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NEW COMPUTER EXPRESS

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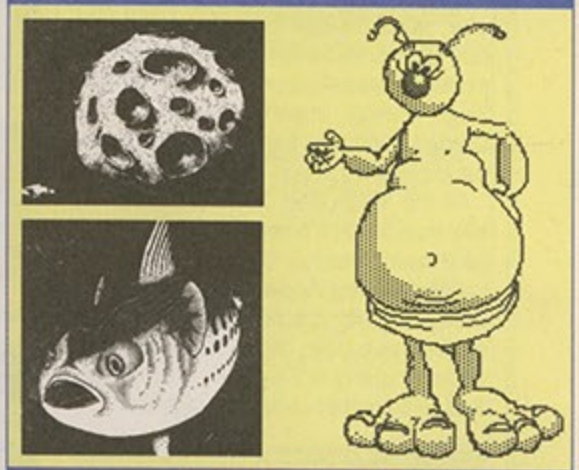
ROBBERY

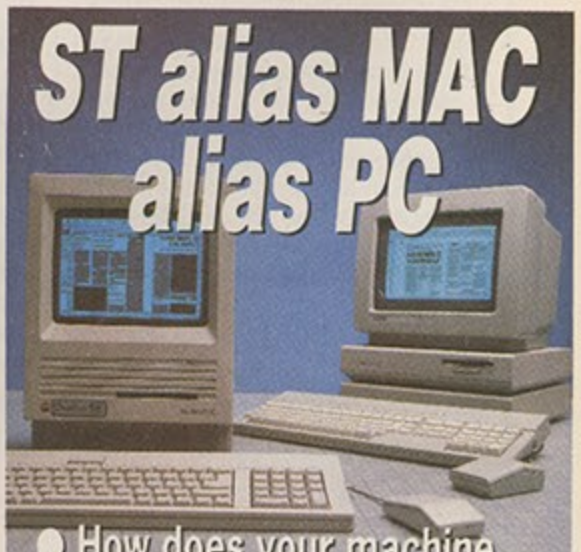
- Computer thefts rocket this year
- Police raids net 600 machines
- How you can protect your micro

COSMIC!



– A walk through the world's biggest game
pages 24,25

ST alias MAC alias PC



• How does your machine fare in the emulation stakes?
– pages 15,16,17

'40% of second-hand micros stolen' – page 2

• Why 16-bit games can't come down in price – page 5

ALSO INSIDE THIS WEEK

- Dream graphics machine
- Cheap CAD on the ST
- New PCW music package
- Value-packed vouchers

SECTIONS FOR PC • Amiga • Atari ST • Spectrum • CPC • C64 • PCW • QL • BBC • MSX • Archimedes

COMPUTER BURGLARIES SOAR

Cops warn: protect your hardware

Your computer has become the prime target for villains and thieves who have created a multi-million pound industry in stolen hardware.

Police said last week that computer thefts are on the increase with colleges, warehouses and small offices under attack. They also estimate that an incredible 40 per cent of second-hand computers are stolen property.

Some £300,000 worth of computer equipment was put on show at Old Wembley police station last Wednesday. All 600 pieces had been gathered following extensive investigations into thefts from King's College, Imperial College and the London School of Economics as well as the University College of North Wales.

All the thefts had been organised by two men in their twenties both of whom have been arrested. One was caught red handed stealing Apple Macs from King's College. Two second-hand computer dealers have been charged with handling stolen property in the South East of England with another under investigation.

Phenomenal amount

Detective Sergeant Iain Farquhar told *Express*: "During our investigations we were coming across a phenomenal amount of stolen computers. I think 40 per cent is a very realistic figure. If you buy a second-hand computer you have nearly a fifty per cent chance of it being stolen."

Leading dealers in second-hand computers have not disagreed with Farquhar's figure although they stress that it is relatively easy for a seasoned businessman to tell a stolen computer.

A spokesman for Music and Video Exchange in Notting Hill, London thought the figure too low. He said: "We have people in here nearly every day trying to sell stolen computers and it's becoming more frequent. Most of the time we call the police and have them arrested. You can reckon on 95 per cent of second-hand car radios to be stolen. With computers it's about 50 per cent."

• On the case: part of the Old Wembley haul

Dt Sgt Farquhar warned that computer theft had now come of age with the possibility of nationwide groups at work. "Previously it was a case of the odd break in here and there but we're beginning to see computer theft emerge as a nationwide problem. We're beginning to realise the magnitude of that problem," he said. Police are to continue investigating where stolen computers are being sold.

Leading computer auctioneer John Russell called for more police action: "The vast majority of machines I come across are from rental companies, liquidated stock and are legitimate. It would be a great help and in everybody's interest if the police could compile a database of stolen computers. Whenever we have called the police to check a computer they are unable to find out if it is stolen."

Dt Sgt Farquhar put this down to the lax attitude of users. "Of all the stolen computers which have been claimed very few of the owners had recorded the serial numbers. That is painfully obvious.

"People should take down serial numbers religiously and see their local crime prevention officer. Either that or get an ultra-violet number pen. They cost a couple of quid and can save a lot of trouble." He added: "If you buy a second-hand computer you have no way of knowing if it is stolen or not."

Schools a target

Police and dealers take the opinion that most stolen computers are taken from educational establishments, warehouses and offices. Schools are an especially simple target. As yet home computers have not figured (although a market is emerging).

Reputable dealers say they are as keen as anyone else to crack down on the crooks. No professional outfit would want to touch stolen property and most ask for ID when buying kit. Often they ask for a demonstration before buying a computer.

The M&V spokesman said: "If they don't know what they are doing then it's obvious what's going on. You won't believe how stupid some of the people are who come in here."

However, avenues are opening up for computer thieves wishing to offload equipment. Greater awareness of computers clearly has an adverse effect.

"Petty thieves are looking for high value portable items which can be sold quickly," said John Russell. "If you're buying a second-hand computer in good faith and you get the paperwork it's legally yours. I'd say it's better to buy from companies rather than individuals."■

Computers square up

● Micro masters battle it out

The world's first Computer Olympiad began last Wednesday with 86 programs competing from 16 countries which were taking part in 15 different competitions.

Computer fanatics and "thinking gamesters" turned up to witness the event in London's Park Lane Hotel. Chess was top of the agenda with programs such as *Chess Player 2150* battling it out with seven other programs including *Rebel* and *Mephisto*. There were also bridge programs tackling each other as well as Connect Four, draughts, go, go-moku, Othello, Scrabble, backgammon and even dominoes.

It's not only software versus software. Expert Othello, Scrabble and chess players plan to take on the winning computer programs.

You can find out who or what the victors are in next week's *Express*.■

The way of the Dragon

Anxious Amiga-owning *Dragon's Lair* fans can rest assured that there's more to come.

British outfit Active has tied up the rights to *Dragon's Lair II* – written by Maryland's Visionary Design. That team was responsible for the original *Dragon's Lair* and *Sword of Sodan*. The game will be available for 1Mb decks before November and is expected to cost around £40.

Many were impressed by the first game's excellent graphics although some expressed doubts about the limited gameplay. Active says the sequel will boast greater depth and is promising even better graphics. An ST version is "in the pipeline". However, hopeful owners will have to wait until next February.■

● *Dragon's Lair*: more to come

Sega mag soon

For the first time Sega owners are to have their own magazine. *New Computer Express* publisher Future is planning to launch a title next month.

It will be edited by games mad writer Steve Jarratt.Over the past few years he's worked on mags such as *ACE, C&VG, Crash, Zzap* and *Commodore User.*

• Sega: mag at last

"People have been talking consoles for ages but it's clear that the time is right for a bright and relevant magazine," he said. "Here in the UK it's the Sega machines which are making all the running and the signs are that they'll sell in droves this Christmas. All those new gamers will want to know what's happening on the Sega front."

While being an independent mag it is being actively supported by Sega's UK distributor Virgin/Mastertronic.

It will be launched at the PC Show in September, will cost £1.20 and begins life as a subscription only publication.■

WHY THE CHARTS MAY BE WRONG

Research leader Gallup has admitted that its games charts are not up to the standards it wishes to achieve – mainly due to some dealers laziness.

In order to compile the weekly charts Gallup relies on submissions from the multiples (such as Menzies and Woolworths) and from independent dealers (those not affiliated to any chain stores). The "indies" are required to fill in a diary every week and send it to Gallup.

However, instead of 200 entries Gallup says it's only getting about 50 a week. And industry sources claim that figure could be as low as 20 in some weeks.

This has the effect of distorting the chart in favour of what is sold in the big stores. Traditionally, coin-op licences and film tie-ins do better in the big shops where people who are not necessarily au fait with games do their shopping.

In the music industry Gallup uses a high tech electronic system which has produced the most accurate pop charts in the world. However the games industry is far too small to pay for this.

Even so, talks are going on with industry body ELSPA on ways to improve the accuracy of the charts.

Gallup's John Pinder told *Express*: "We're aware that dealer response needs to be improved and we are looking at ways of doing that." He said it was impossible to say how, or if, there is any distortion in the charts. He also denied that only 20 dealers were sending their diaries in each week.

Nevertheless, the Gallup chart remains the only real independent market research in the games industry and therefore the only way we have of knowing what's popular.■

Software Horizons goes bust

Software Horizons, the firm started by a young computer user, has gone bust.

As yet it is not clear what has happened to 23-year-old boss Mungo Amyatt-Leir. Announcements are expected within the week as to the future of his impressive sound package *MasterSound*. It has been suggested that Microdeal will take over the product although no-one at that firm was available to comment.

A close business friend of Amyatt-Leir's told *Express*: "It wasn't really his fault. He just had trouble getting money in from debtors." Horizons was also responsible for games such as *Dragonscape* and a budget label called Rapid.■

Acting tough

Confused by the new Copyright, Designs and Patents Act? Well, the rest of the computing world seems to be.

To help out the legal minded amongst us solicitors Bristows, Cooke and Carpmael has come up with a guide to the implications of the legislation.

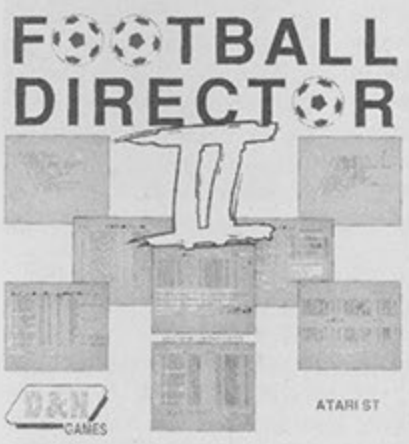
It gives a summary of the major provisions and claims to "look in detail" at changes in protection for software. Practical tips are also offered. What's more – it's free.

Find out where you stand in the eye of the copyright law on 01 242 0462.■

Soccer to meet 16-bit challenge

Aspiring football bosses will be pleased to hear about a new project under way – *Football Director III.*

D&H Games is planning to launch a new version of its comprehensive soccer strategy game with the claim that it will be the biggest yet. The firm is hoping to cram more than 500K of info into the ST and Amiga game including three Scottish divisions and a European Super league.



• *Football Director II*: New goal

"We will be pulling in the best of the first two games as well as using suggestions from people who spend so much time playing football strategy games," said programmer and joint boss Tony Huggard "We want to get everything in." He said it could well be the last in the *FD* series which has sold

Cybermen arrive

Mitsubishi's cyber scientists have developed a computer which recognises all 26 letters of the alphabet no matter how badly they are presented, writes Andy Storer.

The optical neurocomputer emulates the human brain by interfacing neurons with light transmitted through photodiodes and Liquid Electric Displays (LEDs). Neural technology is being heralded as the key to real artificial intelligence. Such technology could be incorporated into robots and used for voice and visual recognition.

The Post Office already uses a computer which recognises typed postcodes. However, attempts to progress have been constrained by existing computer architectures – from which neural processing technology is a radical departure.■

CONTENTS

FEATURES

EMULATORS 15
How many other machines can your micro turn into? Which computer comes out tops?

COSMIC! 24
The world's biggest computer game reviewed – and it's weird...

DREAM GRAPHICS 8
Forget the Amiga, this is the machine for *really* powerful drawing

DATA SAVED! 19
The program that rescues you from any crash

CAD CAN 25
The ST's latest CAD package reviewed: real precision on a budget?

REGULARS

COMMENT 4
LETTERS 11
EXPRESS SALES 34
Pick up some great bargains here
JOBS 36
The best in computer vacancies
TECH TIPS 37,38
GAMEPLAY 40,41,42
Dozens and dozens of tips and hints to help you with your favourite games, plus game of the month *The New Zealand Story* reviewed, previews of up and coming games, mini-reviews, StreetTalk and more...
VOUCHERS 43,44
Buy *Express* for 58p and save £10!
BACK PAGE 46
Listings with a difference

YOUR MACHINE

Amiga 27
ST 26
PC 28
CPC 29
Spectrum 36
Commodore 64 31
PCW, QL 32
BBC, MSX 33
Archimedes 31

COMMENT

COMPUTER THIEVES

There was a time when you could be burgled – lose the telly, video, family snaps and microwave – but still come home to find the Speccy or PC sitting safely on the table.

Why? Because burglars didn't generally know the difference between an Amstrad PPC and a VAX. They couldn't sell the booty so why run the risk of being caught with the darned stuff.

These days they've wised up. Most people know a good deal when they see one no matter how high tech. We're all getting used to computers and if some dodgy character is trying to off-load an Apple Mac down the Kings Arms for £300, chances are someone will know someone who wants it.

But blokes with striped pullovers and bags with swag on aren't creeping up the lamppost in search of your beloved C64. Why bother when they can walk out of a school unhindered with £2,000 worth of PC under their arm?

It's clear that the schools have been scandalously negligent with security. Since Easter, Kings College in London has lost 34 Macs – that's more than £50,000 worth of kit. And they weren't being stripped by cunning cat burglars. The police waited outside one night and found the hapless crook wandering out holding a computer – not exactly Raffles.

GALLUPING BEHIND

Every time some publishers don't find their games bursting into the top ten they starts bitching about how poor the charts are. Gallup, they say, have got it wrong again.

But the beleaguered market researcher doesn't give us the charts for the fun of it. It has to be paid for.

It's up to the trade to get it's act together and start making sure the charts are well funded. We don't need a multi million pound network linking every mail order house and back street dealer. But we do need something that reflects what you are buying and not what a few scattered dealers and chain stores are selling.

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● Commodore tackles Christmas with a light gun

C64 GUN PACK TO BLAST OUT

• C64: Going great guns

Commodore is secretly planning a fully blown attack on first time computer users this autumn with a new special offer pack.

Sources close to Commodore are saying that the firm is planning to bundle a light gun with its pack. Also, plans are afoot to stuff the C64 box with games of a higher calibre than previous bundle efforts.

Inside Commodore Towers the bundle is currently being called 3D Laser Pack although that is likely to be changed to Light Fantastic when the offer is unveiled next month.

Details are scant for the moment but Commodore is known to be scouring the software industry for any top class games which might be available. It is not known where the light gun will be sourced.

When approached this week a spokeswoman for Commodore "would neither confirm nor deny" the existence of such plans.■

Computing's next generation

Kids are being given the chance to dabble with computers for the first time at a London exhibition.

The Bethnal Green Museum of Childhood last week opened its doors to hundreds of youngsters wanting to take part in the Computer Dungeon. That's been set up with the help of a number of companies hoping to attract first time computer users.

On the first two days 1,500 eager kids poured in to get stuck into Amigas and Archimedes machines as well as some Sega consoles. The children were just as keen to have a go at coin-op conversions as music packages and educational bits and pieces.

• Beginners luck: A chance to sample the Amiga

The organisers are happily calling the event a complete success. It runs every afternoon this month and is free.

A permanent exhibition for next year is being under discussion.■

Nintendo sues over game rental

A video rental chain in the US has run into big trouble for renting out Nintendo games.

Nintendo, the Japanese manufacturer of games consoles is seeking an injunction against Blockbuster in Newark which allegedly photocopied Nintendo instructions and distributed them with hired cartridges.

Kids were coming in to try new games for only a few dollars. Many stores rent out video cassettes with a photocopy of the inlay – Blockbuster clearly used the same technique for video games. However, Nintendo are claiming that this is copyright infringement.

The Japanese toy giant says the instructions are important for some of the more sophisticated games on its system. And it says it has every intention of cracking down on "this illegal practice".

Whether Nintendo is referring to the renting itself or about the photocopying of the instructions isn't yet clear.■

• One for the new scientist?

Pass the ports

Yet another power portable has been launched as manufacturers chase each others' tech specs and search for new angles.

Sanyo's nattily named MBC-17LT3 is being pitched as a desktop PC which can be moved around. The £2,450 luggable can't be used on the move since it only runs off the mains.

It sports an 80286 processor with 1Mb of RAM and a 20Mb hard disk on board. Sanyo boasts that it's fitted two extra expansion ports for special users. These, the firm says, are for scientific users and the like who want to link the portable to other instruments in order to download data for some quick number crunching More on 0923 57233.■

SNIPPETS ● SNIPPETS ● SNIPPETS

• Word reaches us that the Prince and Princess of Wales' equerry (person who takes care of business matters whilst dodging tabloid hacks) has sounded out Atari for a couple of Folio handheld PCs.

An Atari spokesman preferred not to speculate on whether the Royals would make any personal use of them...

• Shoot-'em-up specialist Hewson is to launch a new collection of goodies in October. For £12.99 mainstream eight-bit owners get a compilation of *Uridium, Eliminator, Lightforce, Cybernoid II, Hydrofool* and *Sanxion*...

• Mid-range PC manufacturer Walters has joined in the PC price slashing craze. Its low cost AT has dropped 17 per cent from £900 to £745 with other reductions coming in at as much as 34 per cent...

• Computer companies have once again been "rapped" by the Advertising Standards Authority this month. The ASA complains (not for the first time) about those naughty firms advertising product which isn't yet available. This month's guilty parties include Camelot Computing, *Commodore Disk User*, Inmac and Commodore.■

Out of pocket

Commodore lost $10.1 million in the three months to June. Sales were down from $215m to $180.3m on the comparable period last year when profits were $12.2m. Commodore sells much of its kit in Europe and is blaming dodgy exchange rates for the loss. After all, $10 million isn't what it used to be.■

Wang hits hard times

The troubles of the once great computer company Wang are beginning to sound like the penultimate chapter from a Jeffrey Archer novel.

The company which was set up by a Chinese immigrant in 1951 is in serious financial trouble. Its founder, 69-year-old Dr An Wang has recently been treated for cancer and has only just been discharged from hospital. And his son, Frederick Wang, has resigned as the company's president after pressure from board members.

It is understood that his father has become increasingly worried about the performance of the company since Frederick , 38, took over three years ago. The family's share of the once great firm has dropped from $1.5 billion in 1983 to $200 million. Last year it lost a staggering $423.3 million.

Dr An Wang is now working part time to restore some confidence within the company but other board members are looking for a saviour from outside the family.

In the meantime Dr Wang has appointed a lifelong friend to step in as acting president.

Wall street analysts are saying that the company may not survive. One commented: "He (Dr Wang) proved himself and then ran into the Chinese tradition of passing things to the eldest son."

Wang revolutionised the office in the 1970's when it almost singlehandedly displaced the typewriter with the word processor.■

16-BIT PRICE DROP FAILS

A bold attempt to drop the high price of 16-bit gaming has failed – and it looks as if prices are a long way from coming down.

Last March US Gold announced through a series of ads that it would be selling selected arcade hits at £14.95 – £5 cheaper than the status quo. At the time the firm argued that this would attract more gamers who couldn't afford £20 for other games.

However, only one game has been released at this price point – *Last Duel* – and that failed to outsell many of its more expensive rivals. Of the other two games planned *Vigilante* is about to be released with *Out Run Europa* "back on the drawing board".

Gold's coin-op manager Andrew Chorzelski explained: "If you try anything new you have to change people's ideas. We suspect some people saw the £15 price point and thought it was a budget product or that we were trying to offload it, which was not the case.

"We're going to stick to £19.95 for the majority of our 16-bit titles and more for those which warrant a higher price," he said.

Many software publishers argue that rampant piracy is blocking any moves to drop price points. Also, new price initiatives tend to have a hard time in the trade.

It had been hoped that US Gold's brave price cut would prove successful and spark off a mass shift downwards throughout the trade. Unfortunately, it seems doubtful that any publishers will see any advantage in dropping prices on good quality 16-bit games.■

• Bold moves but new prices didn't take

Play it again SAM

Computer music whizz David Whittaker has been drafted in by the chaps at Miles Gordon Technology to come up with music and sound effects development software for its new SAM micro.

His software will consist of machine code drivers that use the SAA 1099 six channel synthesizer, converting data streams into sounds. He is also writing an emulator for the GI sound chip which is used in many computers.

Whittaker's previous achievements include the soundtracks to *Tetris*, *Licence to Kill* and *Platoon*.■

• Whittaker: sound judgment

Compact dictionary

The *Oxford English Dictionary*, price £1,500 on paper, is to be converted to CD-ROM format.

Such is the memory capability of compact disks that there is still half the disk free when the 300,000 words have been logged. The free space is being used for a variety of indices. For example, if you type in the word Goth it will find all the words in the English language with a Gothic derivation. Still, it will cost £750 when it arrives in 1992 (and no, that doesn't include the CD-ROM player).■

SHOOT FROM THE LIP

We didn't sit at home discussing egghead problems. We had a zest for life." **Bernadette Tynan on former boyfriend Sir Clive Sinclair.**

"I reckon 80 per cent of the copies of *Football Director* out there are pirated. We looked at some protection but it costs £5,000. It took me two days to crack that so we just put the game out without protection." **D&H Games' Tony Huggard. His future games will include a protection he's written which "will only be broken by die hard crackers with weeks to spare".**

"ELSPA's policy on the Gallup charts is that we haven't got a policy." **Andrew Hewson, of the European Leisure Software Publishers Association.**

"I think they're jolly lucky to get free batteries in the first place." **An Atari spokesman replying to a couple of consumer complaints that the Portfolio PC doesn't "notice" when the Duracell batteries supplied with the machine finally go dead.**

"Imitation is the sincerest form of flattery." **Oscar Wilde.**

Microlink jacks in to JANET

Busy Microlink has announced that users will be able to exchange messages with the 100,000 users of the academic network JANet.

The Joint Academic Network is available through hundreds of schools, colleges and universities in Britain but has only a few connections elsewhere. This will be the first time JANet has been hooked up to a network not normally associated with research, development or education.

The link between the two systems is being tested with on-line launch likely to be some time next month.■

TOP 20 *Full Price* GAMES

1	**Robocop** OCEAN *Spectrum, C64, CPC, ST, Amiga, Others*	1
2	**Forgotten Worlds** US GOLD *Spec, C64, CPC, ST, Amiga, Others*	3
3	**Dragon Ninja** OCEAN *Spectrum, C64, CPC, ST, Amiga, Others*	2
4	**Silkworm** VIRGIN *Spectrum, C64, CPC, ST, Amiga*	9
5	**Kenny Dalglish** COGNITO *Spectrum, C64, CPC, ST, Amiga*	4
6	**Licence To Kill** DOMARK *Spectrum, C64, CPC, ST, Amiga*	12
7	**Crazy Cars II** TITUS *Spectrum, PC, ST, Amiga*	5
8	**New Zealand Story** OCEAN *Spectrum, C64, CPC, ST, Amiga*	RE
9	**Emlyn Hughes** AUDIOGENIC *Spectrum, C64, CPC*	15
10	**Falcon Mission 1** MIRRORSOFT *ST, Amiga*	6
11	**Operation Wolf** OCEAN *Spectrum, C64, CPC, ST, Amiga*	11
12	**Run The Gauntlet** OCEAN *Spectrum, C64, CPC, ST, Amiga*	8
13	**Red Heat** OCEAN *Spectrum, C64, CPC, ST, Amiga*	7
14	**Double Dragon** MELBOURNE HOUSE *Spectrum, C64, PC, ST, Amiga*	20
15	**Kick Off** ANCO *C64, PC, ST, Amiga*	10
16	**Rick Dangerous** FIREBIRD *Spectrum, C64, CPC, ST, Amiga*	NE
17	**Populous** ELECTRONIC ARTS *ST, Amiga*	17
18	**Batman** OCEAN *Spectrum, C64, PC, ST, Amiga*	NE
19	**Football Manager 2** ADDICTIVE *Spectrum, C64, PC, ST, Amiga*	RE
20	**In Crowd** OCEAN *Spectrum, C64, Amiga*	13

TOP TEN *Budget* GAMES

1	**Yie Ar Kung Fu** HIT SQUAD *Spectrum, C64, CPC, Others*	2
2	**Green Beret** HIT SQUAD *Spec, C64, CPC, Others*	1
3	**Enduro Racer** HIT SQUAD *Spec, C64, CPC, ST, Others*	3
4	**Mig 29** CODE MASTERS *Spectrum, C64, CPC*	6
5	**Daley Thompson** HIT SQUAD *Spec, C64, CPC, Others*	4
6	**Postman Pat** ALTERNATIVE *Spectrum, C64, CPC*	8
7	**Barry McGuigan** MASTERTONIC *Spectrum, C64, CPC, Others*	14
8	**Treasure Island Dizzy** CM *Spectrum, C64, CPC*	5
9	**Jack the Nipper** KIXX *Spectrum, C64, CPC, Others*	NE
10	**Fast Food** CODEMASTERS *Spectrum, CPC*	RE

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.

• Murphy: game on

Cop this

Beverly Hills Cop Eddy Murphy is to appear in a computer game this October courtesy of Tynesoft.

The Newcastle based software house is working on a game which, it claims, sticks closely to the film plot. It will include various sections taken from different scenes such as a car chase and maze-type puzzle. It is understood that Murphy's barrage of expletives will be left out of the game.

The firm is still deciding whether or not to have a go at a sequel. It should appear on most major formats.■

HIGH-POWER PCS TAKE THE LEAD

PCs running '286 processors are now the most popular with the former standard 8086 machines slipping behind, according to market research firm Romtec, .

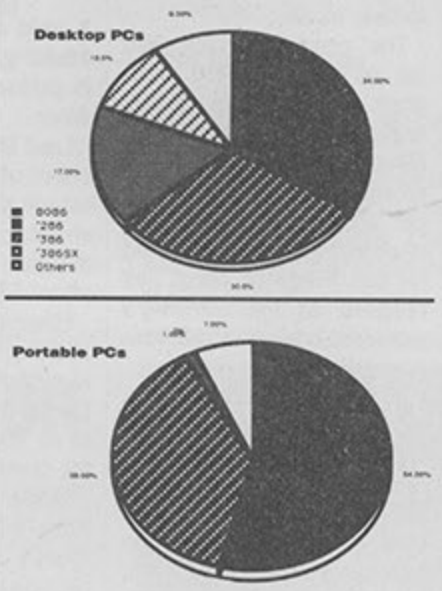
But machines running the faster '386 processor are quickly carving out a niche for themselves

Latest figures give the '286 machines 34 per cent of the desktop PC sector with the aging 8086 trailing with 31 per cent. This time last year the 8086 market had 41 per cent. Despite the '286's dominance it has trailed away. In April 1988 it boasted 42 per cent of the market.

The up and coming '386 machines are now running almost parallel with the 8086 PCs. With the '386s and '386XSs combined it has a 27 per cent share. Comparable figures last year only gave them nine per cent. Other processors have stayed at eight per cent.

In the laptop sector the 8086 still sits on top with 54 per cent. This is probably due to the popularity of Amstrad's low cost PPCs. The '286 machines are running second with 38 per cent with '386 portables still very much behind – only one per cent.

Hardware manufacturers have been concentrating on '386 desktop models this year with computer shows dominated by them. Some analysts have suggested that the '286 PCs will not last long at the top. Already their prices are tumbling toward the low end while corporate buyers turn to '386s.■



• The pie charts on the right show the breakdown of UK PC owners

To the letter

A row has broken out in the world of accounts software – programming house Keyboard Productions has snatched its cheap *ABC* pack from publisher ABC (no relation) and handed it over to another.

Keyboard alleges that ABC sold "unauthorised copies" of its program. This, claims Keyboard, means some users can't be registered with the user club. In order to clear the mess up Keyboard is giving all users a three month amnesty so all users can register.

To add to the confusion police are apparently investigating a robbery at ABC in which accounts and customer records were stolen.

Despite Keyboard's bold statements ABC says it will not let the firm take over without a fight. The lawyers await. ■

Well read

Britain boasts more than 200 computer magazines. Many of these are free mail outs, marketing-led trade publications or high end technical journals. But computing still carries more off the shelf mags than any other pastime.■

'Sir Clive's IQ ruined our romance'

Sir Clive Sinclair was in the national tabloids again last week following the break up of his well-publicised romance with 23-year-old Bernadette Tynan.

Tynan, who has an IQ of 154, told the *Sunday Mirror* that she finished with the brilliant inventor because they were both too clever. She says they spent too much time discussing and analysing high brow problems instead of "just having a good row instead".

"We were our own greatest enemies and were too analytical about everything," she said. "I enjoyed every moment with Sir Clive. He is a very, very incredible person."

The man behind the Speccy and Z88 is said to be hoping for a reconciliation but Tynan has ruled this out. She added: "I'm not really into all that IQ sort of thing. We liked each other for what we were. We didn't sit at home discussing egg head problems. We had a zest for life."

"He's such an interesting person. He has got to be one of the century's most futuristic thinkers. But you end up spending too much time analysing, you forget to enjoy each other's company."■

• Sir Clive: what the papers say...

A helping hand for lost adventurers

Adventurers who can't cope with goblins, get frustrated by trolls and are scrabbling around for ornamental keys could be in with a chance.

A new professional adventure helpline has been set up in Manchester which claims it can solve any adventure problem. Ten lines are manned from noon until 8pm seven days a week.

Guiding Light has been set up by Jackie Wright who has been involved in adventuring for the past three years. "We're expecting a lot of response because there are so many adventurers out there," she said. Adventurers who call 0898 338933 can expect to be charged 25p per minute or 38p per minute during peak time (before 6pm Monday to Friday).■

Picture the screen

Version three of the Amiga's brilliant paint package *DigiPaint* is now available.

It weighs in at £80 but owners of the original can get a £60 upgrade by sending in their disk and manual. *DigiPaint III* features auto-scrolling super bitmaps, texture mapping with anti aliasing and colourising of black and white images. Publisher DigiPro is calling it "awesome". DigiPro can be found on 0703 703030.■

Body talk

Silicon Graphics' new 4D/25 Turbo super-powerful graphics workstation is being touted as the first computer able to simulate a journey through the human body.

Using high resolution colour to model tissue, fluids and organs the simulation of endoscopy will revolutionise training for surgeons. In effect it allows doctors to set out on a "fantastic voyage" through the human body without recourse to live patients.■

• Review page 8.

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DREAM GRAPHICS

What graphics might you expect to see on your personal computer in the next decade? Andy Storer greets the arrival in Britain of the world's most powerful 3D graphics workstation - Silicon Graphics' 4D/25 Turbo.

The long awaited emergence of the ParSec graphics board for the ST, delivering 16 million colours and able to move 12.5 million pixels around a screen every second, pushes the home micro into areas only custom graphics workstations have previously occupied. However, those machines are striding forward at an even faster rate, drawing on advances in chip speeds to deliver systems capable of astonishing graphic power.

The worldwide 3D computing market is only four years old. In that time it's grown to a current worth of $420 million and is mushrooming at a rate of 50% per annum. Silicon Graphics' is the leader in the top-end graphics workstations that constitute this market - accounting for over half the world's sales in high-resolution design and modelling systems. Last week it announced a new entry-level 3D graphics 'platform' - 'entry level' in this case meaning £22,000 - intended for CAD, animation, architectural design, molecular modelling and simulations.

Turbo Graphics

The 4D/25 Turbo is a RISC-based system running off a 20MHz R3000 CPU and delivering 16 million instructions per second. It comes with 8Mb of RAM as standard but is able to address 32Mb and generate a palette of 16,777,216 colours. However, this is only the performance of the main CPU designed to handle computation. The custom graphics chip, termed a 'geometry engine', is responsible for all 3D graphics transformations. The top-end Power Iris model uses five geometry engines in parallel. Separating graphics from computation is something of a radical departure from the architectures of competing workstations that, for the most part, rely on a single 32-bit processor to handle both computing and computationally intensive graphics.

By splitting functions in this way, a user is left with the ability to manipulate complex 3D objects in a near instantaneous manner. For instance, a wire-frame model can be quickly sketched on screen and through a single menu operation be immediately fully rendered and shaded with mul-

How does it compare?

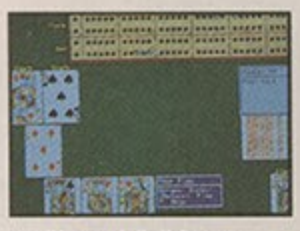
Amiga
£399
The maximum graphics handling capability of the Amiga's blitter chip is estimated to be in the region of a possible 3,000 3D vector calculations and 1500 polygons displayed each second in one colour.

Transputer flight simulator
£20,000
In Issue 38 we featured Parallel Architectures' transputer- based Real Time Environment Simulator. It's software- only system, using five transputers for graphics alone, is able to generate something like 6800 polygons a second in 256 colours. The custom hardware version will bump this up to 17,000 polygons a second.

Silicon Graphics Personal Iris
£36,500
The 4D/25 Turbo is able to display 20,000 polygons on screen and calculate 200,000 3D vector calculations each second. All this at a resolution of 1280 x 960 24-bit pixel screens. But this is only the entry-level model - the top end multi-processor Power Iris range can deliver 100,000 polygons a second!

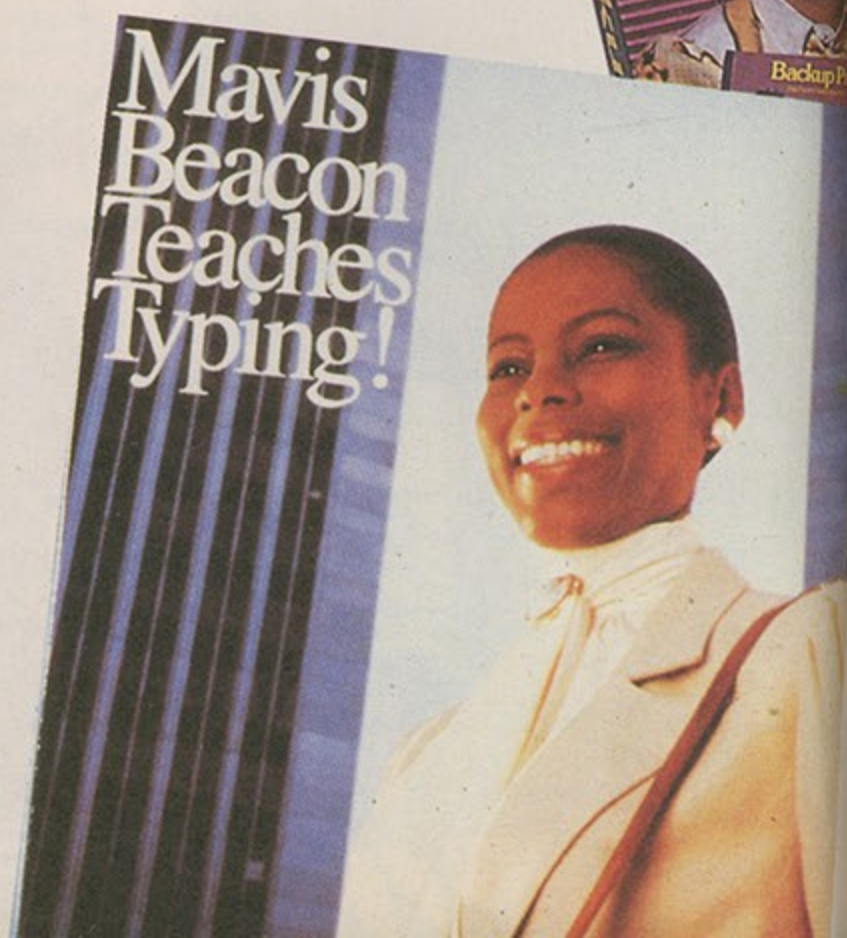
The works

● Mavis Beacon Teaches Typing PC, ST, Amiga, C64, Mac £29.99



● Gin and Cribbage Various (late August) £29.99.

● Secretary Bird PC £39.99



• For £22,000 you could have the state of the art in computer graphics

• A window environment allows work to simultaneously progress on a number of screens of photo-realistic quality

tiple light sources. A further click on the mouse can imbue the resulting solid 3D object with a variety of surface textures - from solid gold and shiny steel to dull concrete. The object can then be scaled, rotated and re-textured at will, all in real-time.

Turbo applications

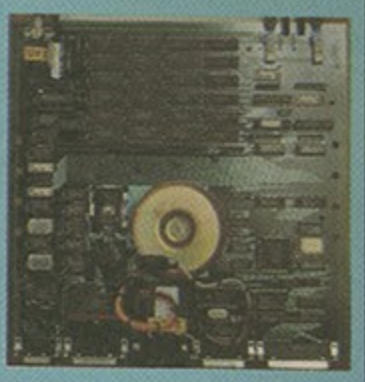
So who uses this gear?

Computer aided design and engineering form the biggest slice of applications. It's useful to be able to produce high-quality rendered images immediately and thereby bypass much of the initial prototyping work. Rolls Royce, British Aerospace and Unilever are among the users in this field.

Animation is also an area exploiting Silicon Graphics' power. Planning the movement of images is frequently done in wire frame form but with the new Turbo, this can be achieved in fully rendered form. This will mean that the price of televisual graphics will come down as frames won't need to be individually rendered after motion paths have been decided. Scientific applications are centred mainly on molecular modelling - fully rendered molecular chains can be navigated at speed, allowing for greater ease of experimentation in areas like genetics and cell structure and research into diseases like Aids and cancer. Glaxo, Shell, Beechams and ICI all own Silicon Graphics' hardware.

Architectural design also benefits from such massive power. Photo-realistic perspectives and walk-through animations allow architects greater spatial awareness. In the visual simulation field, images previously unobtainable on graphics workstations - like fog, snow and rain - can be overlayed with ease onto screens displaying high-resolution flight and vehicle simulators. Finally and perhaps most far-reaching is in the medical imaging field whereby doctors will be able to take realistic journey through the human body. Known as an endoscopy, such a journey will achieve realism through the high-res simulation of minute colour shading, fluids and all the minutiae of the body's organs.

Workstation graphics on your micro?



Like the 4D/25 Turbo, the new ParSec graphics board for the ST, costing £918 from Elmtech on 021 4725719, can produce 4,096 colours on screen from a palette 16,777,216 hues. Offering 1,024 x 768 pixel resolution, the board offers four independent colour planes - rather less than Turbo's 50 but then what do you expect for the price. However, an add-on that can draw 1.25 million pixels per second isn't to be sneezed at , and in this sense the Parsec is pushing 16-bit graphics power to new heights - so much so that when fitted the ST will become no more than a dumb terminal - all GEM functions except disk access being displaced.

But Amiga and PC owners needn't feel left out. Next on Elmtech's list are versions for your machines!

● Back-up Pro
PC (late August)
£24.99

● The Black Hole
PC, ST, Amiga (Late July/August)
£29.99. (Illustration unfortunately not yet available)

● Chessmaster 2100
PC, C64 (later this month
£24.99 and £14.99

● Twist and Shout
PC
£49.99

THE FIDELITY CHESSMASTER 2100

TWIST&SHOU

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Power Pack includes:
- ★ 520 STFM 512K Keyboard with Built-in 1 Megabyte disk drive and TV Modulator
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- ★ First BASIC and First Music Utility Software
- ★ FREE JOYSTICK AND FREE MOUSE MAT WORTH £4.95
- ★ 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 Metacomco.

520STFM Explorer Pack
£279.00
- ★ Explorer Pack Includes 520STFM 512K Keyboard with built-in 1 Megabyte Disk Drive and TV Modulator
- ★ 1 FREE Game, ST Tutorial and METACOMCO Basic worth £25.00
- ★ All Leads, Manuals PLUS MOUSE and FREE Mains Plug!

1040STFM Midi Music Pack
£439.00
- ★ Includes 1 megabyte keyboard plus Pro 12 Midi Music Software

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.
- ★ £385 worth of Business Software including MICROSOFT WRITE word processor (£150), SUPERBASE PERSONAL Database (£60) and VIP PROFESSIONAL Lotus 123 Spreadsheet clone (£150). Metacomco Basic (£25.00)
- ★ All leads, manuals and mouse.

MEGA 1 BUSINESS PACK
£529.00

Features:
- ★ Separate Keyboard and System Unit
- ★ All the Software included with 1040 STFM Business Pack.
- ★ Blitter chip installed for faster graphics

Inc SM124 Mono Monitor..... £628.00

ACCESSORIES

Quickshot II Turbo Joystick.....£9.95	Branded Memorex 3.5" DS DD Disks
Competition Pro 5000 Joystick £13.95	Box of 10.....£13.95
Competition Pro with Autofire £14.95	Memorex Disk Box
Konix Speedking Joystick £11.95	For 40 3.5" Disks £8.95
Red Mouse Mat with Amiga logo ...£5.95	Amiga 1/2 Meg Expansion £119.95
Plain blue Mouse Mat £4.95	Control Centre Atari or Amiga.....£39.95

Contriver Amiga and ST Mouse with FREE Holder and Mouse Pad £20.95

PRINTERS

Star LC24-10 24 pin incl. lead ST/Amiga £279.00
Star LC10 including interface lead for ST/Amiga.....£169.00
Star LC10 colour including interface lead for ST/Amiga.....£219.00
Citizen 120D including interface lead for ST/Amiga £159.00

SEIKOSHA 80 COLUMN PRINTERS - AMAZING PRICES

Seikosha 9 pin NLQ including interface lead for ST/Amiga.....£139.00
Seikosha 24 pin LQ including interface lead for ST/Amiga £259.00

Amiga A500 Games Pack
£379.00
Inc VAT and Next Day Delivery

NEW LOW PRICES!

Game Pack 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.
- ★ £230 worth of Games Software, including BUGGY BOY, MERCENARY, BARBARIAN, WIZBALL & six more games.
- ★ PHOTON PAINT or SPRITZ GRAPHICS PACKAGE worth over £50.00.
- ★ FREE MOUSE MAT worth £4.95
- ★ Amiga BASIC, Amiga EXTRAS 1.3, Workbench 1.3 PLUS the Amiga Step by Step Tutorial.
- ★ All leads, manuals PLUS MOUSE and mains plug!

Amiga A500 StandAlone
£359.00
- ★ Amiga A500 as above but without the £230.00 worth of Games Software

NEW !

Amiga A500 Business & Games Pack
£449.00

includes everything in our Amiga Games Pack PLUS a Comprehensive Suite of Business Programs including, Scribble II WORDPROCESSOR, Analyze II Spreadsheet and Organise Database.

AMIGA 1 MEG!
£489.00

Announcing the new Amiga 1 meg-an A500 system 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 +
£509.00

Our Amiga 1 meg + also includes the £230 worth of games software normally given with our A500 Games Pack.

EXTERNAL DISK DRIVES

Atari SF314 1 Megabyte.....£139.00
Amiga A1010 1 Megabyte £139.00
Cumana 1 Megabyte Atari or Amiga £99.95
NEC 1 Megabyte Amiga.....£89.95
Atari Megafile 30 Hard Disk.....£449.00
New! Commodore A590 20 meg hard disk.....£369.00

MONITORS

Commodore Amiga A1084 Stereo colour Monitor inc lead £239.00
Atari SC1224 Colour Monitor inc lead.....£249.00
Atari SM124 Mono Monitor including lead.....£104.00
Philips CM8833 stereo colour monitor inc. lead for ST or Amiga.....£229.00

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Access

VISA

GENIEALOGY

Please could the thousands of Video Genie users in England have a column? This incredible machine (the only one of its kind with a switch to change screen resolution) has revolutionised the computer industry since its launch.

For instance, did you know that the NCube 2 Scalar supercomputer you featured recently in a news item is heavily based on Genie hardware? Yes! It seems incredible doesn't it?

And it might interest you to know that the US Military have used Genies for programming the recent controversial Star Wars project!

Something else writers at *Express* might find amazing is that the Apple Macintosh actually uses the video chip from the Genie for clearing the screen etc. Apple originally considered using the Genie keyboard for the first Mac, but EACA denied them permission to do so.
David Carter, Woking, Surrey

• ***Amazing. I can hardly believe it myself.***

STEALY EYED?

First, contrary to what SJ Phillips (*Express* 38) appears to think, in 'the real world' there is no basic human right (for sixth formers or anyone else) to own a computer and the software to run it. Every day, in many parts of the real world, through no fault of their own, fellow human beings are dying of starvation because they cannot even afford enough to eat!

Second. Of course we'd all love to own a Porsche. (Or more to the point, we have such a high opinion of ourselves and our contribution to society that we can convince ourselves that we deserve one.) However no one but a complete idiot would spend every penny he had on such a car if as a result he couldn't afford tax, insurance, or the petrol to run it. Unless of course he was willing to forego tax and insurance and to steal the petrol he needed. A logical approach might suggest purchasing a Fiesta instead.

And similarly with computers. The fact that it is easier (ie, requires less courage and skill) to *steal* software than it is to *steal* petrol doesn't alter anything. If you have to *steal* the software then you've chosen too expensive a computer in the first place. OK SJ Phillips? So why not lock the door and give yourself a really good going over with the old steel toe caps instead.
M J Adams, Ealing, London

• ***It could be an extreme exaggeration to say that SJ Phillips was advocating piracy.***

He never mentioned it or implied it in his letter. But I have to agree, you should take into account the price of games when you consider which micro to buy.

DEVICE SQUAD

I don't think the question of banning copying devices is relevant. What is important is that I should be able to protect my investment. After all it is not like purchasing a book where the text cannot be easily destroyed.

After all, we are human and it is part of our nature to make mistakes, otherwise programs I purchase would have no bugs in them.

Have Dave Marshall or Andrew Hewson (Shoot from the Lip, *Express* 38) never wiped a disk by mistake, by human error or faulty equipment? If they haven't then I think I would side with them.

A lot of people are like me now and look for alternative programs if a program is protected.

I have a bridge player program which loads etc, but when it runs the suits on the cards are not implemented properly, which makes it unplayable yet I am expected to accept this as the firm went broke.

The last piece of software that I purchased cost £130 which to me is an awful lot of money. When the software arrived one of the disks was falling to pieces. I wrote to the company who sent another one by return post.

INDUSTRY BOSSES SLAMMED

MYSTERY PRIZE WINNER

Oh, you poor old software houses out there, my heart really bleeds for you. You have to contend with all us computers users who are intent on pirating your software. On top of all that you now have problems with the new Copyright Act.

Perish the thought that you would actually release sub-standard software that could have been written five years ago. Don't even consider the fact that some protection routines won't even allow us users to load original disks! Don't let it even enter your head that the majority of firms out there will happily rip off freelance programmers, artists and musicians etc.

Don't ever think about the many tales of advertising when the software is 'Out Now' but the damn thing hasn't even been written. Forget the complete over-hyping of games and the crummy bribes and back-handers that is rife in the software industry. Shame on us for thinking that software prices are too high and all that packaging with games is there to bump up the cover price.

Don't throw bricks when you live in a glass house. I've been part of the industry for a few years now and I've witnessed most of the above, especially the back-handers.

Some companies out there even have copies (not originals) of their rivals' software.

Yes pirated software is a problem and something must be done to stop (especially) the commercial pirates who actually sell copies. Let's get one thing clear: you, the software industry, are not squeaky clean.
Neil Scrimgeour, Corby, Northants

• *I'm sorry to say I have to agree with you, though I'm sure not all companies are guilty. How about the software houses' point of view on this? Write in to Express Mail n*

Anyway, as the sender of this week's prize letter we're sending a piece of new software for your machine, guaranteed original.

EXPRESS MAIL

Dear Reader

More pages packed with comment, complaint, commendations and controversy – and Rob Ainsley's replies. 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!

Excellent service from but you have to ask why did it happen in the first place?
James Wm Shepherd, Blyth, Northumberland

• ***It raises an interesting point about the 'merchantable quality' a good must have for it to be worth the money. How long could you reasonably expect an uncopyable disk to last before it gives out – a year, two, three?***

Those programs that you can make a copy of are insistent that the very first thing you do is to make your backup and then lock the original away in a nuclear bomb proof watertight lead box. Quite rightly too, when you've just spent a hundred quid on it.

Copy protecting a game that everyone can copy and play without a manual I can understand, but copy protecting a word processor, spreadsheet, graphics package or whatever is surely less justifiable.

BON JOURNO

I am 15 years old and leave school next Easter and I am very interested in pursuing a career in computer journalism. I have been using computers now for about four years and know quite a bit about the most popular formats, both in the entertainment and serious areas. I would appreciate any information you could give me concerning getting into the computer journalism field as I don't know anyone else who can give me information about the qualifications needed. Keep up the great work in the magazine. I think it is brilliant!
Marc Edwards (An Amiga owner from Wigan!) Lancs

• ***There's no regular way into computer journalism. You could scan the ads in the Media sections of The Guardian (Mondays and Saturdays) or the other qualities, or watch UK Press Gazette or Magazine Week. Alternatively, instead of waiting around for the job to come up you can try writing to the computer magazine publishers (their address is in the front of the mags they publish somewhere) asking for a job. But either way you won't get in without all of the following:***

a) A sound knowledge of your machine and the relative merits of the software for it (something a bit deeper than 'I think Kick Off is great but MegaSoft Soccer is useless')

b) Plenty to say about the magazine you're interested in working for and its rivals – which features work, which don't, and why? If you'd been writing that article, how could you have improved it?

c) The ability to write good clear grammatical English. Sorry, no getting round this one! Anyone thinking of taking you on will want to see at least one sample review to prove you can put pen to paper properly. ➤

• Being a computer journalist is not all beer and skittles. You hardly ever get the time to play skittles.

RAINBOW WARRIOR

Oh no, not Amiga colours again! There are only seven colours possible:- red, orange, yellow, green, blue, indigo and violet. Theoretically, the Amiga can produce seven colours. However, minute inspection of a pixel on a colour monitor (a water drop on the screen is ideal as a magnifies) reveals only three colours red, green and blue. Ah, so it's only really capable of three! HAM? does this stand for Hold and Mangle? Not a lot, is it?

Please let folks keep slagging off the Amiga - the Lord works in wondrous ways even on the rubbish there in.

M H Knight, ST owning Optometrist, Bolton, Lancs

DON'T MENTION THE C5

It is very important that if this letter is published the words "Sinclair C5" are included - the whole state of the world may trip over into an alternate reality if excluded, wherein entropy is reversed. Wonder what happened to Sinclairs C1, 2, 3 and 4? What, you don't know what entropy is? Think of it as a slow disk crash applied to everything.

M H Knight, Bolton, Lancs

• Yes, I do know what entropy is. It states that if you wait long enough everything ends up the same, a principle clearly demonstrated by a certain other computer weekly that seems intent on imitating everything we do. How long before they have a 'listings' section at the back, I wonder?

BOARD STIFF

As the sysop of an amateur bulletin board (BBS), I am always annoyed by the negative press that BBSs always seem to get.

For example, you had an article recently about computer pornography on bulletin boards, which was all just mere speculation and no facts. Also, Dave Marshall from Digital Integration in your copyright act article was quoted as saying "When I launch a title, I know in 24 hours it'll be widely available on bulletin boards". They have also been stated as being responsible for the spread of viruses. Any article about one of these three subjects always seems to use generalised statements without facts blaming BBSs!

Most sysops do their utmost to ensure that no pirate software or viruses find their way into their download sections. Viruses are very rarely found on BBSs. They are spread by people exchanging disks. Pirate software is usually exchanged by disk or at "user club" meetings as the sheer economics of file transfer over telephone lines would make it ridiculous. Pornography is found

Top Tens III

TOAST OF THE TOWN

Here are my top ten pet hates about computing:

1 Power packs/ supply units in any shape or form (particularly my ancient ST pack which looks and acts like a toaster).
2 Any OS which you have to boot from a disk (haven't these people heard of ROM?)
3 Micro manufacturers who insist on the casings of their machines to be coloured grey/ black/ cream, ie ultra dull.
4 Readers who moan on and on about £20 games when you can get a 40% plus discount at any mail order firm (they're not all bad).
5 The lack of *Revs* on 16 bit, still the best race sim by far (Software houses take note!)
6 The 16 sprite limit on *STOS*.
7 The lack of machine-independent peripherals - keyboards, disk drives, displays etc (ie, so we don't have to flog it all every time we upgrade our machines!)
8 Those oracles of the computing world you find behind the counter of your average high street box-shifter (just how Dixons find these youthful fountains of knowledge I'll never know).
9 TV personality software tie-ins – *Mike Reid's Pop Insomnia, Paul Daniels' Hamster Sim* etc etc.
10 The recent adverts for an Archimedes games pack at the market storming price of £800 (I can hear Tramiel's knees knocking from here!)

A N Bradbury, Warrington, Lancs

• *The TV tie-in I'm waiting for is Prisoner: Cell Block H.*

DISK DISKUST

1 ST games that require you to plug a joystick in the mouse port.
2 The placement of the Amiga's power on/off switch. Nice one Commodore!
3 The fact you can't buy an Amstrad CPC colour monitor on its own.
4 Ads that only show screenshots of the 16 bit versions.
5 The ST's keyboard.
6 Companies that don't move the write protect notch to 'on', with 3.5-inch disks.
7 Monthly mags that bump up the price because they have a 'FREE DISK' on the front.
8 Pornographic and sexist software.
9 The rate at which C64s go through power supplies.
10 Mouse leads (tails?) that are never long enough.

Neil Scrimgeour, Corby, Northants

• *You can trust* Express. *When we bumped up our price, we didn't give you a free disk with it.*

ZZZZ

10 People who try to impress you by throwing technical jargon and acronyms around - when really they know less about computers than the sales assistant in Dixons.
9 Programs written for TOS 1.08 that crash on my 1.09 machine.
8 Programs that have more facilities in high-res than they do in medium.
7 Programmers, writers and people who write in to computer magazines, who abbreviate their names and add a 'Z'. Jez, Tez, Daz - Daz?
6 Hackers and teenagers who sign themselves as 'The Byte Monster' or any other stupid name.
5 People who look at your computer and say 'What sort of thing can it do?'
4 Spotty, 13-year-old, bespectacled youths who vegetate and get their bones decalcified by sitting in front of a monitor all day.
3 Disk protection routines that make your drive sound as if it's been fed some Gateway yoghurt, nut flavour.
2 Alert boxes that pop up after the machine has gone into meltdown.
1 Finally, getting around to learning the habit of backing-up disks, but only after losing chapters 1-10 of the Great British Novel.

Someone from Derby

• *Given the number of Acts of God which lose budding authors the first 10chapters of their Great British Novel, I can only assume God has exquisite literary taste.*

IT DRIVES ME...

10 Anything like microdrives and ROM cards.
9 Computers which have heat sinks that make the room you are in boiling.
8 Extremely noisy printers that tend to print lop-sided.
7 Computer magazines who use double entendres to fill up their games reviews.
6 Anything related to the Nintendo consoles.
5 The lack of a decent cricket game on any computer.
4 Sticky keyboards and poor quality microswitches in joysticks.
3 Green displays. Yuk! (Take a bow Amstrad).
2 People who nick other people's hints and tips from computer magazines, and then send them to other computer mags as their own work.
1 People who knock computers just for the sake of it.

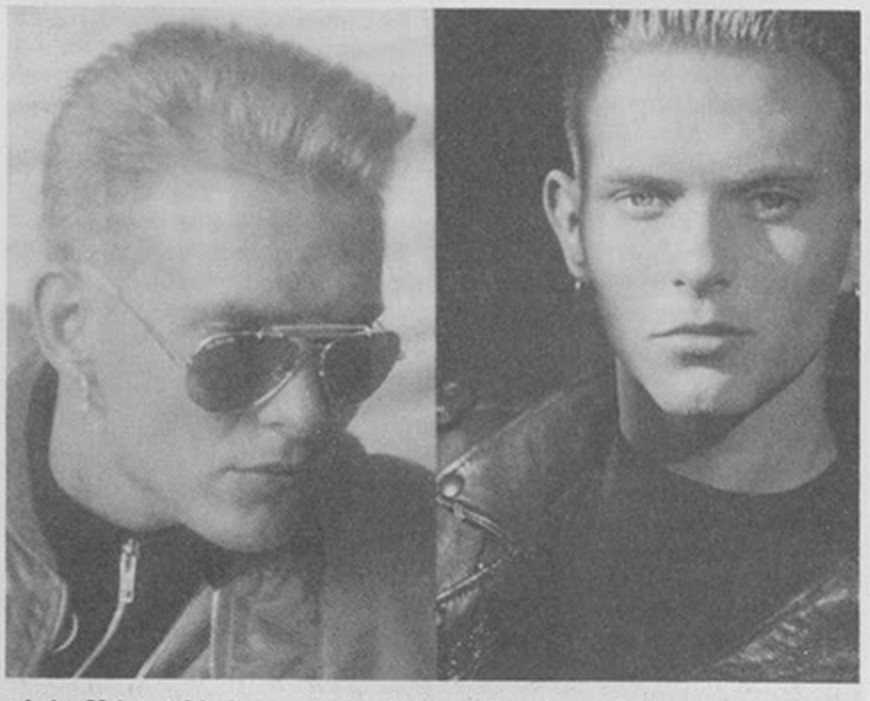
As a little extra here are three of the best things about computing:

1 There's no Bros music on the Amiga PD scene.
2 Software houses that send you tons of posters (thanks Activision).
3 At last the majority of software houses are producing quality products.

David Deans, St Albans, Herts

• *In relation to your point 2, we're trying to capitalise on the fact that we're a weekly by bringing you the hints and tips for the big games first, before any of the monthlies.*

As for point 5, I'm worried about the lack of a decent cricket game in the Test series this summer.



• Amiga PD is tasteful, classy, up-to-the-minute and streetwise – so it doesn't have anything to with Bros, says David Deans

RHEUM WITH A VIEW

1 Users who think sound and graphics are everything in a game.
2 "Professional" software pirates.
3 Software companies (ie most of them) who produce Arch software which is easily mimicked and even bettered on STs and Amigas when surely it should be at least twice as good.
4 The old Spectrum keyboards.
5 *View* - Beeb word processor from Acornsoft which had the use friendliness of an overpopulated wasps' nest.
6 "Low cost" PCs on which you then have to spend £200 getting any reasonable software for.
7 Successful computer weeklies who don't know Bedford is in Bedfordshire.
8 Machine code.
9 Owners of other machines who forget that software from *Elite* and *Zarch* to *Mini Office* originated on the Beeb.
10 Printer manuals you can understand (then you haven't got a scapegoat when the bloody thing doesn't work.)

Jeremy Benson, Bedford, Beds

• *My favourite quote about computer manuals was one spotted by Dave Langford in some computer rag: 'In Germany they often have to put up with manuals written in English. This of course is not the case in England.' How true...*

TOP 10 HATES:

1 The words "it's in the post".
2 AmigaDOS
3 People who complain about the complexity of CLI - it's as easy as MSDOS.
4 Magazines that get paid off for good reviews.
5 Fax machines which are always engaged.
6 *Mini Office Plus* - it's got more bugs in than an ant's nest.
7 Ninja Mutant BMX Warriors in Space
8 Release dates that say it will be out in two weeks - two weeks from when?
9 Companies that complain that costs keep 16-bit software up. Do such costs include sending two programmers to Times Square to see Batman?
10 Magazines that never print my letters.

Laurence Sheed, Hampstead

• *Re your point 1, I have the same irritation at being told the person you're telephoning is 'in a meeting'. Re your point 5, I used to have the same complaint about women.*

only on a very small minority of BBSs.

What bulletin boards do have to offer are a wealth of free technical information and help. The latest versions of public domain and shareware software, Multi-user games and most importantly the chance to communicate with other people sharing your interests (message bases on boards cover almost any conceivable subject including science fiction, role playing games, films, astronomy, Christianity – one board even has a Kylie Minogue section!) Most BBSs are part of global networks such as FidoNet or FNET, so that a local call will allow international communication (at the expense of the sysop!).

Please in the future can you stick to facts in your articles and refrain from making up your own news! Being a sysop is an expensive hobby and the positive sides to it surely outweigh the few negative points that a very small minority might engage in. We certainly do not deserve all the derogatory comments that the computer press dishes out!

Steven W Green, Oxford, Oxon
(Sysop of My Little Phoney, 0865 773277 all speeds to 2400 baud, FNET node 1004)

• By your own admission, pornography does exist on some bulletin boards. When we set out to investigate the facts, all the boards we contacted suddenly shut up shop. Minority they may be, but there's still some porn out there. The news story was not 'made up' any more than your letter is; we get our news from talking to a lot of people – virtually every sysop we talked to didn't want to be named.

May I remind you that to accuse us in print of making news up is libellous and we could take action against you. However as it was us who printed the letter in the first place maybe not.

A Kylie Minogue section? And you're accusing us of being derogatory about sysops?

WAR LAD

Regarding Don Howard's plea for decent Amiga war games (*Express* 38) if he is serious about getting together with a programmer to provide ideas and rules for a war game then I'd love to have a crack at programming one. Please could you either send me his address or print my address so that he (or any other war gamers) can contact me.

Alan Smith complained in *Express Mail* 37 about Commodore's lack of after sales service. I have been a Commodore owner since 1981 and quite frankly they are the worst company I have ever come across. Since I bought my first Commodore all those years ago (a Vic), I have written no less than 14 letters to Commodore. I have only received two replies!

I only wish that the Amiga had been made by Atari since given half the chance I would avoid buying another Commodore.

Chris Clifford, Neath, West Glamorgan

• This is the sort of tasteless filth you'll find on Bulletin Boards, says Steven Green

Snippets

TALKING SHOP

What does Paul Quinn (*Express Mail* passim) do in his shop all day - write letters to you?

Laurence Sheed, Hampstead

• Only half the day – the other half he reads all the letters about him.

LITTLE PIGGIES

For goodness sake give Guinea pigs their own column! We might then read something interesting.

M H Knight, ST owning optometrist, Bolton, Lancs

• We could call our columnist Captain Cavyman.

FAT SLAGS

Why does everyone slag the Amiga off? I have owned one now for 10months and it crashed less than any other computer I have owned. Well, except the Amstrad.

Philip Moore, Clacton, Essex

• What do you mean, crashes 'less'? I have an old Timex watch which stops 'less' than my new Casio. The Casio stops every couple of years when the battery fails. The Timex however ceased operation in 1979 and has not worked since.

FOFT TOUCH

Did you really play *Federation of Free Traders*? Bet you never dreamed anything could be so good and yet so utterly miserably bad did you?

I sent mine back and got my money back - don't tell your readers that, otherwise Gremlin will be swamped with returns.

M H Knight, ST owning optometrist, Bolton, Lancs

GAME FOR A FIGHT

Let's face it, the ST and Amiga aren't much good for anything other than games. I'm sure that offended a lot of people but they have to learn.

N Chohan, Camberley, Surrey

• Hoho! I hope that's not your real name and address...

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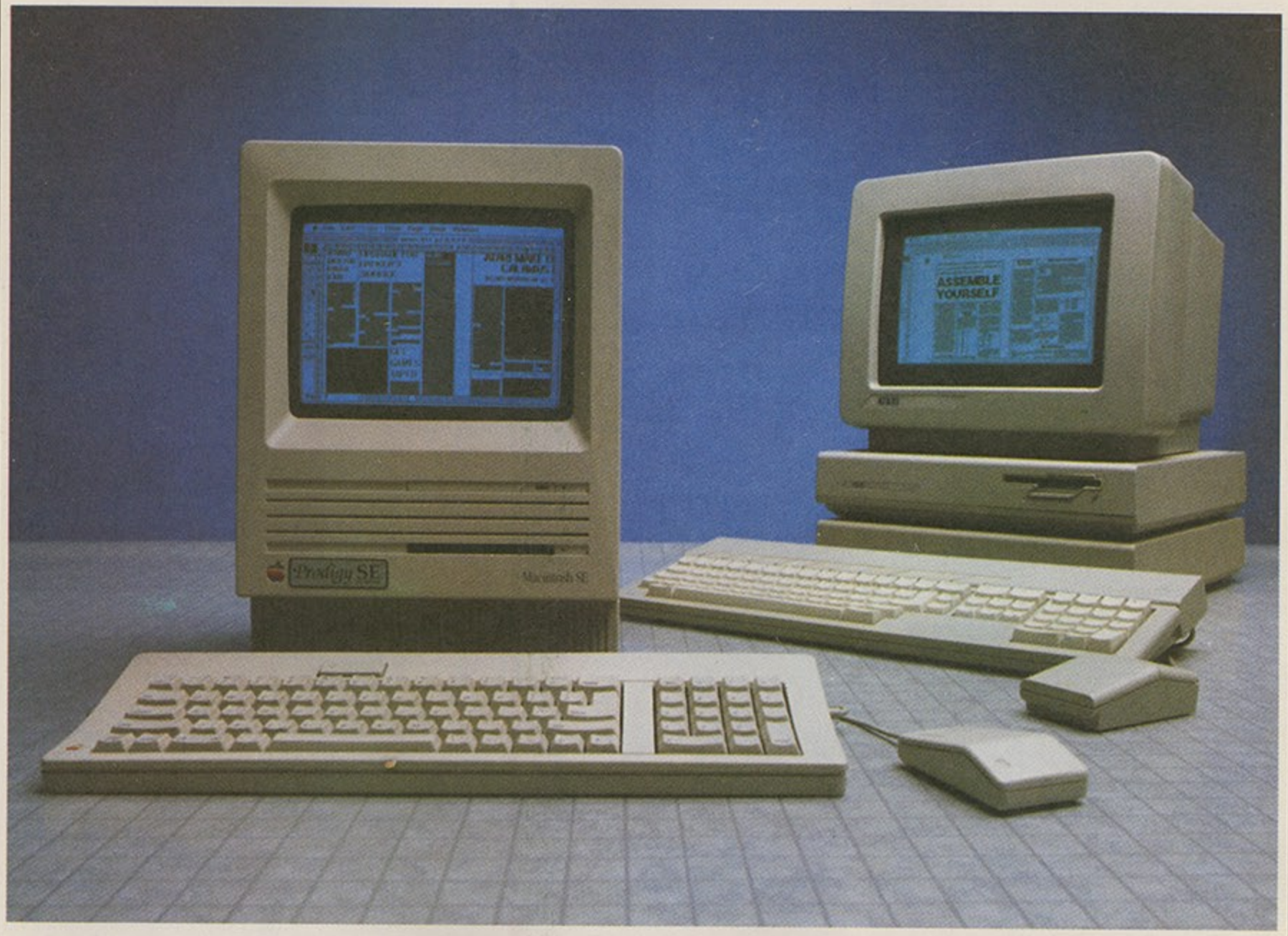


Many into one will go – if you have an emulator. So which machine can wear the most guises? Jerry Glenwright sizes up the front runners

It takes a long time to decide which machine you should blow your entire bank roll buying and once you've decided, you're locked into that choice. The Atari ST is a capable home computer, but what if you want to run *WordStar* or *dBase III*? Tough, you're stuck with *1st Word* and *SuperBase*. The Commodore Amiga is renowned for its superior graphics and sound but where are the DTP packages to make use of all that latent processing power? Wouldn't it be nice if you could buy software packages intended for machines other than the one you own and run them on your computer?

Nowadays, you're no longer limited to the computer which swallowed your life savings. There are emulators available for almost every computer which allow them to behave like entirely different machines.

The emulator consists of a software patch or hardware dongle which when running on or plugged into your computer, allows software written for another machine to – hopefully – run without hiccups. If you own an Amiga and want to run the Macintosh's *Quark Xpress* DTP software, simply fire up the Mac emulation package and use *Xpress* as if you had a Mac. Spectrum and Amstrad CPC owners wanting to use professional quality software such as a word processor or spreadsheet have only to run CP/M on their machine and a small planet's worth of quality business software like *WordStar* becomes instantly available.

Emulation extends the scope of any computer by allowing one machine to be all machines, and with all the popular computers at your disposal the possibilities are endless.

Atari ST

The Atari ST stands head and shoulders above the rest when it comes to emulation. All the popular operating systems are available for this computer from CP/M to Unix, Atari eight-bit to Apple Mac. Some emulators will even run software faster than the original computer and all will give you access to a large range of good quality software and hours of fun experimenting.

▪ **Apple Macintosh:** Some of the very best DTP and word processing packages around are only available for the Apple Mac and you need the bank balance of a multinational corporation to buy one. The *Spectre 128* from HiSoft (0525 718181) changes all that. *Spectre 128* is a Macintosh emulation package consisting of a hardware device which attaches to your ST's cartridge port and a utility program which runs the device. The hardware dongle contains a pair of Macintosh ROMs which effectively allow the Mac's operating system to run on the ST. Using *Spectre 128*, you have access to all of the Mac's software. The only drawback is that the Macintosh uses a hybrid method of reading and writing floppy disks which the ST cannot (at the moment) emulate. Gadgets By Small – the company responsible for the design of the *Spectre 128* – is working on a device which allows direct access of Mac disks but it isn't available yet. In the meantime you have to make use of serial links in order to get the Mac software you want to use into a form readable by the ST.

The *Spectre 128* is an excellent emulation package. Mac software runs 20% faster on the ST and the available screen size is significantly increased – you can even run Spectre from an ST hard drive. The program provides you with an improved speed Mac with larger screen at half the cost of the original machine.

▪ **IBM-PC:** The IBM-PC is *the* most popular micro in the world. It's the first choice for large and small businesses as well as the home 'power' user. *PC-Ditto* from Power Computing (0234 273000) transforms the ST into an IBM PC-XT. You can run almost all of the software intended for these machines – the whole gamut from games to business ware. *PC-Ditto* is a program which takes advantage of the superior processing speed of the 68000 CPU driving the ST to emulate the far slower 8086 processor of the PC. This it does very successfully although it is rather slow (but then the fact that it runs PC programs using software means alone is nothing short of miraculous). *Ditto* turns the ST's monitor into a CGA-compatible display and even drives the ST's mouse as if it was a MicroSoft rodent. And to dispel moans about the lack of speed, Power Computing is about to launch *PC-Ditto II* which uses a hardware device to provide PC emulation at several times the speed of an XT.

• *Flight Simulator 2*, the businessman's favourite toy, running on an ST

▪ **CP/M:** CP/M (available from any good PD library. Try Goodman PDL 0782 335650) was until relatively recently, the foremost operating system for small computers. Almost all business machines made use of CP/M as an operating environment for applications and utilities. With the advent of MS-DOS CP/M went into decline but there is still a tremendous amount of software available which runs under CP/M. A public domain utility originating in Germany turns the ST into a CP/M machine which can take advantage of all this software. Like *PC-Ditto*, the utility uses only software methods to achieve emulation yet manages to run CP/M software several times faster than Z80-based machines (which are the intended hosts of CP/M).

▪ **Unix:** For almost a decade, Unix has threatened to become the chief operating system for both large and small computers alike. Although Unix remains largely the property of teaching establishments it is increasing in popularity and is a lot of fun to play with (particularly if you're following a course of study which involves Unix). *Minix* from Mcgraw Hill Publishing (01-499 0679) is a version of the Unix operating system for the ST. When running *Minix*, the ST appears to be a super-user terminal attached to a mini-computer running Unix. All system calls remain the same, the file structure is directly compatible and there's even a C compiler compatible with the equivalent running under Unix.

▪ **Atari eight-bit:** Many owners of the Atari ST upgraded to their machine via the Atari eight-bit machines such as the 400, 800, XL and XE. They're pleased with the power of the ST but want to know what to do with all that eight-bit software collecting dust? A clever little utility in the public domain (try Goodman PDL 0782 335650) allows the ST to pretend to be a 6502-based Atari eight-bit and to run software intended for those machines. Obviously the problem of different format disk drives makes accessing the software rather difficult but with a little application and a modicum of fiddling with serial cables it is possible to transfer the software, save it to 3.5 inch disk and run it on the ST.

▪ **QL:** The QL emulator is a combined hardware and software package which allows the ST to pretend it's Sinclair's failed attempt at high-tech: the QL. The emulator provides a QL environment at two to three times the speed of a

QL

Launched amid a veritable whirlwind of hyperbole, the QL – sadly – failed to achieve the level of success which its tech spec and PR company promised. But the QL is a technically-sound machine which, given the emulators, can make use of a range of quality software.

▪ **IBM-PC:** There's a small planet's worth of software available for the PC, including some of the best business software around. *The Solution* from Digital Precision (01-527 5493) allows your QL to take advantage of that software by using an ingenious software patch to transform Sinclair's computer into a PC. *The Solution* makes use of the great speed of the QL's 68008 processor to produce performance which, although slow, is capable.

▪ **CP/M:** Also from Digital Precision is a CP/M emulator providing a path into the huge quantity of CP/M-based software for the QL. Success is a software-based emulator similar to *The Solution* providing a fast CP/M environment.

Archimedes

Although the Archimedes is a technically superior computer the dearth of good software means that the machine is sorely underused. However, all this technical muscle provides the Archie with the processing power necessary for good emulation.

▪ **IBM-PC:** A software-based emulator is available for the Archie which runs all well-behaved PC software at a reasonable rate. There's support for CGA graphics and the mouse as well as the direct reading of PC disks.

▪ **BBC:** Part of the firmware of the archimedes, the BBC emulator is summoned via a single command from the keyboard. Once invoked, the emulator will run all Beeb BASIC programs

IBM-PC and compatibles

▪ **Unix:** Unlike most other small computers, the PC doesn't need to emulate anything or does it? There's a wealth of excellent software covering all aspects of business needs and an increasingly large selection of games so who's going to bother producing emulators? Mcgraw Hill Publishing (01 499 0679) thinks that making its version of the Unix operating system available for the PC is a very good idea. All those computer science lecturers, students and the interested can have an entire Unix-like system at their fingertips previously available only to those with access to a minicomputer. *Minix* is a Unix-lookalike which uses exactly the same system calls, file structure etc., to produce and exact replica of Unix. Running *Minix*, your PC behaves as a super-user terminal to a minicomputer running Unix.

▪ **BBC:** The BBC was (and to a certain extent *is*) a very important machine in the educational market place. Many schools from preparatory through secondary use BBC machines in the classroom as a teaching aid to a variety of subjects. The IBM-PC (and compatibles) is the most popular micro so why not allow it to emulate the most popular educational micro? *BBC BASIC 86 Plus* from M-Tec Computer Services UK (0603 870620) allows your PC to run programs written in Beeb BASIC. The package makes full use of the PC's abilities such as 640K RAM (if your machine has it), 8086 assembler (in line) and support for VDA, CGA, EGA and VGA display modes. *86 Plus* also supports the Beeb's VDU, '*' and MODE commands.

BBC

The Beeb is a capable machine which, with a second processor providing emulation, a wealth of good software becomes available.

▪ **IBM-PC:** The BBC was designed to be opened and expanded. To this end it was possible to connect a second processor via the fast interface (the 'tube') built into the Beeb. One of these second processors – the Torch (0223 84100) – provided the BBC with an 8086 processor which allowed it to behave as a PC. The disk drives of the BBC are directly compatible with those of the PC so there's no problem loading up software.

▪ **CP/M:** Using a Z80 second processor from Acorn it is possible for the BBC micro to access the CP/M operating system.

CP/M

The CP/M operating system was written to take advantage of the small computer systems beginning to make a showing in the computer market of the late 1970s. Most of these early micros had no real operating system but merely launched the user straight into BASIC. CP/M provided a standard operating environment in which business applications and utilities could run – and be transferred from one machine to another without too many problems. Although CP/M has now been superseded, several micros including the Spectrum and Amstrad CPC range, have a version of the OS available to allow them to take advantage of the mountain of software still around.

Amiga

After a shaky start the Commodore Amiga is fast becoming one of the most popular home micros – threatening to outshine even the Atari ST. What could be better than owning the best home micro and having it emulate the o`thers. Could it be you'd have the best of all worlds?

▪ **Apple Macintosh:** The Mac is the first choice for DTP applications and writing, yet the secret lies in the software not the hardware. Applications software for the Mac is amongst the best available. The Amiga has some of the best hardware specs around. What if you could harness all that power with superlative Mac software – you'd have arguably the best hardware/software combination available, right? *AMax* from Readysoft (0268 541126) does just that. *Amax* is a Mac emulator for the A500, A1000 and A2000 machines which will allow you to run Macintosh software on your Amiga. There's no drawback with the Mac funny-format disks either, *AMax* allows your Amiga to read and write Mac disks directly – no tinkering with serial cables. The only element missing from the *AMax* package is its inability to make use of Amiga hard drives. everything runs from the floppy. Still, it's a very capable, well though out product which puts an Apple Mac into your hands for a fraction of the price of the real thing.

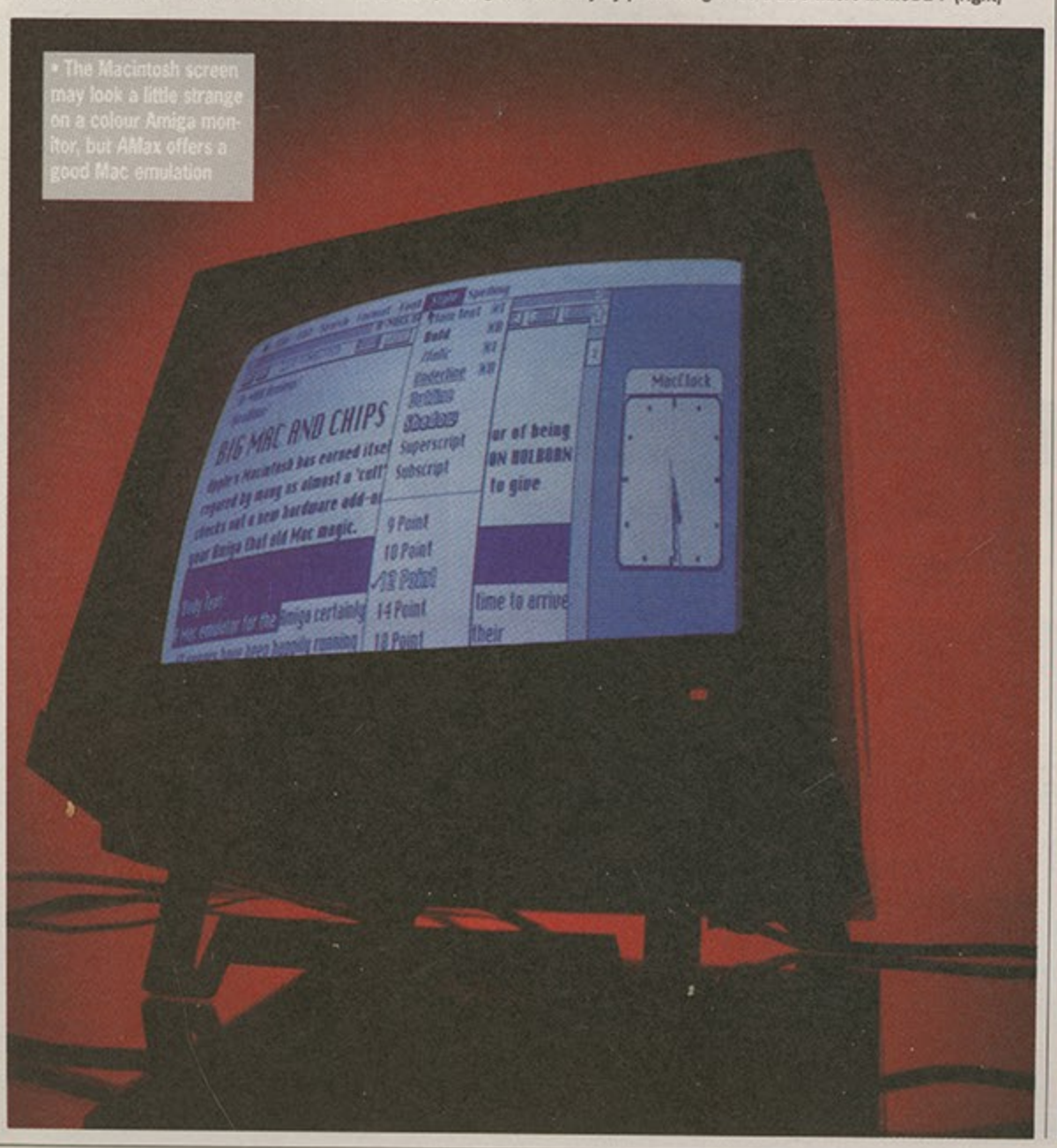
▪ **IBM-PC:** Amiga 2000s come with a PC motherboard and associated components jostling for space in the system box. This board provides complete compatibility with the PC – at a price! There's an AT '286 version and a standard 8088 XT version. No plans to release an add-on PC emulator board or emulation software for the low end machines at the moment.

• The Amiga shuns its WIMPs system for humble MS-DOS

▪ **Commodore 64:** A combined hardware/software package from Readysoft (0268 541126) fools the Amiga into thinking it's a Commodore 64. As many owners of the Amiga upgraded to the machine from the C64, this emulator is a godsend. The hardware device provides support for the 1541 serial disk drives so that you can connect them to the Amiga.and run C64 software without fuss.

▪ **BBC:** Recognising the importance of the educational market, Commodore commissioned a BBC emulator from London-based software house Ariadne. The emulator will run all well-behaved Beeb software at seven times the speed of the original machine.

• Tha Amiga takes off with *Flight Simulator 2* running happily under its DOS emulator (left), and proving its versatility by pretending to be a BBC micro in MODE 7 (right)



• The Macintosh screen may look a little strange on a colour Amiga monitor, but AMax offers a good Mac emulation

BRIDGEBOARDS

You've heard of them, but what are they? The bridgeboard is a hardware solution to the problem of emulating one machine using another. As its name implies, the physical reality of the bridgeboard is a printed circuit board containing the central processor of the machine to be emulated and associated components necessary to drive the CPU. The bridgeboard connects to the host machine and takes over the processing when it's time to do the emulation. Bridgeboards are available for a variety of machines – everything from the BBC to the Amiga A2000 and can generally be relied upon to provide capable emulation at a decent processing rate. However, being hardware-based, the bridgeboard is invariably more expensive than software emulators and the fitting of a bridgeboard may require a certain amount of technical expertise.

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THE END OF CRASHES?

Jerry Glenwright examines a utility for the PC which claims to banish data loss forever

NO PROBLEM

- **IBM PC • £125**
- **Interlog Software (01 771 0350)**

Computer systems are notoriously fragile. A slight bump or power surge causing the system to crash could mean several hours of work evaporating into the ether. Not a pleasent prospect for someone working on the definitive first novel, large database or spreadsheet. But all that is about to change with the launch of *No Problem* from German software house Interlog.

Features

No Problem is a utility program for the IBM-PC and compatibles which guarantees to protect your computer system against power failures, operating errors, system and program crashes. To perform this miraculous feat, *No Problem* is loaded as a memory-resident utility which sits in the background registering each and every keypress you make. You can carry on using applications and other programs as normal and *No Problem* will watch all moves on the system. Any changes made to data files in the course of a session on-line are recorded and saved to a separate area of your hard drive. If anything untoward should happen, all files can be rebuilt, programs that were in use before the catastrophe will run automatically and you will be placed at the exact point in your application before the machine went down. *No Problem* boasts an impressive register of 65,000 keystrokes and 16,000 data file changes – enough to satisfy even the most ardent computer user.

User interface

Booting the program from floppy prior to hard drive installation, provides a text screen with exact instructions as to how to proceed. You're told what to do and when to do it. Questions such as 'which hard to disk to install *No Problem*'? and 'input buffer size' lead you into installation and from there it's a simple matter of booting from the hard drive in the normal way to load and run the program. After booting, a copyright message appears on-screen which signifies correct loading of *No Problem*.

If at any point in your computing session the machine should fail, re-booting will provide you with a *No Problem* message offering to rebuild data files. Should you choose to accept, the data files will be restored to the point before the system crash.

It's as simple as that.

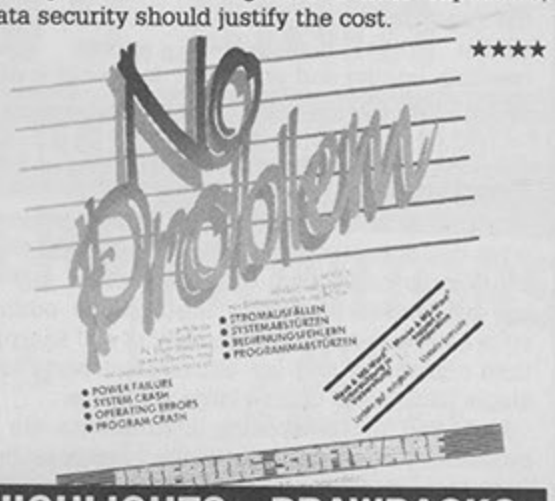
Documentation

Fully featured documentation in the form of a ring-bound manual completes the package. Written in a clear and concise manner, it begins with an overview of the program, provides installation instructions then a run down of what to expect from *No Problem* when problems occur with your system.

Verdict

A thoughful utility which will provide peace of mind to PC and compatibles users who process a lot of information and need some data insurance. The program is simple to use, documentation is very good and although it's a little expensive, data security should justify the cost.

★★★★



HIGHLIGHTS	DRAWBACKS
• Easy to install • Easy to use • Clear documentation	• Expensive for the home user

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COMPOSING YOURSELF

Basil Pigg looks at a remarkable new music manuscript creator for the PCW

THE COMPOSER'S PEN

- **£75 (pocket version £30)**
- **PCW8256, 8512**
- **Composit Software (021-456 1967)**

The PCW has never been a musician's machine - at least, not in the performing sense of the word. Though there is the odd music package for it (DHCP and EMR do MIDI sequencers and interfaces) it's not really suited for producing anything which sounds nice. Either it beeps at you in that piercing monotone or you can torture the buzzer into doing an imitation of a dying fly, as demonstrated by the 'soundtracks' on games like *Batman* and *Matchday II*: it's either One Note Samba, or Slightly Out of Tune.

But now Composit Software, after two years' work, has come up with a music manuscript program for the Amstrad. It's been modelled closely on *LocoScript* - you do everything through the function keys and menus, and even have a similar 'Disk management' screen where creating, editing and printing a document is done respectively by C, E and P!

Features

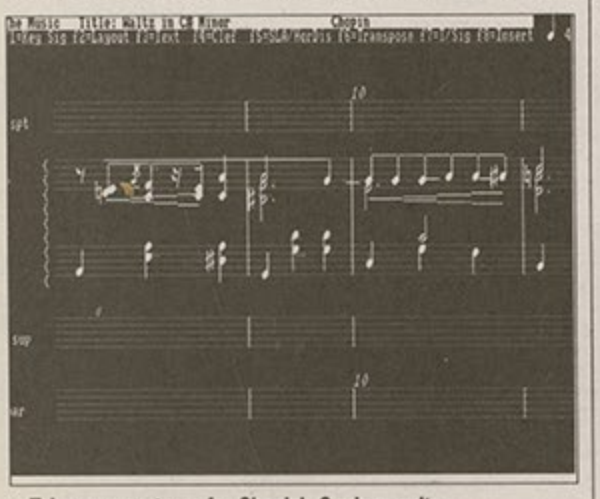
The ability of the program to handle even the most complex musical layouts is staggering. You can handle rests, ties, complex tuplets, any old key signatures (including Bartokesque oddities such as the one consisting solely of a C sharp) or time signatures and lay out musical parts for a single instrument up to a large orchestra.

Multi-line or transposing instruments are no problem; you can automatically transpose lines from any key to any other at the touch of the f6 key. This is an incredible time saver - ask anyone who's ever had to write out a tune in C sharp minor for an Eb clarinet!

• *The Composer's Pen*: could it have aided Beethoven?

Notes are entered using two sets of keys, one controls the duration of the note, the direction of the stem and the octave, and the other set s the 'name' of the note. The QWERSDF keys return ABCDEFG respectively, and other keys then add accidentals or dots. It's surprisingly easy to get used to and you quickly find yourself doing it unconsciously.

The CUT, PASTE and COPY keys work as they do in a word processor, letting you chop and change at will. Recurring themes or parts can be copied and pasted around saving a lot of tedious rewriting. You can superimpose sections on top of other sections - useful for multi-line instruments where the number of parts played changes.



• Take your partners for Chopin's C minor waltz

Most of the features (notes and chords, beams, rests, accidentals, bar lines etc.) show on screen as they will print out except for phrase marks which show as straight lines (they print out OK though). Compositions can be saved to disk, copied and erased as normal. Text can be put in more or less anywhere, for directions or song lyrics.

Printing can be done either condensed (fine for multi-part compositions) or normal (for single instruments). The print quality is very good and perfectly acceptable for professional use (though it's not publishing quality). You can select specific bars or instruments to be printed.

The cost of having music 'typeset' is so great - several hundred pounds for a small orchestral piece - that this program could save the musician, whether professional composer, or teacher writing out parts for the school orchestra, a lot of money.

Problems

The only problem with the program is that (like its lumbering model, *LocoScript*) it can be slow, especially with large compositions. Reformatting a piece (which is done with the obvious RELAY key) after altering a note or two can take several seconds. Many will find it easier to compose music in the usual way, with a piano keyboard rather than a PCW's, and then set the music onto disk once the rough shape is decided. But it would be unfair to harp on this too much - after all, it's remarkable that the thing can be made to work on a PCW at all. And just think how much time it then saves, and how impressive the results are!

The 'pocket' version lacks a few versions of the full version - complex tuplets and beamings, transposition and so on - but is perfectly adequate for music up to, say, GCSE standard.

Documentation

The program comes with a very good tutorial and reference manual, ring bound to open out flat, a quick reference card, and several example files. It has been clearly written with the same amount of thought and care as the program design - it's refreshing to see documentation that has even a hurried reviewer up and running within minutes!

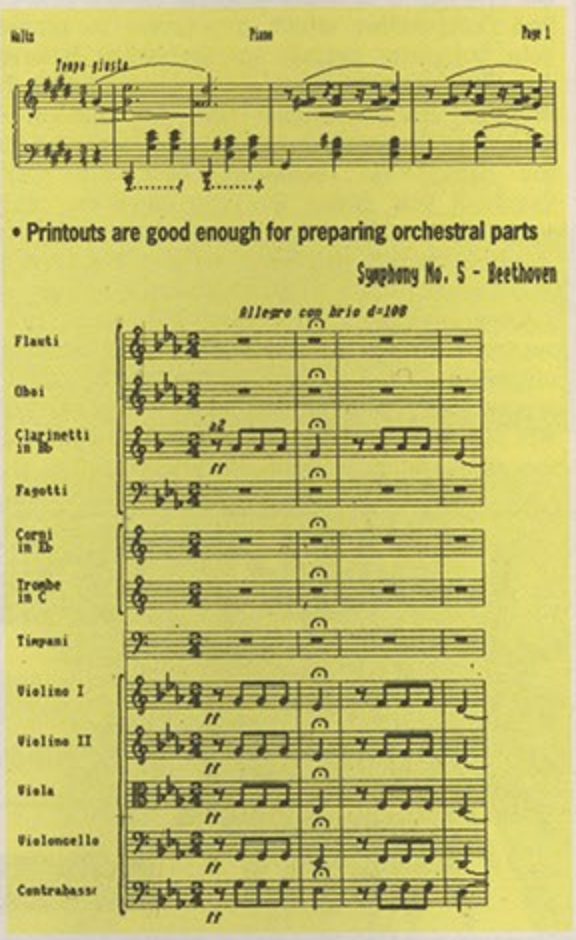
Verdict

An excellent program that has pushed the PCW into an area it was never designed for. It's easy to use, well designed and you'd be hard pushed to think of music it can't handle - all at a very reasonable price.

It's not fast, but then neither is *LocoScript*, and that hasn't stopped people writing novels with it. *The Composer's Pen* is essential for any PCW owners who need to produce musical manuscripts - teachers, students and musicians of all kinds. The cut-down pocket version would be an ideal educational tool for anyone starting on a GCSE or A-level music course who has access to a PCW too, but only a low budget to work from.

Unreservedly recommended.

★★★★★



• Printouts are good enough for preparing orchestral parts

HIGHLIGHTS

- Good printed quality
- Easy to use
- Very powerful - handles anything
- Transposes
- Cut and paste sections
- Ideal educational tool
- Inexpensive cut-down version

DRAWBACKS

- Slow

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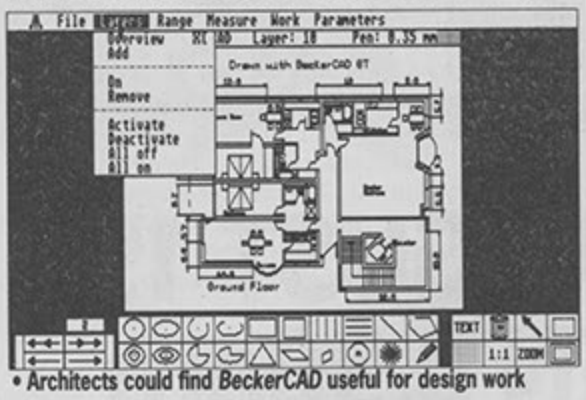
Abacus is perhaps best known for the 15 books it's released on various ST aspects and applications. *BeckerCAD* is a follow on to its *PCB Designer* for electronic engineers and technicians which expands PCBD to include features for general design. As a result it requires 1Mb of RAM, the authors suggesting that 2Mb might be more suitable for complex drawings. As such, and at this price, it would seem ideal for those of you who purchased or intend to purchase an Atari DTP bundle - Mega ST, mono monitor and Atari laser - for around £1,700.

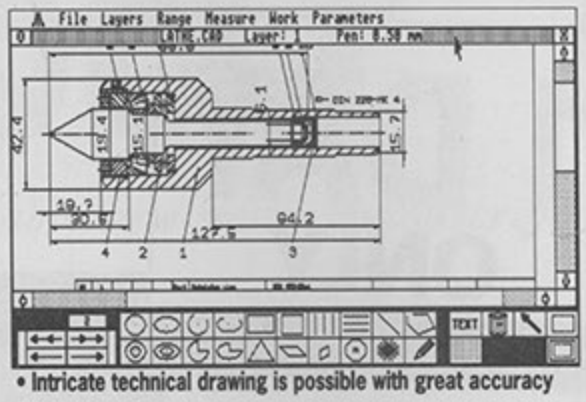


• Architects could find BeckerCAD useful for design work

BeckerCAD uses the GEM environment to provide easy to use facilities for a range of design tools like freehand drawing, polygons, zooms and automatic measuring. Greater flexibility lies in the fact that designs can be stacked one on another to a depth of 300 layers, making the package ideal for technical and architectural applications. A point and click environment is all very well for simplicity and ease of operation but to allow operations mouse control is unable to provide either quickly or accurately, there's a fully integrated programming language included.

Object definitions, automatic rescaling, copy, paste and positioning can all be achieved with fine precision. Not surprisingly then, *BeckerCAD* supports the PostScript page description language so that relatively high definition layouts can be output to lasers - the full range of dot-matrix printer drivers also get a look in. In order to further underline its professional possibilities there are supplementary library files of a variety of architectural, electronic and hydraulic symbols and templates. Round this off with a mass of font types, styles and font editors and you have as powerful a design system as you're likely to see on the ST in its current form.

What's missing from *BeckerCAD* is the opportunity for design, construction and presentation offered by a 3D system. A package like the *Cyber Studio* suite allows you to view, shade and colour objects and designs from any number of angles rather than the overhead plan view. After all, away from circuit boards, that third dimension is pretty essential. But if it's construction rather than presentation you're after then 2D is sufficient.



• Intricate technical drawing is possible with great accuracy

And *BeckerCAD* is aimed at those who have both. For if you're engaged in technical drafting or any other activity that requires accurately scaled drawings, *BeckerCAD* conforms to the European DIN standard.

HIGHLIGHTS
- Easy to use, high definition designer
- User-definable symbol libraries
- Excellent output possibilities

DRAWBACKS
- Needs a large memory machine
- 3D sketching would have been nice

Express Verdict
A powerful and accurate CAD system that competes well with similar PC packages of double the price, *BeckerCAD* is ideally suited to professional draftsmen. If it's precision rather than presentation you're after, then *BeckerCAD* delivers.

★★★★

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WELCOME TO THE BIGGES

This is Cosmic Osmo – an entire solar system on your Mac's hard disk. Come exploring with Stuart Anderton

Cosmic Osmo is a new kind of computer game. For a start it doesn't have an object; you're not trying to rescue the king's daughter from the clutches of an evil wizard. It's just a world (or rather, four worlds) which is there for you to explore.

And there is plenty to find. *Osmo* is filled with weird and wonderful characters, with the emphasis on the weird. Osmo himself is a Michelin-man-on-acid who is often to be found under the kitchen sink, sunbathing.

To move around you point at a door or the area you want to visit and click the mouse; to investigate an object just point and click.

Most ojects in Cosmic Osmo's world react when you click on them, and it's fascinating to wander through the rooms trying to find new objects to play with. The objects react in a number of ways, they can set off little animated sequences or sound samples, change shape, alter other objects or work as buttons to control the game. For example clicking on a light switch dims the screen, or clicking on a cupboard opens the door.

But the best part of *Osmo* is the seriously psychedelic way most of the objects react when you click on them. Fruit leaps off the floor to do a jig, a bottle of salad cream sings a song, a pumpkin leaps out, grabs the mouse pointer and eats it, there are endless unexpected twists to the game.

Scattered throughout the game are telephones, and if you make a note of their numbers you can ring one from another and talk to the charcters in the room!

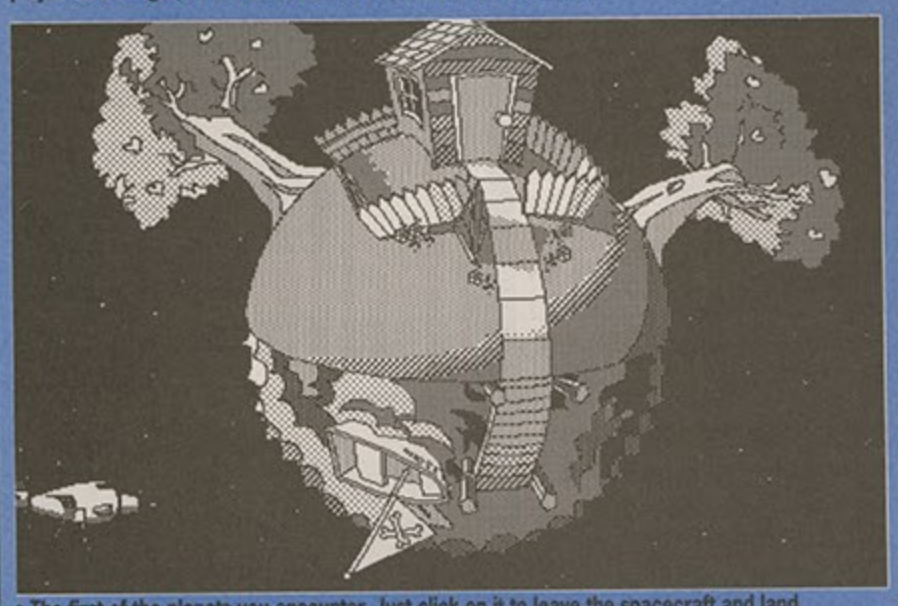
The game is programmed in *HyperCard*, the Macintosh's unique graphical database, which makes it easy to combine graphics with animation, and is the first of what is likely to become a new genre of software. *Osmo* outclasses other graphical mouse-controlled adventures like *Kult*, which in comparison is slow and clumsy to use, and would be a joy as a toy for children, but at £49.95 it's very expensive for a game.

Activision isn't releasing the game through the shops in this country, but if you're interested it'll send you a copy mail order. Activision is on 0734 311666.

▪ Cosmic Osmo ▪ Apple Macintosh with 1Mb and hard disk ▪ Activision ▪ £49.95

• This is your trusty spaceship in which you travel from planet to planet. Be careful to remember where you left it though, as the planets are so big you can easily get lost

• In the cockpit of the spacecraft. The Go button sets the ship moving from planet to planet, but don't be in too much of a hurry to leave as there's plenty to play with. Try out the compact disc player on the right, or fire lethal cotton buds with the Swab button

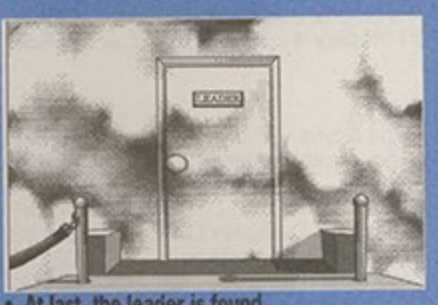


• The first of the planets you encounter. Just click on it to leave the spacecraft and land

• Outside Osmo's cabin. You can grow flowers by clicking on the grass

• Meet Osmo himself

• Follow Osmo up the stairs. Signposts help you find your way



• At last, the leader is found

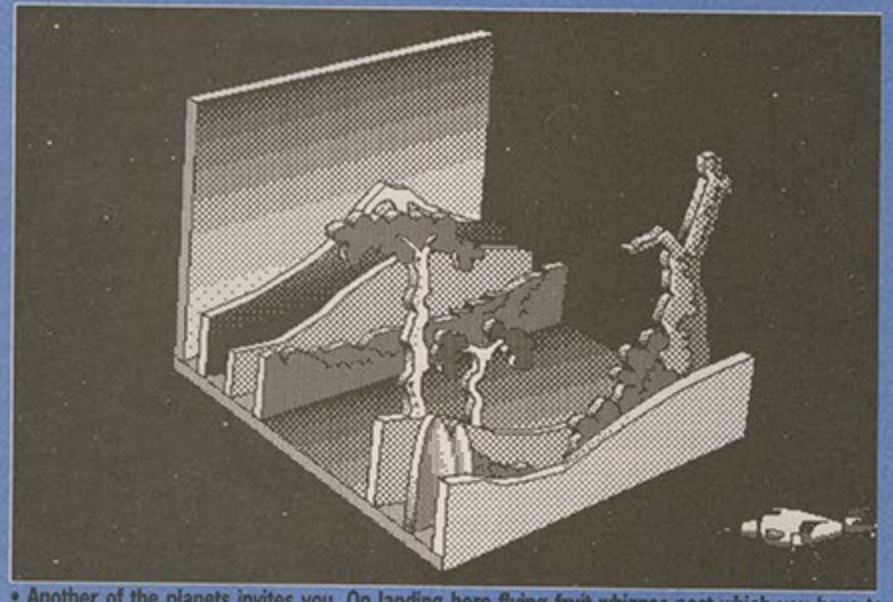
• But first you have to get past his faithful secretary

• Senor Osmollo, the leader of the planet

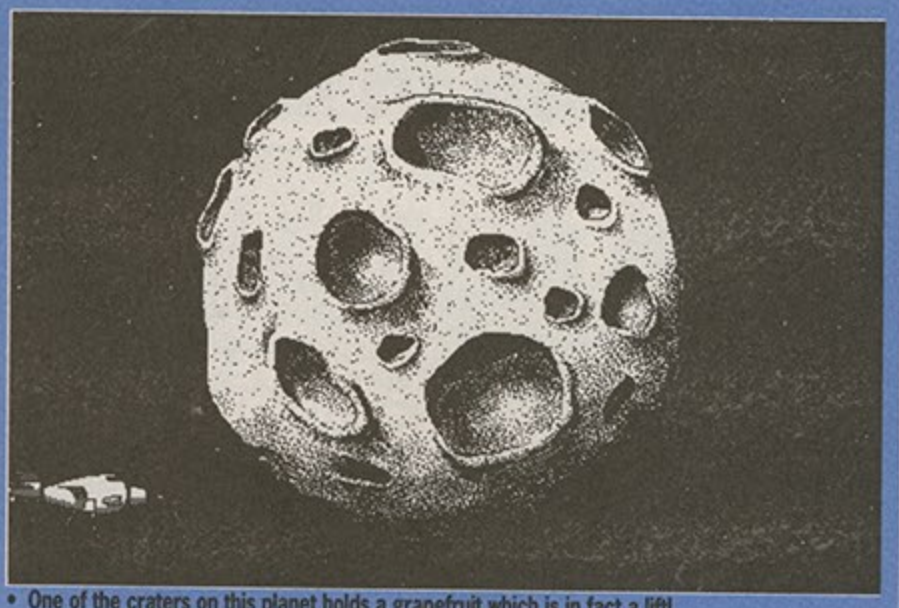
EST EVER COMPUTER GAME

• Back on the surface, the guard dog is very easy to please. All you have to do is feed him the bones one by one and tickle his stomach. The sound and animation are excellent

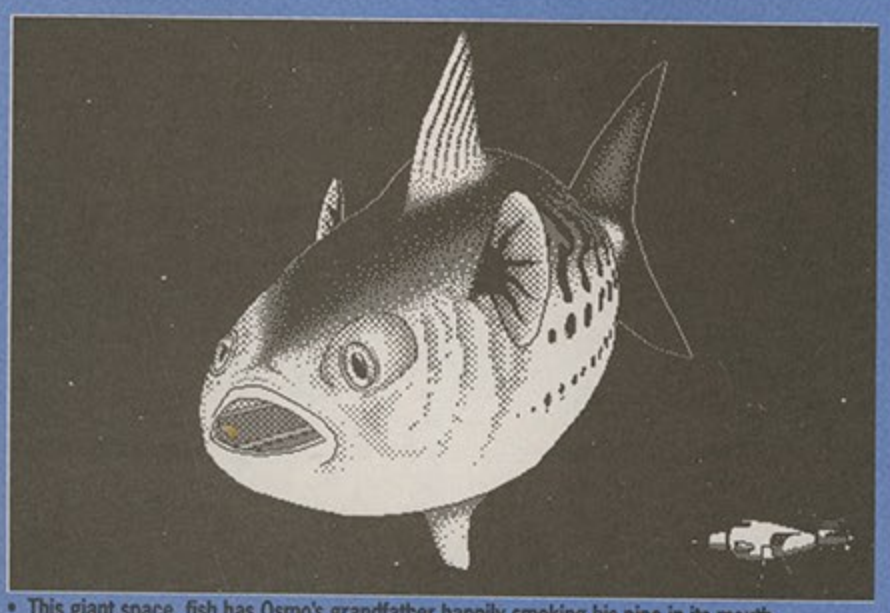
• You can get in the boat and sail it around to the other side of the planet, where your space craft awaits you



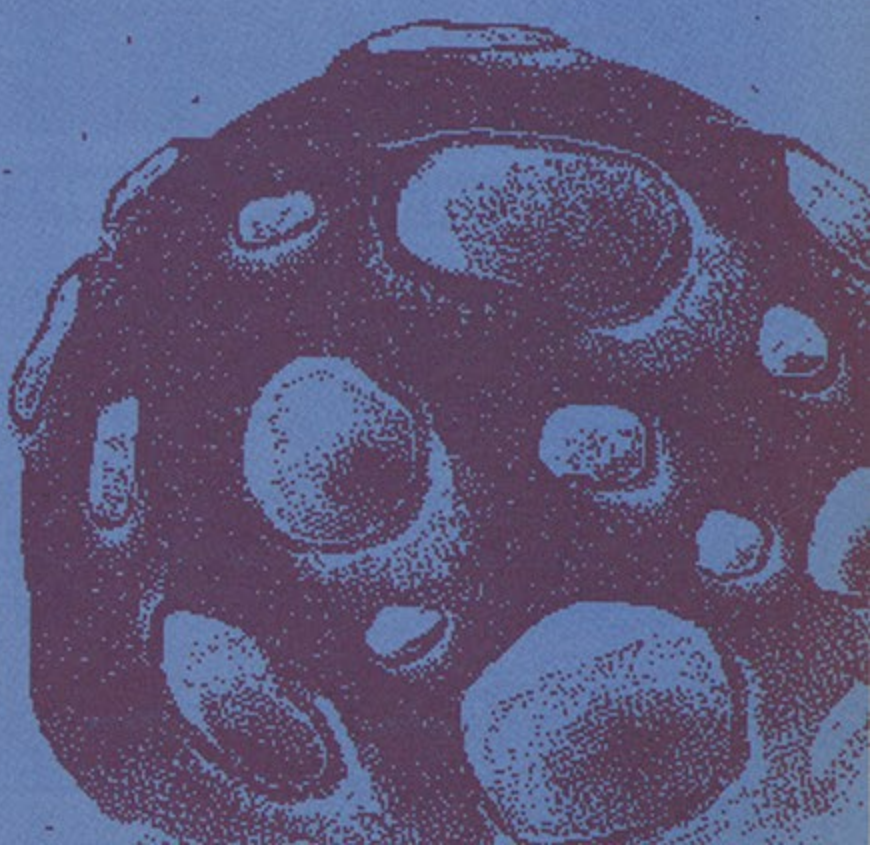
• Another of the planets invites you. On landing here flying fruit whizzes past which you have to shoot at before it will let you into the planet. Inside you'll find Osmo's kitchen, where you can do the washing up, a miniature Macintosh (running HyperCard, naturally) and a pair of potatoes who invite you to 'come play with our faces'. All the planets are interlinked by timewarp hallways which save you having to return to your spacecraft to move on, and which can dump you anywhere in the solar system



• One of the craters on this planet holds a grapefruit which is in fact a lift!



• This giant space fish has Osmo's grandfather happily smoking his pipe in its mouth



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The SyQuest sign

ST hard drives have tumbled in price over the last few months while offering more and more storage space. Just recently two new Syquest drives have appeared which offer 44Mb of disk space on a removable cartridge. SyQuest drives are five-inch disks in a cartridge which is inserted into the front of the drive. They're particularly popular with the Macintosh and PC range of computers but Atari's Megafile 44 and Third Coast's SQ555 are the first on the ST.

I was lucky enough to get my hands on one of the few Third Coast Syquest drives in the country but unfortunately the news isn't all good.

The hardware comes with the standard ICD hard drive software and a host of hard drive utilities, including the head parking software which is used just before power-down.

The drive is shaped to fit on top of the Mega unit with a slot at the front which takes cartridges as if they were floppy disks. An eject button retrieves the cartridge but it's too powerful so if you aren't careful you can damage the cartridge.

These are extremely susceptible to abuse which is the reason they aren't guaranteed. At £100 each, replacements get very expensive; couple this with the annoyance of losing 44Mb of data and you wonder if it's worth it.

The model I tested worked smoothly for hours until I decided to reformat the disk and change the partition size. A simple enough operation and not one you'd expect problems with. However, when the format was complete, the drive went down and the cartridge has been unusable ever since.

Third Coast admitted the SyQuest drives are notoriously unreliable and damage to the cartridges is such a common problem that they've damaged six of their own.

After contacting Third Coast about the problem, they said they're assessing their committment to the SyQuest drives and may consider withdrawing them from sale because of the problems.

▪ The drive weighs in at £750. Third Coast can be contacted on: 0257 426464.

Multi-tasking ST

The public domain is increasingly becoming the place to watch for innovative new ST software. For just £2.50 The ST Club are offering a piece of shell software called *Gulam* which offers a sophisticated command line interface. Another program on the same disk gives you access to multi-tasking through *Gulam*.

According to the 40-page disk manual, *Gulam* is Urdu meaning obediant servant. This is appropriate once you've familiarised yourself with the legion of commands. CLI software allows you to copy files, reformat disks and execute external programs. *Gulam* is superior to other ST CLI software in that you can set up sophisticated batch files.

The multi-tasking software allows you to execute TOS or GEM programs at the same time as running a printer spooler, Xmodem software or other programs. It's not 100% bug-free and making any attempt at running two GEM programs at once will crash the system but there are no problems using the printer spooler supplied on the disk. I tested out the spooler while executing *First Word Plus* (all from within *Gulam*) and although *First Word Plus* ran slightly slower, I experienced no problems at all.

• *Gulam* offers sophisticated CLI for the ST.

Mirrorsoft line-up

With the PC Show just around the corner (September 27), the ST games scene is looking very healthy. Mirrorsoft have finally completed *Rocket Ranger* and *Xenon II* is just around the corner. The *Rocket Ranger* graphics are as good as any Cinemaware game but it's much slower than the Amiga version. The takeoff routine has been chopped out – Cinemaware claim it's because we found it too difficult to complete but the real reason may be that they didn't want it to spread onto four disks. As it is the game occupies three single-sided disks so there's a lot of swapping.

Xenon II is brilliant – well worth the wait. It's the Bitmap's latest vertically-scrolling shoot-'em-up and the graphics are so realistic you could actually be in the game. Several planes of scrolling and some excellant visuals would alone make it an addictive challenge but there's a great gameplan behind it as well. Using your shields and thrusters to hurtle through space you need to blast away at the aliens whilst collecting much-needed firepower.

Xenon II won't be on general release for a few weeks yet but if you're a shoot-'em-up addict then you can't afford to miss it. Issue three of our sister mag *ST Format* will contain a playable demo of half the first level so you can try it out for yourself.

Kim Harmagh

Help lines on the increase

Silica Shop recently announced that their helpline, which aims to provide answers to all technical queries, has just been extended to six people. Their number is 01-309 1111.

GFA programmers can get help with any difficulties from GFA User magazine. Their helpline service operates on Tuesdays, Wednesdays and Thursdays from 6-9pm. Contact 0270 256 429 for help.

Any comms fans out there can contact the Microdeal bulletin board on 0726 65422 for help with Microdeal products. Messages can be left which are picked up and answered daily.

As ever, the Atari technical support line will help out with queries about the ST wherever possible. Phone 01-309 7770 for details.

AMIGA BLIT

DigiPaint 3 Arrives

NewTek, that rather strange Kansas-based supplier of mind-blowing peripherals and software for the Amiga, has finally released the update to its popular *DigiPaint* HAM paint package.

As soon as work on the program was complete, NewTek whisked a couple copies of the finished PAL version half way across the globe to us for review within *NCE*'s sister publication, *Amiga Format* . Being Technical Editor of the aforementioned publication, I've been able to play around with the program for over a week now and I must admit to being suitably impressed.

The first thing that will strike you is the quality of the user interface, which has been totally redesigned in association with that prolific American Amiga artist, Jim Sachs (the man responsible for the graphics on *Defender of the Crown* and Aegis' hugely under-rated *Ports of Call*).

The program boasts some very impressive features such as auto-scrolling worksheets of up to 1024 by 1024 pixels, texture mapping and a extra 3D painting mode for use with *X-Specs 3D* (weird or what!). Although the program features a variety of drawing tools, it is best used as a image enhancement program for digitised graphics.

NewTek certainly is looking to the future with this product as it has been written to take advantage of the A-Rexx environment which is soon to become standard issue with the Amiga when Workbench 1.4 eventually arrives. A-Rexx compatibility allows all aspects of *DigiPaint* to be completely controlled by external programs and batch files.

With the news that Commodore is to include A-Rexx within 1.4, the system looks set to have a major impact on the way we use our machines and so many software houses are going to have to seriously consider producing upgraded versions of their software if they aren't to be left behind. How about producing an A-Rexx compatible *Deluxe Paint 3* then EA? *Digi-Paint 3* is available in this country from the Amiga Centre Scotland who can be contacted on 031 557 4242.

Music X-tra

Music-X is undoubtedly a stunning package (which explains why it seems to be in AmigaBLIT every week!), but many who have used it will confirm that the program does lack in certain areas. Thankfully, Microlllusions' wrote *Music-X* in such a way that the program could be kept up to date by adding on extra program modules. Due to this sensible 'modular' approach, there is no reason for *Music-X* ever to become obsolete.

According to Andy Leaming at SDL (the UK Distributors of *Music-X*), Microlllusions' is already hard at work developing add-ons in an effort to keep the program at its current position (ie, miles ahead of any competitors).

First to be released are a range of patch editors of which Roland D110/10 (yippee! I own a D10) and Korg M1 (Anyone want to swap my D10 for their M1? – No? I didn't think so) users will be the first to be catered for. How much will these patch editors set you back? How does £10 each sound to you? This is a astonishingly low price when you consider that patch editors from other companies usually cost about £100 each!

Where add-on pages are concerned, Microlllusions is currently working on a real-time score editor which is due for a January release (some of you may have noticed that the *Music-X* program disk includes a music notation font). Following closely behind this will be a drum composer/editor and a song arrange page (this should have been in the original program!). All add-on program modules will sell for £50 each. SDL can be contacted on 01 309 1111.

Star Wars lives!

Fans of George Lucas' popular Star Wars trilogy will be pleased to learn that Domark plan to bundle the Amiga versions of their three previously released Star Wars games in one bumper pack.

The £25 compilation, which is due for release sometime in September, will consist of the excellent vector graphics-based *Star Wars*, the fairly average *Empire Strikes Back* and last but not least, the only recently released *Return of the Jedi*.

Games News

Activision has announced the release of an Amiga version of *Predator*, the game of the film starring that muscle bound meanie, Arnold Schwarzenegger. The game is due for release sometime this month and will be available for the standard £24.99.

Activision has been fairly busy just recently producing Amiga versions of quite a bit of their back catalogue. Unfortunately, it still hasn't produced an Amiga version of *Super Sprint*. The Atari version was one of the best

• What a bargain! All three Star Wars games for £25!

arcade conversions I've ever seen and it justifiably received rave reviews. So come on Activision, let's see an Amiga version!

After having to sit back and watch just about every other computer user having a good time of it all, Amiga owners can soon get out their shuriken ('shaken' actually!), ninjato and kusarigama as System 3 plans to release the Amiga version of the highly acclaimed *Last Ninja 2* sometime in September. The game puts you in the role of a young exponent of the ninjutsu art who has travelled through time to save the world from an evil shogun who has set up in business within the darkness of the underground drug dealers.

Jason Holborn

Talk to me

If you have any views on any issues raised within AmigaBLIT, or indeed the Amiga scene in general, then why not put pen to paper and send them into AmigaBLIT. Similarly, if you have any great tips, tricks or cheats that you think may be of interest to Amiga owners, then I'd love to hear from you. The address to write to is: Jason Holborn, AmigaBLIT, New Computer Express, 4 Queen Street, Bath BA1 1EJ.

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PC UPDATE

Time to work Timeworks

I've recently started to use one of the products I reviewed over a year ago in earnest. *Timeworks* DTP, one of the best featured budget desktop publishing programs on the market, has been sitting on a shelf in the office for over a year now, with only sporadic use. This time I had a project which I thought would test it.

As I've mentioned before, I belong to a local writers' workshop which has been going for about two years and has recently decided to produce an anthology of members poems. Guess who offered to make up the page masters on their PC?

Poems are odd things in DTP terms. Nearly all DTPs treat a paragraph as a heap of text with two hard returns at the end. All poems have end-stopped lines (a single hard return), and *Timeworks* tries to be helpful by replacing them with spaces. This basically means that each verse of the poem becomes one contiguous paragraph, and you have to put back the hard returns to reconstruct its original form. This in turn means that you have to have taken a print-out of each poem to put the returns back in the right places.

This strip-out-the-returns attitude does mitigate against another problem, though. If *Timeworks* took a paragraph to be a block of text with a single return, then each line would suddenly become a paragraph. This matters when you come to apply paragraph styles to the work, to change the font, typestyle and the like. Once you've set up a paragraph style, you can apply it to a paragraph by highlighting said para and clicking on the style name in a selector box. All very well, but it's more than an inconvenience to have to click on every single line of each poem.

All in all, though, I'd rather have the second problem, as I could set up the default paragraph style to be correct for the poems. Why can't the poor user have the choice?

Brown Bagging

What do you do when you feel sick about conventional software? - you grab a Brown Bag. No, maybe not the catchiest ad phrase that's ever been put together, but it does describe the main selling point of the company's wares. They've recently sent through a selection of their products, including the weird *MindReader* word processor which guesses each word as you type, and *PC Outline*, the second best known pop-up program in the world.

Less well-known are packages like *Easy Presentation Graphics* and *RAMtest*. *EPG* offers a whole heap of different graphs and charts, including 3D bars, pies, doughnuts (a pie with a whole in the middle), stacked area graphs and pictograms. With a pictogram you can even design your own symbols. It'll take information from spreadsheets like *Lotus 1 2 3*, *Multiplan* and *SuperCalc*, or even from a table written into a word processor file. Looks good and costs only(!) £200.

RAMtest does pretty much what it says. It checks through the memory in your machine and lets you know if any of it has problems. The kind of problem you may experience is intermittent drop outs in programs or some loss of data. *RAMtest* is not a program you're going to use every day, but could be useful as part of a preventive maintainance scheme. It costs £50, and details of all Brown Bag products are available on 01-831 1106

Disk to disk

If you have a machine with a 1.2Mb drive and a 360K drive be very careful which you use to prepare 360K disks on. It should be OK to format a 360K disk and save files to it from the 1.2Mb, and you can always read disks written on a 360K drive on the higher capacity drive. The dangers come when you try and mix the two. You shouldn't mix files saved from 360K and 1.2Mb drives on the same 360K disk, nor should you reformat on a 1.2Mb drive, a disk with files on it saved from a 360K drive. In both cases, it is quite likely that a 360K drive won't be able to read the disks.

The reason is quite simple. A 1.2Mb disk has 80 concentric tracks on it, while a 360K drive has only 40. Since both sets of tracks fit in the same space on the disk, you should be able to see that the 80 tracks on a 1.2Mb disk will be half the width of those on the 360K. A 1.2Mb drive can read the wider tracks from a 360K drive simply by looking at half their width. A 360K drive can also read tracks laid down by the 1.2M drive in 360K format, by placing its head half over the narrow 1.2M track and half on the 'blank space' making up the rest of the 40 track width. If you mix files saved from the two drives, or reformat on the 1.2Mb drive, you risk having tracks which are composed of half an old 360K track, overlaid with a 1.2M track on half its width. The 360K drive is then trying to read a track made up of two disparate halves. It won't do it. No way.

Simon Williams

• **Check out your dodgy RAM with *RAMtest***

PC Help

I'm putting together a feature for Express which involves collating a lot of information about PCs. I have my own ideas on what are the top 50 or so PCs in the country, but I'd like to call on any reader who is particularly pleased with a machine currently on the market to write in and tell me about it. It might be a humble XT, an AT or a super-mega 386. What I'd like is brief details of the machine and a contact telephone number for the manufacturers, so I can ring for spec sheets etc. All help will be gratefully received.

CPC centre

Happy days: here again!

At last, something for CPC owners to be pleased about. After last week's gloomy prognostications from Cheetah's Howard Jacobson – "there's no market for our light-gun," he grumbled – things are looking up.

You've heard, no doubt, of last election's "wobbly Thursday" (4 June 1987), when the Tories developed a sudden panic. Well, I had a "wonderful Wednesday." First of all I was chatting to Siren Software's Simon Cobb, responsible for such items of kit as the Sound Blaster, the Kempston mouse and Hackit, among others.

Far from predicting doom and disaster, Simon was full of the joys of summer. "Going fine," was the nub of his argument: "nothing to complain about at all."

He's a real Amstrad buff who's broadened the base of his business by moving Siren out into the 16-bit market – as any sensible man would – but who remains firmly committed to the CPC *and doesn't care who knows it.*

Wonderful Wednesday

Part two of my "wonderful Wednesday" was a conversation with Robin Nixon of Swift Software, like Siren based "oop north" (I wonder why the CPC is even more popular there than it is dahn sarf?).

You may remember me telling you about Robin's *Pandora*, a games writing utility that uses an ultra fast dialect of BASIC, so you can create commercial quality games without having to learn machine code. Well, you'll be pleased to know it's going very well, but that's not all.

Swift's next project is *Keyword*, a thesaurus-cum-dictionary that will interest anyone who uses a word processor for more than notes to the milkman. There are other releases in the pipeline, such as games compilations and thing's Robin doesn't want to say too much about yet.

But "come here, there's more," as James Cricket might put it. For this column can reveal exclusively (etc) that Swift is about to release a utility called *Omega*. It's very similar to – and I suspect may even have been inspired by – *Flipper*, something that's been immensely popular on the PCW (boo, obviously), in that it allows you to switch between banks of memory.

This means that you can be playing a game while you're supposed to be doing the homework or the company accounts, and then, when your parent/guardian/boss (delete as appropriate) is heard stomping into the room, all you do is press Ctrl+Shift, and Lo! and even, Behold! you're into *Protext*, *Masterfile III* or whatever. Brilliant! And while *Flipper* costs £30, *Omega* is expected to come in considerably cheaper.

More details next week.

Netherworld bliss

This week Hewson's Cecco masterpiece Netherworld *gets infinite smashers/ killers, tons of time and immortality too, all courtesy of that nice medical student from Sale, "Mighty" Mike Wong.*

To enter this tape poke, simply rewind the game to the beginning; type in the poke listing and then type RUN and press the Enter key. (Don't use the key marked CTRL or Control, will you, or the poke won't work.) Press the Play key on the cassette deck, then any key on the main keyboard – the spacebar's as good as any. The tape will now play through as normal – but you won't run out of lives, time or smashers!

```
1 ' NETHERWORLD Tape
2 ' METHOD AS ABOVE
3 ' by Mike Wong
4 ' NCE August 89
10 MODE 2:MEMORY &3FBF
20 FOR n=&BE80 TO &BEB7
30 READ a$:a=VAL("&"+a$)
40 POKE n,a:c=c+a:NEXT
50 IF c<>3885 THEN 250
60 FOR n=1 TO 3
70 READ a$,p,q:PRINT a$;
80 INPUT" (y/n)";a$
90 IF a$="y" THEN 110
100 POKE &BE90+p,q
110 NEXT:LOAD"":CALL &BE80
120 DATA 21,8d,be,11,40,00
130 DATA d5,01,2b,00,ed,b0
140 DATA c9,21,49,00,22,5b
150 DATA 41,c3,c0,3f,3e,a7
160 DATA 32,74,21,32,28,23
170 DATA 3e,00,32,bf,27,18
180 DATA 00,06,0a,21,18,a7
190 DATA 36,09,23,36,09,11
200 DATA 04,00,19,10,f5,c3
210 DATA 00,01
220 DATA INF SMASHERS/KILLERS
230 DATA 7,&3d,INF LIVES,15,1
240 DATA 990 TIME,20,16
250 PRINT"Error..."
```

Over the odds?

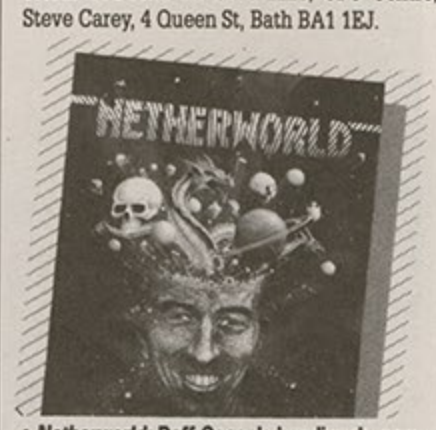
James Blewitt of Daventry writes to agree with my comment a couple of weeks ago about the "horrendous" price of CPC games. "I'm able to get them much cheaper," he writes, "because I'm a member of a Home Computer Club which deducts between 25% and 50% and still (presumably) turns a profit." Good point James, though of course if we were Amiga or ST bods, we'd be shelling out something like £25 per title! Oh how we laughed. Isn't "progress" wonderful?

Fishing for cheaps

Amstrad apparently has a policy of not cutting the list price for the CPC range, preferring instead to bundle a dozen ancient games and a poxy joystick in an attempt to woo the wily consumer.

But that's not to say that the 464 and 6128 actually sell at list price. I'd be very interested, and I'm sure prospective customers would too, to find out where in the country you can buy the CPC cheapest. I'd guess you could easily find a colour 6128 for £349, £50 less than the retail recommended price. I know Dixons has recently been offering it at that price (is that still the case?).

Needless to say I'll be offering a "mystery software" prize to whoever sends in details (genuine offers only, please: I'll be checking!) of cheapest prices for green screen and colour 464/6128 to: Save £££s, CPC Centre, Steve Carey, 4 Queen St, Bath BA1 1EJ.



• ***Netherworld:* Raff Cecco's handiwork, now much easier, courtesy of *NCE!***

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Written by Mark Griffin of Corrupt Code

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Pubic domain lives!

So who says there isn't any public domain software for the Spectrum? Er, OK I did in issue 26 but since then a few examples of PD have been located and now news has just reached me of a public domain and shareware library set up specifically to serve we poor, underprivileged Speccy owners.

In case you're not acquainted with the term, public domain software is a very good thing to have because a) it's either free or really cheap b) you're encouraged to copy and swap it with fellow users and c) the standard's surprisingly high. The almost total lack of any on the Spectrum is an unexplained mystery Arthur C Clarke should have discussed whilst strolling along the beach with his parasol. But now we might at last have some of the magical stuff for our machine thanks to Daniel Garner who also runs the Garner Designs software label I mentioned a few columns back.

His starting collection is fairly small with a total of about 30 PD programs, packed roughly five at a time on three tapes for 48/128/+2 owners and three disks for +3ers. The programs on offer are mostly short but useful routines and range from RAM disks to music demos. A paltry £1 copy/P&P charge lets you have as much PD as you've got tapes and disks for and if you can't muster any media of your own, blanks are available from the library at 75p per cassette and £3.75 per three-inch disk.

Chief librarian Daniel Garner is very keen to expand the range with lots of public domain and shareware offerings from other Spectrum programmers. If you've got any kind of program, routine or demo which needs a good home get in contact with him at the address below. If it's to live long and prosper as I hope it will, the Spectrum's only PD library will need your support. Submissions to and more details from: D Garner at 57 Lovers Walk, Dunstable, Beds LU5 4BG (Tel: 0582 472067).

Flight of fancy

Good news for anyone who's thinking of throwing their Speccy in a suitcase and heading for the exotic splendour of Heathrow. The snappy, roll-off-the-tongue titled Free And Reduced Rate Air Travel (review in Express 28) has itself been the subject of a price reduction and can now be bought for the much healthier sum of £6.95. There are also some other announcements which should please anybody who wants a fortnight in Antigua, a trip to Australia by Concorde and change out of a tenner. Wanderscan have just released FARRAT for +D, Discovery and Disciple owners with a version for +3 users (and other Amstrad three inch drive machines) due to emerge from the pipeline in September. Amazingly, these will also bear the same £6.95 price tag. For those without an Amstrad or indeed a computer, the guide's being made available in several instalments on paper. Enquiries, orders and more details on the low cost travel insurance available to purchasers from Wanderscan Ltd, 22 Parkside, Alkrington, Middleton, Lancs M24 1NL. SAE appreciated.

Coupe PDS

Prospects for the SAM Coupe are looking better by the nanosecond. A Coupe incarnation of the Programmer's Development System is currently being, erm, developed. This is widely used by people like Argonaut and Realtime when writing software for a range of machines and when finished will allow code that's been written and assembled on PCs to be transferred to the Coupe through a specially designed interface. Hopefully this and the Bo Jangeborg art package I mentioned several issues ago will encourage a healthy level of software for the machine's launch.

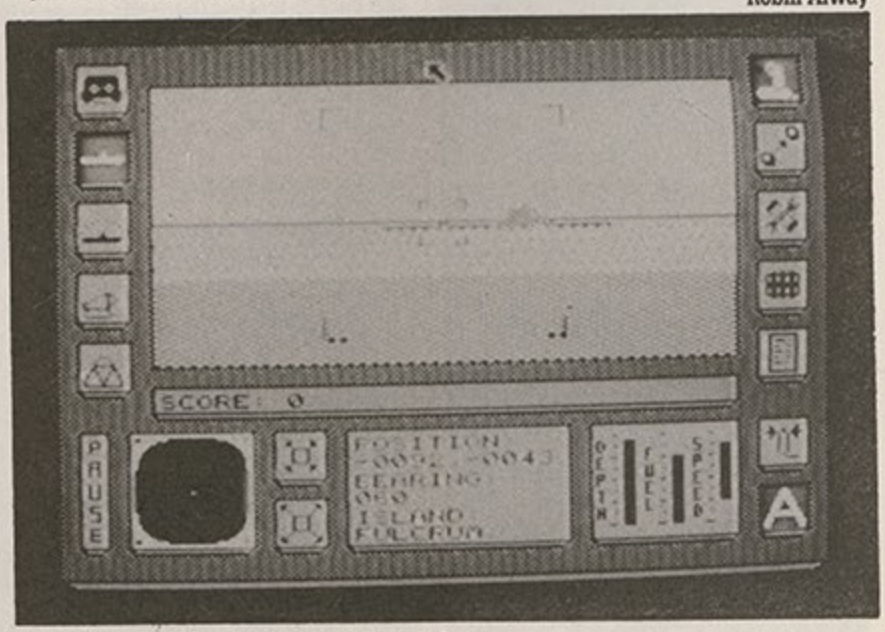
Command tips

Here are a few tips for people with permanently soggy commanders uniforms in what's fast becoming my favourite Spectrum game ever, *Carrier Command*. When an enemy island's in sight but still out of firing range, bring the carrier to a halt and despatch the two defence drones to the front of the ship. These have a magnetic field which throws missiles hopelessly off course and leave the baddies red faced.

If your carrier's running low on fuel get it to the nearest island asap. Redesignate it as the Stockpile Island, set ACC fuel production to high priority and use the Time Lapse icon to speed up the filtering through of new supplies.

You can sometimes find the enemy carrier chugging in the waters off Outcrop, it's the island to the right of the one you start at. Sink the thing with a few bouncing bombs and your on board guided missiles. Needless to say, although I will anyway, senders of cheats, pokes and more tips for Realtime's masterpiece will be rewarded with some free software and lots of ego inflation.

Robin Alway



• ***Carrier Command*: refueling made easy (see above)**

SECTOR 64 SECTOR

Will Silk cut it?

Virgin's *Silkworm* proved to be one of the best arcade conversions for years, so can they maintain the standard with their new game, *Gemini Wing*? *Gemini Wing* is a vertical scrolling shoot-'em-up and is due out by the end of the month.

A ROM thing

Rainbow Arts are set to release a CD of games in CD-ROM format for the C64. The compilation disk includes classics like *Dropzone* and *Impossible Mission* and includes leads to connect it to the CD player. The games load much faster than from tape, and the disk has a vast storage capacity.

Angel stationed

Fallen Angel from Screen Seven has you controlling a vigilante in the subways of Paris, London and New York. Your mission is to search for drug dealers and beat them senseless before tackling Mr Big. As you progress through the game you can collect extra weapons and clues to finding the man himself.

A great game to look out for is *Mr Heli* from Firebird. It cost £9.99 on cassette or £12.99 on disk and features very colouful well-drawn graphics. This is the second polished game we've seen from Probe since *Savage*.

The Edge have a few licenses underway this year. *Punisher* is a film tie-in with the Marvel Comics character will be released simultaneously with the film in November. Also in the pipeline is *X-Men*, another Marvel spin-off due for Christmas release.

Cheats

Thanks to Gaz the Mighty for a very wicked cheat for *Street Cred Football*. If you're bored with the game as it stands then try typing 'Acid' on the title screen for a surprise. A clue: it's not an acid house demo.

Ian and Mick

Sines solved

Thanks to Gazza Gould for this handy sines routine; you can use it to design patterns for sprites.

Line 10 holds the number of points in the circle, and line 12 the size of the circle, the bigger the number the bigger the circle.

```
00 POKE 53269,1:POKE 2040,0
10 D=80: REM NUMBER OF POINTS
11 E=D:D:D/2:PI=3.14159265
12 S=30: REM HIGHER THE NUMBER
THE BIGGER THE CIRCLE
18 FORL=0TOE
20 POKE 53248,X:POKE 53249,Y
30 X=INT(COS(A*PI/D)*S+100)
40 Y=INT(SIN(A*PI/D)*S+140)
45 A=A+1
50 NEXTL
```

ARCHIMEDES LORE

Driving a hard bargain

Hands up who thinks the Acorn hard disk system is exorbitantly priced? OK, hands down. Now I'm not in the pay of Mach Technology, but it does seem they offer a goodly selection of interesting bits and pieces, including 20Mb, 30Mb and 40Mb hard disks and much more reasonable prices. The standard 65ms access 20Mb drive is a mere £286 and even the 28ms 40Mb unit is only £436.

I haven't seen one yet, but may do soon. If you have your own 3.5-inch drive, you can buy the controller podule for £230, which seems expensive, but does point to the fact that Mach are getting their drives cheap.

Art school

Minerva Software have long been specialists in Archie software, and in Beeb stuff before that. Their latest release, *Atelier* is a top-class painting program with some very nice extras, such as wrapping text and graphics round 3D objects. The windowing system looks very stylish and all in all it represents one of the main contenders, along with *Pro Artisan* and *Art Nouveau*.

First Impression

So the impression puns are about to start, along with the release of possibly the best DTP system yet on the Archie, rivalling Quark *Xpress* on the Mac. *Impression* will run very quickly, having been entirely coded in ARM assembler.

It also offers interesting little extras, like variable zoom and Acorn's handy rescaleable fonts. I hope to be able to bring you a review in these pages when Computer Concepts send me a copy.

Rumours

Many rumours have been floated about Acorn's prices in the eight years since the launch of the BBC micro. Almost all have proved unfounded so bear that in mind with regard to the following. How about a gradual phasing out of the Master series sometime in 1990 and a consequent reduction in the cost of Archies. A reduction of £50 to £100 is being spoken of (mainly among those who would like to be able to afford one) and a suggestion that the A3000 will become the main offering for use in schools. It may all be true, and the Archie may become the prime games machine for the entire Western half of the planet by the end of this month.

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pcw patch

GSXtremely bad

Geoff Winkless of Leicester asks me if there are any GSX books available. In case your powers of telepathy are failing (GSX is not mentioned at all in the manual) it's a graphics utility which attaches to Mallard BASIC and lets you draw graphs, points, lines and so on on screen.

There are no books at all on it so the best I can do is point you in the direction of the magazine *8000 Plus* which ran a series explaining how to use it, with sample programs, in their issues 24-26. Available from The Old Barn, Somerton, Somerset TA11 7PY for £1.75 each inc p&p.

An alternative is to buy *Lightning BASIC 2* from CP Software for £24.95 – this is an add-on to your standard BASIC which supplies all those graphics commands like dots, line and circle drawing commands. Highly recommended.Details on 0993 823463.

Pigg Book of Records

Possibly the slowest commercially released program is the Mini Office *anagram cracker. Brian Smith of Plymouth reported in June that after leaving the program running overnight it was unable to turn 'orchestra' into its celebrated transposition 'carthorse'.*

Alternatively LocoScript 1 *took so long to scroll to the end of a 120K document that Rob Ainsley of* 8000 Plus *noted in December 1988 that during that time the average flat in the centre of Bath went up 75p.*

Address making

Geoff also asks me for the screen bitmap addresses on the PCW. I don't know them off hand but CP Software (see above) do. Their graphics routine library program comes with a manual sketching the screen addresses, as well as a variety of useful graphics routines.

Chips with everything

Finally Geoff wants to know where the PCW chips are – they're inside the main monitor and can be easily replaced by hand. Just unscrew the back and ease it off – you'll see them somewhere.

And, he asks, will the PCW work with the keyboard disconnected? Sometimes. Having a PROFILE.SUB to run seems to muck things up but otherwise CP/M or *LocoScript* run OK.

Centre testers

Had problems centring stuff in *LocoScript 2*? I had a line of 17 pitch text which wouldn't centre properly in a document. I even rang up Locomotive to tell them about the 'bug'.

The answer is the scale pitch (and the manual). Even though pitch 17 had been selected in 'Document setup', the scale pitch meant that the newly defined margins were at the positions defined by a scale of 12 pitch width. It also needed a change of scale pitch ([f7]) to 17 – and then everything centred up perfectly. Exit me with red face...

Basil Pigg

QL corner

QUANTA doings

The Tandata modem offer mentioned a few weeks ago was extremely successful and all the three-unit modems on offer have now been sold. Quite a few of the two-unit modems remain (these don't have the auto-dial unit) and these are available to members for £20 plus £2.50 packing and postage.

Jan Jones' excellent book on QL SuperBASIC has been out of print for some time now. QUANTA has obtained the rights to the book and a new batch has been printed. *The Definitive Guide to SuperBASIC* is available to members at £8 plus £2 P&P. Jan actually wrote the SuperBASIC interpreter for Sinclair, so she should know what she is talking about.

Software librarian Leighton Davies has reorganised the library and a new guide has been produced. The library now comprises 39 3.5-inch disks. The library guide (an *Archive* _dbf file) is 170K in size and has over 430 entries. Most of the programs are free!

Don't take your feet off

The overheating problem on some QLs is aggravated by using them without those silly plastic feet which keep dropping off. With the feet in position air flow through the machine is much improved. I also find my typing performance, such as it is, is improved with the feet in position.

Core Wars

Core Wars is a game in which two programmers write a program to run on the same computer. 'Core' is the old fashioned name for RAM. The object of the game is to zap your opponents program. Programs are written in the assembly language of a virtual machine, and executed by an interpreter, versions of which have been developed for most of the popular machines..

QUANTA member Paolo Montrasio of Milan has written such an interpreter for the QL, and he now reports that it is being re-written in BCPL, to speed it up. He's also adding an integrated editor and debugger. If anyone is interested in playing *Core Wars* on their QL, drop a line to Paolo a line at: Via XXIV Maggio 49, 20099 Sesto San Giovanni, Milan, Italy.

I've got a screw loose

A long time ago I mentioned the problems that could arise from loose screws. Well I've just wasted several hours trying to find out why my QL kept crashing after a few minutes operation. The cause of the problem? Loose screws in the power supply mains plug. I'm still kicking myself

John Torofex

What's new?

Got any good tips or hints for other QL users? Know some hot news about the Sinclair scene? Write to me at QL Corner, New Computer Express, Future Publishing, 4 Queen Street, Bath BA1 1EJ.

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BEEB BOX

Master advantages

Acorn have been busy promoting the A3000 as the natural successor to the Master 128. In a recent press release they quote various educational software houses as busy writing or converting software for it, including 4mation.

Now, although I am pleased that some of the most reliable software houses have begun to consider the A3000 I still believe there is a credibility gap. Consider the following; the A3000 costs £649, and needs a monitor, whereas the Master 128 is £439 and can use a TV set. The A3000's bundled software does not include a word processor, or spreadsheet whereas the M128's does. To the average primary school those price differences mean a great deal, and there is still very little primary software written explicitly for the Archimedes.

Assembly time

One of the great advantages of the Model B for program development is the inline 6502 assembler. Unfortunately though, writing large programs means you run into the BeebB's main weakness, lack of memory. There are many ingenious ways of overcoming the problem, including assembling to disk in chunks, and using sideways RAM. The best way has always been to use a separate assembler such as *ADE+* and the 6502 second processor. The second processor was actually developed from Acorn's own program development system by the way. Dabs Press have now added another, where an Archimedes is used as the development tool, and the resulting code is ported over to the Beeb. Interesting, but I reserve judgement until I've actually seen it. In the meantime a used second processor makes a useful tool.

Designer appeal

I recently saw a Macintosh computer disassembled before my eyes. It took the service engineer no more than two minutes before the motherboard was extracted and joined all the other components on the desk top. What this has to do with BBC computers can be summed up in one word; ergonomics. For a hack such as myself, removing the lid of my Beeb is almost an everyday necessity to allow insertion and removal of ROMS. Getting the rest of the computer to bits however is not so easy, with various fiddly screws to be extracted and retained for future use. The Archimedes is, if anything worse.

The point I am trying to make here is that the British micro industry has never bothered much with design beyond the actual electronics. The result has been a series of machines with different cases, keyboards, connectors, and even power supplies. Just like the old British motorcycle, and we all know what happened to that! The cost, not only of design but also tooling up must be enormous. Thus contributing to the problem we have of competing in the marketplace. Come on Acorn, next time you design a computer, commission Porsche, or Lamborghini to do the job!

Andrew Brown

MSX TRA

Joy division

De Gale Marketing's range of joysticks is ever growing, with the current range consisting of the Quickjoy SV 122 at £8.95, the SV 124 priced £10.95, the SV 123 Supercharger (reviewed in an earlier issue of *NCE*), and the top of the current range, the SV 125 Superboard, price £19.95.

If you read the review of the Supercharger, you may remember that I found it to be an excellent joystick, particularly as it functions as a true MSX stick. This means that if the joystick is set to CPC464 mode, the fire buttons can be used independently. It was therefore an added joy to receive the rest of the current range to evaluate, especially as they have a CPC 464 setting just like the Supercharger.

Removing the largest of the three joysticks from its box, (go for the biggest first), the first thing I noticed was that it sported a stop clock, and needed batteries to make it function. Also the device absolutely bristles with fire buttons and switches, these include no less than six fire buttons, an auto-fire on off switch, two switches to select left or right hand fire buttons or top or base fire buttons. There is a switch to select between Atari or CPC 464 compatibility (more of which later), and a switch which controls the rate of the auto fire.

The stop clock also sports three buttons; two to set the counter, and a start stop button. How have they managed to fit so many switches onto a joystick? Easy, it's three time the size of a normal joystick, and needs a smooth, firm surface for you to stick it on, via the four suction pads on the base. All controls are fully microswitched, and the counter is nicely angled for easy viewing.

Now down to the nitty gritty, how does it work. As a normal joystick, it is excellent, with a well designed and decent sized pistol grip for directional control, plus well placed and responsive fire buttons. It was when I tried to use it as a true MSX joystick that problems occurred, because it did not matter how the selector buttons were set, I could not use not the fire buttons independently.

This problem apart, I found the Superboard a joy (no pun intended) to use, the stop watch is a bit of a gimmick, and will rarely be used, even so the Superboard is a fine addition to the Quickjoy range and can be recommended.

Xenon action

Melbourn House has recently converted several titles to the MSX format. These include the already released *Barbarian*, and the soon to be released *Xenon*, *Terrapods*, *Roadwars* and the game *Double Dragon* which is to be released in about four weeks time. I already have pre-production copies of *Terrapods*, *Roadwars* and *Xenon* and have been giving *Xenon* a real hammering.

The graphics, although lacking in colour, are very good indeed, and the loading screen is excellent, really colourful. Also, the music which accompanies the game is brilliant. *Xenon* is a shoot-'em-up that should grace every MSX user's collection. Nice game Melbourne House, well worth the £9.95 asking price.

Keith Neal

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Losing the battle with your machine? Express's Agony column has the answer. Write in strictest confidence to Uncle Techtip. Best tips win a freebie – so don't forget to tell us your address and machine

SOS
Manual labours

I had a letter from Robert Hart, Wimbledon, London who was asking for help with his search for a Oki Microline 192 printer manual. Well, I'm pleased to announce that Steve Brewer of Letchworth, Herts has sent in – at great personal cost to himself – the desired manuals. Unfortunately, poor, overworked Uncle Techtip has lost Robert's address (!). If you'd like to send your address to me Mr. Hart, I shall be pleased – indeed, proud – to pass on the books. In the meantime, a computerish trinket is winging its way to you Steve.

HELP!
Apple sauce

I've just acquired (by legal means) an Apple Europlus II, complete with two disk drives, a monitor and the biggest and most horrendous printer I've ever seen (an Integral Data System 460). Being used to a Spectrum +3 I would like to ask your advice on a couple of points.

Is there any public domain software available for the Apple? If so, where?

The monitor is a Luxor model number 180 37819. Would it be possible and practical to connect the Spectrum to the monitor? If so, how?

Can anyone help me with a copy of the *AppleWriter* word processor because the copy I have appears to be corrupt?

Barry Walton, Whitley Bay, Tyne & Wear.

• Your best course of action is to take out immediate membership of the Apple user group. Contact Apple 2000, Irene Flaxman, PO Box 3, Liverpool L21 8PY. Tel: 051-928 4142. You should be able to connect the Spectrum to the monitor. Call GL Systems on 0904 610722 with all the details of the monitor and for a modest sum, they'll run up a lead for you.

HELP!
Machine choice

I am hoping you can help me on a problem. I presently own a tired old Einstein and I'm looking for an upgrade. The choices I am thinking on are Atari ST, Amiga 500 and the Acorn A3000. I want the machine for game playing, graphic design and sound packages. MIDI is not an essential but video mixing is. Price is also no problem. Please suggest the machine for me.

A. McDonald, Witham, Essex.

•Forget the ST. With its lousy sound and inferior graphics (compared to the other two) it's not the machine for you. The A3000 is a technically superior machine which at the moment is failing to achieve the sales figures (and therefore the patronage from software houses) of the other two. The Amiga has wonderful sound, super graphics capabilities, is well supported and priced right. Buy it.

• The Amiga: Uncle Tech Tips' reccomended best buy

HELP!
Viral infection

1. Will the new Atari portable entertainment console be able to be linked up to the ST?

2. What do *STOS Sprites*, *STOS Maestro* and *STOS Maestro Plus* consist of?

3. Is it just my mouse or is it standard for most Atari 520STFMs for the mouse to go crazy? Because sometimes when I push up on the mouse it goes down and vice versa.

4. If anyone wants to swap software with me or if anyone wants to share any tips on *STOS* please write to me.

Joe Campbell, 38 Maunsells Road, Taylors Hill, Galway, Ireland.

• 1. It should be possible to make some kind of serial connection between the ST and the console.

2. All these products are designed to enhance the original *STOS* BASIC package. *STOS Sprites* is a collection of spacecraft, cars, people, monsters and various other sprites which can be incorporated into your *STOS* creations. *STOS Maestro* (and *Maestro Plus*) are packages which allow you to include sampled sounds such as dogs barking, various musical instruments, guns etc.. The difference between the two packages is that the latter includes a device which connects to the ST via the cartridge port and allows you to sample your own sounds.

3. You have the 'Ghost' virus which seems to be particularly prevalent at the moment. Get hold of the public domain version of *Virus Destruction Utility* from any public domain library (see the letter from P. Bocij on these pages) which will sort out your machine.

4. Only they can answer that.....

HELP!
Satisfied customer

Thanks for solving my previous problems in your columns a few weeks ago. As you did so well with those, here are a few others!

1. With a vast and varied PD collection, I need to store as much as possible on a single disk. I have literally a dozen or so funny formatters all of which allow extended formatting (to around 820K), which I use quite frequently. I then store my least often used programs on these disks in an archived format.

The problem is that some disks really do have around 820K on them, some say they have but don't

BUG OF THE WEEK

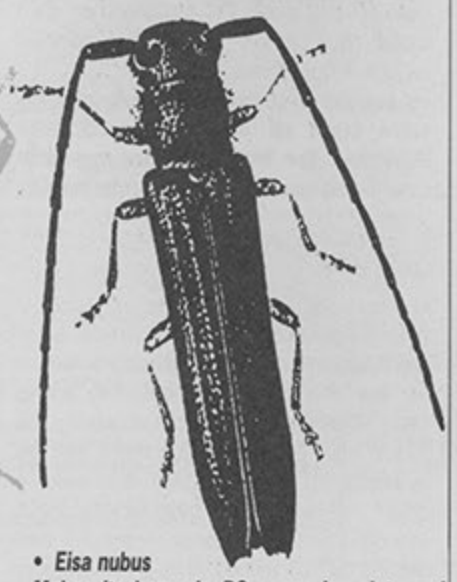
Protext on the PCW won't let you have headers or footers of more than one line. However, if you make your single line very long, the line spills over onto the next line when the document prints out, and so by trial and error you can make the long single line print out as a nice multi-line header or footer. You have to take one or more lines off the page length command, of course. This might work on the versions of *Protext* on other machines. As the header or footer is a stored command it doesn't get affected by a format command.

OK maybe not a bug but a curious feature anyway!

J Hill, Newcastle

• Thanks for your tip-cum-bug, J. An *Express* subscription is yours!

Come on, techtippers, keep those bugs coming in...



• *Eisa nubus*

Makes its home in PC expansion slots and Archimedes podule sockets. Some conservationists fear its habitat may be under threat from Microchannel. Others aren't worried

• *STOS Maestro*: a fully featured sound sampling package

and some neither have the extra space nor do they say so. Why? I have tried all of the programs so it is not a case of a bugged formatter.

2. I'm interested in learning a new programming language, having already mastered BASIC, COBOL and Logo. I know a little about the choices open to me (C, Pascal etc) but what do you recommend? Can you also recommend an idiot's guide too?

Now it's time to repay your help. My favourite PD library – Seven Disk, Digswellbury, Digswell Lane, Welwyn Garden City, Herts AL7 1SN – has various spelling checkers available (together with other utilities) for a very reasonable £1 per disk. Seven Disk also has several very good virus killers including a pre-production version of the *Virus Destruction Utility*. Again, these programs are £1 per disk. Not only did 'VDU' correctly identify and destroy the 'Ghost ' virus but it also corrected some other disk problems. I hope that such a cheap, general solution is useful to your readers.

P. Bocij, Derby.

• 1. How do you know that the disks are not giving you the full 820K? Perhaps erroneous calculations are instrumental in the false capacity count? Are you using good quality disks? Perhaps they have a lot of bad sectors which would account for a reduced formatted capacity. Maybe your drive's at fault. Without actually standing in front of your system and seeing the thing at work, it's pretty difficult to determine the problem (and no, I don't do house calls). Try buying some good quality floppies, a head cleaner for the disk drive and starting again....

2. Perhaps you should have told me a little more about the reasons why you want to learn a new language. Is it so that you will be able to solve some specific task? Or merely for the hell of it? Pascal is fine but boring. Restrictions, restrictions, restrictions. At every experiment the compiler is moaning about something or other. Get your hands dirty and have a shot at C. It's an easy language to learn but a very difficult one to master. What the hell? It's fun trying. Your beloved Seven Disk (or any other decent PD library) should be able to supply a cut down PD version of the language which will suffice as an introduction. A good beginner's text is the *Big Red Book of C*, published by Sigma and available for around £8-£9 from any high street book store.

HELP!
Dual personality

I use an Amiga 500 mainly for games, schoolwork and a little art. At the moment I am using a black and white TV as a display for the computer but I am hoping to get a colour one shortly. I read in a back issue (21) of *Express* that some TVs are dual models supporting monitor quality displays as well as normal TV standards. Unfortunately, you do not give any examples of TVs which can do this. Please could you give a few examples of TVs that offer this feature.

David Auty, Mirfield, West Yorks.

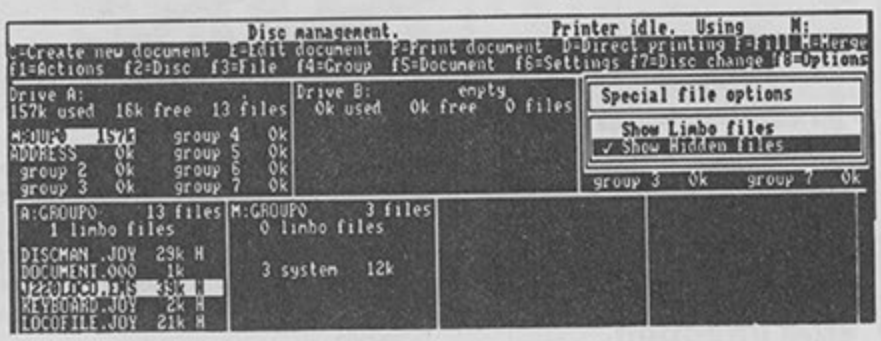
• Does Mirfield, West Yorkshire have a High Street? If it does, then I suggest you pay it a visit whereupon you will discover a veritable Aladdin's cave of dual purpose monitors. (OK, just in case you don't have a High Street, have a look at the Ferguson range of monitor/TVs).

HELP!
Motive power

Is there going to be a version of *LocoScript* on the PC, and if so, when will it come out? Would the *LocoScript* files on my PC work on my PCW and vice versa without making ASCII files?

J Hills, Newcastle

• Yes, though it's still under wraps. It'll probably make its debut at the PC show at the end of September. I can only guess the answer to the last question, but I think it will be yes.



• *LocoScript*: set to revolutionise the world of slow clumsy PC word processors

TIP
All grown up

In last week's Techtips (*Express* 40) Michael Kirk wanted to know if there was any way he could increase the amount of storage available on the Spectrum +3 disk drive. I had a telephone call from Miles Gordon Technology a company heavily responsible for products aimed at the Spectrum market. The company is currently marketing an add-on drive for the Spectrum which, coupled with the bundled *DiskMate* software, provides 706K of extra capacity. The disk drive (known as the Lifetime drive) retails at just over £100. MGT can be contacted on 0792 791100.

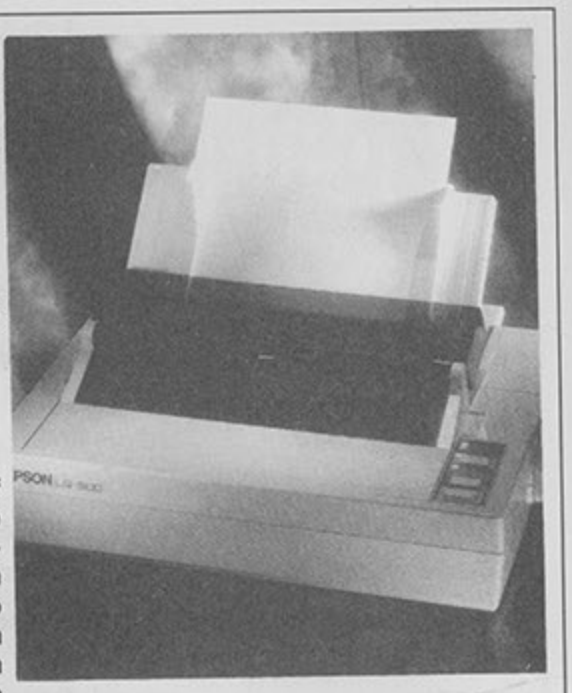
TIP
Power to your pen

I do not agree with Power Computing that the hardest job when fitting their internal drive upgrade is taking the case off. Much harder was replacing the case as the screw holes in the new NEC drive are a different size to the screws in the case!

Further, the Atari's power supply is too short to reach the smaller replacement drive and as there is no slack, it is necessary to cut the four leads and solder in an extension. This is no easy job for the uninitiated. I tested the drive with the *Blitz* software supplied. It failed, not due to my soldering, but due to a faulty track seven on *Blitz*. I hope this information helps others.

B. Linke. Hastings, East Sussex.

•A sorry tale of woe. Perhaps, Power Computing would like to answer the charges?



• 24-pin font tips from *Protext* (Fontastic, left)

TIP
Fontastic

I have discovered a way of giving an Epson compatible the fonts on an Epson compatible 24-pin printer on *Protext* (ST version). Go into the configuration program and set the printer up as an Epson 24-pin printer. Save the new configuration and change the printer on the *Protext* disk to an Epson 24. Load up *Protext* and create a document. Type in PRINTQ and watch the new fonts come up.

Also when you're in *Protext* type in PANIC and see what happens!!

Michael Gill, Inverkeithing, Fife.

HELP!
Moving up

I own at the moment an Atari 800XL, which is a brilliant machine and has served me well for the past five years. However I feel that it is time to move on and upgrade my machine, but which one? I would like a machine that I could program on and potter about with while my wife would like a machine that she could bring home work to (they use a PC at work). So I thought that the best deal would be to buy an Atari ST with *PC Ditto* which would seem to meet both our needs, and my pocket.

Could you tell me therefore will the ST run any normal PC software (word pros, databases etc) and at what cost, speed etc., and is it really noticeable? Would it be better to buy an ST with 1Mb RAM or will *Ditto* behave like a real PC and be limited to memory access (I believe MS-DOS can only look at large amounts of memory by paging) or would a 512K machine suffice? Will the Atari drive read PC disks meaning that I could buy off the shelf PC software or do I need to convert it to Atari format before I could use it?

I realise that there is loads of software such as excellent word pros designed for the Atari but my wife could not use this in relation to her work.

C. Skipsey, Birtley, Co. Durham.

•With *PC Ditto* and an Atari ST you have - in affect - an IBM-PC compatible, albeit it a very slow PC compatible. Almost all of the popular software packages available for the PC will run successfully under *Ditto*. Obviously, the more memory the ST is equipped with, the more will be available for use by *Ditto*, but even a 512K machine will perform exactly like a standard PC. The drives of the ST and the IBM-PC are identical in every respect (MS-DOS writes a disk identity marker onto a floppy denoting the type of disk i.e. density etc., GEM doesn't, so floppies formatted on a PC will work with an ST but not vice versa) so there's no problems associated with loading, reading and writing data to disks. You could go the whole hog and purchase a 5.25 inch drive for the ST making it directly compatible with all existing PC software.

HELP!
Fragmentation

I have an Amstrad PC2286 and MS-DOS 4.01. While writing a simple batch file the other day (what an interesting life you lead - Uncle TT), I noticed that it took up an entire allocation unit of 2,048 bytes on my hard disk even though the file itself was only about 50 bytes. This is obviously because DOS puts files into allocation units, but why the need for such large units? The space left over in the units is completely unusable.

Using Norton's *FileSize* program, i found that this space was reported as 'slack'. The fact that the program looks for this space leads me to believe that it is something common to all versions of DOS and that there is nothing I can do about it. It seems rather strange to me that there is this space left over.

I phoned Microsoft who were unhelpful merely saying that they don't support MS-DOS and I should try the manufacturers. I've written to Amstrad but seeing as they have a rather nasty habit of not knowing anything about anything, I have decided to write to you as well. Please tell me if there is a fault in my version of MS-DOS (unlikely) or if it is a normal occurrence.

Simon Stuart, Blackpool, Lancs.

• A perfectly normal occurrence. DOS and indeed most disk operating systems, break up the available storage space on a hard drive into easily manageable blocks. The size of these blocks is determined by a variety of speed and other tests. Eventually, when the majority of blocks have been used the problem of 'fragmentation' occurs. This means that there is considerable space left over from used blocks which cannot be used to store data. When this happens, the whole system slows and it is necessary to carry out the process known as 'garbage collection'. This re-stores the data in contiguous blocks thereby freeing the fragmented storage space. Garbage collection programs are available in the public domain for a nominal sum.

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STREET TALK

By Rik Haynes

OCEAN looks set to continue its monstrously successful year with a string of outstanding games due for release between now and Christmas. Among the forthcoming blockbusters are *Beach Volley*, *Chase HQ*, *Ivanhoe*, *The Lost Patrol*, *F-29 Retaliator*, *Untouchables* and of course *Batman*. What with this amazing release schedule, *Robocop* at No.1 for most of '89, and TWO Game of the Weeks in the past three weeks, Ocean certainly gets my vote for Software Company of the Year.

• ST *Ivanhoe*: coin-op quality visuals from Ocean's French connection

CHAOS Strikes Back, the *Dungeon Master* expansion game, has been delayed (yet) again! It unlikely to be released before the end of the year, even though the actual program was finished last month. The reason for the hold-up is that the existing library of *Dungeon Master* monsters is being updated and redrawn. Meanwhile, UK publisher, Mirrorsoft is warning *Dungeon Masterterers* to save their games with "very" strong characters, because *Chaos* is going to be a really tough nut to crack. We'll just have to wait and see, after all we're experts at that now!

MASTERTRONIC is re-releasing Hacker II, Fist II and *Fighting Warrior* for £2.99 on Spectrum, C64 and CPC. It's also launching the latest game from the author of *Trap Door*, Don Priestly on Spectrum and CPC budget. *Gregory Loses His Clock* is a surreal arcade adventure with Priestly's hallmarks of "mega" large sprites and infectious gameplay. And talking of *Infection*, that's a new puzzle game from Mastertronic which should be out next month on Spectrum, C64, CPC, ST and Amiga.

STEVE Bak, the programmer responsible for *Goldrunner* and *Return to Genesis*, is just putting the finishing touches to a new game for Logotron. Out next month on ST and Amiga, *Bad Company* is an *Operation Wolf*-type shoot-'em-up featuring – get this – "vanishing point perspective bitmap scrolling". Let's just hope it's got non-vanishing gameplay!

• Setting the scene on Amiga *Lost Patrol*

• Amiga *Lost Patrol*: join the army, see the world, meet people... then kill them!

TAME G

A massive collection of hot games tips, cheats and tactics from our *Robocop* Competition entrants (see back page for winners)... Sorry tipsters, no prizes for your info this time 'cause you may have won a video player instead!

"*New Zealand Story* on Amiga: On the title screen type 'MOTHERF***INGKIWIBASTARD'."
***R.PATEL**, South Benfleet, Essex*

"In *Robocop* it's better to use up the Multiple Shots and use Single Shots to dispatch the machines at each level's end. Also hit '[SPACE]' repeatedly to keep Robocop jumping whilst firing."
***PAUL McMULLEN**, Doncaster, South Yorkshire*

"In *New Zealand Story* on Level One use bombs on top of the third platform pointing left to get a warp level effect."
***SP HILL**, Sheffield*

"*Cybernoid II*: Re-define the keys as ORGY for infinite lives."
***SIMON LAMBERT**, London*

"*Arkanoid 2* on ST: Type 'DALEY 88' on the intro screen to return to the last level. *Millenium 2.2* – to complete it in a day: Colonise CALLISTO, TITON, TRITON and LEDA. Build spare SOLAGEN X's (about 6), 10 Orbital Lasers, 4 Carracks, 4 Grazers (for asteroids), Fleet Carrier and 5 Fighters. Use the Orbital Laser whenever attacked and use the Day Accelerate icon. Have something being built all the time."
***ALEX HARRISON**, Birkenhead, Merseyside*

• *Arkanoid 2*: how to break out to the last level

"Spectrum *Times of Lore*: Don't kill any people in the towns or villages."
***GJ RODGER**, Milton Keynes*

"*Starglider II* on ST: Slow the Starglider down until it stops, press the '[F5]' and '[DELETE]' keys, then type 'WERE ON A MISSION FROM GOD1'. You now have infinite energy, and if you press 'K' you get all the weapons you can carry."
***STEVEN MURRAY**, Bristol*

"Amiga *Dungeon Master*: To kill monsters a lot quicker, coax them to a doorway and keep closing the door on them. Falcon: Always choose the No Migs option."
***CHRIS SANDLIN**, High Wycombe, Bucks*

"*Mario Brothers* on Nintendo: After losing all your lives press the 'A' and 'START' buttons, and you will go back to where you last finished with 3 lives."
***MARK FORD**, Birmingham*

"In ST *Elite* watch the colours of the objects on the scanner. Blue and Grey are hostile (Grey being Thargoids). Yellow objects aren't hostile, don't interfere with them unless you want to lose your Clean Status."
***STEVE WOOD**, Wolverhampton*

"At the start of Spectrum *Robocop*, crouch down and press '[FIRE]' to kill the bad guys. Then advance, crouch and when the chainsaw guy comes along, punch him in the stomach."
***MICHAEL EMMENS**, Oldham, Lancs.*

"On Amiga *Microprose Soccer* use Low Banana Power. At kick-off go straight up the pitch avoiding tackles, when half-way to the goal go slightly to the right and shoot Banana Power."
***DAVID DEANS**, St. Albans*

"*Times of Lore* on C64: To get in the Gortigled Tower in Ganestor, go in the inn and walk past the barman. Go down the steps and walk to the top right hand part of the room. Touch the thing on the wall and some steps will appear, these take you to the tower."
***RICHARD HODGSON**, Wallasey, Merseyside*

"In *Xybots*, keep a stock of the keys in

DO YOU OWN THESE GAMES?

- **INDIANA JONES AND THE LAST CRUSADE**
- **BEACH VOLLEY**
- **FALCON MISSION ONE**
- **THE NEW ZEALAND STORY**
- **JAWS**

We've declared war on five of the hottest releases. We want to tame them and we need your help. Have you found a hidden **cheat** mode? How about a poke, or the odd tip to get you through a difficult stage? What about a bug?

If you have the info, you could **win** a fantastic new game, T-shirt or poster, by writing to Tame the Game, New Computer Express, 4 Queen Street, Bath BA1 1EJ or fax us on 0225 446019. Please state what machine you use.

Everybody who gets a tip, cheat, poke or bug published wins a **prize**! So what are you waiting for?

DON'T FORGET! We're also interested in high score claims on all the latest games, if you provide three tips too.

GAME

reserve, as not enough are provided."
MICHAEL LADER, *Bournemouth, Dorset*

• Through the maze with our *Xybots* tip

"For the first few levels in *International Karate +* use the Headbutt move as fast as you can. After this, use the Sweep and Low Crouch Punch manoeuvres – while staying as far away from your opponents as possible."
D RALPH, *Merthyr Tyofil, South Wales*

"In Amiga *Populous* type the name of a famous sports car (backwards!) on the entry screen."
P MOORE, *Clacton-on-Sea, Essex*

"*New Zealand Story*: Attack anything that flies from underneath, come up firing and you not only kill it, but get its flying platform as well."
DANNY CANNON, *Romford, Essex*

"Nintendo *Road Racer*: Press the 'A' and 'Start' buttons when the game ends to start where you finished."
R PARTRIDGE, *Birmingham*

"On *Batman* you can beat up bad guys with the minimum of fuss by standing on the left or right of the screen about 5cm from the edge. Then wait until a bad guy is in the corner, and hold down '[Fire]' and '[Left/Right]' to pummel him!"
R BARKER, *Brickhill, Bedford*

"If the other player does a sliding tackle in *Kick Off*, run over him for a foul, and if the referee is mean, he will give your opponent a card. Keep doing this to get all your opponents players sent off."
HARJIT SINGH, *Huddersfield, West Yorkshire*

"Amiga *Interceptor*: To avoid enemy missiles, hit '[F1]' and brake, so your engines flame out and the missiles cannot pick up your heat emissions. Then just do a few evasive turns and it should work around 95% of the time."
STEVEN ALLAN, *Edinburgh*

"On C64 *Nemesis*, if you press the '[SHIFT LOCK]' and the '[SPACE BAR]' keys four times on the title screen, you'll play with invincibility."
RICHARD COLEMAN, *Ayrshire*

"In *Lombard RAC Rally* always go for the TV interview to get extra point/money."
ADAM BUCIOR, *Bacup, Lancs*

"*Nemesis 2* MSX Konami cart: Hold down the '[SHIFT]', '[CTRL]', '[TAB]', '[ESC]', '[CLS]', [INS]' and '[DEL]' keys at the same time, and you will always get at least one bonus weapon each time a stage is completed."
CHRIS NORRIS, *Blackley*

"Amiga *Earl Weavers Baseball*: After playing for half an hour, do a Warm Start without the disk in the drive, insert the workbench disk, go to the menu bar, select and reformat the *Earl Weavers Baseball* disk. This gives you a free blank disk on which to store something useful."
KOLIN ROBERTSON, *St-Annes, Lancs*

"On Level 2 of *Robocop*, if you have lots of energy, shoot the girl. She will then disappear leaving the terrorist alone."
WILLIAM GODDARD, *Tavistock, Devon*

"*Licence to Kill*: Ignore the jeep in Stage One and jump out when prompted – the jeep will then catch up."
KERRY SALMON, *Bury, Lancs*

"Did you know that some Konami carts can be used together on MSX decks? Insert *Nemesis 2* (Slot 1) with *QBert* (Slot 2) then type in one of the following words: 'METALION' (a green energy shield will protect your ship), 'LARSI8TH' (you have all of the starting weapons) or 'NEMESIS' (you move on one level)."
PAT AYER, *Whitefield, North Manchester*

"MSX *Gauntlet*: When your life force is 200 and your being heavily attacked, press 'P' and then swap the joystick into port 2. Press 'P' again and your life force and player will change."
GLYN RICHARDS, *North Oswestry, Shropshire*

"*Dungeon Master* on Amiga: On level 10 there's a tricky bit called Zoom. To pass this part you should turn right round to face the wall when you enter the teleport. When you come to the opposite side, push forward on the keyboard and if you don't do it first time wait till you come to it again and try once more. PS Don't forget the potions."
WAH KWONGCHAN, *Glasgow, Scotland*

"*Zkull* on the QL: When in the temple in the underground building, the missing colour on the alter is red – so they're ruby's."
NEIL GORDON, *Hull*

"I'm afraid I am an MSX owner, so games are hard to come by, but if you get bored playing *The Hobbit*, try and kill Gandalf – it saves turning the power off!"
STEVEN TRAYNOR, *Stirling, Scotland*

"Spectrum *Stormlord*: Type in 'BRING ON THE GIRLS' on the control screen. The game will pause for a while. Press a number between 1 & 4 for the level you want to go to."
BEN RUSSELL, *Bath*

"Use the shield to cheat at cards on CPC *Myth*."
D ARMSTRONG, *Belfast*

"*Kick Off*: If the ball goes out of play in injury time, some time is put on the clock (anything from 10 secs to 1 min)."
SIMON LEAPER, *Bristol*

THE NEW ZEALAND STORY

From Ocean • C64 version reviewed

Sure, *New Zealand Story* is fantastic on the Amiga, but what about the C64 and Spectrum versions?

GAME of the WEEK

GAMEPLAY • Taito coin-op conversion of a 20 level, multi-directional platform arcade adventure. Very similar in nature to Taito's earlier cult release, *Bubble Bobble*, except you control Tiwi the Kiwi!

GRAPHICS AND SOUND • Cute, cuddly sprites and backdrops backed up with a choice of either sound spot-effects or a sickly sweet soundtrack.

OTHER VERSIONS • The Amiga and ST versions were reviewed in *Gameplay 39*, where they were awarded Game of the Week – and quite rightly too, because they are probably the most accurate and playable 16-bit coin-op conversions released thus far. Spectrum New Zealand Story is a little disappointing in the fact that there's no backdrop artwork – the soundtrack is crap too. Fortunately, the game's still highly playable, addictive and well worth a look.

VERDICT ★★★★★
Ocean just repeats success with even greater success, C64 *New Zealand Story* is one the best C64 games we've seen for ages. We just can't wait for *Batman*! Until then, go for this deceptively simple but utterly addictive game.

VERSION	PRICE/FORMAT	DUE OUT
Spec	£8.99cs, £14.99dk	Now
C64	£9.99cs, £14.99dk	Now
CPC	£9.99cs, £14.99dk	Now
ST	£19.99dk	Now
Amiga	£24.99dk	Now
PC	No version planned	

NAME BEHIND THE GAME

Richard Palmer, an in-house programmer at Ocean, wrote the C64 version of *New Zealand Story*. The game took six months to write, with Palmer using Ocean's custom designed development system based around the ST. The hardest parts to write were fitting everything into a limited amount of frame-time (moving all the objects while the screen is being updated/refreshed). In the end, Palmer had to settle on a maximum of six baddies on the floor and three in the air – the coin-op has a maximum of 30 baddies in comparison. Palmer's favourite aspect of C64 *New Zealand Story* is its immense playability. Palmer started to write games on the C64 when he was 13 (he's just turned 19), with the first published game being a budget title from Power House – unfortunately Palmer can't remember the name of it. Since then he's worked on the C64 versions of *Daley Thompson's Olympic Challenge* (Ocean/1988) and *Wec Le Mans* (Ocean/1989) and is currently waiting for Ocean to confirm his next project, which he believes will be another coin-op conversion. And just how did Palmer get his big break into programming for the UK's top games software company? Easy, his brother already worked for Ocean as a graphic designer and put in a good word for him! Goes to prove that saying "it's not what you know..."

MINI-REVIEW

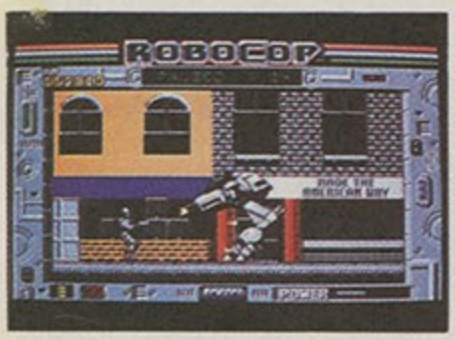
BARBARIAN II ★★★★

Palace • Amiga • £24.99dk • Also on Spectrum, C64, CPC, ST • Out on PC next month

A great release for the hack'n'slash fanatic with a variety of monsters to hack to pieces... although there's not much else to do. The visuals are bold, bright, well defined and expertly animated. The realistic sound FX are top quality samples tuned to perfection. But probably the best feature of *Barbarian II* is the fiendish black humour.

ROBOCOP ★★

Ocean • Amiga • £24.99dk • Also on Spectrum, C64, CPC, ST, PC, MSX



Wow! Wasn't this promised last Christmas '89? We wouldn't have minded too much if the finished game had lived up to its illustrious eight-bit predecessors. Unfortunately, it doesn't. The audio-visuals are barely adequate, and the gameplay seems more boring than before. Something is missing, namely playability and hookability. Amiga *Robocop* should have been a lot better.

FIRST PEEK

• The first exclusive look at Melbourne House's new game, *Demons Tomb*, on the Amiga. It's a graphic mystery adventure with you – in control of some archaeology boffin called Edward Lynton – lost in a tomb somewhere in Devonshire. After sorting out some clues you'll control Edward's son, Richard in a quest to solve Edward's murder. Once that's completed, you'll discover "a much larger and more horrifying mystery". Confused? We are! See what you can make of it when it's released on ST, Amiga and PC...

Forget the sales level, feel the quality. These are, in our opinion, the best titles of the last two months.

HIT LIST TOP 5 GAMES

1. KICK OFF
Anco • C64, ST, Amiga
The definite football-sim. Nothing else comes close.

2. NEW ZEALAND STORY
Ocean • Spectrum, C64, CPC, ST, Amiga
Accurate and playable conversion of a very popular coin-op.

3. CARRIER COMMAND
Rainbird • Spectrum, ST, Amiga
Great blend of strategy and arcade action, now available on the Spectrum. Due soon on other formats.

4. SILKWORM
Virgin Games • Spectrum, C64, CPC, ST, Amiga
Brilliant blaster based on an obscure coin-op.
Current C64 Hiscore: 926300 by JASON SMITH, Telford, Shropshire

5. STARGLIDER II
Rainbird • Spectrum, ST, Amiga
Successor to one of the original classics. An be played as a space strategy game or high-end shoot-'em-up.

ONE-LINERS • ONE-LINERS

• Pirates beware! Illegal copies of Amiga *Barbarian II* apparently have the Lamer Exterminator virus on them. It'll serve you right if you accept a copy!
• Microprose may not release home micro conversions of Sega's coin-op, *Action Fighter*, in the UK... because US Gold has just re-released a similar game, *Spy Hunter* on budget.
• Amiga cyberpunks will be able to play *Neuromancer* from September 14, thanks to Electronic Arts.
• Logotron is bringing out a solid 3D ST/Amiga shoot'em-up, *Star Blaze*, in October.
• *Passing Shot* the Sega tennis-sim coin-op should be out later this month on Spectrum, C64, CPC, ST and Amiga courtesy of Mirrorsoft.
• Hewson is soon to release two scorching games compilations. *Premier Collection 2* (*Eliminator*, *Custodian*, *Mercenary* and *Backlash*) for ST/Amiga, and *Christmas Collection* (*Uridium*, *Eliminator*, *Lightforce*, *Exolon*, *Cybernoid II*, *Hydrofool* and *Sanxion*) on Spectrum, C64 and CPC.

Play back

YOUR views on the latest software – call 0225 444439

"*New Zealand Story* – thanks Ocean for a really great game, the sprites are very good and the gameplay is just out of this world."
Steve Smith, London

"*New Zealand Story* is good and addictive, but have the programmer's ever heard of hardware scrolling or decent sound?"
Darren Stanford, Thamesmead

"When will Amiga *Dragonslayer* from Linel be available? It was hyped at the PC Show last year, but we've yet to see anything evolve from this."
Lester Miller, Worthing
• *Not this year, pal*

"*Barbarian II* takes far too long to load, and there's just not enough moves to make the game worthwhile. A complete let-down."
Robert Hannits, Harpington

"*Silkworm*'s too fast for your eyes, you can't keep up with all the sprites."
The Spectre, no address supplied

"Any girlie gamesplayers out there?"
Name and address supplied
• *You sexist pervert! However, we would love to discover what games 'girlies' like to play, so phone...*

"My favourite game is *Operation Wolf* on the Amiga, but I find it very hard to get even to Level Three. I have tried some cheats printed in other magazines but have not found one that works, do you know any?"
GC Marshall, Melton Mowbray, Leics
• *Try turning to Tame the Game...*

"I don't have a favourite game, but would recommend *Mindreader* as the best PC Shareware WP package."
SD Knight, Arbroath, Angus
• *Er, thanks!*

"Do you think games are being made too difficult to play or solve? Can you recommend any games for beginners!"
D. Lavington, Ealing, London
• *If games were made too easy you'd feel disappointed and cheated, it's obviously a tough balance to get right. Try:* Pacmania, New Zealand Story, Silkworm, Tetris *or* Kick Off

"I'm most disappointed with *Millennium 2.2* – you pay £25 for a game that only takes 15 hours to complete."
B. Fisher, Isle of Wight
• *Looking for a bit more of a challenge eh? Try:* Populous, Colossus Chess, Flight Simulator II, Dungeon Master *or* Elite

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CP/M Plus for the Spectrum uses the same discs as +3DOS, so you'll be able to read and write your Spectrum discs. But it can also use the discs for the most popular CP/M machines about – the Amstrad CPC and PCW – so you'll be able to run many programs for these machines as well.

Standard Screen

CP/M Plus on the +3 can emulate a standard 24 line, 80 character screen, so most existing CP/M software should run without any problems – we've even kept the control characters the same as the Amstrad CPC and PCW computers, so programs for these machines should run with little or no change.

CP/M Plus is a trademark of Digital Research Inc.

But don't just take it from us, Crash magazine's verdict was:

"At £30 for CP/M Plus, utilities, and Locomotive [Mallard] BASIC, this package is a bargain if you're at all interested in computers for their own sake. . . . Even if you don't want to be a hacker, you can be a 'power user' with CP/M, using whatever parts of it appeal, to run a customised computer system for work, business or fun."

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Using the PCW benchmarks, Mallard BASIC is five times faster than Spectrum BASIC. It's not only faster, it's more accurate too!

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Mallard BASIC understands +3 discs - so you can read and write disc files, serially or randomly. Using Mallard's built-in "Jetsam" commands, files can be indexed by key and sorted into alphabetical order. You could use this, for example, to create a database. Jetsam is designed to give quick access to your data.

Compatible BASIC

Mallard is compatible with the industry standard BASIC, so there's lots of public domain programs you can pick up and run with little or no change. Once you've written your own programs, you'll find it easy to move them to other, more powerful, computers. Mallard also runs on PC compatibles and on the Amstrad PCWs.

Mallard BASIC is a trademark of Locomotive Software Ltd.

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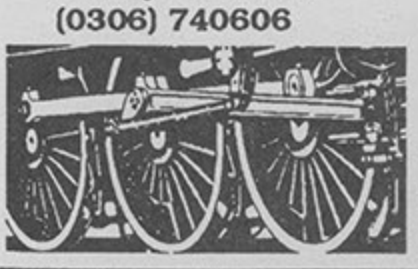

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EXPRESS LISTINGS!

The listings page with a difference: they're not just here to fill up space...

Ten computer companies named after flora

10 Apple
US computer manufacturer
20 Apricot
Computer manufacturer
30 Acorn
Computer manufacturer
40 Mandarin
Games software house
50 Tangerine
Precursor of Oric
60 Tulip
Dutch PC manufacturer
70 Mitsubishi
'Three water chestnuts': Japanese portable manufacturer
80 Cherry
Digitiser and hardware manufacturer
90 Pear Tree
Software house
100 Toshiba
'Eastern lawns': Japanese portable manufacturer

Ten terms used in news reports translated

10 'industry pundits believe...'
The chap I just met by the coffee machine thinks...
20 'fears are growing that...'
We know they're going to do it but can't prove it
30 'reliable sources have said...'
Well, they got it right once before
40 'usually reliable sources have said...'
They might get it right one day
50 'one well placed source...'
Me
60 'it is now looking certain that...'
The Guardian said this morning...
70 'Industry bosses have slammed...'
Someone else got the story first but we need a different angle
80 'exclusively revealed...'
The company rang us up first to tell us because they'd lost our rivals' number
90 'Details are emerging...'
We've got one fact and we need to stretch it across five paragraphs.
100 'Fred Smith said "I am delighted at the outcome of the case and this paves the way for a major restructuring of the industry"'
We said "you must be delighted at the outcome of the case, won't it pave the way for a major restructuring of the industry?" and he said "Er, yes, I suppose so".

Ten games licences that bombed

10 ET
Thousands of cartridges were dumped in the desert when the thing just didn't sell.
20 Frankie Goes to Hollywood
Bad idea, bad game, no sales.
30 Asterix the Gaul
Pitiful.
40 Scooby Doo
Hyped mercilessly for two years by Elite only to slink quietly away. A real dog.
50 Jack Charlton's Fishing Game.
'Nuff said.
60 World Cup Carnival
Two year old game repackaged by US gold. The press hated it (*Amstrad Action* rated it zero per cent).
70 Superman.
A criminal waste of a good licence by First Star.
80 Friday 13th
Domark hired a team of educational programmers and regretted it later.
90 Inspector Gadget
Lots of troubles and mucking around - It finally slithered out as a crap budget release
100 Roy of the Rovers
Piranha had the licence and went bust. Gremlin picked it up and insulted Roy fans with an unspeakably bad game.

Ten TLAs (Three Letter Abbreviations)

10 RAM
20 REM
30 HAM
40 GEM
50 DOS
60 TOS
70 SAM
80 ROM
90 LAN
100 COM

Ten computer things named after historical figures

10 Einstein
Tatung's early 80s micro named after the physicist Albert (1879-1955) who published important work in the field of relativity involving fundamental reappraisals of the nature of space and time
20 Archimedes
Acorn's new 32-bit Beeb named after the Greek mathematician (287-212 BC) who ran naked through the streets shouting 'Eureka' and also invented the screw
30 Ada
Fourth generation programming language named after Ada Lovelace, the daughter of Lord Byron and the first programmer, who worked on Babbage's analytical engine in the mid 1800s
40 Pascal
Popular programming language named after French mathematician and philosopher Blaise Pascal (1623-1662)
50 Plato
New software label taking its name from the Greek philosopher and mathematician (427-348 BC), pupil of Socrates, who believed that truth and beauty and so on were material objects
60 Magellan
Ashton-Tate's hard disk organiser named after the Portuguese explorer Ferneo de Magellan (1470-1521) who led the first sailing expedition round the world
70 Adam
Coleco's IBM-incompatible micro of the early 80s named after the first person on earth Adam (4004-3074 BC) the only man in history to have lacked a navel
80 Jupiter
Another early 8Os micro named after the Roman king of gods, Jupiter, bringer of jollity
90 Shakespeare
Amiga DTP package named gratuitously after William Shakespeare (1564-1616) small-time actor and playwright of Stratford
100 Armadeus
Music package for the Archimedes (q.v.) evidently a corruption of the middle name of Wolfgang Amadeus Mozart (1756-1791) composer of 41 symphonies and dozens of string quartets, chamber pieces and concerti

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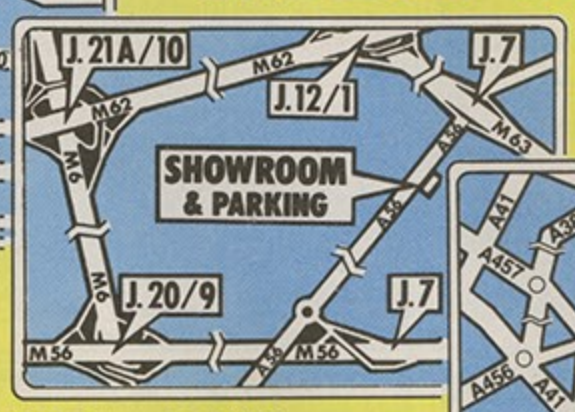

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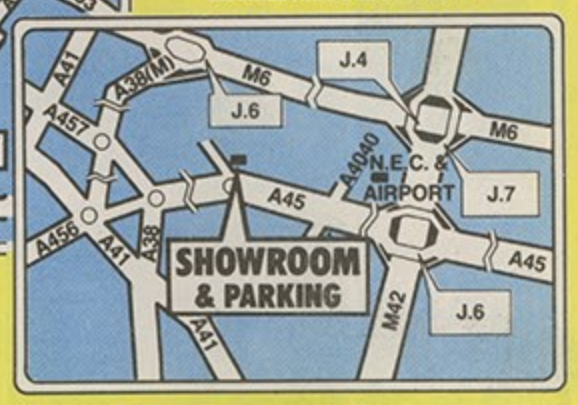

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