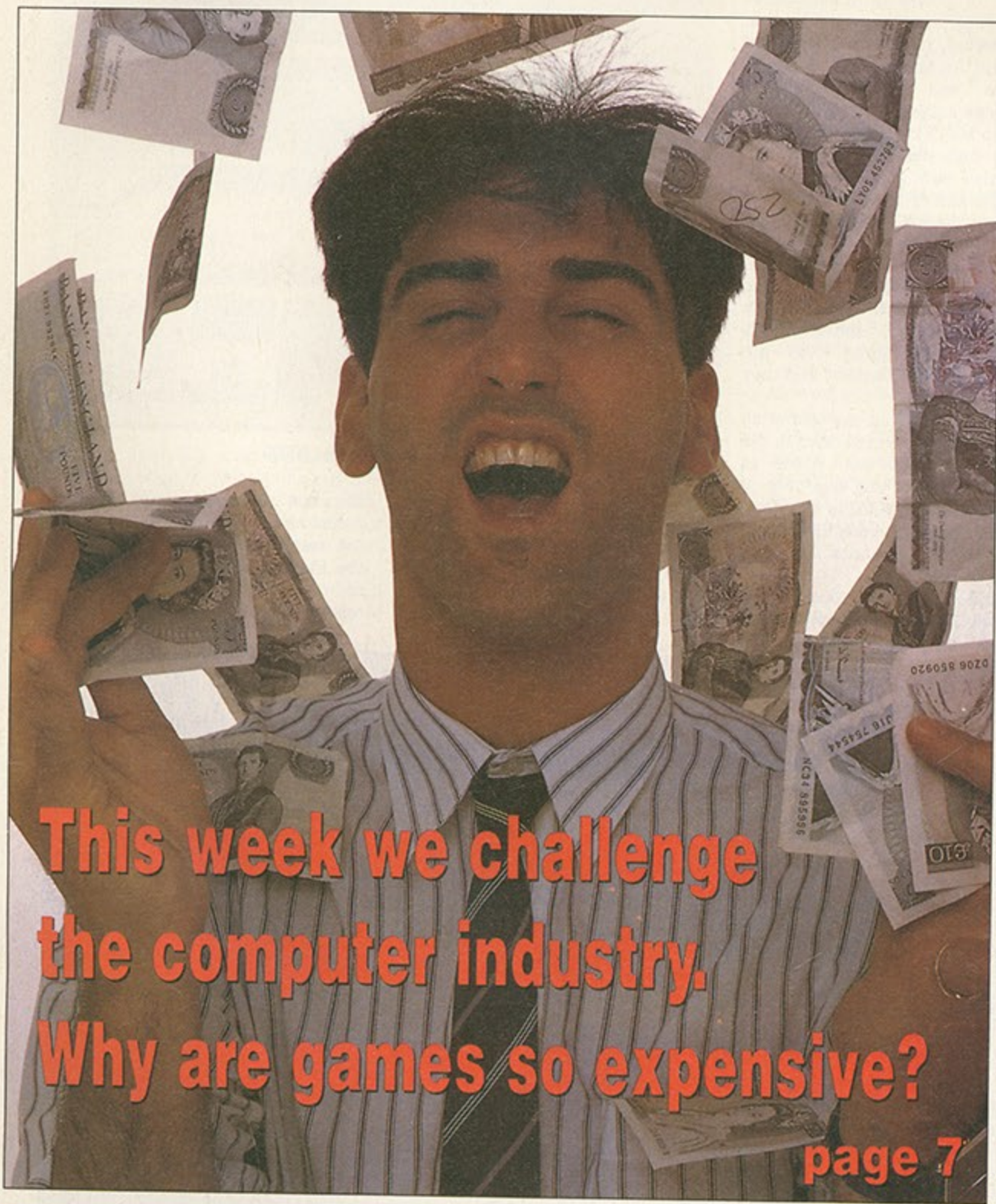


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# COMPUTER EXPRESS

First news, best buys - every week • Issue 28 • 20 May 1989

## WHO'S GETTING YOUR MONEY?



This week we challenge  
the computer industry.  
Why are games so expensive?

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THE MAN WHO  
MAKES  
WORLDS



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FREE INSIDE

£10

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Bio rhythms



ANOTHER FRENCH STUNNER

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

# LOW COST ARCHIE ARRIVES, BUT 305 IS WRITTEN OFF

As exclusively predicted in *Express* (March 25th) Acorn has launched a new low cost version of the Archimedes.

The firm has also decided to stop producing its Archimedes 305, machine which has failed to spark any enthusiasm amongst computer buyers. That half Mb machine had hitherto been Acorn's entry level Archie, weighing in at £699.

The new A3000 is in fact a BBC-

badged micro boasting all the advantages of the Archimedes range. It can execute four million instructions per second, uses a 32-bit RISC chip and multi-tasking RISC operating system.

Disappointingly, Acorn has slapped a £659 price point on the 3000 (without a monitor). Many had hoped that the machine would come in at less than £600, thereby making it a serious contender in the mass market.

Nevertheless, computer buyers looking for power at a reasonable price will be sorely tempted by this new offering. It is fully compatible with Archimedes 300 and 400 software and offers emulators which give access to Beeb software and even MS DOS packages.

Acorn had been most secretive about the new machine. Despite *Express's* earlier revelations it had repeatedly denied the existence of a cheap new Archie.

Last week boss Harvey Coleman was more forthcoming. "We've been showing the A3000 to some key customers and their enthusiasm is extremely encouraging. We are certain it will be a winner; and they agree," he said.

The A3000 is about the size of an Amiga with the 3.5 inch drive in the side. It comes in two boxes as opposed to three, and has 1Mb of internal RAM (upgradable to 2Mbs). It will be available at the BBC Acorn User Show at Alexandra Palace at the end of July.

On the demise of the 305 a spokesman offered: "It really wasn't



• Cheap, but not that cheap: the new low-cost Archimedes A3000

selling. People were going for the more expensive 310 so we decided to stop making them." The 310 costs £899 without a monitor. He also acknowledged that people were expressing disappointment at

the price but said it was as cheap as it could have been.

A machine has been delivered to the *Express* office, first impressions are good, and a full review will be appearing next week.

## Rent boys are ready



• Hire education: Jerry Leach hopes for short-term success

If you're stuck for a computer and need one for a short time, hiring just might be the answer.

This week sees the launch of a new PC rental firm called Short Term Rentals. It reckons the computer hire market is going bonkers with firms often needing a machine for short periods.

Often this is as a result of breakdowns. Short Term calls this a "distress purchase" and says it can deliver in 24 hours. The company's warehouse in Middlesex is crammed full of PCs from Compaq, IBM, Toshiba and Wyse as well as Apple Macs.

But it can be an expensive business. Hiring a Wyse 286 will cost £43.75 per week for a three month rental. For that money you could have bought a cheap PC. And an IBM PS/2 machine costs £85 - for one day.

"It's very competitive. People need computers and if something goes wrong they want a replacement quickly" said manager Jerry Leach.

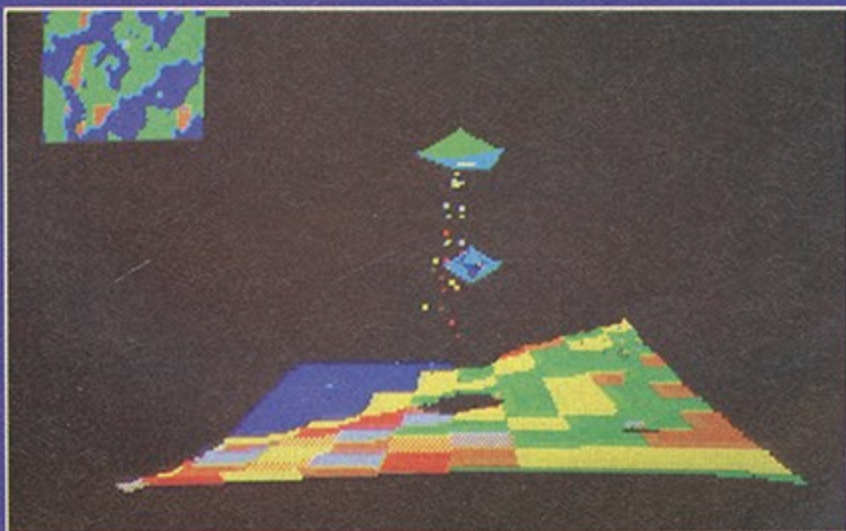
## Phew what a PC scorcher

This Summer's looking hot for PC gamers with a string of top games releases set for the next few months.

Among the scorchers are Firebird's highly regarded shoot-'em-up *Virus* and surreal strategy game *Sentinel*. Palace's *Barbarian II* and futuristic epic *Starglider II* will also be breaking through.

This year has seen the emergence of the PC as a serious competitor in the 16-bit games arena, with major titles being released on the PC nearly as readily as on the ST or Amiga.

The standard of PC games has also improved, with EGA and VGA becoming increasingly popular as users reap the benefits of cheaper PC hardware. The only fly in the ointment is that several games software companies are complaining of a lack of competent PC games programmers.



• The Virus everyone wants: one of many games soon to appear on the PC

## FRENCH HACKERS FACE THREE YEARS IN JAIL

Two French hackers face sentences of up to three years imprisonment and £50,000 fines if found guilty.

The hackers, it emerged last week, have been charged with breaking into the computer systems of military establishments as well as hundreds of companies,

banks and government agencies in France.

The duo are accused of entering a computer system with the intention of fraud and having "directly or indirectly introduced, erased or changed data".

According to French police this is the country's biggest hacking case

yet. The arrests were made last March but the authorities delayed the announcement because of the military connection.

● UK hackers in KGB connection - see page 4

# 'WE MEAN BUSINESS'

## PC bargains as Philips strides in to low cost arena

There's a new firm on the home and small business computing scene which reckons it will dominate the low cost PC market within three years - and will topple mighty Amstrad.

Pioneering Dutch consumer electronics giant Philips is steaming into the low end PC arena with cheap XTs and offers. It says that by 1992 Philips will be as popular as Amstrad amongst computer users.

The firm has long been at the cutting edge of new technology and is currently investing in optical storage technology. But now it wants to get down to the grass roots of home computing.

Many will be surprised by this move. The low end PC market is



• Aiming high: Philips entry level PC

cramped full of machines, many of which are years old.



• Shadow Trade and Industry spokesman Bryan Gould last week took a break from the sweat of Parliament to try out his new computer.

In fact, this model is just one of many purchased by the Labour party. British manufacturer Opus has picked up a contract to supply the Opposition with hundreds of specially customised "Red Rose" PCs (note the logo). The micros in question are none other than the new PCIII/20s, which will soon be buzzing away happily at Labour headquarters in Walworth Road. Strangely, Opus' traditional blue stripe appears to have been left off these versions.

## Falcon flies again



• Falcon: New mission

Mirrorsoft's enormously successful flight sim Falcon is to receive a new set of missions on disk.

Players who are finding the game a bit simple now can get involved in more complicated scenarios. The Mission disk basically puts the pilot in the middle of a larger battle environment.

According to one enthusiastic Mirrorsoft person the whole thing is "very wonderful".

The Mission Disk contains 12 new missions and costs £20. Thus far, some 100,000 European gamers are claimed to have bought Falcon on the ST, PC and Amiga.

Prospective home and business PC owners now have even more choice and a firm commitment from a large company.

"We've waited this long for the market to develop. By 1992 nearly 1.5 million PCs will be bought in Europe. It's a consumer electronics market," offered a spokesman. He claimed that Philips would be going after Amstrad on price "but not on quality".

This is not the first time Amstrad's product quality has been brought into question by a PC newcomer. It's worth noting that Amstrad PCs are still the most popular in the country.

Philips' entry level machine is the £599 NMS 9100XT with 768K of RAM. It's also offering a 20Mb hard disk version for £799. The £599 machine has been waiting in the wings since January but, until now, Philips has not given it much of a push.

Both its micros are being sold with fax cards for £849 and £1049 respectively.

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**COMMENTS**

**Arch fiends**

The Archimedes A3000 has arrived: more memory than the 300s, definitely a step up in power for most of us, but at £650 any hopes of a really cheap Archie for the home user have been dashed.

There are many mutterings that it could be a lot cheaper - not just from computer journals and prospective customers, but from some people working for Acorn. Perhaps the price will have to come down by, say, £100 in, say, six months if the machine doesn't shift as its specification deserves. And if that does happen there'll be plenty of cries of 'I told you so...'

**Maths can be fun**

Mandelbrot equations to most of us are those patterns our micros produce overnight from type-in BASIC listings. The interview Express had with the man himself showed how trivial are these examples of a very powerful and significant tool. The Mandelbrot equations give a compact and convenient way of simulating the apparently chaotic patterns of Nature and Life very accurately, with applications in everything from predicting the weather to people falling in love, but their power wasn't unleashed until the micro came along. A spinoff is the astonishingly beautiful graphics, a few examples of which you can enjoy in the centre pages.

It's got everything: abstract mathematical beauty, genuinely useful applications, and even nice pictures to look at - the application of high order mathematics to everyday life. And all made possible through micros. More than just interesting little BASIC type-ins!

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© Future Publishing Ltd 4 QUEEN ST, BATH, BA1 1EJ  
TEL: 0225 446034 • FAX: 0225 446019  
Printed by Redwood Web Offset, Trowbridge, Wilts  
Distributed by Comag, West Drayton, Middx

# SHOWS SCRAPPED FOR SHOPPERS

The computer year's show schedule was changed forever last week as it emerged that long established events are to be scrapped and replaced by one big jamboree.

In an extraordinary turn of events, Database Exhibitions has decided to do away with its twice a year Atari Shows. The last such event will be on the 23rd of this month.

The Commodore Christmas show and the Winter BBC Show are also to be scrapped although both summer events are to continue. And the future of the two Amstrad shows hung in the balance last week as negotiations went on between Amstrad and Database.

Show goers are to be presented



• The show musn't go on: Last Atari show coming up

with a single Christmas event which it is hoped will replace all the lost shows. The Computer Shopper Show is sponsored by the monthly buyers' guide of the same name.

It is being pitched as a chance for hardened software and hardware buyers to do their Christmas shopping. All major (and minor) micros will be represented.

The Shopper Show is being pencilled in for November 24th to 26th. "All our Winter shows combined attract 45,000 people every year and we hope to be seeing them at the Shopper show" said Database's Mike Malone. "It will be a big date in the computer calendar. It will be an ideal time for people to buy new products before the Christmas break."

## UK HACKERS RUN KGB SPY SCHOOL

British police are reportedly on the trail of several young computer hackers who are in the employ of the KGB.

According to *The Observer* British hackers are teaching KGB agents how to break into important networks. Tory MP and anti-hacking campaigner Emma Nicholson passed to police the names of several Britons she alleges are involved.

Nicholson says that the computer spy ring is linked to the Red Brigade terrorist group in West Germany - a country already exposed as the home of cyber espionage.

She says that the hackers are doing it for money as well as a desire to 'subvert capitalist regimes'. Scotland Yard is taking a closer interest in the matter. Det Supt Russell Allen last week told *The Observer*: "There are growing



• Scotland Yard: Investigations into "KGB's British hackers"

fears of a link between hackers in this country and terrorist groupings or unfriendly foreign powers."

## British technofear? it's a myth

Theories that the British public is afraid of technological advancement is nothing but a myth.

That's the finding of a report published this week by the National Economic Development Office. It found that all sectors of the community (regardless of age, sex, income or region) are in favour of home computerisation in some form.

But the British public takes a pragmatic view. Many are in favour of home education through computers (87 per cent) but total interactive entertainment centres offering the likes of optical discs combining video, games and music has very few takers.

Crazy notions of robotic house cleaners aren't popular (63 per cent said no) but

programmability of heating, lighting etc is a favourite. More than half wanted electronic access to libraries and information databases.

"People clearly expect change and do not resist it. Any reservations are based on their experience of unreliability of computers at work," said the report, entitled *Home Automation. Will the Public Buy It?*

## Commodore's primary objective

Attempts by Commodore to push its Amiga into Britain's primary schools appear to be succeeding.

The Primary Project is to be extended so that more under 11 year olds can have access to the machine. The scheme - which involves primary schools taking on Amigas for free or at cut down prices - kicked off at the beginning of this year and has been greeted warmly by teachers and students alike.

Commodore is clearly convinced that its micro is ideal for the younger user. Kids are getting stuck into Electronic Arts' Deluxe Paint II and word processor Kind Words which also incorporates simple DTP.

As the BBC approaches what can best be described as old age, hardware manufacturers are doing their damndest to woo education authorities. Whilst the Primary Project only affects 20 schools or so Commodore will trumpet its success when trying to sell machines on a nationwide basis.

Meanwhile, Commodore's young marketing man and public face Dean Barrett has left the firm.



• Start 'em young: Amigas to be put into primary schools

## Beat 'em at their own game

Gamesters who fancy themselves will get the chance to play against top programmers at the Commodore Show next month.

Six famous games programmers, including Jez San (*Starglider I + II*), The Bitmap Brothers (*Xenon, Speedball*) and Andrew Braybrook (*Paradroid, Uridium*), will be challenging punters to beat them at their own game.

Apart from the "Beat the Author" competition the programmers will be on hand to give programming help and advice. Further details from Database on 0625 878888.



• San worshippers: Try your luck against the man himself

### Saving manual labour

Computer manuals may not make the most interesting reading but there are occasions when they are jolly useful indeed.

With this in mind a new mail order computer book club has been set up boasting more than 100 titles.

The Computer Users Book Club is backed by Wrighton Publications and works in much the same way as any other book club. Subjects covered include most major machines, programming, DTP and even books on games and flight sims.

More on 0495 292169.

# WEST BANK HORROR GAME GRIPS ISRAELI RIGHT WINGERS

A sick new computer game is being played by Israeli youngsters which involves the killing of Palestinians.

Called *Intifada (Uprising)* the game puts the player in the role of an Israeli soldier whose mission it is to fight stone-throwing protesters in a Palestinian village on the Gaza Strip.

The aim of *Intifada* is to rack up a gruesome list of Palestinians killed outright, seriously injured, jailed, or dying in hospital.

If the player is killed, an ambulance is shown carting him off with the caption: "You are dying because of burns over 90 per cent of your body. You are another victim of Arab terror".

The end caption reads: "Your excellent performance in quelling the rioters has helped the Right wing half of the Government. Your country is most grateful. Keep up the good work."

A Tel Aviv based journalist who



• Gaza Strip: Grim reality becomes sick computer game

had seen *Intifada* told *Express*: "The game was confined to the town of Rehivet which is South West of here. Whilst circulation is very hush hush it is spreading quickly."

He indicated that a right wing organisation is behind the PC game.

However, there is no suggestion that this game has any official approval.

Recent weeks have seen an upsurge in right wing feelings throughout Israel prompted by violence and rioting on the West Bank.

## Weather or not to go shopping

When it comes to getting the public's money, supermarkets have to take the biscuit.

Gateway is currently testing a software system which links its chain of foodstores with the Met Office. The store wants to keep abreast of weather changes because, apparently, this affects people's shopping patterns.

The *Datasolve* program will feed weather patterns into Gateway's stock control system giving it the chance to analyse shopping patterns to their hearts content.

## The benefits of computing

Anyone who has spent an afternoon in a dole office will be pleased to hear about the latest computer on the market.

Bene is a handheld pocket sized machine which will assess people's benefit entitlements within a few seconds. The machine can work out housing benefits, family credit and income support. It's been programmed with 1989 benefit rates but can be updated every year.

So, instead of complicated and time consuming paperwork, welfare workers can assess people's needs quickly. And they'll get their figures right. Bene costs £76.50.



### TOP 20 Full Price GAMES

- 1 Robocop** OCEAN  
Spectrum, C64, CPC, ST, Amiga, MSX
- 2 Populous** ELECTRONIC ARTS  
ST, Amiga
- 3 Microprose Soccer** MICROPROSE  
Spectrum, C64, C64
- 4 Operation Wolf** OCEAN  
Spectrum, C64, CPC, ST, Amiga
- 5 Run the Gauntlet** OCEAN  
Spectrum, C64, CPC, ST, Amiga
- 6 Dragon Ninja** OCEAN  
Spectrum, C64, CPC
- 7 Afterburner** ACTIVISION  
Spectrum, C64, CPC, ST, Amiga
- 8 Arcade Muscle** US GOLD  
Spectrum, C64, CPC
- 9 Emlyn Hughes** AUDIOGENIC  
Spectrum, C64
- 10 WEC Le Mans** IMAGINE  
Spectrum, C64, CPC, ST, Amiga
- 11 Fun School 2** DATABASE/MANDARIN  
Spectrum, C64, CPC, ST, Amiga, BBC
- 12 Renegade 3** IMAGINE  
Spectrum, C64, CPC
- 13 Middle Earth** MELBOURNE HOUSE  
Spec, C64, CPC, ST, Amiga, PC
- 14 Double Dragon** MELBOURNE HOUSE  
Spectrum, C64, ST, Amiga, PC
- 15 In Crowd** OCEAN  
Spec, C64, CPC
- 16 Football Manager 2** ADDICTIVE  
Spectrum, C64, CPC, ST, Amiga, PC
- 17 Pacland** GRANDSLAM  
Spectrum, C64, CPC, ST, Amiga, MSX
- 18 Barbarian 2** PALACE  
Spectrum, C64, CPC, ST
- 19 Batman** OCEAN  
Spectrum, C64, CPC, ST, Amiga
- 20 Thunder Blade** US GOLD  
Spectrum, C64, CPC, ST, Amiga

### TOP TEN Budget GAMES

- 1 Turbo Esprit** ENCORE  
Spec, C64, CPC
- 2 Treasure Island** CODE MASTERS  
Spec, C64, CPC
- 3 Fast Food** CODE MASTERS  
Spectrum, CPC
- 4 Shanghai Warriors** PLAYERS  
Spec, C64, CPC
- 5 Ghostbusters** MASTERTRONIC  
Spec, C64, CPC
- 6 720** KIXX  
Spec, C64, CPC
- 7 Spy Hunter** KIXX  
Spectrum, C64, CPC
- 8 SAS Combat** CODE MASTERS  
Spectrum, C64, CPC
- 9 Pinball Simulator** CODE MASTERS  
Spec, C64, CPC
- 10 Hardball** KIXX  
Spectrum, C64, CPC, Atari 8-bit

RE re-entry • NE new entry • Last week's positions  
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# YOU PAYS YOUR MONEY

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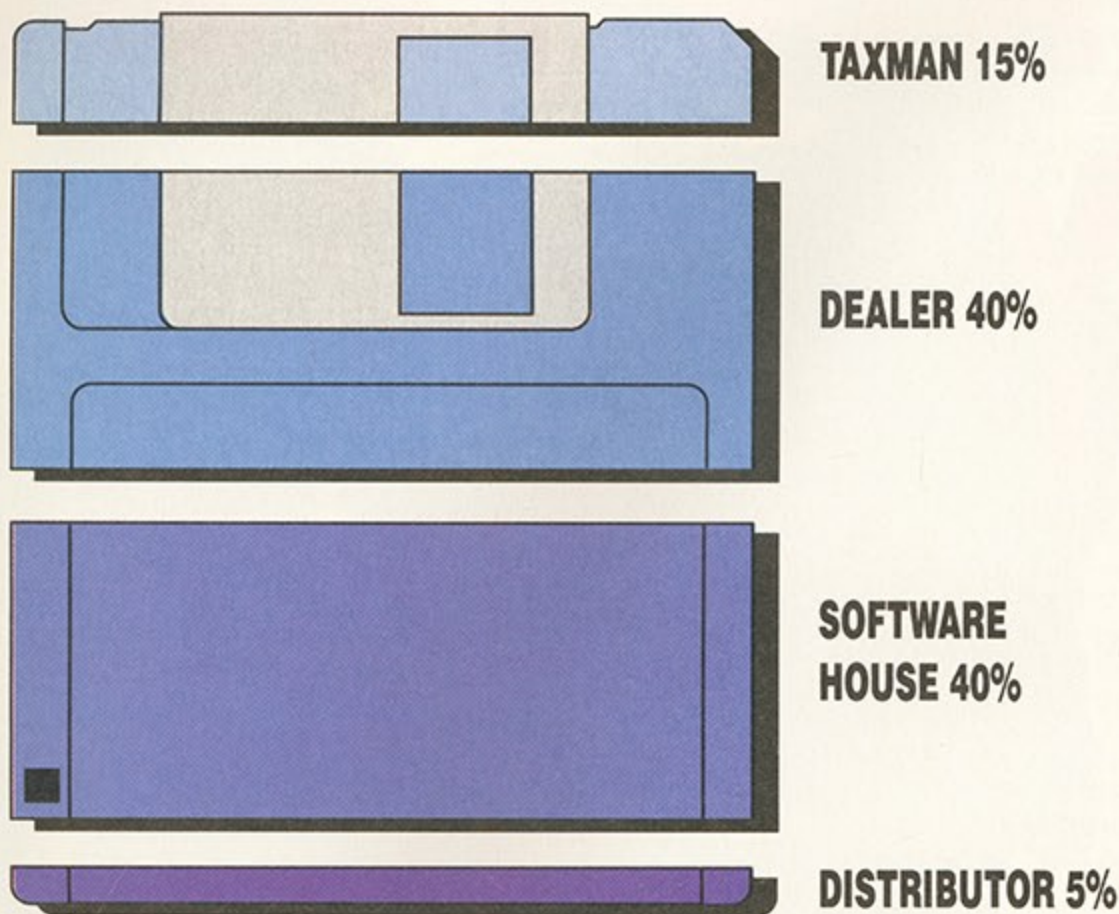
*Thousands upon thousands of people are expending huge amounts of energy on getting their hands on the few quid you have decided to spend on a game this week. They spend their working hours trying to appeal to you, trying to be nice to you, trying to attract your attention.*

*Rivals within the software industry and from other leisure industries have to be beaten off before your cash is sitting snugly in the bank account.*

*Their toils will call upon extraordinary talent, back-breaking hard work, and, just sometimes, squalid dishonesty.*

*Here, Colin Campbell reveals what happens to your money once it's passed over the counter. We investigate the machinations of the computer games industry and ask: Are you paying too much?*

## Who gets the dosh?



The game you've just bought cost £20. The taxman gets 15 per cent of that straight away, no messing: £3 of your money just went into the Treasury coffers. It's not that the Government feels any particular need to tax games. Most consumer products carry a 15 per cent VAT charge. Books, food and kids' clothes are currently amongst the few exceptions.

The dealer stands to make a fair few quid. His cut is about £6.50. Dealers aren't enormously rich people on the whole. When the industry starts babbling about cutting their whack the dealers get hopping mad and threaten to go bust.

Software houses don't like software dealers going bust because games can't be sold through Estate Agents or shoe shops. If there's even a small town without a dealer it makes them nervous.

On the whole, software houses don't like chain stores having the run of things because they are a tad too powerful and always call the shots. Multiples such as Boots and WH Smiths are harder to sell games to and are forever worrying about shelf space and profit margins.

Squeezed in the middle are the mail order outfits. They can cut prices because they don't have overheads in the same way as dealers. It's worth noting that many retailers have their own, wholly separate mail order operations.

The distributor's cut is somewhat smaller at £2.60. There are only a few of this lot and most of them are very big. Names such as Centresoft, Microdealer and Leisuresoft won't mean much to you but the trade always has its eye on them.

Essentially, they are the middle men. They move thousands upon thousands of games around the country every week. They do an enormous amount of business but they don't get so much on each individual game.

Some software houses have attempted to bypass distributors by "selling direct". Because distributors are geared up to moving bits of software around the country and software houses are not this experiment has proved to be a bit of a disaster. Electronic Arts spent a good deal of money finding this out.

That leaves just under £7 for the software house. That is for a full priced 16-bit game. As you can imagine, the figures are somewhat smaller on a minor budget game. Read on for what the software house does with its money.

The plastic box, inlay card and cassette in a normal budget game is worth 25p. Software houses pay about 50p for a 3.5 inch disk when buying in bulk

## Who gets paid what?

For the first four categories you can add between 30 per cent and 60 per cent in expenses, company car and all those little perks. Some software bosses hardly pay for their own food. They spend too much time eating out and having business lunches (we jest not).

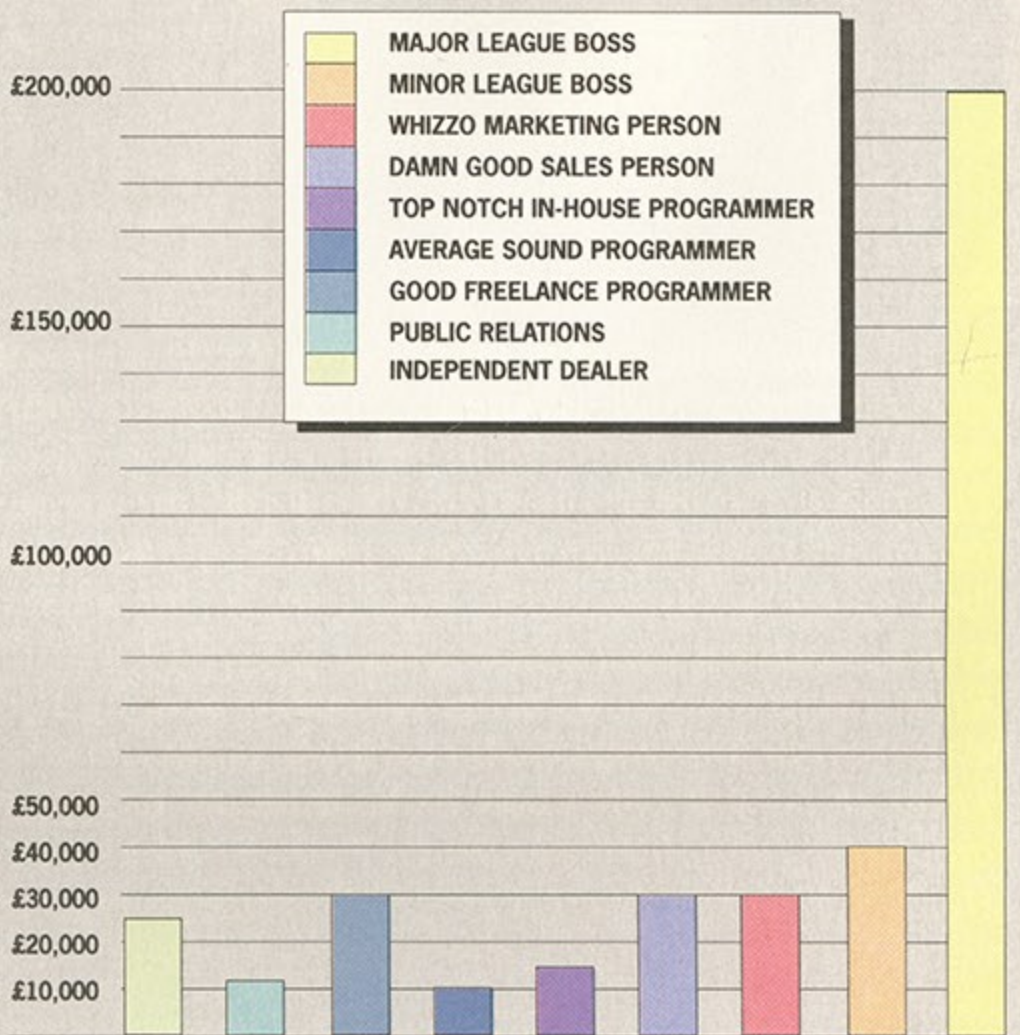
Then there are trips to the US and Japan to tie up deals. They enjoy it but it's damned hard work traipsing around in a suit being professional. More than one software boss has dropped out to go back to programming or to wander across some distant land.

As always, you're paid what you are worth. One promising PR woman became the boss of a leading software publisher after only a few years. Lads selling ads on magazines are now earning lots of money with their knowledge of marketing. More than anyone, sales people will earn depending on how good they are - i.e. how much they sell.

Programmers are all paid on merit. This lot are the most prone to being ripped off. It still happens but if you're on a nine to five you're going to earn a fair whack. Really good programmers go it alone and can make serious money. David Braben (*Elite*, *Virus*) is worth £300,000.

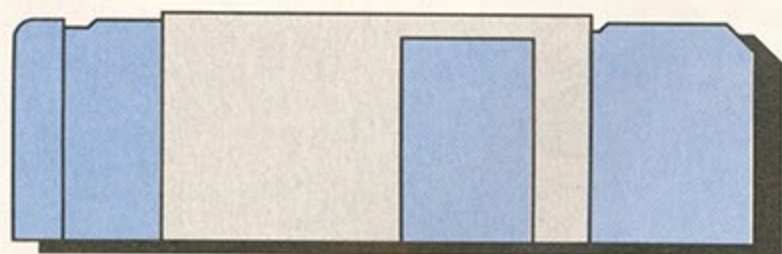
Dealers are limited by how many people come in to the shop. Most just make an average living. Those with two or three well situated stores can become rich (they can also fall flat on their faces). Those with back street shops scrape to survive. Size, talent and luck count in this, and every other industry. But games software is still relatively young and one commodity is so rare as to be worth a fortune - good ideas.

(The National Average wage across all jobs is said to be £13,500)

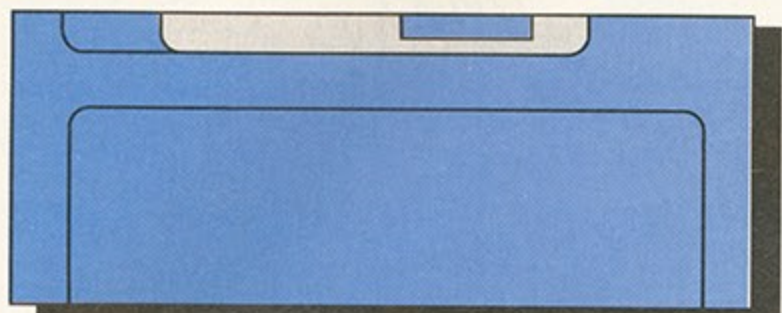




# A publisher's lot



**DEVELOPMENT 30%**



**ADMIN and  
ADVERTISING 40%**



**MANUFACTURING  
25%**



**PROFIT 5%**

*A full colour double page advertisement in a leading monthly magazine can cost £2,000. Advertising can take one of the largest bites out of a firm's budget*

If you think publishers are enormously rich, think again. A quick search through the Companies House records reveals that, whilst some are making a healthy living, many are losing money or making pathetic profits.

Publishing computer games is a high risk business. It amounts to little more than a gamble. All publishers can do when they release a game is cross their fingers. No amount of advertising will make a game successful (though having no advertising makes a sure-fire loser). It is you who decide what will be a winner and the publishers are only too aware of this.

Our chart shows a bog standard formula to producing a profitable and safe computer game. If it sells a reasonable number everyone will have made a profit.

In days of old software houses could have worked to that formula. These days, you lot are far too fickle. The stakes are too high and the competition is too tough.

A big name game might cost £1.5 million before you even see it. Paying for a licence, a stand at the PC Show and an extensive advertising campaign will eat all that up. One and a half million pounds will have been spent on a game which may well stiff.

No software house could possibly survive just selling full price games to UK gamers. They need the European, American and sometimes Australian markets. They need to be able to put games out at budget prices after their full price life is over. Then there are compilations and even bundling deals with manufacturers. A good game will be milked until it squeals. A duff game is swept out of view with alarming speed.

Most of the software houses you know are successful - they've survived. The days of someone releasing a game which almost immediately turns them into a millionaire are long gone.

Some firms have to go a few years making terrible losses until they make money on the big game which has a long and expensive development history behind it. Development costs are high. Risks are high. Everything takes a long time.

That is why the price of full price computer games isn't going to come down. You pay for the top man's flash car and trips to Hawaii and posh lunches every week. But he bloody well earns it.

## Licensed to spend

All these prices are enormously negotiable. Some brilliant film tie ups can be picked up at bargain prices. Ocean bought *Robocop* before it became a household name for a reputedly small sum (few companies will give specific figures). That game has been number one in the charts since Christmas.

One software boss told *Express* he dropped out of the bidding for one of last year's big arcade machines when it hit £250,000. That game did not reach number one.

Many licence-owning agents will go round the software industry taking in bids and upping prices until they get the best deal. Royalties of up to ten per cent are paid on almost all games as well as the down payments mentioned here.

Final prices depend on the negotiating abilities of the publisher and the amount of sales he will promise the agent.

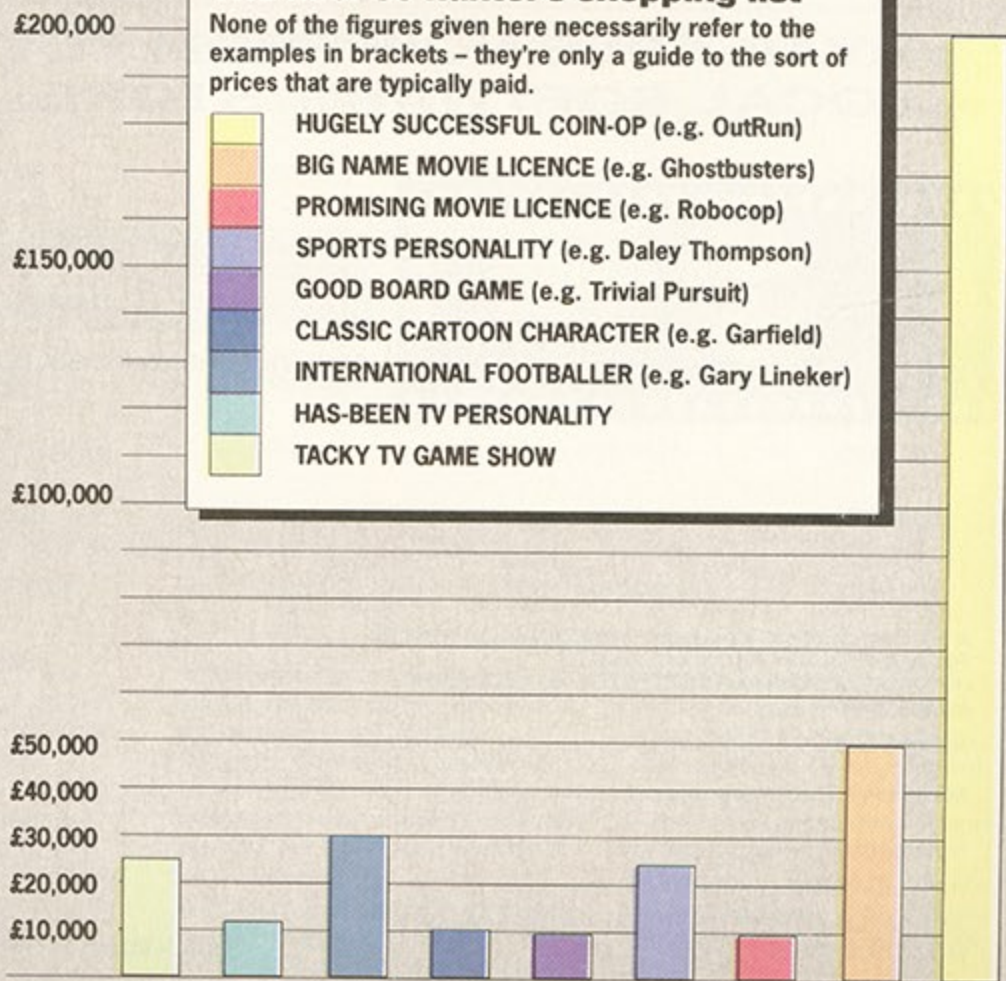
Think of a famous name and it will either have become a game licence or been considered as a game licence. Some areas in the entertainment world are best left alone. Books have, on the whole, failed to make any headway. *Not a Penny More, Not a Penny Less* was a best selling book but made an awful game. *Fourth Protocol* and *Hunt For Red October* are among the few successful exceptions mainly since they incorporated action relevant to the books.

Cartoon characters are difficult (*Garfield* did well; *Scooby Doo* from *Elite* flopped). Soap operas are disastrous (*Eastenders* and *Grange Hill* both failed miserably). Comedy is almost impossible (*How to be a Complete Bastard* and *The Young Ones* were both ghastly). Something like *Naked Gun* would cost a fortune and would be a real pain to turn into a good game.

Personalities are also dodgy. US Gold fared badly with Charlie Chaplin and didn't even bother with the Marilyn Monroe and James Dean licences previously picked up.

### The licence hunter's shopping list

None of the figures given here necessarily refer to the examples in brackets - they're only a guide to the sort of prices that are typically paid.



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# Ten steps in the life of a game

Once a software house has got a game together it has to sell it on to people whose job it is to sell it on to you - the distributors and dealers. Between these three strata there is little love lost. But they have to get on because if they don't it's the job centre ahoy.

There are a good deal of anomalies but the basic formula for getting a game from the drawing board to your micro is simple enough. Here's how they do it:

- 1) Someone has an idea for a game.
- 2) The rights to produce the game are secured through a licence if necessary. Games designers are consulted for ideas, scrawl them on drawing boards and come up with a complete design.
- 3) The boss gets programmers to write the game by either through an in-house team or hiring freelance writers and/or a software development team. Many games are written on all major formats in unison. This takes a long time and is fraught with difficulties.
- 4) Months later, when it's ready, the artwork is drawn, tapes duplicated and the lot stuck in a box. This job is done by a duplicating house which will often offer a complete service.
- 5) During this time the boss will have had to put up with lots of annoying advertising people from all games magazines. Prices are haggled over, artwork is got together, ads are booked. Magazine advertising is the software publisher's most effective way of getting info across to you. As such it costs plenty.
- 6) For maximum publicity review copies are shipped out to magazines. Sometimes previews or screen shots will be fed to the mags in advance. An exclusive will be granted to the



• WH Smiths: One hell of a lot of power

one mag who, through an unspoken agreement, will look on the game favourably in return for being the first to review it. Reviews are massively important.

7) As many games as possible will be sold to a handful of distributors who, on a preordained day, will take delivery of thousands of units.

8) Their sales people will get on to the dealers and take orders. Dealers try and work out how popular the game will be and orders accordingly. The distributors ship the games to the dealers by courier.

9) More sales people will turn up to see Mr and Ms Dealer and give them a right earbashing about how well the game will sell. They'll dump a load of cardboard cut outs and posters to stick on their walls.

10) You've seen the ads, you've read the reviews. Now you go out and buy the game. Everyone is checking sales returns and charts to see if they've wasted their time and money. If not it's doubles all round at the local on a Friday afternoon.

## Machine specifics

In the UK the Speccy market is still the best for shipping large volumes. You expect 20,000 sales during a game's full price life just as long as it gets a sniff of the charts. The CPC is always some way behind.

In European terms that's evened out since that machine is enormously popular in France and Spain. The 64 has

a good following in all countries. As a machine it's still selling in huge quantities and mostly to gamers.

Here, ST games are likely to sell more than those of its Commodore rival. In Germany though the Amiga market is enormous. The PC is increasing in popularity but still lags behind as a games

machine. Europe wide a 16-bit game needs to sell about 10,000 to cut the mustard.

Of course, once a game becomes a budget title that figure goes up a great deal. However, there's not much in this for publishers who make pennies on each budget game sold and even less for a single contribution to a compilation.

## Ten games and how well they sold

TYPE	NAME	UK PUBLISHER	FIGURE	FORMATS	WHERE
COIN-OP	OUT RUN	US GOLD	600,000 (EST)	ALL FORMATS	EUROPE
MOVIE LICENCE	GHOSTBUSTERS	ACTIVISION	2,000,000+	ALL FORMATS	WORLDWIDE
BOARD GAME	TRIVIAL PURSUIT	DOMARK	450,000	ALL FORMATS	WORLDWIDE
RPG	DUNGEON MASTER	MIRRORSOFT	60,000	ST ONLY	EUROPE
FLIGHT SIM	FALCON	MIRRORSOFT	95,000	ST, PC, AMIGA	EUROPE
ADVENTURE	THE PAWN	RAINBIRD	100,000+	ALL DISK FORMATS	WORLDWIDE
BUDGET GAME	BMX SIMULATOR	CODE MASTERS	500,000	ALL FORMATS	EUROPE
OTHER	KAT TRAP	DOMARK	6,000	ALL FORMATS	EUROPE
OTHER	HELTER SKELTER	AUDIOGENIC	3,000	ALL FORMATS	EUROPE

We chose a cross section of some of the best known games to appear over the past few years. All are remarkable for differing reasons. Figures quoted are full price sales only.

● *Out Run* cost US Gold a small fortune and paid dividends. It's still making money having just been launched on the PC and will soon be budgetised for 16-bit owners

who haven't yet bought it. Gold preferred not to comment on the figure, although our estimates our understood to be accurate.

*Ghostbusters* and *Trivial Pursuit* were both enormously successful and were milked for all they had. ● *Dungeon Master's* tally of 60,000 on the ST is extraordinary. And for a flight sim *Falcon* has done incredibly well.

● Compared to arcade games, adventures don't attract much in the way of sales. *The Pawn* (Magnetic Scrolls) is a notable exception.

● Budget games are dirt cheap and sell lots. But half a million is way above the odds.

● Thousands of games have failed to spark consumers imagination. We chose *Kat Trap* because it was

designed by a consumer for a monthly magazine competition.

*Poor Helter Skelter* was one of those games which the publisher thought would be a winner, was welcomed by quite a few reviewers, but was largely ignored by the paying public. Thanks to Domark and Audiogenic for those figures. Nobody else dared to admit their biggest stiffs.

# EXPRESS MAIL

## Dear Reader

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

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

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

## CHEMISTRY OF ADDICTION

Am I a computer junkie? Going by the shock horror feature (News, Express 21) it may seem so. "Dr Freeman quoted cases of young men who had reached their mid twenties and had never taken a girl out" you say - well I haven't (I haven't reached my mid twenties either yet, but that's besides the point) because of religious belief.

Surely it's better to get addicted to

vivid reds and greens in the tubes on the cover (except potassium permanganate and copper sulphate) it's no surprise that people get hooked on computing instead.

## PCW PATCH

You seem to have a lot of people complaining about your comments and space on the PCW range. I, on the other hand, am amazed at how well you prevent your magazine from over-

emphasising the PCW. After all, you are in the same office as 8000 Plus, aren't you? It would be all too easy for you to copy editorials from 8000 Plus in your Magazine.

If any computer buff wants more detailed information on their own model and less on other models they have only to do one thing: read the magazine specific to that model (after all, there must be at least one mag per machine now).

I own a 9512 and would not swap it for anything. I can't stand the look of Dot-Matrix print. I can do DTP with LocoScript (or WordStar or anything) and, with a few simple codes, 'Wordstream' convert it into fully typeset material ready to paste-up.

Could you explain why Amstrad PCW magazine continually claims to be 'the best-selling PCW magazine' when there are now only two for that machine and their figures represent those of two magazines rolled into one.

M J StClair, Bristol, Avon

● We're down the corridor from 8000 Plus but we try to keep our approaches different. They have the time to do the in-depth features and tutorials; we emphasise the topical and newsy side of things. As you say, if you want more details, you can select from a wide variety of excellent magazines specific to your machine, such as Amstrad Action (CPC), PC Plus (PC), ST Format (ST), Amiga Format (Amiga) and 8000 Plus (PCW). (A totally unbiased selection, though they all happen to be published by us!).

Amstrad PCW magazine's claim to be the best seller, whether by composing sales

figures for its progenitors or not, is an interesting piece of arithmetic. Neither of the two titles which merged to make it had sales over half that of 8000 Plus; watch the news pages for developments...

## THE CHECK'S IN THE POST

Tremble in your shoes, editorial scum! I have shown issue 26 to my lawyers, who reckon we can screw you for millions on account of the irreparable damage to my literary career caused by your presentation of me as unable to spell 'twilight'. I call on you to name the guilty spelling-checker that substituted 'twilight' throughout. The public should be told.

Disgusted of Reading (really David Langford)

● It wasn't my fault. Someone broke in and changed it after we'd gone. It was a Bank Holiday. The spelling checker is bugged. My bike had a puncture. The bus was late. My father died when I was young. My pregnant mother was frightened by a Thesaurus...

## MISTAKEN IDENTITY

I have found two mistakes in your Issue 26.

1) There was no Games Chart! There is a limit to incompetence but a computer mag with no charts, well what can I say?

2) One of you can't add up because for the past three issues your back page has carried a wrong date for the next issue out.

Umair Malik, London



• This man, whom we shall call 'Colin', started on chemistry sets. Now he's a complete

computers than to drugs, smoking, drinking etc? "The victims are often gifted youngsters who are shy and clumsy in early youth" it is claimed. If being "shy and clumsy" are reasons for people getting addicted to computing then isn't it equally possible that if they are not introduced to computers, they could easily get hooked on other things such as books, chemistry sets, electronics apparatus etc? If anything, computer addiction is a lot more easily controlled than any of the other items I've mentioned.

Ahmad Alam, Liverpool, Merseyside

● I think most of the points you raise were dealt with in the editorial comment of the same issue. The not taking girls out and being shy and clumsy were cited as typical traits of potential computer junkies rather than necessary or sufficient conditions so I wouldn't pay too much attention to that.

Looking at my old Thomas Salter chemistry set which had that nauseating little oik on the front with a clean white shirt, sensible tie and brushed hair, and whose chemicals were all milky white instead of the

Don Griffith (Letters, Express 25) mentions that 20,000 staff are to lose their jobs under the Government's scheme for a new computerised DSS. It would be pleasant to think that computerisation will minimise the number of cock-ups the system produces.

Unfortunately, it won't. When I recently complained about a payment that had been delayed by three whole months, I was told by the DSS that their computer had 'rejected' the payment information. If any reader can tell me what this means, I'd love to know: with only a MSc in computing, I can't guess, and the DSS have refused to say. They have also refused to tell me how often they make mistakes like this, on the ludicrous grounds that it is an Official Secret.

Now, I have never really believed the old saw, "To err is human, but to really foul things up you need a computer". I have always preferred to think of the machines as exceptionally powerful tools.

However, a powerful tool in the hands of a powerful fool merely makes for bigger, better cock-ups. When the fool in question is protected by the Official Secrets Act, he cannot even be held to account for his errors. And I have no hesitation in characterising the people in charge of the DSS as fools.

Personally, I would rather deal with the likes of Don Griffith than with a VDU; DSS desk staff may be undertrained, underpaid and overworked, and have every reason to be fed up, but at least they do



not suffer from disk crashes. The Government is dead set on cheese-paring staff cuts in the DSS, and I don't think it will stop until there is a fiasco so huge that even the Official Secrets Act won't hide it.

The really sad thing is that, until then, there isn't a damned thing you or I or Don can do about it.

John Satt, Bedford, Herts

● It's a very valid point. The computer is a powerful tool etc., but so long as people are fed all this nonsense by the media that computers are mystical and magic machines whose

workings are incomprehensible, then the fools who are running our lives can continue to pass off their mistakes as 'computer errors'. It's like a taxi driver who takes you the long way round to get an extra couple of quid claiming 'sorry mate, my taxi made a mistake'.

Owners of home computers, whether a 48K Speccy or an Archie, know better. Great tools, and great fun, but put garbage in and garbage comes out. Perhaps the only thing we can do is keep spreading awareness to everyone else, and keep pointing out to officials that try and fob us off with pathetic nonsense like "the computer rejected your information" that we know they're talking a load of crap.

Anyway, John, tell us what your computer is and we'll send you some software for sending us this week's prize letter. And all prize idiots out there trying to run our lives, watch out: we're not going to be fobbed off much longer.

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- 1) Look, smartypants, there was no games chart because there was a Bank Holiday on the Monday of that issue, which meant the printers needed the finished pages on the preceding Thursday night rather than the Friday, and the Gallup charts don't come out till Friday lunchtime. Satisfied? Mistake indeed! What do you think we are?
- 2) Well, OK, so we make mistakes sometimes.

### HARD QUESTION

I bought HiSoft's DevPac at a special price from your sister mag *ST/Amiga Format*. Normally included in the package is a 68000 instruction set pocket manual not present in the package I received. I assumed this omission was due to the offer being half-price, but just in case I added a note of it to the registration you have to send in for guarantee etc. Within a day I had received the said omission! HiSoft obviously not only stands for High quality Software but also Service.

However, though your article on hard disks had me getting in touch with a manufacturer, I have since heard from a friend that hard disks can only be switched on and off a certain number of times (admittedly thousands) before they 'crash' due to head meeting disk. Is this true, and if so, how serious is the damage?

James Howley, Burnley

- A crash is fatal and your disk is a write-off. However, our Technical Editor assures us that the chances of your disk crashing are very small and do not increase with wear or time. You have a one-in-ten-thousand chance or whatever of a head crash whenever you switch on, whether the disk is brand new or ten years old. A precaution to use though is to let the platter stop spinning and wind down before switching it on again.

### NOT PEDANTIC, JUST PERNICKETY

I am surprised at your lack of medical knowledge! Allow me to enlighten you. Presbyopia is not long sightedness. The two are quiet separate conditions though they do have some features in common and not dissimilar treatments.

Presbyopia - inability to focus on near objects due to hardening of the lens which has a reduction in its ability to change shape occurring around the age of 40. Treatment is spectacles for reading.

Hypermetropia - refractive error in the eye(s) in which the eye is effectively too long. In order to focus on distant objects the lens changes shape as it would normally do for near objects, thus distant objects are seen clearly. For near objects the lens cannot alter its shape any further and they will be out of focus. Treatment is spectacles which will be worn for near and distance vision.

As both of you and Robert Lamb will find yourself forking out the price of a budget ST/Amiga game for your next opticians visit it would be as well not to get your terms confused.

Philip Beed, Lee On The Solent, Hants

- Ah, I see. In other words, presbyopia is what most people would call 'long sightedness'. Sorry, we don't have enough space to be pedantic! Otherwise we'll have to make the type size even smaller, and anyone who can't afford an eye test because they have just bought a game and are long sighted won't be able to read it.

### OUT OF PLACE?

I would like to comment on the Mel Croucher article *Computer Chaos* (Express 25). A couple of the stories were like something out of a Stephen King novel and the *Dirty Harry* movies. There were the cars that set themselves on fire and exploded killing two Ford executives and the French motorist who

was killed just because a stupid French policeman thought he was a criminal who had stolen a car, when he'd actually bought it ten days earlier.

Even though I enjoy your magazine and enjoyed the article, I just felt it was out of place.

Luke Sherwin-White, London

- The 'stories' are all true, excerpts from the publications or sources credited with each story. We simply couldn't invent some of those ridiculous cock-ups that have happened when important computers are put in the hands of a div.

### BRAIN WAVE

My advice to any other kids like me is don't go mad buying games - one or two won't hurt, but get games where you have to use your brains, a bit more like simulators and adventure games, or maybe even educational games.

And just think what you can buy with twenty quid, like fifty bottles of cola, or with a few more paper rounds you could buy a small word processor, or about 40 issues of *New Computer Express*. I doubt that any games addicts would take my advice but games aren't everything.

Martin Rubiera, Ilford, Essex

- I wish I'd followed your advice. I'd have bought so many coke bottles the empties would have added £1,000 to the value of my flat.

### A MORAL TALE

As a creator and ex-designer of virus programs on more complex computers, namely Prime, Unix and Hewlett Packard multi user systems, I tell you virus-writers now, "it does not pay". For example, through my own stupidity, I managed to get myself thrown off a Pascal diploma course at a local technical college.

I designed programs to load up into critical parts of the system, namely the Spooler queue, Master File directory and

log in segments of individual user IDs. Also, I created a program to monitor the operating system (PRIMOS) to look for users logging in, recording user IDs and passwords and posting the created files to me on the built in Email facility.

Finally, I created a background program to run with the operating system, doing absolutely nothing except watching the system time for a certain date, preset by me for a time when I would be on line during a scheduled programming session, request me to type in a password and shut down. Alas, I was thrown out before this date, so it didn't get the correct password, and promptly set about erasing very important programs from the hard disk and any mag tape drives hooked up at the time.

It made me feel good at the time, but not having any qualifications that mean anything to anybody now, make me realise that it was a really stupid thing to do. So any prospective virus or logic bomb writers WATCH OUT!

Jimmy (full name and address supplied)

## SNIPPETS

### ONLY 2 HAIL MARYS, THEN

...I would just like to point out that I don't have many pirated games in my collection, maybe 10 or 12...

Jumping Jack Flash

- And Jack the Ripper didn't kill many people, only about six. I think we ought to hear more about the good side of Jack the Ripper.

### SENTENCE CONSTRUCTION

With reference to the MP bringing prison sentences against hackers, I think the same sentence should be brought against the virus writers...

Tony Robson, Oakham, Leics

- Good idea: intent to damage data with malice aforethought, that sort of thing. Maybe an amendment to the Hacking Bill?

### EXPOSED!

...Dave Langford's exposed himself now. All those articles in *8000 Plus* implying that he uses a PCW, and now the underhanded and treacherous admission that he's been using *Wordperfect 4.2* on a PC all the time (Express 25)!

John Smart, Hitchin, Herts

- Dave does use a PCW (with Protex) as one of his word processing setups, but to my certain knowledge has never exposed himself.

### NO PROBLEM

I would like to thank you for your help in solving my problem (Tech Tips, Express 25). Many readers rang to offer help. Thanks in particular to Steve Wood and Jonathan Cohen.

E Davies

- Like the saying, er, says, a problem shared is, er, not your problem any more.

### DUG: HIS OWN GRAVE?

I have just read the letter from Dug Bartham (Letters, Express 26), and as a fellow 'A' Level Computer Studies student, I sympathise with him for his misfortune in losing all his A-level work to a virus. However, there are many lessons to be learned if not re-learned from his dilemma.

1) Viruses  
From Dug's letter I am assuming that his computer is an ST or Amiga. He should have known that people (?) have been spreading viruses on these machines for quite a while and as such he should have taken the pertinent precautions - i.e. don't run copies of programs (especially games) from 'friends' or other sources without write protecting the disk, and after running the program switch off your machine. This is the simplest precaution and it only

takes a minute or two of hassle.

2) Backups  
Dug is not the only Computer Studies student that has lost his/her project. Indeed, my project was corrupted a week before the deadline date, but because I took numerous backups all I had to do was load in the most recent version, thus losing only a small amount of work.

3) Copies  
As stated before on numerous occasions in the pages of Express, copying a program from someone else is illegal. However, most people (especially students) simply cannot afford the price of most of today's packages. This can be negated (especially if, like me, you own a PC) by using Shareware programs. If you register for the programs the cost compared to equivalent commercial packages is very reasonable. However, if people do not register

their copies in this country, it could mean that authors could be reluctant to let their latest masterpiece onto the Shareware market. Therefore register your packages if you use them instead of a comparable commercial program.

Adrian Porter, Birmingham, West Midlands

...Amazing! The writer is studying A level Computer Studies? Why didn't he make a backup copy of his precious project? Why didn't he switch off his computer and then on again before using an unprotected disk to kill any potential virus?...

H Knight, Bolton, Lancs

- We've had a lot of letters about Dug's misfortune, most along the lines of it's-his-own-fault-he-should-have-taken-backups. Well, perhaps, but how many of us actually do take backups regularly? Like checking the oil and water and

tyres on the car every day, it's something we all know we should do but somehow never get round to. Careless he may have been, but as Adrian says, let's try to learn lessons from it rather than having a go at Dug.

### BALL'S IN HIS COURT

After reading what Dug Bartham want to do to the person who ruined his A level project, it may be of interest to note that in a recent episode of the humorous radio program with the misprinted title, *Star Trek II*, the BBC's Mr Computer, Fred Harris, was 'castrated'. Surely that nice Mr Harris is not involved in anything so sordid as computer viruses (perhaps you could do a Frank Bough on him).

Andrew Sprackling, Exeter, Devon

- We phoned Fred to ask him but I think his phone must be unobtainable, because all we could hear was a high-pitched whine.



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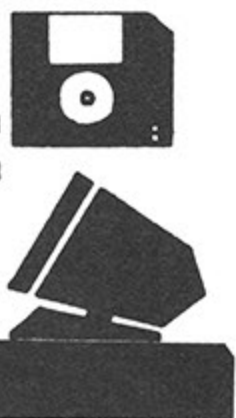
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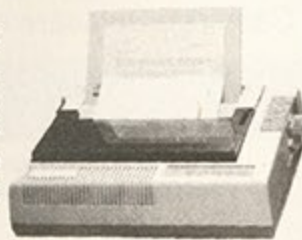
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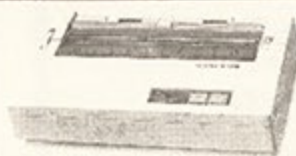
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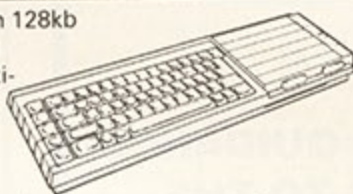
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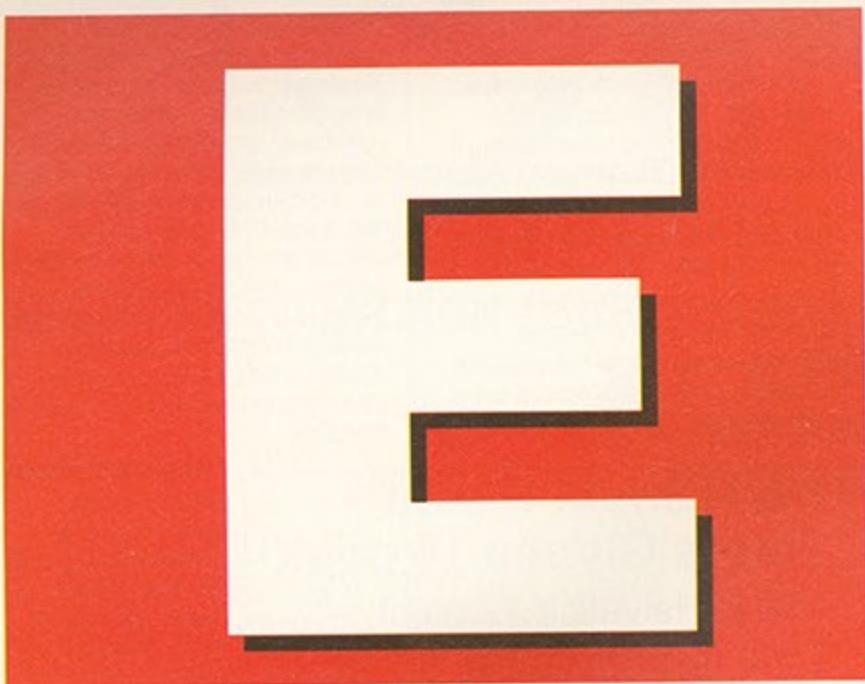
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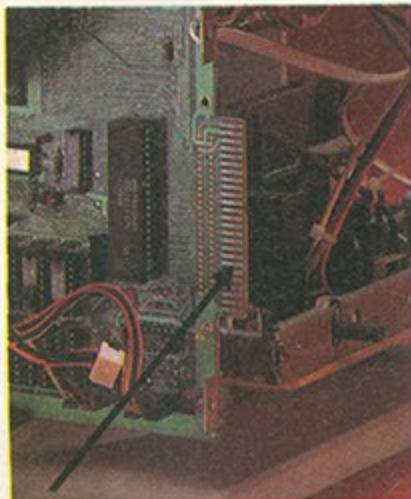




**EBCDIC (T):** Pronounced IB-SA-DIC, this is a code similar to ASCII which is used to represent letters and symbols by numbers within a computer. Whereas ASCII goes continuously (a is 97, b 98 and so on to z) EBCDIC is discontinuous. Mainly used in America. See also **ASCII**.

**ECONET (T):** A local user network used by the BBC computers. The network allows several machines to share peripherals and data and is available in the form of firmware on ROM. Econet is mainly used in schools and colleges to make the most of available equipment and to illustrate the LAN. See also **Thernet, LAN, network, WAN**.

**EDGE CONNECTOR (T):** A piece of computer circuit-board bearing metal connectors, accessible from the rear of a computer, used to connect peripherals such as printers and drives. Edge connectors were mainly used by early home computers as an alternative to 'real' but expensive interfaces. (The PCW and Atari XL have edge connectors). See also **Centronics**.



• The PCW's edge connector: cheap alternative to 'real' interfaces

**EDITOR (T):** Computer program which is used to display, alter and revise text and program files held on floppy disk. See also **word processor**.

**ELECTRONIC ARTS (CO.):** American company which set up in the

UK almost two years ago. Since that time it has produced *Interceptor*, a superlative flight simulation for the Amiga, and *Populous*, destined to become the game of the year.



• Electronic Arts' Populous

**ELECTRIC DREAMS (CO.):** Originally a separate software house which became a label under the Activision umbrella. Recent releases include *R-Type* and *Super Hang-on*.



• The classic space trading game Elite, from Firebird

**ELITE (G):** Definitive space trading game which was the first of its kind. 3-D interactive graphics, space flight simulation and tactical manoeuvring and trading made it a best seller across all formats. See also **Braben**.

**ELITE (CO.):** Software house which shot to fame in the mid '80s with a string of highly successful coin-op conversions such as *Commando*, *Ghost 'n' Goblins* and *Paper Boy*. The

company has slipped from the limelight recently after releasing indifferent games such as *Mike Read's Pop Quiz*.

**ELIZA (P):** Famous artificial intelligence program of the late '60s and early '70s written with the language LISP. The program simulates a session with a psychotherapist in which you ask questions and it attempts to answer them. In practice, the program is not very convincing, merely picking up on portions of your responses and echoing them back to you, but it neatly illustrates what can be done with very simple AI and is fun to play with. It is available for many machines sometimes under other names. Here is a sample consultation with Prof. Eliza:

HOW CAN I HELP YOU?

I'm not feeling too good

DOES IT HELP YOU TO TELL ME

YOU'RE NOT FEELING TOO GOOD?

Not really, I just need to

talk to you

YOU'RE NOT REALLY TALKING

ABOUT ME ARE YOU?

What do you mean?

ARE YOU ASKING ME?

No

DOES IT HELP TO BE NEGATIVE?

Oh, shut up

I'M NOT SURE I UNDERSTAND

THAT

Goodbye

GOODBYE

**EMAIL (T):** 'Electronic mail' which is transmitted from one computer to another on a network and held on backing storage until read. The mail can then be stored or discarded. Electronic mail offers users the ability to transmit messages many times faster than by conventional postal means.

**EMAP (CO.):** One of the largest periodical publishers in the UK. Notable for its recent purchase of the premier computer games magazine *ACE*.

**EMBEDDED SYSTEMS (T):** Computer systems which can't be programmed for uses other than those the device is initially set up for. Embedded systems can be found in cameras, washing machines, cars and zebra crossings, to name but a few.

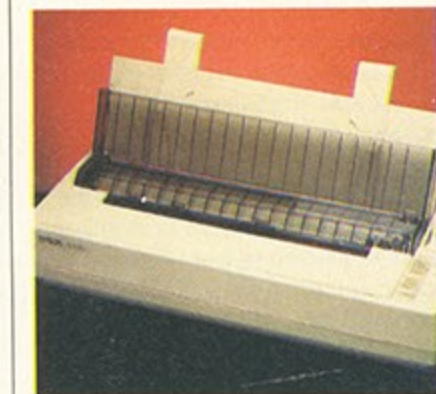
**EMULATOR (T):** Device, hard or software, which is used by one computer system to make it appear to be an entirely different system, thereby allowing it to run applications and other software provided for the emulated machine. Thus owners of computers such as the Atari ST can run emulators that make their machine behave like an Apple Mac, IBM-PC or CP/M machine at a fraction of the cost of these computers.

**ENCOUNTER (G):** *Battlezone* clone with simple sound, graphics and gameplay which nevertheless became a huge seller on the Atari 8-bit and Commodore 64 due to it being incredibly addictive.

**ENTERPRISE (C):** Home micro of the early '80s which evolved through several names (Elan, Flan) before finally becoming the Enterprise. Although the machine was innovatory in its range of interfaces and tech spec, it remained obscure due to its high price and extreme late arrival in the High Street shops.

**EPROM (T):** Erasable Programmable Read Only Memory. An integrated circuit which can be used to store programs and data in its circuits permanently. This data can be erased by 'shining' ultra violet light onto its surface and the chip can then be written to again. Compare with **ROM, PROM**.

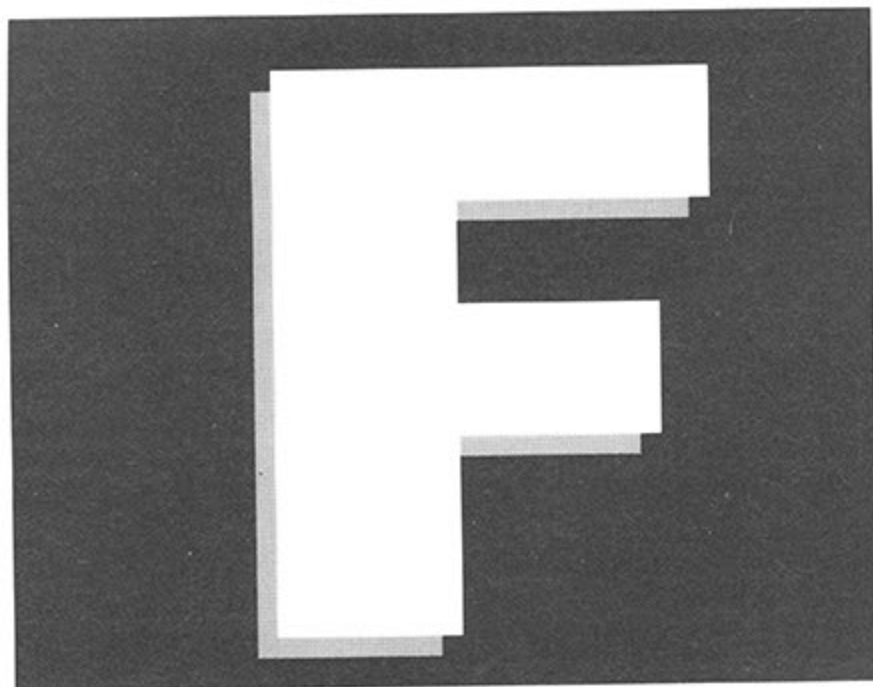
**EPSON (CO.):** Japanese electronics company which markets a range of PC compatible machines but is best known for its superlative range of printers. The control codes embedded in these printers have become a standard throughout the printer manufacturing industry with all the best selling printers offering an Epson-compatible mode.



• Epson control codes have become industry standards for printers

**ETHERNET (T):** A type of local area network which is extremely popular among small to medium sized businesses needing to share data and peripherals such as printers. A large number of manufacturers market ethernet networks, but the largest and most well known is the American company Novell. See also **Econet, LAN, WAN, Network**.

**EXPLODING FIST (G):** Probably the most popular of the 'kick 'em to death' games which never made it to the 16-bit machines.



**FANZINES (GG):** 'Fan magazines'. Home-produced amateur magazines aimed at particular machines and usually with a readership in three rather than four figures. The best known of the fanzines was Spectrum magazine *The Bug* which ceased publication recently when its founders went up to college. Other notable fanzines are the now defunct *PCW File* and *CPC fanzine Wacci*.

**FALCON (G):** F-16 flight simulator which achieved great popularity and enormous sales during Christmas '88 when it shot into the software charts at number seven on the ST and Amiga.

**FATAL ERROR (T):** Event within a computer which stops the system working - usually caused by a bug in a program which the machine is running. See also *bug*.

**FAX (T):** Short for 'facsimile'. A device which is either stand-alone or in the form of an add-on card for a personal computer, which is used to transmit text, photographs and other paper documents around the world via ordinary telephone lines.

**FERROUS OXIDE (T):** Magnetic substance which is used to coat floppy and hard disks and tape, thereby allowing them to store magnetically encoded data.

**FIFO (T):** First In First Out. A method of storing and retrieving data in a list or 'stack' so that the first item stored is the first item retrieved.

**FILE (T):** A collection of information stored on a floppy/hard disk or tape streamer which can be manipulated by a computer running applications such as a spreadsheet, word processor or database.

**FIRMWARE (T):** Software which is stored on integrated circuits such as ROMs, PROMs and EPROMs.

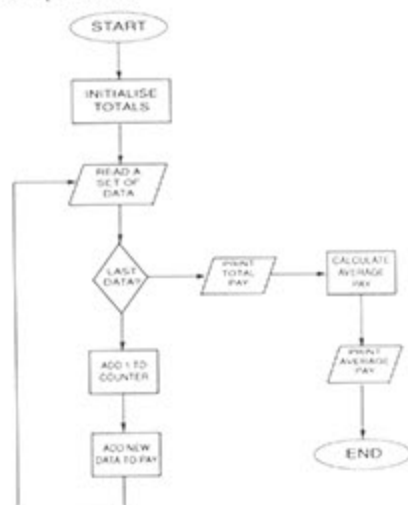
**FIXED DISK (T):** Disk drive in which the disk itself is inflexible and cannot be removed from the drive mechanism. For more information see *hard drive*.

**FLIGHT SIMULATION (GG):** Often just 'flight sim'. Generic term describing a range of games programs which allow the player to fly accurate mock-ups of well known aeroplanes such as the Spitfire, F16 etc.

**FLIGHT SIMULATOR II (G):** Definitive flight simulation program from Sublogic corporation, which offers the whole of North America as the available flight area. Lots of features - all at an incredible resolution - can be flown around and through such as the Statue of Liberty, Manhattan Bridge, Space Needle etc. Recently, Sublogic released a collection of scenery disks covering Japan, Europe and America in even greater detail.

**FLOPPY (T):** Type of magnetic disk which is constructed from a flexible plastic disc coated in ferrous oxide and held inside a cardboard or plastic sleeve. The floppy is used by computers to store data and programs upon their surface. See also *disk drive*, *hard drive*, *fixed disk*, *ferrous oxide*.

**FLOWCHART (T):** A collection of geometric shapes which symbolise the steps of a computer program. The symbols are used to build up a representation of the tasks the program will ultimately perform, hopefully trapping any possible problem areas in the process.



**FOFT (G):** This highly controversial game received a mixed reception in the press - the general consensus was that it was a great opportunity missed.

**FONT (T):** The style of a character set on screen or paper. *New Computer Express* uses fonts such as Helvetica and Glypha; *The Guardian*, after its recent redesign, uses Helvetica and Garamond fonts. Font (originally 'fount') is now used to mean the style regardless of size; strictly Garamond 12 point is a different font from Garamond 15 point, but both are the same typeface. The advent of desktop publishing on computers has changed the way these traditional printing terms are being used. See also *typeface*.

**FRACTALS (T):** Branch of mathematics defined by Prof. Benoit Mandelbrot in an attempt to create order from chaos. Fractals are notoriously complex equations to compute (a BBC micro needs six days of solid computation to solve the Julia Set, a standard fractal equation). Fractals are used to solve a number of problems and can be applied to generate on computer everything from music to breath-taking graphical displays - they are being used for generating landscapes in films such as *Star Trek*.

This is Glypha 12 point  
This is Glypha 15 point  
This is Helvetica 12 point  
This is Helvetica 15 point

This is News Gothic 7 point

• Some examples of different fonts in different sizes. There are over 5,000 different fonts in use in English language publishing.

**FOOTBALL MANAGER (T):** Programmed by Kevin Toms, *Manager* is the only game to make regular visits to the software charts since its original release on the ZX81 in the early '80s. The game is available for almost anything with silicon.



• Football Manager 2, sequel to Kevin Toms' classic original

**FORTH (L):** Third generation language which has had several stabs at popularity but has managed to remain obscure due in part to its use of Reverse Polish Notation (in which '3+2' would be written '3 2+') and other arcane semi-mathematical practices. However, Forth is a fast, portable language available for most small micros and is a suitable alternative to BASIC.

**FORMAT (T):** The process of preparing a new disk - floppy or hard - so that it can be used by a computer to store data. The formatting is performed by a program which records electronic 'boundaries' on the surface of the disk thereby mapping the areas available for use by the computer.

**FORTRAN (L):** One of the first computer languages and still one of the most popular for certain applications. Fortran stands for FORmula TRANslation and is mainly used by colleges and research establishments to solve mathematical problems.

**FRAGMENTATION (T):** The gradual breaking up of the available storage space on a hard disk into smaller and smaller pieces. When a file is written to a hard disk, a 'block' of size x is located and the file written to it leaving an amount dx. As each block or group of blocks is used more and more

pieces are strewn around the disk, slowing up the process of writing and reading the disk. Eventually, the process known as garbage collection must be performed. All the stored files are allocated contiguous blocks and the fragmented pieces are gathered into new blocks.

**FREESCAPE (G):** Solid 3-D landscape system conceived by Incentive and used with great success in their games *Driller*, *Darkside* and *Total Eclipse*.

**FUNCTION KEYS (T):** Keys on a keyboard designated for special uses by programs such as word processors. Up to ten function keys are usually available and are

programmed to carry out tasks such as saving files, moving and marking blocks etc. at the press of one key.

**FUTURE PUBLISHING (CO.):** Publishers of computer magazines such as *ST/Amiga Format* (now split into *ST Format* and *Amiga Format*), *PC Plus*, *New Computer Express*, *Amstrad Action*, *8000 Plus* and formerly *ACE*.



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# Bits and PCs

Unless you had a four-figure budget, you'd have been unable to afford most of the hardware at this year's PC User Show. Express sent Andy Storer along with his rubber cheque book.



When the two major launches of a show costing a fiver to get in turn out to be Zenith, Epson and Tulip's 386-based portables costing around five grand each, you may as well throw budgets to the wind and go in search of the real 'power' gear.

Since 33MHz 386s seem to be the current performance ceiling, competition has turned as much to storage and backup systems as desktop turbos. Cutting a leading edge here was Gigatape's DAT Drive offering 1.2 Gbyte capacity for £3,500 and Digi-Data's VHS Tape-based Gigastore, affording storage of upto 5.4 GBytes for £6,500.

CD-ROM was also in the business of finding a footing in the market - PCML was showing its half-height Sony drive, while Magstore had its LF5200 Optical Disk drive up and running. All both fabulously expensive and expensive, but with these amounts of storage available, a product like Thermoteknik's LazaGRAM PictureBase - a complete image capture, archival and retrieval system - really comes into its own. For just under £3,000 you can configure an archived image database ordered on a selection of datafields for incorporation in DBase 3 applications.

Something you couldn't have got your hands on even if you had limitless dough was the Zenith colour LCD laptop, based on the world's first battery-powered 80386, the TurboPORT 386, and featuring CGA resolution. Zenith doesn't plan to put it into full production - the company is waiting until it can deliver VGA graphics on battery power. Still even CGA looked real natty.

Another impressive launch was Star's XB 24-pin printers which deliver a 48 by 35 dot character matrix offering the equivalent resolution of 48-pin printers. Starting at £600 for the basic 24-10 model, these offer laser-like quality for sub-laser prices.

More affordable of course was the new software on show. Making a small splash was Logotron with its *Eight in One* completely integrated business package for £49.95. This has already received a warm critical reception, but its *Hyperbook*, offering free-text searching, looked more exciting. For £50, *Hyperbook* provides annotation, glossary and archive cross-referencing for documents imported from any source and is to be marketed along with a special series of reference texts produced by Longman Publishers.

Reference was also the name of the game with Good Associates which launched the first disk-based UK Fax directory comprising 100,000 numbers - can there really be that many machines out there? Entries are also coded under Business Sector and Region, so it looks like a must for mail shots. Bad news is that it costs £150 per thousand names.

Since money is time, a couple of software packages that could save you lot of both are ISL's *Robot* and Matrix's *Layout*, both launched at the show. *Robot* is a Job Control Language which uses macros to emulate human input and sits as a background task. *Layout* is an icon-based Object Orientated Programming System compatible with Pascal, C and BASIC. All you have to do is compose flow-charts to create programs. *Layout* comes with a paint program, an on-line help manual and Mac-like desktop. Not bad for £99.

The PC User Show isn't the biggest show on the circuit, so at the end of the day you get the impression it's the smaller outfits that take up the front running - and the less expensive stands on the edges. But for the everyday computer user the prices on show may as well be telephone numbers. ●

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With SM124 mono monitor: £498 INC VAT

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For the serious home user and the small business, we are pleased to announce a new package based around the 1040ST-FM. The 1040ST-FM has 1Mbyte RAM and a 1Mbyte built-in disk drive. In addition, the 1040ST-FM now comes with a TV modulator built-in. (The previously available 1040ST-F was designed for use with a monitor only and did not come with a modulator.) This modulator allows the 1040ST-F to be plugged directly into any domestic TV set, and comes complete with a lead to allow you to do so. The new 'Professional Pack' from Silica includes the new 1040ST-FM with modulator plus four high quality software packages including a spreadsheet, database, word processor and programming language. This 'Professional Pack' software will enable you to get straight down to business with your new computer. In addition to this software (worth £384.84), if you buy the Professional Pack from Silica Shop, you will also receive the Silica ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for further information.



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**LESS DISCOUNT: -£385.82**

**PROFESSIONAL PACK PRICE: £499.00**

# 2Mb & 4Mb MEGA ST

The MEGA ST computers are styled as a lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

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**£899** INC VAT

+ mono monitor = £998  
+ colour monitor = £1198

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**£1199** INC VAT

+ mono monitor = £1298  
+ colour monitor = £1498



# DTP PageStream £149 +VAT = £171.35

Desktop Publishing (DTP) is one of the fastest growing applications for personal computers. We are pleased to announce a powerful low cost package for the Atari ST called PageStream. PageStream costs only £149 (+VAT=£171.35) and, because it works with an Atari 1040ST and a Seikosha SP-180AJ printer, you can be up and running with a complete system for less than £1000. Some of the features of PageStream are listed to the right. If you would like further information on this program, complete and return the coupon below, ticking the 'DTP' box in the corner.

- \* TEXT-FLOW AROUND GRAPHICS
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- \* POSTSCRIPT COMPATIBLE
- \* TAG FUNCTION
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- \* GROUPING OF OBJECTS



# ST COMPUTERS

The range of Atari ST computers offers something for everyone. From the games enthusiast who wants the challenge of the very best in arcade action, to the businessman who wants to make financial forecasts or faultless presentations. The ST offers high quality graphics, sound and speed for the gamer, whilst providing a fast, user friendly and affordable solution to business. The ST is now firmly established in the home environment and boasts a wealth of users in education, local government, television, and a variety of different businesses. Software for the range stretches to cover applications as diverse as ENTERTAINMENT, ACCOUNTS, ART, COMMUNICATIONS, COMPUTER AIDED DESIGN, DATABASES, DESKTOP PUBLISHING, EDUCATION, MUSIC, PROGRAMMING, SPREADSHEETS, WORD PROCESSING and more. For a full list of the software available, as well as details of the ST range, complete and return the coupon below.

All prices correct at the time of going to press. E&OE

# 520ST-FM EXPLORER PACK WITH BUILT-IN 1Mb DISK DRIVE



The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

**£260** ONLY £2.51 PER WEEK RETURN COUPON FOR DETAILS  
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+ SM124 mono monitor: £398 INC VAT

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# WHY SILICA SHOP?

Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

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Do you already own a computer  
If so, which one do you own? .....  DTP

# Pick up your IQ

Jerry Glenwright checks out the latest in computer personal organisers – the Sharp IQ

SHARP IQ (061 205 2333) ● Available from Dixons/ Laskys/ Comet etc. ● £169.99

In the beginning there was the Filofax, a little leather ring binder that held all the information you could possibly throw at it and more. Maps, rulers, even calculators were marketed specifically to fit the six little rings.

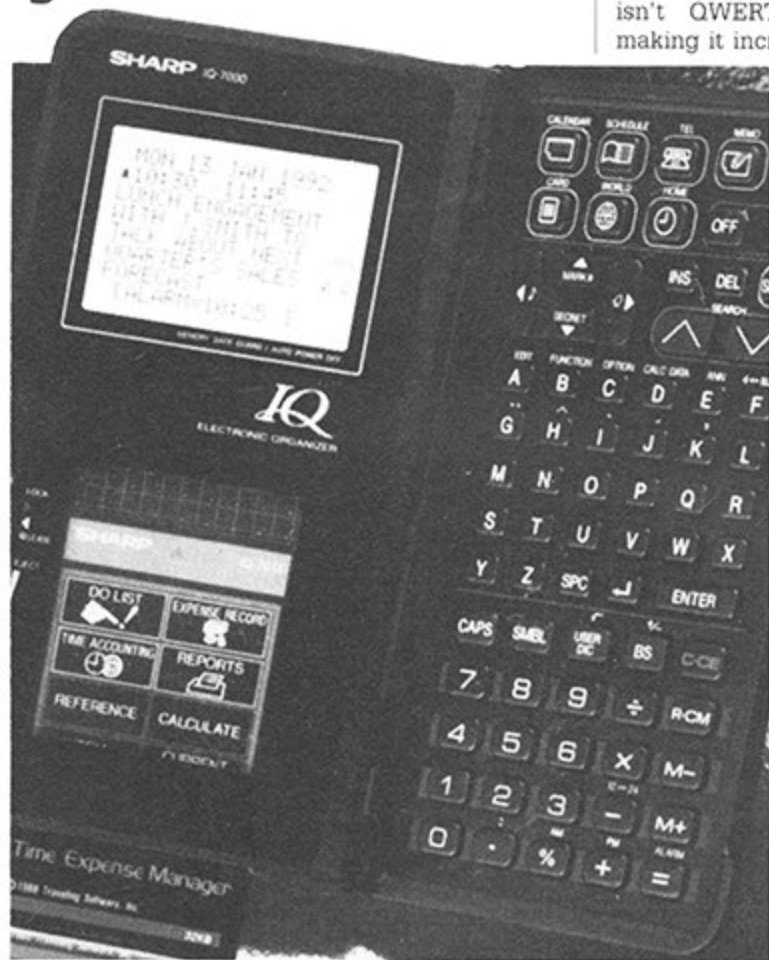
About the time the Filofax was making inroads into the lifestyle-off-the-shelf market, Psion (at the time best known for its chess programs and integrated QL software) designed and marketed a hand held computer with an LCD screen, reasonable keys and enough RAM to actually be useful. Although the Psion machine received moderately favourable reviews it sold in very small numbers to techies and gadget-freaks. It wasn't until Marks and Spencers adopted the hand-held for use in its stores checking stock levels that media attention rocketed and Psion sales increased by leaps and bounds.

Other manufacturers began to take notice of this possible area of exploitation. If Psion can sell thousands of units maybe they could too. So all the companies that had hand-held computers with one line LCD screens and 1K of RAM on the market revised their machines, souped-up the tech-spec and flooded the electronics stores. The high street box-shifters were positively overflowing with little computers. Unfortunately, nobody had any real need for these machines and so most of them remained in the polished glass cases of the display stands.

## Info a penny

1989, and the information revolution has never been more urgent or more sophisticated. Office workers, execs, journalists and others in daily contact with a large number of people carry around huge amounts of information – they're constantly to be found rummaging through pockets, purses and wallets for illegible phone numbers on scraps of paper.

What if all this information could be stored in a slim, lightweight, pocket-sized computer and easily and efficiently and recalled at the touch of



● Small but perfectly formed: the Sharp IQ-7000

button? The information could be categorised, indexed, and sorted alphabetically or in any other way so desired. What if a password could be used to protect the data from prying eyes? And what if, as well as addresses, phone numbers, calendars and world times, the functions of the machine could be extended by tiny plug-in cards providing a whole range of new functions such as language translators, thesaurus, dictionary etc?

The question has been answered by Japanese electronics giant Sharp, with the release of its new hand-held pocket computer, the IQ-7000, a slim device the size of a wallet which can do all of those things – and lots more.

## 6" long

It is very light and of very high quality construction. The IQ has a matt black plastic case, smooth and rounded, approximately six and a half inches long by three and a half inches wide. The machine would fit easily into any pocket or bag.

Opening the computer, you are presented with

a square LCD screen able to display eight lines of sixteen characters or four lines of twelve characters offering greater readability.

Beneath the screen is a panel which is used by plug-in cards to provide a greater range of features. To the right of the screen and card socket is the keypad, consisting of two rows of specialised keys providing access to the built-in functions, and beneath these are Insert, Delete, On/Off and Search keys.

Next is the alphabetic keyboard, and it is here that the first 'fault' is apparent – the keyboard isn't QWERTY! It's laid out alphabetically, making it incredibly difficult to use with speed if

you're used to using a QWERTY keyboard, as most people are. The argument is that a small machine such as the IQ can't be used for touch-typing anyway, so why bother to have a QWERTY keyboard? The opposing argument is try it and see. It really is hell using the IQ's keyboard. Fingers which automatically move to keys occupying the QWERTY layout are total confused. The keyboard really is a bind.

The last portion of key space is devoted to a numeric keypad the same as those you'll find attached to the average calculator.

The IQ has a range of built-in functions so that you can put it to work immediately. Schedule, memo, telephone book, calculator, world times and a calendar provide a comprehensive list of useful features for the lavatory attendant on the move.

The schedule function offers the ability to type important dates past and present, flag them so that they appear next to the dates when displaying a calendar and have an alarm bell ring if you wish to be reminded of the scheduled event before it happens.

A memo pad allows you to scribble electronic notes into your IQ which can be preserved, added to and erased at will.

There are three separate telephone directories so that you can make distinctions between business, personal and other numbers. There's no need to rummage through lots of your friends' telephone numbers when trying to find the phone number of the local glue factory when Dobbin has reached the end of his days.

## Time stuffing

And if you're a rad on-the-move sort of person you can summon the current time of just about any country in the world at the touch of a button, enabling you to arrive in the dead of night in the country of your choice and avoid queues for cabs, buses and trains.

There's a serial port on the side of the machine, and with the addition of a suitable cable (available soon from Sharp) you will be able to download data from your RS232-equipped PC to the IQ, thereby allowing you to transfer information directly from desk top accessories such as SideKick into the schedule and telephone directory programs of the IQ.

The Sharp IQ is a well-made electronic gadget that has one important advantage over many similar offerings on the market – it's actually useful. Sure it's expensive compared to that four quid cheapo organiser you can get from your local WH Smith's – but it offers much more and faster power and stays slim however fat your collection of phone numbers grows.

As electronic personal organisers go, this is definitely one of the best, if not the best. Give your little leather ring binder to your Granny and entrust the ephemera of everyday life to this. ●

★ ★ ★ ★

## Tech spec

Just what have Sharp managed to stuff into its pocket electronic depository? Check out the IQ's tech spec to see how many Ks you're getting to the pound...

- Display: LCD screen, 16 x 8 or 12 x 4 lines.
- RAM: 32K This means that the phone directory will store 700 items consisting of 16

characters for name and 16 for number.

- Built in functions: Telephone directory, appointments schedule, calendar, memo pad.
- Other features: Password entry to protect sensitive data, a user definable dictionary and data transfer between the IQ and a PC. Ability to plug-in add on cards such as a language

translator, thesaurus and dictionary, expanding the abilities of the machine.

- Battery life: Said to be 90 hours. The memory has a separate battery back-up with a claimed life of approximately 2 years.
- Weight: 245g including batteries.

# ATARI ST and AMIGA

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- ★ First BASIC and First Music Utility Software
- ★ FREE JOYSTICK
- ★ All leads, manuals PLUS MOUSE and free mains plug!

**REMEMBER!** Many ST's do not come with BASIC - ours come with ST BASIC REV D by Metacomco.

*Also available with only one free game and no joystick or Organiser  
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*Includes everything in the Atari 520 STFM Super Pack but with the 1 megabyte memory 1040 STFM Keyboard*

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- ★ Atari 1040STFM Keyboard with 1 meg memory and 1 meg built-in disk drive plus TV modulator.
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- ★ All leads, manuals and mouse.

### MEGA 1 BUSINESS PACK £529.00

**Features:**

- ★ Separate Keyboard and System Unit
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<b>SEIKOSHA 80 COLUMN PRINTERS - AMAZING PRICES</b>	
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### Amiga A500 System 1 £365.00

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**Workbench 1.3  
£9.95**

**System 1 includes:**

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- ★ Amiga BASIC, Amiga EXTRAS, Workbench PLUS the Amiga Step by Step Tutorial.
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**NEW !**

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### AMIGA 1 MEG! £499.00

Announcing the new Amiga 1 meg-an A500 system 1 with fitted 1 megabyte memory expansion and clock card PLUS TV Modulator AND DRAGON'S LAIR a six disk 1 meg megagame!

### AMIGA 1 MEG + £519.00

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### CREDIT CARD ORDERLINE ☎ 0908 78008 (Mon - Sat 9am - 6pm)

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VISA

# A MATTT



be done is to conquer the medium. Looking at our most recent pictures, the medium is now much easier to conquer and one can devote more time to artistic expression...so it's a new form."

"It's the human controls of light and colour that make fractal art not plots of fractions. It's fascinating to explore different effects of lighting on fractals but, looking down one's nose, one could say it's just painting by numbers - after all, it's being done by a computer. But then if you look at painting by numbers, there's a lot of difference between the beginner and the professional. It's down to taste and skill."

"The question remains - how much of reality is depicted by these rules? Unless you had pictures you would not know. The answer is that they do represent a great deal of what we perceive to be reality and therefore the Mandelbrot Set, my little baby, is a description of reality. But the difference between the descriptive and the explanatory is very elusive."

### On science

"The number one secret of science, which is kept very very secret, is that the messiness of the world is absolutely boundless and the number of tricks science has to handle it is extremely small...the number of tricks that last as a tool - that don't get blunted by one application - is even smaller. The tricks that work are the simple tricks. For any new science to succeed it has to start by being very simple."

### On chaos

"Imagine Chaos as a jungle and Order as a cultivated field. Chaos has moved back, our work has made pathways through the undergrowth which may still become overgrown again. Chaos has not

vanished...messiness is still everywhere. For most people, it's people themselves that are the real chaos - much more than natural phenomena."

### On computers

"Many, many supreme concurrences emerge in the computer...but its link as a tool is perhaps more important than the link of any conceptual unity..."

"A computer does not bring proof...a computer brings a thought, a conjecture, a possibility to something the eye perceives and the mind tries to fully control and comprehend."

### On hurricanes and butterflies

"If you deal with natural systems, the distinction between impossibility in principle and impossibility in practice becomes more clear cut when you realise for one minute's study you may need five decimals, for two minutes, 500 decimals and for three minute's study - five million. When that is the case it's not very realistic to have a prediction beyond a very short time - that's why it's not proven but widely believed that a hurricane's course can be initially determined by tiny movements such as the fluttering of a butterfly's wings."

### On his legacy

"I've provided a new tool for guessing"  
"I'm much prouder of my conjectures than my theories - I pose problems, I stimulate people"

### On fractal theory

"The idea of self-similarity goes back very far. I did not discover the fact that clouds are like billows upon billows upon billows. Every child knows that...every painter. What I did was to identify and provide the tool which can transform this intuitive perception of shape into something that can be grabbed and worked on. This notion that the world may appear as a set of different scales is one that has occurred to many thinkers many times...but as long as it's vague it's not Science. Part of the success of my work is that I give substance to this very old idea. When people see my pictures they get a sense of familiarity...it's part of our common thinking...our inheritance. It's intuitive really, but without the proper mathematical tool it couldn't have been implemented."

### On fractal art

"People claim to use fractals in the visual arts and I find a lot of gimmickry...what has to



• The shots above and those on the far right of the opposite page are examples of the work of F H Voss, one of Mandelbrot's colleagues in New York who produce them using a Silicon Graphics workstation

*The Mandelbrot Set is well known as that quirky equation that produces wacko pictures on every home micro in the entire universe. But pretty patterns are only part of the polynomial. Beyond the monitor is the larger world of fractal geometry and its applications. When Benoit Mandelbrot, Professor at New York's Yale University, touched down in Britain last week, Andy Storer met him for lunch and enjoyed the journey to the edge of the fractal dimension.*

The idea behind fractals is simplicity itself - merely that any irregular shape, form or distribution retains its irregularity whatever the magnification used.

As Mandelbrot himself puts it, "My trick works so widely because it's so simple...everything is made up of little pieces which are like the whole but smaller; endlessly." Thus, for instance, in the absence of external indications of scale, a piece of coastline appears similar whether it be magnified ten million times or twice. As this means absolute precise measurement is impossible for irregular, and therefore by implication, natural phenomena, it poses a intractable problem for computation and hence computer modelling and simulation. How do you generate a lifelike landscape? Or, for that matter, something as simple as an everyday cloud?

Mandelbrot's life's work in "irregularity and brokenness in geometric shape" has been an attempt to address these and similar problems. In drawing on a sketchy heritage of fractal theory throughout history and codifying it in a body of pure maths which has of late become firmly applied, his research has taken him from maths to physics to meteorology, geology, economics, art and music.

Such a wide-ranging assault on classical theory in all disciplines has led commentators to herald him as a New Scientist - pioneering a new shift in the current paradigm of scientific thought and practice. This is a role Mandelbrot himself plays down, concluding "Until people start talking the new language without putting quotation marks around the words, the shift hasn't occurred".

Last month, the word 'Fractal' appeared in the new edition of *The Oxford Dictionary*, the bastion of accepted common knowledge. It would appear the quotation marks have vanished. ●

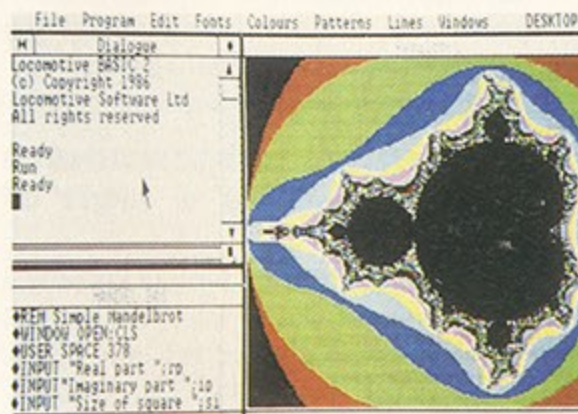


# TER OF FRACTALS



• A shot from the BBC documentary "War in Korea" created on the same hardware used by Mandelbrot, and illustrating a practical and familiar use of fractal theory in contemporary graphics

**"You can use my geometry to create shapes that are perfectly repeatable, controllable and have measurable properties which at the same time are indistinguishable to a large extent from the messiness of the world. It's brought the idea of perfection... down to earth"**



• The output from a basic Mandelbrot equation, which can be found in the public domain for all home machines



• A shot from the PD program Scenery for the Amiga - easily the best example of fractal graphics on a home micro



## The history of a new dimension

- The 'Heroic' Period - 1973-1978  
 "The machines were so bad. Someone at IBM found a way of transferring a file to a typewriter - someone had to stay overnight pushing Return each time a line was typed...next morning we saw the first fractal coastline. Later we found a way of transferring files onto a laboratory cathode ray tube. We took the first pictures with a polaroid camera."
- The 'Classic' Period - 1977-1983  
 "We had this primitive raster machine...I've forgotten what it was called - we wrote software for it to appear on a monitor. The aim was to make technical pictures...to put as little 'Art' into it as we could get away with for it still to look nice."
- The 'Romantic' Period - 1983-  
 "Machines can now cope so easily with pictures...what took weeks now takes fifteen minutes. My group...the people I'm closest to...now use lighting and shading to the full. It's not solely down to improvements in hardware and software but in thinking through and ordering your operations."

## What gear do you have at home, Professor?

"I use a Silicon Graphics Iris Workstation for close examination of pre-rendered images. Then for the heavy crunching (rendering) we use 20 parallel computers. We were given many parallel machines - well not given, but sold at give-away prices. Most are difficult to use and some impossible. Our final rendering is a standard 1,200 by 1,000 pixels but we often go to higher precision so we can make blow-ups. Even with this equipment our latest picture took a week to render."

## Some uses of fractal theory

Meteorology, Nuclear Winter projections, Mining, Stock Market analysis, Distribution of Galaxies, Turbulence, Military Simulators, TV computer graphics, Star Trek 2 etc etc



# "Programmer's paradise"

... Following our tests we can recommend GFA-BASIC AMIGA to everyone with almost no reservations ... GFA-BASIC AMIGA offers, all in all, 350 keywords. A lot for a BASIC programmer to try out ... There are so many loop and structure commands alone that one is not at all tempted to revert back to other programming languages such as PASCAL or MODULA-2 ... as a programmer you will be amazed ... GFA-BASIC is the answer to nearly all your wishes ... Evaluation: outstanding product.

HAPPY COMPUTER, December 1988

## The dialect of the future

... has made the AMIGA jump from a simple plaything to a genuine computer ... The definite plus, at least in the eyes of the ATARI ST owners, is now available for "the friend" as well ... GFA-BASIC 3.0 is one of the best interpreters currently available for 16 bit computers ... the large manual supplied in a ring binder is a joy for both the beginner and experienced programmer alike ...

AMIGA SPECIAL, January 1989

## New friend

... The built-in editor is not only very fast but practical as well, the folding function in particular. It is possible to fold a procedure with a single keystroke, whereby only the procedure header remains visible. When needed, another keystroke will recall the body of the procedure again. The folding makes the logic of the program much clearer and one can find his or her way around BASIC programs much easier. Equally useful is the abbreviated input feature ... GFA has beaten AMIGA-BASIC hands down and is, in certain areas, even faster than an AC compiled module.

c't, February 1989

## It was worth the wait

Everything needed for structured programming is available in the program flow control structures ... Even the access to system routines is elegantly re-

solved ... The speed of GFA-BASIC is good ... All in all, in terms of BASIC programming on the AMIGA the package makes a very solid and professional impression.

TOOLBOX, February 1989

## The BASIC of the future

It is quite obvious that in the area of the BASIC languages a coup will take place ... All in all, the GFA Systemtechnik developers can be complemented that they will set new standards for the Amiga with their BASIC.

... An unusual feature is the ability to reserve a certain number of bytes inside a BASIC program with the INLINE command. This is used for insertion of machine language routines within the program itself. These routines can then be saved together with the BASIC program and are available immediately after subsequent loading ... This GFA interpreter will, without doubt, change the BASIC landscape on the AMIGA.

AMIGA-MAGAZIN, September 1988

## Can BASIC programmers finally breathe a sigh of relief?

... even after working with it for only a short while, it shows itself in the best light. Fast scrolling and the ease of use are particularly apparent. The AMIGA-BASIC with its boring editor, tedious warning requesters and infuriatingly slow screen drawing is quickly forgotten.

... Program control: no BASIC has ever offered so many commands and options for structured programming ... There is no need to sort "by hand" anymore. QSORT (Quicksort) or SSORT (Shell-sort) will sort the relevant fields as required.

The optimized routines make the programs run very quickly ... It is almost to be taken for granted that the building and control of menus is very simple ... The manual is supplied in an attractive box and the ring binder contains some 400 pages. It is subdivided into 12 sub-

ject orientated chapters. Each keyword is accompanied by an example showing its usage.

KICKSTART, January 1989

## More than just an alternative – a BASIC for the professional

GFA-BASIC 3.0 is a new BASIC interpreter for the Commodore AMIGA. Its multipurpose keywords, assistance in structured programming and other characteristics make this inexpensive BASIC a serious development tool.

... With over 300 keywords and functions (not counting the operating system functions), on one side it has more features than all comparable BASIC dialects, and, on the other, thanks to its speed and structure (GFA-BASIC supports procedures and functions), it is a serious competition to other programming languages such as C or PASCAL. ... GFA-BASIC from GFA Systemtechnik is in our opinion the best BASIC interpreter for the Commodore AMIGA at this time. Its performance is yet to be surpassed ... Price/performance ratio: 5 points (Highest score).

CHIP, February 1989

## Basically speaking

GFA has some unusual commands that are often just a quicker way to do something. For example if you want to increment a variable by one there are three ways to do it ... They're listed in order of increasing speed ... GFA-BASIC is a language for everyone ... thanks to the manual and advanced programmers can do some spectacular things by using the lower-level instructions and delving into the operating system.

ST/AMIGA FORMAT, March 1989

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Important: Ask your local Atari Dealer for the upgrade price from GFA-BASIC 2.0 to 3.0





**PC  
UPDATE**

**Big Blue Bouncers**

The PC User show is always worth a visit and there were plenty of interesting things at this year's gawotte in Olympia. Most of the big boys were there, including IBM, which had two major products - which, by complete coincidence, were launched at a separate shindig just up the road from the main hall.

The launch involved lots of smartly-suited gents explaining why PS/2/MCA/SAA/IBM was so good, how they had sold 4 million of them and how they were the only standard worth following. When they got round to explaining the new products they turned out to be very much in the corporate league. Working on the principle that you like to hear about executive computers in the same way that car mag readers like the occasional review of a Porsche, here are the details.



• This typical IBM executive must be about seven foot two, or else the PS/2 P70 he's carrying is only a 2/3 scale mock up

The cheaper of the two machines clocked in at £2,500 and goes under the name of PS/2 Model 55SX. As the name may suggest, this machine uses the Intel 80386SX chip, the 16-bit bus version of the 386 (other people's SX machines start at around £1,300). It runs at 16MHz and comes with a single 3.5" floppy and a 30Mb or 60Mb hard disk. The motherboard, or planar as IBM seems to have christened it, can hold an 80387SX maths co-processor and the 386SX/387SX combination is two and a half to three times faster than the equivalent 286/287 partnership. The demo machines certainly ran fast and looked... exactly the same as any other PS/2 machine. The only giveaway was a Model 55SX logo in 6 point type and a white on off switch. Red switches are a no-no in Germany, apparently.

The other machine is the long-awaited 80386 portable. This machine is, according to IBM, a completely functional PS/2 model 70, but put in a transportable system box. This ain't no laptop, as it needs mains power, comes with a 60Mb or 120Mb hard disk, 4Mb RAM as standard and a gas plasma VGA compatible screen (in 16 wonderful shades of red). The 1.44Mb floppy drive is mounted vertically inside the case and hinges forward in a rather tacky manner to take disks. The PS/2 P70-K61, as the smaller model is snappily titled, and its K21 big blue brother weighs in

at 20lb. "Peanuts!" according to an IBM big-wig - a rather unfortunate choice of words, as the "peanut" PC Junior was never that light, and sold very poorly. If you need to know the price of the new portable you can't afford it. Your company might be able to, though, if it has £5,500 to £6,000 to spare!

**Zing a Zong**

Not Bucks Fizz's next single, but a highly contrived link to a champagne and orange juice launch for a new range of PC software from Mindscape. Best known for its leisure products such as *Balance of Power* and *Deja Vu*, the company is chancing its arm with several business products, of which the most intriguing seems to be *Pro 3-D*, or *Zing!* as it has been renamed for the tamer British market.

*Zing!* is a 3D graphics tool which can generate three-dimensional symmetrical images from two dimensional drawings, or create 3D images from a series of cross-sections. Sounds good for all manner of applications, and it can export graphics to *Ventura*, *Pagemaker*, *WordPerfect*, *MS Word*, *SuperPaint* and many others. One of the nicest things about the package is its asking price - £149.99 plus VAT.

Other products new from Mindscape include *Numbers Up*, a memory resident spreadsheet, *Twist and Shout* for printing spreadsheets sideways, *The Secretary Bird* integrated package and the peculiarly named *Mavis Beacon Teaches Typing!*. Perhaps *Mavis* is bigger in the US than here.

A nice little launch was held in a back room at Olympia and all those participating were provided with a *Exhibition Survival Kit*. All kinds of useful equipment was provided for the weary, though the bubble gum tasted rubbery.

**And now in colour**

Zenith was sporting its new Supersport 386 laptop with a colour LCD display. The colours were sharp, though the screen itself was small, at around 4" by 5". The most annoying thing, though, was that the screen has a high gloss finish. I could see more of my own reflection than what was on the screen. Still, my reflection was in colour!

Simon Williams

**HP sauce**

*My pocket having won out over my brain last week, I ordered a mechanical printer switch to flip between laser and dot matrix printers. It duly arrived, but I didn't have chance to test it before coming away from home for the week. Bit of luck, really, as on the off chance I called at the Inmac stand at the show, to see if I could get yet another definitive answer to my "will it blow up my laser" query.*

*The Inmac man, apart from trying to sell me a £480 electronic printer switch, did confirm that trying to switch an HP LaserJet with a manual switch was quite likely to blow the input chip of the printer, and that HP had put an embargo on the use of manual switches. Other lasers are apparently unaffected, only HP has seen fit to leave the parallel input to the printer unbuffered. It's a shame its tech support people don't seem to be aware of the problem.*

*All this leaves me with a switch box which I'm still determined to use. All that should be necessary is to fit a series of buffering diodes, possibly inside the switch box. As always, of course, it's knowing the values for these (and whether all 50 lines will need buffering).*

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# AMIGA BLIT

## Threat of the consoles

Take a look into any of the dedicated computer publications available and you'll soon get the impression that the very latest and most exciting innovation to be unleashed onto the home computer market is the dedicated games console. Some journalists are even making the claim that the mighty Amiga itself cannot hope to rival the power offered by these obscure little oriental boxes. Has the Amiga really met its match?

In a word, the answer is no. Out of the small selection of machines that are even worth considering, the machine that currently represents the state of the art in console hardware is the Japanese PC Engine. I've been lucky enough to get to borrow one of these little beauties and therefore I feel I'm suitably qualified to compare this king of the consoles with the Amiga.

Firstly, it must be said that the PC Engine is undoubtedly a powerful piece of kit but, judging by currently available cartridges, the machine's hardware does not offer any feature that could not be easily achieved on a bog standard Amiga.

"So why do games on the PC Engine

always seem to look so much better than games on the Amiga?", you may ask.

The answer to this question can easily be found by taking a look at the current standard of Amiga games releases in this country. You own a machine that features state of the art hardware, but what do we see? Games ported across from the ST.

While these so-called mega games are about the best the ST's strained hardware can cope with, on an Amiga they look decidedly feeble. Would C64 owners be happy if Spectrum games were ported straight across to their machine? If the C64 had utilised the Z80, this is probably what would have happened!

Before all you software houses write to me and start quoting phrases such as "financially viable" etc, I would just like to say that Amiga owners really do not give a pig's ear about such things and are only interested in getting what they truly deserve; Amiga games written for the Amiga, and not for the ST.

I believe if Amiga games were written to take full advantage of the machine's hardware, sales of both the games and the Amiga would increase considerably.

## Jason kun wa sukebei da yo

James Clavell's

# SHOGUN



• Shogun: Set to keep Infocom firmly on the adventure game throne

Anyone who knows me will confirm that games rarely keep me interested for more than about ten minutes (see above for reason!). It therefore came as a great surprise to find a game that not only lasted through those crucial first ten minutes, but is still keeping me tied to my Amiga for hours on end.

What is this wondrous piece of programming? Well, surprisingly enough, it's not a shoot-'em-up, a beat-'em-up or even an arcade game - it is in fact an adventure. The game in question is Infocom's adaptation of James Clavell's classic novel Shogun (hence the Japanese headline! - translate it if you can).

Shogun the adventure puts you in the shoes of the English Pilot-Major, John Blackthorne, as he stumbles through an exotic, bewildering and often deadly seventeenth century Japan. Shogun lets you truly taste the intrigue and fascinating culture of feudal Japan without ever having to worry about getting your head separated from your shoulders with the quick Iai-flick of a Katana.

Infocom has always been generally regarded as the master of the adventure game and Shogun will undoubtedly raise their reputation to even greater heights. All Infocom adventures, including Shogun, are distributed in this country by Activision.

Jason Holborn

## Amiga Gamesbusters!

Trying to discover a new games tip every week can certainly be a difficult task at the best of times! I was therefore overjoyed when someone finally came to my rescue by providing me with the biggest collections of tips this side of the Himalayas. Who is this saviour of the AmigaBLIT games section?... step forward VARK (who ever you may be!).

The first cheat is for Discovery's stylish shoot-'em-up Hybris. From the title screen, simply press the SPACE bar to enter a special cheat screen that allows you to change the various game parameters.

The second cheat is for Grandslam's Pacmania and comes in the form of a short listing which must be typed into AmigaBASIC, saved to disk and then run. The cheat allows you infinite lives.

```
EM *** PACMANIA CHEAT ***
CHECK = 0
CHEAT = 5237766
FOR N = CHEAT TO 5238624 STEP 2
READ AS
A=VAL("&H"+AS)
CHECK=CHECK+A
POKEW N,A
NEXT N
IF CHECK <> 251583 THEN
PRINT "Error in DATA!"
END
END IF
PRINT "INSERT PACMANIA IN DFO:"
PRINT "AND PRESS ANY KEY"
WHILE KS = ""
KS=INKEY$
WEND
POKEW 5238546,7737
CALL CHEAT
END
DATA 2C79,0000,0004,207C,00FE,88C0,43F9,0007
DATA F000,303C,0145,12D8,51C8,FFFC,22FC,DBFC
DATA 0000,22FC,007E,4E5D,32BC,4E75,4EB9,0007
DATA F01A,41FA,000A,2948,015A,4EBC,000C,4DF9
DATA 0000,4C00,33FC,0005,0000,D220,33FC,5339
DATA 0000,D34E,4ED6,0000
```

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# SECTOR 64 SECTOR

## Power up

Thanks to Graham Galbraith from Newcastle, you will now be able to fix your own power packs if they ever blow up. Over to you, Graham...

"I personally don't own a 64 (love the sound, though), yet as an electronics engineer I have been given many dud or seemingly faulty 64s to fix.



• Dead 64 power supplies can sometimes be fixed. Graham Galbraith explains...

In have actually repaired the power supplies, though it is difficult. Not least because the original power supplies are meant to be unrepairable – the whole works, transformer and regulator are encased in a brittle or rubbery plastic resin which is extremely tough.

Basically, all you can do is to recover the heat sink and the transformer, which is the most expensive and hard-to-get part. You MUST take care not to snap any of the wires going to or coming from the transformer, otherwise it will be useless.

Next, you throw away the rest of the power supply (even the case usually ends up smashed) then build a new regulator circuit (parts for about £2). You then rebox the whole thing (suitable boxes are expensive; around £5).

It wouldn't really be economically viable for repair firms to do this because of the time involved, but if you know a little electronics and your mate with a duff 64 is as poor as a church mouse, it's perfectly feasible to resurrect a new power supply from anything but the ashes of the old. The only applies if the regulator circuitry is dud, as is usually the case. If the transformer is a dud (rare), then you should buy a new power supply, as building one will cost just as much and be twice as much hassle.

Typically, your 64s will be working normally most of the time, and crashing after a while or throwing up random characters and behaving oddly as soon as they are switched on – either way, the cause has nearly always been 12V coming from the 5V output of the power supply. Theoretically, computer chips subjected to more than 7V will be badly damaged, and may indeed explode or crack in half. I once saw a whole computer destroyed by overvoltage.

However, every 64 I ever saw with an over-voltage power supply survived unscathed, though I could never understand why. If the power is completely dead (no 9V AC out or 5V DC out), then this can be either good news or bad news: it might just be the power supply's built-in mains fuse, which is often near the surface of the resin and can be dug out and tested/replaced with a similar component, if

necessary. Or, if it's not that, it's the mains transformer – and you may as well throw the whole lot away. If you have 9V out and either nil or 12-ish V coming out of the 5V output, it's the regulator, and you may be able to build your own power supply using the original transformer and heatsink – normally very expensive to buy on their own.

Thanks Graham. I would just like to point out that some readers were worried that their 64 could blow up in front of them. I must assure you that the chances of that are very slim, so don't have nightmares. If you don't know anything about electronics, I must also point out you must not try to repair your power pack on your own.

## Yipeeee...!

We rang Commodore's PR, and you'll be pleased to hear the Commodore is working on a new CBM64. It's to feature a faster processor and lots of other enhanced goodies (in fact, Commodore, a press copy wouldn't go amiss...). We will be ringing the man responsible for this machine in the next few days, so we'll keep you posted on what's to happen – will it be an Amiga at a very cheap price?

## Next week

Thanks to Nigel Myers, next week we'll be printing a listing of his which allows you to sneak through memory looking for cheats and other sneaky things left in by games programmers...

## Cheats & tips

We've had quite a few letters asking how to reset your computer to type in the cheats mentioned in Sector 64. Well, you can buy reset cartridges (see Tech Tips, issue 27) which allow you to do this, or you can use the pins on the back of computer. This latter method is not recommended, as if you don't know what you're doing and ground the wrong pin you will end up blowing up the user port. We wouldn't want to take the responsibility for writing off several hundred of our readers' C64s.

And remember, if you have pokes or listings for Sector 64, then send them in – we'll be pleased to include them.

Ian + Mic

## DIY test card

This week's type-in comes to you courtesy of David Clutton.

```
5 S=49152:FOR I=0TO124:READ A:POKE S+I,A:NEXT I
10 DATA 120,169,13,141,20,3
20 DATA 169,192,141,21,3,88,96
30 DATA 173,18,208,201,255,144
40 DATA 249,206,79,192,16,5
50 DATA 169,47,141,79,192,174
60 DATA 79,192,189,80,192,174
70 DATA 18,208,236,18,208,240
80 DATA 251,141,32,208,173,18
90 DATA 208,201,255,144,222,169
100 DATA 0,141,32,208,141,33
110 DATA 208,76,49,234,0,0
120 DATA 0,0,0,0,0,0
130 DATA 0,0,0,0,0,0
140 DATA 6,14,6,14,3
150 DATA 6,14,3,1,6,3
160 DATA 1,1,3,6,1,3
170 DATA 14,6,3,14,6,14
180 DATA 6,9,11,8,9,11
190 DATA 8,12,9,12,15,15
200 DATA 12,9,12,8,11,9
210 DATA 8,11,9,11,9
220 REM LINE 140-210 COLOUR BAR DATA
230 REM POKÉ 49197,32/BORDER
240 REM POKÉ 49197,33/BACKGROUND
250 SYS 49152
READY
```

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**Music to my ears**

Q: What's the connection between Bach's *Mass in B Minor*, Schubert's *Unfinished Symphony* and Shostakovich's *String Quartet No. 8*? A: None of them was written on the PCW. But soon, thanks to Composit Software's *Composer's Pen*, you can create and print out musical scores just like you word process.

You 'type' in notes onto a staff just as you would write on manuscript paper. You can automatically transpose lines and cut and paste sections and so on. Printed quality is pretty good and it copes with complex tuplets, chords, up to 99 lines, barlines, appoggiaturas, rests etc etc. It'll cost £300 or so, but

Basil Pigg

• For those who don't read music, this goes dum-da-da-dummm, deedeedeede, dummm...

remember this is a serious and upmarket program: you could recoup the cost in one go if arranging orchestral parts. For the musician, teachers and schools it'll be a boon. Details from Composit on 0952 586979. Maybe Schubert would have finished his *Symphony No. 8* with a PCW after all...

**PC: still plodding**

Some guesses on a PC LocoScript. It'll be out in September at the Personal Computer Show; it'll be compatible with PCW LocoScript (just cable your files across and edit them under Loco on the PC); and price - I reckon £40, knowing Loco's enlightened pricing policy.

**Poking fun**

The most useful poke in Mallard BASIC is the one which makes everything on screen also be printed to the printer. To do this: POKE 8792,205 on the 8000s, or POKE 29161,205 on the 9512. To stop this echo: POKE 8792,195 and POKE 29161,195 respectively



**Prospero compilers**

The highly-regarded ProForTran and ProPascal compilers are still available from Prospero Software, at £99 each. The ForTran conforms to the ForTran 77 standard, and the Pascal is ISO validated. These professional-standard compilers are identical to the versions for the PC and Atari ST. Prospero has a good name for after-sales support, and

**Northern Sinclair Show and Quanta Workshop**

Following the first successful show in April, a second Northern Sinclair Show has been organised for Sector Software for Saturday 24th June at Stokes Hall, Leyland, Lancs. A two-day Quanta workshop (Saturday and Sunday) has also been organised for the same weekend. Contact Phil Borman on 0472 49850 for details of the Quanta meeting.

doesn't mind admitting to bugs in its software - it eradicates them in a matter of days as a rule, unlike some software houses I could name. One Quanta member ported a large finite element analysis package originally developed on a big mainframe to the QL with virtually no problems. Prospero is on 01-741 8531.

**Have you got a screw loose?**

If your QL suddenly becomes unreliable, crashing or locking up at frequent intervals, check the tightness of the screws in the various plugs and sockets. Loose mains connections can cause some really weird problems.

This tip is especially important if you often take your system in the car with you - the vibration can result in screws undoing themselves.

Sometimes the screw securing the voltage regulator to its heat sink works loose, resulting in the regulator overheating and going into thermal shutdown. If your QL suffers from this affliction, you will find that it works fine when first switched on but dies on you after a few minutes. The regulator and heat sink are situated just behind the Microdrives, and are quite accessible with the top of the machine removed.

It would be a good idea to smear some heat-sink compound on the heat sink to improve the thermal transfer. Sinclair forgot to do this on all the QLs I've come across.

**QLs and communists**

When the QL first came out it was embargoed for export to most of the Eastern Bloc countries under the COCOM regulations.

Apparently, this was due to the use of the much-derided Microdrives for mass storage; it was thought that the storage density was too high.

Incidentally, I remember someone at Sinclair telling me that the deputy director of the Soviet Academy of Sciences had a QL. I wonder if he is still using it...?

John Torofex



**Software supply**

Software is the lifeblood of any computer, and continual supplies essential to maintain viability. So you might say that the BBC is slowly dying on its feet. Certainly there is far less excitement around new launches than in the past. But - and it's a big but - software still comes through.

**Hats off**

As a postscript to last week's moan about Acorn, I must say thanks to Philip Coles from Mitre software, who was extremely helpful, both over the phone, and by post. Perhaps he ought to work for Acorn!

We have the independent software houses and individual authors to thank for this. Launches from this sector rarely if ever receive the kind of publicity necessary to generate huge sales, so they depend on other channels to get distributed. For example, many small educational software houses never advertise, but send out catalogues to the people with budgets to dispose of.

Surprisingly, also, profit is not the primary motive. Old-fashioned ideas such as service, and value for money still hold sway. Nobody gets rich, but on the other hand, nobody gets ripped off either.

**Serious business**

Following on from the general software theme, here are some comments on a few packages that have passed my way recently. *Accounts Book* from Apricot Studios, is a nice straightforward 'do your own accounts' type package for people who are VAT registered.

However, it is not a substitution for a full accounts package, or for an accountant. There are just two ledgers - receipts and payments - balancing them being done automatically by the program, which will also do a trial balance for you. Weaknesses include no facility for handling capital assets and no ability to handle credit transactions. The slim manual is well written, but rather dense in places.

GSN Educational Software has a series called *The Micro at Work*, a pretentious title for a set of simulations and courseware. However, all the software and manuals are well designed and integrated. In *Design a House*, children are expected to make their own decisions about how to furnish a house, and can then go on to design their own. *Travel Agent*, and *Air Traffic Control* are simulations of those particular businesses. Finally, *Work in Cars* from Netherhall Software, is not about mechanics, but physics.

**Tip of the week**

This week's tip therefore is; if you are looking for a piece of software for your BBC, and you can't find it locally, or advertised nationally, don't despair! Your local library, LEA, school, or town hall are all good jumping off points for locating the more elusive suppliers.

The real goldmines though are schools, as they get sent everything. Please remember not to make illegal copies, it's not right and it harms the people who produce the software.

Andrew Brown



**Hands on review**

For the last couple of weeks I have been trying out the new Quickjoy Supercharger joystick, courtesy of De Gale Marketing, the importer. We all know that 99 per cent of Atari-type joysticks will work on the MSX (did we?) and the Quickjoy is no exception. In fact, it goes one better - it has an autofire which

**Code compatibility**

I had a letter from Stephen Elford of Plympton, near Plymouth, asking why the game *Finders Keepers* fails to run on his MSX.

Well, Stephen, I don't know which MSX computer it is that you own, but I would suspect that it is either a Sony Hit Bit or a Sanyo MPC 100. Many early Mastertronic games (and some of the newer ones) fail to run on all MSX machines, mainly due to the programmers failing to understand that you couldn't just dump Z80 codes into the MSX and expect them to run on all versions - a point which Ocean has failed to realise. To ensure that the software is compatible with all types of MSX, the programmers must stick to the rules laid down by Microsoft and ASCII.

If anyone has a poke which will allow Stephen to play *Finders Keepers* on his MSX, I'm sure he would like to hear from you. Write to this column at the usual address.

actually works on the MSX, a rare occurrence.

The joystick is fully microswitched and sports four suction pads for sticking to the proverbial flat surface, though the base of the joystick has been cleverly designed for hand holding too.

Now, down to the nitty gritty - what are the pros and cons? Well, I just love the chunky pistol grip and fire button positions. At last, a joystick designed for man-sized hands. I also found the autofire a real bonus - great for *Nemesis*-type games. The unit also feels pretty well made, although only time will tell.

The only gripe concerns the directional response, which is not as good as the Konix Navigator's - but then the latter does excel in its response. Nevertheless, the Quickjoy is as responsive as most other joysticks, and feels like it will improve with use. Retail price is £12.95, and I LIKE IT.

De Gale Marketing is to release more joysticks from the Quickjoy range later this year, along with other peripherals. I wish the company success.

**WEC Le Mans stuck on the grid?**

Anyone purchased *WEC Le Mans* for the MSX and can't get it to load? That's because the loading instructions supplied with the game are wrong.

For successful loading you need to type in RUN "cas:". If this fails, then you probably own an MSX 2.

I have only had this game in my possession for a couple of days, but my initial impressions are very favourable - the feel of the coin-op has been well captured.

A full review of this game, and Image Works' *Blasteroids*, will appear shortly in this column.

Keith Neal





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# CPC Centre

### Censors move in on new game

When I was last in Madrid - OK, OK, on the only occasion I've ever been to Madrid - I was there to see Spanish software house Dinamic. As if you didn't know, the CPC has been tremendously important there for several years now, with the result that more attention is often paid to games on it than is sometimes the case here.

Anyway, Dinamic's latest project is *Navy Moves*, the sequel to the oh-so-average *Army Moves* of two years ago. Fortunately, all the right lessons have been learnt, and the finished version I saw last week looks to be in a different league altogether. Well worth considering.

The mission is to destroy the enemy's U-5544 nuclear submarine. You commence at dawn on the surface of the ocean and



• Wish you'd waited a while to buy amongst others *The Bard's Tale*, *Arctic Fox* or *The Archon Collection*?

approach the enemy base by power boat, 'jumping' over explosive enemy mines. Enemy commandos on jet skis try to prevent you completing this part of the mission.

The second stage takes you into the drink as you try to get to the enemy base, encountering sharks along the way.

Incidentally, *Army Moves* was banned in West Germany, where they take a very dim view of violent games with military overtones. I dare say the same will happen to *Navy Moves*. There may be some trace of logic in this daft and clumsy censorship, but blow me if I can see it.

### Magickal mystery solved

Some time ago I offered a few playing tips for *Heavy on the Magick*. Now Nick O'Brien of Sheffield (good luck with the exams Nick!) has sent in a short poke that presents you with 99% skill, stamina, luck and experience (oh, if only life were like that!). You also get all the spells and find yourself grade 10. (Use option 5 to restore Axil and enter version A.)

- 1 ' Heavy on the Magick
- 2 ' NCE May 1989
- 10 DATA 1, 150, 150, 150
- 20 DATA 10, 150, 47, 102
- 30 DATA 128, 170
- 40 FOR n=43090 to 43099
- 50 READ a
- 60 POKE n, a
- 70 NEXT
- 80 POKE 43116, 248
- 90 SAVE "AXIL-A", B, 43090, 27

### Classics for all

By the way, in case you missed the news, Electronic Arts has launched a new *Classic*

Collection of games approximately half the price they were originally. It's certainly good news if the rest of the series are up to the standard of the three excellent titles immediately available for a mere £2.99cs, £6.99dk: *The Bard's Tale*, *Arctic Fox*, and *The Archon Collection*. I'll let you know of more additions to the series as they come up.

One thought, though: will people start putting off buying EA's usually excellent releases, hoping to pick them up fairly soon at a substantial saving?

### Crisp colours

There's a new program out for printing in colours using DMP2000 and other Epson compatible dot matrix printers that works in either mode 0 or 1, offers user-defined shadings and up to four colours. *Colourdump* is probably going to cost between £10 and £15 and produces good, crisp printouts - though since *CPC Centre* appears on a black and white page you'll have to take my word for that. Ring Richard Moss on % 061 430 3917.

### Driller playing tips

More tips to help you to complete Incentive's *Mastergame*, this time come from Ian Andrew and the chaps from Incentive itself.

■ **Quicker Movement:** You can move twice as fast by using both the joystick and keyboard movement controls together.

■ **Amethyst:** In the stores shoot the pillar that supports the energy crystal and it will disappear. The crystal will fall and is then worth double the energy. Shooting the supported crystal will regenerate the three other shield crystals.

■ **Obsidian:** Try shooting the fluorescent lights inside the store shed.

■ **Ochre:** The forcefield can be deactivated by resetting two

### Space saving tip

*Like me, you've probably got cardboard boxes under your bed and a wardrobe full of games and various programs that were going to transform your life, keep you organised, save you money, help you lose weight and so on. If we're honest, though, we're never going to look at them again. So why not get rid of 'em? Even better, why not get rid of them and help a good cause at the same time?*

*Oxfam is having a push at the moment to collect computer software for resale, and would warmly welcome any contributions you may have, except copies of World Cup Carnival (oops, sorry chaps only joking). Take along your unwanted to the local Oxfam, or call Richard English on 01 585 0220 for more info.*

switches, one in Graphite and the one in K3 in Malachite.

■ **Basalt:** Shoot the pyramid from the top downwards for a maximum score.

■ **Aquamarine:** Shoot the crack between the doors when they're closed for a 10,000 point bonus.

■ **Ruby:** To travel safely around the girders reduce your height to zero, step to 50 and set the angle to 90. As you proceed to a junction you can look left or right each time you move forward until you are lined up for a change of direction.

■ **Diamond:** The crystals have "special properties" when touched (bit cryptic, eh lads?).

Best of all, though, are the unlimited shields you can get if you go to Obsidian and laser the southern section of ground.

Steve Carey

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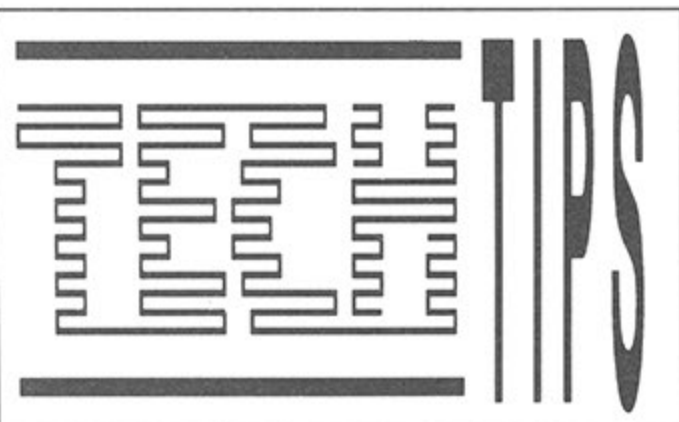
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Uncle Tech Tip is away on his hols this week (Actually, attending a seminar on OS/2 enviro-kinetic systems modelling in Bali), but he'll be back next issue with two pages of helpful hints and tips...

### HELP! ST applications

I intend to start using PC Ditto on an Atari 520STFM upgraded to 1Mb of memory, a combined 3.5 and 5.25 inch second drive and a Canon dot matrix printer.

1. Will I be able to run MS-DOS software from a hard disk drive connected to my Atari?

2. Will I be able to run dBase IV Developers Edition with no drawbacks? And will the runtime versions of the applications I produce on the Atari run with no problems on PS/2s, ATs etc?

3. If I can run dBase 4 and other software from hard disk, which is the best hard drive unit to choose?

4. What is the maximum amount of memory that I can upgrade my 520STFM to? And how do I set about doing it?

5. Is it damaging to the main unit of

able? And when will it be available?

8. How do I get a back copy of Express issue 25?

Colin Brown, Birkenhead, Wirral

• 1. Yes. A hard drive can be partitioned for use by PC Ditto and MS-DOS.

2. Yes, albeit incredibly slowly. It will be difficult to develop applications using the set-up outlined above.

3. There are many hard drives available for the ST, all of reasonable quality, so the only thing to choose is storage capacity and price. One of the cheapest is the drive available from Third Coast Technologies. Call them on 0257 426464.

4. At present RAM costs? I should say about 1Mb.

5. No.

6. Yes.

7. No, it will be switchable.

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an IBM AT to have a dot matrix printer located on top of it?

6. With Spectre 128, will the hardware device for the disk drive you mentioned in the review allow you to access Apple Mac disks?

7. Will this gadget change the drive permanently for use with Mac software thus rendering it useless for ST use? Or will it be switch-

### HELP! Out of print

Could you or any of your readers help me please?

I have a Rotronics DX85 printer with a label on the back saying "made by Salmeco". I have asked several firms in my area to repair a fault with the printer but all they say is that without any information of the electronic circuits a repair could be very costly.

If anyone knows of the firm Salmeco and could provide me with a phone number or address I would be very grateful. It appears that I am stuck with a printer costing over £200 which I can't use.

Jim Rollin, Clwyd, Nth. Wales

• Salmeco huh? A very difficult company to track down. If any TechTippers have a phone number or address, call 0225 446034 and I'll pass on the information.

### HELP! Making the connection

I have a few queries.

1. I recently purchased an Amstrad PC1512MMDD and I have a Commodore 64 with disk drive and Commodore MPS801 dot matrix printer. Is it possible to connect the unwholesome mess together?

2. With reference to the letter from RS Gibbs (Express 22) about the speaker in his PC, my 1512 seems to suffer the same problem of a high pitched whistle but with the volume turned right down there is no difference to the whistle.

3. Is it possible to connect a standard joystick (Comp Pro) to the 1512 by direct connection to the port on the keyboard?

Name and address mislaid

• 1. The answer is no. You cannot connect any Commodore peripherals to your PC1512. If you want to print files prepared on the Amstrad machine using your Commodore printer, connect the two computers together via serial ports and use public domain comms software to port over ASCII files from the 1512 to the C64. You can read the files into a suitable C64 word processor and print them on the MPS801 printer. Why you should want to do this is another question!

2. Turning the volume down has no effect because the signal is not passing through the volume control.

3. No. The joystick works via a standard RS232 serial port and games software address this port rather than the keyboard (unless set up for the mouse).

### TIP Out of print

In Express issue 25 RL Holton seemed to have trouble with his Amiga 500 graphic dumps. Well, if he doesn't know by now, I may be able to help.

I too own the Amiga 500 and Citizen 120 printer, and the way to achieve a dump as seen on the screen when programming is to type LLIST and this will print what is in the computer's memory. As for graphic dumps, this can be found on the workbench disk supplied with the computer.

M A Lambe, St Austell, Cornwall

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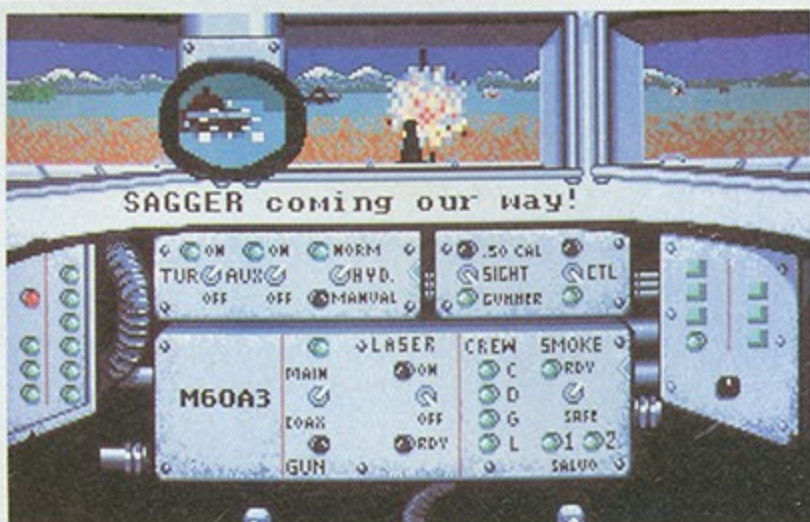
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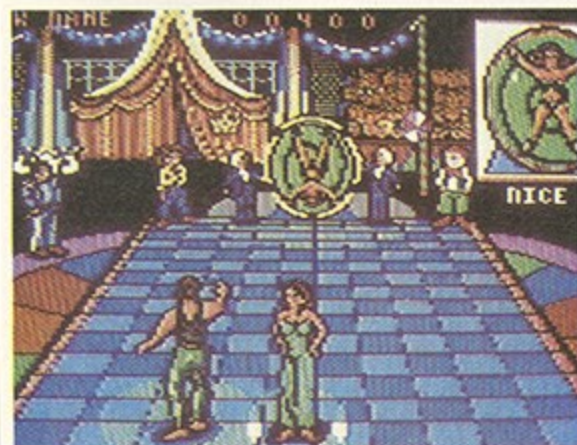
## STEEL THUNDER ACCOLADE

The latest in a recent spate of tank simulators, *Steel Thunder* places you in control of four major US tankies: M1A1 Abrams, M3 Bradley Cavalry Fighting Vehicle, M60A3 and M48A5 Patton. Not content with offering just one theatre of war to smash the commies in, *Steel Thunder* lets you take on the Russkies in West Germany, Cuba and Syria. Out now on C64 disk and PC.



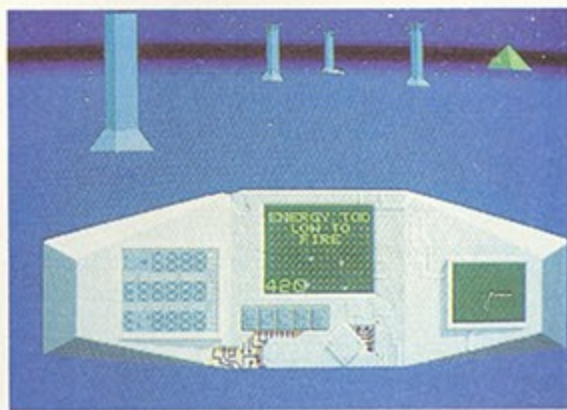
## CIRCUS ATTRACTIONS GOLDEN GOBLINS

All the fun of the Big Top can be yours thanks to the latest release from German-based software company, Golden Goblins. *Circus Attractions* is a sports-sim type game containing trapezining, juggling, tightrope walking, knife throwing and clown jumping events. One or two players can play the game, but they'll have to work as a team to be successful. Available soon on C64, ST, Amiga and PC.



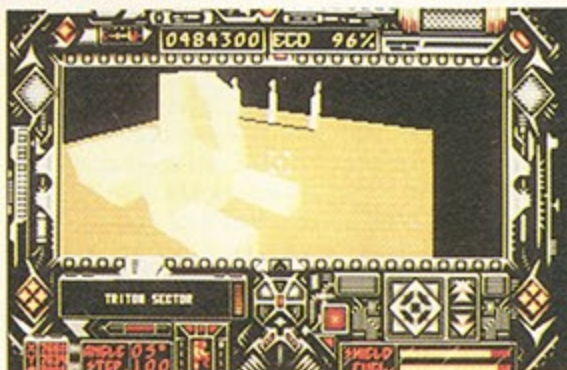
## TWYLYTE RAPID

Another 16-bit budget release from Rapid, *Twylite* is a solid 3-D shoot-'em-up featuring five different stages of action for you to fight through. Out shortly on ST and Amiga.



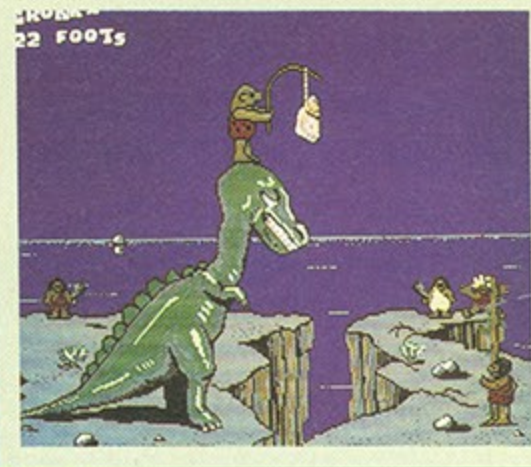
## DARKSIDE INCENTIVE

Out soon on ST and Amiga, *Darkside* features Incentive's well known and highly regarded Freespace solid 3D landscaping system. The sequel to *Driller*, *Darkside* takes the story up 200 years later with you on a mission to destroy the network of ECD's (Energy Collection Devices) on the moon Tricuspid, in order to stop the Ketars' evil plans for revenge.



## CAVEMAN UGH-LYMPICS ELECTRONIC ARTS

*Ugh-Lympics* is a sports-sim with a difference... it's set in prehistoric times! One to four-players can compete in six events, covering such themes as Clubbing, Dinovaulting and the totally sexist Mate Toss - with the ultimate aim being a place for yourself in the Caves of Fame. *Ugh-Lympics* will shortly be released on PC, the C64 version was reviewed in *Express* 1.



## STEIGER SCREEN 7

*Steiger* is an arcade blast-'em-up featuring you in the role of a mercenary looking for trouble - and finding it, courtesy of the US Navy, with you assigned with the task of wiping out a terrorist training camp. Out soon on C64, ST and Amiga.



## THE DUEL - TEST DRIVE II ACCOLADE

Already out on the Amiga and PC (reviewed in *Express* 26), *The Duel* is now available on the C64. Taking the helm of a Ferrari F40 or a Porsche 959 - cruising around looking cool and feeling good before the pig patrol do you for speeding - this racing sim has just a hint of Americana about it. Look out for Spectrum, CPC and ST versions in the near future.



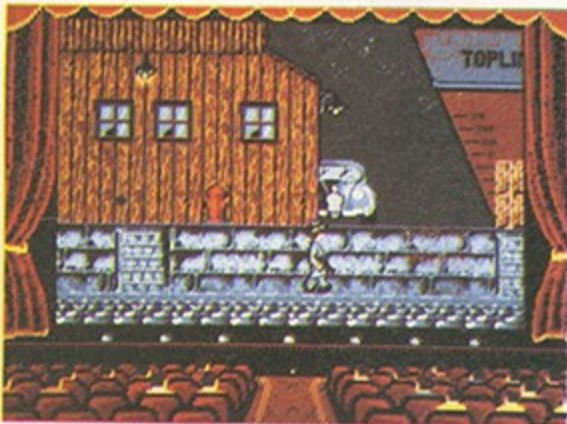
● Amiga games are looking up, thanks to Psygnosis' *Blood Money* and *Bio Challenge* by Palace. It's a pity the same can't be said of the appalling *Out Run*, boring *Muncher*, indifferent *Legacy of the Ancients* or shallow *Chicago 30's*. Still, if we didn't see trash like this, we wouldn't be able to judge a decent game.

## CHICAGO 30s

US GOLD

ST • £19.99dk

Also on Spectrum, C64, CPC



• Go for a curtain call

Take to the streets as champion law-enforcer Eliot Ness as you seek to rid 1930s Chicago of prohibition gangsters...

● **GAMEPLAY**

The one-paragraph scenario sums up your task in this arcade-type shoot-'em-up from Spanish software house Toposoft – kill or be killed.

You control a small foot-bound character tramping *Rolling Thunder*-style through the streets shooting everything in sight. You can move left, right, up and down, using either keyboard or joystick. All rather awkward when you're under fire, so to start with you'll be pushing up daisies with monotonous regularity. Fortunately, once you suss out the attack patterns, things get easier. For example, you can complete Level One out of four by choosing the upper of two routes and plodding relentlessly, gun on autofire, to the end.

Level Two sees you upgrading to a car with all the performance of a turbocharged invalid carriage, from where you can continue your crusade against the city low-life. Your ultimate aim is to reach the end of Level Four and the warehouse where the illegal booze bartering goes on.

● **GRAPHICS AND SOUND**

Backdrops are uninspiring, and the sprites small and indifferently animated. Sound is limited to a rather forgettable tune during loading, and the steady crashing of gunfire during play.

● **OTHER VERSIONS**

Nothing special on other micros either.

# BIO CHALLENGE

PALACE

Amiga £24.99dk

Also on ST

*Bio Challenge* is the debut release from French software company Delphine Software, a subsidiary of Delphine Records which handle the likes of Richard Claydermann...

● **GAMEPLAY**

First impressions of *Bio Challenge* reveal it as just another horizontally-scrolling platform game. However, these foolish feelings soon give way to the underlying complexity found within its deeper foundations. The biggest problem is handling the awkward control method as of your on-screen persona as you control KLIPT, the latest development of person-machine fusion in a mission to save personkind.

● **GRAPHICS AND SOUND**

Audio-visuals are well up to scratch – and then some –

with parallax scrolling backdrops, minuscule sprites whizzing around the screen, and your brilliant (Baby?) Bio sprite with its multitude of animations and movements really helps conjure up a terrific sense of empathy for your character.

During the game you get a typical Euro-pop soundtrack blasting through the speakers – it may get on your nerves after a while.

On top of this, you get some amazing intro sequences before starting play.

● **OTHER VERSIONS**

The ST version of *Bio Challenge* performs remarkably well – even the scrolling and audio matches its Amiga partner to a very close degree. When it comes to programming the ST the French really know their onions!

● **EXPRESS VERDICT**

*Bio Challenge* immediately shows its French origins – distinctive audio-visuals and infuriatingly off-beat gameplay. It's a weird, wonderful and wickedly addictive game. You'll either love it or positively hate it.

★ ★ ★ ★

Rik Haynes

### OFFBEAT



• Baby Bio starting out on its great adventure



• Waiting for fatso to move under the slab

● **EXPRESS VERDICT**

Audio-visually unexciting, *Chicago 30s* features monotonous and unrewarding gameplay. Only determined gamers would bother to complete it.

★ ★

Rod Lawton

## LEGACY OF THE ANCIENTS

ELECTRONIC ARTS

PC • £14.99dk

Also on C64

And now, for all mercenaries with a taste for the unusual, comes EA's Software Classic release *Legacy of the Ancients*, an adopt-the-persona cosh 'n' kill 'em with 3D dungeons, rolling landscapes and more superlatives than *Roget's Thesaurus*.

● **GAMEPLAY**

You adopt the alter-ego of a poor peasant who, after finding a dead man with a leather-bound scroll, is charged with the task of ridding said scroll of its magic powers (ho-hum...). Beginning the game in a Time-Space Museum, you enter different worlds by passing into the exhibits (do I detect a scenario à la *Star Trek*?) and once into these other worlds you must equip yourself with armour and spells, rob banks and fight bad guys until at last you can nullify the power of the scroll.

The 'other worlds' consist of scrolling green patches with you as a 2D character laid over the top. At various times other 2D blobs pop up and attempt to engage you in battle.

● **GRAPHICS AND SOUND**

The museum graphics are a reasonable attempt at 3D, but *Monster Maze* on the ZX81 did it all five years ago. The packaging advertises 'incredible' sound effects – the only incredible thing about the sound is that Electronic Arts dared to include them in the game.

● **OTHER VERSIONS**

Also available on disk for the Commodore 64.



• Software Classics? You must be joking...

● **EXPRESS VERDICT**

The game has a super plot but its badly implemented. Graphics are supremely uninspiring, fight sequences are boring and its difficult to care a damn whether you can remove the scroll's power or not. Visit a bookshop, where £14.99 will buy you some excellent fiction.

★ ★

Merlin Mellish



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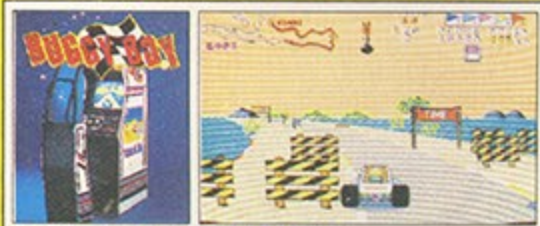
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### THE MUNCHER

GREMLIN

Spectrum • £7.99cs, £12.99dk  
Also on C64



• And you thought Chewits were rather tasteless...

Munch your way through helicopters, buildings and the screaming residents of Gobblesville in this munch-'em-up from Gremlin.

● **GAMEPLAY**

You play the Muncher, a prehistoric creature from the dawn of time (at least, the game looks as though it was programmed at the dawn of time) out to eat Japan. After slithering from the sea you approach the first town on the menu. Beneath your great feet, people run screaming, and it's here that you can gain vital points – by stamping on them. Helicopters can be taken from the air with a slick little jump and a twist of the head and buildings totalled by walking into them. The object of the game is to destroy and devastate as much as you can, thereby amassing points.

● **GRAPHICS AND SOUND**

The Muncher itself is reasonable well drawn, but horrendous colour clashes make the whole display a pain to look at for more than a few tenths of a second. Frantic caterwaulings emanate from the Spectrum's pitifully poor speaker, and coupled with the dire graphics, the experience is like watching a Fellini movie on acid.

● **OTHER VERSIONS**

Also available for the Commodore 64.

● **EXPRESS VERDICT**

It was a long shot, but it just didn't work. The free badge was much appreciated but for £7.99 I want more than personal adornments, I want meaty gameplay and spectacular sounds – this 'game' has neither. If you buy it, bin it (preferably before playing).



Fielding Mellish

### OUT RUN

US GOLD

PC • £24.99dk  
Also on Spectrum, C64, CPC, ST, Amiga,  
Sega console (not US Gold)

Wasn't 8-bit *Out Run* Christmas Number One in 1987? Yes, that's right, and now it has just been released on PC, so has it been worth the wait?

● **VERSION UPDATE**

In control of an open-top Testarossa complete with girlie at your side, you travel through some decidedly dodgy road terrain in your bid to win fame, fortune and a no-claims bonus. That is, of course if you can master the inadequate, unfair control method employed – it's easier to drive a real-life car after six pints of home-brew Liebfraumilch than it is to drive the car in this game.

# BLOOD MONEY

PSYGNOSIS

Amiga £24.99dk  
Under development on C64, ST, PC

*Blood Money* is the follow up to *Menace*, the highly successful horizontally-scrolling shoot-'em-up released last year...

● **GAMEPLAY**

Originality nowhere to be seen – at first sight – as you take on all sorts of alien scum in this one or simultaneous two-player horizontally, sometimes vertically-scrolling shoot-'em-up.

Variations on the genre come in the form of aliens yielding credits (which can then be used to buy extra weaponry from armaments stores scattered throughout the landscape), unusual alien sprites (jellyfish for instance) and neat touches such as an antennae pylon making your joystick controls reverse...

● **GRAPHICS AND SOUND**

*Blood Money* continues Psygnosis' high standards in audio-visual excellence, and even takes them one step further.

From start to finish you witness polished presentation from the impressive opening sequence with the asteroid field, through the sampled music house track while the main section loads, to the game selection screen with parallax-scrolling starfield.

In-game visuals are split between atmospheric smooth-scrolling backdrops (very reminiscent of *Menace*) to well drawn sprites – all with perfect animation and colouration. The only visual quibble we

**ADDICTIVE**



• Making the opposition shake like...er, jellies

have is the pathetic definition used for your character's sprite.

Audio is split between a soundtrack and standard renditions of game spot-effects which do their assigned duties admirably.

● **OTHER VERSIONS**

The C64 version looks set to be released first, some time in the Summer. The ST and PC versions should follow in early Autumn.

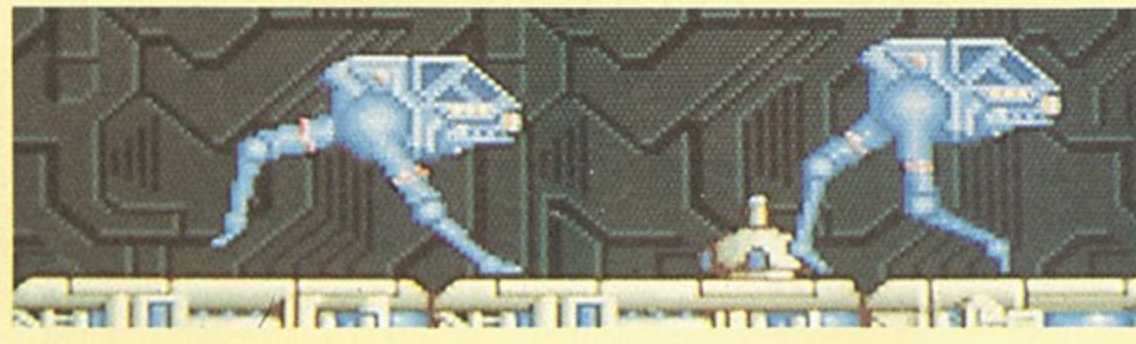
● **EXPRESS VERDICT**

Sure, *Blood Money* isn't that original or new – but it is expertly programmed, audio-visually appealing, and very addictive.

*Blood Money* really takes off when played in two-player mode, and (Cliche no. 23A – Reviews Ed) should sit comfortably in any shoot-'em-up fan's software collection.



Rik Haynes



● **GRAPHICS AND SOUND**

Surprisingly, PC *Out Run* scores the most highly in the audio-visual departments. Both CGA and EGA displays are well done, and all the infamous *Out Run* soundtracks have been accurately converted – bearing in mind the lack of the PC sound capability.

● **OTHER VERSIONS**

As we said before, when 8-bit *Out Run* was released, innocent customers were swept up by US Gold's hype factory, taken for a ride, and left with a really atrocious farce of a conversion. The same was true of the ST and Amiga (reviewed in *Express 2*) conversions six months

later. *Out Run* on the Sega console was the only accurate conversion – the one that wasn't written by US Gold.

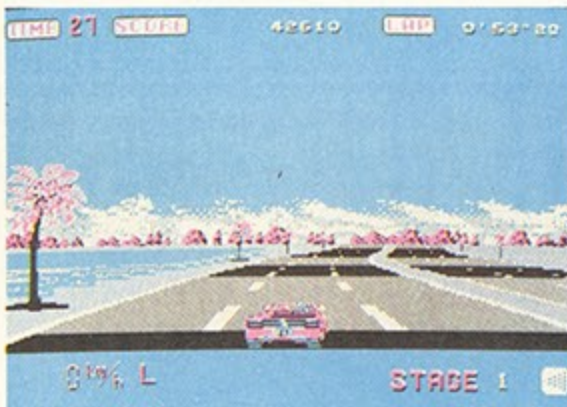
● **EXPRESS VERDICT**

Not bad audio-visuals, it's just a shame the game plays like a Stock, Aitken and Waterman record: dull, repetitive and devoid of any originality.

Sorry, US Gold, *Out Run* has been as successfully converted to the PC as with the other micros – i.e. losing all of the original coin-ops good qualities on the way.



Rik Haynes



• Running out on CGA...



• ...and EGA

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# EXPRESS

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# Computer Chaos

Another collection of incredible, ridiculous, preposterous, and plain daft – but true – computer stories from Mel Croucher's archives

## USAF, Daws Hill

Half a million pounds' worth of American Air Force data and hardware is burned to cinders when fire rips through the computer room. As well as military information, confidential payroll, bank and credit card details are also lost.

The security squad reports that they have been the victim of sabotage when they discover the computer power cable has been severed, and the proof is clear when the saboteur's dead body is found nearby. He is hurriedly buried near to the air strip. Heat sensors and video cameras will be installed immediately to prevent similar incidents.

The identity of the pyromaniac? A baby squirrel.

Daily Mail

## Wandsworth, London

The Ministry of Defence is rather prickly after some top secret training manuals for the Tornado fighter are found on a London rubbish dump and classified Naval printouts turn up on a Reading towpath.

They go onto Red Alert when secret computer tapes which contain guided missile data vanish in transit.

Later that week, the spools of tape are handed into the Post Office Lost Property counter, and the search for spies is called off. It transpires that the Ministry of Defence sent them via Her Majesty's Royal Mail and they literally fell off the back of a lorry.

Computing

## Edinburgh, Scotland

FGH Systems agrees to pay £3,000 compensation for the antisocial behaviour of one of its Donic robots. It originally went to work at the Kavio Restaurant in Leith, but was sent to an Edinburgh restaurant to act as a wine waiter "as a surprise for the customers." The Edinburgh Court is informed that after the robot came into contact with alcohol, it spilled drinks, lost its voice, jostled furniture, ran amok and finally decapitated itself.

The robot is sent to London for reprogramming.

Projects Barlow

## Tom O'Connor's kitchen

A comedian is preparing for a panto season in Inverness, and needs to consult thousands of his most prized gags, which he stores on his home micro. His son is playing with the machine in the kitchen, when his wife pops a chicken into the microwave and switches on. The data disk is wiped, and years of jokes disappear up the parson's nose.

Tom O'Connor

## Chicago, USA

The 1968 Democratic Party Convention opts for very elaborate computerised security, and all the participants are forced to provide machine-readable "magnetic" signatures.

An unfortunate BBC newsman signs his while under the influence of alcohol, and the electronic doors refuse to let him out after he sobers up. The rest of his crew fare no better, when their recording gear erases their signatures.

One coloured delegate burns his card in protest and is told that he will have to stay in the Hall until the Convention has finished.

David Hoeh (Chairman, New Hampshire) is repeatedly refused admission, and on the third day he attacks the security computers, bites a policeman's hand and is hauled off to jail.

Another delegate calls over a TV crew, and proves to them that you can fool the computer by inserting a credit card. He is also arrested by police for tampering with the security system.

Meanwhile, the Republican Party Convention are using their computer to issue identification badges. It rejects only two names: Leonard Hall, the Party Chairman (because it has already got another Leonard Hall on its files) and a delegate who is from no State Delegation. The man's name is Richard Millhouse Nixon.

Beast of Business

## Shoot from the Lip... the week's most quotable sayings

"Between them their sales would probably go some way to paying off the national debt of a struggling third world power."

Database's Michael Meakin going ever so slightly over the top about programmers Jez San, Andrew

Braybrook, Stan Schembri and the Bitmaps.

"Fantastic mag. I think the cover price should be £1.50. It'll keep the Spectrum owners away."

Elitist Express reader Mark Hula

# NEXT WEEK

## The £25 micro

Amazing bargain world of computer auctions

## Archimedes A3000

The first look at Acorn's low-cost Archie

## David Braben

Secrets of the man who wrote Elite and Virus

## e Light

New animation package for the Amiga

## Tech tips

Your computer problems solved!

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Another blistering collection of letters, reviews, features, games, classified bargains... plus part 6 of the A-Z and the very latest in news and comment on the computer scene

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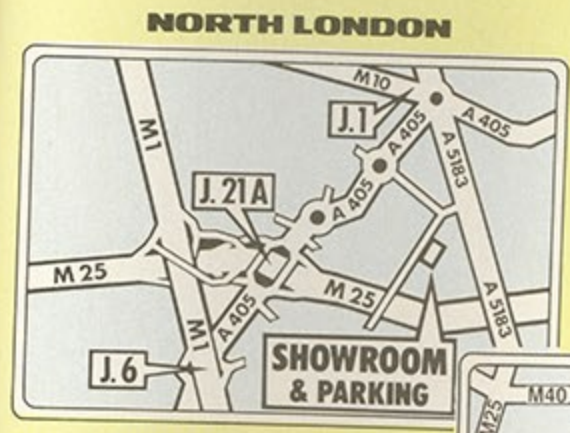
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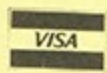
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*...the name of the game*

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