



Disk Box 3.5 holds 50 Lockable.....	6.95
Amiga Dust Cover durable clear plastic.....	8.50
3.5 Drive Cleaner.....	5.95
Top Quality mouse mat.....	4.95



CUSTOMERS IN EIRE PLEASE CONTACT: MERRYMODOE, PO BOX 26, CARLOW. TEL 0503 41543

WORLDWIDE SOFTWARE
1 Bridge Street
Galashiels TD1 1SW

Credit Card Order
Telephone Line



0896 57004

SPECIAL OFFER
OCEANIC C64/128 COMPATIBLE
DISK DRIVE
ONLY £112.00

WORLDWIDE SOFTWARE

Overseas Express Service Now Available Overseas Express Service Now

OVERSEAS OVERSEAS OVERSEAS OVERSEAS OVERSEAS
Overseas customers can now contact our
Export Department at:

Worldwide Software
106A Chilwell Road
Beeston
Nottingham NG9 1ES
England

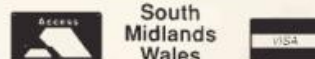
Overseas Telephone Only:
Nottingham 225368

Europe Shipping Costs Are:
£1.50 Per Cass/Disk For Normal Airmail
£2.00 Per Cass/Disk For Express Airmail

Outside Europe Shipping Costs
£2.00 Per Cass/Disk For Normal Airmail
£3.00 Per Cass/Disk For Express Mail

WORLDWIDE SOFTWARE
106A CHILWELL ROAD
NOTTINGHAM NG9 1ES

Credit Card Order
Telephone Line



0602 252113

SPECIAL OFFER
C64 DATASETTE UNIT
ONLY £18.50

WORLDWIDE SUPER SPECIAL OFFERS ON COMMODORE SOFTWARE

COMPILATIONS	COMPILATIONS	COMPILATIONS	COMPILATIONS	COMPILATIONS	COMPILATIONS
Fists "N" Thrillies Cass Disk 9.25 11.50	Game Set & Match II Cass Disk 9.25 13.50	Ocean In Crowd Compilation Cass Disk 11.20 13.50	Frank Brunos Big Box Cass Disk 9.25 11.99	Konami Arcade Collection Cass Disk 7.25 13.99	
Sports World 88 Cass Disk 7.99 11.99	Magnificent Seven Cass Disk 7.99 13.99	We Are The Champions Cass Disk 7.99 13.99	Gold Silver Bronze Cass Disk 11.99 13.99	Konami Coin Ops Cass Disk 7.99 11.99	
Supreme Challenge Cass Disk 9.99 13.50	Taito Coin Op Hits Cass Disk 9.99 13.50	Giants Compilation Cass Disk 9.99 11.99	Leaderboard Collection Cass Disk 11.99 14.90	Solid Gold Cass Disk 7.99 11.99	

EDUCATIONAL EDUCATIONAL EDUCATIONAL EDUCATIONAL EDUCATIONAL EDUCATIONAL
LARGE VARIETY OF EDUCATIONAL SOFTWARE NOW AVAILABLE FOR 3 TO 15 YEAR OLDS - SEND SAE FOR CATALOGUE BY RETURN
FAST DELIVERY OF ALL STOCK ITEMS BY 1ST CLASS MAIL IN UK. CREDIT CARD ACCOUNTS DEBITED ONLY ON DESPATCH SPECIAL OVERSEAS BY AIRMAIL WORLDWIDE
COMPUTER CONTROLLED DESPATCH ENSURES FAST DELIVERY ON ALL STOCK ITEMS
NEW RELEASES DESPATCHED ON DAY OF RELEASE
CREDIT CARD ORDER TELEPHONE 0896 57004 CREDIT CARD ORDER TELEPHONE 0602 252113

WORLDWIDE SUPER SPECIAL OFFERS ON COMMODORE SOFTWARE

AMIGA SOFTWARE	C64/128 SOFTWARE	CASS DISK	C64/128 SOFTWARE	CASS DISK	AMIGA SOFTWARE
3D Pool.....14.35	3D Pool.....7.25 9.00		Leaderboard Fam Courses II.....4.99 6.99		Legend Of The Sword.....16.45
4th and Inches.....14.95	1943 Battle Of Midway.....7.99 11.99		Leaderboard Collection.....11.99 14.99		Leisure Suit Larry.....13.25
Afterburner.....17.95	4X4 Off Road Racing.....7.99 11.99		Led Storm.....7.99 11.99		Lombard RAC Rally.....16.45
Alien Legion.....17.95	F14 Tomcat.....11.20 14.95		Menace.....9.75		Lord Of The Rising Sun.....22.95
Baal.....14.95	F16 Combat Pilot.....7.99 11.99		Mini Golf.....7.25 11.20		Microprose Soccer.....17.95
Barbarian II.....13.25	Afterburner.....9.99 11.99		Mini Office II.....12.75 14.95		Milenium 2.2.....17.95
Batman.....16.45	Arcade Muscle.....6.99 9.50		Motor Massacre.....7.99 11.99		Mini Golf.....13.25
Battleship 1942.....19.95	Artura.....6.99 11.99		Navcom 6.....7.25 9.99		Motor Massacre.....14.35
Black Tiger.....17.95	Barbarian II.....6.99 9.99		Neuromancer.....7.25 9.99		Neuromancer.....18.95
Blasteroids.....13.25	Batman.....6.99 10.50		Night Hunter.....7.99 11.99		Operation Neptune.....17.95
Butcher Hill.....14.35	Black Tiger.....7.99 11.99		Night Raider.....7.99 11.99		Operation Wolf.....16.45
California Games.....17.95	Blasteroids.....7.25 11.20		Operation Wolf.....6.50 10.50		Pacmarina.....13.25
Captain Fizz.....11.20	Bombuzal.....6.99 9.45		Operation Neptune.....7.25 11.20		Pioneer Plague.....16.45
Carrier Command.....16.45	Butcher Hill.....7.99 11.99		Pools Of Radiance.....17.95		Pools Of Radiance.....17.95
Colossus Chess X.....17.95	Colossus Chess 4.....7.99 11.99		Project Firestart.....7.25 12.99		Purple Saturn Day.....16.45
Cosmic Pirate.....17.95	Corruption.....14.95		Project Stealth Fighter.....11.20 14.95		R-Type.....17.95
Crazy Cars II.....17.95	Cosmic Pirate.....7.99 11.99		Purple Saturn Day.....7.25 11.20		Robocop.....16.45
Custodian.....14.95	DNA Warrior.....7.25 11.20		R-Type.....7.99 11.99		Rocket Ranger.....21.95
Cyberoid II.....14.95	Dark Fusion.....7.99 11.99		Rambo II.....6.99 10.50		Savage.....14.95
D.N.A Warrior.....14.35	Deathlord.....12.99		Red Storm Rising.....11.20 14.95		Shoot Em Up Const Set.....16.45
Denaris.....19.95	Denaris.....7.99 12.99		Robocop.....6.99 10.50		Silent Service.....17.95
Double Dragon.....16.45	Dragon Ninja.....6.99 10.50		Rocket Ranger.....14.95		Speedball.....16.45
Dragon Ninja.....16.45	Dynamic Duo.....7.25 9.99		Savage.....6.99 10.50		Starglider II.....16.45
Dragon Scape.....14.95	Emlyn Hughes Int Soccer.....7.25 11.20		Silent Service.....7.25 11.20		Super Hang On.....17.95
Dragon Slayer.....24.95	Final Frontier.....9.99 14.99		Skateball.....7.99 11.99		Sword Of Sodom.....17.95
Dream Zone.....17.95	Firezone.....9.99 14.99		Storm Lord.....7.99 11.99		Techno Cop.....14.35
Elite.....16.45	Fish.....11.20 12.20		Techno Cop.....7.99 11.99		Teenage Queen.....14.95
F.O.F.T.....24.95	Flight Ace.....11.20 12.20		The Deep.....7.99 11.99		The Deep.....17.95
F16 Falcon.....20.95	Flight Simulator II.....19.95 28.95		Thunderblade.....7.99 11.99		The Knight.....21.95
Fish.....16.45	Football Director.....6.55		Tiger Road.....7.99 11.99		Thunderblade.....17.95
Flight Simulator II.....28.95	Football Manager II.....6.99 10.50		Times Of Lore.....7.25 11.20		Tiger Road.....14.35
Football Director II.....13.25	Game Set & Match II.....9.00 13.50		Titan.....7.25 11.20		Times Of Lore.....17.95
Gauntlet II.....17.95	Games Winter Edition.....7.99 11.99		Tracksuit Manager.....7.25		Titan.....17.95
Guerilla War.....16.45	Gary Lineker Hot shot.....7.99 11.99		Tyger Tyger.....7.25 9.45		Track Suit Manager.....13.25
H.K.M.....17.95	Grand Prix Circuit.....7.99 11.99		Ultima I or III or IV.....14.95		TV Sports Football.....21.95
Heroes Of The Lance.....17.95	Guerilla War.....6.99 10.50		Ultima V.....19.95		Ultimate Golf.....16.45
Hostages.....16.45	Gunsling.....11.20 14.95		Ultimate Golf.....7.99 11.99		Universal Military Sim.....17.95
Hybris.....17.95	H.K.M.....7.99 11.99		War In Middle Earth.....7.25 14.99		Verminator.....16.45
Incredible Shrink Sphere.....17.95	Hawkeye.....6.99 9.45		Warlocks Quest.....7.25 11.20		Victory Road.....14.95
Interceptor.....17.95	Heroes Of The Lance.....19.99 24.99		Wec Le Mans.....6.99 10.50		Wanted.....14.35
International Karate.....17.95	History In The Making.....7.25 11.20		Weird Dreams.....11.20 14.95		War In Middle Earth.....17.95
Joan Of Arc.....17.95	Incred Shrink Sphere.....11.20 12.20		Western Europe Scenery Disk.....14.95		Wec Le Mans.....16.45
Kennedy Approach.....17.95	Ingrid Back.....9.99 15.99		Xenon.....7.25 11.20		Weird Dreams.....16.45
Kenny Daglish Manager.....14.95	Iron Lord.....6.99 10.50		Zak Mcracken.....11.99		Zak Mcracken.....17.95
Laser Squad.....17.95	Kennedy Approach.....6.55				
Last Duel.....14.95	Laser Squad.....9.75 11.20				
Leaderboard Birdie.....17.95	Last Ninja II.....9.75 11.20				
Led Storm.....14.35					
PERIPHERALS	JOYSTICKS		JOYSTICKS		JOYSTICKS
Azimuth C64 Tape Head Align Kit.....8.99	Cheetah 125 Plus.....6.99		Comp Pro 5000 Clear.....13.95		Speedwing With Autofire.....11.99
C64 Dust Cover.....4.99	Cheetah Mach 1.....10.95		Comp Pro 5000 Extra.....10.95		Ram Delta.....7.99
Action Reply MK V Professional.....33.99	Comp Pro 5000.....12.95		Speedking.....10.99		Cruiser.....8.99

BLANK DISKS

3.5" DS/DD With Labels Only £9.95 Per Ten
5.25" DS/DD Disk With Labels Only £4.99 Per Ten
All prices include Post and Packing in UK.
Please make Cheques and Postal Orders Payable to
WORLDWIDE SOFTWARE

SAME DAY DESPATCH WHERE POSSIBLE

BLANK DISKS

**WE ACCEPT
EXPRESS
VOUCHERS**

ALL OFFERS AND PRICES SUBJECT TO CHANGE E & OE

Viruses

How safe are you? Despite frequent shock-horror stories in the press, viruses are not the computer equivalent of biological viruses they are made out to be. Jerry Glenwright cuts through the hype and gives you a healthy dose of common-sense...

You're cataloguing some files using a utility your friend gave you. Suddenly you think you see a character in the top left hand corner of your monitor break into small pieces and crash to the bottom of the screen. Must buy one of those anti-glare screen covers, you think to yourself, put it down to eye strain and carry on. Within minutes, it's happening again. Gradually all the graphical display 'breaks' into tiny pieces and falls to the bottom of the screen, and your computer locks up. When you start up your computer again, all your data has gone. Wiped clean. Irretrievably.

Nowadays, the above can be an all-too-familiar scenario. Hardly a week goes by, without the popular press reporting some new disaster from the computing world, involving that most deadly of the enemies of computing: the virus.

'Large corporations the world over are living at the edge of total collapse as the insidious fragment of code burrows its way into their computer systems, destroying everything in its path. This fatal fragment of fury, unleashed from within the depths of some demented hacker's perverse and twisted mind, threatens AIDS-like to destroy...' Could this potential for dramatic journalistic treatment be part of the reason for the incredible publicity given to viruses during the last six months?

As with any item of popular news, there is a modicum of truth. The computer virus does exist (though in 18 months in the computer industry, I've never seen one). It does replicate itself, writing these replicants to your disks, until one day some condition is met and you are made aware of its presence. But it is not nearly as widespread or dangerous as the tabloid press would have us believe. It is relatively easy for the novice as well as the more experienced hacker to get rid of, and several steps can be taken to insure against its appearance in the first place. If you own a machine like a PCW, CPC, Spectrum or C64, you are extremely unlikely ever to encounter a virus - it's the ST and Amiga owners and the PC and Mac users that should be on their guard.

The virus is just a computer program: the cousin of the program that corrects your spelling and allows you to process words and play games. The difference with this program is that it is written with the express intention of doing something unexpected or damaging to your system. It takes several forms, and its results can vary from the relatively innocuous (such as a silly message or changing the colour of your screen), to the trashing of your hard disk, with the consequent loss of all your data (although even in these extreme circumstances you may still be able to retrieve vital files).

Who writes viruses? Some started as jokes and do harmless things like scatter slugs over the screen which move over it, leaving a slimy trail. Others were originally devices to stop pirate copying: one example has been the 'Brain' virus which originated in Pakistan and has spread to America. It started as a harmless messaging routine but some hackers have altered its makeup so that different 'strains' of the same routine have been

reported to trash hard disks.

Sacked computer programmers have been known to write viruses to get back at their former employers, and many viruses now are being written for fun as a nasty kind of computer vandalism. Rumours have been circulating of a virus writing kit available in West Germany to help prospective vandals, as reported in Express (issue 14).

What boots it

Consisting of just a few tens of bytes of code, the virus is a very small program which is hidden away on a disk: as difficult to find as one sentence in a book. On almost every disk, there exist areas needed by your disk operating system, to access and use the information which is stored on the disk. For example, the boot sectors, which contain a machine code program which loads the software stored on the disk into the correct memory addresses of your computer, and start its operation. These sectors are read every time the machine is booted. Then there are areas such as the file allocation tables, telling the disk operating system how big your files are, their names, and their whereabouts on the disk.

```
A:\>edlin netboot.bat
New file
*li
1:*echo off
2:*cls
3:*prompt $p$g
4:*net3
5:login tecnet
6:*
```

```
*****
***** Something Wonderful Has Happened *****
***          Your computer is alive          ***
**                                **
***          All your disks are infected      ***
*****
```

• A virus at work on the PC

Day in the Life of...a Virus

Eric is a keen home computer buff. Each evening he is to be found at his machine, computing the home accounts and logging-on to bulletin-boards.

During a typical session on-line to his favourite bulletin board, Eric notices a filing utility, which appears to be just the thing he needs, in order to organise his growing collection of files on floppy disk. He downloads the utility from the board, but, because of the late hour, he decides to wait until he goes to work the following day before trying it out...

9:00:00	Eric arrives at his office.	
9:03:00	Eric boots his machine into the office PC network, and logs in.	10:05:00
9:04:00	Eric inserts the disk containing the new utility into his machine.	10:30:10
9:04:35	The utility is up and running, but, unknown to Eric, so is the virus he unwittingly downloaded with it the night before.	10:33:10
9:05:50:45	Eric inserts the first disk to be sorted into his machine.	10:45:25
9:05:50:48	The virus examines the boot sectors of the new disk to determine whether or not it has already copied itself to that disk.	10:45:25:08
9:05:50:49	Discovering that the disk is free from infection, the virus writes an exact replica of itself to the disk.	11:05:00
9:07:50:49.5	Eric carries out a disk directory listing of the disk, completely unaware that a	11:05:00:08

fraction of a second earlier, it was being examined by the virus.	
Eric has completed the sorting and filing of eight disks, each one now infected by the virus.	
Eric joins his friend Rita for coffee.	
Eric informs Rita of the wonderful new utility. He tells her that it will solve all of her disk filing problems.	
Back at Eric's machine, Rita makes a copy of the utility, so that she may use it at home.	
The virus infects Rita's disk.	
Ron, overhearing the conversation between Eric and Rita, decides to take a copy for himself.	
The virus infects Ron's disk.	
Ron has infected eleven of his own disks, with the virus ridden copy of the utility which he took from Eric.	
Ron discovers a disk which he missed during his filing operation. He inserts this disk into his machine.	
The virus infects the new disk and in so doing, completes its life cycle of the infection of twenty disks.	
The virus announces itself and begins the systematic destruction of the host system, starting off by wiping clean all the customer data on the company's network hard-drive...	

It is very easy for the would-be virus programmer to add (or 'patch') an extra few bytes of code into one of these areas. This then acts as a pointer (the computer equivalent of an 'Advance to May-fair' card) to the virus routine stored elsewhere on the disk, which loads itself into the memory of the computer. Once this task is completed, control can be returned to the operating system. These operations take a very small amount of time, perhaps a few tenths of a second, and so your suspicions are not aroused.

Once the virus program is resident in the memory, it will sit in the background waiting for you to insert another disk in the drive. It then checks the relevant areas of the disk, to see if a replica of itself already exists. If not it writes out an exact copy of itself, infecting the new disk. Soon, all your disks will be infected. Then, at some predetermined event or time (when five copies have been made and the virus has safely propagated itself, or when the date reaches Friday the 13th for example) you will be made rudely aware that you are a victim of computer virus.

And that's it. No magic, no sinister happenings; just a small piece of software doing what it's been programmed to do. Once in the computer, the virus does not stay there forever. It cannot remain in the memory of your computer once the power supply has been removed. It cannot infect other disks by keeping them together in the same box, and it isn't transmitted via the air or human fingers!

You must, however, be aware that it can infect your disks! Don't think that it can't happen to you, because unless you take precautions to ensure that it doesn't get to your software, it will. And although it is perfectly possible to eradicate a virus from infected disks, better that you don't have to try.

Technobabble

Boot sector

The instructions on disk telling the computer how to start up when you switch it on; how to load the operating system and so on. The process of booting up is like getting dressed in the morning: what you take on then is with you for the rest of the day. Boot sectors are a favourite hang out for viruses.

Bulletin Board

Computer which can be accessed by people to download software from: they can be anything from hobbyists' private computers to large companies' information servers.

Downloading

Copying a program or other file from

someone else's computer onto yours via a cable or phone link.

PD (Public Domain) Software

Software free of copyright which may be copied and given away freely. A notoriously popular breeding ground for viruses.

Trojan (Horse)

A program that looks useful - a utility or game - which actually contains a virus and is a sneaky way of getting it into your system.

Vaccine

Program or group of programs that provides some kind of protection against computer viruses, or detects their presence enabling you to trash the offending

disks (and use the back-up copies you took instead).

Virus

Malicious program which causes damage to your data or does something unexpected when a predetermined condition is met and propagates by copying itself to other disks.

Worm

Malicious program that moves through your computer (inserting garbage in your text files perhaps). It doesn't usually copy itself to other disks as a virus does but just 'worms' its way through your system, so is found in networked systems rather than individual micros.

Viruses

Practise safe hex

The cardinal rule is to write-protect all floppy disks whenever possible. A virus cannot write a copy of itself to a write-protected floppy disk. The simple application of the write-protect tab is enough to stop even the most terrible virus in its tracks. Make a back-up copy of all unprotected software and use the copies. Be very careful when you buy or otherwise receive public domain software; it is the single largest method of transmission for the virus. You will be unlikely to find a virus contained within commercial software. The software houses are very careful to combat something which may rob them of their trade, although this is not to say that it doesn't happen. If you

purchase your public domain software from a reputable supplier, then they may be using some method of checking the disks, and they will usually advertise this fact.

Bulletin boards, because of their inherently interactive role, are prime targets for the distribution of the computer virus. Be very careful when using any utilities or games that you download during a session on-line. Often, the virus may be disguised as a patch to cure a bug in some other piece of PD software. If you're using the software and haven't encountered the bug, then don't use the patch: what purports to be a cure may, once used, need a cure itself. Try to limit the amount of disks you swap with your friends. Although you take extra care with your disks, they may not.

If you want to examine disks more closely for the presence of a virus, then use a sector editor. These are programs which allow you to make a more detailed inspection of just what is on a suspect disk. Turn on the ASCII dump function and search through all the files on the disk, for messages such as 'Something wonderful has happened', 'Now trashing hard disk', etc. You may not be able to see where the virus code starts and where it ends, but at least you know that this disc is probably infected, and can revert to your backup.

You can also use the sector editor to examine the system areas for extra bytes as described earlier. You must exercise caution when making this kind of search, as a mistake may lead to your software being rendered unusable.

Hooray it's the vacs

How about a vaccine? These are utilities which will track down and 'kill' any virus which may be lurking on your disks. By examining the bootstrap loader code and file allocation areas, they are able to identify rogue code. They will then prompt you as to whether they should hand over control to the software on the disk, or delete the suspect code and 'cure' the disk. They are available from the public domain, as well as commercially, for most formats.

Finally, if after taking all precautions, you find yourself a victim of the dreaded virus, then make like a hitch-hiker: Don't Panic. Turn off your computer and wait for several seconds before switching back on. Examine the offending disk. Do files still exist? If so, are they legitimate files? If the disk is a copy, compare the files with those of the original. Do the byte sizes of the files correspond? If not, then they may have been changed by the virus, and it may be wise not to use these files again (unless you can examine them with a sector editor and recognise rogue bytes). If the byte sizes of the files do correspond, then copy these files to another disk, and format the corrupted disk. If files have been deleted, you may still be able to retrieve them using one of the many 'un-delete' utilities available. If the disk is completely corrupted, then at least you were using a copy and still have the original, don't you?

Remember: the home or small business user is far more likely to be the victim of media hype than virus corruption.

Desk	Analyzer	Archiver	Editor
TRACK 01	SECTOR ID	TRK:001	SEC:001
SIZE:0512	SIDE:0	CRC:good	DF:yes
001	002	003	004
005	006	007	008
009	010	XXX	XXX
011	012	013	014
015	016	017	018
019	020	021	022
023	024	025	026
027	028	029	030
031	032	033	034
035	036	037	038
039	040	041	042
043	044	045	046
047	048	049	050
051	052	053	054
055	056	057	058
059	060	061	062
063	064	065	066
067	068	069	070
071	072	073	074
075	076	077	078
079	080	081	082
083	084	085	086
087	088	089	090
091	092	093	094
095	096	097	098
099	100	101	102
103	104	105	106
107	108	109	110
111	112	113	114
115	116	117	118
119	120	121	122
123	124	125	126
127	128	129	130
131	132	133	134
135	136	137	138
139	140	141	142
143	144	145	146
147	148	149	150
151	152	153	154
155	156	157	158
159	160	161	162
163	164	165	166
167	168	169	170
171	172	173	174
175	176	177	178
179	180	181	182
183	184	185	186
187	188	189	190
191	192	193	194
195	196	197	198
199	200	201	202
203	204	205	206
207	208	209	210
211	212	213	214
215	216	217	218
219	220	221	222
223	224	225	226
227	228	229	230
231	232	233	234
235	236	237	238
239	240	241	242
243	244	245	246
247	248	249	250
251	252	253	254
255	256	257	258
259	260	261	262
263	264	265	266
267	268	269	270
271	272	273	274
275	276	277	278
279	280	281	282
283	284	285	286
287	288	289	290
291	292	293	294
295	296	297	298
299	300	301	302
303	304	305	306
307	308	309	310
311	312	313	314
315	316	317	318
319	320	321	322
323	324	325	326
327	328	329	330
331	332	333	334
335	336	337	338
339	340	341	342
343	344	345	346
347	348	349	350
351	352	353	354
355	356	357	358
359	360	361	362
363	364	365	366
367	368	369	370
371	372	373	374
375	376	377	378
379	380	381	382
383	384	385	386
387	388	389	390
391	392	393	394
395	396	397	398
399	400	401	402
403	404	405	406
407	408	409	410
411	412	413	414
415	416	417	418
419	420	421	422
423	424	425	426
427	428	429	430
431	432	433	434
435	436	437	438
439	440	441	442
443	444	445	446
447	448	449	450
451	452	453	454
455	456	457	458
459	460	461	462
463	464	465	466
467	468	469	470
471	472	473	474
475	476	477	478
479	480	481	482
483	484	485	486
487	488	489	490
491	492	493	494
495	496	497	498
499	500	501	502
503	504	505	506
507	508	509	510
511	512	513	514
515	516	517	518
519	520	521	522
523	524	525	526
527	528	529	530
531	532	533	534
535	536	537	538
539	540	541	542
543	544	545	546
547	548	549	550
551	552	553	554
555	556	557	558
559	560	561	562
563	564	565	566
567	568	569	570
571	572	573	574
575	576	577	578
579	580	581	582
583	584	585	586
587	588	589	590
591	592	593	594
595	596	597	598
599	600	601	602
603	604	605	606
607	608	609	610
611	612	613	614
615	616	617	618
619	620	621	622
623	624	625	626
627	628	629	630
631	632	633	634
635	636	637	638
639	640	641	642
643	644	645	646
647	648	649	650
651	652	653	654
655	656	657	658
659	660	661	662
663	664	665	666
667	668	669	670
671	672	673	674
675	676	677	678
679	680	681	682
683	684	685	686
687	688	689	690
691	692	693	694
695	696	697	698
699	700	701	702
703	704	705	706
707	708	709	710
711	712	713	714
715	716	717	718
719	720	721	722
723	724	725	726
727	728	729	730
731	732	733	734
735	736	737	738
739	740	741	742
743	744	745	746
747	748	749	750
751	752	753	754
755	756	757	758
759	760	761	762
763	764	765	766
767	768	769	770
771	772	773	774
775	776	777	778
779	780	781	782
783	784	785	786
787	788	789	790
791	792	793	794
795	796	797	798
799	800	801	802
803	804	805	806
807	808	809	810
811	812	813	814
815	816	817	818
819	820	821	822
823	824	825	826
827	828	829	830
831	832	833	834
835	836	837	838
839	840	841	842
843	844	845	846
847	848	849	850
851	852	853	854
855	856	857	858
859	860	861	862
863	864	865	866
867	868	869	870
871	872	873	874
875	876	877	878
879	880	881	882
883	884	885	886
887	888	889	890
891	892	893	894
895	896	897	898
899	900	901	902
903	904	905	906
907	908	909	910
911	912	913	914
915	916	917	918
919	920	921	922
923	924	925	926
927	928	929	930
931	932	933	934
935	936	937	938
939	940	941	942
943	944	945	946
947	948	949	950
951	952	953	954
955	956	957	958
959	960	961	962
963	964	965	966
967	968	969	970
971	972	973	974
975	976	977	978
979	980	981	982
983	984	985	986
987	988	989	990
991	992	993	994
995	996	997	998
999	1000	1001	1002

• Viruses can often be spotted in the middle of a program by text messages like this that display on

The World of Viruses

Though many hundreds of viruses have been written, many of them whimsical and harmless (one early example in a mainframe printed 'Happy Birthday Ludwig' on screen on Beethoven's birthday) a few are more destructive. Here are a few examples of the sort of thing you may find yourself up against.

The '1813' virus

A virus supposed to have spread widely around PCs in the City, taking its name from the fact that it was 1813 bytes long. It was set to 'go off' on Friday 13th, wiping clean all disks and hard disks on any computer using a disk infected with it on that date. Despite widespread publicity only six cases of it doing so were reported.

The 'PLO' virus

This caused the computer it was on, in the Hebrew University in Jerusalem, to slow down to one fifth of its speed. It was caught before it could achieve its pur-

pose of destroying all the files on the computer on Friday, May 13th 1988 - the 40th anniversary of the last day Palestine existed as an independent country. The perpetrator was never found but its nature led it to be dubbed the 'PLO' virus.

SEX.EXE

A Trojan Horse American PD program which let you watch pornography on screen, but whose main purpose was to infect your PC with a virus which corrupted your disk after replicating itself to others.

Byte Bandit

An Amiga virus. After a random amount of time it blanks the screen. The screen is recoverable by pressing the left ALT key, the left Amiga key, the space bar, the right Amiga key and the right ALT key, in that order. (The virus emerged recently on certain versions of the game 'Wizball' but versions bought now should be OK).

As Easy As...

What does a virus really look like? How does it replicate itself, and write these replicas to your disks? This routine, sneaked into a normal program disk somewhere, will copy itself to all disks used on your machine and will burst into life, wiping the hard disk, when it has parented twenty offspring, or when it's Christmas Day (whichever is the sooner).

The virus begins by initialising two control variables, which it uses to determine whether or not it's time to 'wake up'. If neither of these two conditions have been met, then it will check each disk inserted into your drive, writing replicas of itself to those which are not already infected.

Prospective hackers should note that it's written in a language which is plausible but nonexistent so cannot be used or adapted to make a real virus!

Main routine:

```
Var drive_num; copy_count; THE_DATE;THE_COUNT;
THE_DATE:=25.12.89;
THE_COUNT:=20
if sysdate=THE_DATE then
  sub screw_system;
end
copy_count:=0
drive_num:=1
```

Drive test:

```
if drive_num>0 then
  go disk_test;
else
  sub to_sleep;
drive_num:=1
```

Disk test:

```
Var disk_in_drive; already_infected;
Var bootsec_byte_cnt;actual_byte_cnt;
bootsec_byte_cnt:=normal boot sector byte size;
already_infected:=0
disk_in_drive:=examine(drive_num(relevant memory loca-
tion))
if disk_in_drive=0 then
  if examine(more_drives(mem locn))-drive_num then
    drive_num:=drive_num+1;
    go disk_test;
  else
    drive_num:=0;
    go drive_test;
else
  actual_byte_cnt:=val(examine(disk boot sectors))
  already_infected:=mod(bootsec_byte_cnt/actual_byte_cnt)
  if already_infected then
    copy_count:=copy_count+1;
    if copy_count=THE_COUNT then
      sub screw_system;
      end;
    else
      drive_num:=drive_num+1;
      go disk_test;
    else
      sub infect;
      drive_num:=drive_num+1
      go disk_test
```

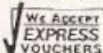

18 • NEW COMPUTER EXPRESS • 18 MARCH 1989

SHAREWARE ADVANTAGE

TRIED & TESTED SOFTWARE - JUST £3 A DISC

SPECIAL! ZORTECH CHECK IT!
* VIRUS EARLY WARNING SYSTEM £39.95

- Our Prices Include VAT & First Class Postage.
- Your Order Will Be Processed Within 24 Hours.
- We Give A Refund If You Are Not Satisfied.



WORD PROCESSING.

- PC-Write Quicksoft's Multi-function Word Processor.
- PC-Type+ Powerful WP, Fast Spelling Checker, Undo, On-line Help. 3 Discs. Documentation on Disc 4.
- Sail Text editor with windowed multi-file mode.
- Galaxy New version of this popular easy to use WP with pull-down menus and spelling checker. 2 Discs.
- Mindreader Brown Bags unique learning WP which can speed up your typing and reduce errors.
- PC-Outline Popular brain storming, idea processor.
- Spelling Checker with updateable directory.
- PC Stylist Analyse your writing for style and readability.
- Typewriter Emulator For those quick messages, addresses etc.

SPREADSHEETS & DATABASES

- PC-CALC+ Multi-feature spreadsheet 52 col, 618 row. 3 Discs.
- As-Easy-As Spreadsheet which is 123 compatible.
- Qubecalc A novel 3-dimensional spreadsheet.
- PC-File+ V2 Popular Database with mailmerge. 3 Discs.
- PC-File+ dBase power at shareware prices. HD 3 Discs.
- 3X5 Card Index simulates the manual system (limited sort).
- Dream Multi-feature relational database system for custom design applications. 3 Discs.
- Wampum Powerful implementation of dBase III language. HD 2 Discs.

HOME AND BUSINESS FINANCE

- Freeway Cashbook UK home accounts & budget. 2 Discs.
- 100 Backs Comprehensive home accounts & budget. 2 Discs.
- Home Inventory/Home Insurance with report generator.
- Home Loan Calculate interest, repayments reports.
- Freeway Accounts Plus Popular UK Package complete with Purchase, Sales & Nominal Ledgers. 3 Discs.
- Freeway Payroll Latest up-to-date version. 3 Discs.
- Mr Bill Customer billing and tracking. 2 Discs.
- Time & Money Financial tracking with cash projection.

BUSINESS APPLICATIONS

- Business Graphics Line, Bar Graphs, Pie Charts. 2 Discs.
- 100 Standard Business Letters to use and adapt.
- EZ Forms standard forms to edit and use.
- Stock Control System Powerful aid to any business.
- Automated Planning Useful suite of planning aids.
- Project Management Critical Path Analysis, Gantt Charts.
- The Front Office Sales Tracking system. 2 Discs.
- Esie Expert System Shell: Artificial Intelligence.
- PC-Mail Mailing list system and label printer. 2 Discs.
- Pro-Comm Menu-driven communications. 2 Discs.
- PC-Dial Buttonware communications program.
- STD Codes in Numerical order with corresponding exchanges.
- Desk Commando User definable menu, DOS shell, Text Editor, Scientific Calculator, Calendar, Appointments Diary.
- PC-Deskteam Handy calculator, notepad, diary, DOS access.
- Homebase Shareware Sidekick, Calculator, WP, Database, Calendar, Notepad, Communications, DOS access. 3 Discs.

PROGRAMMING

- Basic Interpreter Write and run standard GWBASIC, BASICA.
- Pascal Compiler A good introduction to Pascal.
- Mystic Pascal compiler and editor.
- Modula-2 Compiler fully operational compiler, editor, linker and on-disc manual. 2 Discs.
- Prolog The language for Artificial Intelligence.
- JEM Version of LOGO - ideal for teaching programming.
- XLISP New version of the Artificial Intelligence Language.
- Laxon Perry Forth Assembler, editor and decompiler. 2 Discs.
- Chasm Machine code assembler for the 8086 with Primer.
- A86 D86 Powerful 8086 Assembler with debugger. 2 Discs.
- Basic Tutor Introductory tutorial on BASIC.
- Window Boss Produce windows with Turbo C etc.
- Pseudosam Z80 Cross Assembler (others available).
- C Tools Useful collection of C source code. 2 Discs.
- Turbo Pascal Tools Collection of source code. 4 Discs.
- Tutorials each a 2-Disc set: C TUTOR * TURBO C TUTOR * PASCAL TUTOR * TURBO PASCAL TUTOR * MODULA-2 TUTOR

WHY ARE THE PRICES SO LOW?

ADVANTAGE only offer shareware which is fully operational and has been tested on PC compatibles including all Amstrad PC's and portables. Advantage supply comprehensive pre-sales advice and information on the programs.

Prices are low because you pay just for the administration and distribution costs, plus pre-sales support from Advantage. No payment for the software is included. You can use the programs freely but if you find them useful you are requested to make a payment direct to the author. In return you can expect printed manual and post-sales support. If you are unsure about the programs that you require or would like more information about our computer and training services, give us a call and we will be glad to help you.

ADVANTAGE - by post - (NCE) 56 BATH ROAD
CHELTENHAM, GL53 7HJ

- by telephone - 0242 224340 or
0242 224848

Prices include VAT and First Class postage in EC countries. Non-EC please add £3 per order.
We accept sterling cheques, Eurocheques.
Postal Orders. Access or Visa

EDUCATIONAL

- PC-Tutor Well-presented course on computers & DOS.
- Helpdoss All you need to know about DOS.
- Fasttype Popular multi-option PC typing course.
- Amanda's Letters Lotto (Age 2-4) Teaches keyboard and letter recognition and co-ordination.
- ABC Funkeys (Age 2-5) Colourful way to learn letters.
- Amy's First Primer (Age 3-6) Six games teaching basic letter and arithmetic skills.
- Children's Games (Age 5-8) Five educational games:- Alphabet, Animals, Clockgame, Hangman and Mosaic.
- Educational Selection (Age 6-10) Hangman (word guessing), Funnels and Buckets, (arithmetic), Polyglot (word matching) and Children's Word Processor.
- Word Games Opposites, Word Find, Jobs, Synonyms, Odd Word Out, Categories, Comparisons, Plurals, Verbs (Age 6-Adult)
- Phrase Craze Learn word and phrase skills (Age 7-12).
- Wiz Quiz (Age 6-12) Quiz-based maths tutorial.
- Maths Tutor (6-Adult) Covers basic to advanced maths.
- Statistics Over 20 stat analysis functions. 3 Discs.
- GCSE Physics Revision Novel way to learn Physics.
- GCSE Computer Science Revision Novel way to learn.
- Calculus Tutorial Teach yourself Calculus.
- Nightsky The latest version of the computer planetarium.
- Test & Train Build your own training program.
- Foreign languages each on a single disc: * FRENCH TUTOR * GERMAN TUTOR * ITALIAN TUTOR * SPANISH TUTOR.

D.I.Y. COMPUTING

- Power Menu Brown Bag's easy to use hard disc menu system.
- Auto Menu Design your own menu for your hard disc.
- DBS KAT Cataloguing system for hard disc.
- LD A selection of many different printer fonts to enhance your WP text. Memory resident.
- Fontastic Introduction to DTP with font editor. 2 Discs.
- Essential Utilities Over 40 of the best available.
- Text Processing Utilities Printer Control, Spooler, Print Sideways Tally Word Counter, Filters, Fogfinder, Lister.
- Baker's Dozen Thirteen useful programs from Buttonware.
- Disk Commando Norton utilities at Shareware prices.
- Ultra Utilities "Disk Doctor" with unerase & sector editor.
- Master Key Powerful sector and file editor for hard disc.
- Packdisc Eliminates file fragmentation, economise & speed up your hard disc system.
- Archive System Save up to half your backup discs.
- Hypershell Menu text presentation and management system.
- Signsmith Create your own posters and letter head.

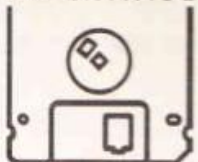
SPECIAL INTEREST

- Family History One of the best shareware genealogy programs with documentation and examples. 2 Discs.
- Family Ties Easy to use Menu-driven Genealogy program.
- Astrol-95 Plot astrological charts and horoscopes.
- VCR Database for cataloguing videos, LP's etc.
- Recipe System Database offers many useful recipes.
- PC Sport League table generator.
- Jog Log Monitor and track your performance.
- World Extensive gazetteer of places in the World.
- Crossword Creator all you need to create your own puzzles.
- Crossword Solver and anagram generator with dictionary.
- Gifts Ideas Generator Ideal at Birthdays and Anniversaries.
- Composer Create, play & save tunes using on-screen stave.
- Pianoman Turn your PC keyboard into a musical one.
- Bible Quiz Quiz game based on the Holy Bible.
- The Entire King James Bible - 11 Disc Set!

GRAPHICS

- PC Key Draw The latest version of this amazing shareware Desk Top Publisher and scale drawing system. 3 Discs.
- PC Key-Draw Picture & Font Library and Utilities.
- Fingerpaint Painting program runs on MSDOS not GEM.
- Flo-Draw text and graphics editor. 2 Discs.
- Danced Accurate 3D frame drawing and animation. 2 Discs.
- Image-3D creates amazing 3 dimensional drawings on CGA/EGA.
- EGA Pinups A selection of saucy hi-resolution pictures.

ADVANTAGE



- COMPUTERS
 - SOFTWARE
 - TRAINING
 - SUPPORT
- Come and visit our showrooms

5 1/4" Discs Only £3 Each

3 1/2" Discs Only £4 Each

PROGRAMS FOR PLEASURE

- Star Trek II The next generation - up to date new version.
- Star Trek The original classic game.
- Pinball Wizard A choice of five different pintables.
- Pinball Fanatic Five more different pintables.
- PC Jokes Practical jokes for the unsuspecting PC user.
- Get Lucky Adult Trivial Quiz and strip poker games.
- Adult Humour Large collection of rather rude jokes.
- Wheel Of Misfortune Based on the TV word-guessing game.
- Opus-1 Extensive general knowledge quiz.
- Trivia Quiz Many questions. 5 categories. 2 Discs.
- Trek Trivia Fascinating quiz based on the famous TV series.
- Music Trivia Quiz based on musical questions.
- Game Of Life Fascinating presentation of Conway's game.
- War Game of strategy. Takes hours rather than days.
- Empire & Prince Life-cycle survival strategy games.
- Simulations each on a single disc: American Football * Baseball * Basketball * Rocket Launcher/Lander * Railroad.

BOARD & CARD GAMES

- Scrabble Good implementation of the board game.
- Sleuth Exciting murder mystery solving game.
- Word Domination The classic game of risk and strategy.
- Chess & Checkers Good quality full screen graphic versions.
- Chinese Checkers Unusual 6-sided version of draughts.
- Mahjong and Solitaire (Patience) (need CGA).
- Poker, Canasta and Heart 3 classic card games.
- Gin Rummy & Ultima-2 Two card game simulations.
- Blackjack & Pontoon - Pontoon is memory resident.
- Two Bridges Two versions of the card game.
- Quimbee (Yahtzee) and Five. Two diced-based games.

ADVENTURE GAMES

- Golden Wombat Of Destiny Intriguing and unusual adventure.
- Hack (Amulet Of Yendor) Extensive role-playing adventure.
- Dungeons & Dragons Fantasy role-playing adventure.
- Colossal Cave Adventure The one that started it.
- Cave Quest Sent to Earth to seek fame and fortune.
- Supernova Complex game set in deep space.
- Intercept & Mutant Invasion Two Sci-fi adventures.
- Dark Continent & Nebula Two games by same author.
- Adventureware Five separate adventures on different themes.
- New York Adventure & Braminar You set the gameplay.
- Buttonware Adventures Two educational games.
- Jacaranda Jim Offbeat and amusing UK adventure.
- Adult Adventure The text and graphics are rather graphic.

GAMES COMPENDIUMS

Each disc contains a selection of quality machine code games featuring graphics and sound. Keyboard and joystick play.

- Classic Games - Space Invaders, Pacman, Pacgirl, Ribit, Breakout, Donkey Kong Q-Bert, Jumping Joe.
- Fun & Games - Pango, Baby, Elevator, Centipede, Pyramid, Dragons, Pac, Lazy Monday.
- Come In Peace - Striker, Paratrooper, Round 42, Sopwith, Landmine.
- Space Warriors - Quantoids, Rescue Flightmare, Kamakaze, Space Wars.
- Keep Them Amused - Burger Blaster, Grime, Racer, Ninja, Caverns and Galaxy.
- Face The Action Batalia, Tank, Moonbase, Blort II, Gemini.
- Block & Tackle Nemon, Qix, Konix, Blockade, Daleks, Berzerk.
- Lost Vegas - One Arm Bandit, Roulette, Backgammon, Wheel Of Fortune, and Biorhythms.
- Skill & Strategy - Sail (Yachting - not 1512) Teed Off (Golf) Stock Exchange, Big Rig (trucking simulation).
- Wit Your Pits Brainstorm, Battleships, Word Puzzle, Rogue.
- Mazing Games - Polymaze, Amaze, 3-Demon, Castle, Chase.
- PC Challenge - Chess, Otello, Entrap, PC Golf, Air Traffic.
- Junior Challenge - 3D Tic-Tac-Toe, Dotto, Willy The Worm, Labbits & Voldrons, Draughts.
- More Games A selection of 16 games for non-CGA PC. 2 Discs.
- The EGA Collection Mahjong, Risk, Breakout, Wheel Of Fortune specially for EGA computers. 2 Discs.
- Spy Catcher, Master Spy, Raiders, Hostages, Brimstone, Mad Scientist.

Join the Advantage Independent Computer User Group and buy your shareware discs for just £2 each (3 1/2" £3 each)

Annual Membership is £15 (EC Countries)
£18 (Non-EC)

Athene Consultants (Media Centre)

16 Stoke Road, Gosport, Hants. PO12 1JB

Tel: 0705 511439 (Office Hours)

0705 511648 (24 Hours)

Fax: 0705 511646

* Same Day Despatch* Stock items

* CREDIT CARDS WELCOME*

* Access & Visa*



THE LOWEST PRICES IN THE UK GUARANTEED. CALL FOR QUANTITY DISCOUNTS

3.5" DS/DD 135TPI Standard Bulk

At 86p
Lifetime Warranty
High Clip (KAO/Maxell)

97p

Minimum Qty 10
Order in units of 10

5.25" DS/DD 48tpi High Quality Bulk

High Clip
Lifetime Warranty
For IBM PC 360k

37p

Minimum Qty 25
Order in Units of 25

5.25" DS/QD 96tpi High Quality Bulk

High Clip
Lifetime Warranty

45p

Minimum Qty 25
Order in Units of 25

5.25" HD AT 96tpi High Quality Bulk

High Clip
Lifetime Warranty
For IBM AT 1.2 Mb

£1.13 inclusive

Minimum Qty 25
Order in Units of 25

DISKS

Prices per Pack of 10

DYSAN

5.25" AT Only £15.00
5.25" DS/QD 96tpi £11.50
5.25" DS/DD 48tpi £9.10
3.5" DS/DD 135tpi £16.50
3.5" DS/HD £47.50

Branded Disks
at
Low Prices

3M

5.25" AT Only £19.00
5.25" DS/QD 96tpi £16.50
5.25" DS/DD 48tpi £8.00
3.5" DS/DD 135tpi £18.50
3.5" DS/HD £45.50

DISKS

SONY

3.5" DS/HD £45.00
3.5" DS/DD £15.00

SPECIAL OFFER ****

5.25" DS/HD Branded Verbatim only £16.00 while stocks last
3.5" DS/DD Branded Verbatim only £13.00 while stocks last
Amiga 500 Systems from £379



STAR COMPUTER PRINTERS

Registered Dealer, Official UK versions only

LC10	£199.00 (inclusive)
LC10 Colour	£259.00 (inclusive)
LC 24/10	£310.00 (inclusive)
NB 24/10	£425.00 (inclusive)
Star NX15	£320.00 (inclusive)
Star NB 24/15	£510.00 (inclusive)
Star LP8 Laser Only	£1600.00 (inclusive)
Panasonic Laser	£1840.00 (inclusive)
Citizen 120D (Commodore)	£139.00 (inclusive)

Price includes delivery & VAT



AMIGA HARDWARE

AMIGA A500	£389.00 (inclusive) + FREE Software
AMIGA A500 1MEG	£528.00 (inclusive) + FREE Dragon's Lair
1084 S Stereo Monitor	£279.00 (inclusive)

A2000 MACHINES, PLEASE CALL FOR PRICING

"APD Unlimited! Now part of Athene PD. Full Range of Amiga PD from £2.50 a disk
Special Offer: Starter Collection of 4 PD Demo disks. Latest releases £6.50
inclusive. Ever growing library, please send S.A.E. for Catalogue

We also Supply Verbatim, Fuji, Xidex, Maxell, Nashua
The Full STAR Printer Range at Low Prices

Disk Storage Systems

DATA CARTRIDGES - RIBBONS - PAPER - TONER CARTRIDGES - CABLES

3.5"

10	3.5" Disk Box	£1.30
40	3.5" Disk Box	£6.00*
100	3.5" Disk Box	£10.00*
28	3" Disk Box	£6.00*

5.25"

10	5.25" Disk Box	£1.30
50	5.25" Disk Box	£7.00*
100	5.25" Disk Box	£9.00*
140	5.25" Disk Box	£11.00*

* Lockable

Full Range of Printer Ribbons for EPSON, STAR, AMSTRAD etc.

PC HARDWARE

AMSTRAD

EFI

SAMSUNG

OPUS

**PLEASE CALL FOR THE
BEST QUOTES**

All Orders £1 Delivery Charge
All Prices Include VAT
Courier Next Day Delivery £5.75

You only have to task

If you've met an Amiga owner they'll impress you by saying how their machine can multi-task.

But what exactly is this multi-tasking business everyone keeps talking about?

Peter Worlock explains everything, strictly one thing at a time...

There comes a time in every computer user's life - recompiling a program, sorting a large database, printing a 60-page document - when you think there has to be a better way of working. You sit there, drinking coffee, or doodling pictures of PCs with axes through them, or simply staring in disbelief while your machine chunters away.

Of course, it is accomplishing something... but you're doing nothing.

The obvious solution is to find some way of forcing the computer to do more than one thing at a time. In fact, the technique has been in use for years on mini and mainframe computers and is known as multitasking. But as the personal computer has become more powerful, multitasking is increasingly an option for individuals using small machines.

Though to call multitasking one technique is inaccurate, because there are several different ways of achieving similar ends. Each has benefits and drawbacks.

Pop-up utilities

The normal mode of operation for most personal computers is to run one program at a time. But this can present problems since few of us work that way: we constantly switch between a number of minor tasks, looking up an address when writing a letter, or making quick use of a calculator, or jotting notes while engaged in other applications.

But making those kinds of changes in traditional software usually takes more time and trouble than it's worth. You have to quit your current application, probably switch disks, load up the second program then quit that, swap disks and reload the original software.

The first solution was the use of desktop accessories, pop-up programs, or TSRs - three different names for the same technique. Desktop accessories are usually found in windowing operating systems like those on the Macintosh, ST and Amiga. TSR stands for Terminate and Stay Resident and describes the method of creating desktop accessories on MS-DOS systems.

Both kinds of programs are also called pop-ups, simply because they pop up over another application.

Pop-ups are almost always the small-but-useful programs like notepads, calculators and address

books, but have been extended to encompass fully-fledged word processors and spreadsheets.

So if you're working in a word processor and need a calculator you can call one up from a menu (if you're running a windowing system) or by a special "hotkey" sequence (if you're in MS-DOS). The pop-up appears in a small window over the main application, then vanishes once you're finished with it.

Task switching

Eventually it occurred to several software publishers that if it was possible to temporarily switch from a major application to a minor one, why not provide a way to switch between two major programs.

There are now a number of utilities that provide this facility: the Macintosh has Switcher, the ST has Nissoft's Twister, and MS-DOS boasts several programs. Even humble 8-bit micros like the Amstrad PCW are getting in on the act. (The Amiga doesn't need this facility, as we'll see.)

There are two ways of achieving this end. Both depend on a small program that acts as

supervisor in the system, and both allow you to load two or more programs into memory. Where they differ is in the handling of the separate programs.

One method is to segment the available memory, turning a single computer into as many virtual machines as necessary. The second way is load only the core parts of each program while everything else remains on disk.

The advantage of the first method is that switching between applications is almost instantaneous, whereas the second requires that the current program is almost entirely saved to disk before the second application gains control of the computer. Even with a fast hard disk there are noticeable delays using this method.

Multitasking

In the case of both pop-up programs, and switchers, the computer isn't really multitasking - it isn't actually doing more than one thing at a time. Whenever you switch from one application to another, the former goes into hibernation until you return to it.

For many purposes this is an adequate solution, but there are tasks where it would be useful to have the computer carry on with the first task

while you turn your attention to a second. This is true multitasking.

Computers offering this facility include the Amiga, and PCs, Macintoshes and others running a multitasking operating system such as OS/2, Windows/366, Desqview, Multifinder or Unix, to name but a few.

In one sense, multitasking is a straightforward development of the switcher: the computer switches between the tasks in cyclical fashion and at regular and very brief intervals. Apple took this route when it developed Switcher into the multitasking Multifinder.

Within this simple view of multitasking there is room for one or two variations. The first is known as simple time-slicing and awards a fixed portion of the processor's time to each task. However, different parts of a program will obviously fail to fit this simple division of labour since certain instructions take longer to execute than others. It would be inefficient to have the processor break off a task and return to it later if the task could easily be completed in a few more microseconds.

To overcome this drawback, the processor



• Multitasking is the ability to perform two or more operations simultaneously

moves between tasks in a cycle, but awards time to each task in a more logical fashion. This allows a processor-intensive program, like maths calculation, more time than a program which spends most of its time waiting for input from the keyboard.

A third approach to multitasking makes no attempt at fairness. This makes use of interrupts and priorities. As the processor executes the first

Spool the other one

The specific case of speeding up printing operations has a cheaper solution than a multitasking operating system: the humble print spooler.

The spooler is a small program which works in conjunction with a chunk of memory. Since the slow-down in print operations arises from the fact that the computer can transmit information faster than the printer can receive it, the answer is simply to stuff the information into a temporary store – the memory.

This allows the computer to carry on with other tasks. Meanwhile, the spooler program sends the data to the printer at a rate the printer can handle.

The cheapest solution is to buy a software spooler

which makes use of the computer's own memory. However, this does take memory away from other applications, which could be a crucial drawback.

Better, but more expensive, is the hardware spooler – a black box that sits between the computer and printer. A secondary advantage of the hardware spooler is that it will provide far more memory – typically 64K to 256K – than you could afford to take from the computer.

Prices start at around £75 for a 64K buffer.

Software spoolers range from around £30 for commercial products, to nothing at all for public domain programs.

tasks before the human operator is ready to move on to other things. The tasks mentioned at the beginning of this article – compiling large programs, sorting large databases, and printing documents – are the exceptions.

So while multitasking can improve the efficiency of your computer, it can only do so in certain circumstances, namely those in which it is the computer that is slowing things down and not you.

Moreover, multitasking is expensive in terms of hardware. You need a fast computer – otherwise each task executes excruciatingly slowly – and lots of memory. Although the Amiga 500 is a true multitasking computer, you'll find it difficult to use with the standard 512K of RAM since that is barely sufficient for a single program, let alone three or four.

So for most users, a combination of task switching and pre-emptive programs will prove more valuable – and more economical – than a true multitasking environment. ●

program it watches for interrupts from others. When an interrupt occurs, the processor checks the priority of the interrupting program and if it has higher priority than the currently executing application, ditches the current task and switches to the second.

If the interrupting program has a lower priority the processor ignores it until the current program gives it sufficient time to answer the demand.

The opposite of this method, called pre-emptive multitasking, is cooperative multitasking where high-priority programs must specifically allow the processor to attend to other tasks. In this case poorly written software can hog the processor, as well as other system resources like memory, the stack, device drivers and so on, so that the computer is never allowed to multitask.

Will it work for you?

So much for the theory. In practice multitasking is a grand illusion: it should be obvious that when you have a single computer with a single processor it can only do one thing at a time. The key is that the computer can execute millions of instructions every second, so by doing a few

instructions from one program, then a few from another, and so on, it appears to us humans as though several things are happening simultaneously.

In its crudest form, any computer is capable of multitasking and most do. Whenever you encounter a computer – whether a Sinclair Spectrum or a 386 PC – playing a jaunty tune while alien spaceships sweep Earthwards, you're hearing and seeing multitasking in action. In fact, there is far more multitasking in the average game than in the average business application.

The obvious question is why that should be so. If multitasking is so powerful, why is it so little used?

The answer lies in that speed difference between humans and computers. The computer can complete most



• The Amiga 500: A multitasking micro

A SELECTION OF TITLES FROM PRENTICE HALL

MASTERING FORTH

Revised & Expanded Second Edition

MARTIN TRACY

& ADVANCED MICROMOTION

The most complete beginner's tutorial on the Forth programming language available. The book covers the commands required in FORTH-83 Standard, the programming dialect popular in the Forth Interest Group Hacker Community, and MasterForth, an advanced dialect developed by the author and used by professionals and scholars.

1989 300 pages 13-559957-1 £17.95 Paperback

THINKING FORTH

LEO BRODIE

This instructive guide illustrates the 'elegant logic' behind FORTH and shows you how to apply specific problem-solving tools to software, regardless of your programming situation.

1986 224 pages 13-917568-7 £14.75 Paperback

THE BIBLE... STARTING FORTH

Second Edition

LEO BRODIE

A revision of the bestselling introduction to the Forth programming language. An engaging volume which provides a thorough beginner's tutorial on the Forth programming language and operating system. The Second Edition conforms to the Forth-83 Standard.

1987 304 pages 13-843079-9 £20.95 Paperback

FORTH:

A Text and Reference

MAHLON KELLY & NICHOLAS SPIES
Turning readers into accomplished Forth programmers, this book provides a compendium of tools and techniques as well as complete coverage of the words and functions of the language.

1986 224 pages 13-326331-2 £20.85 Paperback

occam 2 Reference Manual

INMOS Limited

A definitive document on the occam 2 programming language. Written by experienced occam programmers at INMOS Ltd, where the language was developed, the manual provides full coverage of how the language may be applied.

1988 144 pages 13-629312-3 £15.95 Paperback

occam Programming Manual

INMOS Limited

"... clearly written, informative and well produced... outstanding as a programming manual."

MICROPROCESSORS & MICROSYSTEMS

1985 100 pages 13-629296-8 £15.95 Paperback

occam and occam2 are registered trademarks of the INMOS group of companies.

Programming in occam 2

Geraint Jones & Michael Goldsmith

A complete introduction to the language and to parallel programming. Jones and Goldsmith introduce occam-2, illustrating the way the language can be used and use a large number of examples which demonstrate the application of parallel programming strategies to real problems.

1988 318 pages 13-730334-3 £15.95 Paperback

Programming in occam

Geraint Jones & Michael Goldsmith

"... a readable and sound treatise on how to think and program concurrently." THE TIMES HIGHER EDUCATION SUPPLEMENT

1987 192 pages 13-729773-4 £15.95 Paperback

Prices are correct at the time of going to press but may be subject to change.

These titles are all in the Prentice Hall International Series in Computer Science, edited by C.A.R. Hoare. For more information on these or other titles in the series, please write to Jean Walmsley, at the address below, for our latest catalogue.



PRENTICE HALL

66 Wood Lane End, Hemel Hempstead, Hertfordshire, HP2 4RG, England.
SIMON & SCHUSTER INTERNATIONAL GROUP





HOMESoft (UK)

Software and Hardware



ALMOST PROBABLY THE CHEAPEST MAIL ORDER/RETAILER IN EUROPE

AMIGA 500 PACK 1 WITH MODULATOR AND ART PACKAGE ONLY £360.00	AMIGA 500 PACK 2 WITH MODULATOR & ART PACKAGE + WORKBENCH v1.3 ONLY £370.00	AMIGA 500 PACK 3 WITH MODULATOR & ART PACKAGE + FIVE GAMES ONLY £379.00	AMIGA 500 PACK 4 WITH MODULATOR & ART PACKAGE + TEN GAMES ONLY £389.00	INCLUDES CHEETAH 125+ STICK HEAD CLEANING DISK 4 PLAYER ADAPTER DELUXE MOUSE MAT MOUSE BRACKET 10 DS/DD BLANK DISKS CLEAR LIBRARY CASE SPEEDBALL GAME	1MB DRIVES ST OR AMIGA ONLY £95.00
AMIGA 500 PACK 5 WITH MODULATOR & ART PACKAGE PLUS PERIPHERAL PACK ONLY £399.00	AMIGA 500 PACK 6 PHILIPS CM8833 MED RES MONITOR GAMES STARTER PK WITH MODULATOR ONLY £585.00	AMIGA 500 PACK 7 COMMODORE 1084s MED RES MONITOR GAMES STARTER PK WITH MODULATOR ONLY £615.00	AMIGA 500 PACK 8 WITH MODULATOR & ART PACKAGE PLUS MPS-1230 PRINTER ONLY £499.00	PHILIPS CM8833 MEDIUM RESOLUTION STEREO MONITOR ONLY £235.00	COMMODORE 1084s MEDIUM RESOLUTION STEREO MONITOR ONLY £255.00
				COMMODORE A501 500K EXPANSION UNIT WITH BUILT IN CLOCK ONLY £130.00	WATCH THIS SPACE! PC ENGINE COMING SOON!!

MON-FRI 9AM-6PM
SAT 9AM-4PM
CALLERS WELCOME

ACCESS/VISA
CARD HOTLINE
0772-452414

ALL GOODS
DESPATCHED
WITHIN
12 HOURS SUBJECT
TO AVAILABILITY



*Amiga 500 Computers are supplied with Mouse, Workbench Disks, Tutorials

SOFTWARE BARGAINS

THE FOLLOWING SOFTWARE AT:

£4.99 EACH

BETTER DEAD THAN ALIEN
 BACKLASH
 HELLBENT
 ATAX
 FINAL ASSAULT
 SPITTING IMAGE
 WIZARD WARZ
 LEADERBOARD - BIRDIE
 WINTER OLYMPIAD
 INTERNATIONAL SOCCER
 QUADRALIEN
 STAR GOOSE
 OUTRUN
 SIDE ARMS

AMIGA A500 ONLY

BUY ANY 5 OF THE ABOVE
TITLES AND GET A FREE!!

MOUSE MAT

WHILE STOCKS LAST

ALL AMIGA 500 MACHINES AND MODULATORS TO
BE SOLD SEPARATELY AS OF 31st MARCH 1989 ALL
BUNDLED SOFTWARE OFFERS END PRICE INCREASE
EFFECTIVE AS OF 1st APRIL 1989 BEAT THE RUSH
BUY NOW WHILE STOCKS LAST!!

All prices include VAT and Postage. Hardware Included.

Europe Add £2.00 per item

Express next day courier
service available.

UNIT 13
 CENTURION WAY INDUSTRIAL ESTATE
 LEYLAND
 PRESTON
 LANCASHIRE
 PR5 2GU

TELEPHONE: 0772 452414 - Sales
0772 455685 - Advertising

16 Bit Software	AMIGA	ATARI	16 Bit Software	AMIGA	ATARI	16 Bit Software	AMIGA	ATARI
1943 Battle of Midway	15.90	15.90	Kennedy Approach	14.70	14.70	Vindicators	11.70	11.70
4 x 4 Off Road Racing	13.90	13.90	Kristal	17.70	17.70	Victory Road	14.70	14.70
Afterburner	14.70	11.70	Land of Legends	17.70	17.70	Way of the L. Dragon	9.70	9.70
Amiga Gold Hits	13.90	---	Last Duel	10.99	10.99	World Dreams	14.70	14.70
Arcade Force Four	---	16.80	Lancelot	11.70	11.70	Western Europe Scenery	12.70	12.70
Action Service	11.70	11.70	LED Storm	13.90	13.90	WorldClass Leaderboard	13.90	13.90
Baal	---	13.90	Lombard RAC Rally	14.70	14.70	Who Framed Roger Rabbit	14.50	---
Ballistics	11.70	11.70	Manhattan Dealers	14.70	14.70	XR35	6.80	6.80
Balance of Power 1990	14.70	14.70	Menace (Dracoma)	11.70	11.70	Zany Golf	16.80	16.80
Battlechess	16.80	---	Mini Golf	13.90	13.90	Zoon	11.70	---
Batman	14.70	11.70	Microprose Soccer	14.70	14.70	Zak McKracken	15.90	15.90
Battlehawks 1942	14.70	14.70	Millennium 2.2	11.70	11.70	Advanced Ski Simulation	14.70	11.70
Blastoids	14.70	11.70	Motor Massacre	13.90	13.90	Advanced Rugby Sim.	11.70	11.70
Bombuzal	14.70	14.70	Murders	11.70	11.70	Burndian	17.70	17.70
Butcher Hill	13.90	13.90	Nebulus	13.90	13.90	Black Tiger	16.80	13.90
California Games	12.90	---	NetherWorld	13.90	13.90	Cosmic Pirate	11.70	11.70
Captain Blood	14.70	14.70	Nineteen Part One	11.70	11.70	Crack It (Digger)	11.70	11.70
Captain Fizz	9.70	9.70	Outrun	13.90	13.90	Dragonscape	11.70	13.70
Crazy Cars II	14.70	14.70	Outrun Europa	10.99	10.99	Hybris	17.70	17.70
Cyrodion	13.90	13.90	Overlander	14.70	11.70	I Ladarius	14.70	11.70
Cybermind	13.90	13.90	Pacmania	11.50	11.50	Joe Shrimking Sphere	14.70	11.70
Dark Fusion	13.90	13.90	Pioneer Plague	14.70	---	Papillon's Icu	16.80	16.80
Double Dragon	11.70	11.70	Pools of Radiance	15.90	15.90	Siam Trooper	14.70	13.70
Dragon's Lair (Imb)	29.50	---	President is Missing	14.70	14.70	Scorpion	14.70	14.70
Dream Zone	14.70	14.70	Prison	11.70	11.70	Trained Assassin	14.70	14.70
Dungeon Master	---	14.70	Project D backup tool	29.50	---	Wec Le Mans	14.70	11.70
Dungeon Master (Imb)	15.50	---	Purple Saturn Day	14.70	14.70			
Dragon Ninja	14.70	12.70	Rambo III	14.70	11.70			
E. Weaver Baseball	13.90	---	Return of the Jedi	11.70	11.70			
Elite	14.70	14.70	Renegade III	14.70	11.70			
Empire Strikes Back	11.70	11.70	Rocket Ranger	17.50	14.50			
Exxonage	11.70	11.70	RoadBlazers	16.80	10.80			
F-16 Fighter Pilot	14.70	14.70	Robocop	14.70	11.70			
Five Star Compilation	---	14.70	8-Type	11.70	11.70			
Falcon (F16)	17.50	14.50	Scenery Disk no 7	12.70	12.70			
Fantavision	29.00	---	Scenery Disk no 11	12.70	12.70			
Final Assault	13.90	13.90	SDI (Activision)	11.70	11.70			
Flight Simulator II	23.90	23.90	Sidarms	15.70	15.70			
Flying Shark	14.70	14.70	Skrull	14.70	14.70			
FOJET	17.70	17.70	Shoot 'em Up Con. Kit	14.70	14.70			
Frigh Night	11.70	11.70	Star Wars	11.70	11.70			
Goldberg's Domain	11.70	11.70	Starglider II	14.70	14.70			
Galactic Conqueror	14.70	14.70	Speedball	14.50	14.50			
Games - Summer Edition	13.90	13.90	Sword of Sodor	17.70	---			
Games - Winter Edition	13.90	13.90	STOS	---	19.90			
Ghosts n Goblins	13.90	13.90	STAC	---	29.90			
Hotter Skillet	9.70	9.70	Sundog - Frozen Legacy	---	8.90			
Homes of the Lance	15.90	15.90	Super Hang-On	14.70	11.70			
HRM	10.99	10.99	Three Stooges	17.70	17.70			
Intestines	14.70	14.70	Trial	17.70	17.70			
International Karate +	14.70	11.70	Tiger Road	13.90	13.90			
International Soccer	11.70	11.70	Techno Cop	13.90	13.90			
Iron Lord	16.80	16.80	TV Sports Football	17.50	---			
Japan Scenery Disk	12.70	12.70	ThunderBlade	14.90	12.90			
Interceptor F/A 18	16.50	---	Turbo Cup	11.70	11.70			
Joe	23.90	23.90	Ultimate Golf	13.90	13.90			
Joe of Arc	12.70	12.70	U.M.S.	14.70	14.70			
			Virus	11.70	11.70			

PERIPHERALS

Competition Pro Extra	Joystick	11.50
Competition Pro 5000	Joystick	11.35
Cheetah Mach 1+	Joystick	9.50
Cheetah 125+	Joystick	6.80
Cheetah Starfighter	Joystick	11.50
Konix Speedking	Joystick	9.70
Quickshot 2+	Joystick	6.99
Quickshot 2 Turbo	Joystick	10.55
Magnon	Joystick	9.30
Konix Navigator	Joystick	12.50
Konix Speedking	+ Autofire	10.20
Suncom Economy	Joystick	4.99
3.5" DS/DD Disks Per 10		9.50
3.5" DS/DD Disks Per 50		47.00
3.5" DS/DD Disks Per 10 in case		10.50
100 Capacity 3.5" Storage Box		6.95
100 Capacity 5.25" Storage Box	4.50	
(While stocks last)		
100 Cap. 3.5" Posso Storage Box	14.99	
3.5" Head Cleaning Disk	2.50	
Twin Joystick Extension Lead	4.50	
Quality Mouse Mats	4.50	

WE ACCEPT
EXPRESS
VOUCHERS

FOR NEW RELEASES AND ITEMS NOT LISTED
PLEASE PHONE US TODAY.
NEW TITLES WILL BE DESPATCHED ON
CONFIRMED DATE OF RELEASE.

GOODS SUBJECT TO AVAILABILITY AND
CHANGE WITHOUT PRIOR NOTICE
OFFER ENDS 31st JULY 1989.

HOMESoft (UK) CARES FOR ITS CUSTOMERS



CLUB 68000

LARGEST ATARI ST CLUB IN EUROPE

DO YOU OWN AN ATARI ST COMPUTER

For everyone who owns one of these computers, CLUB 68000 offers members software, hardware and accessories at huge savings off recommended retail prices! Each item has been carefully chosen to offer the best value and quality.

HERE'S WHAT YOU GET:

When you join you will receive a free disk with a games compendium, and a free catalogue every 3 months.

PROFESSIONAL SOFTWARE

	R.R.P.	MEMBER		R.R.P.	MEMBER		R.R.P.	MEMBER
1st Word Plus	79.95	55.95	Home Account	39.95	27.95	Pascal 2	89.95	62.95
Aegis Animator	79.95	59.95	Juggler II	39.95	27.95	Power Basic	49.95	34.95
C Breeze Editor	24.95	17.95	KComm II	49.95	34.95	Protext Filer	29.95	20.95
Campus Draft	79.95	55.00	K Data	49.95	34.95	Protext Office	29.95	20.95
Degas Elite	24.95	17.45	K Expert	79.95	55.95	Quantum Paint Pro	34.99	24.95
DTP Timeworks	99.95	69.95	K Gadget	29.95	21.95	SkyPlot	69.95	49.95
Digicalc	39.95	27.95	K Graph II	49.95	34.95	Superbase Personal II	99.95	69.95
DevPac II	59.95	41.95	K Index	19.95	12.95	Superbase Professional	249.00	174.95
Easy Calc/Graph	39.95	24.95	K Ministrel	29.95	21.95	SuperPlan	99.95	69.95
FTL Modula 2	69.95	48.95	K Roget	49.95	34.95	SwiftCalc	79.95	55.95
Fleet Street Publisher	115.00	79.95	K Resource II	39.95	24.95	Sprite Construction Set	24.95	17.45
F.S. Laser Driver	19.95	12.95	K Rikki	19.95	12.95	Tempus	29.95	21.95
F.S. Postscript Driver	19.95	12.95	K Seka	49.95	34.95	Twist	39.95	24.95
Flashback	39.95	27.45	K Spread II	79.95	55.95	Tune Up	29.95	20.95
Fontz	29.95	20.95	K Switch II	29.95	21.95	Turbo ST/Saved	39.95	27.95
Freeze Frame Cartridge	49.95	34.95	K Word II	39.95	24.95	Ten WordProcessor	9.99	6.99
Home Publisher	24.95	17.45	Lattice C 3.04	99.95	69.95	Ten Disk Library	9.99	6.99
Heracles Copy	24.95	14.95	Macro Assembler	49.95	34.95	Ten Disk Utilities	9.99	6.99
HiSoft Basic	79.95	55.95	Mailshot Plus	49.95	34.95	Word Perfect 4.2	228.00	169.95
HiSoft DevPac	59.95	44.95	Partner	49.95	34.95	WordUp	59.95	39.95
			Protext	79.95	55.95			

100 TOP GAMES

	R.R.P.	MEMBER		R.R.P.	MEMBER		R.R.P.	MEMBER
R-Type	19.95	12.95	Zak McKracken	24.95	15.95	Gunship	24.95	15.95
Rambo III	19.95	12.95	Afterburner	24.95	15.95	Great Gianni Sisters	24.95	15.95
Robocop	19.95	12.95	Batman	19.95	12.95	Game Over II	19.95	12.95
Shoot 'em Up Con. Set	24.95	15.95	Bombuzal	19.95	12.95	Garfield	19.95	12.95
Skrul	24.95	15.95	California Games	19.95	12.95	Gauntlet II	19.95	12.95
Star Glider II	24.95	15.95	Captain Fizz	19.95	12.95	Heroes of the Lance	24.95	15.95
SDI	19.95	12.95	Barbarian II	19.95	12.95	Hostages	24.95	15.95
Speedball	24.95	15.95	Captain Blood	19.95	12.95	Hotball	24.95	15.95
Spitting Image	19.95	12.95	Carrier Command	24.95	15.95	International Soccer	24.95	15.95
STAC	39.95	24.95	Colossus Chess 10	24.95	15.95	Impossible Mission II	24.95	15.95
STOS	29.95	19.95	Crazy Cars II	24.95	15.95	Jet	39.95	27.95
StormTrooper	24.95	15.95	Double Dragon	19.95	12.95	Joan of Arc	19.95	12.95
Test Drive	24.95	15.95	Dungeon Master	24.95	15.95	Kristal	29.95	19.95
Times of Lore	24.95	15.95	Down at the Trolls	19.95	12.95	L.E.D. Storm	24.95	15.95
Tiger Road	19.95	12.95	Dragon Ninja	19.95	12.95	Lombard RAC Rally	24.95	15.95
ThunderBlade	19.95	12.95	Elite	24.95	15.95	Mini Golf	19.95	12.95
Triad (3 Games)	29.95	19.95	Flight Simulator II	39.95	27.95	Menace	19.95	12.95
Technocop	19.95	12.95	F. Sim II Scenery Disk	19.95	12.95	Operation Wolf	19.95	12.95
UMS	24.95	15.95	Faloon F16	24.95	15.95	Outrun	19.95	12.95
UMS Scenery Disk 1	14.95	9.95	Fish	24.95	15.95	Operation Neptune	24.95	15.95
UMS Scenery Disk 2	14.95	9.95	Final Assault	19.95	12.95	Purple Satin Day	24.95	15.95
Ultima V	24.95	15.95	Football Director II	19.95	12.95	Paladdin	24.95	15.95
Verminator	24.95	15.95	Fusion	24.95	15.95	Pacmania	19.95	12.95
Volleyball Simulator	19.95	12.95	Fed. of Free Traders	29.95	19.95	Pools of Radiance	24.95	15.95
Who Framed Roger Rabbit	29.95	19.95	F16 Combat Fighter	24.95	15.95	Powerdrome	24.95	15.95
World Tour Golf	24.95	15.95	Five Star (5 Games)	24.95	15.95	Puffy Saga	24.95	15.95
Zoom	29.95	19.95				Psion Chess	24.95	15.95

CLUB 68000 INTRODUCTORY OFFER

Fill out this coupon and return it to CLUB 68000 Ltd. Your only commitment is to pay £10.00 for one year's membership of CLUB 68000. Mail this coupon to CLUB 68000 Ltd., Suite 1, Wickham House, 2 Upper Teddington Road, Hampton Wick, Kingston on Thames, Surrey KT1 4DP

Please send me _____ £ _____ Name _____

_____ £ _____ Address _____

_____ £ _____

Type of Computer _____ Membership £ 10.00 _____

☐ Cheque Enclosed Total _____ Post Code _____

☐ Visa/Access/Mastercard No: _____ Telephone No: _____

☐ Postal Order _____ Date _____

_____ Signature _____

Software: Free Post & Packaging within the UK. Europe £1.00. Overseas £3.00. Hardware: Courier Service £6.00

N.C.E. 1

Will you still need me (when I'm 64)?

Launched back in 1982, the phenomenally successful Commodore 64 is now approaching world wide sales of 10 million units. Rik Haynes tries to answer the C64 million dollar question: how did it do it?

Why is the C64 the most popular micro in the world? Of course the C64's balance between good specification and attractive pricing wooed many a computer buyer. But probably the underlying driving force of the C64's success was Commodore's founder and computer selling guru, Jack Tramiel.

Tramiel had quite a turbulent life before setting up Commodore; he lost all his immediate family to the horrors of the Nazi concentration camp at Auschwitz during the war but he managed to escape to America and start his own typewriter repair company called Commodore. In the 1970s Commodore moved from typewriters to calculators and eventually went on to produce personal computers in the late 70s.

Boom and gloom

The next five years saw Commodore repeat success with even better success as it launched the Pet, the VIC-20 and then the C64 in 1982. With the C64 Commodore seemed to have hit the million jackpot, with a micro capable of so much but at an affordable price.

With the micro industry booming during 1983, the C64 went straight to the top of the sales charts and found a place in computer enthusiasts'

hearts around the world.

Then in January 1984 just as Commodore's sales were at an all-time high, Jack Tramiel resigned as Commodore's chief executive officer and ceased to be a director. In the process, Commodore had not only lost its founding father but also gained a tough competitor, for Tramiel bought Commodore's arch rival Atari from Warner Bros later that year.

As soon as Tramiel left Commodore, a worrying migration of disillusioned executive staff left Commodore, with many of them going on to Atari. This coupled with the general and marked drop in worldwide micro sales started to throw Commodore from profit into loss. To make matters worse, Commodore tried to release a new range of micros that were completely incompatible with the C64.

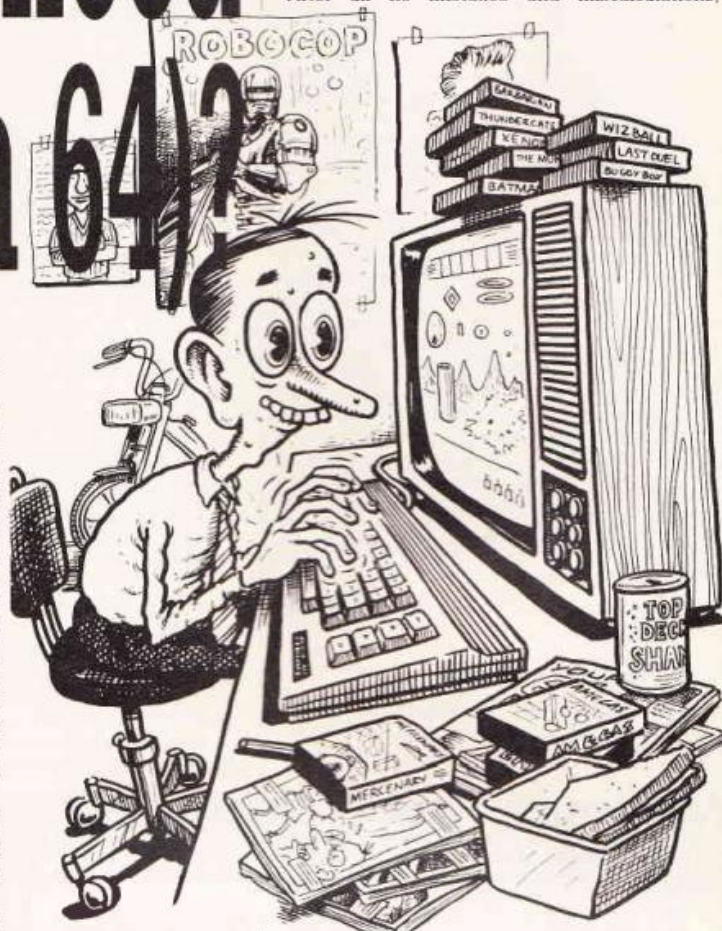
We're alright, Jack

Despite all these setbacks, one constant factor kept Commodore going - the popularity of the C64. Throughout the world, programmers had been lured to the C64 facilities which easily outshone the competition. Software developers took the C64 one step further by producing a string of high quality games which helped

catapult the C64 to new heights of popularity and success.

Through the years the C64 has attracted some impressive, incredible and plain old classic games such as *Armalyte*, *The Last Ninja I and II*, *Delta*, *Wizball*, *Archon*, *Leaderboard*, *Encounter*, *Ghostbusters* and of course the superlative *International Soccer*.

After all its mistakes and miscalculations,



Commodore is firmly back in shape, and looking to replace the C64 with its Amiga. Obviously, Jack Tramiel and his Atari ST is in the running too. But the C64 can still put these two micros straight into last position when you look at its huge software base and loyal following.

The post-micro boom days have seen the humble C64 bundled with a constant variation of goodies to induce the prospective first-time micro buyer to purchase a C64 starter pack.

The current batch of bundles for the C64 are made up of the Commodore Hollywood Box (C64, C2N datacassette unit, joystick and games based on a film/television theme from Ocean and Domark - price £149.99) and the Commodore Home Entertainment Pack (C64, C2N datacassette unit, joystick, bundled games software, Bush

Well I never!

Thirteen accounts of instantly forgettable Commodore and C64 trivia...

- Jack Tramiel resigned from Commodore on Friday the thirteenth... he eventually went on to buy Commodore's arch rival Atari.
- The first title released from US Gold was a C64 game imported from the States called *Beach Head*.
- General Alexander Haig was appointed to Commodore's board of directors in June 1984 - with Commodore chairman Irving Gould commenting, "his experience and reputation will be very helpful to us".
- In January 1985, The IBA (Independent Broadcasting Authority) banned the Commodore C64 TV ads featuring Maureen the Circus Elephant, following

national public pressure from animal lovers and the RSPCA who felt putting a grown Elephant into a giant pair of boxer shorts rather excessive and unnecessary. Surely not?

- Apparently 300,000 C64's were sold in June 1984 alone.
- Commodore funded an experiment in 1983 to aid Virginia Bruster, a supervisor of a Californian safari park, to teach Isaac the chimp to spell using a C64 and some special custom designed programs.
- C64 programming fanatics have found many unofficial bugs in VIC-II and ways of improving the C64's graphics and sound facilities to produce such effects as more than eight sprites, 4 channel sound-effects, full screen display and the illusion of more than 16 colours.
- Commodore gained The Royal Warrant in 1984.
- The Daily Mirror ran a competition with £20,000 of C64 prizes in 1983, which prompted one of its biggest

reader competition responses with over 600,000 entries.

- Commodore announced a shirt advertising deal with first division football team Chelsea, worth 1.25 million to the club, in September 1987. Of course, Chelsea were relegated to the second division at the end of that season.
- Before it closed down, Commodore's plant at Corby reportedly produced 1.3 million C64s.
- Certain industry pundits are suggesting that as many as 35% of C64s sold over the Christmas 1988 period were returned faulty.
- Commodore produced a totally innovative software product for the C64 back in 1982 called *The Home Babysitter* cartridge designed "to keep your youngest child occupied for hours and teaches special learning concepts and relationships". Wow, don't leave home without looking it.

Keep it in the Commodore family

- 1976** PET announced, with 6502 microprocessor, 4K or 8K RAM and built-in green phosphor screen and cassette deck, and a keyboard with calculator-type keys.
- 1977** PET launched at Chicago Consumer Electronics Show in June, price \$795.
- 1980** VIC-20 announced at Chicago CES in June, with 6502 microprocessor, 5K RAM, colour, sound, and compact full size typewriter style keyboard.
- 1981** VIC-20 launched at Las Vegas CES in January, price \$299.95.
- 1982** C64 and Ultimax announced at Las Vegas CES in January. The Ultimax was a cross between a micro and a console with only 2K RAM (unexpandable), same VIC-II and SID graphics and sound chips as C64, and a membrane keyboard - Ultimax was never launched.
- 1982** C64 available for limited sale only in US indie retail outlets in September, price \$595.
- 1982** Just before Christmas, approximately 200 adapted C64s from the States were grey imported into the UK by some dealers.
- 1983** SX-64 launched at Las Vegas CES in January. The SX-64 was a "portable" version of the C64 with built-in colour monitor, single- or dual disk drive capacity and detachable keyboard. The SX-64 probably never took off due to its immense size and weight which made it more of a luggage than a portable.
- 1983** Early 1983 saw the C64 on general release

with a price drop to \$399 and the C64 was officially released in the UK.

- 1983** The micro price wars began in August when Commodore slashed the C64 price from £345 to £229.
- 1984** C16 and Plus/4 announced at Las Vegas CES in January. The Plus/4 had 64K RAM, 6502 compatible processor, new graphics chip, built-in business software and restyled keyboard. While the C16 had the same processor and graphics chip as Plus/4, 16K RAM and slightly modified C64 keyboard. Unfortunately, both micros were incompatible with the C64 and this ultimately caused their downfall.
- 1984** Amiga Computer, Inc demonstrated the state-of-the-art Amiga Lorraine 68000-based micro to a select few at Chicago CES in June.
- 1984** Commodore purchased Amiga Computer, Inc in August.
- 1985** C128 launched at Las Vegas CES in January.
- 1985** Amiga previewed to invited guests only at London PCW Show in September.
- 1985** Commodore confirmed its plan to drop the Plus/4 and C16 micros in September.
- 1986** Amiga publicly seen at Birmingham Which Computer? Show in January.
- 1986** Restyled C64c launched at Chicago CES in June, with new style keyboard and bundled GEOS WIMP operating system.

800, Texas Instruments TI-44 and even Commodore's own C16 and Plus/4.

After all, if any 8-bit micro can seriously compete with the superior 16-bit machines, the C64 - with its attractive pricing and specification, huge software base and loyal user following - must surely be the one with the best fighting chance. Only time will tell... ●

Specs speak louder than words

C64

6510 microprocessor • 64K RAM • 16K ROM • VIC-II (Video Interface Chip) capable of displaying 40x25 text, 320x200 resolution, 16 colours, 8 sprites and hardware facilities for pixel smooth horizontal and vertical scrolling • SID (Sound Interface Device) producing 3 channel mono sound with filter control and triangle, sawtooth, pulse and noise wave generators • Built-in BASIC (V2.0) • Full size typewriter style keyboard suitable for touch typing with 8 programmable function keys • User port, serial port, cartridge port, disk drive and cassette ports, RF/TV output, Composite Video output, and 2 Atari-style game controller ports

C128

3 modes of operation: C64 mode (99.9% compatible with C64), C128 mode and CP/M mode • 8502 microprocessor (6510 compatible) • 280A microprocessor • 128K RAM • 72K ROM • VIC-II and SID custom graphics and sound chips • C128 only video chip displaying 80x25 text and 640x200 resolution • Built-in BASIC (V7.0) and machine code monitor • Full size typewriter style keyboard with numeric keypad, separate cursor and control keys, and 8 programmable function keys • Same range of ports as C64 plus Audio Output/Input ports and Digital RGB Video output

personal stereo and a Yamaha electronic keyboard - price £199.99).

The seven year itch

Now the C64 is seven years old, you may think it's getting too long in the tooth and way past its prime - but you couldn't be more wrong.

Obviously as the 16-bit machines become ever more increasingly popular, they'll take an even larger bite of the micro market - but the C64 is still alive and kicking and this situation looks set to continue way into the 1990's. After all, in its time the C64 has seen and fought off the other 8-bit competition including the Spectrum and CPC - and has totally wiped the floor with the poor Atari

COMPUTER JOBS • COMPUTER JOBS • COMPUTER JOBS • COMPUTER JOBS • COMPUTER JOBS

EXPERIENCED 68000 PROGRAMMERS

Emlyn Hughes International Soccer has just been awarded the accolade **BEST GAME OF THE YEAR** by Commodore Computing. Now we need to put this and other sports simulations onto the Amiga and Atari ST.

We are looking for mature, hard-working, and above all, experienced 68000 Programmers. Your experience need not necessarily have been gained writing games - though you should, of course, have an interest in sports and games. Knowledge of C, 8086/8088 assembler, and the IBM PC would also be useful.

You will be housed either in the Harrow area or in the Southampton area, and if you do not live in one of these areas you should be prepared to relocate. Applicants in the Coventry area may also be considered.

We will pay top salaries to the right people. If you are not capable of earning a substantial five figure salary, please do not apply.

Write to: **NIGEL ALDERTON, SOFTWARE MANAGER, AUDIOGENIC SOFTWARE LTD,**
Winchester House, Canning Road, Harrow HA3 7SJ,
or telephone 01-861 1166 between 10 am and 7 pm.

ARGONAUT SOFTWARE

We are expanding our development team and have vacancies for talented programmers, graphic artists and software musicians with experience on one or more of the Amiga, ST, Mac or IBM computers.

A good knowledge of machine code in either 68000 or 8086 is required. There are also positions for Z80 and 6502 programmers wishing to learn a new language. You will be working in a stimulating environment with a dynamic team of top programmers; on very powerful computer equipment rarely seen in the games industry.

We are the leading creator of 3 dimensional games like the award winning Star Gilder series, and are now working on new exciting game and simulation products to be the hits of 1989 and 1990!

Top Salaries paid according to Experience, Ability and Performance.

Contact Jez San or Richard Clucas at our North London Offices on
Tel: (01) 906 3744, Fax: (01) 959 5052

ACTUAL SCREENSHOTS

A new software label setting new standards in Computer Gaming requires **CODERS** and **GRAPHIC ARTISTS** for the **AMIGA, ATARI ST** and **PC MACHINES**, capable of producing the **BEST** the Medium has to offer.

If you think you've got what it takes, contact
ADRIAN TURNER at
ACTUAL SCREENSHOTS
immediately on
(01) 533 2918

or send C.V.'s and DEMOS to:
UNIT 7D, KING'S YARD, CARPENTERS ROAD,
LONDON, E15 2HD

REPTILIA

Reptilia Design requires programmers to work in house on the Spectrum 48k/128k and Commodore 64. If you think you are talented enough to convert a game from one format to another then write with examples of your work to:

Reptilia Design,
Unit 27, 33 Noble Square,
Basildon, SS13 1LT

For Further Details phone Ian or Mick
between 12pm and 7pm on (0268) 590571



PREMIER MAIL ORDER

TITLE	ATARI STAMIGA	TITLE	ATARI STAMIGA	TITLE	SPECTRUM	CBM 64	AMSTRAD	TITLE	SPECTRUM	CBM 64	AMSTRAD
					Cass	Disc	Cass		Cass	Disc	Cass
Action ST	13.99	Last Duel	14.99	Ace	2.99	2.99	2.99	Mask 2	2.99	2.99	2.99
Adv. Rugby Sim	11.99	Leaderboard Birdie	13.99	Ace 2	2.99	2.99	2.99	Masters of the Universe	2.99	2.95	2.95
Adv. Ski Sim	11.99	LED Storm	13.99	Ace of Aces	2.99	2.99	2.99	Metaplex	2.99	2.99	2.99
Airburner	13.99	Legend of Sword	14.99	Airburner	6.99	10.99	6.99	Metropolis	2.99	2.99	2.99
Airborne Ranger	14.99	Living Daylights	11.99	Airborne Ranger 128	9.99	6.99	10.99	Micro Office 2	9.99	13.95	9.95
Alien Syndrome	11.99	Lombard RAC Rally	14.99	Alien Syndrome	6.99	6.45	9.95	Mini Soccer 2	9.99	13.95	9.95
Amiga Gold Hits 1	16.99	Manhattan Dealer	11.99	Amiga Gold Hits 2	6.99	2.95	2.95	Mini Putt	6.99	10.99	6.95
Arkand Rev. of Doh	11.99	Mania Whittaker	9.99	Archon Collection	6.99	10.99	7.45	Modern Wars	5.99	8.99	6.95
Armalyte	11.99	Masters of Universe	9.99	Archon 2 Revenge	5.50	9.99	6.00	Motor Massacre	5.99	8.99	6.95
Asteroids	7.99	Menace	11.99	Army Moves	3.99	3.95	3.95	Muncher (T Wrecks)	5.99	10.99	7.45
Baal	11.99	Microprose Soccer	14.99	Atlanta	3.99	2.95	6.95	Nemesis The Warlock	2.00	9.99	7.45
Ballyhoo	7.99	Mindshadow	7.99	Bal	2.00	6.95	2.00	Nether World	5.99	12.95	7.45
Bat. of Power 1990	14.99	Missile Command	7.99	Bal Breaker	2.00	6.95	2.00	Neuromancer	5.99	12.95	7.45
Ballistik	11.99	Moontbase	7.99	Barbarian Playhouse	9.99	6.95	6.95	Nigel Mansell GP	6.99	6.95	10.45
Barbarian 2 Pal	11.99	Moon Patrol	7.99	Barbarian 2 Palace	6.99	6.95	9.95	Night Raider	7.50	5.95	10.95
Bards Tale 1	19.99	Nebulus	13.99	Bards Tale 1	6.99	7.45	10.95	Nodes of Yesod	2.00	2.00	7.45
Bards Tale 2	17.99	Netherworld	13.99	Bards Tale 2 or 3	6.99	12.95	6.25	Obliterator	6.99	6.95	9.95
Batman Caped Crusader	11.99	Nigel Mansell	11.99	Batman Caped Crusader	5.99	9.99	6.25	Operation Neptune	5.50	9.99	7.45
Battle Chess	7.99	Night Hunter	13.99	B-Dash Con Kit	3.99	3.95	3.95	Operation Wolf	5.50	9.99	5.95
Battlehawks 1942	16.99	Night Raider	13.99	Best of Beyond	2.95	3.95	3.95	Outrun	5.99	7.45	10.45
Battlezone	7.99	North Star	9.99	Best of Elite Vol 1	3.99	3.95	3.95	Overlord	6.99	6.25	9.95
Bermuda Project	9.99	Oids	11.99	Best of Elite Vol 2	6.95	6.95	2.99	Pacland	5.99	6.25	9.95
Black Tiger	13.99	Operation Neptune	14.99	Blackboard	2.99	7.45	9.95	Pacmania	5.99	6.25	9.95
Blasteroids	13.99	Operation Wolf	11.99	Black Lamp	3.99	6.95	9.95	Pacton vs Rommel	5.99	6.95	9.95
Bombjack	11.99	Outrun	13.99	Black Tiger	6.99	6.95	9.95	Peter Beardsley	5.99	6.95	9.95
Bombzoo	11.99	Outrun Europa	9.99	Blasteroids	6.50	6.45	9.95	PHM Pegasus	6.99	7.45	10.95
Boredom	7.99	Pacland	11.99	Blood Valley	2.99	6.45	9.95	Pirates	9.95	13.95	13.95
Borrowed Time	7.99	Pacmania	11.99	Bombzoo	6.50	2.00	2.95	Pool of Radiance	5.99	19.95	19.95
Bratatus	9.99	Paperboy	11.99	Bouncer	2.00	6.95	9.95	Power at Sea	7.50	7.45	10.95
California Games	16.99	Peter Beardsley	11.99	Suppy Boy	5.99	6.95	9.95	Power Play Hockey	7.50	7.45	10.95
Capone	17.99	Phantom Fighter	13.99	Captain Blood	5.99	6.95	9.95	Predator	7.50	8.95	10.95
Captain Blood	14.99	Pioneer Plague	11.99	Carnier Command	9.99	13.99	9.95	President is Missing	7.50	8.95	10.95
Carrier Command	14.99	Platoon	11.99	Chessmaster 2000	7.50	7.50	10.50	Project Firestart	7.50	10.45	10.45
Chessmaster 2000	16.99	Pool of Radiance	16.99	Chuck Yeager	8.99	10.99	7.50	Pro Soccer (CRL)	6.99	6.95	9.95
Chronoquest	17.99	Populous	16.99	Classic Collection	3.00	3.00	3.00	Pro Soccer Sim	6.50	8.99	6.95
Colossus Chess X	16.99	Powerdrome	17.99	Cornel Game	1.00	1.00	1.00	Purple Saturn Day	6.50	9.99	6.50
Corruption	14.99	Pro Soccer Sim	11.99	Command Performance	8.99	12.99	8.95	Question of Sport	9.99	13.99	9.95
Cosmic Pirate	11.99	Psion Chess	16.99	Crazy Cars 2	6.50	6.50	6.50	Rack Em	6.99	6.95	10.45
Cracked	7.99	Puffy Saga	17.99	Crosscage	4.99	6.50	9.95	Raffles	5.50	6.00	6.50
Crazy Cars 2	11.99	Purple Saturn Day	14.99	Crosscage 2	4.99	6.50	9.95	Rambo 3	5.99	6.45	9.95
Crystal Castles	9.99	Raffles	11.99	Daisy Thompson 88	6.50	6.50	9.95	Realm of Trolls	5.99	7.45	10.95
Daisy Thompson 88	11.99	Rambo 3	11.99	Dandy	5.99	8.99	6.95	Red October	5.99	9.95	13.95
Damocles	11.99	Rambo	16.99	Dark Fusion	5.99	8.99	6.95	Red Storm Rising	5.99	9.95	12.95
Dark Castle	14.99	Reach for Stars	13.99	Dark Side	6.99	9.99	6.95	Renegade 3	5.99	6.50	10.00
Defektor	9.99	Rebels in Dark	11.99	Defektor	6.99	6.99	10.99	Return of Jedi	6.99	6.95	9.95
Degas Elite	17.99	Renegade 3	11.99	Demans	6.99	6.99	10.99	Rex	6.99	7.45	10.45
Deja Vu	11.99	Return of Jedi	11.99	Demans 2	6.50	6.50	10.00	Revs	2.95	4.95	4.95
Demans	11.99	Return to Genesis	11.99	DNA Warrior	6.50	6.50	10.00	Robocop	5.99	6.45	9.95
DNA Warrior	11.99	Road Blasters	13.99	DoonDaks Revenge	2.99	6.95	9.95	Rocket Ranger	5.99	12.99	6.45
Double Dragon	11.99	RoboCop	11.99	Double Dragon	6.50	9.99	6.95	Rock Star	5.99	7.45	10.95
Dragon Ninja	11.99	Rocket Ranger	13.99	Dragon Ninja	6.50	9.99	6.95	Roy of Rovers	6.99	6.95	10.45
Dragon's Lair	29.99	Roger Rabbit	13.99	Dragon's Lair	2.99	2.95	2.95	R-Type	6.99	6.95	10.45
Dungeon Master	14.99	Rolling Thunder	13.99	DragonSlayer	5.95	2.00	3.00	Run the Gauntlet	5.99	6.50	10.00
Eliminator	13.99	R-Type	13.99	Druid	2.00	2.00	2.95	Rygar	2.99	2.99	2.99
Elite	14.99	Running Man	14.99	Drumline Can 2	3.99	7.45	7.45	Samurai Trilogy	4.99	2.95	2.95
Emmanuelle	11.99	Run the Gauntlet	11.99	Drumline	6.50	6.95	9.95	Samurai Warrior	4.99	5.95	9.95
Empire	17.99	Savage	14.99	E.H. Hughes Football	6.99	9.99	6.95	Sanxion	6.50	2.95	2.95
Empire Strikes Back	11.99	Scrabble Deluxe	13.99	Empire	2.95	2.95	2.00	Savage	5.50	6.95	9.95
Esponage	11.99	Sentinel	13.99	Empire 2	6.99	6.95	9.95	S.D.I. (Activision)	7.50	7.45	10.45
Exolon	16.99	S.F. Hammer	14.99	Exolon	6.50	9.99	6.95	Sentinel	2.95	2.95	2.95
4 x 4 Off Road Racing	13.99	Shadowgate	17.99	Exolon 2	6.50	9.99	6.95	Serve & Volley	7.45	10.45	10.45
5 Star ST	14.99	Shoot em up Con. Kit	14.99	Exolon 3	6.50	9.99	6.95	Shockway Rider	2.95	2.95	2.95
F-16 Combat Pilot	16.99	Silent Service	14.99	Exolon 4	6.50	9.99	6.95	Shockway Rider 2	2.95	2.95	2.95
Falcon F16	14.99	Skate or Die	17.99	Exolon 5	6.50	9.99	6.95	Shoot em Up Con. Kit	10.95	14.95	14.95
Fantasy	29.99	Skydive	13.99	Exolon 6	6.50	9.99	6.95	Shoot Out	3.99	3.99	7.45
Fish Basic Disc	31.99	Space Harrier 2	13.99	Exolon 7	6.50	9.99	6.95	Sideway	2.99	2.95	2.95
Flash Basic ROM	62.99	Space Race	14.99	Exolon 8	6.50	9.99	6.95	Silent Service	6.99	6.95	9.95
Flod. of Free Trade	19.99	Space Ranger	14.99	Exolon 9	6.50	9.99	6.95	Skateball	6.99	7.45	10.45
Forman Formula 1	17.99	Starblaster 2	14.99	Exolon 10	6.50	9.99	6.95	Skate or Die	6.99	7.45	10.45
F-15 Strike Eagle	14.99	Stealth Fighter	13.99	Exolon 11	6.50	9.99	6.95	Space Ace	10.50	12.99	10.45
Flut	14.99	Storm Trooper	11.99	Exolon 12	6.50	9.99	6.95	Space Ball	10.50	12.99	10.45
Flight Sim. 2	26.99	Street Fighter	13.99	Exolon 13	6.50	9.99	6.95	Spas Image	6.99	6.95	9.95
Rt Disc 7 or 11	13.99	S.T.O.S.	9.95	Exolon 14	6.50	9.99	6.95	Spy Hunter	2.99	2.99	2.99
Rt Disc European	13.99	Strip Poker 2	9.95	Exolon 15	6.50	9.99	6.95	Spy v Spy Arctic	2.99	2.95	2.95
Rt Disc Japan	13.99	Super Dragon	13.99	Exolon 16	6.50	9.99	6.95	Stalngard	7.50	9.99	9.95
Flying Shark	14.99	Super Hangon	13.99	Exolon 17	6.50	9.99	6.95	Star Wars	6.99	6.95	9.95
Football Director 2	11.99	Superman	14.99	Exolon 18	6.50	9.99	6.95	Stealth Fighter	6.99	9.95	13.95
Football Manager 2	11.99	Sword of Sodan	16.99	Exolon 19	6.50	9.99	6.95	Strip Poker 2	6.50	6.95	9.95
Frank Bruno Boxing	12.99	Tass Times	7.99	Exolon 20	6.50	9.99	6.95	Super Cycle	2.99	2.99	2.99
Freedom	11.99	Teenage Queen	11.99	Exolon 21	6.50	9.99	6.95	Super Dragon Slayer	5.95	7.45	10.95
Fusion	17.99	Test Drive	17.99	Exolon 22	6.50	9.99	6.95	Super Hangon	5.95	6.95	9.95
Galactic Conqueror	14.99	Thunderblade	13.99	Exolon 23	6.50	9.99	6.95	Superman	5.99	6.95	9.95
Galadriel's Domain	11.99	Tiger Road	13.99	Exolon 24	6.50	9.99	6.95	Super Sprint	2.99	2.95	2.95
Game Over 2	13.99	Time & Magic	11.99	Exolon 25	6.50	9.99	6.95	Super Sunday	3.95	3.95	3.95
Garfield	11.99	Times of Lore	14.99	Exolon 26	6.50	9.99	6.95	Supreme Challenge	8.50	8.95	11.95
Garfield Winter	11.99	Titan	14.99	Exolon 27	6.50	9.99	6.95	3D Pool	6.50	6.50	9.00
Ghosts n' Goblins	11.99	Tracers	11.99	Exolon 28	6.50	9.99	6.95	20 Chartbusters	6.99	6.95	6.95
Golden Path	7.99	Trackstar Manager	11.99	Exolon 29	6.50	9.99	6.95	Taipan	3.95	3.95	3.95
Grand Prix Sim. 2	11.99	Trantor	9.99	Exolon 30	6.50	9.99	6.95	Taiko Coin Ops	8.50	8.95	11.95
Green Beret	11.99	Triad	17.99	Exolon 31	6.50	9.99	6.95	Target Renegade	5.50	5.95	9.95
Gryzor	11.99	Triad Pursuits	11.99	Exolon 32	6.50	9.99	6.95	Techno Cop	8.50	7.45	10.95
Guerrilla War	11.99	TT Racer 2	14.99	Exolon 33	6.50	9.99	6.95	Terrapods	6.50	6.95	6.95
Gunsip	14.99	TV Sports Football	14.99	Exolon 34	6.50	9.99	6.95	The In Crowd	8.50	8.95	8.95
Hacker 1 or 2	7.99	Typhoon	9.99	Exolon 35	6.50	9.99	6.95	The National	7.00	7.00	7.00
Hardball	9.99	Ultimate Golf	13.99	Exolon 36	6.50	9.99	6.95	Thunderblade	6.99	7.45	10.45
Hawkeye	14.99	Uninvited	11.99	Exolon 37	6.50	9.99	6.95	Tiger Road	6.99	7.45	10.45
Heifire Attack	11.99	Univ. Military Sim	14.99	Exolon 38	6.50	9.99	6.95	Times of Lore	6.99	6.95	9.95
Heist Skater	9.99	U.S. Scenario 1	8.99	Exolon 39	6.50	9.99	6.95	Time & Magic	9.99	9.95	9.95
Heroes of Lance	16.99	U.S. Scenario 2	8.99	Exolon 40	6.50	9.99	6.95	Titan	6.50	6.50	6.50
Highway Hawks	11.99	Victory Road	11.99	Exolon 41	6.50	9.99	6.95	Total Eclipse	6.99	6.95	9.95
Hi Machine	9.99	Victors (Domark)	11.99	Exolon 42	6.50	9.99	6.95	Tour de Force	2.99	2.95	2.95
Hollywood Hinx	7.99	Virus	11.99	Exolon 43	6.50	9.99	6.95	Trackstar Manager	6.50	6.95	9.95
Hostages	14.99	Vixen	11.99	Exolon 44	6.50	9.99	6.95	Train Escape	6.99	6.95	10.45
Hot Football	14.99	Wanderer	11.99	Exolon 45	6.50	9.99	6.95	Trantor	2.99	2.99	2.99
Hydros	11.99	War in Middle Earth	14.99	Exolon 46	6.50	9.99	6.95	Triv Pursuit	9.99	9.95	12.95
Hydros 2	11.99	WEC Le Mans	11.99	Exolon 47	6.50	9.99	6.95	Triv Pursuit New Beg	9.99	9.95	12.95
Ludicrous	14.99	Weird Dreams	14.99	Exolon 48							



• Just one of the 17 halls at the Hanover Show. Thankfully, there's an electronic visitor information system to help you find your way around.



• The long awaited appearance of Stacey, the Atari laptop first shown at Comdex in a balsa wood form! But here it's up and running and should sell well when it hits the streets in June.

Massive attack

Hanover's annual CeBit Computer Fair is the World's biggest. This year 500,000 visitors are expected to walk the 325,000 square metres of space taken by 3000 exhibitors. At Atari UK's invitation, Andy Storer joined the crowds and prepared for visual overload.

Throw 14 journalists together in a 5 star hotel for 18 hours before a show going on the size of 17 Olympias, and you have a party just dying to be featured in the *Eye's* 'Great Bores of Today'.

Throw in a delayed flight, a five course "No Velle" cuisine and an unlimited supply of Jever Pilsner, and conversation takes on that peculiar hack quality of enthusiastic cynicism.

Stories of the shows in Vegas, L.A., Frisco, Paris, Monte Carlo and the legendary Toshiba freebie to Japan - so legendary nobody went on it - are only interrupted by 'power talk' on the latest 386 machines, comms upload problems and hard disk utilities. But reminiscences remain the delight of the day. At the '85 Olivetti journo's gig in Venice, for instance, the company celebrated their conquest of 35% of the Italian market by hiring a whole island, taking over the Gritti Palace, arranging a midnight trip around the museum and running up a bill of 6 million Lire at Harry's Bar. Hanover would no doubt become Hungover with ease.

By 2am, the hotel bar plays host to a small enclave of Atari personnel and a few journalists lucky enough to catch them willing to let on. "Yes,

Stacey will be there tomorrow", "No, the Super-ST, as you call it, won't", "We have 5 versions of the Folio planned", "At the end of this year every product you've heard of will be out", "We want the real guy who's buying power".

And yes, next day, in amongst the mass of monitors, keyboards and decks that make up The Launch Pad known as CeBit '89, Stacey was indeed there. And in its final form this time. Available by June/July, the 1 Meg Atari laptop looks and feels fine. A dark grey briefcase exterior opens to reveal a

green super-twist LCD screen on the inside lid above a punchy keyboard and inlaid tracker ball instead of a mouse. On the right hand side are two 720K drives, whilst over the left are serial and parallel, joystick and mouse ports. Stacey runs TOS V1.09 and is reported to run for about 4 hours on its internal batteries. It'll come in at just under £1,000.

Elsewhere on the Atari stand was a new mono monitor, the SM194, costing around £1,600 and offering 1280x960 resolution for its main intended application, DTP work. Since Atari want to move

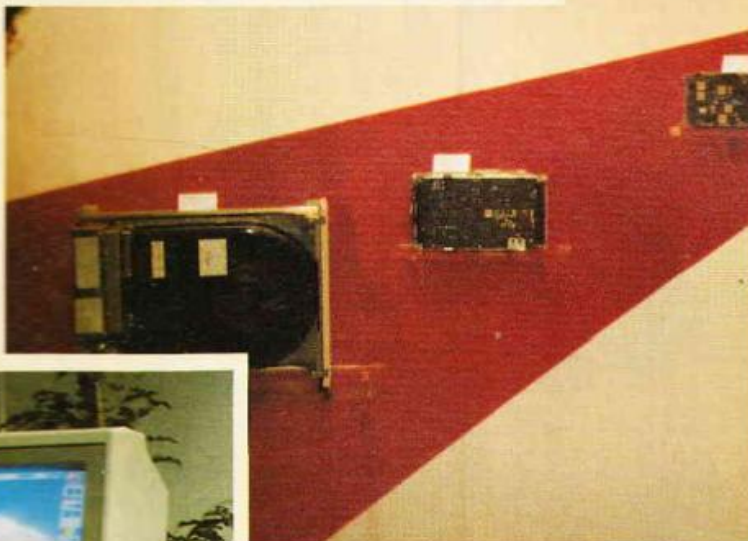


• The natty SM 194 19" mono monitor was the other new piece of kit on Atari's stand, that's if you discount the Pocket PC, the ATW 1 and the range of 13 calculators. But no sign of the Mega ST 1 or the Super-ST - now affectionately dubbed the 'TT'



- Toshiba's giant laptop (above) brought new meaning to the term 'portability'. The display was actually running off a life-size model.
- Fujitsu's stand (right) certainly contained some of the most interesting developments. Besides the Voice Communication Unit, its 3.5 inch 180 MByte hard disk illustrated just how far technology has come since its 14.5 inch version of ten years ago

into "the high-end of the workstation market" with their ATW 1 transputer machine, it would seem this monitor will also be perfect for the medium data processing and scientific applications that involves.



• Commodore's "Videobox" for the Amiga A500 demonstrated the company's drive for low-cost desktop video.

Casio space featuring models lazing around the very latest in check-out tills and Microsoft's green laser installation drawing attention to their latest OS/2 and Mac software. Next to Mitsubishi's 37" monitor displays were Hong Kong's 3P Products' fastest 386 in the world - the 33MHz CAS386C33 - clocking in at an incredible 51Mhz on some benchmarks. Fujitsu showed off its Voice Communication Unit - a PC compatible system able to recognise 4,000 spoken words and, unbelievably, output a single voice response for over 80 minutes. Right next to it was a 3.5" hard disk in a case some 6" long by 1.5" capable of storing 180 Mb! Fujitsu is really going great guns - it's

about to release the FM-TOWNS - a 32-bit, MS-DOS home micro in Tokyo with built in CD ROM and expect it to sell in droves even for an asking price of \$4,000. Meanwhile, NEC presented its £700, 550 Mb, PC and hi-fi compatible CD ROM unit with two of the twenty applications already released for it - *Clip Art 3D* and *Image Folio*. Both contain 4,000 images, and sell for £250.

More homegrown varieties were present in the form of Amstrad - nothing to report here really except the release of a 20 Mb hard drive for the PC 1512 - and a stand shared by Psion and Cambridge Computers. This marriage seemed a little ironic; after all, Psion is releasing a Z88-style laptop in June or so. We'd like to think they're jointly preparing for the D.I.P./

Otherwise, there was no sign of the Atari Unix machine but in a back room was a prototype of the 'Super ST' Atari refers to as the 'TT'. This was rumoured to be just an ST running on a 68030 chip and showing off ultra-fast animated graphics, but the final machine, claimed to be available by September, will also offer 1280x960 resolution and 2 Mb of RAM.

A long walk to the Commodore stand involved passing just about every major manufacturer in the world. There's so much space you don't get the claustrophobia of British shows - you can actually hear something above the din of conversation. Unfortunately, this proved to be variations on every Jean Michel Jarre track ever heard. In amongst the American and Taiwanese 'villages' were the Epson stand, featuring a giant 60' x 15' panoramic screen showing off, among other things, its new 48-pin printer, Toshiba's 30 foot high model of their laptop, a

Atari 5 Folio machine onslaught, but they were probably just saving money. Probably the same reason there was no sign of Acorn.

At last to the Commodore installation, where the company was beaming over a 74% growth in its German home market penetration and announcing its "Business At Home" drive. This centres on the perceived need for a good-priced AT. The solution was the launch of a £1,200 286 upgrade for the PC 30 and 386 SX for the PC 50. Looking towards the top end of the market, it also underlined plans for its Amiga 2500 Unix machine and A2000-based transputer workstation. Back on the Home/Business front it showed off its new DTP package comprising a 3Mb A2000, 40 Mb hard disk, Sharp JX 300 colour scanner, NEC LC 890 Postscript compatible laser printer and *Professional Page* and *Draw* software.

Also attracting much interest was a very sexy Commodore-badged Desk Top Video system - "Videobox" - comprising genlock, digitiser and RGB splitter in a casing along with 'Diamond' painting, 'Quick Silver' animation, 'Effects' digital image merger and 'Video Titler' titling software. All IFF and PAL compatible and coming out at £500 for the A500 upwards.

From then on it was a Press bus back to Atari and a quick look at the new Steinberg music package - a Beta test version of the all-singing, all dancing *Soundworks FZ1* - and a really tasty solid 3D animation package called *AXIS*. More on this soon.

After that, the airport, more beers and endless recounting. The verdict? Great in so far as it went but how much can you cover in 7 hours on this scale? ●

clik - ST

Unit 2 Willowslea Farm,
Spout Lane North, Stanwell Moor,
Staines, Middlesex TW19 6BW
Telephone: (0753) 683965

WE ACCEPT
EXPRESS
VOUCHERS

TITLE	S.S.P	OUR PRICE	TITLE	S.S.P	OUR PRICE	TITLE	S.S.P	OUR PRICE
Advanced Rugby Sim.....	19.99	13.50	NightRaider.....	19.99	13.50	NEW RELEASES		
Afterburner.....	24.99	16.50	Nigel Mansell's G.P.....	24.99	17.50	Barbarian II.....	19.99	13.50
Airball.....	24.99	16.50	Obilator.....	24.99	16.50	Batman.....	19.99	13.50
Alien Syndrome.....	19.95	13.50	Off Shore Warrior.....	24.99	16.50	Blair.....	19.99	13.50
Alpine Games.....	9.99	7.50	Operation Wolf.....	24.99	16.50	Billards (French Vers.).....	19.95	13.50
Arcade Force Four.....	24.99	19.50	Out Run.....	19.95	16.00	Custodian.....	19.99	13.50
Arctic Fox.....	24.99	17.50	OverLander.....	19.99	13.50	Fusion.....	24.95	19.50
Armageddon Man.....	19.99	14.50	Ogre.....	24.99	16.50	Incredible Shrinking Sphere.....	19.99	13.50
Barbarian Palace.....	24.99	16.50	Pothole Pete.....	9.99	7.50	King's Quest 4.....	29.99	19.50
Barbarian.....	19.99	10.50	PowerDrome.....	24.99	17.50	Knights.....	29.99	19.50
Bards Tale I.....	24.99	17.50	PacMania.....	19.99	13.50	Kenny Daglish.....	19.95	13.50
Better Dead Than Alien.....	19.95	13.50	Pandora.....	19.99	13.50	LED Storm.....	19.99	13.50
Beyond The Ice Palace.....	19.99	13.50	Pawn.....	19.99	13.50	Mad Flunky.....	14.95	10.50
Bionic Commando.....	19.95	16.00	Peter Beardsley.....	19.99	13.50	Menace.....	19.95	13.50
BMX Simulator.....	14.99	10.50	Phoenix.....	19.99	13.50	Raffles.....	19.99	13.50
Bubble Bobble.....	19.99	13.50	Pink Panther.....	19.99	13.50	Ray of the Rovers.....	19.99	13.50
Buggy Boy.....	19.99	13.50	Platoon.....	19.95	13.50	ST Ballistix.....	19.99	13.50
Bomb Jack.....	19.95	13.50	Power Struggle.....	14.99	10.50	Wizard's Crown.....	24.99	17.50
Captain Blood.....	24.99	16.50	Purple Saturn Day.....	24.99	16.50	Zak McKracken.....	24.99	16.50
Captain Fizz.....	19.99	13.50	Perfect Match.....	24.99	16.50	The Deep.....	19.99	16.00
Casino Roulette.....	19.99	13.50	President is Missing.....	24.99	16.50	"SPECIAL OFFERS" While stocks last !!		
ChessMaster 2000.....	24.99	17.50	Quadrant.....	24.99	16.50	Annals of Rome.....	24.95	12.50
Corruption.....	24.99	16.50	Queston II.....	24.99	19.50	Borrowed Time.....	29.95	12.50
Carnier Command.....	24.99	16.50	Question of Sport.....	24.99	16.50	Crazy Cars II.....	24.99	12.50
Champion Wrestling.....	19.99	16.00	Return To Genesis.....	19.99	13.50	Golden Path.....	24.95	12.50
Champion Water Ski.....	19.99	16.00	Rampage.....	14.99	10.50	Hacker.....	29.99	12.50
Crash Garrett.....	19.99	13.50	Rolling Thunder.....	19.99	16.00	Hacker II.....	29.99	12.50
Dark Castle.....	24.99	16.50	RoadWar 2000.....	24.99	19.50	Hollywood Hijinx.....	29.99	12.50
Dungeon Master.....	24.99	16.50	RoadRunner.....	24.99	16.50	Hits Disc.....	24.99	12.50
Double Dragon.....	19.99	13.50	Revenge II.....	9.99	7.50	I Karate.....	24.99	12.50
Daley Thompson.....	19.99	13.50	Rambo III.....	24.99	16.50	Manhattan Dealer.....	24.95	12.50
Deja Vu.....	29.99	19.50	Ranarama.....	19.99	16.00	Metro Cross.....	19.99	12.50
Dizzy Wizard.....	19.99	13.50	RoadWars.....	24.99	16.50	Mind Fighter.....	24.99	12.50
Dugger.....	19.99	13.50	RoadWar Europe.....	24.99	19.50	Mind Shadow.....	29.99	12.50
ECO.....	19.99	13.50	Shackled.....	19.99	13.50	Moon Mist.....	29.99	12.50
Eddie Edwards Ski.....	19.99	13.50	Side Arms.....	19.99	16.00	Off Shore Warrior.....	24.99	12.50
Elite.....	24.99	16.50	Silent Service.....	24.99	16.50	Shanghai.....	29.99	12.50
Empire.....	24.99	17.50	Shut Down.....	9.99	7.50	Spell Breaker.....	29.99	12.50
Empire Strikes Back.....	19.99	13.50	Sappers.....	19.99	13.50	TASS Time.....	29.99	12.50
Espionage.....	19.99	13.50	Sky Fox.....	14.99	12.50	Trinity.....	29.99	12.50
Extensor.....	9.99	7.50	Sky Fighter.....	14.99	10.50	Wish Bringer.....	29.99	12.50
Fahrenheit 451.....	24.99	16.50	Space Quest I.....	19.99	13.50	Ultima II.....	24.99	12.50
Falcon.....	24.99	16.50	Space Quest II.....	19.99	13.50	Zork I.....	29.99	12.50
Fire & Forget.....	24.99	16.50	Star Trek.....	19.99	13.50	Zork II.....	29.99	12.50
Firezone.....	24.99	16.50	Scenery Disk No 7.....	19.99	13.50	Zork III.....	29.99	12.50
Five Star Compendium.....	24.99	16.50	Scenery Disk No 11.....	19.99	13.50	UTILITIES		
Flight Sim. II.....	39.99	26.50	Scenery Disk European.....	19.99	13.50	3D Developer Disc.....	29.95	21.50
Flinstones.....	19.99	13.50	Scenery Disk Japan.....	19.99	13.50	3D Printer & Printer Drivers.....	24.95	17.50
F.O.F.T.....	29.99	19.50	Side Winder.....	9.99	7.50	Adventure Art Studio.....	69.99	50.50
Gunship.....	24.99	16.50	Space Harrier.....	19.99	13.50	Animator.....	29.95	60.50
Get Dexter!.....	19.99	13.50	Spitfire 40.....	24.99	16.50	Architectural Design Disc.....	29.95	21.50
Gauntlet II.....	24.99	19.50	StarWars.....	19.99	13.50	Art Director.....	49.95	32.50
Gold Runner II.....	19.99	13.50	StarGlider II.....	24.99	16.50	Back Pack.....	49.99	32.50
Galdregon's Domain.....	19.99	16.50	Stellar Crusade.....	32.99	26.50	CAD 3D V 2.0 + Cybermate.....	89.95	62.50
Garfield.....	19.99	13.50	Str Crazy.....	19.99	13.50	CAD 3D Fonts & Printives.....	29.95	21.50
Hellfire Attack.....	24.99	17.50	ST Olympiad.....	9.99	7.50	CAD 3D Architectural Design.....	29.95	21.50
Helter Skelter.....	14.99	10.50	STOS.....	29.99	19.50	Crash.....	99.95	72.50
Heroes of the Lance.....	24.95	19.50	Street Fighter.....	19.99	16.00	Cyber Control.....	29.95	21.50
Hostages.....	24.99	16.50	Street Gang.....	14.99	10.50	Cyber Paint.....	69.95	43.45
Hot Shot.....	19.99	13.50	Strip Poker.....	19.99	13.50	Cyber Sculpt.....	69.95	45.50
Ikari Warriors.....	14.99	10.50	Strip Poker II.....	14.99	10.50	Cyber Texture.....	59.95	45.50
Impact.....	14.95	10.50	Summer Olympiad.....	19.99	13.50	Cyber Studio.....	79.95	60.50
Impossible Mission.....	19.99	16.00	Super Hang-On.....	19.99	13.50	Data Management Pro.....	69.95	50.50
Insanity Fight.....	24.99	16.50	Super Sprint.....	14.99	10.50	Degas Elite.....	24.95	17.50
Int'l Soccer.....	24.99	16.50	Space Ace.....	19.99	13.50	DEV-PAC Ver 2.0.....	59.95	45.50
IK+.....	24.99	16.50	Soccer Supremo.....	14.99	10.50	Digi Drum.....	24.95	17.50
I Ball.....	9.99	7.50	Staff.....	19.99	13.50	Digital Home Accounts.....	24.95	17.50
Jet.....	39.99	26.50	Sundog.....	14.99	10.50	Disc Library.....	24.95	17.50
Jewels of Darkness.....	19.99	13.50	Star Fleet.....	24.99	17.50	Digit Mail Shot Plus.....	49.95	32.50
Joan of Arc.....	19.99	13.50	Simbad & Throne of Falcons.....	24.99	16.50	Easy Draw II.....	59.95	45.50
Joe Blade II.....	19.99	13.50	SpeedBall.....	24.99	16.50	Easy Draw II Supercharged Ver.....	99.99	72.50
Juggler.....	24.99	16.50	Superman.....	24.99	16.50	Easy Draw II General Library.....	29.95	21.50
Kennedy Approach.....	24.99	16.50	ST Karate.....	19.99	13.50	Easy Draw II Technical Library.....	29.95	21.50
Knight Orc.....	19.95	13.50	Skrull.....	24.99	16.50	Fast Assembler.....	19.95	16.50
Kings Quest Pack.....	24.99	16.50	Tanglewood.....	19.99	13.50	File Director.....	59.95	45.50
KnightMare.....	19.99	13.50	Tetris.....	19.99	13.50	Fleet Street Publisher.....	115.00	95.50
Las Vegas.....	9.99	7.50	Thrust.....	9.99	7.50	FTL Modulator II.....	69.95	50.50
Leather Goddess.....	29.99	19.50	Tracker.....	24.99	16.50	Future Design Disc.....	24.95	17.50
Leatherneck.....	19.99	13.50	Turbo Cup.....	19.99	13.50	G.F.A. Artist.....	49.95	32.50
Leisure Suit Larry.....	19.99	13.50	Typhoon.....	19.99	13.50	G.F.A. Compiler.....	45.99	32.50
Leisure Suit Larry II.....	24.99	16.50	Thundercats.....	19.99	13.50	G.F.A. Basic Interpreter V.3.....	45.95	32.50
Living Daylights.....	19.99	13.50	Time & Magic.....	19.99	13.50	G.F.A. Draft.....	99.99	72.50
Lombard RAC Rally.....	24.99	16.50	Trivial Pursuit (New Beginning).....	19.99	13.50	G.F.A. Draft Plus.....	139.95	115.00
Lords of Conquest.....	24.99	17.50	Trivial Pursuit.....	19.99	13.50	G.F.A. Sheet.....	45.99	32.50
Lurking Horror.....	29.99	19.50	Terramex.....	19.99	13.50	G.F.A. Vector.....	34.95	26.50
Legend of the Sword.....	24.99	16.50	Terrapods.....	24.99	16.50	G.I.S.T.....	34.95	26.50
Mach III.....	19.99	13.50	Transputer.....	24.99	16.50	Graphic Sheet.....	59.99	45.50
Manhunter.....	29.99	19.50	ThunderBlade.....	24.99	19.50	G.S.G.C Compiler.....	24.95	17.50
Mickey Mouse.....	19.99	13.50	Times of Lore.....	24.99	16.50	Hi-soft Basic.....	79.95	60.50
Mini Golf.....	19.99	13.50	Ultima III.....	24.99	16.50	K. Data.....	49.99	32.50
Mission Genocide.....	9.99	7.50	Ultima IV.....	24.99	16.50	K. Graph II.....	49.99	32.50
Mean 18.....	24.99	17.50	U.M.S.....	24.99	16.50	K. Minstral.....	29.95	21.50
Mega Pack.....	24.99	16.50	U.M.S. Disc I.....	12.95	8.50	K. Roger.....	49.99	32.50
Maria's Xmas Box.....	14.99	10.50	U.M.S. Disc II.....	12.95	8.50	K. Word II.....	49.99	32.50
Moebius.....	24.99	16.50	Victory Road.....	24.99	16.50	K. Sega.....	59.95	45.50
Marble Madness.....	19.99	14.50	Virus.....	24.99	16.50	K. Occam.....	59.99	45.50
Mind Forever Voyaging.....	29.99	19.50	Vampire Empire.....	19.99	13.50	Lattice C V.4.....	89.95	72.50
Maniac's Diary.....	24.99	16.50	Vegas Gambler.....	24.99	16.50	Lisp.....	89.95	69.50
Munsters.....	24.99	17.50	War Games Con Set.....	24.99	16.50	Macro Assembler.....	24.99	17.50
NetherWorld.....	19.99	16.00	Warlocks Quest.....	19.99	13.50	Modula II Developer.....	149.95	110.50
Night Hunter.....	24.99	17.50	Where Time Stood Still.....	19.99	13.50	Modula II Standard.....	99.95	72.50
			Whirligig.....	19.95	13.50	Music Studio.....	24.99	21.50
			Winter Olympiad.....	19.99	13.50	M.C.C. Pascal.....	89.99	69.50
			Wizards Crown.....	24.99	16.50	Paintworks.....	34.95	26.50
			Wizards Warz.....	19.99	13.50	Pascal.....	89.95	62.50
			Wanted.....	19.99	13.50	Power Basics.....	39.99	26.50
			Xenon.....	19.99	13.50	Publishing Partner.....	159.99	115.50
			Xevious.....	24.99	16.50	Sage Accountant.....	171.95	150.50
			Zany Golf.....	24.99	17.50	Sage Accountant Plus.....	228.95	175.50
			Zynaps.....	19.99	16.00	Sage Bookkeeper.....	113.99	85.50
			20000 Leagues Under the Sea.....	19.99	13.50	Saved.....	29.99	21.50
						ST Data Manager.....	79.99	60.50
						ST Eurotek.....	149.95	110.50
						ST Swift Calc.....	79.99	60.50
						ST Word Writer.....	79.99	60.50
						ST Replay.....	79.99	60.50
						Super Conductor.....	49.99	32.50
						Superbase Personal.....	99.95	72.50
						Timeworks DTP.....	99.95	72.50
						Timeworks Partner.....	49.95	32.50
						Trimbase.....	89.95	70.50
						Turbo Jet.....	29.95	21.50
						Turbo ST.....	39.95	26.50
						Twist.....	29.95	21.50
						V.I.P. Professional.....	149.99	110.50
						WERCS.....	49.95	32.50
						WERCS Plus.....	29.95	21.50
						Word Perfect.....	228.99	175.50
						Word Up.....	59.95	45.50



• Played into his hands: Clifford Stoll set a trap for the hacker spies – and they fell for it

Spycatcher

Two weeks ago eight young computer hackers were arrested in West Germany for allegedly spying on behalf of the Soviets. The story involves international espionage at the highest levels; it puts the concept of a generation of computer literates into disturbing perspective; and it's got a hero. All in all, it's cracking stuff...

Colin Campbell explores what could possibly emerge as computing's most fascinating saga to date

It's been obvious for a long time now that some poor fools with a handy knowledge of computing would end up being tempted, entangled and destroyed by the insidious lure of power, money and danger.

So many science fiction writers and spy novelists have introduced the computer hacker as a major tool for espionage (William Gibson in *Count Zero*, for example) that when it really happens, nobody is terribly surprised. All this will be of little relevance to the eight young men aged between 25 and 35 who are now languishing in German cells accused of spying for a possible enemy.

They have spent years tapping into key networks and passing info on to the no doubt delighted Soviets. Their skills are not extraordinary. Their profits are not particularly impressive. Their punishment is likely to be severe.

The personalities of the eight young computer hackers herded into vans last week by West German police are not known. But it's a fair bet that they're not fiery-eyed ideologues with a passion for world revolution; more likely they are interested in comms rather than Communism.

The hackers are already pleading that they were being blackmailed by their KGB spymasters from East Berlin. Their toils brought in £100,000 over the years along with that most squalid of rewards – drugs.

The cosy spy ring would still be riding high if it weren't for the extraordinary efforts of one computer enthusiast who set about unravelling one of computing's most fascinating stories...

For whom the bell Stolls

Dr Clifford Stoll is an all round clever bloke with a penchant for the stars and a healthy interest in computers. Whilst working as an astronomer in Berkeley, California,

he stumbled across a 75 cent discrepancy in his 'shared time' computer system accounts.

He was intrigued and baffled. How on earth had this oddity managed to creep in? 'If it had been \$1,000 off, I wouldn't have thought anything of it,' he said. 'It's like if your house collapses you just assume there has been an earthquake. But if you find a tiny termite hole, you think "Jeez, I had better investigate".'



• Checkpoint Charlie: Secret data on disk was passed to the Soviets

Cyberpunk-like, Stoll set about exploring the tangled computer networks in search of the seventy five cent source. After three days of poking in every corner of the system he found the culprit.

The charge had come from someone who had crept into the computer through the telephone lines. This was

in the summer of 1986 when the concept of computer hacking was more Hollywood than anything else.

Stoll then spent four months assiduously monitoring the hackers' toils. It became apparent that they were using the Berkeley network as a gateway to the computer system called Milnet which links up vital computers in military establishments, university laboratories and key centres of defence.

Stoll became even more involved as words such as SDI, biological warfare, nuclear and NORAD cropped up. He contacted the Federal Bureau of Investigation and passed on his discovery. The FBI were not impressed especially since it all began from a 75 cent overcharge. They are reported to have responded: 'Who cares? It's not important.'

By now Stoll was hooked. The investigation was becoming an obsession as he dug up new ways of tracking the hackers. He connected an electronic pager to the computer which alerted him every time the intruders broke in.

His girlfriend, hardly surprisingly, became annoyed with his obsession. In an attempt to put an end to the thing she suggested he try and ensnare the hackers with a trap.

A program, guaranteed to get the hackers' fingers furiously tapping, was designed and enticingly called SDI Net. The hackers probably sniffed bags of cash when the opportunity was discovered and promptly spent two hours rummaging through the bogus material.

It was plenty of time. Stoll tracked the call to one of the world's most notorious centres of illegal computer activities – Hanover, West Germany.

A man in Pittsburgh sent Stoll a letter some months later asking for information concerning SDI Net. Once again, Stoll approached the FBI. This time they were convinced. The Pittsburgh man was picked up, his contacts with East European countries unearthed and a full scale investigation was initiated.

The spy who bugged me

The FBI and the Bundesamt für Verfassungsschutz (German secret service) closed in on the hackers over a period of 18 months. The spies were being paid £1,500 for each disk. Many contained data from the pentagon, nuclear laboratories and US space secrets; British intelligence was also infiltrated.

Officials are keen to stress that the hackers missed the West's most sensitive secrets and that the Soviets were only receiving low level information. Nevertheless, it is generally agreed that the efforts of the hackers has closed the technology gap between the East and West.

'I would say that Dr Stoll is largely responsible for cracking the case,' said Charles Hurley, former spokesman for the Lawrence Berkeley laboratories. 'Over a period of many months he tracked them.'

And Stoll? He's made his way to Harvard to get back to some star gazing. 'It was exciting, but in another sense it was dreadful because I got zero astronomy done for two years,' he said.

As for the hackers, they face a long and drawn-out bout of painful revelations and accusations. If found guilty (and an 18 month investigation as well as confessions already gleaned suggests something) they face a few years banged up. Hackers looking for ready cash and stimulation take note.

NEC

PC Engine

"A NEW AGE HAS DAWNED"



Chan + Chan



Vigilante



Galaga 88



Victory Run



R-Type 1



"The PC Engine is not an expensive console, it's a cheap arcade machine"

The Games Machine

"Forget Nintendo and Sega, they are not even a spit in the ocean in terms of power and gameplay. Even the Amiga would be very hard pushed when you come up against THE MOST POWERFUL CONSOLE IN THE WORLD"

Computer and Video Games

"No flicker, detailed and smooth. Oh gorgeous!!!"

Computer and Video Games

"Games on the PC Engine are, quite simply, the best you've ever seen. It's the most impressive piece of video game hardware I've ever seen"

Geoff Minter, The Nature of the Beast

"The PC Engine is no fantasy"

Computer and Video Games

IN AN IDEAL WORLD THE GAMES CONSOLE WOULD OFFER YOU

- Unsurpassed software excellence
- Arcade-perfect graphics
- Multi-channel stereophonic sound.

WE ACCEPT EXPRESS VOUCHERS

- State-of-the-art micro circuitry
- The most compact design in the world.
- Unparalleled expandability — designed with the future in mind

- Instant game load and access (no waiting for disks or tapes)
- Multi-player interaction
- The fastest running speed of any games machine in existence.

WELCOME TO THE IDEAL WORLD!



HARDWARE — Look out for the latest computer innovations available on the PC Engine such as a portable colour LCD screen. How about a CD Rom player capable of orchestral sound tracks and true voiceovers with previously unheard of storage capabilities. Imagine if it could double as a top of the range hi-fi compact disk player with amazing software drives facilities.

SOFTWARE — All titles £29.95. R-Type 1, Space Harrier, Chan + Chan, Victory Road, Fantasy Zone, The Legendary Axe, Vigilante, Galaga 88, R-Type 2, Wonderboy. These titles represent a small selection of the PC Engines extensive software library. Send SAE for more details.

Please send me the following:
SCART PC ENGINE — for use with monitors equipped with Scart/Euro connectors at £199.95
PAL PC ENGINE — For use with standard British TV sets at £124.95
SCART PC ENGINE with PHILIPS CM8833 COLOUR MONITOR at £399.95
Add £4.95 towards p & p
Please supply the following games at £29.95 each

1. 2.
3. 4.
5. 6.
7. 8.
9. 10.
TOTAL

Name Tel.
Address
I enclose a cheque/PO for
Expiry Date
Visa/Access Card No.
Signature

or tick box for weekly payment details ☐

DEPT NCE 1 The Moor Hall, Ludlow, Shropshire, SY8 3EG.
TEL: 0584 75604, FAX: 0584 75387

Trade
Enquiries
Welcome

MICROMEDIA



You've had your chance

Just where is Calamus? Flagged as the best and most comprehensive DTP package for the ST, Calamus had been dogged by delay after delay. Sorry, excuse after excuse. Atari UK has been sitting on the package for over six months. Why? It was completed in late 1987 by DMC of Germany. And has been shipping in the States for many months. So what has happened? Atari UK's line is that bugs in the original version are being ironed out.

Originally, it seems, Signa Publishing were to distribute Calamus in the UK. Somehow Atari got involved and DMC decided it would be more prestigious if Atari handled the package. So much for the brief history. Recent rumours suggest that DMC is unhappy with Atari UK's handling of Calamus and is giving the distribution rights to Signa. This fits in with reports that Signa is to make a major announcement shortly. That said, neither Atari or Signa would confirm the story.

To add to the confusion, Gainsstar is importing the American version of Calamus. Price is £200, which compares favourably to the Atari-quoted tag of £399. However, don't get too excited because it transpires that the American version won't work on UK STs.

The reason, it seems, is not because of poorly written code that accesses the ROM, but a protection mechanism that checks to see if the machine is of US origin. If the computer isn't from the States then the software refuses to work. The reason for this insane practice is to prevent companies importing the American version.

So far so good? Well, here's the really sickening part. American distributors in the States claim to have the UK version and can't understand why it isn't available here. Gainsstar, meanwhile, hopes to have the UK version currently touring the States on sale here soon. Ohh, it's more fun than Dallas!

We shall overcome

If you've been wondering why Glentop has been so quiet on the ST scene lately, it's because GFA System Technik in Germany - producers of the GFA range of software - is to set up shop in the UK. Glentop publishes the English versions of GFA's products, so naturally GFA's move to the UK will disrupt Glentop's trading. In fact, it is very likely that when GFA arrives, Glentop will no longer handle any of System Technik's software. Glentop's MD, Peter Holme, reckons this is perfectly legal according to the conditions in the contract.

The move, claimed GFA Germany's boss Rolf Hilshner, is due to take place in early July. Apparently a "well-known" figure in the industry is to head GFA's UK operations;

Hilshner didn't dwell on the subject. He did add that "many exciting new packages would be released."

Until July, no new GFA software will be seen. This explains why GFA Raytrace hasn't hit the shelves yet - even though Glentop has completed the translation. As a result of GFA's planned actions, Glentop is to move into the PC market and do little else on the ST. Catherine Peel's book - *Programmer's Reference to the ST* - will be reprinted from time to time to accommodate new TOS and machine versions, but apart from that not much else will be done.

GFA is a multinational company that has offices in Germany, France and the USA amongst others. Obviously the UK's ST market has come of age if GFA is willing to open offices here. Keep a look out; you're going to hear a lot from GFA in coming months.

Quickies

● **Flair Paint** - written and designed by Jeff Lawson and Mark Picevance, and published by AMS/Logitech - is to be handled by Database Software. The reason is thought to be linked with Logitech's hatred of anything non-PC. The product, packaging and price will remain at £34.99. Database is on 0625 878888.

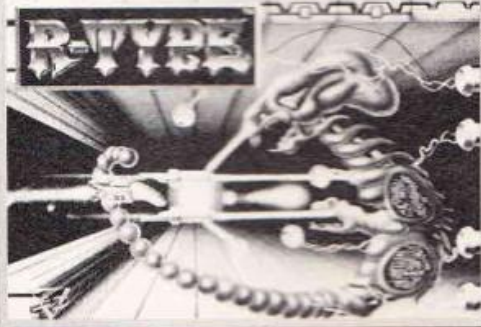
● **Vektor Graphics** in Leeds is currently working on *Bomber* a 3D "high action" flight simulator. The title will be handled by Acclaim. According to Vektor, several other 3D games are on the way.

R-TYPE of game

What a game, but what a ***** to complete. Impossible without a little underhand help.

When you're asked to insert the second disk during loading, do the following: press [F5], type 'ME' and press the up arrow key. After that, insert the second disk and press the space bar to continue. During the game pressing the function keys toggles various cheats:

- F5 - invincibility from walls and aliens.
- F6 - invulnerability from alien fire.
- F7 - infinite credits.
- F8 - orb can be controlled by someone using the mouse.



● A new freeware C compiler called *Scozon C* is being distributed by the South West Software Library. The package includes an optimiser, assembler, linker and numerous utilities. The full X and R C specification is supported. It's available from South West (0703 229041) on one double sided disk - with the source on another. Cost per disk is £3.

● From the beginning of April, Photophile will expand its service to cover STs. You supply a photograph of the item you want digitised and in return you get a disk with a file containing the grabbed picture. The file can be in either Neochrome, Degas, Doodle or Art Director format. The cost is £1.50 per colour picture and £1 per black and white. A further £2 for each disk and £1 to cover postage. Details on 0602 451977.

● **Rombo Productions** has moved. The new phone number is 0506 414631.

Adrian McHerriot

TREBLE H COMPUTING

16 BIT SPECIALIST

Hardware

Atari 520 STFM 1 meg Drive	£275.99
Atari 520 STFM 1 meg Drive + Super Pack	£369.99
Atari 1040 STFM 1 meg Drive + Professional Pack	£449.99
Atari 1040 STFM + SM124 Mono Monitor	£549.99
Atari SM124 Mono Monitor	£109.99
Amiga A500 including Modulator	£379.99
Philips CM8833 Med-Res Stereo Monitor	£269.95
Commodore 1084S Med-Res Stereo Monitor	£259.95
Cumana 1 meg 3.5" Drive for ST inc PSU	£99.95
Cumana 1 meg 3.5" Drive for Amiga inc on/off Switch	£94.95
Triangle 1 meg 3.5" Drive for ST inc internal PSU	£94.95
Triangle 1 meg 3.5" Drive for Amiga inc on/off Switch	£84.95
Citizen 120/D Mono Printer	£159.95
Star LC10 Colour Printer inc Cables	£269.95
Star LC10 Mono Printer inc Cables	£249.95
A501 Memory Expansion for Amiga	£129.95
A501 Memory Expansion for Amiga plus Dragon's Lair	£149.95
Prosound Designer for Atari ST	£49.95
Prosound Designer V.2 Gold Edition for Amiga	£79.95
Midi Interface for Amiga	£24.95
Romantic Robots ST Multiface (disk organiser also available)	£49.95
80 Capacity 3.5" Storage Box	£9.95
10 x 3.5" DS/DD Disks	£8.99

Atari Gift Pack

Atari 520 STFM 1 meg Drive
Mouse + Leads + Manual
Free Joystick
Free 80 Cap Disk Box
Free 10 x 3 1/2" DS/DD Disks
Free Mouse Mat
21 Games
Source Book & Tutorial
ALL FOR ONLY £384.99

Amiga Gift Pack

Amiga A500
Mouse + Leads + Manual
Free Modulator
Free Joystick
Free 80 Cap Disk Box
Free 10 x 3 1/2" DS/DD Disks
Free Mouse Mat
Workbench + Basic Manual
ALL FOR ONLY £399.99

Atari ST Software

	Our Price	R.R.P.
Barbarian II	£14.99	£19.99
Galdregon's Domain	£14.99	£19.99
Falcon	£17.99	£24.99
F16 Combat Pilot	£17.99	£24.99
Elite	£17.99	£24.99
Speedball	£14.99	£19.99
Dungeon Master	£17.99	£24.99
Manhunter	£20.99	£29.99
Ballistix	£14.99	£19.99
Int Karate +	£17.99	£24.99
K. Daigish's Soc.Mgr	£14.99	£19.99
Roy of the Rovers	£15.99	£19.99
Baal	£14.99	£19.99
Purple Saturn Day	£17.99	£24.99
Leisure Suit Larry II	£24.99	£29.99
R-Type	£15.99	£19.99
Operation Wolf	£14.99	£19.99
Inc. Shrinking Sphere	£14.99	£19.99
Teenage Queen	£14.99	£19.99
Zak McKracken	£18.99	£24.99

Amiga Software

	Our Price	R.R.P.
Dragon's Lair (1 Meg)	£34.99	£44.95
T.V.Sports Football	£20.99	£29.99
Super Hang On	£17.99	£24.99
Rocket Ranger	£20.99	£29.99
Elite	£17.99	£24.99
F16 Falcon	£20.99	£29.99
Roger Rabbit	£17.99	£24.99
Speedball	£17.99	£24.99
Dugn. Master (1 meg)	£17.99	£24.99
Sword of Sodan	£20.99	£29.99
Int. Karate +	£17.99	£24.99
World Class Leaderbrd	£14.99	£19.99
Ballistix	£14.99	£19.99
K. Daigish's Soc.Mgr	£14.99	£19.99
Baal	£14.99	£19.99
Purple Saturn Day	£17.99	£24.99
Galdregon's Domain	£14.99	£19.99
Operation Wolf	£14.99	£19.99
Inc. Shrinking Sphere	£17.99	£24.99
Zak McKracken	£18.99	£24.99



Specials

Atari ST
Orbitor
RRP £24.99
Special Price £16.50

Amiga
F16 Combat Pilot
RRP £24.95
Special Price £16.50

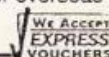
For all other 16-Bit Hardware + Software. Please contact for competitive prices.

All Prices are correct at time of going to press and are subject to change without notice.

TREBLE H COMPUTING
Dept. N.,
CROMER HOUSE,
CAXTON WAY,
STEVENAGE,
HERTS SG1 2DF
Tel: 0438 361738
Fax: 0438 740794

Personal callers welcome
open 9 til 6 Mon - Sat.
Shop prices may differ

Please send Cheques/PO made payable to: "Treble H Computing". All prices include VAT packaging + delivery in the UK. Add £2.00 for Europe + £3.00 for overseas



16-BIT HARDWARE SUPERDEALS

**AMIGA 500
GAMES PACK
ONLY £399.00**
(including Photon Paint)

with FREE TV Modulator, Mouse, Mouse Mat, 14 Top Quality Games worth £300, PHOTON PAINT, 2 Utilities Disks with over 30 useful application programs, 2 Manuals, AmigaBASIC/Extras and Tutorial Disks

**AMIGA 500
DRAGON'S LAIR PACK
ONLY £499.95**

with FREE TV Modulator, Mouse, Mouse Mat, 1 Meg Memory, Dragon's Lair Game, 2 Manuals, WorkBench V1.3, Amiga BASIC/Extras and Tutorial Disks

**AMIGA 500
ECONOMY PACK
ONLY £359.00**

with FREE TV Modulator, Mouse, Mouse Mat, 2 Manuals, WorkBench V1.3, Amiga BASIC/Extras and Tutorial Disks

AMIGA 500 + 1084S MONITOR + GAMES PACK (without Modulator) ONLY £620.00

**ATARI 520STFM SUPERPACK
ONLY £345.00**

with FREE 21 Games, ST Organiser, Mouse, Mouse Mat, Joystick, 1 Meg Internal Drive, ST BASIC Source Book and Tutorial and BASIC Disk (New Version)

**ATARI 520STFM
ONLY £275.00**

with FREE 1 Meg Internal Disk Drive, Desktop Accessories, Ramarama, Tutorial and ST BASIC

**ATARI 1040STFM
BUSI-PACK
ONLY £445.00**

with FREE V.I.P. Professional Spreadsheet, Superbase Personal Database, Microsoft Word Word Processor, and BASIC Sourcebook & Tutorial + Disk

PRINTERS

Seikosha KX-SP120 with FREE Parallel Interface & Lead	£144.95
Commodore MPS 1230 with FREE Parallel Interface & Lead	£154.95
Star LC-10 with FREE Parallel Interface & Lead	£199.95
Star LC-10 Colour with FREE Parallel Interface & Lead	£239.00

OTHER ITEMS

Superbase Personal (Amiga)	£39.95
A501 Amiga 5 Meg Memory Expansion	£129.95
A501 Amiga 5 Meg Memory Expansion + Dungeon Master Game	£149.95
Philips CM8833 Colour Monitor (with Mono Screen Option)	£224.95

All Prices include 15% VAT. Add £5 per item for Carriage/Insurance. Credit Cards Customers may have Next Day Courier for just £8
Access/Visa/Mastercard orders & Enquiries - Phone 0706 43519

Visit our New Showroom at:
Unit 9, 160 Drake St. Rochdale for Demo
Send All Orders to: 16-Bit Software (Dept F1),
24 Bankfield Lane, Norden, Rochdale, Lancs., OL11 5RJ

PC UPDATE

What price IBM?

Amstrad started life in computers by undercutting on prices and offering reasonable quality, thus providing excellent value for money. This continued from the CPCs, through the PCWs, to the PC1512 and

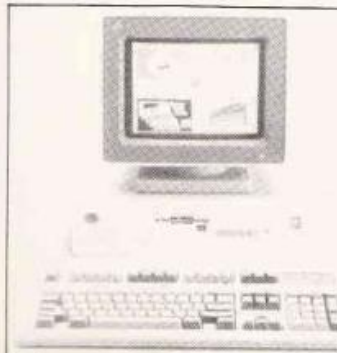
version above 3.0 should have the same utilities.

COMP.COM: Compares two files, byte by byte, and reports any inconsistencies. Useful for comparing a copy of a file with an original.

Type:
COMP <name of first file> <name of second file>

DISKCOMP.COM: Extends the comparison to the disk level. Compares two floppy disks and is again helpful in checking a copy with the original. Could also be useful for checking for virus infection, though you'd have to be sure that your source disk didn't already have the virus on it! Type:

DISKCOMP <name of first drive> <name of second drive>



• IBM's model 30: Now cheap enough to challenge Amstrad?

Simon Williams

Paperback writer

If you read the trade computer press, or bought software from Amstrad in its early CPC 464 days, you'll know the name of William Peel. Never one for a quiet life, Bill left Amstrad some years back to start up NewStar software and has since gone on to champion the cause of such products as VP Planner, Multiwriter 2 and TopDOS. His latest catalogue, which includes products from the publishing arm - Paperback Software - is well produced and provides a more than reasonable amount of information. It's worth ringing (0243) 255017 to ask for a

1640. With the the new 2000 range of machines, though, the company made a conscious decision to go for a higher spec and aim for the corporate market. The new machines have 3.5" drives, VGA screens and a higher entry price. The bottom of the range 2086 machine has been pitched straight at the entry level IBM PS/2 machine, the Model 30. Amstrad's adverts have majored on a direct price comparison.

IBM has now cut its dealer price on Model 30s, for those who can buy in lots of 50, so we should start to see Dixons and other major players offering them for around the £800 mark. At this level, they compare well with the PC2086. You have to consider whether you value Windows and a VGA screen (Amstrad's bonuses) more than a better second-hand price, probable better warranty and a metal case.

Will this price cut hurt IBM? Well rumour has it that a PS/2 Model 30 costs IBM less to build than an Amstrad PC1512, let alone a PC1640 or PC2086. If you look at the relative complexity of the circuit boards, you can see why.

DOS extras

As the first in yet another occasional series, how about those utilities supplied with MS-DOS which few people use to their fullest extent? There are a lot of goodies available from DOS worth getting to know. For the purposes of this item, I'm working with PC-DOS version 3.3, but any

Jargon jungle

To continue with a few of the common terms in PC usage which may confuse or befuddle:

SPEEDS: Whenever you see a speed quoted in a PC spec, it normally refers to the length of time it takes the central processor (8088, 8086, 80286, 80386 - see last week) to execute one instruction. Speeds range from 4.77MHz to 25MHz or even 32MHz. In other words, processors can typically perform between 5 million and 32 million instructions per second. The speed of everything in the PC, including the central processor, is controlled by a crystal clock, and each unit of time is therefore known as a clock cycle or tick.

Other things - such as processor type - being equal, a machine which runs at 16MHz goes twice as fast as a machine running at 8MHz. This doesn't necessarily mean the PCs housing these processors will show the same difference in speed, though. Other factors have an effect, particularly the speed of the memory chips. Most machine-code instructions involve fetching data from or putting it into locations in memory. If the memory takes a long time (in computer terms) to respond to the central processor's request, the processor may have to wait for one or more clock cycles each time it uses memory. If it has to wait for one clock cycle, the whole machine is said to be a 'one wait state' system. If it never has to wait, the system is 'zero wait state' - the ideal situation.

HARD DISKS: There are two main factors governing hard disks; their capacity and their speed. Their capacity starts at around 20Mb and can go as high as 300Mb for very large PC systems. A 20Mb hard disk will give you the same sort of capacity as around 50 360K floppies, 17 1.2Mb floppies or 14 1.44Mb floppies. Check the programs you use regularly and the amount of floppy disk space they take up. You should be able to work out the size of hard disk you need. In practice, Murphy's 2nd Law of Computing applies.

The speed of a hard disk affects a PC much as the speed of memory does, but to a greater extent as a hard disk is much slower to start with. Typical speeds are 65ms - slow, 28ms - quite fast and 15ms - very fast. The other factor affecting speed is the type of interface. Most PC interfaces are referred to as MFM. This standard is fine for medium sized disks (say, up to 40Mb). Disks of over 100Mb benefit from an ESDI interface, which has long been used in mini-computer systems.

MURPHY'S 2ND LAW OF COMPUTING: States that however much memory or disk space you buy, it's always less than half what you actually need.

VECTOR SOFTWARE

MAIL ORDER SPECIALISTS

DEPT.10
VECTOR SOFTWARE
170 Arabella Drive
Upper Richmond Road
London SW15 5LG

ATARI ST	
Title	Price
Afterburner	13.50
Andes Attack	8.75
Barbarian (Mel Hse.)	6.75
Barbarian 2	10.50
Bards Tale	16.50
Batman	13.50
Borodino	19.95
Carner Command	14.95
Championship Cricket	8.75
Double Dragon	13.50
Elite	16.50
Fed. of free Traders	19.95
F-16 Falcon	14.95
Fish	16.50
Five Star	16.50
Football Manager 2	13.50
Football Director 2	13.50
Gaidragon's Domain	13.50
Heroes of the Lance	16.50
Hostages	16.50
Hustler	10.50
I Ludiarius	13.50
Joan of Arc	16.50
Leaderboard Collection	16.50
Led Storm	13.50
Operation Wolf	13.50
Outrun	13.50
Oxford	12.95
Powerdrome	16.50
SDI	13.50
Soldier of Light	6.75
Speedball	16.50
Starglider 2	14.95
STOS	19.95
Techno Cop	13.50
Test Drive	14.95
Thunderblade	13.50
Times of Love	16.50
Trackit Manager	13.50
Triad	16.50

AMIGA	
Title	Price
Ums Whirligig	14.95
Basal	12.95
Bards Tale	16.50
Bards Tale 2	16.50
Battledress	16.50
Batman	16.50
Captain Blood	16.50
Carner Command	13.50
Double Dragon	13.50
Elite	16.50
F-16 Falcon	19.95
Fire & Forget	12.95
Fish	16.50
Football Director 2	13.50
Football Manager 2	13.50
Gaidragon's Domain	13.50
Gauntlet 2	13.50
Heroes of the Lance	16.50
I Ludiarius	13.50
Interceptor	16.50
Joan of Arc	16.50
Leaderboard Collection	16.50
Led Storm	16.50
Nebulus	13.50
Operation Wolf	16.50
Outrun	13.50
Phantom Fighter	13.50
Pioneer Plague	16.50
Rocket Ranger	19.95
Sentinel	14.95
Starglider 2	16.50
Sword of Sodan	19.95
Techno Cop	13.50
Thunderblade	16.50
Trackit Manager	13.50
TV Sports Football	19.95
Virus	12.95
World Tour Golf	14.95

Advance Orders Accepted
Call 01-878-6025 and ask
for **VECTOR SOFTWARE**
Enquiries always welcome

* denotes a sale item. Prices apply
only whilst stock lasts - please
phone to check availability. No
visitors please - we are a specialist
mail order company

All prices include VAT and P&P in the UK. Please add £2.00 to overseas orders for P&P.
Add 50p to your order if you require recorded delivery (UK only). Please make
Cheques/Postal Orders payable to **VECTOR SOFTWARE**. Orders normally dispatched
within 24 Hours. Send Stamped, Addressed Envelope for free Price List -
Please specify machine.

AMIGA BLIT

Epyx to release Amiga portable?

Latest news (gossip and rumours actually!) from the States indicates that Epyx, the giant leisure software manufacturer, may be on the verge of releasing a hand-held portable based around the Amiga.

Message Port

Have you got any opinions on any issues discussed within AmigaBLIT, or about any aspect of the Amiga scene in general? If so, I'd love to hear from you. Likewise, if you've got any handy hints, tips or pokes for any software packages on the Amiga (infinite lives in Deluxe Paint?) that you think would be of use to other Amiga owners, then why not send those in as well? You can contact me at the following address: AmigaNet, New Computer Express, 4 Queen Street, Bath BA1 1EJ.

No details have yet emerged about the new machine, but informed opinion seems to indicate that the new machine is aimed primarily at the leisure market. When I phoned Epyx in the States (but don't tell my publisher, will you!), I was unable to get anyone to even confirm or deny the machine's existence.

Many industry watchers have been predicting the arrival of the new machine ever since Epyx had supposedly managed to poach Jay Miner, the designer of the Amiga custom chips, and other such Amiga personalities from Commodore-Amiga Inc when Commodore shut down the Los Gatos-based company.

AmiExpo Latest

Well, the latest AmiExpo in New York has come and gone, and already news of some exciting new products has started to filter through the usual gossip channels that computer journalists rely on so much. Several major companies in the Amiga market used the show as an excuse to either preview or launch new products.

Gold Disk was previewing the latest addition to its range of PRO series products, a new word processor and outline processor, in a similar vein to New Horizons' Flow idea processor.

NewTek, that company that gave the World Digi-View, released the latest update to its highly-acclaimed HAM paint package, Digi-Paint which is called, not surprisingly, Digi-Paint 3. Also shown at AmiExpo was its much awaited video

Video Titling made Easy

It is generally acknowledged throughout the video industry that the Amiga is the number one buy for any potential videophiles on a tight budget, why buy a machine such as the Quantel Paintbox when the Amiga can produce some very acceptable results for a fraction of the price?

However, one common complaint that many first time users have with professional video software is that it can often be almost incomprehensible to the average human. Many would even argue that calling a product professional is only a marketing ploy to gloss over the fact that the program is actual almost impossible to use!

You can therefore appreciate how overjoyed I was when a new piece of software landed on my rather untidy desk. Video Generic Master, from HB Marketing, is the ideal solution for any of you budding video enthusiasts that wish to use your Amigas to add fancy titles to all those home movies. The program is a powerful video titling package that contains a whole host of powerful facilities such as multi-direction scrolling,

fonts right up to about 70 point and a lot more besides. But best of all... it's very easy to use; even a friend of mine who owns an ST worked out how to use it!

Video Generic Master is £89.95. For further details you can contact the distributors, HB Marketing, on 0295 444433.

Snippets...

● If you're eagerly awaiting the arrival of MicroMania's follow-up to its highly regarded HAM paint package Photon Paint, then I'm afraid you're going to have to wait just a little bit longer. The European distributor, Activision (aka where's MusicX?), has had to postpone the release until at least the end of March. In Activision trying to avoid a direct head-to-head confrontation with Electronic Arts' Deluxe Paint version 3, I ask myself?



● Look out for some very hot new products from NewTek over the coming months!

● NewTek, the company that brought you Digi-View, is soon to release as much talked about Video Toaster Unit. The Toaster is a real-time HAM video digitiser, broadcast quality genlock and video effects unit which is aimed primarily at the professional video market. Currently, only an American NTSC version exists but NewTek is claimed to be working hard on a PAL version.

The price of the Video Toaster is currently undecided, as the final deciding factor will undoubtedly be the price of the DRAM chips employed by the unit. If DRAM prices do fall, then expect to be paying just under £1,000 for the hottest piece of hardware available. But if prices stay at their current astronomical level, then the Video Toaster will probably end up with a rather hefty £1,600 price tag.

Jason Holborn

* SPECIAL OFFER * SPECIAL OFFER *

Buy any Amiga/Atari Pack and receive our FREE Special Starter Pack which includes 20 Quality Disks (includes 10 Good PD Software) or receive a FREE Pocket Colour T.V. (See Below)

AMIGA A500 PACKS

PACK A	Amiga A500 + Mouse + Modulator + Our Special Pack	£370.00
PACK B	Amiga A500 + Mouse + Modulator + 10 Games + Our FREE Special Pack	£395.00
PACK C	Superbase - Our FREE Special Pack	
PACK D	Amiga A500 + Mouse + Modulator + 8 Games + Our FREE Special Pack (24 Disks)	£399.99
PACK E	Amiga A500 + Mouse + Modulator + 512KB Ram Expansion - Dragon's Lair + Our Special Pack (20 Disks)	£548.99
PACK F	Amiga A500 + Mouse + Modulator + A1084 Colour Monitor + Our Special Pack (20 Disks)	£649.99
PACK G	Amiga A500 + Mouse + Modulator + A1010 Disc Drive + Aegis Softx - Our Special Pack (20 Disks)	£548.99
A2000	+ Mouse + 1Mb RAM + Our Special Pack (20 Disks)	£1399.99
A2000	+ Mouse + 1Mb RAM + A1084 Colour Monitor + Our Special Pack (20 Disks)	£1699.99
A2000	+ Mouse + 1Mb RAM + A1084 Colour Monitor + BridgeCard + 20 Meg Hard Disk + Pocket Colour T.V. + Our FREE Special Pack (20 Disks)	£2529.99

*** Increase the speed of your Amiga with our 68010 Processor + full instruction

*** Double the speed of your Amiga with the Accelerator Card with the 14.3 MHz 68000 + Optional 16 MHz 68881 Call Processor

£30.00

WE ALSO STOCK COMMODORE C64, ATARI 520STFM, PC'S AND COMPATIBLES, PEGASUS FORMS, SOFTWARE AND COMPUTER ACCESSORIES FOR THE ABOVE COMPUTERS. PLEASE RING FOR DETAILS. All prices are inclusive of VAT. Goods are despatched within 24 hrs of cleared transaction. The above offers are only available by MAIL ORDER. Please send your cheque/Postal Order to: QUADSOFT COMPUTERS, Unit 306, 203-213 Mair Street, London, E8 3QE. Tel: 01-987 3889

JUMPDISK DEFEATS THE VIRUS



"Look chaps, the good news is that we've developed a nice new virus called 'IRQ'. The bad is that JUMPDISK have just published 'KILL VIRUS' or 'KV' as they call it. Not only does it detect 'IRQ' but it also REMOVES IT!

Not content with that they've also included VIRUSX 3.10. This spots all known Virus - years of hard work wasted. Put this together with the latest version of that marvellous utility DISKSALV1.32, ten more programs, numerous articles, tutorials, news and reviews and you've got the March issue of the world's best selling magazine on a disk for the Amiga - JUMPDISK - at only £8.50 inc. I think it's time for early retirement!"

Please mention this ad when you order the March issue of JUMPDISK and we will include one of the hottest demos shown at the recent N.Y. Amiexpo show. It features the latest games from the publishers of Dragon's Lair

We are recognized as Europe's leading specialist of public domain programs for the Amiga. Like to know more? Just order 'THE PD LIBRARY PACK' for only £4.99 inc. It includes two packed discs, a £5.00 voucher (may be used against your first purchase of ten or more disks), a 3D game with glasses and FREE UPDATE SERVICE.

Our best selling PD games 'STAR TREK' (3 disks) is still available at £8.95 inc. Please note that 1meg is required.

We are GEORGE THOMPSON SERVICES,

DIPPEN, BRODICK, ARRAN,
SCOTLAND KA27 8RN.

Tel: (077 082) 234.



We now accept Access/Visa credit card orders for same day despatch.

We are committed to providing the best material on the best media at the best possible prices backed by a service we are proud of.

IMPORTANT NOTICE

There are thought to be approximately 20 virus programs circulating in the Atari ST community worldwide

Protect your ST with

THE VIRUS DESTRUCTION UTILITY 3.1

ONLY £6.95 INC P&P

Excel Software are the sole U.K. Agents for the above product (Dealer enquiries welcome)

Excel Software also operate a large public domain software library with guaranteed virus free software!

Send a 19p stamp or call us today for our latest catalogue

EXCEL SOFTWARE, PO BOX 159, STOCKPORT SK2 6HN
TELEPHONE: 061-456 9587 (After 6pm)

POOLS PREDICTOR

AT LAST! There is an Alternative

TWO UNIQUE SYSTEMS IN ONE

- **PREDICTS** Draws, Homes & Aways. **NO** Need to Upgrade Each Year.
- **ABSOLUTE** Ease of Use Built In. and **FAST**.
- **NO** Fiddly Figures List or Redundant Databases.
- * **PREDICTIONS** Based on teams form **NOW**. Printer support for ALL Predictions.
- * **AVAILABLE** At £17.99 for Amstrad/IBM Pcs, Amstrad PCWs. £12.95 Spectrum 128/48K.

DO YOU PLAY THE 'TIMES' PORTFOLIO?

Have your playing cards checked automatically with our easy to use program. For use on: Amstrad/IBM PCs & Amstrad PCWs.

It could quickly pay for itself at just £12.95 inclusive.

C.C.S. Language Tutorial.

A unique programmable (Spoken) Language Tutorial. YOU set the questions. Has to be seen to be believed. Amstrad/IBM PCs & Amstrad PCWs. Price: £89.95. No tuition. Please Write/Phone for details.

Corwen

Computer Systems

The Old Barn, Chapel Street, Corwen
CLWYD LL21 0ER. Tel: (0490) 2902/2294
We only sell our OWN Software.

8,000 + SOFTWARE TITLES in STOCK

MOUSE MATS - HIGH QUALITY BRITISH MADE £3.95
DUST COVERS - AMIGA/ST £4.95 - SP+2 or +3 £3.50



DISK HEAD CLEANERS 3" - £6.99

3.5" - £3.99 & 5.25" - £2.99



MOUSE HOUSES only £2.95

SPECTRUM + 2/3 JOYSTICK ADAPTORS £2.90

SPECTRUM PLUS 3 CASSETTE CABLE £2.50

ROTRONICS 64K WAFERS £3.99 - 32k £3.49

BUY ANY 4 GET ONE 16K FREE VALUE £2.99

SOFTWARE AVAILABLE FOR ALMOST ANY MACHINE OR GAMES MACHINE EVER MADE

MSX-ATARI-VIC-C16 & DRAGON SPECIALIST.

FULL LIST AVAILABLE. SEND LARGE S.A.E.

PLEASE STATE MACHINE TYPE & DETAILS OF ANY SPECIAL TITLE OR ITEM REQUIRED. QUOTE CE 2

YOU WILL BE SURPRISED AT OUR RANGE & PRICES. TRY US & SEE.

CAPRI MARKETING LTD. EST 1984

24a, WHITE PIT LANE, FLACKWELL HEATH, HIGH WYCOMBE, BUCKS. HP10 9HR CHEQUE (with card number), P.O. OR TEL: 06285 31244 + (24HR ANSWERING SERVICE)



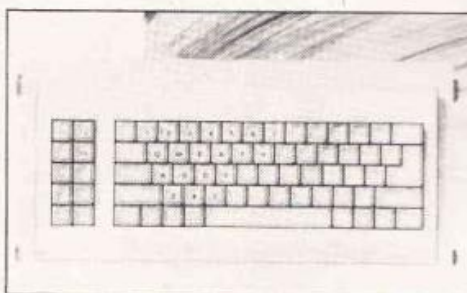
YOUR FORMAT MACHINE-SPECIFIC COLUMNS

SPEX

Coupé de grace

After an eternity or three it's good to see Miles Gordon Technology's Spectrum-compatible is finally readying itself for launch onto the market, hopefully to cries of jubilation from the crowd.

The report in the latest issue of ACE on the unveiling of the first ever SAM suggests the finished product is every bit as good as originally claimed. It's cheap, has a wide range of expansion possibilities (including MIDI), an excellent BASIC language as standard and four different modes; each one impressive in its own way. Power Without the Price if ever I saw it.



• MGT's SAM Coupé: Too good to miss?

And yet, much as I hate to be a wet blanket, you can't help thinking that with all this talk of sooper dooper new games consoles, the SAM Coupé has been shoved out of the limelight and given a bit of a back seat (no doubt a jiggly, hydraulic one just to rub it in). It couldn't really have been launched at a worse time. The current climate in computerland seems to demand more and more innovation with the release of every new piece of hardware.

MGT's baby is not going to be revolutionary or ground-breaking, admittedly, but it is a well-balanced design which deserves some success. The firm behind SAM is good news for us humble users, too. It knows and loves the Spectrum and has heaps of enthusiasm and commitment. The complete opposite of Amstrad, in fact! (Libel suits, write etc to the usual address.) Us Speccy owners are pretty fortunate to be getting a new and impressive computer late in our machine's life. You're not going to waste the opportunity and buy one of those amazingly expensive Amigas are you? Glad to hear it. Now I want that in writing.

Heroic tips

If you enjoy collecting examples of poor writing, in addition to SPEX and The Sun, invest in *Heroes of the Lance*. A sadder piece of contrived rubbish than the storyline you will not find.

I suppose the actual plot isn't at all bad, it's just the names. From what I can make out, the aim of the game is to help the inhabitants of Krynn before opposition to Takhisis can be united by recovering the Disks of Mishakal from Xak Tsaroth. Oh, and by the way, they're being guarded by Khisanth and enslaved Aghar, and even those dastardly

Xynktrbzogs are in on the act (the only good Xynktrbzog is a dead one, I always say).

So it looks like your party of adventurers, which includes Tanis, Caramon, Majere, Tasslehoff Burrfoot and Sturm Brightblade (I bet they got some stick at school), will have their work cut out. The authors must have used *The Stupid-Sounding Random Fantasy Name Construction Kit* for some of those!

Anyway, talking of rubbish, that intro is really meant to introduce some tips for the damned game (which plays a lot better than it sounds):

- First and foremost, don't think you can get away without making a map. I know it's time-consuming and you always start at the wrong edge of the paper, but do it for me, will you?
- It might seem obvious, but arrange your party according to strength and armour. Good old Finn Fireforge makes an excellent frontman.
- Don't bother feeling for traps. I found if you keep running they can be avoided fairly easily.
- Firing a few arrows at the baddies is

greatly preferable to taking them on at close range. Use Tanis, and try to get shots in as quickly as possible; you can't move when shooting.

• Killing Trolls (at last, a name I can pronounce!) is best done with a torch. Not very partial to heat, these chaps.

Old dinosaur

Remember Bubble Bobble, that adorably cute platform-style game where you zapped the bad guys by

trapping them in a bubbles and popping them? If only real life was as simple. Well, anyway, a Spectrum sequel called *Rainbow Islands* is on its way. Again, it looks adorably, bordering on the sickly, cute, and as we speak is being grafted over by Craftgold.

Also on the conversion road to your Speccy is *Renegade III*, which looks like being another mega-violent beat-em-up (would you have it any other way?), only this time the action is set in prehistoric times.

On the other hand

Last week I told you the Spectrum was going to be catered for at that glamorous show-biz event *The Northern Sinclair Show*. And if that wasn't enough, we will also be represented at the one, the only, *Alternative Micro Show*.

I promise to make absolutely no jokes about the Oric, Memotech, Enterprise and Texas owners that will also be at the Horticultural Halls on the 1st of April (yes, honestly). I like to think I can relate to them in some ways - you see my brother used to own a Colour Genie! Seriously though folks, I hope it turns out to be as big a success as the last one. Phone 0473 690729 for details.

The (nearly) infamous Speccy!

I hope you all read Graeme Kidd's excellent retelling of the Spectrum story in *Express* 17. Those who didn't, write "I will not miss an issue of *Express* again" one thousand times and get your order into the back issues department immediately.

I must confess it did throw up a few things I wasn't aware of. The fact that the Spectrum was a contender as the official BBC computer, for example. It doesn't bear thinking about. Imagine how humiliating it would be to see our machine alongside Fred Harris on one of those awful 'home micro' programs they show on BBC2 at 3:19pm just to make sure no-one will watch. A lucky escape, no?

Robin Alway

Coming soon...

Tyger Tyger • Firebird • £9.95

We saw an early version of this game briefly at last year's PC show, and have been anticipating its release ever since. Written by ex-Compunetter Gary Liddon and with stunning graphics by Paul (Dokk) Docherty, this game looks destined to become a hit. Look out for it, as it should appear in the shops soon.

BASIC RAM listing

This listing wipes out the BASIC RAM, allowing changes to be made with BASIC.

```
0 SYS49408:B-49408
1 RESTORE:FORL=OTO39:READA:POKEB=L,A:NOTEL
9 DATA 152,0,189,0,160
10 DATA 157,0,160,232,208
20 DATA 247,238,4,193,238
30 DATA 7,193,173,7,193
40 DATA 201,192,240,3,76
50 DATA 0,193,169,160,141
60 DATA 4,193,141,7,193
70 DATA 169,54,133,1,96
80 REM CHANGE READY TO FINE!
90 B=41848:FORL=OTO4:READA:POKEB=L,A:NOTEL
91 DATA 70,73,78,69,33
100 REM CHANGE POKE TO KILL
101 B=41210:FORL=OTO3:READA:POKEB=L,A:NOTEL
102 DATA 75,73,76,204
110 REM CHANGE PRINT TO ASCII
111 B=41220:FORL=OTO4:READA:POKEB=L,A:NOTEL
112 DATA 65,83,67,73,201
```

The POKE command is now "KILL", PRINT is now "ASCII" and READY message is now "FINE".

Pinball Simulator • Code Masters • £2.99

This has been written by Christian Shriggley, the former brains behind Gremlin Graphics and some neat CNet demos a long time ago. As to what the game's about - well, we guess it speaks for itself.

Rock Star

Management • Code Masters • £9.99

A game in which you can tame people like Wacko Jacko (or maybe Tina Turner...). Sounds quite original, but we'll have to wait and see.

Rally Cross

Simulator • Code Masters • £2.99

This game takes place from an overhead view-point, with you rallying against all odds. Written (it has to be) by Gavin Rauben, the guy behind a lot of Power House and Code Masters games today, it's got to be worth a look. There's always something in his games that makes you want to keep playing.

Birth of a legend

64-ers in search of a little bedtime reading should check out a book called *The Home Computer Wars*. Written by Michael S.

Tomczyk, Jack Tramiel's one-time assistant, it charts the four years up to and just after Jack Tramiel's departure for Atari - specifically, the birth and development of the Commodore 64.

Published at \$9.95 in the states, any good bookstore should be able to order you a copy if you quote them the ISBN number - 0-942386-78-7.

Sexist or what?

A subject recently brought to light once again is that of sexism in computer games. Recent game releases such as *Emmanuelle* and *Teenage Queen* on the 16-bit machines have provoked letters in various computer magazines. With the arrival of the Amiga and Atari ST, the sexist games market has never been better - due to these machines' ability to produce lifelike images.

In the days before the 16-bit invasion, several companies produced various strip poker-type games, but due to the graphic limitations of the weaker 8-bit machines, these games could never be considered realistic, and were no (arguably) worse than something to have a laugh about with your mates. Digitised pictures on the 64 are very messy, and the computer images in Martech's famous poker game from a few years ago bore little resemblance to Samantha Fox.

It was inevitable, though, that such games would arrive on the more powerful Amiga and ST - given their far superior graphics capabilities, and these are the versions that have provoked the controversy.

But is this controversy deliberate? Is it a marketing device on the part of the software houses? The fuss over these

games only serves to make people dubious - perhaps curious enough to go out and buy the product.

There is a clear majority of male computer users over females out there, agreed. Hardly an ideal situation - and is it likely to change if software stays male-dominated? But then maybe Anco has the answer, with its special *Strip Poker* data disk bearing (!) the charms of Lee and Roy.

Ian • Mic

AMIGA DESIGN DISKS

Exclusive
to
ISMSCULPT 3D/4D
and
VIDEOSCAPE 3D
FormatsHot from
ANTIC
U.S.A

- Architectural: 3D Arches, stairways, roofs, complete house or city designs
- FUTURE: Build 3D spacecraft, vehicles, androids, even complete space stations.
- HUMAN: Complete 3D male and female prototypes with complex limbs etc.
- MICROBOT: Advanced robotic designs and component parts to create your own robots.

£24.95 inc VAT

ZOETROPE

The Amiga Animation Programme

Requires 1meg. £99.95 inc VAT Pal version. For more information contact:

ISM Tel: 0983 864674

or SEE YOUR LOCAL AMIGA SPECIALIST

COMPUTER REPAIRS

Fixed Super Low Prices!

Inclusive of parts, labour and VAT

FIRST AID
FOR
TECHNOLOGY

1 WEEK TURNROUND

* AMSTRAD / SINCLAIR AUTHORISED *

SPECTRUM 48K	£14 + Free Game	VIC 20, C+4	£22
SPECTRUM 128	£18	1541 DISK DRIVE	£36
C64	£22 + Free Game	C2N TDECK	£19
C128	£29	MPS 801	£38
C16	£18	C64 PSU FOR SALE	£20

Please enclose payment with item - 3 month warranty on repair
Please enclose advert with repair

W.T.S. ELECTRONICS LTD
(NCE 020389)

Studio Master House, Chaulend Lane, Luton, Beds. LU4 8EZ

Tel: 0582 491949

(4 lines)

Standard terms of business apply



EEC LTD
£2.00 OFF OCP



OCP ART STUDIO FOR CBM USERS

"without doubt the best" PCW
"in short, excellent" Computer Trade Weekly
"an exceptional product" Your Computer
"a notch above most design packages" Personal Computer World.

COMPREHENSIVE, USER FRIENDLY ART AND DESIGN SOFTWARE

ADVANCED ART STUDIO DISK OR CASSETTE

CASSETTE ☐ OR DISK ☐ £19.95

ART STUDIO CBM 64

CASSETTE ☐ £12.95 DISK ☐ £15.95

ART STUDIO CBM MOUSE £29.95
(£2.00 off if purchased with above programs)

SPECIAL PRINTER DEAL

SEIKOSHA GP 500 VC £129

80 Col. Dot Matrix, 50 C.P.S. Tractor Feed, 8 character sets.
DEDICATED CBM CABLE FREE!!!

Terms C.W.O Access or Visa, Prices inc. VAT. Please add P&P of
£1. Software £6, for Printer UK - £15 Overseas.
Offers subject to availability - ORDERS TO:-

EEC LTD

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

VISA

ACCESS



MoRE ACROnYms

Why haven't we seen any OOPs on the PCWs yet? You know, Object Oriented Programming, though what the acronyms stand for is becoming increasingly irrelevant as long as they can be pronounced; for

For example you might have an object called Menu that knows all about the PCW screen environment, how to save a bit of it, pull down the menu, collect your choice and put the screen back. This is quite a lot of work and well worth using again; an OOP language makes this kind of thing easy to re-use. This is only a tease since it seems unlikely we'll get one.

I can C, I can C!

Hisoft is easily the best programming houses anywhere, and its range of languages for the PCW offers unbearable value. Since I like to be thought fashionable I program in C even when it would be easier

to do it in something else (or not at all) and Hisoft C is the version I use (I know nothing - so don't write in with your problems). Instead look at this:

```
main()
{
  int a,b,c=5;
  power(a,b);
  printf("%d %d",a,b);
}

power(c,d)
int *d;
{
  *d=c*c*c;
}
```

According to Kernighan and Ritchie (who wrote C) this shouldn't work - the variable c isn't declared in POWER yet we use it anyway - but it works perfectly under both Hisoft C and Zortech C. Any others? And since it's answers time, when is Hisoft going to release a version of C for the PCW with floating point numbers? Write to Hisoft and ask.

Steve Patient

Seriously interesting

In contrast to our more upmarket (that is to say, expensive) computer brethren browsing among the PC contemptibles, the PCW encourages a more realistic estimate of the pocket depth. There is a surprisingly rich undergrowth of fine, homegrown, programs appearing for the PCW. Fortunately, they aren't all accounts packages.

In recent weeks two have caught my eye; Gilligans Guide, based on the Ordnance Survey maps and providing a wealth of information in graphical form on various parts of the country (new areas to order for only £30); and an astronomy program that displays any part of the night sky from any part of the Earth at any time. Both of these will soon be covered in detail in the pages of the very wonderful 8000 Plus.

example no one now living can remember whether SPOOLER is an acronym or not (but if it is I know what it stands for).

The idea behind OOP is that a chunk of code and the data it works on is treated as an object that you can send instructions to, use as part of another object or just save for a rainy day.



World-wide communication is possible, using amateur satellites and microwave links, and it is all absolutely free, once you have the hardware and software. Most QL "packeters" use the excellent Qualsoft terminal emulation program from TF services.

DIY QL

Quanta member Mike Lilley and his brother have designed a printed circuit board about the size of an A4 sheet of paper, that takes all the plug-in chips from a standard QL, plus quite a few other components. The result is a fully QL-compatible computer with 512K of RAM, disk interface and parallel printer interface, with provision for several EPROMs and special-purpose interfaces (like analogue-digital converter).

Six of these systems have been built so far, with relatively few problems in most cases.

Packet radio

Several QL users who are also licensed radio amateurs are using their QLs for packet radio, in conjunction with a 2 metre transceiver, and a box of tricks called a Terminal Node Controller (TNC) that is fitted between the computer (via the RS-232 port) and the transceiver.

The TNC contains a modem chip and a powerful Z80-based microcomputer that takes data sent to it from the computer, converts the data into "packets", with checksums and destination addresses, and sends the packets, via a network of other

Ancient history

The QL is about six years old this month. It's difficult to be precise about its exact age, as it had a rather troubled gestation period, and arrived prematurely.

The happy event was attended by hordes of hacks and hackettes who wetted the head of Uncle Clive's new baby with copious amounts of bubbly at a celebratory breakfast, and subsequently wrote glowing reviews of the new arrival in spite of the fact that no-one was allowed to actually play with it. Watch next week's Express Micro Biography for the full story of the QL...

New C compiler

PDOL is advertising a new C compiler for the QL.

Unlike the Digital Precision product, the new compiler is a full implementation of the language, and is in fact identical to the latest release of the Lattice C compiler for the Atari ST range, with a new QL-specific library. In fact, the QL emulates the ST when it runs the compiler.

This does not mean that you can run ST software on the QL, by the way. This compiler is ideal for use with the SuperBASIC-C translator mentioned a couple of weeks ago.

John Torofex

packet stations, to the destination. The same process occurs in reverse when one receives data from another station.



SATURDAY, APRIL 8th
at

Stokes Hall, Church Road, Leyland, Lancashire
10.00am until 6.00pm

Over 35 stands specially for the home computer user.

HARDWARE ♦ SOFTWARE ♦ PERIPHERALS
PRINTERS ♦ DISKS ♦ DISK DRIVES ♦ GAMES

Plus

The first public showing in the North of
CAMBRIDGE COMPUTERS'
Z88 PORTABLE COMPUTER

Also on show:

Cambridge Computers' new Satellite TV system

Meals and refreshments available all day.
Bar open throughout the exhibition.

ADMISSION £1.50 (Payable on the door)

For further information contact the organiser,
DAVID BATTY on Leyland (0772) 454328
FAX: 0772 454680



SATURDAY APRIL 1ST (THIS AIN'T NO JOKE)
10AM - 5PM

HORTICULTURAL HALLS
GREYCOAT STREET, LONDON SW1
NEAR VICTORIA TUBE/RAIL/COACH STATIONS

ENTRANCE: £2.00-ADULT £1.00-CHILD

EVERYTHING FOR THE SPECTRUM - BBC - QL
ZX88 - EINSTEIN - MSX - ENTERPRISE
ADAM - DRAGON - TEXAS TI99/4A - MEMOTECH
LYNX - ORIC - ATARI 8 BIT - JUPITER ACE
COMMODORE 8 BIT - ELECTRON

AND A HUGE BRING & BUY SALE

ALL THE FUN OF THE MICROFAIR

THE ALTERNATIVE MICRO SHOW IS ORGANISED BY
EMSOFT LTD, POPLAR LANE, IPSWICH, SUFFOLK IP2 0BA

TEL: 0473 690729

BEET BOX

The virus is spreading...

That is, according to a correspondent who gives his address only as 'The Micro Kid, Hackers UK Ltd, England'.

This nerd claims to have placed a virus on his school's Eiconet network. Proud of this dubious achievement, he then goes on to offer me a tip for the column.

Well, firstly mate, you can't place a true virus on Eiconet. Secondly, I am not going to publish your tip. And thirdly, I have passed your details back to your school.

Many a good tune

If you have ventured down to your local pub recently, and seen one of these curious-looking CD jukeboxes, then you could well have been looking at a Master 128 in disguise.

Also featured on Arena last week, the jukeboxes have already sold over a thousand units. The venture looks set to be a major success for Acorn, which has provided the computers that form the heart of the system, and the power to access around a thousand tracks of digital music.

Why pick a Master? Well, in the words of Joanne Arbiter, MD of Arbiter Leisure, "inherent reliability and robustness".

He finishes his letter with "That's all for now until my next tip", so I might add: "That's all until my next tip-off!"

Dragon emulator?

Things seem to have woken up recently from their post-Christmas torpor, with a veritable deluge (well, trickle anyway) of new material onto my desk.

ESM keeps 'em coming with Puff, which is one of its educational adventures for kids. I must admit that I was enchanted by the story of a dragon who can't fly any more.

I was less enchanted by the software, which is plain and simple both in presentation and format. However, it will do the job required, which is to help children learn English and arithmetic.

Sam's back

Superior is also keeping it going with Play it Again Sam 7. Now it should have been available for a while by the time you read this, so I am not going to bore you with a review. But what I will do is keep you posted on the Electron compatibility of Firetrack. If it plays well, then it's a must for Elk fans. One can only guess why these things were never converted before.

Terminal mess

At the Which Computer? Show I was somewhat surprised - and pleased - to spot two Master computers on the Acorn stand.

Both were doing duty as terminals on a hybrid Eiconet/Unix system, but to be quite honest they would have been better standing alone judging by the mess the system was in, with worried-looking men trying to trace the signal with a multimeter! Still, it does demonstrate the flexibility of this eight-year-old computer.

Andrew Brown

MSX TR

MSX digitising

A couple of weeks ago Express did an article on computers and video digitisers, and given that little information was available for the MSX user, I thought I would take this opportunity to cover the subject.

In Japan, MSX computers can be expanded and upgraded to do almost anything, so it comes as no surprise to find that you can purchase a cartridge that allows digitising and titling on even an MSX 1 computer. Unfortunately, this device only works on the Japanese TV system - this is why we have not seen it in the UK.

Luckily, you can still purchase the Pioneer PX 7 MSX computer at the ridiculously low price of £199.00, including titling software. This computer was originally £500.00, so it is a real bargain. The machine has all the usual MSX features, but also has two BNC connectors: one for inputting a signal from a camcorder or VCR, the other giving a "mixed" output for recording onto a second recorder. You can place text and graphics over your video, and can also use the inbuilt sound chip to add music or sound effects.

The only MSX computer available in the UK that can do full digitisation and graphic overlays is the Philips MSX 2 VG 8280UK, at just over £800. Now that Philips is no longer

manufacturing these computers, they are soon going to be in short supply, as even at this relatively high price they are selling well.

For details of the Pioneer PX 7 computer, contact Videoquip, 5 Fosse Road South, Leicester LE3 0LP or phone 0533 558818. For details of the Philips range of computers, contact Nightdare Ltd, 118 Walnut Road, Chelston, Torquay, Devon TQ2 6HP, Tel 0803 606146, or contact Knights Computers, 108 Rosemount Place, Aberdeen AB2 4YW, Tel 0224 630526.

Ghoulish tips

Richard Cross, of Bearwood Nr Bournemouth, has kindly sent in a few tips and pokes for the MSX gamers amongst you. They are:

- For Ghostbusters, type in the name JON and say your account number is 1234 - you will be given an enormous amount of starting money.
- For Hunchback, before loading type in:
10 BLOAD"CAS":poke-283700
20 DEFUSR=&H9000:A=USR(0)
Now run the program.

More of Richard's tips next week, and in reply to Richard's request for a free sub for all his hacking work - you've no chance mate. Even I have to buy my own copy of the mag each week.

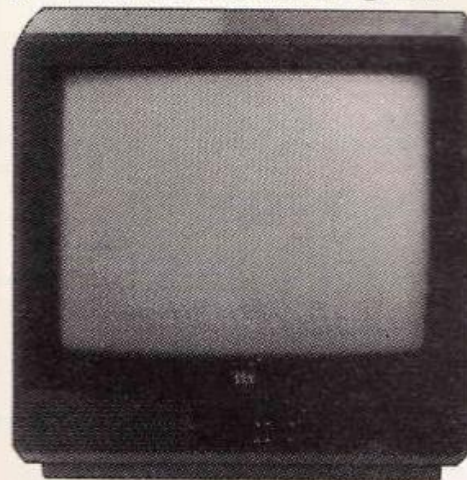
More games

The MSX software scene is still thriving, with many games in the pipeline. Some to look out for are: Superman from Tynesoft; Scape Ghost from Level 9; System 8 and Turf Form, both from CDS Software; Thunderbirds from Grandslam; Crazy Cars for the MSX 1 and 2 is now out on cartridge, and I have a copy in my possession courtesy of Titus software. It sells at £24.95, so is not cheap. Watch this space for my impressions of the game.

Keith Neal

AN Evesham Micros SPECIAL PURCHASE

ITT CP3228 TV/MONITOR



COMBINES THE FEATURES OF A TV & MONITOR ; EXCELLENT DISPLAY QUALITY WHEN USED WITH AN ATARI ST OR CBM AMIGA AND A SCART CABLE

- ☐ 41cm (16 1/2") FST tube
- ☐ Multi feature infra-red remote control
- ☐ Full SCART monitor input socket
- ☐ 8 watts peak music power
- ☐ 40 station tuner presets
- ☐ Supplied with ST or Amiga SCART cable
- ☐ Full TWO YEAR guarantee
- ☐ Superb value for money
- ☐ Use EXPRESS voucher to save £4.00!



ONLY £229.00 including VAT and delivery

Evesham Micros

How to order from
Evesham Micros

Phone us with your
ACCESS or VISA
card details on:
0386-765500

All prices include VAT and delivery. Express Courier delivery £5.00 extra.

Send cheque, Postal Order
or ACCESS/VISA card details

Govt, educ. & PLC orders welcome
Same day despatch whenever possible
All goods subject to availability, E.&O.E.
Open to callers 6 days, 9.30-5.30

Evesham Micros Ltd
63 BRIDGE STREET
EVESHAM
WORCS WR11 4SF
0386-765500
fax 0386-765354
telex 333294

Also at: 1762 Pershore Rd., Cotteridge, Birmingham B30 3BH Tel: 021 458 4564

CPC

CPC's never had it so good

Now look here, I'm getting pretty sick and tired of all these references in the computer press to the 'poor old CPC' and its imminent extinction. It's been going on, like a particularly uncomfortable background noise, for a long time now. Like many a self-fulfilling prophecy, however, the cumulative effect is to undermine confidence and give people the impression that there must be fire to accompany the smoke.

What's prompted this little outburst (oooh I love it when you're angry) was the news story in this very organ last week (p.6) that nailed the 'bye-bye' nonsense once and for all. At least NCE hasn't fallen for the knee-jerk anti CPC reaction. So next time you hear someone sneering at your machine and predicting it'll

go out of production 'very soon' - whether it's a journo, shopkeeper or 16-bit machine owner - hit 'em with a clip from last week's NCE and a few of the following facts. They'll soon feel as if they've gone four and three-quarter rounds with Iron Mike.

● **fact one:** the most recent Gallup figures indicate that more CPC games are bought than Commodore 64s.

● **fact two:** the same figures show that considerably more than twice as many CPC games have been bought this year than Atari STs and Amigas put together.

● **fact three:** despite thoughtless assertions that 'hardly any' games get converted for the CPC any more, all but four of last week's All Formats Top 40 are available in an Amstrad version.

● **fact four:** the leading CPC-specific magazine, Amstrad Action, has just returned readership figures for the second half of 1988 up from 35,000 by very nearly 10 per cent.

● **fact five:** more CPCs were bought during the six months up to Christmas 1988 than in the same period of 1987.

● **fact six:** the 464 pcb has been redesigned, and some 6128 components have been integrated onto a custom chip.

None of these facts suggest to me that the CPC is fading fast, or that it's about to go out of production. Mr Sugar isn't interested in what fashion says, or what computer journalists tell him he ought to be doing (that includes me, of course). But if something sells he'll sell it.

Wheel be out soon

It was only a couple of weeks ago I was telling you about Microleisure's rather terrific Star Cursor arcade-style joystick. Now

Titan poke

Neville Short has sent in an infinite lives poke for the Titus hit.

```
10  TITUS POKE - DISK
20  NCE MARCH 1989
30  BY N. SHORT
40  HELLO DAVE
50  MODE 0:BORDER 0:FOR I=0 TO 15:READ A:INK I,A:NEXT
60  OPENOUT"A":MEMORY 67FF:CLOSEOUT
70  'LOAD"!TITAN1",6C000
80  'LOAD"!TITAN2",68000
90  MODE 1:LOCATE 3,12:PRINT" INFINITE LIVES (Y/N)?"
91  AS="":WHILE AS="":AS=UPPER(INKEY$)WEND
92  IF AS="Y" THEN 100 ELSE 110
100 POKE 41A19,0:POKE 41A1A,6CA:" INFINITE LIVES
110 MODE 0:FOR I=0 TO 15:INK I,0:NEXT
120 'LOAD"!TITAN3",6C000
130 RESTORE 150:FOR I=0 TO 15:READ A:INK I,A:NEXT
140 RESTORE 160:FOR I=0 TO 14:READ A$:
    POKE 44000+I,VAL("6"+A$):NEXT:CALL 44000
150 DATA 0,26,13,20,14,2,1,24,12,15,6,3,19,3,16,25
160 DATA F3,23,00,0E,11,00,80,01,0E,40,ED,B0,C3,00,10
```



comes news of something even more exciting in the usually staid and uninteresting waggling department. It's a steering wheel device which plugs directly into your CPC joystick port. As yet it's only available in the States, but plans are fairly advanced for its release this side of the water. I'm not allowed to show you a picture yet, or give details about who's selling it, but I can tell you a) it'll cost about £35, b) I've tried it, and it certainly brings a whole new dimension to driving sims and similar games - WEC Le Mans is even better when you're really steering! and c) Amstrad Action has five of the things to give away in a

competition featured in its May issue (out on April 13th). They're to boost Entertainment International's release of Crazy Cars II, coming soon, as they say, to a small screen near you.

Steve Carey

SHARE OF SALES BY MACHINE

Machine	This week	Last week	4 wks ago
SPECTRUM	40.4	40.1	40.9
AMSTRAD	21.0	20.1	19.2
COMMODORE 64	19.8	20.8	19.7
ATARI	5.0	3.4	4.4
ATARI ST	4.6	5.1	5.4
AMIGA	3.7	4.3	3.9
BBC	1.7	1.7	1.7
ELECTRON	0.9	0.9	1.0
COMMODORE 16	0.6	0.8	1.0

AVERAGE SALES PER MACHINE

Machine	This week	Last week	4 wks ago
SPECTRUM	40.4	40.1	40.9
AMSTRAD	21.0	20.1	19.2
COMMODORE 64	19.8	20.8	19.7
ATARI	5.0	3.4	4.4
ATARI ST	4.6	5.1	5.4
AMIGA	3.7	4.3	3.9
BBC	1.7	1.7	1.7
ELECTRON	0.9	0.9	1.0
COMMODORE 16	0.6	0.8	1.0

• Is the CPC on the way out? Not according to Gallup!

Unbeatable value

**CPC464
CPC664
CPC6128**

MONEY MANAGER

SAVE £5 on RRP of £29.95 when you order direct from Connect Systems

Incl. VAT, P&P

Financial management software for personal and/or small business use

Money Manager is an easy-to-use system for recording all financial transactions, and for analysing them in a number of very powerful ways in order to facilitate sound financial management. It is ideal for controlling the finances of a small business, or for users wishing to control their personal finances in a business-like way. Use it to check bank statements, keep track of expenditure, monitor cash flow, make budgeting forecasts, prepare business financial statements, pacify your bank manager, convince the tax and VAT inspectors, avoid nasty surprises, etc. etc.!

12 months of entries are kept in a file stored on your disc. At any time, you may load a file into the computer memory, add to or edit the entries, analyse them, print statements, and then save the updated file for later use. Entries may be historic (for record keeping) or forecast (for budgeting). You may have any number of separate files, and make copies of files for archive purposes. You may advance the period covered by a file month by month.

Up to 100 separate transactions may be entered per month. Each entry consists of:

- The day of the month, e.g. 23rd of June.
- An account number, one of up to 9 defined by you to suit your circumstances e.g. 1=Barclays, 2=Visa, 3=Halifax etc.
- Reference, e.g. ABC123 for a cheque number or invoice reference.
- A class code, one of up to 50 defined by you to suit your circumstances e.g. h0=Household expenses, h1=Mortgage, h2=Rates or p0=Production, p1=Raw materials, p2=Assembly, p3=Packing, etc.
- A description so that you can see what each transaction was for, e.g. "New gearbox" or "Box of 10 discs."
- An optional single character mark which you may include for further classification, e.g. b=business, p=private, etc.
- The amount of the transaction, which may be plus or minus.
- A marker to indicate whether the entry is exempt, zero rated or taxable for VAT, or alternatively the actual VAT paid.

You may select categories according to account, class and mark (e.g. all entries, or all motoring expenses for business using a credit card, etc.) and produce reports on the screen or printer as follows:

- Full detailed statements, showing each transaction for any month or for the whole year.
- Detailed monthly VAT statement showing input and output amounts excluding VAT, the actual VAT and the total amount, plus totals and net VAT due.
- Tables showing the totals in each class for each month of the year.
- Tables showing the totals in each class for each account.
- Tables showing monthly maximum, minimum, average balances, turnover, cashflow etc.
- Bar graphs of any category month by month.
- Pie charts of annual totals for various categories (CPC version only).

Plus: standing orders-entries optionally sorted into date order-item search facility. Comprehensive manual and full set of practice data included. Full telephone support.

Unrivalled features

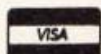
Money Manager Plus
for PCW 8256, 8512,
9512, PC1512, 1640,

**PPC
£39.95**
Inc. VAT, P&P

Send cheque or credit card number or phone for immediate despatch

Connect Systems

3 Flanchford Road, London W12 9ND. 01-743 9792 8am-10pm 7 days a week



FREE! TENSTAR PACK WORTH OVER £229!



FREE! - AMEGAS - by Players



FREE! - INSANITY FIGHT - by Microdeal



FREE! - ART OF CHESS - by SPA



FREE! - MERCENARY COMP - by Novagen



FREE! - BARBARIAN, ULT WARRIOR - by Palace



FREE! - TERRORPODS - by Psygnosis



FREE! - BUGGY BOY - by Elite



FREE! - THUNDERCATS - by Elite



FREE! - IKARI WARRIORS - by Elite



FREE! - WIZBALL - by Ocean

Commodore AMIGA



ONLY
£3.34
PER WEEK
RETURN COUPON FOR DETAILS

£346.95

+VAT= £399
INCLUDES FREE UK DELIVERY

The Amiga 500 is one of a new breed of technologically advanced computers, which are now emerging as the new standard for home computing, based around the new Motorola 68000 chip. The A500 has 512K RAM and a 1Mbyte double sided disk drive built-in. It can be connected directly to a wide range of monitors, or to a domestic TV set through a TV modulator. Designed with the user in mind, the A500 features a user friendly WIMP environment and comes supplied with a free mouse. And when you buy your Amiga from Silica Shop, the UK's No1 Amiga specialists, you will experience an after sales service that is second to none, including a technical support helpline and free newsletters and price lists. Return the coupon below for our current information pack, which will give details of the Silica service and the very latest Silica Amiga offers. E&OE

WHY SILICA SHOP?

Before you decide when to buy your new Commodore Amiga computer, we suggest you consider very carefully WHERE you buy it. There are many companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer as well as expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Amiga related products in the UK, a full time Amiga specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years and can now claim to meet our customers' requirements with an accuracy and understanding which is second to none. Here are just some of the things we can offer you:

THE FULL STOCK RANGE: The largest range of Amiga related peripherals, accessories, books and software in the UK.

AFTER SALES SUPPORT: The staff at Silica Shop are dedicated to help you to get the best from your Amiga.

FREE NEWSLETTERS: Mailed direct to your home as soon as we print them, featuring offers and latest releases.

FREE OVERNIGHT DELIVERY: On all hardware orders shipped to Silica Shop customers within the UK mainland.

PRICE MATCH PROMISE: We will normally match our competitors' offers on a 'same product same price' basis.

FREE TECHNICAL HELPLINE: Full time team of Amiga technical experts to help you with your technical queries.

But don't just take our word for it. Complete and return the coupon below for our latest Amiga literature and begin to experience the Silica Shop specialist Amiga service.

PHOTON PAINT PACK

A500 Computer	£399.99
TV Modulator	£24.99
Photon Paint	£69.95
TenStar Pack	£229.50
TOTAL RRP:	£724.43
LESS DISCOUNT:	£325.43
PACK PRICE INC VAT:	£399

1084S MONITOR PACK

A500 Computer	£399.99
1084S Colour Monitor	£299.99
Photon Paint	£69.95
TenStar Pack	£229.50
TOTAL RRP:	£999.43
LESS DISCOUNT:	£350.43
PACK PRICE INC VAT:	£649

FREE FROM SILICA

When you buy the Amiga 500 from Silica Shop, you will not only get a high power, value for money computer, we will also give you some spectacular free gifts. First of all, we are now including a TV modulator with every A500 stand alone keyboard, so you can plug your Amiga straight into your TV at home (the modulator is not included with the A500+A1084S pack as it is not required for use with monitors). Secondly, we have added a free copy of Photon Paint, an advanced graphics package with an RRP of £69.95. Last (and by no means least!), so that you can be up and running straight away, we are giving away the sensational TENSTAR GAMES PACK with every A500 purchased at Silica Shop. This pack features ten top Amiga titles which have a combined RRP of nearly £230! Return the coupon for details.

FREE TENSTAR PACK

Amegas	£14.95
Art Of Chess	£24.95
Barbarian, Ult Warrior	£19.95
Buggy Boy	£24.95
Ikari Warriors	£24.95
Insanity Fight	£24.95
Mercenary Comp	£19.95
Terrorpods	£24.95
Thundercats	£24.95
Wizball	£24.95
TOTAL RRP:	£229.50 INC VAT

DO YOU OWN AN AMIGA?

If you already own an Amiga computer and would like to be registered on our mailing list as an Amiga user, let us know. We will be pleased to send you copies of our price lists and newsletters FREE OF CHARGE as they become available. Complete the coupon and return it to our Sidcup branch and begin experiencing a specialist Amiga service that is second to none.

SILICA SHOP:

SIDCUP (& Mail Order)	01-309 1111
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX	
OPEN: MON-SAT 9am - 5.30pm	LATE NIGHT: FRIDAY 9am - 7pm
LONDON	01-580 4000
52 Tottenham Court Road, London, W1P 0BA	
OPEN: MON-SAT 9.30am - 6.00pm	LATE NIGHT: NONE
LONDON	01-629 1234 ext 3914
Selfridges 1st floor, Oxford Street, London, W1A 1AB	
OPEN: MON-SAT 9am - 6.00pm	LATE NIGHT: THURSDAY 9am - 8pm

To: Silica Shop Ltd, Dep NCE, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX

PLEASE SEND ME FREE LITERATURE ON THE AMIGA

Mr/Ms/Ms Initials: Surname:

Address:

Postcode:

Do you already own a computer?
If so, which one do you own?

**EXPRESS
EXPRESS
EXPRESS**

SALES

AMIGA MEMORY EXPANSIONS

Fully populated, easy to fit (just plug in) memory expansion boards for the Amiga A500.
Both boards are memory compatible with Commodore's expansion.

MX1 - 512K switchable memory expansion board£84.95

MX2 - 512K switchable memory expansion board with battery backed time and date£99.95

Dragons Lair, 6 disks, 1 meg only£34.95
Dungeon Master, 1 meg only£19.95

All prices are fully inclusive.
Cheques / Postal orders to:

C & M Micros
25 Middlefield Road
Bessacarr
Doncaster
DN4 7EB

MID SUTHERLAND DATA

* PC SOFTWARE *

* PARROT DISKETTES *

PHONE NOW FOR DETAILS !!

0549 2340

PCW 9512 USERS

NOW YOU CAN AFFORD TO USE YOUR PRINTER !!

Send a used PCW 9512 Carbon-Rim Ribbon Cassette - £1.99 to:

Aladdink, (Dept C.E.) Eyemouth,
Berwickshire, TD14 5AP

We will supply a **BRAND NEW** Carbon-Rim Ribbon AS GOOD AS NEW (INTRODUCTORY OFFER expires 31st March 1989) (Limited to one Cassette per household).
Also.... Fabric Ribbons, reinked for most printers. Send S.A.E. for details stating printer make and model or Telephone: 08907 50955 to 8pm

All Public Domain Only £1

What do you want from a professional Public Domain Bureau? We believe have the answer. Send for an Atari ST catalogue now. You've nothing to lose!

- Same day dispatch - Next day delivery!
- Free Catalogue mail-out / Special Offers.
- Credit card ordering / Instant processing.
- No subscription fees or hidden extras.
- Carefully selected top quality software.

As one of the longest established in Atari ST Public Domain software, with probably the largest library, you can't get the same service anywhere else! **PHONE** or send a large SAE for your **FREE** catalogue.

STAR U.K. LTD Dept NCE.50 Bridge Street, Aberdeen, Scotland. AB1 2JN. Tel: (0224) 593024

DRAGON COMPUTER SHOW

Ossett Town Hall, Ossett, West Yorks.

SATURDAY 25th MARCH

10 am to 3 pm. Admission £1.00, OAPS + Children 50p.
Leading Dragon Software Suppliers in attendance.

Details and information on:

0656-880965

miditech

**MIDI SOFTWARE
FOR ATARI AND AMIGA'S ?**

We deal only in Computer Music so we can offer you the biggest choice plus the Specialist Knowledge to help you get the most from your Midi Setup.
Write or phone for our Price Lists containing over 100 Programmes, Accessories and Demo Discs.

The Midi Pack

Yamaha PSS - 480, Track 24, software, midi leads, plus instructions - the ideal starter package for only - **£249.00** including P&P
Amiga owners please add £30 for interface

Amiga Owners

At last...A Pro Featured Sequencer at a budget price.
Track 24 is a New Release from Comus featuring Real and Steptime Recording plus Notation Editing.
All this and more for only **£75.00** or **£100.00** with interface.

MIDITECH, THE COLOSSEUM, PORTLAND GATE, LEEDS, LS2 3AW TEL 0532 446520
ACCESS & VISA WELCOME MAIL ORDER AND TRAINING PACKAGES AVAILABLE

EAST MIDLANDS PUBLIC DOMAIN LIBRARY

Amiga PD disks over 400 in stock!
£5 p.a. Subscription including 2 FREE Catalogue Disks (regularly updated)

* **SPECIAL OFFERS MONTHLY***

Cheques or Postal Orders payable to:

E.M.P.D.L.

54 Watnall Road, Hucknall, Notts, NG15 7LE.
Tel: 0602 630071

Horse Racing Software that consistently picks winners

IF YOU ARE LOOKING FOR A PROGRAM THAT:

- * gives every horse a TRUE RATING and forecasts the CORRECT ODDS
- * provides sound BETTING ADVICE * needs NO RACING KNOWLEDGE
- * requires the minimum of updating
- * ALL at a price you CAN afford

Then look no further than the **BRIMARDON FORMULA PLUS**
- uses information from a daily racing paper -
Price £35



Last season 20% after tax level stake profit from blindly backing TOP RATED HORSES IN EVERY VALUABLE HANDICAP RACE

Also available the **BRIMARDON FORMULA** - uses any daily paper - **Price £25**
DOZENS OF TESTIMONIALS from delighted customers.
"brilliant" ... "results have to be experienced to be believed" ... "won £3700"

Send a cheque or postal order and your computer make to:



Brimardon

Computer Racing Service
75 Cockerlton Green, Darlington, DL3 9EG
0325 288483

STOP LOSING - make 1989 the year you beat the bookies

PC SHAREWARE

CHOOSE FROM HUNDREDS £1.75 (51/4) £2.75 (31/2)
Free catalogue - Write or Phone now!
Euro PC at Bargain Prices
Softcell Services, 9 Wells Street,
Cardiff, CF1 8DW
0222 222895

ATARI ST PUBLIC DOMAIN

Wordprocessors, Games, Utilities, Music, Languages, Art, Educational and even DTP prog from £1.75!
You'll be amazed at our Premier Service.
For a FREE catalogue send a 19p stamp to:
ALPHA COMPUTING
32 Meadow Drive, Halifax, W.Yorks HX3 5JZ

GOODMAN P.D.L.

Established as one of Britain's leading suppliers of Public Domain Software for the Atari ST, The Catalogue gives details of the 100's of programmes that are now available including games, utilities, Demo's etc.
Prices from only £2 fully inclusive or from 75p if you supply your own discs.
Send a 19p stamp for further details to:

GOODMAN P.D.L.
16 Conrad Close, Meir Hay Estate
Longton, Stoke-on-Trent ST3 1SW
0782 335650

FED UP WITH GAMES?

Learn BASIC Programming.
Get this 16 page Introduction for £3.
Use on CPC, Beeb, etc. with notes for Commodore & Spectrum.
Cheque, P.O. or Web Parcel of 3 coins to:
J.H. TAYLOR,
18 SEAHILL ROAD, HOLLYWOOD,
CO. DOWN, BT18 0DA

AMIGA & ST SOFTWARE 1/2 PRICE!

Amiga A500's from £350
Atari ST FMS (1Meg drive) from £260
Prices include VAT

SAE for lists or ring 0602-274369
Mike Jarvis: 19, Portree Drive, Nottingham NG5 5DT

BLITSOFT

Amiga Public Domain Club

£5 per year subscription gives you - 3 introductory disks from our rapidly growing catalogue - FREE disk for every 3 purchased
Join now or send S.A.E. for catalogue
Members will receive catalogue and disk vouchers
All Disks £2.50 incl. P&P

Send Cheques/P.O.'s to:
BLITSOFT, 6 Dorney Place,
Bradwell Common, Milton Keynes,
Buckinghamshire MK13 8EL

S.F.A. COMPUTERS
AMSTRAD-COMMODORE-CAMBRIDGE

**COMMODORE PC 1
C/W MONITOR + ABL 1
SOFTWARE £295 + VAT**

Phone now for best prices on all models.
Unit 15, Abbey Mill Business Centre,
Seedhill Road, Paisley PA1 1JN
Tel: 041 - 840 - 1477

FREE !!! (1 per Household)

10 Wrap Around 3 1/2" Disk Labels
S.A.E. to: N.B.S. (Label Offer)
21, Priory Rd, Newport, Isle of Wight

THIS SPACE ATTRACTS ATTENTION ! FOR JUST £21

CALL SARAH KING TO RESERVE YOUR SPACE NOW!!
ON 0225 444439
OR 0225 446034

COMPUTERS & BUSINESS

The Home Study course that works.
Learn about the role of computers in today's businesses.

Study in the comfort of your own home, our easy Home Study course covering such topics as:

- * Computer at work *
- * Programming in BASIC *
- * Graphics *
- * Machine code *
- * Commercial applications *

FREE brochure, no obligations from:
IDEAL SCHOOLS
FREEPOST CU4
GLASGOW G1 4BR

WANTED

ALL COMPUTER
HARDWARE/SOFTWARE WANTED
FOR CASH OR EXCHANGE
NOTHING REFUSED!!
01 727 3538

TECH TIPS

HELP!

Flipped!

I have been informed that notching floppies to get double-sided disks from single-sided ones, can cause damage to your drive.

Is there any truth in this or can I make all my disks flippies?

T. S. Yeo, Dunbartonshire, Scotland.

As long as you make a clean cut into the cardboard sleeve of the disk you intend to convert to a floppy, or use a commercially available disk notcher (try mail-order advertisers, should be around £5), you shouldn't have any problems. Be aware, however, that if you make this modification to a floppy designated as being single-sided, then the integrity of the data on the flip side cannot be guaranteed.

The wizards @ Mandarin software tell me that it is very easy to master STOS, and to encourage your efforts, they are currently offering the sum of £5000 to the games-writer of the year. Get programming!

TIP

A Little

Bored, Fontleroy?

I read with interest the tip printed in issue 16 regarding Amiga fonts. However, the tip as printed is almost unusable. The standard AmigaDOS file which goes with every 'The Very First' font is such that the Amiga thinks there are many more point sizes than actually exist in the font directory. This means that if the fonts are copied

language is very similar to that of C and machine code, so it shouldn't be a problem to incorporate some degree of 'intelligence' into your boxing character.

To achieve smooth movement of your figures, use between four and eight frames of animation.

TIP All the angles

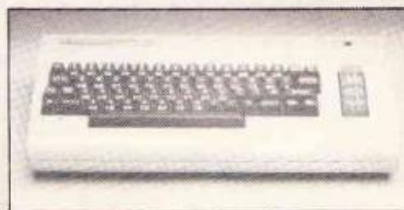
Everyone knows that the Commodore 64 is the best eight-bit computer in the world (Excuse me, I'm due back on the planet Earth - Tech Ed), but when it comes to games, they can be a teensy bit temperamental. To cure this rather annoying problem, here is a cheap circuit to help with adjustment of the azimuth angle (The azimuth angle is the position of the read head of the machine, relative to the tape - Tech Ed).

You need a small speaker - one from a personal stereo mini-speaker is ideal. Wire it to your 64 via a six pin DIN plug (Tandy sell one for about £1). Take the two wires from the speaker and solder one to pin one and the other to pin five of the DIN plug (it doesn't matter which wire you use for each).

Now place a game that you normally have trouble

with in the commodore tape deck and press play. As soon as you can hear the game, place a small Phillips screw-driver in the hole in the tape deck, and adjust the screw. As you turn the screw, the sound quality from the speaker will change. Keep turning the screw, until the sound is the best quality you can get. The game should now load without any problems.

Leigh Haynes, Grimsby, Sth. Humberside.



• The Commodore 64: Best 8-bit micro in the world or a pain in the azimuth?

attach an Atari ST to an Amstrad monitor. I must say at this point, that this information has been culled from several sources, all I've done here is to pull it all together.

All you need is a standard Atari monitor lead, and Amstrad six pin DIN plug, two general purpose diodes (OA91 from Maplin), and some 280 or 300 ohm resistors.

Remove the Atari monitor plug and bare the wires. Solder one of the diodes in line on both the horizontal and vertical sync wires (pins 9 and 12), making sure that the marked end of the diode points towards the monitor. These two wires should now be joined together.

Solder one of the resistors to each of the green, red and blue wires, pins 6, 7, and 10 respectively (colour references relate to signal colour, i.e. RGB, not the colour of the wire).

Now connect the necessary wires to the Amstrad six pin DIN socket, using the following configuration: Atari pin 7 to Amstrad pin 1, Atari pin 6 to Amstrad pin 2, Atari pin 10 to Amstrad pin 3, Atari

pins 9 and 12 (now joined) to Amstrad pin 4. Finally, Atari pin 13 to Amstrad pin 5. Pin six on the Amstrad is not connected. Angus MacQueen, Duston, Northampton.

TIP

RAM PACKed up!

A few weeks ago you had a query from an MSX user who was having trouble using a RAM pack. I can explain why the RAM pack appears not to be working.

The MSX uses a Z80 central processor, which as you know is an 8-bit processor with a 16-bit address bus. The maximum amount of memory the Z80 can access is 64k. To get around this problem, the MSX uses a clever system of 'bank-switching', enabling it to expand up to 4 megabytes. Unfortunately, all this memory can't be used from BASIC, but requires either MSX-DOS or machine code to make use of it.

Your RAM pack is probably OK, but appears not to be of much use to you, although if you are using a 32k MSX, then you should be able to use 64k games.

David Haslett, Blackpool, Lancs.

Win a sub!

We want to hear your problems, but we also want helpful hints and tips. And reports of those bugs you've found, from the comical to the downright frustrating. You could scoop the weekly best-tip prize of a free 26-issue subscription! And remember, there's no waiting around for monthly publication dates. The best tips, and solutions to your problems will be in print before you can say Alan Sugar. (Please don't send SAEs for replies, we can only answer enquiries in print).

So whether it's help offered or needed, write to:
Tech Tips, New Computer Express,
4 Queen Street,
Bath, Avon BA1 1EJ.

HELP!

STOS-er

In the next few weeks I will be buying S.T.O.S., and would appreciate a few answers to these questions:

1. Is it possible to join three or four sprites together to make one large sprite character such as a boxer, and would it be fairly easy to animate him and control him by joystick?
2. Would it be possible to create a boxing simulation incorporating artificial intelligence, so that the computer boxer would act on any mistakes the other boxer makes?
3. How many frames of animation are needed to make fluent movement?
4. Could a person with a peanut sized knowledge of BASIC be able to get along with the S.T.O.S. programming language without too many problems?

Tarquin Burnett, Harlow, Essex.

STOS allows a sprite size of 64x64 pixels to be defined and manipulated with the sprite editor. For larger characters, it is possible to join several sprites together, to make one large sprite. To animate a single character made up of several sprites, you will need to use a method known as page-flipping (fully explained in the STOS manual). The whole character can then be moved quite easily using a joystick.

The logic of the STOS programming

language is very similar to that of C and machine code, so it shouldn't be a problem to incorporate some degree of 'intelligence' into your boxing character. To achieve smooth movement of your figures, use between four and eight frames of animation.

A much easier way of extending your Amiga's font selection is with the aid of Fish Disk No. 135. This contains a huge amount of fonts to transfer to your other programs. At last, the garish Workbench typefaces can be replaced by decent Times Roman and Helvetica fonts, albeit under different names. Some of them are over 160 pixels high, and there are options to reduce the characters to just upper-case, numerals, etc. The disk is obtainable from George Thompson Services, Tel: 077082 234.

Niall Caldwell, Glasgow.

TIP

Monitoring progress

In response to the enquiry from Clive Benthall (issue 15), I have detailed below the method I used very successfully to

directly onto a disk such as DPaint, the font menu becomes so large

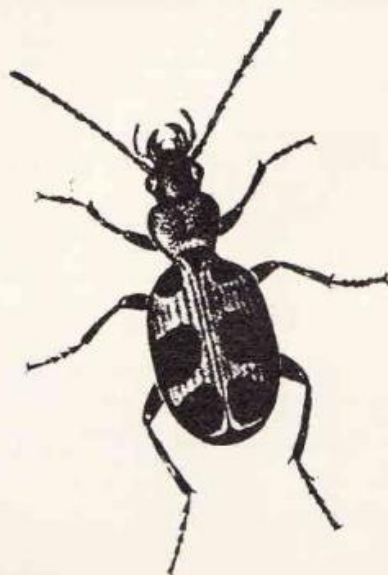
BUG OF THE WEEK

When you die in *Bionic Commandos* on the ST, wait until part of the parachutist disappears under the bottom of the screen right at the beginning of the game, then watch the screen scroll and display garbage!

Grant Robson, Bridge-of-well, Renfrewshire.

• Callisthus lunatus

This ground beetle is related to the genus *Chlaenius*, but is easily distinguished by its conspicuous markings. The beetles are thermophilic, and are to be found chiefly on dry and warm chalky hillsides, to which they parachute in their thousands from altitudes of up to 20,000 feet.



SECTOR SOFTWARE

Established 1985

0772 454328

Commodore Amiga A500 Computer with Modulator, Mouse, Workbench,
BASIC disk, Extras disk and 10 FREE games
£389.00

Workbench 1.3 Upgrade for Amiga owners	£15.00
Brother M1109 Printer	£155.00
Star LC10 Colour Printer	£275.00
Star LC10 Mono Printer	£240.00
Star LC2410 Printer (24 pin quality dot matrix)	£374.00

Bulk 3.5" Disks at the LOW PRICE of £1.00 each

Philips CM8833 Stereo Monitor **£260.00**

AMIGA WRITE CARTRIDGE

Simply plug in to your Amiga and monitor all data written to your disk drive. LED flashes when data is being written allowing you to monitor disk writing by Virus programs, write protect switch will also automatically tell your Amiga that any disk inserted in the drive is write protected when it may or may not be (stops viruses in their tracks). Switch included to turn the external drive off to free memory for games etc.

£15.00

SECTOR SOFTWARE



39 WRAY CRESCENT
ULNES WALTON
LEYLAND
LANCASHIRE
PR5 3NA

TEL: 0772 454328 FAX: 0772 454680



COMPUTER STATIONERY (U.K.)

Commercial House, Commercial Road,
South Shields, Tyne & Wear, NE33 1RW
Telephone: (091) 455 4300 Telex: 537390 Fax: (091) 455 1847

PROBABLY THE BEST PRICES IN THE U.K.!
- ALL INCLUDE V.A.T. AND DELIVERY

DISKETTES	Nashua 5 1/4" DS/DD 48 TPI	£0.51
	Nashua 3 1/2" DS/DD 135TPI	£1.07
	Amsoft 3" CF2	£1.99 each
CONTINUOUS LISTING PAPER (per 1000 sheets)	11 x 9 1/2 60gsm Plain White	£6.45
	A4 70gsm Plain White	£6.73
	A4 90gsm Plain White	£7.98
	A4 Photocopier Paper	£2.35 per ream
RIBBONS	Amstrad DMP 2000/3000	£2.50
	Amstrad 8256/8512	£3.25
	Star LC10 Nylon	£2.89
	Star LC24-10 (original)	£6.53
	(All other makes at up to 50% off R.R.P.)	
DISK STORAGE	5 1/4" 10 Capacity	£1.20
	5 1/4" 50 Capacity	£4.50
	3 1/2" 40 Capacity	£4.50

*** **STOP PRESS!!** Amstrad 8256/8512 Dust Covers only £6.49 per set

These are just samples of our fantastic offers. Please send £1.00 for our full product listing (refundable), or ring for a price.

Cheques/Postal Orders/Official Orders to:
Computer Stationery U.K.
Commercial House,
Commercial Road,
South Shields,
Tyne & Wear,
NE33 1RW



(All Orders under £10.00 - Please add £1.00 Postage & Packing)

FREE MOUSE MAT WITH EVERY ORDER FROM THIS AD

All prices include VAT and Carriage, Finance Available via Avcostrut

AMSTRAD PCW

CPS 8256 RS232 Interface	£67.50
FD1 1MB Disk Drive Upgrade 8256/8512	£169.00
FD4 1MB Disk Drive Upgrade 9512	£169.00
Extension Cables for PCW, Set of 3	£22.95
Master Scan Scanner	£64.95
Master Pack, Scan and Paint	£74.95
Amstrad PCW Joystick Interface	£14.95

MICE

AMX Mouse with Art for CPC	£64.95
AMX Mouse with Stop Press for PCW	£84.95
AMX Mouse with Desk Top for PCW	£74.95
AMX Mouse with Desk Top for BBC	£74.95
AMX Mouse with Art for Spectrums	£64.95
Genius GM6 with Dr. Halo for PC	£49.95
Neos Mouse with Cheese for C64	£22.95
Kempston Mouse with Jeeves for PCW	£64.95
Kempston Mouse with Toolkit for Spectrum	£49.95
Kempston Mouse with Blueprint for CPC	£64.95

PRINTERS

Citizen 180E	£159.95
Star LC10	£219.95
Star LC10 Commodore	£219.95
Star LC10 Colour	£269.95
Star LC10 Colour Commodore	£269.95
Amstrad DMP 3250	£219.95
Panasonic KXP 1081	£169.95

AMIGA

A501 Memory Upgrade 512k	£149.95
520 T.V. Modulator	£24.95
AF880 2nd Disk Drive	£109.95
1084 High Res. Colour Monitor	£289.95
"Digiview Gold Digitiser"	£125.95

COMPUTERS

Amstrad 464 with T.V. Modulator	£159.95
Amstrad PC1512 dual drive colour	£679.95
Sinclair PC200	£339.95
Spectrum +3 with free software	£199.95
Amiga 500 with free software	£389.95
Atari 520 STFM Explorer Pack	£289.95
Atari 520 STFM Super Pack	£389.95
Commodore 64C Hollywood Pack	£149.95

ATARI ST

Atari ST Multiface	£59.75
Cumana 2nd Disk Drive	£109.95
Atari mouse for ST	£24.95
4 Player adaptors	£5.95
Animatic Sprite Master	£23.95
Music Studio music composition	£16.95

COMMODORE PC1

RF552C 2nd Disk Drive 5.25"	£129.95
AF880 2nd Disk Drive 3.5"	£109.95

SINCLAIR PROFESSIONAL

PC200 Joystick	£22.95
SD1 3.5" External Disk Drive	£199.95
SD2 5.25" External Disk Drive	£199.95

PERIPHERALS & DISKS

Catnay Cassette Recorder	£19.95
Universal Metal Printer Stand	£17.95
Clear Plastic Printer Stand	£12.95
14" Monitor Filter Colour or Mono	£17.95
12" Monitor Filter Colour or Mono	£16.95
CF2 Amsoft 3" Disks, per 10	£24.95
Sony 3.5" Disks, per 10	£18.95
Unbranded 3.5" Disks, per 10	£11.95
Mimic 5.25" Disks, per 10	£6.99

AMSTRAD CPC

DD1 Disk Drive for 464	£159.95
FD1 2nd Disk Drive for 6128	£99.95
MP2 T.V. Modulator for 6128	£29.95
RS232 Interface for CPC	£59.95
DMP2160 Printer for CPC	£159.95
Multiface II Interface	£44.75

SPECTRUM

Ramprint Printer Interface	£34.95
Multiface 1 Interface	£39.75
Multiface 128 Interface	£44.75
ZX Microdrive	£29.95
Multiprint Interface	£44.75
Multiface 3 Interface	£49.75
Trojan Lightpen for Spectrum + 2	£18.95
Trojan Lightpen for Spec + 3	£23.95

COMMODORE 64

Sprint 128 Printer Interface	£29.95
Oceanic Disk Drive	£129.95
Commodore 1541 Disk Drive	£159.95
Citizen 560 Printer for C64	£29.95
Comprint Centronics Printer Interface	£19.95
BBC Emulator (Cassette)	£8.99
C2N Datarecorder	£29.95
Micromate Power Supply	£22.95
Unbranded Mono Monitor	£49.95

AMSTRAD PC

FD5 2nd Disk Drive for PPC	£189.95
FD3 Disk Drive for PC1512/1640	£189.95
PC Card Modem	£114.95
Linkmaster PC/PPC Transfer Kit	£22.95
2400 Baud PC Card Modem	£219.95
Amstrad Network System	£458.85
Timeworks DTP Lite	£44.95

LION COMPUTERS, 778 BOROUGH ROAD, BIRKENHEAD, MERSEYSIDE, L42 9JG
TEL: 051 608 0435

Send your orders enclosing Cheque/Postal Orders or quote your Credit Card details with expiry date.
Alternatively, telephone your orders using your Credit Card. Visit our shop, Open 6 Full Days 9.15 - 5.45



BATH COMPUTER SHACK

YOU CAN'T AFFORD TO GO ELSEWHERE

*** ATARI SUPER PACK ***

Atari 520stfm, 1 meg drive, 22 games and a joystick	ONLY £349.00
Atari Explorer Pack	£279.00
Atari 1040stfm now with modulator	ONLY £419.00
Atari 1040stfm with SM124 high resolution mono monitor	ONLY £529.00
Atari Megafile 30 Hard Disc	£529.00
Atari SM124 High Res Monitor	£119.00
Atari SC1224 Colour Monitor	£279.00
Atari SLM802 Lazer Printer	£1049.00

ATARI MEGA'S AND PC'S

Please call for our very best prices, you won't be disappointed.

E.G. Atari Mega 4 Mono	£899.00
Atari PC 3 DDMM	£699.00

MONITORS

Philips CM8833	£259.00
Philips CM8852	£299.00

* NB: All prices include lead.

PRINTERS

Citizen 120D	£159.00
Panasonic KXP1081	£175.00
Epson LX800	£199.00
Star LC10 (with spare ribbon)	£215.00
Star LC10 colour	£265.00
Star LC24/10	£339.00
Star NB24-15 (free sheetfeeder)	£599.00

* NB: All above prices include lead.

ACCESSORIES

Handycap Keyboard Cover	£7.95
Monitor Stand	£24.95
Mouse Mats	£4.50
Monitor Master (ST Only)	£35.00
Mouse Master (ST & Amiga)	£24.95

COMMODORE

Amiga 500	£369.00
Amiga 500, Icon paint, 5 games	£389.00
Amiga 500, Icon paint, 2 games, 1084 Colour Stereo Monitor	£619.00
Amiga 500, Icon paint, 2 games modulator	£399.00
Amiga 500, Icon Paint, modulator	£389.00
Commodore 1084 Colour Stereo Monitor	£259.00

COMMODORE PC'S

PC10 SDMM	£573.85
PC10 DDMM	£679.00
PC 20 HDECD	£1259.00

AMSTRAD SPECIAL OFFER

Amstrad PC 1640 DD Mono	£669.00
Amstrad PC 1512 SD Mono + DMP 3160	£539.00
Amstrad PC 1512 DD Mono + DMP 3160	£649.00
Amstrad PC 1512 DD Colour + DMP 3160	£725.00

All other models available, please call for our very best prices.

Amstrad PPC512S	£429.00
Amstrad PPC512D	£549.00
Amstrad PPC640S	£549.00
Amstrad PPC640D	£629.00

DISCS & BOXES

At UNBEATABLE Prices

10 x 3.5" DS DD Discs in Box	£9.95
25 x 3.5" DS DD Discs in Box	£25.00
25 x 5.25" Discs	£8.50
100 x 5.25" Discs	£29.95

Above Discs Certified & Guaranteed

40 Cap 3.5" Lockable Box	£4.99
80 Cap 3.5" Lockable Box	£7.99
100 Cap 3.5" Lockable Box	£9.99

Orders under £50.00 - add £2.50 P & P

All prices include VAT
All Hardware is sent by next day courier F.O.C.



Access & Visa orders welcome.
Mail Order address below.

E&OE

SHOW ROOM
8E Chelsea Road
Lower Weston
Bath
Avon
BA1 3DU

TEL: (0225) 310300 FAX: (0225) 446827

MAIL ORDER
8E, Chelsea Road
Lower Weston
Bath
Avon
BA1 3DU

TEL: (0225) 310463 FAX: (0225) 446827

FOUR FREE ISSUES!

■ At only 48p *New Computer Express* is an incredible bargain, but take out a year's subscription and we'll send you an **additional four** issues of the magazine **absolutely free!**

■ So for just **£24.95**, you'll receive **56** copies of Britain's **most exciting** weekly computer magazine! (Or you can take out a six-month subscription (26 issues) for just **£12.50**.)

■ There's no better way of keeping **100%** up to date on the fast-changing computer scene!

(Please allow three weeks for your subscription order to be processed.)

CREDIT CARD ORDERS 0458 74011

You can order your subscription by phone. Just dial 0458 74011 and ask for New Computer Express Subscriptions.



Collect the set!

Missed out on some earlier issues of *New Computer Express*? Here's how you can complete your collection.

We have limited numbers of back issues available for 75p each (48p plus 27p post and packing).

Just send details of the issues you require, your name and address plus a cheque made out to Future Publishing Ltd or your credit card details to:

Express Back Issues, Future Publishing Ltd, Somerton, Somerset TA11 7PY.

Here are the highlights of the previous issues - but remember they also contain all your regular favourites: news, games reviews, machine columns, beginners' guide, controversies, tech tips, letters, PSs, vouchers etc etc.

Issue 1: Future of computing, PC graphics, revival of Basic, Xmas games

Issue 2: Which computer?, the perfect wordprocessor, Konix console

Issue 3: Portable computing, Alan Sugar profile part I, yuppie software

Issue 4: Sega's 16-bit console, best value PC, games that change your life

Issue 5: PC 200 fiasco, DTP guide, computer art, Unix explained

Issue 6: MGT Coupe, careers in computing, Realtime profile, cracking

Issue 7/8: Best games of '88, review of the year, look forward to '89

Issue 9: Censorship controversy, classic computer problems solved

Issue 10: PC software guide, Christmas games tips, Release Schedule wk 1

Issue 11: CDI technology, choosing a printer, Alan Sugar profile final part

Issue 12: Being a smart consumer, dyslexia and computers, Jack Tramiel story

Issue 13: Konix console, da Vinci exhibition, best Amiga software, shareware

Issue 14: Which PC?, PC Engine CD ROM, Hackers, Workbench 1.3

Issue 15: MiniGEN, monitors, virus book reviews, Sir Clive Sinclair

Issue 16: Music special, History of the PC, TV graphics, beginners's graphics

Issue 17: Digitisers, programming languages, History of the Spectrum

Issue 18: ST essentials, Hypertext, QuickBASIC review, History of the BBC

YES, I'd like to keep in touch with the latest computer news, releases and advertising bargains by subscribing to *New Computer Express*. I would like to subscribe for:

☐ 56 issues costing just £24.95 ☐ 26 issues costing just £12.50
(tick one box only)

Name

Address

Age: ☐ <18 ☐ 18-25 ☐ 26-35 ☐ 36-45 ☐ >45

Computer

Total payable

Payment by: ☐ Access ☐ Visa ☐ Cheque ☐ PO

Access/Visa no

Expiry date: April 10th 1989

Please make cheques or POs payable to **Future Publishing Ltd** and enclose them with this form in an envelope addressed to Express Subscriptions, Future Publishing Ltd, Somerton, Somerset TA11 7PY. No stamp required if posted in the UK.

● This week heralded the arrival of a Pool simulation courtesy of Firebird. Fortunately 3-D Pool manages to breathe new life into the boring old flat approach to a Pool/Snooker sim.

While on the strategic front, *War In Middle Earth* – based on *The Lord of the Rings* – should appeal to wargamer and Tolkien fan alike.

Interestingly, both of these titles were reviewed on the C64, which all goes to show there's plenty of life left in this old 8-bit diehard.

3D POOL

FIREBIRD

C64 £9.99cs, £12.99dk

Due out on ST, Amiga, Archimedes, Spectrum, CPC, MSX, BBC

Since CDS's *Steve Davis' Snooker* and *Code Masters' Pro-Snooker Simulator* cleaned up very nicely thank you, it would seem there'll be plenty of potters cueing up for shot at 3D Pool.

● GAMEPLAY

Although 3D Pool has options for two-player, demo, practice and trick shot modes, its main feature is a tournament in which you get to play the best of 3 games against 3 different opponents before taking on a sim of Maltese Joe Barbara, the current European champion.

There's no cue anywhere to be seen – instead you judge the shot by imagining a line from the cue ball to the centre of the screen. So instead of moving your cue around the table, the table moves around you. This is effected by simply moving the joystick. You can also move vertically for progressively more overhead views. The degree to which you get 'above' the table is deemed to signify the amount of top or bottom you wish to put on the cue ball. Holding down fire and moving the stick from left to right allows you to increase or decrease the power of the shot. Then it's a simple double-click to let fly. You may also zoom in or out of a position – particularly useful if the balls are packed tight.

The opposition get progressively stronger of course, and whilst there's no obvious bias in the ability of your sim opponents let's just say some

OPERATION NEPTUNE

INFOGRAMES

ST • £24.95dk

Also on Amiga

Bob Morane's back on the beat again, though this time he's up against the Yellow Shadow down below.

● GAMEPLAY

Op Neptune is a sub-aquatic seek and destroy shoot-em-up with more than a little strategy, in which you must use mines to destroy a network of enemy bases linked by energy grids. You're working for the free world, and if all your bases, oxygen and energy disappear it's game over. In the meantime, new bases and links are being built all the time, and given protection ranging from mines to guard and war patrols. You have underwater

of the shots they manage to pull off do have a certain flair. Having said that, gameplay is great and emulates pool-play sufficiently accurately to be of good use on the real baize.

● GRAPHICS AND SOUND

Even on the C64 the graphics are impressive. Rotating shots can be zoomed and elevated whilst the balls are still in motion – a combination of code that probably eats up all the 64's processing power. Although the ball colours are either red or deep red, they're still sufficiently distinguishable to remove confusion. Sound is confined to the spot-effect of balls dropping into pockets.

● OTHER VERSIONS

Of the ones we've seen, the Archimedes version obviously wins hands down. Here you can almost



• Archie should look the same on the ST and Amiga



believe you're dealing with photo-quality graphics, and there's the added bonus of being able to cursor directly onto the exact spot on the object ball you want to connect with before making the shot. Otherwise all versions are very good and will no doubt sell in droves.

● EXPRESS VERDICT

A pretty neat pool simulator that uses solid 3D to full advantage and combines it with great gameplay. A game that'll have you dying to get out onto a real table to show off how much you've learned.

★★★★★

Andy Storer



• BBC: Yes, even out on the good old Beeb



• C64: Not bad eh?

scooters, decoy and time-bombs at your disposal, plus the chance to slip into rubber and engage in flipped fisticuffs – as well as a whole submarine to navigate – in a bid to rid the undersea world of the yellow peril.

● GRAPHICS AND SOUND

Neptune uses excellent graphics to depict the various locales and scenarios comprising the average gameplay. These begin with well-crafted animation screens which curiously descend into rather uniform underwater landscapes. Spot-effect sound is promising too, with the backing music score top-notch.



• We all live in a Yellow Submarine. Well, a sort of bluey-grey submarine, actually.

● OTHER VERSIONS

The Amiga version is a near identical outing to the ST, but benefits from slightly better sound effects and, of course, a stereo rendition of the impressive music score.

● EXPRESS VERDICT

An above-average variant on a strategic shoot-em-up, with neat graphics and atmosphere. Unfortunately, gameplay fails to deliver after more than a few loads, so it can't be recommended as an essential purchase at this price-point.

★★★

Andy Storer

LEGEND OF THE SWORD

RAINBIRD

PC • £24.99dk

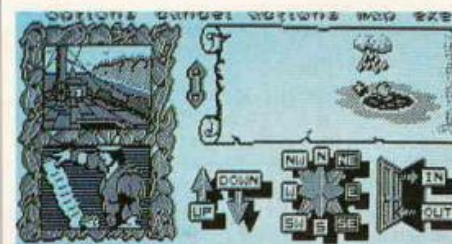
Also on ST, Amiga

Legend's appearance on the ST back in August won wide critical acclaim for its original graphic presentation and humorous parser. Now out on the PC, how much of an adventure does it present?

● GAMEPLAY

You and a bunch of five mercenaries are dispatched to the Anar, where you're after a sword with which you can slay a wizard. There are a variety of places, puzzles and pitfalls to occupy your time and a very neat twist in the tail.

Although there's nothing highly original about the scenario, it's the method of interaction which lifts *Legend* from the usual dross of wizard v warrior outings. Many common adventure commands can be fed in using the mouse, and your current and last location are displayed in two windows. There's also the traditional



low the adventure begins.....
"Land ahoy!" shouts the lookout from his high perched brownsnest. A sudden tin
emission shivers up your spine as the distant mountain peaks of Anar mysteri
poor through the morning mist.
The captain of the ship pulls out a map of the Western half of Anar and points
the treacherous shoreline.
Among the dangerous rocks and reefs," he tells you, "There are only three po
inding points: East, North-East and South-East."
The map is the back of your hand.

• The icon is mightier than the sword

means of interaction - you against the interpreter - and here you'll find a flexible and sophisticated parser that'll have you regarding it as friend rather than foe.

● GRAPHICS AND SOUND

Legend is unique in presenting an almost fully mouse-driven system complete with scrollable map and pictorial representation of found objects. A useful inclusion are direction icons which allow rapid movement between locations. As with just about every adventure in the universe, the only sound is that of the keyboard.

● OTHER VERSIONS

Both the ST and Amiga versions are well worth checking out, though there's not a great deal of difference between them and this outing.

● EXPRESS VERDICT

An adventure which will hopefully set the trend for future interactive games, but not necessarily in terms of scenario. In the meantime, a purchase for confirmed parser-punters only.

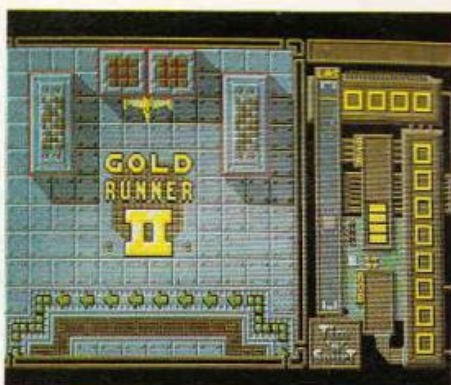
★ ★ ★

Andy Storer

GOLDRUNNER II

MICRODEAL

Amiga • £19.95dk
Already on ST



• A bird's eye view of Goldrunner II

When *Goldrunner* first appeared in 1987 it achieved high acclaim for its state-of-the-art vertical scroll routine, a feature unfortunately negated by *Goldrunner's* lack of gameplay. Now *Goldrunner II* is out, so has its predecessor's deficiency in gameplay been rectified or ignored?

● GAMEPLAY

Goldrunner II follows the standard route of the vertically-scrolling shoot-em-up genre, with objects to pick up, obstacles to avoid and aliens to shoot. It's done in a routine, painfully familiar way with nothing new, exciting or overwhelmingly addictive to justify prolonged play.

● GRAPHICS AND SOUND

Goldrunner II contains bog standard - if not stale - audio-visuals, with the only noteworthy feature being the extremely fast and smooth-moving vertical scroll routine already used in the original *Goldrunner*.

For those gamers who persevere, keep on playing *Goldrunner II* and get bored with the backdrops, Microdeal is offering two add-on scenery disks costing £5.95 each.

● OTHER VERSIONS

Out first on the ST, *Goldrunner II* is more or less the same on the ST albeit with slightly inferior audio quality.

● EXPRESS VERDICT

Ouch! *Goldrunner II* is based around a technically brilliant smooth 'n' fast vertical scroll routine, with gameplay and audio-visuals somewhat of an afterthought - and does it show. Unplayable and monotonous gameplay coupled with less-than-inspiring audio-visuals add up to a rather forgettable shoot-em-up. *Goldrunner II* completely fails to compete with the excellent *Hybris*, *Sidewinder* or *Xenon*.

Goldrunner? More like goldigger.

★

Rik Haynes

SCORPION

DIGITAL MAGIC SOFTWARE

Amiga • £24.95dk
Out soon on ST

Marking the debut release for a group of ex-CRL designers and programmers called Digital Magic Software, *Scorpion* is a horizontally-scrolling platform exploration-type game.

● GAMEPLAY

Taking on the guise of a Scorpion Warrior (complete with motorbike helmet), you must travel through five different levels in a quest to rescue the princess of Scoria.

Along the way, you'll encounter all manner of hazards, creatures and traps - as well as extra weapon pick-ups - before your confrontation with each of the five end-of-level guardians.

● GRAPHICS AND SOUND

Scorpion contains a strange combination of visual influences such as your motorbike helmet-clad character taking on pirates, crabs and seagulls on a pirate ship in the first level. Which is fine if it had worked, but unfortunately it doesn't, due to its rudimentary backdrops and sprites, barely enlivened by a few visual tricks and enhancements.

Audio is made up of purely functional sound spot effects.

● OTHER VERSIONS

No details on any other version of *Scorpion* are currently available.

● EXPRESS VERDICT

While *Scorpion* is a reasonable first release, it regrettably incorporates many unsatisfactory elements - namely its tedious, unoriginal gameplay and odd mix of visual ideas - producing a game neither special or entertaining.

Scorpion is disappointing. Hopefully Digital will do better next time...

★ ★

Rik Haynes



• Jumping from your speedboat onto the Pirate Galleon

WAR IN MIDDLE EARTH

MELBOURNE HOUSE

C64 £9.99cs, £14.99dk

Also on Spectrum, CPC

Out around Easter on ST, Amiga, PC



• In the lands of Middle Earth

In golden days of old, before the day of the 16-bit, there came a licence deal between Melbourne House and the publishers of the works of J.R.R. Tolkien. The first of these micro game versions was *The Hobbit*, an adventure game more noted for its bugs than quality of gameplay. Then came *Lord of the Rings*, a menu-driven adventure marred by slow speed of operation. Now there's *War in Middle Earth*, a wargame by Mike "Lords of Midnight" Singleton...

● GAMEPLAY

Taking the role of the Hobbit Frodo Baggins, you set out with the help of your friends and allies to the land of Mordor in order to cast "The One Ring" into the Cracks of Doom, thus defeating the evil Sauron and ending his grip over the kingdoms of Middle Earth. Unfortunately, it's not that simple a task, and along the way Sauron's forces will try to thwart your every manoeuvre.

War in Middle Earth is played over a map of Middle Earth, with you able to move your cursor around this and a zoomed-in Campaign Map, where you can gain information and issue orders to your forces. You can

also select which character should be the ring-bearer. When combat occurs, everyone in your force involved in the action is represented and able to take part in the ensuing battle.

● GRAPHICS AND SOUND

Visuals perform their assigned duties well, but they're certainly not outstanding. Details displayed in the Campaign Map are clear, concise and informative. The combat sequence is competently drawn and animated.

Far less impressive is the audio, which seems to have been painfully bolted-on at the end of the games development.

● OTHER VERSIONS

The Spectrum and CPC versions are very similar to the C64, and are well worth a look. 16-bit *War in Middle Earth* trades in the character involvement in the battleground for more character interaction in the rest of the game. The 16-bit preview samples we've seen look very promising, especially the VGA PC version. ST, Amiga and PC *War of Middle Earth* should be released in the next few weeks.

● EXPRESS VERDICT

Although *War in Middle Earth* is an admirable release which should appeal to Tolkien and wargamer fans alike, we just couldn't help feeling the huge potential for a computer game based on Tolkien's writings still hadn't been realised. Of course, there's always a chance with the sequel to the sequel to *Lord of the Rings*...

★ ★ ★

Rik Haynes



• Issuing your orders on the campaign map

**ATARI 520 ST-FM SUPER PACK WITH £450
WORTH OF SOFTWARE£369.99**

ATARI 1040 ST-FM SUPER PACK £469.99

31/2" 50 CAPACITY STORAGE BOX £4.95
51/4" 50 CAPACITY STORAGE BOX £3.99

51/4" DSDD BULK IN LIBRARY CASE £4.50 FOR 10

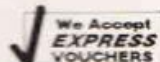
31/2" DSDD 1MB 135TPI BULK.....£8.50 FOR 10

SONY 31/2" DSDD.....£10.40 FOR 10

NASHUA 31/2" DSDD£12.50 FOR 10

31/2" DISKS HEADCLEANING KIT£2.99

SPECIAL OFFER



50 CAP. 31/2" STORAGE BOX
25 31/2" DSDD 1MB DISK

£25.00

FREE CLEANING KIT WITH ALL ORDERS OVER £15 (Worth £2.99)

DEALERS! CALL US NOW FOR BEST PRICES.
ALL PRICES INCLUDE V.A.T. AND DELIVERY

Callers 091 516 0065
OR send cheque or P.O. with your order



VAT REG: 486 0821 33
Branded and Unbranded
Disks at Competitive Prices

H.C.L.

HOBURNE CONSULTANTS LTD

10A SOUTHWICK INDUSTRIAL ESTATE, SOUTHWICK, SUNDERLAND SR5 3TX

SPECIALISTS IN THE SUPPLY AND INSTALLATION OF COMPUTER HARDWARE, SOFTWARE AND DATA SUPPLIES

TEL: (091) 516 0065
FAX: (091) 516 0065



FABRIC RIBBON RE-INKING SERVICE

NO NEED TO BUY A NEW RIBBON
WHEN YOUR PRINTER GOES PALE!
ALL TYPES OF RIBBON RE-INKED
(Amstrad, Brother, Epson, Star, Citizen etc.)

Only £1.45 per Ribbon

Re-ink like new

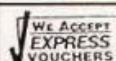
SAVE £££'S!!

MONEY BACK GUARANTEE - QUICK SERVICE

Post used cassette with payment to:

S + J Brothers

**Hillview Post Office, Alexandria,
Dumbartonshire G83 0QD
(0389) 52680 (24 hours)**



3 1/2 " DISKS



10 x 3.5" DS/DD £9
25 x 3.5" DS/DD £20
50 x 3.5" DS/DD £38
100 x 3.5" DS/DD £74
250 x 3.5" DS/DD £180
500 x 3.5" DS/DD £345
1,000 x 3.5" DS/DD £675
100 Capacity 3.5" Capacity Disk box £7.50

Printers inc lead. All prices INC. VAT & 3 - day courier.

Please add 5% to all prices if ordering by credit card. Cheques and postal orders to:



HARDWARE DISTRIBUTION

Dept NCE, 1st Floor,
19 Division Street, Sheffield S1 4GE
Tel 0742 726485



ATARI ST and AMIGA

Sixteen Bit Superdeals from the Sixteen Bit Specialists!
CUSTOMERS PLEASE NOTE! When comparing prices remember ours include fast delivery by courier.

520 STFM Super Pack

£349.00

Inc VAT and Next Day Delivery

Super Pack includes:

- ★ 520STFM 512K Keyboard with Built-in 1Megabyte disk drive and TV Modulator
- ★ £450 of games software including BUGGY BOY, TEST DRIVE, MARBLE MADNESS, WIZBALL and 17 more.
- ★ Organiser Business Software including WORDPROCESSOR, SPREADSHEET and DATABASE.
- ★ FREE JOYSTICK!
- ★ All leads, manuals PLUS MOUSE and free mains plug!

REMEMBER! Many ST's do not come with BASIC - ours come with ST BASIC REV D by Metacom.

Also available with only one free game and no joystick or Organiser -

£269.00 inc.

1040STFM Super Pack

£439.00

As above but with 1 meg 1040STFM

ATTENTION AMIGA
A500 OWNERS!
£501 Ram-Cash Card + Dragon's Lair
£199.00

1040STFM Business Pack

£439.00

Business Pack Includes:

- ★ Atari 1040STFM Keyboard with 1 meg memory and 1 meg built-in disk drive plus TV modulator
- ★ £360 worth of Business Software including MICROSOFT WRITE word processor (£150), SUPERBASE PERSONAL Database (£60) and VIP PROFESSIONAL Lotus 123 Spreadsheet clone (£150) ★ All leads, manuals and mouse

Amiga A500 System 1

£365.00

Inc VAT and Next Day Delivery

System 1 includes:

- ★ 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.
- ★ Amiga BASIC, Amiga EXTRAS, Workbench PLUS the Amiga Step by step Tutorial.
- ★ All leads, manuals PLUS MOUSE and mains plug!

Amiga A500 System 2

£385.00

- ★ Amiga A500 System 1 PLUS £230.00 worth of software comprising 10 games

Amiga A500 System 3

£395.00

- ★ Amiga A500 System 1 PLUS £265 worth of software comprising 8 games and PHOTON PAINT graphics package plus Workbench 1.3.

NEW! AMIGA 1 MEG! £499.00

Announcing the new Amiga 1 meg - an A500 system 1 with fitted 1 megabyte memory expansion and clock card PLUS TV Modulator AND DRAGON'S LAIR a six disk 1 meg megagame!

AMIGA 1 MEG+

£519.00

Our Amiga 1 meg + also includes the £230 worth of games software normally given with our A500 System 2 Games Pack.

PRINTERS

Star LC10 including interface lead for ST/Amiga £239.00
Star LC10 colour including interface lead for ST/Amiga £269.00
Citizen 1200 including interface lead for ST/Amiga £159.00

MONITORS

Commodore Amiga A1084 Stereo colour monitor inc lead £269.00
Atari SC1224 Colour Monitor inc lead £259.00
Atari SM124 Mono Monitor including lead £104.00

CREDIT CARD ORDERLINE = 0908 78008 (Mon-Sat 9am - 6pm)

We've moved to larger premises - Callers most welcome!

DIGICOM

Unit 36, Wharfside, Fenny Stratford, MILTON KEYNES MK2 2AZ
All prices include VAT and delivery by courier



Nothing Vektor'd, nothing gain'd

Rik Haynes previews five new releases, including the latest from Vektor Graphix

BOMBER • VEKTOR GRAFIX

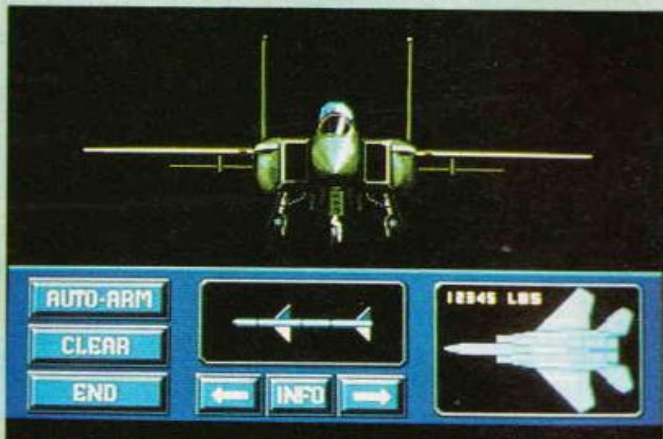
Vektor Graphix – the software development company responsible for the micro conversions of the *Star Wars* and *The Empire Strikes Back* coin-ops for Domark – is currently producing a game under their

own name.

Bomber is an all-action, head-to-head flight-sim giving you the chance to fly any one of a possible 14 different aircraft – including a F-15 Strike Eagle, F-4

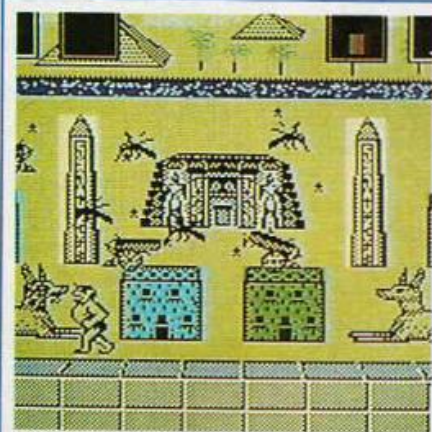
Phantom, F-111 Libya-special and even a Soviet Mig 27 Flogger.

Bomber is due for release soon on Spectrum, C64, CPC, ST, Amiga and PC.



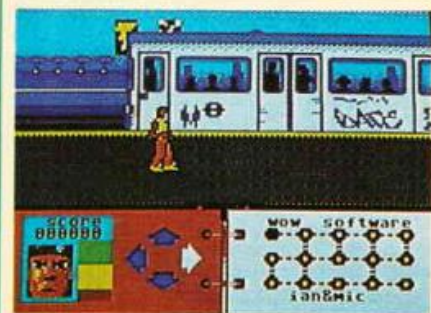
RINGSIDE • EAS

If you can't wait for the Bruno-Tyson rematch, then *Ringside* could be just the ticket, with you placed in control of a boxer itching to become the king of the ring. Along the way, you'll have to create and train your boxing alter-ego, learn the tricks of the trade and punch out ten opponents before reaching that coveted number one spot. Know what I mean, Harry? Out soon on ST, Amiga and PC.



AAARGH! • MELBOURNE HOUSE

AAARGH! was originally an Arcadia Amiga-based coin-op game, and is based around the exploits of some 'rampaging' monsters. Out shortly on Spectrum and C64 – ST, Amiga and PC versions are already available.



SUBWAY VIGILANTE & STREET CRED BOXING • PLAYERS PREMIER

WOW! Software Developments, formerly Reptila Design, is presently putting the finishing touches to two budget games on the C64 due for release next month. *Subway Vigilante* throws you into the dangerous 'Guardian Angel' world of the London Underground, forcing you to take on the scum of the city in your quest to protect the innocent. *Street Cred Boxing* sees you in a fight for the right to fight – as your favourite boxing gym is under threat from some unscrupulous yuppies who want to redevelop the site.

**The
incredible
New
Computer
Express
voucher
scheme can
save you**

£10

**when you buy
from adverts
in this
magazine!**

Full details on next page

**EXPRESS
VOUCHER**

£1

**EXPRESS
VOUCHER**

£2

**EXPRESS
VOUCHER**

£3

**EXPRESS
VOUCHER**

£4

£1.00 voucher. Valid for orders above £20

This voucher may be used as £1.00 part payment on any order totalling over £20 from a participating advertiser in *New Computer Express*. You simply fill in the details below and send it off with your order.

Your name _____

Address _____

Telephone (if possible) _____

Item (s) purchased _____

Only one voucher per order is allowed. This voucher and its accompanying order must be received by the advertiser before 9am **March 27, 1989.**

£2.00 voucher. Valid for orders above £40

This voucher may be used as £2.00 part payment on any order totalling over £40 from a participating advertiser in *New Computer Express*. You simply fill in the details below and send it off with your order.

Your name _____

Address _____

Telephone (if possible) _____

Item (s) purchased _____

Only one voucher per order is allowed. This voucher and its accompanying order must be received by the advertiser before 9am **March 27, 1989.**

£3.00 voucher. Valid for orders above £60

This voucher may be used as £3.00 part payment on any order totalling over £60 from a participating advertiser in *New Computer Express*. You simply fill in the details below and send it off with your order.

Your name _____

Address _____

Telephone (if possible) _____

Item (s) purchased _____

Only one voucher per order is allowed. This voucher and its accompanying order must be received by the advertiser before 9am **March 27, 1989.**

£4 voucher. Valid for orders above £80

This voucher may be used as £4.00 part payment on any order totalling over £80 from a participating advertiser in *New Computer Express*. You simply fill in the details below and send it off with your order.

Your name _____

Address _____

Telephone (if possible) _____

Item (s) purchased _____

Only one voucher per order is allowed. This voucher and its accompanying order must be received by the advertiser before 9am **March 27, 1989.**

EXPRESS VOUCHERS

How the scheme works

● The Express voucher is a special scheme to encourage you to buy New Computer Express regularly.

● It offers you savings of up to £10 when you buy goods through the magazine.

● The vouchers are not limited to specific items – you can save on any purchase from one of the participating advertisers.

● Most mail order advertisers in this magazine are taking part in the scheme – just look for this sign. →



● Remember. The use of just one voucher could more than recoup the price of the magazine.

THE FIVE SIMPLE RULES

1. Express vouchers can be used to obtain discounts on purchases of goods advertised in this issue of *New Computer Express*, provided that they are bought directly from an advertiser taking part in the scheme. The vouchers are valid **only** for those advertisements which say "We Accept Express Vouchers".
2. Each voucher entitles you to a discount at the voucher's face value, provided that your overall order level is **higher** than the figure indicated on the back of the voucher.
3. To use a voucher, simply enclose it with your discounted payment when you order. You may use **only one** voucher in any one order.
4. The order including the voucher must be received by the advertiser before the closing date printed on the voucher.
5. You must fill in the details requested on the voucher.

Evesham Micros

WE ACCEPT
EXPRESS
VOUCHERS

All prices include VAT and Delivery

ATARI® 520STFM SUPER PACK

Includes STFM with 1MEG drive, 21 games with business software (worth over £450) & joystick.

Only £339.00

520 STFM latest version with 1MEG drive fitted	£269.00
1040 STFM latest model, including TV modulator	£399.00
1040 STFM machine as above, with 'Microsoft Write' & 'VIP Professional' ..	£419.00
1040 STFM machine as above, including 21 games, business software & joystick extras as supplied with above '520 STFM Super Pack' ..	£419.00
1040 STFM as above with super pack extras, 'MS-Write' & 'VIP Pro.' ..	£459.00

Buy a monochrome monitor with any 1040 from above for £110.00 extra	
Mega ST2 with mono monitor, 'MS-Write' and 'VIP Pro.'	£849.00
Mega ST4 with mono monitor, 'MS-Write' and 'VIP Pro.'	£1099.00
SLM804 laser printer, great value at	£1099.00
SM124/5 mono monitor	£119.00
Mega ST2 package - includes Mega ST2, mono monitor, external 1Mb 3.5" drive, SLM804 laser printer, 'Microsoft Write', 'VIP Professional', 'Fleet St. Publisher' software and 90 days on site maintenance	
Atari DTP system - includes Mega ST4, mono monitor, SLM804 laser printer, 30Mb hard disk, 'Fleet Street Publisher' software and 90 days on site maintenance	
5.25" External drive 40/80 track 360/720K formatted capacity	£2795.00
Pace Linnet Modem Pack inc.cable & software	£159.95
Pye 1185 15" FST teletext remote ctrl TV/Monitor c/w ST or Amiga cable ..	£179.00
Philips CM8833 colour monitor c/w ST or Amiga cable	£269.00
Philips CM8852 as above, higher resolution	£229.00
Philips CM8852 as above, higher resolution	£299.00
Cameron Handy Mouse, high quality replacement ST mouse	£39.95

commodore hardware

SPECIAL OFFER AMIGA PACK

A new Amiga 500 package including the following: (extras worth over £270)

★ Amiga 500 computer	★ Photon Paint	★ Demolition
★ TV Modulator	★ Karate Kid II	★ Atlas
★ Mouse & Mouse mat	★ Goldrunner	★ plus 5 disks of public domain s/ware
★ Joystick	★ XR 35	
★ Las Vegas	★ Grid Start	

all for only
£399.00

Oceanic OC-118 64/128 disk drive for 64/128 with free GEOS software ..	£129.95
Oceanic OC-118 as above with Freeze Machine	£149.95
Freeze Machine complete backup cartridge, with integral reset button ..	£28.95
LC-10 commodore 64/128 ready printer inc. 2 extra black ribbons free ..	£199.00
LC-10 7-colour version of above printer inc. 2 extra black ribbons	£249.00

Amiga & ST 3.5" Drives

★ Very Quiet	Fully compatible, high quality 3.5" external drives for the ST and Amiga
★ Slimline Styling	Amiga version only £79.95
★ Fully Compatible	Atari ST version only £82.95
★ Top quality Citizen drive mechanism	Prices include VAT & delivery
★ On/Off switch for Amiga	
★ External plug-in PSU for ST	
★ Throughport for Amiga	
★ 1Mb unformatted capacity	

Western Digital Filecards

Upgrading your PC to hard disk? Look no further, we offer the best prices on top quality hardcards. Thorough documentation supplied, low power consumption, with free XTree file management software and Speedread. For Amstrad PC1512/1640 users we supply hardcards tested and formatted, with our simple software installation procedure. The best packages available!

20 MEG...£219.00 32 MEG...£239.00

DISECTORST V4

for all Atari ST models
only **£24.95**

New Version 4 disk utilities for the ST, features include: protected software backup, featuring the new turbo nibbler, a faster and more powerful copier, which uses all available drives & memory and includes 56 parameter options for handling a greater range of software; drive B boot to allow many programs to startup from drive B; organiser accessory providing many major disk management commands; extra format giving over 15% extra user storage area per floppy disk; fast backup; ramdisk accessory; undelete file; PLUS many more!

3.5" disks

10...£11.95 in plastic case	£13.95
25...£27.95 in 40 cap case	£34.95

Fully guaranteed double sided media

5.25" disks

25...£13.95 in 50 cap box	£22.95
in 100 cap box	£24.95

Fully guaranteed double sided media

Amstrad PC1512/1640/2086

We offer a wide choice of Amstrad PCs with many upgrade options, including the very latest PC2086 range. For the hard disk option, check our 'Evesham Upgraded Models'. Only the best will do - so we normally upgrade by means of a Western Digital Filecard, which includes XTree and SpeedRead software; however on single drive 1512/1640 models we can offer internal installations at the same price (leaving more expansion room but no upgrade opportunity for a 2nd floppy drive). We can provide on-site service contracts at time of purchase - please telephone for details. Prices in lighter type exclude VAT.

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

	SD	DD	AMS H.D.	SD 20MEG	DD 20MEG	SD 32MEG	DD 32MEG
EVESHAM UPGRADED MODELS							
MONO 1512	384.35 442.00	477.39 549.00	N/A N/A	574.78 661.00	667.83 768.00	592.17 681.00	665.22 788.00
COLOUR 1512	494.78 569.00	555.65 639.00	N/A N/A	685.22 788.00	746.09 858.00	702.61 808.00	763.48 878.00
MONO 1640	474.78 546.00	555.65 639.00	738.26 849.00	665.22 765.00	746.09 858.00	682.61 785.00	763.48 878.00
CGA (colour) 1640	581.74 669.00	651.30 749.00	825.22 949.00	772.17 888.00	841.74 968.00	789.57 908.00	859.13 988.00
EGA (ECD) 1640	677.39 779.00	738.26 849.00	938.26 1079.00	867.83 998.00	926.70 1068.00	885.22 1018.00	946.09 1088.00
2086 MONO	578.26 665.00	666.96 790.00	917.39 1055.00	768.70 884.00	877.39 1009.00	766.09 904.00	894.78 1029.00
2086 CD	717.39 825.00	825.22 949.00	1056.52 1215.00	907.83 1044.00	1015.65 1168.00	925.22 1064.00	1033.04 1188.00
2086 12" HRCD	808.70 930.00	920.00 1058.00	1147.83 1320.00	999.13 1149.00	1110.43 1277.00	1016.52 1169.00	1127.83 1297.00
2086 14" HRCD	900.87 1036.00	1012.17 1164.00	1241.74 1428.00	1091.30 1255.00	1202.61 1383.00	1109.70 1275.00	1220.00 1403.00

PC1640 Summer Promotion Pack

Includes PC1640 DD with mono monitor, DMP4000 printer and software pack inc. Wordstar 1512, Supercalc 3.1 and Accounts Master DD £899.00 inc.VAT

optional extras

1512 memory upgrade to 640K	£39.95	3.5 inch drive (720K) for any single drive models	£79.95
Maths Co-processor 8087-2	£129.00	PC2000 series compatible 360K 5.25" external drive	£100.00
NEC V30 (8086 replacement)	£24.95	Joystick & Controller Card	£34.95
Cipher CT1525 tape streamer	£319.00		
Amstrad Modem Card V21/23	£99.00		
Amstrad MC2400 Modem Card	£199.00		

Amstrad PPCs

Low prices on all portable PCs - especially twin drive models prices in brackets are excluding VAT

PPC512S	(£373.04) £429.00	PPC640S	(£477.39) £549.00
PPC152D	(£433.91) £499.00	PPC640D	(£546.96) £629.00

New low price External 3.5" floppy drive (720K) to suit ANY Amstrad 1512/1640 inc. DD and HD models! Uses no expansion slots £99.95

Central Point Software

For all your PC disk management requirements

PC Tools Deluxe Version 5... Other utilities may claim to 'do it all' but only PC Tools Deluxe is the complete disk utility package, providing a fast hard disk backup, the best undelete available, 100% safe formatting of floppy and hard disks, uniform, reliable disk caching, compress facility, in fact everything required to manage & protect your data at a sensible price.....£49.95

Copy II PC Version 5..... The most effective floppy disk backup utility of its type. We always ship the latest version. Can also transfer many programs to hard disk and then run them without reference to floppy. Supports both 5.25" and 3.5" disk format. Don't be without it.....£24.95

Copy II Deluxe Option Board..... The ultimate solution to backing up copy-protected software using the hardware option. All the original features of the Option Board, including the most powerful backup copier product on the market, and can even transform any PC equipped with a 3.5" drive into a dual purpose IBM/Macintosh drive. Allows your PC to read and write to MAC data disks easily through DOS. Comes as an easy-to-fit short card.....£84.95

PRINTERS

All prices include VAT, delivery and cable

star

We use and recommend Star printers since they do offer an unbeatable combination of features, print quality, reliability and value. Make the sensible decision - get it right with a Star printer at our special, all in, prices.

Star LC10 best-selling 144/36cps printer, 4 NLQ fonts, inc.2 extra ribbons free ..	£199.00
Star LC10 7-colour version of above printer, inc.2 extra black ribbons	£249.00
Star LC24-10 feature-packed multifont 24 pin printer	£339.00
Star NB24-10 great value 24pin inc. cut sheet feeder + 2 extra ribbons	£499.00
Star NX-15 budget wide carriage printer	£329.00
Star NB24-15 wide carr.version of NB24-10 inc. cut sheet feeder	£649.00
NEC P2200 budget 24pin, great value 168/56 cps	£319.00
Amstrad DMP3250DI good value 10" with serial/parallel interfaces	£189.00
Panasonic KXP1081 reliable budget 10" printer 120/24 cps	£169.00
Panasonic KXP1124 great new sturdy 10" multifont 24pin printer	£319.00
Epson LX800 popular 10" 180/25 cps	£199.00
Epson LQ500 good 24pin printer 150/50 cps	£319.00
Citizen 120D good value 10" 120 cps	£139.00
Citizen HQP-45 wide carriage 24pin printer - a bargain	£399.00

How to order

All prices VAT/delivery inclusive
Express courier delivery £5.00 extra
Send cheque, P.O. or ACCESS/VISA details
Phone with ACCESS/VISA details
Govt., educ. & PLC official orders welcome
All goods subject to availability E.&O.E.
Open to callers 6 days, 9.30-5.30
Tele: 033294 Fax: 0386 765354

Evesham Micros Ltd

63 Bridge Street
Evesham
Worcs WR11 4SF
Tel: 0386 765500

Also at: 1762 Pershore Rd., Cottesridge, Birmingham, B30 3BH Tel: 021 458 4564

Computer chaos

Mel Croucher's contemporary archives of amazing, but true, computer cock-ups...

Vancouver Stock Exchange, 28 November 1983

Investors are amazed to find this morning's index at 1098.892, a rise of over fifty per cent! Spokeswoman Dawn Seasons admits that whereas the 1,500 stocks represented by the index are calculated to four decimal places, they are only printed to three. Instead of rounding the last digit up or down, the computers have been chopping them off and flushing them down the electronic toilet. This results in the loss of an index point a day, and nobody has spotted the glitch in twenty-two months of operation! *Toronto Star*, 29.11.83

Cape Kennedy, Florida, 1969

Armstrong, Aldrin and Collins blast off for humanity's first voyage to the moon, just Mr Joel Aron of IBM's Federal Systems Division is responsible for a large part of the software, and while in a 'relaxed condition' at the swimming pool admits that the Apollo software was full of bugs. In one of the trajectory computations we had the Moon's gravity repulsive rather than attractive. His colleague Steve Olson asks when this fact was discovered, 'Oh,' says Aron, 'five days ago.' (Steve Olson)

Portland, Oregon, USA

J Michael Read, the Tri City Service District supervisor, confirms that programmers are full of crap. When a burned-out wire halts the sewage treatment pumps between midnight and breakfast time on Wednesday, a programming error assure the automatic telephone alarms that everything is absolutely normal. Next morning 40,000 residents receive brown hot water from their shower heads, and an interesting new scent in their shampoo. One and a half million gallons of raw sewage have flooded the Willamette River, and the back-up alarms have been neutralised

because they 'disturb the night shift.' Matters are 'put right.' At 3am on Monday morning an electrical failure shuts down the pumps at the sewage station. The computer system has been modified so that computer operators can override computer commands in the event of such a failure, but only after another spillage stinks up the Willamette River is it discovered that the system doesn't work when the computers ain't got no power humming through them. Shirley Kangla, spokeswoman for the Oregon Department of Environmental Quality confirms that 'we have a major spill.' How major? This time it's five and a half million gallons. *The Oregonian*, 22.9.88

The House of Representatives, Washington

On the 2nd of May, 1988, Congress votes on the vital funding bill for the Strategic Defence Initiative, commonly known as the computer-controlled 'Star Wars' project. It seems only natural that with the Americans putting so much faith in computers, they use one to register their votes. The result is 358 'ayes' against 237 'nays'. The House of Representatives has 435 members... Gary Chapman, *Software Engineering Notes*

Hong Kong, 10 July 1984

The death is announced of 58-year-old Chin Soo Ying. In 1950 he built a computer named Tsen Tsen based on the British Colossus machine, and he went on to modify it over the years to enhance its intelligence and give it concepts of love and emotion. Recently he constructed a new machine named Woo Shi, and put his 34-year-old Tsen Tsen to one side. His widow states that Tsen Tsen became jealous of the new model, overloaded herself, and fatally electrocuted her creator, simultaneously committing suicide. *Weekly World News*



• In the course of reviewing 3D Pool this week, Express's Andy Storer was challenged by World Pool Champion 'Maltese' Joe Barbara to a match. In a surprise result, Joe sneaked home by the odd couple of frames in the two-frame challenge. For those of you watching in black and white, Andy is the one in the red sweater.

NEXT WEEK

Graphics

The Art of the Micro: the complete buyer's guide

Public Domain

How to take copies of all the best software for your machine - legally

Paint job

De Luxe Paint 3: reviews and interviews

History of the QL

The story of the Great Leap... where?

PLUS

Another pot pourri of letters, tech tips, reviews, features, jobs, games... and the very latest in news and comment on the current computer scene

On sale
Thursday March
23rd

Order
yours
now!

Only
48p!

Shoot from the Lip... the week's most quotable sayings

"If it comes to a shoot out we'll do fine. We're good cowboys."

Microsoft's techno billionaire Bill Gates on facing up to the competition.

"Windows 386 is cooler than Windows 286 but it does cost twice as much so the coolness to price ratio is about the same."

Gates again

"The Amiga beater? We don't need to beat Commodore. They do that themselves."

Atari UK's boss Bob Gleadow when asked about the 'Amiga beating' Super ST.

"I would not like to explain to relatives of a victim killed by someone hacking into an air or railways system that the police have no power to interfere until after someone is dead."

A police computer crime specialist to *The Observer* on the escalating dangers of computer hacking.

520ST-FM SUPER PACK



The Atari Super Pack is ideal for you if you want to get off to a flying start with the best in entertainment software. The Pack includes a 520ST-FM with 512K RAM, a built-in 1Mb disk drive, over £450 of top games and a joystick. If you buy the Super Pack at Silica Shop, we will add our own ST Starter Kit (worth over £200), FREE OF CHARGE. Return the coupon for details.

£399

INCLUDING VAT

With SM124 mono monitor: £498 INC VAT

With SC1224 colour monitor: £698 INC VAT

1Mb DISK DRIVE £450 OF SOFTWARE

ARCADE GAMES

Arkanoid II	Imagine	£19.95
Beyond The Ice Palace	Elite	£19.95
Black Lamp	Firebird	£19.95
Buggy Boy	Elite	£19.95
Chopper X	Mastertronic	£9.99
Ikari Warriors	Elite	£14.95
Marble Madness	Electronic Arts	£24.95
Quadrailen	Logotron	£19.95
Ranarama	Hewson Consultants	£19.95
Return To Genesis	Firebird	£19.95
Roadways	Melbourne House	£19.95
Starquake	Mandarin	£19.95
Test Drive	Electronic Arts	£24.95
Thrust	Firebird	£9.95
Thundercats	Elite	£19.95
Wizball	Ocean	£19.95
Xenon	Melbourne House	£19.95
Zynaps	Hewson Consultants	£19.95

SPORTS SIMULATIONS

Eddie Edwards Super Ski	Elite	£19.95
Seconds Out	Tynesoft	£19.95
Summer Olympiad '88	Tynesoft	£19.95

PRODUCTIVITY SOFTWARE

Organiser	Triangle Publishing	£49.95
-----------	---------------------	--------

JOYSTICK

Atari CX40 Joystick	Atari Corp	£4.99
---------------------	------------	-------

FREE ATARI BUNDLE VALUE: £458.97



The range of Atari ST computers offers something for everyone. From the games enthusiast who wants the challenge of the very best in arcade action, to the businessman who wants to make financial forecasts or faultless presentations. The ST offers high quality graphics, sound and speed for the gamer, whilst providing a fast, user friendly and affordable solution to business. The ST is now firmly established in the home environment and boasts a wealth of users in education, local government, television, and a variety of different businesses. Software for the range stretches to cover applications as diverse as ENTERTAINMENT, ACCOUNTS, ART, COMMUNICATIONS, COMPUTER AIDED DESIGN, DATABASES, DESKTOP PUBLISHING, EDUCATION, MUSIC, PROGRAMMING, SPREADSHEETS, WORD PROCESSING and more. For a full list of the software available, as well as details of the ST range, complete and return the coupon below.

All prices correct at the time of going to press. F&OE

520ST-FM EXPLORER PACK WITH BUILT-IN 1Mb DISK DRIVE



The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

£260

ONLY £2.51 PER WEEK
RETURN COUPON FOR DETAILS
+ VAT = £299

+ SM124 mono monitor: £398 INC VAT

+ SC1224 colour monitor: £598 INC VAT

1040ST-FM PROFESSIONAL PACK

NOW WITH TV MODULATOR

For the serious home user and the small business, we are pleased to announce a new package based around the 1040ST-FM. The 1040ST-FM has 1Mbyte RAM and a 1Mbyte built-in disk drive. In addition, the 1040ST-FM now comes with a TV modulator built-in. (The previously available 1040ST-F was designed for use with a monitor only and did not come with a modulator.) This modulator allows the 1040ST-F to be plugged directly into any domestic TV set, and comes complete with a lead to allow you to do so. The new 'Professional Pack' from Silica includes the new 1040ST-FM with modulator plus four high quality software packages including a spreadsheet, database, word processor and programming language. This 'Professional Pack' software will enable you to get straight down to business with your new computer. In addition to this software (worth £384.84), if you buy the Professional Pack from Silica Shop, you will also receive the Silica ST Starter Kit (worth over £200), FREE OF CHARGE. Return the coupon for further information.

£499

INCLUDING VAT

With SM124 mono monitor: £598 INC VAT

With SC1224 colour monitor: £798 INC VAT



ATARI 1040ST-FM	(Computer)	£499.99
VIP PROFESSIONAL	(Spreadsheet)	£149.95
MICROSOFT WRITE	(Word Processor)	£149.95
SUPERBASE PERSONAL	(Database)	£59.95
BASIC DISK & MANUAL	(Language)	£24.98

NORMAL RRP: £884.82

LESS DISCOUNT: -£385.82

PROFESSIONAL PACK PRICE: £499.00

2Mb & 4Mb MEGA ST

The MEGA ST computers are styled as lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200), both FREE OF CHARGE. Return the coupon for further details.

2Mb MEGA ST
£899 INC VAT

+ mono monitor = £998
+ colour monitor = £1198

4Mb MEGA ST
£1199 INC VAT

+ mono monitor = £1298
+ colour monitor = £1498



DTP PageStream £149 +VAT £171.35

Desktop Publishing (DTP) is one of the fastest growing applications for personal computers. We are pleased to announce a powerful low cost package for the Atari ST called PageStream. PageStream costs only £149 (+VAT £171.35) and, because it works with an Atari 1040ST and a Silica SP-1800A printer, you can be up and running with a complete system for less than £1000. Some of the features of PageStream are listed to the right. If you would like further information on this program, complete and return the coupon below, ticking the DTP box in the corner.

- * TEXT-FLOW AROUND GRAPHICS
- * ROTATION OF TEXT & GRAPHICS
- * SLANT OR TWIST ANY OBJECT
- * POSTSCRIPT COMPATIBLE
- * TAG FUNCTION
- * AUTO/MANUAL KERNING & HYPHENATION
- * GROUPING OF OBJECTS

DO YOU OWN AN ATARI ST?

If you already own an Atari ST computer and would like to be registered on our mailing list as an ST user, let us know. We will be pleased to send you copies of our price lists and newsletters FREE OF CHARGE as they become available. Complete the coupon and return it to our Sidcup branch and begin experiencing a specialist ST service that is second to none.

SILICA SHOP:

SIDCUP (& Mail Order) 01-309 1111
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
OPEN: MON-SAT 9am - 5.30pm LATE NIGHT: FRIDAY 9am - 7pm

LONDON 01-580 4000
52 Tottenham Court Road, London, W1P 0BA
OPEN: MON-SAT 9.30am - 6.00pm LATE NIGHT: NONE

LONDON 01-629 1234 ext 3914
Selfridges (1st floor), Oxford Street, London, W1A 1AB
OPEN: MON-SAT 9am - 6.00pm LATE NIGHT: THURSDAY 9am - 8pm

WHY SILICA SHOP?

Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals, and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

SILICA STARTER KIT: Worth over £200, FREE with every Atari ST computer bought from Silica.

PROFESSIONAL PACK: Free business software with 1040ST-FM and MEGA ST's bought from Silica.

DEDICATED SERVICING: 7 full-time Atari trained staff with years of experience on Atari servicing.

THE FULL STOCK RANGE: All of your Atari requirements from one place.

AFTER SALES SUPPORT: The staff at Silica are dedicated to help you get the best from your ST.

FREE CATALOGUES: Mailed direct to your home as soon as we print them, featuring offers as well as all of the new releases.

FREE OVERNIGHT DELIVERY: On all hardware orders shipped within the UK mainland.

PRICE MATCH PROMISE: We will match competitors on a 'same product same price' basis.

FREE TECHNICAL HELPLINE: Full time team of Atari technical experts always at your service.

FREE SILICA STARTER KIT WORTH OVER £200

WITH EVERY ST - RETURN COUPON FOR DETAILS
ALL PRICES QUOTED INCLUDE FREE UK DELIVERY

To: Silica Shop Ltd, Dept NCE 03 89, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND FREE LITERATURE ON THE ATARI ST

Mr/Mrs/Ms: _____ Initials: _____ Surname: _____

Address: _____

Postcode: _____

Do you already own a computer? ☐ Yes ☐ No

If so, which one do you own? _____

Dept NCE 03 89,

DTP ☐

Where do you buy an Amstrad 30Mb 2086 with colour monitor for £1091 at 3.45 on Saturday afternoon?

NORTH LONDON	MANCHESTER	WEST LONDON	BIRMINGHAM
			
99 PARK STREET LANE BRICKET WOOD ST. ALBANS, HERTS (0727) 72790	85 WASHWAY ROAD (OPPOSITE IBM) SALE, MANCHESTER 061-962 0780	304 KINGSBILL AVENUE (off Uxbridge Road) HAYES, MIDDLESEX 01-841 8744	1046-1048 COVENTRY RD HEYMILLS, BIRMINGHAM 021-772 5212

SHOWROOM OPENING HOURS: Monday-Friday 9am-6pm Saturday 10am-5pm

COMPUTER EXPRESS



AMSTRAD 2086 30Mb with COLOUR MONITOR

The new trend setter from Amstrad. 3MHz 8086cpu for excellent software compatibility. Fast 30Mb Hard Disk and 640K RAM. Windows 2 with every machine. Every unit fully tested in addition to our extra 28 days Customer Assurance Warranty. **£1091**

not to mention

EPSON LX800

This latest offering from Epson zips along at 150cps in draft and 25cps in NLQ. Comes complete with Parallel Esc-P or IBM Parallel interface as standard, plus top mounted tractor feed. Good clear typeface, and 80 column wide. **£159.00**
Colour version printing 7 colours **£214.00**

STAR LC-10 COLOUR

The star of the printer world. Already is topping the hi-parades. For the money no other printer offers so much. 80 column multifont printer with 5 resident fonts and paper parking. 144cps draft and 36cps in NLQ quality. **£219.00**
Black only version **£175.00**

TIMWORKS

The latest in low-cost DTP. An excellent package for anyone wanting to make a start in DTP for a very modest sum. Timeworks is very popular, and has good telephone support from the manufacturer and ourselves. **£89.00**

NEC P2200

At last! 24 pin quality that anybody can afford, with NEC's renowned reliability to match. This little baby cruises along at 168cps in high speed, 140cps in standard and a really nippy 56cps in 24 pin letter quality mode. This printer should be on any discriminating buyers list. NEC P2200. **£289.00**
Cut Sheet Feed - Special this month **£29.0**

AMSTRAD 2000 Series

NEW 2086 range available from stock NOW!

Single Drive 12" Mono	£586	Single Drive 14" Colour	£711
Single Drive 12" Colour VGA	£806	Single Drive 14" Colour VGA	£901
Double Drive 12" Mono	£711	Double Drive 14" Colour	£859
Double Drive 12" Colour VGA	£949	Double Drive 14" Colour VGA	£1044
30 Mb Hard Disk 12" Mono	£949	30 Mb Hard Disk 14" Colour	£1091
30 Mb Hard Disk 12" Col VGA	£1189	30 Mb Hard Disk 14" Col VGA	£1279
NEW 286 IBM AT compatibles:			
Double Drive 12" Mono	£919	Double Drive 14" Colour	£1059
Double Drive 12" Colour VGA	£1149	Double Drive 14" Colour VGA	£1239
40 Mb Hard Disk 12" Mono	£1239	40 Mb Hard Disk 14" Colour	£1379
40 Mb Hard Disk 12" Col VGA	£1469	40 Mb Hard Disk 14" Col VGA	£1559
NEW 286 ideal for serious computing and networking:			
65 Mb Hard Disk 12" Mono	£2439	65 Mb Hard Disk 14" Colour	£2579
65 Mb Hard Disk 12" Col VGA	£2669	65 Mb Hard Disk 14" Col VGA	£2779

We're there because you're there.

FOR FULL PRICE LIST PLEASE CALL
EXPORT & TRADE ENQUIRIES WELCOME
TELEPHONE & MAIL ORDERS WELCOME



CALL **0727 37451**



MICRO-COMPUTERS, PERIPHERALS
SOFTWARE, SALES & SUPPORT
CREDIT CARDS NOT DEBITED UNTIL DESPATCH

OPENING IN 1989: LEEDS, NEWCASTLE, GLASGOW, BRISTOL & SOUTH LONDON