

POPULAR
Computing
WEEKLY

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Vol 6 No 10

Commodore launches new Amigas in Europe

Full details on page 4

News Desk

Microprose attracts more US companies

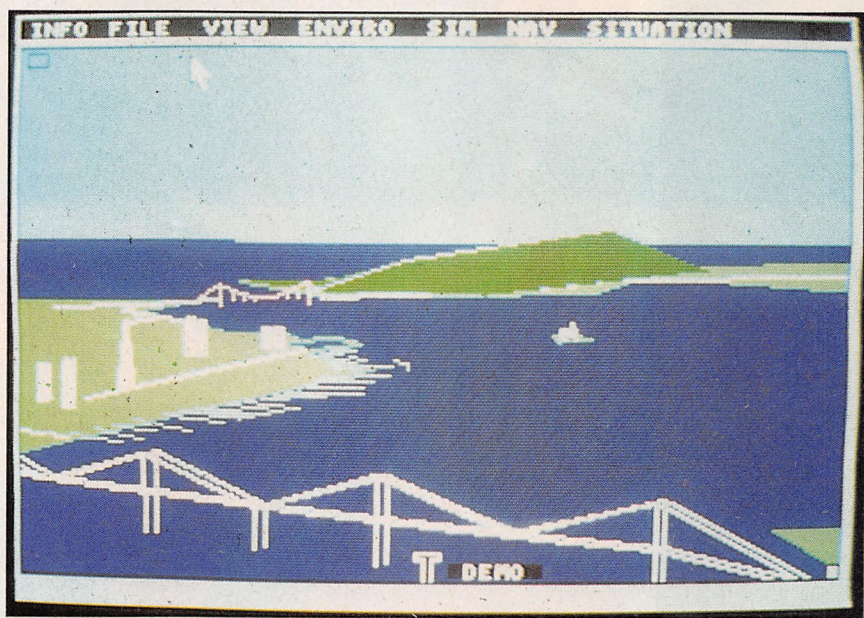
Amstrad PC deals from Softshop

Garfield signs up

Flight Simulation

Sub Logic's Flight Simulator II

- now on Atari ST see page 16



SPECIAL
supplement

PC Compatibles

RIDERS GO FULL CIRCLE...



SHOCKWAY RIDER

SPECTRUM £7.95

AMSTRAD & COMMODORE £8.95

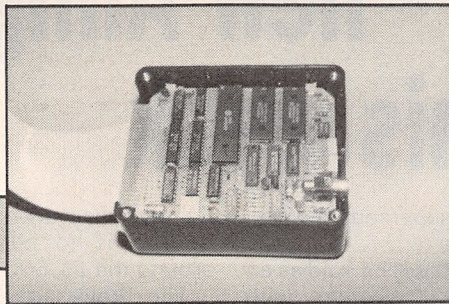
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SEDGLEY ROAD EAST, TIPTON, WEST MIDLANDS DY4 7UJ. Tel: 021-557 2981 (4 lines)

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Check out this black and white frame-grabbing video digitiser for Amstrad CPCs.



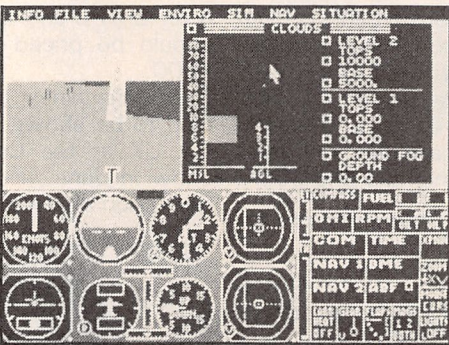
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ABC

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Commodore - new Amigas in Europe this week

COMMODORE launched its two new Amiga machines in Europe this week, with a public demonstration at the Hannover Fair in Germany, and a simultaneous announcement in London.

The two machines, the A500 and A2000, will be positioned below and above the current A1000 respectively, with the A500 being aimed at the individual and small business user, and the A2000 more specifically at the science and engineering markets. It is not yet clear how soon the two new ma-

chines will supersede the present Amiga.

The A500 will be sold as an integral 512K system, with the keyboard, processor. A final price has not yet been announced but will be pitched to compete with Atari's ST range.

The A2000 comes in at the other end of the scale and improves considerably on the present mode. It has a larger casing, with 'knock-out' panels for a second 3½ inch drive and either a 5¼ inch drive or a hard disc, one megabyte of memory and 880K

3½ inch disc drive. Commodore aims to pitch this at around the £1,500 mark.

The keyboard has also been expanded, with extra help and maths function keys.

Commodore is also taking IBM compatibility a step further with the A2000. Available as an extra is the A2088 card, which is basically an IBM PC on a board. This should be priced at around £500.

The machines are scheduled to be shown publicly in the UK at the Commodore show in June, and available here soon afterwards.

Amiga trade-in bargain

SUPERSOFT is promoting a trade-in offer on old Commodore systems which is generous to say the least - but it claims it will still make money on the deal.

The most attractive offer is for Commodore systems including an 8296D or GD machine. Trade one of these in, and Supersoft says it will sell a new Amiga 1000 system with 512K of memory, built-in 880K disc drive, high-resolution colour monitor and mouse, for £402.50 inclusive.

That represents a saving of £850 compared with a usual price of £1258 although Supersoft says it will also offer "generous" deals on any Commodore system.

Peter Calver of Supersoft explained the company's reasoning behind the offer.

"Obviously, we'd hope that we could sell the second-hand machines for more than we paid for them. Second-hand computers are now a large part of our business.

"A lot of people are now upgrading their system by buying a PC, and then coming to us to see if we'll take their old Commodore off their hands.

"We'd much rather they came straight to Supersoft in the first place, and bought an Amiga from us into the bargain."

Full details are available from Supersoft at Winchester House, Canning Road, Wealdstone, Harrow, Middlesex HA3 7SJ, 01-861 1166.

Artroom extension

CLARES Micro Supplies have launched a new package for Master Compact users of *Artroom* - the *Artroom Colour Extension (ACE)*.

ACE consists of three programs. The main program, *Colourizer*, converts the *Artroom* screen to Mode one and enables users to colour in *Artroom* pictures with up to four colours, and ECF patterns. New ECF patterns can be saved on disc, and the colour screen can be printed

using the Mode one printer dump.

The second program converts any graphics screen into a Mode four *Artroom* screen, and the third is a graphics library.

ACE costs £15 on 5¼ inch disc for the Master 128, or £17 on 3½ inch disc for the Compact, and is available from Clares Micro Supplies, 98 Middlewich Road, Northwich, Cheshire CW9 7DA (0606) 48511.

US Gold - new deal, new games

US GOLD has signed new contracts with both Strategic Simulations Inc (SSI) and Broderbund.

Gold plans to release not only individual titles from the two companies, but also compilations.

The first SSI simulation will be called *Wartime Greats*, for the Commodore 64, and comprises *Tigers in the Snow*, *Combat Leader*, *Knights of the Desert* and *Battle for Normandy*. It will be priced at £9.99 on tape and £14.99 on disc.

Two Commodore 64 Broderbund compilations are also planned: the *Lode Runner Trilogy* and *Broderbund*.

The first will contain *Lode Runner*, *Lode Runner Rescue* and *Championship Lode Run-*

ner, *Broderbund* comprises *Raid on Bungeling Bay*, *Spe-lunker*, *Stealthy* and *Choplifter*.

Again, prices are £9.99 on tape and £14.99 on disc. All three products are scheduled for release at Easter, in the middle of April.

Low price digitiser

HB Marketing has announced a low cost video digitizer for the ST range. Realtizer is a high performance package retailing at £199.

The product plugs into the ST cartridge slot, and connects to video recorders and cameras, supporting colour and monochrome screens.

Realtizer's automatic expo-



Commodore's new A2000, with one megabyte Ram, slots for additional 3½ inch and 5 inch discs

● Commodore's long-awaited Ram expansion packs for the C128 are at last available.

Two models are being sold - the 1750 box, comprising 512K Ram and retailing at £149.99, and the 1700, an extra 128K Ram selling at £99.99.

sure system can be set at two, four, eight or 16 grey levels, and it has a palette of 512 colours. Images can be stored in *Neochrome*, *Degas*, *Doodle*, *Art Director* or *IMG* formats.

Realtizer is available from HB Marketing, Pier Road, North Feltham Trading Estate, Feltham, Middlesex.

Microprose UK deal

MICROPROSE, the American simulation software company is entering into a joint venture agreement in the UK with Origin Systems Inc, publishers of the *Ultima* series of software in the US (see *Popular Computing Weekly*, February 12).

Origin has appointed a product manager for its UK operations and Microprose will be handling distribution of its full range for IBM, Macintosh, and ST machines.

Activision, whose UK division is based in North London, is also reported to be trying to attract US companies to the UK on a joint venture basis.

Dixons bid opens door in US for Amstrad

DIXONS, the high street electrical retailer, is nearing completion of its £256 million bid for the American Cyclops chain. And Amstrad, which has enjoyed a close relationship with Dixons as a retailer, have confirmed that it would be after any business resulting from the deal.

Both Amstrad and Dixons are unwilling or unable to confirm whether discussions had taken place between the two companies about collaboration after the imminent takeover.

The PCW 8256/8512 flopped in the US when carried by the giant Sears chain, but Vidco, the American distributor for the PC 1512, claims it has been "overwhelmed by demand" since it was launched in the US last January.

An Amstrad spokesman explained the differing fortunes of the two machines.

"It comes down to the way it's marketed. I wouldn't call the PCW an abject failure. Sears is a very big corporation, and more of a buyer than a retailer, if you see what I mean. Their marketing drive

is not fully there.

"We chose Vidco because they're a small company and they know their market. They were heavily involved with Commodore, but they dropped that commitment to handle the PC."

Vidco has been successful in getting the Amstrad machines into several US multiples, but clearly the Dixons deal could mean vastly increased sales across the US. Amstrad's spokesman was coy when asked about the Dixons bid.

"We discuss matters regularly with all our long-term customers. Obviously, we're after as much distribution as we can get. We hope we would be considered should Dixons be successful."

Dixons' Richard Kalms could not confirm whether such discussions had taken place either.

Dixons has bid \$92½ per share for Cyclops. This has been accepted, and looks set to give Dixons entry to the \$24 billion (£16 billion) market for electrical products in the US through Cyclops' 119 shops.

Garfield on a screen near you

THE Edge has announced details of its Garfield game, *Big Fat Hairy Deal*, which is due for release "sometime in April".

The game will be available for Spectrum, Amstrad and Commodore machines. Cheri Langdell explained some details of the game.

"Basically, it's an arcade game with animated graphics. We've had to keep the graphics and the story within the parameters of the original cartoon, and so the game will also feature the original cast of characters."



The game will cost £7.95 for the Spectrum, £8.95 for the Amstrad and Commodore tape versions, £12.95 for the Commodore disc version, and £14.95 for the Amstrad disc version.

Locoscript layout aid

NOVICE *Locoscript* users who need to design invoices, letterheads, etc, will welcome an inexpensive item from Brian Worts of Exmouth.

TempMate consists of a clear acetate sheet attached to a card backing sheet. The acetate is marked out with

positions for margins, tabs, lines for window envelope addresses and so on.

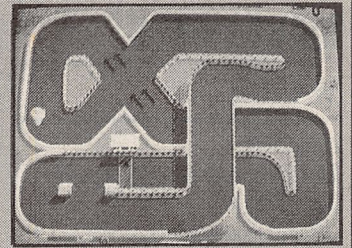
TempMate is available, price £4.30 including postage and packing, from Brian Worts, 18 Danby Terrace, Exmouth EX8 1QS, (0395) 277496.

Software Hotlines

THERE'S a lot of very confused people in the business and it's difficult to know exactly on what to pin the blame. Overconsumption of narcotic substances is out – most software houses just don't make enough of the kind of money needed to keep permanently stoned, so maybe it's down to those heavy business lunches – although I favour that old standby, congenital brain damage.

CRL has announced the release of a title called *Frankenstein* (a three part graphic adventure) while **Ariolasoft** has just released, yup, *Bride of Frankenstein*. **Anco** will be unleashing the awesome power within the C16 with *Summer Events* which, remember, has nothing to do with *Summer Games* from **Epyx**. Let us not mention the embarrassment of **Imagine** producing the *Breakout* variant *Arkanoid* at the same time as **Gremlin** releasing *Krakout* (quote from the advert – "we mistimed it," – never a truer word, etc). Or the fact that **CRL** will be bringing us *Ball Breaker* shortly.

So, let us pass onto *Nemesis*, surely the most over reviewed while unfinished game since **Beyond's Dark Sceptre**. Now there is not only *Nemesis* the **Konami** coin-op conversion, but *Nemesis* – *The Warlock* from **Martech**. The latter is a character from 2000AD, that magazine being identified by those marketing chaps as having the perfect consumer profile for games licensing deals. De-



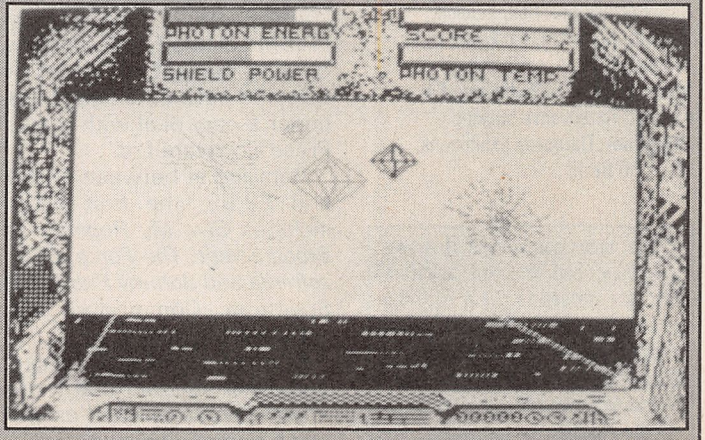
spite this fact, both tie-ins so far, **Piranha's Rogue Trooper** and **Melbourne House's Judge Dredd** have not done very well at all. Which must mean something... Who knows, Martech might get third time lucky – the programming is being done by **Catylist Coders** who did the excellent Amstrad CPC *Jail Break* for **Konami**.

Other forthcoming **Martech** projects include the "very crazy, very zany" *Cosmic Shock Absorber* (below) and a maze-based shooter called *Pulsator* plus very interestingly, an ST version of *Zoids*.

Did you know that ½ a million people walk into Britain's amusement arcades every day, although 10 of them are me. I'm currently addicted to *Championship Super Sprint* (above) – can't wait for the **Activision/Electric Dreams** version of the original.

Grange Hill has just arrived in the office, complete with section where you must firmly say 'no' to the drug pusher, although I'm still looking for the bit dealing with safe sex. Must be there somewhere.

Finally, in what must be the most sickeningly self-congratulatory press release of the decade, **Activision** has announced that Andrew Wright has become 'Ambassador' of the company. May I be the first to claim diplomatic immunity? **John Cook**



DIARY DATES

MARCH

20-22 March

The Electron & BBC Micro User Show

UMIST, Manchester

Details: Software, hardware and peripherals for Acorn's micros

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

APRIL

11 April

Dragon Computer Show

Ossett Town Hall, nr Wakefield, W Yorks

Details: Software, hardware and demonstrations for Dragon users

Price: £1 adults, 50p children and OAPs

Organiser: John Penn, 04203 5970

24-26 April

The Atari Computer Show

Novotel, London W6

Details: First chance for Atari to show off exciting new strategy

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

MAY

2-3 May

First Ideal

Microcomputer Show

Kensington Exhibition Centre

Details: Software, hardware, peripherals for consumer users

Price: £3 on door, £2 in advance

Organiser: RAMCO International Exhibitions, 01-906 3363

8-10 May

The Electron & BBC Micro User Show

New Horticultural Hall, London

Details: Software, hardware and peripherals for Acorn's micros

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

PC systems under £1000 from Ryman

SOFTSHOP, the computer retail outlet to be found in some Ryman stores, has put together three budget systems based around the Amstrad PC1512.

The first costs £999, and includes the double disc drive PC1512, monochrome monitor plus an 80 column dot matrix printer and integrated office software featuring spreadsheet, wordprocessor, database management and graphics systems.

The £1499 middle package features a letter-quality printer and training software, while the top of the range £1999 system consists of a hard disc PC plus database, spreadsheet and financial modeller, accounting, payroll and training software.

All packages include pre- and post-installation support, and it is understood that colour monitors are included in

the £1499 and £1999 packages.

The packages are aimed at small business users, and can be tailored to individual needs, within defined limits.

Softshop MD Mark Horne commented: "The Amstrad PC has identified and created this market between home and corporate users - people who needed a versatile system, but were not prepared to spend the huge sums necessary. We are catering for that market."

He added that although there are no plans to make these packages available in other Softshop or Ryman branches, this may change if the scheme is a success.

All prices include Vat, and the packages are available from the Softshop Low Cost Computer Centre, Ryman, 66 Tottenham Court Road, London W1.

Amiga - new 4GL

MICROAPL has released a new version of its *APL 68000* mainframe 4GL for the Amiga, following similar products for the Apple Macintosh and Atari ST.

Designed for individual and corporate users who want to make the fullest use of the Amiga architecture, *APL 68000* includes an IBM-compatible interpreter, support for Amiga colour graphics, access to all Amiga's multi-tasking, windowing, speech and sound-synthesis facilities.

Argus cheapies

PRISM Leisure Corporation is offering the first in a series of selected back-catalogue titles under a new deal with Argus Press Software Ltd.

Retailing at between £1.99 and £2.99, the first batch includes *Give My Regards To Broad Street*, *The Force*, *Schizophrenia* and *Johnny Reb II*, for Spectrum, Commodore and Amstrad Machines.

Prism's principal buyer, Terry Ashton said that more titles will be available "as and when demand tells us.

Precision database for Amstrad PC

PRECISION Software, known mainly for its Commodore products, has moved over to the Amstrad PC1512, with *Superbase Personal*.

It was originally developed on the Amiga. A Precision spokeswoman claimed *Superbase* was different for two reasons - "its versatility, and its power for the price."



The system places no limit on the number of fields, and relational reports can be built up from any number of files.

Superbase features also include a graphics management capability, windows and menu-driven operation.

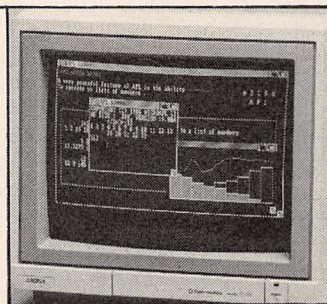
It costs £99.95 from dealers, or further information may be obtained direct from Precision Software, 6 Park Terrace, Worcester Park, Surrey KT4 7JZ.

64 & 128 - help on its way

SUPERSOFT has released the *Help* utility cartridge for the Commodore 64 and 128.

Help's main features are Basic programming aids, a full two-pass symbolic assembler, a machine code monitor and disc support commands. It operates with no reduction in the memory for Basic, and the 128 version also operates in 64 mode.

Supersoft *Help* costs £39.95, and is available direct from Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex HA3 7SJ, 01-861 1166, or from specialist dealers.

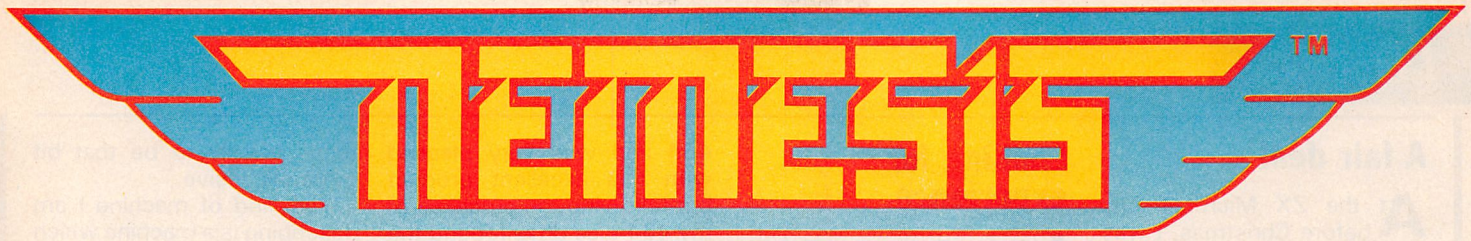


APL 68000 costs £230 including Vat, and is available direct from MicroAPL, Unit 1F, Nine Elms Industrial Estate, 87 Kirtling Street, London SW8 5BP, 01-622 0395.

"They will all be existing stock with the existing packaging, but at the new low price," he added. First titles should be available early this month.

Correction

THE Megafont ST review in last week's issue gave Silica Shop as the supplier - prospective fonters would do better to contact the actual distributors, Software Express, at 514-516 Alum Rock Road, Alum Rock, Birmingham B8 3HX.



The Final Challenge



Launching soon on:

Spectrum £7.95
Amstrad, Commodore tape £8.95
Amstrad, Commodore disc £14.95

For mail order enquiries please write to:

NMC Limited, PO Box 67
London SW11 1BS
or call on 01-228 6730

A fair deal

At the ZX Microfair just before Christmas, I was given the chance to buy an unwanted advance ticket for just £1 – half the price of an on-the-door ticket. I welcomed this as I seldom have very much money, especially at Christmas.

However, I could not buy the ticket straight away as I did not have change, for a £10 note was the only money I had.

I therefore asked for change from the ticket desk. They were perfectly willing at first – they had literally piles of change, mainly in £1 coins – but when they realised what I wanted it for, they refused and could not be persuaded to change their minds.

In the end, I could not get change in time. Naturally, I was very put out by this, and at the first opportunity (Monday 15th) I wrote an angry letter to Mike Johnson, the Microfair organiser about it.

Having heard nothing for over a month, I thought the whole matter had been dropped. Today, however, I have received a free advance ticket for the next show! Presumably, Mike Johnson spent the intervening month checking my claim.

Thank you, Mike Johnson.

Robert J Baker
London SW4

Looking for experience

I am currently researching any projects using computers with severely handicapped people with the view of starting a project in East Sussex. I would be grateful if any readers have experiences they could pass on to me.

The aim of the project in Brighton will be to investigate whether computers can be used as a tool to facilitate communication, possibly at a very low level, with mentally handicapped adults, who would otherwise have no communication at the present time.

In particular, I am interested in programs that are geared towards adults rather than children and your readers' experience with the hardware they use.

Mark Tennent
Social Services Department
Hollingdean and Coldean
Office
62 Brentwood Road
Brighton, East Sussex

Backing up ESP

As a subscriber to your magazine, I would like to inform you and your readers of my recent excellent back up help from the Electric Studio light-pen company.

I had bought the tape based ESP light-pen for my Amstrad

464 and was very pleased with this excellent product but following the purchase of my 464 disc drive I found the only way to continue using the light-pen was to constantly remove/refit the two interfaces. This would obviously soon wear out the board edge connector, and so I wrote to ESP for help.

Within a week of my writing, Electric Studio sent me an upgrade to a disc based light-pen system. Unfortunately this was faulty and so I returned it to them explaining the problems. By return of post I received a fully working disc based light-pen which myself and my children are again using.

I can fully recommend both this pen and the company for its excellent back up help.

John Wright
Solihull

One for the money, two for the show

What on earth does P. Erskine of Essex (*Popular* Jan 8) want for his money? From what I have managed to deduce from Mr Erskine's two letters, it would appear that he is somewhat out of touch with what is currently happening in the computer industry. He seems unable to grasp the simple fact that any computer worth its chips

tends usually to be that bit more expensive.

The kind of machine I am describing is a machine which allows the user a wide range of hardware ports (without having to purchase interface x, y and z), reasonable memory, and a machine which doesn't lose its keys when you turn it upside down.

As I see it, 16-bit machines such as the Atari ST range will become increasingly popular, and not due to a default factor, which is a ludicrous suggestion in the first place since there are already several 68000 based systems on the market. We shouldn't really be comparing them, but if you consider the price of a Commodore 64 with disc drive at around £450 and the Atari 520ST-FM priced at £399, it would seem fairly obvious in which direction the market is heading.

I would suggest, as an alternative to a 16-bit machine, that Mr Erskine should perhaps invest his hard earned pennies in a TI99/4a – you can pick them up for around £20. If, however, he is desperate for a 'cheap' 68000ish machine, I would consider swapping my QL (which I only use as a printer buffer for my ST) for a box of 3½ inch discs.

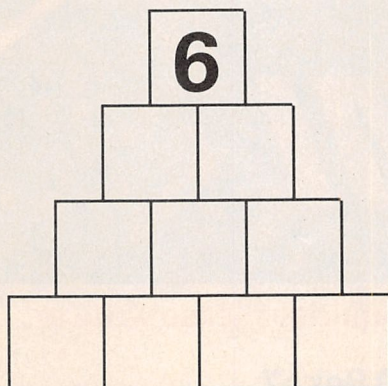
Scott Creighton
Glasgow

Puzzle

Puzzle No 248

Pictured below are ten cards, each bearing a different digit in the range zero to nine, no two cards bearing the same digit. As you can see, they have been arranged into a pyramid of cards with the '6' at the top.

The other cards are placed in such a way as to produce a two digit prime number in the



second row, a three digit cube in the third, and a four digit square in the bottom row.

Can you say how the cards were placed?

Solution to Puzzle No 243

The smallest triangular number with nine digits (1 to 9) is 153694278 representing a triangle with sides of 17532.

The largest is 987523461 formed by a triangle of order 44441.

Therefore if we are adding the series from 1 to n , the corresponding triangular number will be given by the formula $(n + 1)(n/2)$. A few calculations using this formula will show that the lowest nine-digit number that it can generate is $n = 14142$, and the highest is $n = 44720$.

These values are used in the *For/Next* loop in the listing, each triangular number being tested in turn. For speed, a rough test for a non-repeating nine digit result is performed by computing the sum and product of each value. A sequence of digits 1 to 9 in any order will result in a sum of 45 and a product of 362880. Note that other sequences can slip through this test, but it is accurate for this purpose.

```
10 FOR N=14142 TO 44720
20 T=(N+1)*(N/2):T#=STR$(T)
30 S=0:P=1
40 FOR F=1 TO 9
50 V=VAL(MID$(T#,F,1))
60 S=S+V:P=P*V
70 NEXT
80 IF S=45 AND P=362880
   THEN PRINT N;" ";T#
90 NEXT N
```

Winner of Puzzle 243

This week's winner is Dave Jones of Beckton, London E6, who will receive £10.

Rules

The closing date for Puzzle 248 is March 27. Answers should include a program listing if possible.

No amigo for Amiga

I'm not going to start the "my computer is better than yours" argument, which surely must be as old as computers themselves. But I still feel I must comment on Mr. Innset's letter in *Popular* (Jan. 15). First of all, the Amiga is by no way outselling the ST in Norway. My personal estimates say that there are 4 or 5 ST's to every Amiga in Norway. Official sales figures say very little over here, because more than half the ST's in Norway are brought in from England and Germany. If you compare Amiga sales with the ST's, they'll probably be a lot closer than in England. (Which is related to the average Norwegian's earnings.)

The Amiga is still nowhere near the ST in terms of software. The official Atari catalogue lists some 600 titles for the ST. That catalogue is still nowhere near complete, as there are hundreds of programs not listed, many of which are public domain. The graphics on the Amiga may still be better, but has anyone considered why the new SM125 monitor from Atari has a resolution of 1280*960? The German magazine CHIP "revealed" plans for the new EST, which boasts a resolution of 640*480 with 32 colours on-screen, from a palette of 4096. When Atari's AMY sound chip is completed, the Amiga will look quite inferior. Downgrading the Amiga to a PC to get software is more or less absurd, and that'll make it one of the most expensive PC's around (Personally, I'd never touch an IBM emulator, neither for the ST or the Amiga.)

The Amiga is still very full of bugs, although most of the fatal ones have been corrected, new bugs show up every day.

I'd like to mention our user group to Scandinavian readers. A sample issue of our magazine/newsletter will be sent to anyone who contacts us on the following address:

Kristian Rosenvold
Atari ST user group of Norway
Skienstgata 23
3900 Porsgrunn
Norway



WITH APOLOGIES TO JIM DAVIS

Albert and Einstein

I am writing to inform your readers that the East Anglian Einstein Association (EAEA), now produces a monthly newsletter for Einstein owners.

The EAEA is a user group for all Albert owners, not just those in East Anglia. Subscription is £3 for three issues, starting from March.

Further details from EAEA, 80 Dales Road, Ipswich, Suffolk, IP1 4JR. The group is run by myself and Mike Smallman.

Graham Bettany
EAEA

Atari defended

After reading the answer to a letter sent in by one Paul Macdonald to Kenn Garroch's Peek & Poke section of your magazine (Vol 6, No 2) I felt compelled to write.

Paul Macdonald wrote to obtain some information regarding an Atari XE/XL and a Commodore C4 computer.

I go as far as to ask whether Mr Garroch has ever set eyes upon an Atari computer, since in Paul's letter reference is made to the Atari needing an additional interface to be connected to a monitor. He answered that it was probably similar to the Commodore and would need one. If Mr Garroch had simply looked at the back of an Atari computer he would see a 5 din plug in the back labelled 'MONITOR'.

His poor knowledge of the Atari machine was heightened by his dismissal of the Atari's superior sound & graphics and stating that 'in

King of the castle

Move 12 in Game Two of our Readers vs *Colossus* tournament has now been completed.

The Readers, playing white, voted for a castling move. *Colossus*, playing black, has replied by moving its queen's rook (see diagram below for details).

Every vote counts

Now we need your suggestions for the next Readers' move. Send your suggested move to either Inter-Mediates (*Popular Chess*), Freepost, Sawbridgeworth, Herts CM21 9YA (you do not need to use a stamp with this address), or *Popular Chess*, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp). Please note that if you use Freepost,

your entries must be posted promptly - Freepost is slower than paid-for mail. All entries must reach either address by Wednesday, March 11.

The move which gets the most votes will be entered into the game. Results and *Colossus*'s response will be published in two weeks' time.

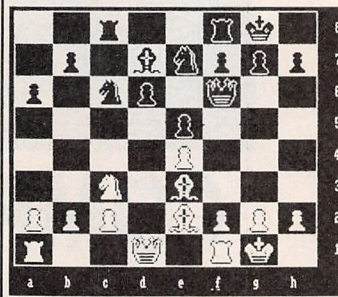
Prizes

A British Museum reproduction Arran chess set will go to the person suggesting the most accepted moves at the end of the game. Five copies of *Colossus Chess 4* (available for most popular micros) will go to the most consistent entrants for the duration of the game.

Next week, we return to Game One, where the readers are playing black.

Game Two

- | | | |
|----|------------|------------|
| 1 | Pe2-e4 | Pc7-c5 |
| 2 | Ng1-f3 | Nb8-c6 |
| 3 | Pd2-d4 | Pc5xd4 |
| 4 | Nf3xd4 | Pe7-e5 |
| 5 | Nd4-b5 | Pa7-a6 |
| 6 | Nb5-d6+ | Bf8xd6 |
| 7 | Qd1xd6 | Qd8-f6 |
| 8 | Qd6-d1 | Ng8-e7 |
| 9 | Nb1-c3 | Pd7-d6 |
| 10 | Bc1-e3 | Ke8-g8 o-o |
| 11 | Bf1-e2 | Bc8-d7 |
| 12 | Kel-gl o-o | Ra8-c8 |
| 13 | ? | |



his opinion' it did not make up for the lack of software available for the machine, a fact Paul Macdonald was already aware of, and surely to be decided by the reader.

Primarily the graphics and sound of both machines are, in the hands of a good M.C programmer, the same. In the case of basic the Atari has the edge due to the poor Commodore basic (although a different basic can be bought).

Secondly, for the games player it all depends upon the software bought. Good games play will result from a game being originally written on that machine, taking full advantage of the hardware. When a game is converted, time is usually the most important factor, so it is usually not as good. The Atari version of Dropzone is faster, while the Commodore Beachhead has far better sound.

Unfortunately I am in no

position to comment upon word-processors on the Commodore, since I have never used one on that machine, although I have heard that Mini Office II is good. As for the Atari it has several, one being the Atari-writer + which I am at present using.

Finally for the best all round machine a lot of variables must be considered, not only the sound, graphics etc. But also the price of the machine itself and its peripherals. An Atari 800XL costs £80, a 130XE costs £110 with the supporting disc drive at £100. The Commodore 64C is £250 with the 1571 disc at £238.

I feel that if this letter is printed it will give Paul Macdonald a far better idea of both machines when he comes to make his choice.

Pierre Chenier
London N11

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Caught in the act of digitising

Chris Jenkins explains how a video digitiser can help you re-capture that special moment you captured on video

As video equipment becomes more affordable, digitisers such as the Rombo Vidi become more popular.

The Vidi will capture pictures from video tape, video cameras, or even other computers. The powerful image editing facilities make Vidi most useful if your intention is to produce a printed digitised image, or to incorporate black and white images into other programs. Indeed, AMS sells the Vidi digitiser with the Amstrad *Pagemaker* package, in order to produce digitised pictures for its desktop publishing programs.

The Vidi comes with software on disc, or, for a small additional charge, on Rom. A ribbon cable connector and a video lead are also provided.

The digitiser itself is a featureless black box; all picture control is through software. Control is available either through a system of menu bars, or using RSX commands in your own programs.

The Vidi is a frame grabber rather than a slow scanner, able to capture up to six frames per second. This makes it possible to use a moving picture for your video source. Some digitisers can only cope with still pictures, and since the pause mode on many video machines creates "snow" and bands of interference on the picture, these are fairly useless.

Vidi images can be captured in three modes; Mode 2, which is high resolution but offers only two shades; Mode 1, medium resolution with four shades; or Mode 0, a special 16-shade limitation.

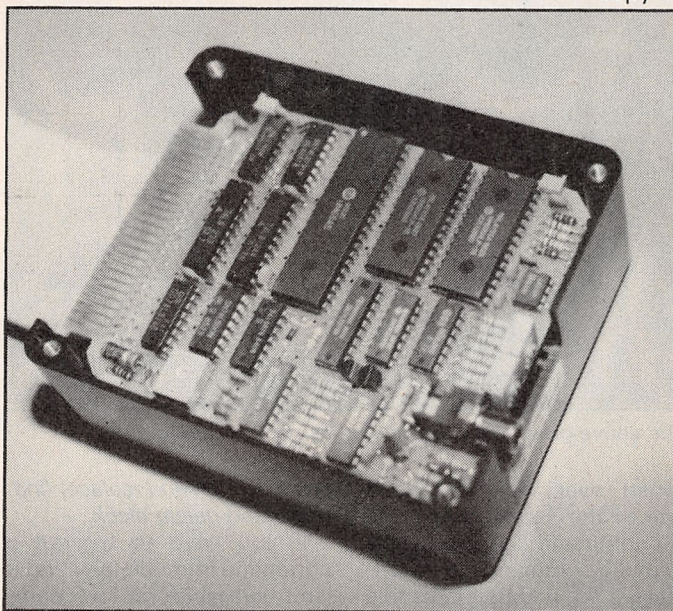
Brightness, contrast, and picture alignment can be set before grabbing a frame, and saving it to disc or tape, printing it out to any Epson compatible printer or flipping to the previous frame.

Each saved image can be assigned an individual filename, and "?" can be used for pattern matching. Files can also be deleted or catalogued from the *Save* menu.

There are two separate types of file extension available; *Bin* is the normal screen only format, while the *Art* option gives two separate files, one the palette file *Pal*, containing the screen mode and colours, the other *Scr* which is the normal screen file.

This option makes files compatible with Rainbird *Art Studio* files, meaning

"Powerful image editing facilities make Vidi most useful if your intention is to incorporate black and white images into other programs"



The internal view of Rombo's Vidi video digitiser

that your Vidi images can be further edited using this power graphics program.

The print menu offers options to print the image horizontally or vertically, single or double strike, and with or without line feed.

The control menu offers what control you have over screen colour; the ink, border and paper colour can be set to any of the CPC's available shades. In Mode 1, a different colour can be assigned to each of the four brightness levels.

Also available is a Mode 0, which allows you to build up a 16-level image using successive shades of brightness. This obviously necessitates using a still image as your video source.

The menu bar system is easy to use, but if you want to incorporate the Vidi into your own programs you will need some knowledge of Basic RSX programming. If you are using Basic 1.0 string variables have to be passed to the RSX routines, using commands such as

`A$="Picture";View,@a$`. Life is simpler with Basic 1.1, where you can use just `View,"Picture"`.

The RSX commands include bank switching for 128K machines, ink, paper and border colour, brightness, contrast, clear window, copy screen, frame grab, convert to AMS *Pagemaker* format, compress image to quarter size, set frame position, and so forth.

One of the most interesting RSX commands is *VSprite*. This allows you to copy a window from one part of the screen to another. The parameters are left, right, top and bottom of the source window, and X/Y coordinates of the top left hand corner of the destination.

It's also possible to define a scan window in a similar way, so it should be possible to build up some interesting multi-image effects if you can handle the necessary RSX programming.

The main opposition to the Vidi machine is the Electric Studio video digitiser, which was reviewed in *Popular* December 18, 1986. Though more expensive, this system comes with a built-in graphics manipulation program controlled by a light-pen (also provided).

The video control possibilities are much greater than those of the Vidi software, so this might be the better choice if you are interested in art for art's sake.

Another slight catch to the Rombo system is that although the Rom software is available for £4.95, to use it you will need a £34.95 Rombox in which to mount the chip. Generously, though, Rombo will give you a free Vidi chip if you buy the Rombox.

Unless you have some obscure technical application for a digitiser, the Vidi unit is probably of most use as part of desktop publishing system. If you are interested in digitised images in, for example, games programs, you will certainly need to use a graphics package such as *Art Studio* to get the best results.

Product Vidi video digitiser **Micro**
Amstrad CPC **Price** £89.95 **Supplier**
Rombo Productions, 107 Raeburn
Rigg, Knightsbridge, Livingstone,
West Lothian EH54 8PH (0506
39046).

The fastest Basic money can buy

Duncan Evans puts Glentop's GFA Basic to the test on his Atari ST – and finds that it measures up

With the standard Atari Basic being horribly difficult to use, Computer Concepts thankfully brought out *Fast ST Basic* on cartridge to fulfill the need for a fast, comprehensive interpreter. Now, though, we have a pretender to the throne of best Basic on the ST; *GFA Basic* from Glentop.

One of *Fast Basic's* more outstanding features is its great speed. Well, there's a demo on the *GFA Basic* disc that illustrates the capabilities of the interpreter. It draws a pattern on the screen, reads the bit pattern of that particular section of screen into a string and then splats it back at random positions. The sheer speed with which it performs this activity is simply unbelievable.

Look at the table below and you'll get some idea of how incredibly fast it is.

Bench test No.	Speed (seconds)	Fast Basic	GFA Basic
1	0.145	0.105	
2	0.58	0.395	
3	1.305	1.025	
4	1.55	1.01	
5	1.505	1.085	
6	2.575	1.765	
7	4.11	2.845	
8	2.725	2.945	
Average:	1.801	1.397	

If there was one feature I didn't like about *Fast Basic* it was the way the editor worked, with its use of two main windows and restrictions on the number of characters you could get on a line. *GFA Basic* works somewhat differently: in fact, much better. What you are presented with is an edit screen and a display screen. No blasted windows to get in the way, unless you specifically set them up in your program for the user.

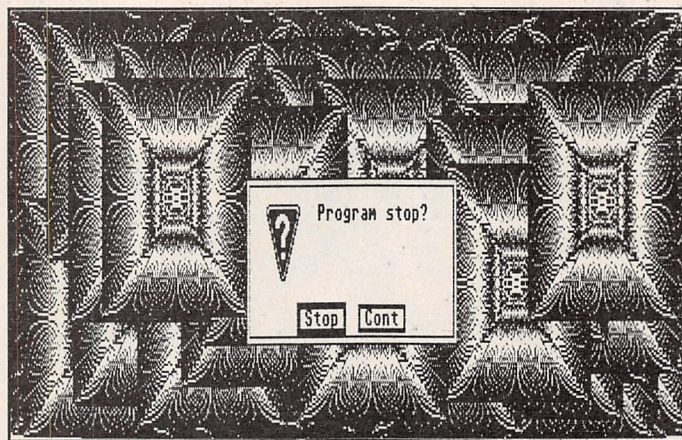
The edit screen is blank except for the top two lines which contain useful immediate commands such as *load, save, run, string search and replace, test, switch screens*

and various *cut and paste* functions.

One extremely good feature here is that if you set the computer up in low resolution mode then the editor works in medium res while the display screen stays in low. A slight flaw in this set up is that the mouse cursor cannot be posi-

available. While . . . Wend, If . . . Then . . . Else . . . Endif, Repeat . . . Until, Do . . . Loop and Gosub name . . . Proc name . . . Return.

As with *Fast Basic*, *GFA Basic* supports a host of word processing functions, all easily accessible from the command line, including *cut and*



The above graphic is obtained by using GFA Basic

tioned over the right hand side of the screen to access the command line. However, as these commands are available via the function keys this is a small price to pay.

Alas, the editor in *GFA Basic* does not have a wrap-around feature when entering lines which are longer than the screen width. The text is scrolled along in the same fashion as *Fast Basic* but editing said line is still easier. This irritation becomes very minor indeed when you consider two of the most notable facets of the language. The first is that there are no line numbers, although they can be used as labels, and the second is that you are limited to one command instruction per line.

Having only one per line takes some getting used to, although with automatic line indentation and extra instructions (such as Endif to close an If clause) familiarisation should not prove too painful.

GFA Basic has a very structured look to it and this is reflected in the commands

paste, search and replace, find, move and delete block.

If you have to try out a command immediately, and it isn't available on the command line, then you can switch effortlessly into direct mode where the cursor and text appear over the output screen in standard eight-bit micro fashion.

Moving into the graphics area you can plot points, draw lines, circles, polygons, squares, rounded boxes, fills, set fill styles and produce solid and elliptical versions of the aforementioned commands. Standard fare there all right but the most interesting and powerful command is *Get*, which reads a rectangle from the screen into a string as a bit pattern. You can then put a copy of the image back anywhere you like on the screen. Not only is this very much simpler than the *Fast Basic* equivalent, but it's also astonishingly fast.

On a similar theme is something that goes by the name of Sprite which puts a sprite defined in a string at a speci-

fied location. Unfortunately the manual is not very clear on this topic so trying it out could be hard work.

Where *GFA Basic* starts to outstrip *Fast Basic* is in the data and disc handling, and *Gem* utilisation.

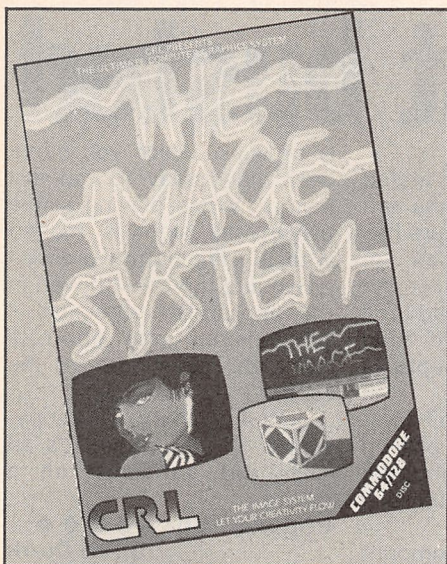
Add and Dec can be used with Do . . . Loop constructs to increment or decrement a variable which results in the entire operation being much quicker than a For . . . Next loop.

As far as disc operations go you can do almost anything: change the system drive, full serial and random access, find out how much free space there is on the disc, and manipulate directories.

The *Gem* operations are handled very well, although you'd still need to be knowledgeable about the subject to use the full power on offer. The simpler applications, such as alert and dialogue boxes, mouse control and using menus, are much easier to implement in *GFA Basic*. For example the variables *Mousex* and *Mousey* contain the x-y co-ordinates of the mouse cursor (which can be redefined incidentally) while *Mousek* relates to which of the buttons have been pressed.

In conclusion, *GFA* and *Fast Basic* share many good features, especially in the graphics department. Computer Concept's product may be on cartridge and include a built in assembler but *GFA Basic* has a more comfortable editor, better sound, *Gem*, disc and data handling. If you can get along with the one command per line restriction then the speed and power of *GFA Basic* means that there could be a coup in the ST Basic market.

Program GFA Basic Price
£59.95 **Supplier** Glentop,
Standfast House, Bath
Place, High Street, Barnet,
Herts EN5 5XE.



Imagine 25% off...

Here at *Popular* we realise that after forking out the 50p each week for your favourite mag, there isn't much left over for the essentials in life – food, drink, new software, extra hardware. There's not much we can do about the first two – although we are attempting to contact the Chancellor at the highest levels about lowering the tax on Pils – but as for the others, maybe we can fix up a thing or two for you.

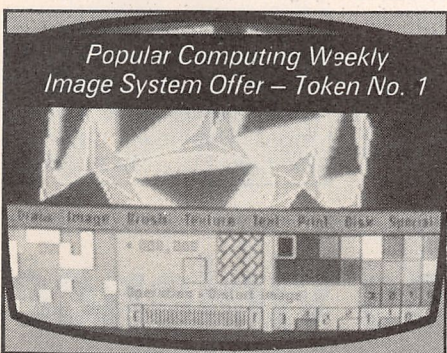
This is the first in a series of *Popular* Special Discounts, where we have negotiated special deals for you – our loyal readers – the first of which is for *The Image System* from CRL on the Commodore 64.

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package with a difference. As well as the normal paint, spray, pattern, copy, type commands it allows you to distort/twist any image on the screen, allowing you to create the most amazing effects. Just like on *Top of the Pops!*

The Image System usually retails at £19.95 on tape, £24.95 on disc – but we're offering a discount of five pounds on the title. That's up to 25% off!

All you have to do is collect two *Image System* tokens (one printed below, one printed next week), fill in the form and send it off, together with a cheque or postal order for the correct amount, to CRL at 9 Kings Yard, Carpenter's Road, London E15 2HD.



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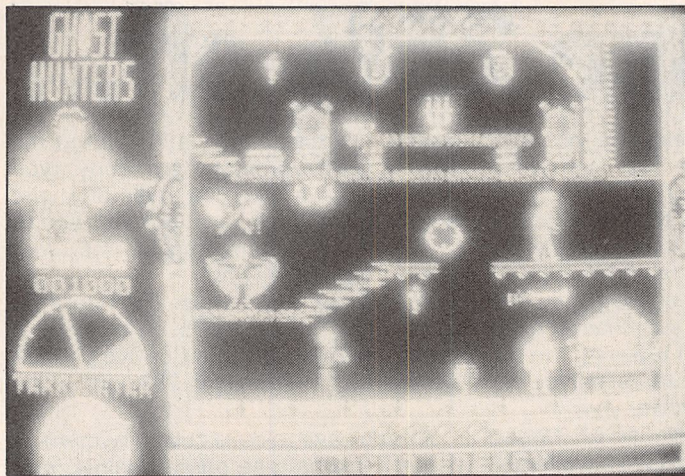
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POP 1



Codemasters has well and truly established itself as a major budget label, with a claimed 300 000 odd sales since the launch late last year. But while it does come up with some nice games, the consistency of, say Mastertronic, has yet to be achieved.

A disbeliever would only

have to compare a recent Spectrum release *White Heat*, with *Ghost Hunters*, here on Amstrad, as evidence.

No intended disrespect to programmer Mark Baldock, but *White Heat* is what you might have expected from a second-rate budget label two years ago. *Ghost Hunters*, from the Oliver brothers, is a

Ghost busted

different matter.

Here the tried and tested formula of the platforms and ladders arcade adventure has been taken and added to, creating an original and enjoyable game that, if tarted up a little in design, would have made a perfectly acceptable full price title.

The scam is set in a haunted house, with you playing the part of Hunk Studbuckle, out to find his brother trapped somewhere inside.

Hunk has a certain amount of life force (the Olivers call it Macho Energy!) that is diminished if ghosts, goblins or any supernatural beings appear anywhere on the screen. This happening calls for the Phantom Splatterer, a set of cross hairs controlled independent-

ly of Hunk, which you move over the display to zap evil beings. When playing single player, the sight is moved with the fire button pressed down and the stick moved in the appropriate direction – two player, one controls Hunk, the other controls the zapper.

Jumpy, jumpy – zappy, zappy. All the same, it's an excellent variation on a theme.

Popular Appeal ♦♦♦♦
John Cook

Program Ghost Hunters
Micro Amstrad CPC
Price £1.99 Supplier
Code Masters, 1 Beaumont Business Centre, Banbury, Oxon OX16 7RT.

More than the usual mass violence

One of my favourite games on the 64 was that Broudbund import from Ariolasoft, *Raid on Bungeling Bay*, so you can imagine my delight when I booted up *War Copter* and found more of the same.

Go on. Close your eyes. Think of me (blond, six foot, roguishly good looking, congenial liar) looking at the monitor. Second thoughts, don't... read the rest of this.

Like *Bungeling Bay*, the sce-

nario is based around a series of islands with you controlling a helicopter equipped with missiles and machine guns with a mission to wipe out the opposition. But in *War Copter*, there seem to be a greater number of strategy elements, albeit on a smaller playing area.

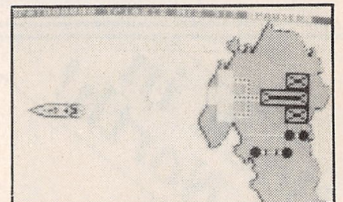
You've got fuel to worry about. You've got ammunition shortages and although your factories can manufacture more, they need to be

supplied with the raw materials, which happens to be the debris left over from enemy ships you have previously destroyed.

You have your precious Repair Control to defend. In fact, there's a lot going on beside the usual mass violence.

For the software starved Atari 8-bit owners, one well worth looking at.

Popular Appeal ♦♦♦♦
John Cook

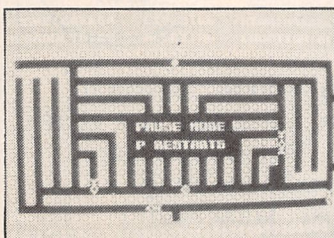


Program War Copter Micro
Atari XL/XE Price
£7.95 (tape), £9.95 (disc)
Supplier Red Rat, 11 Fennel Street, Manchester M4 3DU.

What the Commodore is best for

One of those games with no graphical merits whatsoever, *Megabolts* manages to provide a good blast purely through being well thought-out and imaginative.

Set in a series of 64 mazes,



"Megabolts provides a good blast purely through being well thought out and imaginative"

the game involves destroying the thousands of invading Megabolts. There are two ways to kill them, neither of which are explained in the game instructions. One, I can exclusively reveal, is to shoot them up the bottom. To do this you have an undistinguished little fighter, which is vulnerable to the bolts themselves or to timebombs left in

its path.

There's a fuel limit (of course) – you can top up by collecting the occasional yellow whirly thing. It's also possible to blast your way through the maze walls, although whether this makes it easier for the Megabolts to home in on you is open to question.

A scanner tells you in which

of the 8x8 grid of screens there are still active Megabolts; needless to say, I haven't yet managed to clear the whole lot.

A good example of what the C16 is best at; fast, smooth, graphically undistinguished, but a good budget blast.

Popular Appeal ♦♦♦♦
Chris Jenkins

Program Megabolts Micro
Commodore C16
Price £1.99 Supplier
Mastertronic, 8-10 Paul Street, London EC2A 4HJ.

All friends now

Take it that we all saw *Where Eagles Dare* ten days ago. Great, wasn't it? Clint Eastwood blowing away half the Waffen SS, teeth firmly gritted throughout – just as if someone was tickling his knees. Richard Burton being as enigmatic as only an actor filming a movie massively out of sequence, can be.

All the silliness was tied together with a plot as improbable as... well... as Interceptor getting a game to number one?

A little bitchy perhaps, but how often have you seen that name in the headlines? The company has been around for years, and in an industry where survival itself is an achievement, a quick ripple of applause for that. But the biggie has always eluded.

Maybe that's why Interceptor has created a new label, Pandora, with which to re-release arcade titles – the first being *Into The Eagles Nest*.

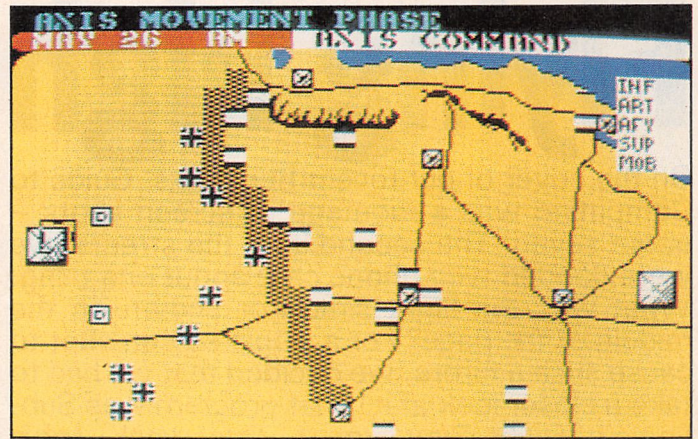
And if playability and quality have anything to do with it, the game will be huge.

Inspired by *Gauntlet* (but one player only), *Eagles Nest* has similar 'view from above' graphics – only vastly superior in both detail and design.

You control a lone commando who enters a castle to release four hostages held by the enemy and then is assigned to blow up the premises. This can only be achieved by decimating legions of the opposition who, whilst never having their nationality specifically stated (don't mention the war, all friends now, etc) – are in fact filthy screaming hordes of raving Nazis.

Your only weapon is a sub-machine gun, with limited ammunition – although you can pick up extra at various points around the place.

The on-screen Germans are a sluggish lot – maybe it's a matter of too much Sauerkraut – but there are swarms



of them in most rooms and others wandering around the place.

Wounds (and you can only take 50 of them) are sustained by bodily contact with the blighters – so you have to gun them down before they get to you. No problem until you run out of ammo. Eating food or finding a first aid box will help with the cuts and bruises and you get extra points for liberating paintings and jewellery that are scattered around the four floors of the complex.

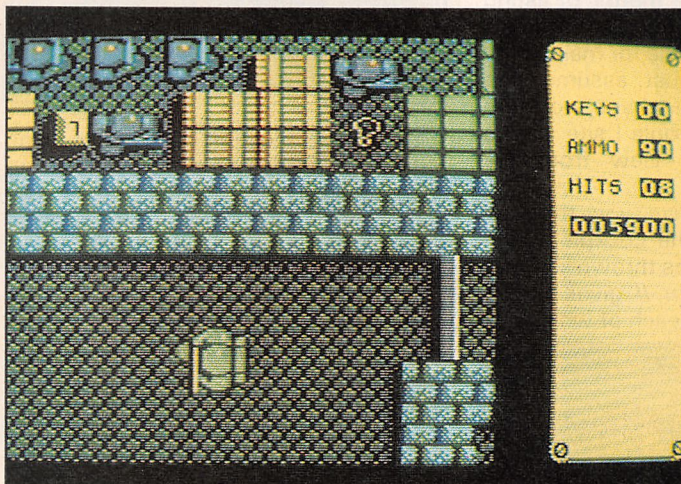
The game plays as a straightforward shooter, but

to succeed in the mission, blood lust must be tempered with an element of strategy re running out of ammo and finding those elusive first aid kits and lift passes.

Congrats all round.

Popular Appeal ♦♦♦♦
John Cook

Program *Into the Eagles Nest* Micro Commodore 64 (also available for Spectrum and CPC) **Price** £8.95 (tape), £12.95 (disc) **Supplier** Pandora, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.



Strategy games and arcade games have always been uneasy bedfellows; either the strategy parts make the head-bangers yawn, or the arcade element kicks the strategists out of bed. *Tobruk* doesn't really solve the problems.

Tobruk is a simulation of the battle between Rommel and the Allied forces over possession of the Gazala line, which ended with the Allies being forced back into Egypt. It has all the familiar strategy elements; command, move-

ment, supply and attack phases, and unexpected air attacks, all controlled by joystick or keyboard.

There are status displays for name, type, supply condition and movement capability for each unit. Splitting the battlefield (covering Libya in the West to the Egyptian border) in two is a minefield, so laying and lifting mines becomes a major feature of the struggle to capture key points.

The arcade sequences, which can be switched off,

Tobruk for two

are reasonably good, featuring the view from a tank's turret, and features a practice mode in which you can choose to hone your skills in navigation gun control.

More unusual is the option

only his own forces deployed on the screen.

Tobruk is competent, yet unremarkable, but you have the technology, this option makes it well worth seeking.

"More unusual is the option to link two Amstrads together to produce a true two-player game. Running this version, each player only sees his own forces deployed on screen"

to link two Amstrads together to produce a true two-player game. For this you will need two computers, plus a cable to connect the joystick ports, which you can knock together yourself or buy from PSS. Running this version of the game, each player sees

Popular Appeal ♦♦♦♦
Chris Jenkins

Program *Tobruk* Micro Spectrum/Amstrad CPC **Price** £9.95 **Supplier** PSS, 452 Stoney Stanton Road, Coventry CV6 5DG.

Flying high

On the cover of our recent Beginners' Guide to Computing was a montage of screen shots – about seven. The second it hit the streets, we were flooded with phone calls about one thing. What was the flight simulator shown on the middle of the page? For a single screen shot to cause such a furore, we decided that we had to take a closer look at it. That program was Sub-Logic's *Flight Simulator II*. This week **John Cook** goes up, up and away . . .

I'd guess there have been flight simulators for about every home computer in existence, from the ZX80 onwards. For some reason, they seem to hold a fascination for all but the most trivial users – but considering the average flying lesson weighs in at about £50 per hour, maybe it's not so mysterious. Using a flight sim, we can imagine ourselves riding high above the clouds, gently banking to the sunset, admiring the scenery below. Ho, ho.

Not wishing to deride authors of previous programs, but normally you'd need the imagination of a Department of Employment statistician to really believe in the illusion of flight that most attempt to portray, however hard you try. It's the fact that Sub Logic's latest offering breaks the barrier of illusion – that at times it really does feel like you're in the cockpit of a light plane – and the vast range of program options available to you, that makes *Flight Simulator II* simply the best yet on the ST, and dare I suggest, perhaps on any home computer.

There are so many nice things about *Flight Sim II*, it's difficult to know where to start. Essentially it simulates the performance of a Cessna 182 class, single engine, propeller driven aircraft taking

into consideration a total of 47 'important characteristics' of the machine. Typically of the program, it doesn't stop there. For budding millionaires, you can try flying the Gates Learjet – not quite as realistically, they say, but fun. They're right.

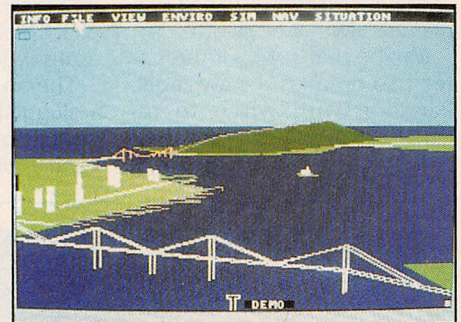
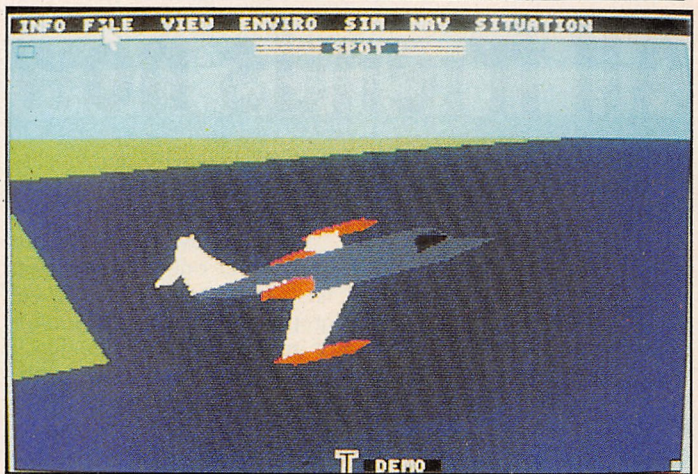
Added on to that is a World War I battle game (the performance of the Cessna is about that of a top class WW1 fighter) in which you shoot up the enemy, bomb depots, etc. But this is strictly an add-on for fun. The real business is about flying around some of the neatest scenery on Continental USA, which can be made as easy, or as challenging, as you like. Alone, or if you have a spare ST, with a friend!

With most programs, describing the thing is often a simple matter of listing the program options. *Flight Sim II* defies this approach. Excuse me for making my own job easy, but just assume that everything is variable and you won't be far wrong. As an example I site such a simple thing as the view from the cockpit.

Most flight sims give you the bog standard view from the cockpit with a few 3-D ground features thrown in. From the aircraft, *Flight Sim II* gives you a choice of eight views, each of which can

be panned in any direction or zoomed in or out. Watching yourself take off from the rear view is utterly amazing. Neat then.

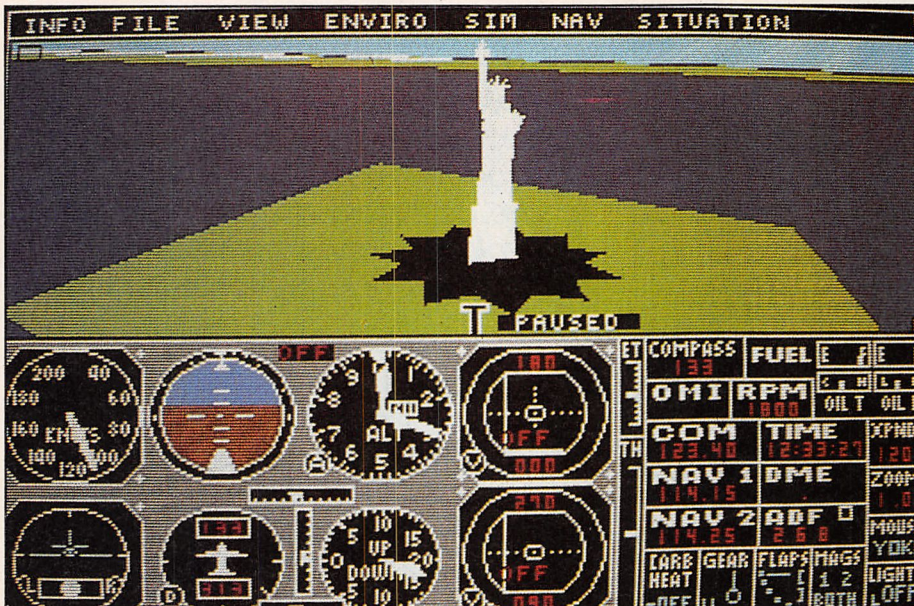
But you can also get a view from the Control Tower or Tracking Car, which is a bit like watching yourself through binoculars (using the zoom function is essential here if you are to be anything more than a dot on the horizon). Watch yourself weave around the sky, great!



Most spectacular is the Spotter Plane option, that gives you a view from an accompanying aircraft, just as if you were being filmed. Exactly how the plane follows you, at what height and distance, etc, is also variable. Impressive.

Normally these extra views replace the view from the cockpit on the main display above the instruments (which, naturally can be moved down for a more scenic view) – however, you can choose to display one view over another in a separate window. Flying across San Francisco Harbour with the main view from the spotter and the cockpit view from a small side window is one of the most genuinely delightful sights I've ever seen on a computer monitor. So the first message is, *Flight Sim II* is fun. Yet the thing also works as a full blown flight simulator.

One look at the plethora of dials tells you someone has invested some serious time in making things as accurate as possible. Flying only confirms this, yet because you can set the realism of both the external meteorological conditions and the internal aircraft response exactly, the process of flying can be made easy (but never absurdly so) or you can make it very difficult – just like real life.



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Bring on the games machines

Tony Kendle brings you two alternative Firelord routines and amends his view of the Amiga



I can't believe the number of times I have seen a comparison between different *Gauntlet* style games in various magazines. Almost without exception, Firebird's *Druid* comes out top, which is in many ways well deserved. The game play is probably the best of them all. Even so I really must congratulate US Gold again for the best arcade conversion I have seen for the Amstrad since *Moon Cresta*. Perhaps it is a symptom of my innate mental simplicity but I also find this the most addictive version going.

Regular readers will know that I am champion of the multi-player games cause and it is inevitable that I would therefore be taken by Brian Clough's computerised football boardgame. It's taken years for software companies to realise that the perennial best seller *Football Manager* has a lot of classic ideas but could also bear a lot of im-

provement. As usual they now all seem to have had the same idea at once but at the end of the day it's a game of two halves etc, and Brian's the man for me.

There are also one or two other games that I have hesitated raving about because, well I have to admit it, they're on the ST and Amiga supermicros. It's unfortunately a fact of life that some computers have better graphics, better sound, more speed etc, than others. It has always been part of the 'policy' of this column to recognise the strengths of every machine and not get carried away with the impressive games machines. Up till now I have looked on the ST and Amiga as too expensive and with too few users to deserve many mentions but now it looks as if the situation has changed with some major price cuts and that these will become the elite games machines of the future.

There will of course be no point in

continually harping on that such and such a game is brilliant – because very many will be. However I must say that the excellent *Leaderboard* and Mirrorsoft's *Strike Force* are exceptional fun on the ST. Buy them. Another game that was a huge hit with me, but less so in the charts, is Ariolasoft's *Archon* which is hypnotic on the Amiga – brilliant sound effects.

On with the tips! This week we have two more useful routines: one from Paul Miller and Sue Potter of Waddon, and for Hewson's *Firelord* an alternative version from our regular correspondents – the highly talented Langley Hackers – which I just could not resist. The listing offers many more alternative cheat pokes, so will be well worth the extra effort involved in getting it to work.

Incidentally if anyone wants to send in some more conventional help for *Firelord* I will be very pleased to see it.

```

FIRE LORD
FIRST, TYPE OUT THIS ROUTINE;
10 FOR A=30000 TO 30031
20 READ B: POKE A,B: NEXT A
30 DATA 0,76,47,72,65,67,75,69,82,83,32,64,156,0,128,
0,0,0,221,33,48,117,17,17,0,62,0,55,205,194,4,201
40 PRINT "PLACE BLANK CASSETTE IN TAPE DECK,"
50 PRINT "PRESS RECORD THEN PRESS ANY KEY"
60 PAUSE 0
70 RANDOMIZE USR 30018

AND RUN, FOLLOWING THE PRINTED INSTRUCTIONS.
THIS WILL PUT A 'DUMMY' HEADER ON THE TAPE.
NOW WIND PAST THE HEADER ON FIRE LORD, THEN
TYPE LOAD "" (& PRESS ENTER).
THEN LOAD YOUR DUMMY HEADER. WHEN YOU'VE DONE THAT,
PLACE FIRE LORD BACK IN AND PRESS PLAY
WHEN A TAPE LOADING ERROR APPEARS,
IGNORE THIS & STOP THE TAPE.
NOW ENTER THESE POKES;
POKE 23967,95 (PRESS ENTER)
POKE 24309,229
POKE 24310,33
POKE 24311,26
POKE 24312,18
POKE 24313,34
POKE 24314,236
POKE 24315,98
POKE 24316,225
POKE 24317,201
    
```

```

0 REM FIRELORD from hewson for the spectrum
  hacked by PAUL MILLER + SUE POTTER of waddon
  with no help from DAVE OR ALEX (commodore
  people)
1 FOR F=65510 TO 65535
2 READ A: POKE F,A: NEXT F
3 DATA 221,33,0,64,17,30,191,62,255,55,205,86
4 DATA 62,0,50,155,151: REM NO ENERGY LOSS (BUT
  DO NOT FIRE AT ANYTHING)
5 DATA 62,52,50,38,150: REM GAINS LIVES IF
  GUILTY WHEN CAUGHT STEALING INSIDE HOUSES
6 DATA 195,98,94
7 PAUSE 0: RANDOMIZE USR 65510
8 REM TO LOAD POKES RUN PROGRAM AND START TAPE
  ONCE PASSED LOADER PRESS ANY KEY TO LOAD PROGRAM
    
```

```

IF INTERFACE 1 IS ATTACHED, ADD 58 TO EACH ADDRESS.
THEN TYPE GOTO 0, PRESS ENTER AND START THE TAPE.
WHEN THE GAME HAS LOADED IN IT WILL START AS NORMAL.
SELECT JOYSTICK OR KEYBOARD AND PRESS 0.
WHEN THE GAME HAS STARTED, PRESS ASDFGH SIMULTANEOUSLY
AND THE SINCLAIR LOGO WILL
APPEAR ON THE BOTTOM OF THE SCREEN.
DON'T WORRY, IT HASN'T CRASHED.
NOW TYPE THIS IN
POKE 25324,98 (THEN ENTER)
POKE 25325,94
IF YOU WANT THE GAME TO RETURN TO BASIC AT THE END OF
EVERY GAME (TO ADD CHEAT POKES) TYPE THIS
POKE 24162,207
TO START THE GAME TYPE
    
```

```

RANDOMIZE USR 24143
CHEAT POKES
POKE 36870,201=YOU START THE GAME WITH FIRE POWER
POKE 34509,52 =INFINITE LIVES
POKE 39169,24 =YOU CAN WALK THROUGH FIRE
POKE 36745,201=INFINITE ENERGY, FIRE AND BARTERING
POKE 34837,100=REMOVES EVERYTHING NASTY
POKE 39805,0 =INFINITE BARTERING
POKE 38560,0 =INFINITE FIRE
POKE 34982,0 =INFINITE ENERGY
POKE 39974,52 =YOU CAN'T LOSE WHEN BEING JUDGED
POKE 39885,0 =REMOVES THOSE LITTLE WHITE THINGS THAT
  GET IN THE WAY.
END PROG...
1986 L.H.L. THEY MAKE 'EM WF 'PEAK 'EN.....
    
```

Top Twenty

All figures compiled by Gallup/Microscope

- 1 (1) Gauntlet
- 2 (2) BMX Simulator
- 3 (3) Paperboy
- 4 (6) Ninja
- 5 (7) Konami's Coin-op Hits
- 6 (9) Ollie and Lisa
- 7 (5) Footballer of the Year
- 8 (4) 180
- 9 (8) Fist II
- 10 (-) Leaderboard
- 11 (10) Computer Hits Vol 3
- 12 (11) Park Patrol
- 13 (15) Feud
- 14 (12) Hit Pack
- 15 (16) Agent X
- 16 (13) Space Harrier
- 17 (-) Breakthru
- 18 (-) Super Soccer
- 19 (-) Gunship
- 20 (-) Ace of Aces

- US Gold
- Code Masters
- Elite
- Mastertronic
- Imagine
- Firebird
- Gremlin Graphics
- Mastertronic
- Melbourne House
- Access/US Gold
- Beau Jolly
- Firebird
- Bulldog
- Elite
- Mastertronic
- Elite
- Data-East/US Gold
- Imagine
- Microprose
- US Gold

The essential Book of the Dead

Tony Bridge reviews an unusual new release from *The Essential Myth*

More and more adventure authors are using the commercial writing utilities; there was a bit of a backlash some months ago as many people seemed to get the idea that an adventure conceived with the aid of *The Quill*, *GAC* or one of the others was in some way inferior – but the fact is that all the big adventure producers (Level 9, Infocom, Scott Adams and the others) use “shells” of this sort in order to speed up the writing process.

Of course, the end result is down to the writer’s imagination quite as much as – if not more than – the utility used, and I’m quite sure that good examples of *Quill*’d or *GAC*’d adventures are perfectly commercially viable. I can only hope that retailers and large publishing houses become more forward-looking than the majority have been of late.

For *GAC* users, the release of Incentive’s *GAC Adventure Writer’s Handbook* should become an indispensable part of the system. This 46 page booklet is designed to supplement the original manual and contains in-depth looks at counters, graphics, conditions, multiple loading techniques and so on, as well as errata for the manuals for each machine. At just £1.25, it’s essential for any *GAC* owner. Write to Incentive, 2 Minerva House, Calleva Park, Aldermaston, Berks RG7 4QW.

You may remember me talking a couple of weeks ago about titles and their importance; now I have in front of me a *GAC*’d adventure with a great title. *The Essential Myth* (and that’s just the name of the software company) has just released *The Book of the Dead* for the Spectrum. That’s one of those ideas that I wish I’d had!

You are Kteth, a falcon-headed Egyptian godling; or rather, an ex-godling. Because your father has been a bad boy and attempted to gain control of all the gods by murdering the Arch-God, Osiris, you are now banished by proxy from Paradise and doomed to wander in the world of mortals. Your only hope in regaining the world of your brethren lies in finding the book. The first adventure I’ve seen where you’re hoping to die!

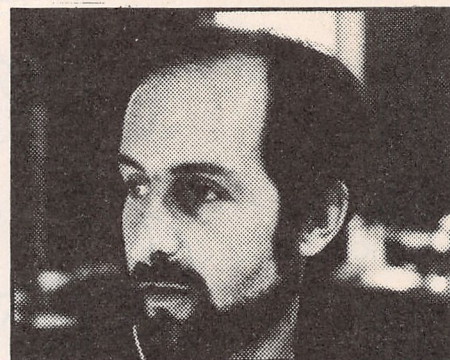
This is a well-presented two part story using all the features of *GAC*. The pictures are colourful and quickly drawn (although many are pressed into service to illustrate several locations) and the character set is suitably ancient, though

a little difficult to read, and there are several nice little touches like the “key” symbol instead of “press a key”.

Setting the story in ancient times allows the authors plenty of scope for scene-setting and atmosphere-creating and they have, naturally, seized every opportunity.

You’ll find lots of vaguely Egyptian references to ibis(es), sacred ankhs, Ramon the Sun God and so on. However, grasping for atmosphere like this often leads to ‘unnecessary verbage’ (as a character from Gilbert and Sullivan once said) and so you’ll find ‘suspiciously symmetrical hills’, ‘ungregarious sheep’ and so on, which makes the going sometimes a little turgid.

Many of the puzzles are quite ingenious, but they are the sort that seem obvious only with hindsight – and I think that I detect, in some of the *Help* and *Examine* messages, a none too subtle nudge in the right direction (frustrated game-testers, possibly?). Early on in the game, you’ll find a dirty fleece – once you have realised that you must wash it, you’ll then find that the water makes it too heavy to lift. Of course, it’s needed later in the game, but how to dry it out? You can try everything, but the answer is stumbled upon by sheer accident, when you find that praying to Amon-Ra makes the sun shine stronger.



The subtle nudge here is the picture of the sun in the temple, which is all rather obvious now – and, I have to admit, rather clever.

Another example from the same section of the adventure is that of the mangonel. What? Yes, I hadn’t heard of one before, but it’s a huge catapult thingy and you can load a boulder into it, and then fire it off.

By a miracle, the boulder hits the ibis which falls into a location some way off – it just happens to be carrying the sacred ankh, which is needed before you can pray to Amon-Ra.

It all fits in neatly, but seemingly without logic, although again there are several subtle nudges which make sense once you know the answer.

The adventure accepts multiple commands with commas and the graphics can be turned off and on as required, although, like other *GAC* stories, Ram save/load is not implemented. As a two-parter, it’s long and involved – it’s not a classic, but interesting enough.

The Book of the Dead costs £3.95 from The Essential Myth, 54 Church Street, Tewkesbury, Gloucester GL20 5RZ. And ask the company about its next product, which will be a compilation of utilities for the *GAC*, including a garbage collector, a collection of fonts and so on.

Adventure Helpline

Sinbad and the Golden Ship on Spectrum. How do you control the genie when out of the lamp, and how do you get past the oak door in the mountain in part 2? Peter Georgiou, 3 Shap Drive, Warndon, Worcester WR4 9NY.

Micro man and The Mural on Spectrum. *Micro Man*: How do I get out of the car? *The Mural*: How do I get the coupon out of the newspaper? Andrew Malinowski, 5 Birch Park, Harrow, Middlesex HA3 6SP.

Adventure Helpline

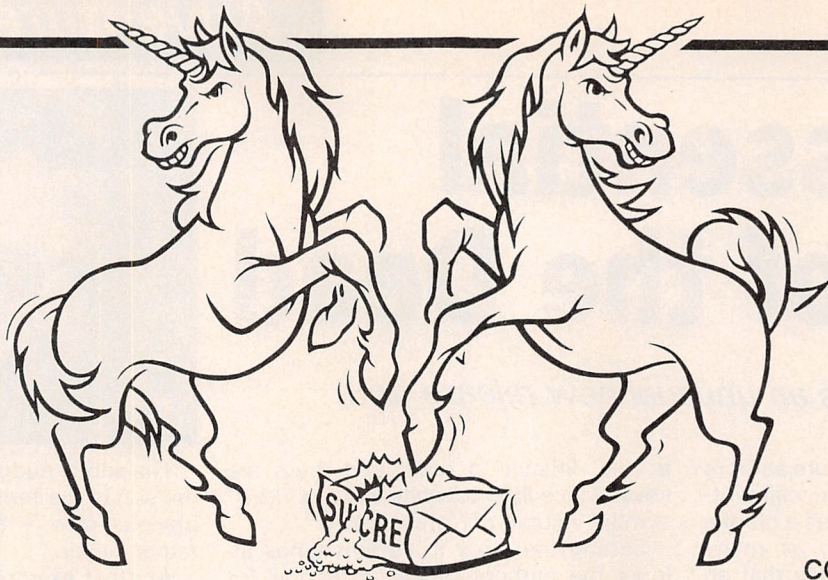
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IBM-PC COMPATIBLES

INSIDE

23

PC software under £100; the choices and the pitfalls

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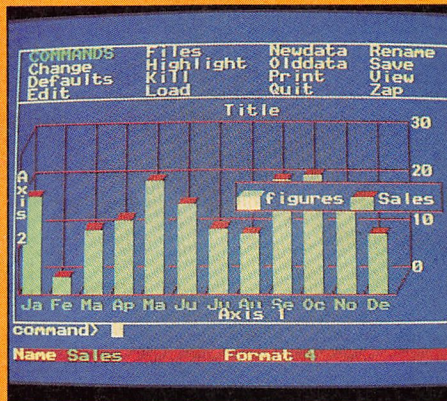
Choosing a PC; Amstrad's competition in the clone market

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Psion PC-Four; from the QL to the PC at a bargain price

32

Curing the business blues; a roundup of PC games titles



The Amstrad PC may not involve the new technology of the Atari ST or the Amiga, but by bringing IBM compatibility within the financial range of home users it has opened up a whole new market.

In this supplement we'll be looking at the range of PC-clones which are challenging the Amstrad's low-priced position, and at the range of software becoming available to meet the economy challenge.

If you aren't familiar with PC software, our review of the Psion PC-Four package will give you some idea of the strengths and limitations of the systems.

There's no doubt that the lure of big-business compatibility is attracting many potential micro purchasers away from "games" machines. But for the spreadsheet-weary, don't worry - we'll cover PC games, too! ◀

Under a ton

PC SOFTWARE NEEDN'T BREAK THE BANK.
GARY PARTRIDGE LOOKS AT SUB-£100 PACKAGES

As the IBM PC standard becomes more and more popular, cheaper machines are forcing down the prices of software packages. Later in this supplement we review **PC-Four**, Psion's PC version of the well-known Exchange suite.

Buying cheap PC software, though, has its pitfalls. Often, manufacturers, faced with the problem of justifying high prices, produce cheaper packages but cut out some of the more esoteric functions. Don't choose a "budget" version of a business classic such as **Lotus 1-2-3** until you check whether it performs all the functions you expect from the original. Possibly the most interesting areas are the integrated packages and vertical markets. Psion's PC-Four gives you a word processor, spreadsheet, database, and graphics program for £69; if you want to spend more, the £149 **ABC** package provides book-keeping, stock control, and desktop features, too.

Packages aimed at vertical markets, such as the Blyth Software products,

provide tailor-made solutions to the small businessman's problems, without going to the vast expense of calling in a software consultant. Another factor to consider is whether you will require software support; will the manufacturer of your budget software react to a telephone call for help with his accounting package? Some software houses make an extra charge for user support; again, check before buying.

For the purposes of this article, we're listing packages up to £100. Thus the table on page 25 excludes some very well-known and still reasonably priced programs, such as **MAP Accounting** and **First Software**

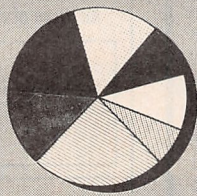
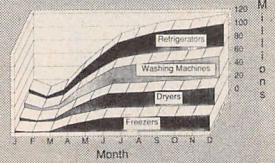
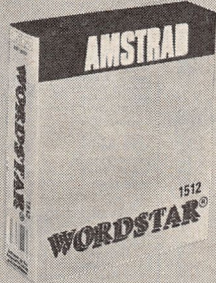
DBase 2, but with the current volatile state of PC software prices a line has to be drawn somewhere.

In the future we will be looking at the state of the PC software market as hardware prices continue to fall. The introduction of the Atari PC's will no doubt spur a new wave of interest in a market where compatibility and power have always been the keywords.

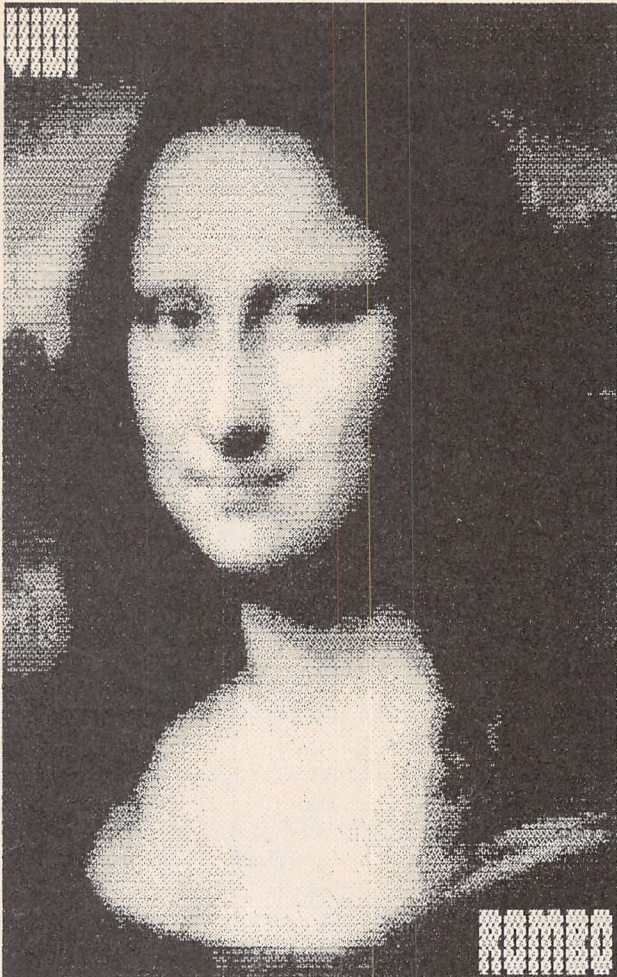
Now a new consideration, economy, has changed the face of the PC software industry, and things will never be the same again. ◀



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Activision	Personal Choice	£84.99	Integrated package
Amstrad	Reflex	£69.95	Database
Amstrad	Sidekick	£29.95	Desktop accessories
Ariolasoft	Newsroom	£39.95	Desktop publishing
Ariolasoft	Consultant	£59.95	DB manager
Ariolasoft	Homepak	£34.95	W/P, comm., database
Ariolasoft	Cut&Paste	£24.95	Word processor
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Blyth	Rental	£99.00	Vertical markets
Blyth	Motor	£99.00	Vertical markets
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Cambrian	CamBase 2	£49.95	Database
Caxton	Cardbox	£59.99	Filing
Caxton	Condor Jr	£99.99	Database
Caxton	Scratch Pad Plus	£59.95	Spreadsheet
Compssoft	Delta 4	£99.00	Database
Compssoft	Delta-Graph	£99.95	Business graphics
Computer Assoc	Supercalc	£69.95	Spreadsheet
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CSD	Trust Writer	£45.00	Word processor
CSD	Trust Speller	£17.00	Spelling checker
Digital Research	GemWrite	£99.95	Word processor
Grafox	Logistix	£99.95	Integrated package
HAT	Snip	£99.00	Accounts
Kuma	KComm 2	£49.95	Communications
Kuma	KGraph 2	£49.95	Business graphics
Kuma	KSpread 2	£79.95	Spreadsheet
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Kuma	KSpell	£19.95	Spelling checker
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Microsoft	Word Junior	£69.95	Word processor
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Choosing a PC

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CONTENDERS IN THE PC PRICE BATTLE

AMSTRAD PC 1512

Ahead in the marketing war at least, the Amstrad has done more to awaken public interest to the PC standard than any of the other cheap IBM Clones.

The machine has 512K RAM expandable to 640K, RS232 and IBM printer ports, three slots, a single 360K drive, monochrome monitor and mouse and joystick ports for £448. There are also versions available with twin discs, colour, and 10 or 20 Mb hard disc, the top of the range model now weighing in at £1067.

► **Amstrad, 169 King's Road, Brentwood, Essex CM14 4EF, 0277 228886.**

ATARI PC

Due for launch at the end of April, Atari's PC-compatible machines are almost certain to undercut Amstrad's on price, or outdo them on performance. The £356-odd starter model comes with a single drive and colour graphics card, but without monitor. The more expensive model, complete with an Enhanced Graphics Adaptor and hi-res monitor, costs around £499. The monitor itself will be available separately at around £140.

Neither of these machines include the all-important expansion slots. In the middle of the year, Atari threatens to produce a "professional model" including three slots and a 20Mb hard disc drive, selling at around £1000. Plans to produce a model running the faster Intel 80286 chip are dependent on IBM's actions.

► **Atari UK, Atari House, Railway Terrace, Slough, Berks, 0753-33344.**

BONDWELL 34



Lunched before the Amstrad PC, the Bondwell was the first sign of a UK PC price war. The 640K twin drive system sells at around £690.

Like many PC clones the Bondwell is remarkable to the uninitiated largely for its bulk. The main unit with double disc drives has a large footprint, the keyboard is separate and the monitor sits on top. In all other respects the Bondwell is unremarkable; IBM standard slots to expand the memory and add further I/O functions, a good standard of software compatibility and so on.

► **Spectrum Group, Hunting Lane, Hitchin, Herts SG4 0TJ, 0462-37171.**

COMMODORE PC

After an undistinguished start, Commodore's range of PC's has come back into the limelight with recent price cuts. The machines are still hardly attractive though, with the 512K PC10-1 now available at £995. This model comes with parallel and serial printer ports, four card slots, AGA Video card, mono monitor, and two 360K drives. The PC20 with 512K, single drive, three slots and mono monitor costs £1379, while the PC40 with 1Mb RAM, 20Mb hard disc and colour monitor comes in at £2247. Economy is not the word here.

► **Commodore UK, Commodore House, The Switchback, Gardner Road, Maidenhead, Berks SL6 7XA, 0628 770088.**

OPUS PCII TURBO

One of Opus' main selling points is that, apart from some vital drive components, most of the machine is made and assembled in Britain. This allows greater quality control and allows a more flexible sourcing policy.

The PCII Turbo is now available in twelve models, ranging from monochrome through colour to Enhanced Graphics Adaptor systems, and sales are claimed to be in excess of £2m per month. Best known to home computer users as the creators of the Opus Discovery disc drive for the Spectrum, Opus's PCII places the company firmly in the business market.

The basic model offers 256K expandable to 1Mb, a single 360K drive, eight slots, parallel printer and joystick interfaces, a security lock, realtime clock/calendar with battery backup, and a fully IBM-compatible operating system.

► **Opus Supplies Ltd, 55 Ormside Way, Holmethorpe Industrial Estate, Redhill, Surrey RH1 2LW, 0737-65080.**

TANDY 1000-EX

Cheapest of Tandy's PC-clones, the 1000-EX comes with mono monitor, single 360K disc drive and 512K for £528. Most striking is the old-fashioned system design; one large unit housing the keyboard, PCB and disc drive, upon which the monitor sits. The disc drive is tucked around the side, like that of the Atari STF machines, making it difficult to get at.

There are expansion slots, but they aren't IBM standard, taking only Tandy cards for extra RAM, RS-232 and a modem. The keyboard is non-standard too, owing not a little to Tandy's earlier non-IBM machines. This has created some compatibility programs.

Perhaps the best reason to consider buying the Tandy is the free Personal Deskmate software package bundled with it. Word processor, spreadsheet, database, graphics calendar, and comms routines are included. Also available are versions with colour and 20Mb hard disc.

► **Tandy UK, Leamore Lane, Bloxwich, Walsall, West Midlands WS2 7PS, 0922 477778.**

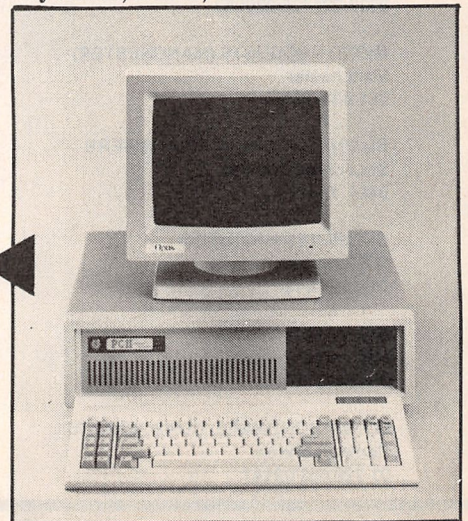
WALTERS XT

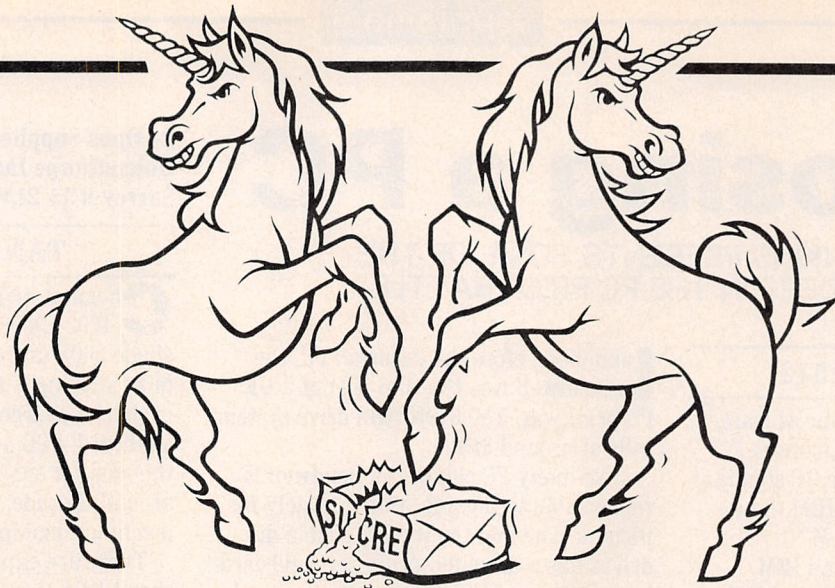
Again brought into the limelight by a recent round of price cuts, the Walters machines start at £455+VAT for the XT. This comes with a single 360K drive, mono monitor, and 256K expandable to 640K on board.

The XT has eight slots, and is also available with a 10Mb Winchester at £739+VAT or a 20Mb at £875+VAT.

Further up the range is the AT, starting at £1180+VAT and going up to £1630+VAT for the 20Mb hard drive version.

► **Walters International Ltd, Matrix House, Cressex Industrial Estate, High Wycombe, Bucks, 0494 32751.**





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FOUR OF A KIND

The advent of the Amstrad PC has prompted many software manufacturers to produce more reasonably-priced packages. As a general rule, you should not have to pay more than 25 percent of the cost of your micro system for any good applications package. At around £400 for the basic Amstrad system, £69 would be an incredibly attractive software price point to attract new owners; and Psion's **PC-Four** pack offers a great deal for that small outlay.

Based on the Exchange package provided with the Sinclair QL, PC-Four in fact consists of five discs cased with a ring bound manual. The four programs are **Quill**, the wordprocessor; **Archive**, the database; **Abacus**, the spreadsheet; and **Easel**, the business graphics program. The fifth disc is a tutorial complete with a large range of demonstration files.

Obviously, one of the most important factors to consider when choosing business software is integration. PC-Four's programs can not only exchange information with each other, but also with

other manufacturers' programs; so, for the small business, the package represents a complete administration system in one purchase.

Minimum system requirement is 512K, or 640K when using GemEasel.

The four programs are similar in appearance and operation; once you have become used to using one (Quill is probably the most useful); the others will seem simple to learn in comparison.

Uniform

All four programs can be backed up, or transferred to hard disc for use. When loading, it's possible to simultaneously load a working file; for instance, typing **QUILL LETTER1** will load both the wordprocessor program and the data file at once. All the PC-Four programs will continue to look at the current drive unless you specify a change of device; so you can use either a single, double or hard disc system.

All four programs have a uniform appearance; a control area giving options

and prompts at the top of the screen, a central work area, and the bottom status area where commands are typed in. They also share many common command keys; for instance, the function keys to the left of the keyboard. F1 is always the HELP key; F2 removes or restores the upper prompt area; F3 puts the program into COMMAND mode; and F10 redraws the contents of the entire screen.

The HELP displays vary according to the level at which you are working; most contain a brief description of the current function (for instance LOAD or PRINT) and options to access more detailed explanations. It's not enough to allow you to dispense with the manual altogether, but it can save a good deal of time. The ESC key allows you to escape from a function should you become hopelessly confused.

PC-Four uses the standard Dos file extensions and commands, including wildcards. Each program has its own file extension.

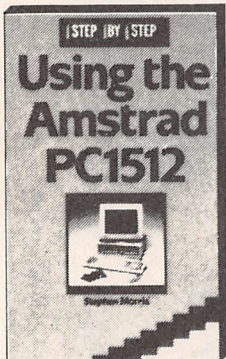
So, how do the four programs function?

STEP BY STEP

**GUIDES TO THE
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PC1512**

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USING THE AMSTRAD PC1512
Stephen Morris

This guide succinctly describes how to understand and use all the facilities of the Amstrad PC1512, from initial setting up of the system, copying disks, using GEM through to printers and printing, using RPED, Doodle, GEM Paint and BASIC2. The guide's clear text, which includes many example screen displays and checklists, provides the simplest and most effective means of learning.



USING GEM PAINT ON THE AMSTRAD PC1512
Stephen Morris

GEM Paint comes bundled with the Amstrad PC1512 and this guide succinctly describes how to understand and use the program quickly and effectively. The guide contains many worked examples and shows how to use GEM Paint to create pictures for leisure and business.



SIMPLE BASIC 2 PROGRAMS ON THE AMSTRAD PC1512
Robin Kinge & Marc Diprose

Although not a primer for BASIC2, this guide nonetheless provides thirty examples of the type of program that can be written using BASIC2. In addition to games and art programs, the reader is presented with programs to show how spreadsheet, database and word processing programs work.

STEP BY STEP

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Quill, the wordprocessor, includes all the functions you would expect of a program intended for fairly heavy-duty office use. There's a numbered bar across the top of the 80-column screen, as well as a position counter; line and page number display, word count, cursor movement by letter, word, line or paragraph, superscript, subscript, underline, italic, bold, sequence presets (for common phrases such as "Yours sincerely"), headers, footers, tabs, margins, justification, search and replace, insert, replace and delete, and document width up to 160 characters (which goes off the end of the screen, meaning that you have to scroll the screen window over the document).

Abacus

Quill's screen display is very clear, giving a good idea of the appearance of the finished document. Of course, using its mail merge facilities with the Archive database makes it a powerful tool for creating mailing lists, standard letters and so forth.

Abacus, the spreadsheet, has up to 999 rows and 255 columns. The screen window can be scrolled rapidly over the grid using the cursor keys, or you can enter and number/letter combination to move directly to a particular cell.

As with all spreadsheets, any text can be entered into the cells, and formulae can be devised to calculate figures such as, say, annual sales taking expenses into account.

Abacus includes a number of pre-defined functions, such as MONTH() which returns a text value, COL() and ROW() to locate a cell, and SUM() which is the basic function for calculations. It's also possible to define more complex formulae.

A simple formula such as

HELP press F1 PROMPTS press F2	CURSOR move ↑ with ← → keys ↓	TEXT New para: Press ← Delete: ← or DEL Change mode: F9	TYPEFACE press F4 GLOSSARY press F5	COMMANDS press F3 ESCAPE press ESC
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Dear Mr...,

Re: BREAK DOWN OF LAST MONTHS FIGERS OF DISTRICT CODE
23/87

as requested by the chairman of Blunders Bank, Mr Cash, please find enclosed in this in this letter the break down by each bank, under my control, of there quartely figures.

Mr Cash, who I have get to meet (sorry I missed the last group meeting the big company car had been stolen and anyway had broken down much to my embarrassment since it was the first time that I had borrowed it) feels that some explanation is in order although why I do not understand, as you can see our new buisness is up 300% on last year. How was I to know that the interest rate would carry on rising. I

MODE: INSERT WORDS: 173 LINE: 1 PAGE: 1 DOCUMENT: "BLUNDERS"

ROW=SALES.JANUARY*1.05 could be used in a cash flow analysis, while for more complicated functions there are some advanced features like auto recalculation each time you enter a new value.

Values from Abacus can most usefully be exported to Easel, a fully interactive facility for producing graphs. Bar charts are built up simply by naming a table, entering a value for each column, and adding text where required, positioning it using a set of cross-hairs.

Once plotted, your data can be displayed in a number of ways using the VIEW option. Bar graphs, horizontal graphs, highlighted bars, 3-D graphs, pie charts and line graphs are all available, quickly replotted either from your original figures or with adaptations.

The database program, Archive, can either be used in a simplified form using preset commands, or you can use the advanced database language to create

your own routines.

Each file is made up of a collection of records, each consisting of a number of fields of information. For instance, the file contacts would consist of records of all your business contacts, each record containing a field for name, address, phone number, and type of work.

Unlike some database programs, Archive does not force you to decide in advance how much memory you wish to put aside for each field within a record. The maximum size is 255 characters per field.

Search

Having built up your file, you can add and delete records, move through the records using NEXT, BACK, FIRST and LAST, or FIND, which will search for any specified piece of text. You can also use the more powerful SEARCH, which will find files satisfying two different conditions; for instance SEARCH CONTINENT\$="Europe" AND LANGUAGE\$="French".

Archive's database and screen layout language may be the most confusing part of the PC-Four package, but for many users it will never be needed.

Overall PC-Four is a no-frills package which manages to deliver the goods at an unexpectedly low price. You may well find more powerful wordprocessors, spreadsheets, databases and graphics packages, but for many PC owners the economy and compatibility of PC-Four will make it a clear winner. ◀

Product PC-Four

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HELP press F1 PROMPTS press F2	CURSOR press ← → GOTO CELL press F5	DATA & FORMULA enter directly & press ←	TEXT type "	COMMANDS press F3 ESCAPE press ESC			
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6	Northern Division	190.00	182.90	184.95	249.67	252.00	1321.52
7	Scotland Sales	66.78	76.34	72.10	72.78	72.34	438.44
8	Payroll	-13.74	-13.74	-13.74	-14.56	-15.88	-71.66
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Group's profits 1688.30

CELL A1 GRID USED A1:P21
CONTENTS EMPTY

DIRECTION →

PC computers were never designed as games machines, but the same computing power which makes them versatile business micros gives them the ability to run a variety of entertainment packages. All you ever needed was a single disc drive, a monitor - preferably colour - and an understanding bank manager.

The problem with PC games, until recently, has been their cost. The market was a limited one; the games had to sell to business users, the equivalent of executive toys. But the advent of the Amstrad PC1512 has changed all that. There are more PCs out there, and with them, a wider range of customers.

Eventually the British situation could mirror the American one, where there is no rigid division between a home machine,

clubhouse won't cost the earth.

You scroll through your bag of clubs, and when you've chosen one your large, animated golfer walks over to the ball. Aiming the shot uses a system; you position an arrow on the horizon where you want your shot to land. It's a very natural way of doing things. After that you only have to swing your club and hope for the best.

Five a Side Soccer is a completely different ball game! Little men run around the pitch in a full contest, or you can take part in a penalties competition. Unfortunately the game isn't desperately playable. Our copy of **Ninja Mission** failed to load, but it appears to be a hearty beat 'em up game with a little plot thrown in.

Another approach to budget games has



once you've chosen your club, but the real skill comes in making your shot.

A swing meter appears on screen, just by the animated golfer, and your first shot

ALL PLAY & NO WORK

used for games, and an office machine, doomed to a life of spreadsheets. But even then, the PC is likely to retain its more 'grown-up' image, which means that the majority of its games are aimed at a more adult market, and present sophisticated challenges.

There are some outposts where arcade games rule the roost though. Potentially the most exciting development is Mastertronic's appearance on the scene. The budget king plans to do for the software what Amstrad did for the hardware, with a range of games costing a mere £9.95. At this price the discs are almost disposable, to be wiped and used for other purposes once you've got bored with the games, perhaps.

The first releases share a sporting theme. **Pro Golf** is probably the best of the three, and while there are better simulations of the game available, this one isn't bad, considering that entry to the

FROM SOCCER TO STARGLIDER, JOHN MINSON SURVEYS THE FIELD OF PC GAMES SOFTWARE, AND FINDS PLENTY TO LURE HIM AWAY FROM THE SPREADSHEETS . . .

been taken by Robtek. **Games Compendium Vol 1** contains ten programs which can be played in mono or colour. There are indoor favourites such as **Solitaire**, **Poker** and **Othello**, plus simple arcade games like **Demolition** and **Pacmania**.

If you're looking for serious sport, you'd do better to go up-market. **World Tour Golf**, published by Electronic Arts, via Ariolasoft, embodies the American approach to leisure software. Its

packaging is glossy, its documentation is lavish, it's presented with more than a little wit, and it's extremely addictive.

The course itself is admittedly garish - psychedelic colour schemes are often a bugbear when it comes to PC games - but it plays beautifully. You aim your shot with a crosshairs cursor,

starts the backswing. Hit the key again for the downswing, which defines the shot's strength, and finally a third hit, as close to when the meter points down as possible, affects accuracy. Add to this the ability to view the green from different angles, or even construct your own dream - or nightmare - course, and you begin to appreciate the care that has gone into this simulation.

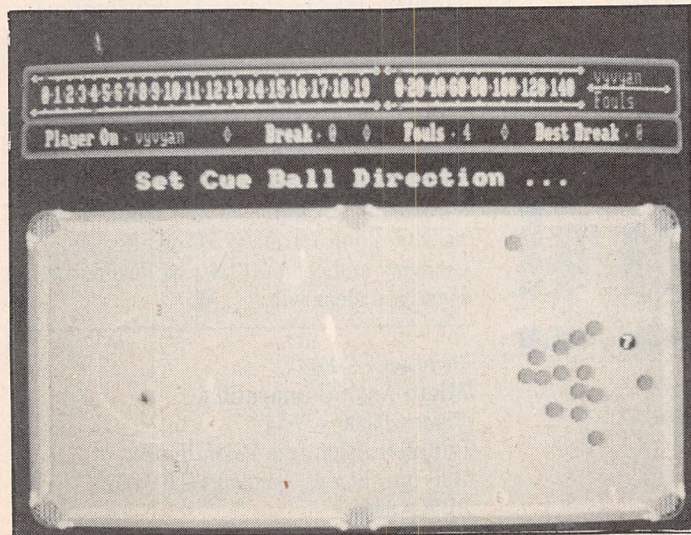
There's a world of difference between the serenity of taking on 18 holes and the pack of 11 giants who make up an American Football team, but if the rough and tumble of the gridiron appeals, **Super Sunday** from Nexus is for you!

The Commodore 64 version of the game, which this closely resembles, has already been praised in this very magazine. Select your team from one of the classic Superbowl finalists, and pick your plays, taking note of the players' abilities. It's very much a strategic game and if the players look rather like frogs when seen from the side - so what? How else can you coach in the NFL?

Sports

Other sports are either here or on the way. Ariolasoft has the basketball simulation, **One to One**, featuring top American players Dr Julius Erving and Larry Bird, dribbling and jumping their way to victory. Then there are the track and field events, **Winter Games** and **Summer Games II**, which are long standing favourites on purely games machines. And motor racing game, **Pitstop II** is also on the way.

But if all this fresh air makes you long for the smokey atmosphere and dim lights of the pool hall Amsoft's **Alex Higgins'**



Snooker should give you just the break you need. It's an excellent one or two player simulation for fans of the game with bright, clear colours and a table that almost fills the screen.

Your shot is aimed with a circular cursor then you adjust both vertical and horizontal spin with bar indicators, which are a little too small, before hitting fire. The balls roll smoothly and the general presentation is excellent. You can use the numeric keys, mouse or a joystick in practice or game modes, and monitors are catered for with an option that displays the value of each ball.

Staying indoors, board games have long been micro standards. There are several chess programs available for the PC, as well as card games like **Grandslam Bridge**, another Electronic Arts masterpiece from Ariolasoft. Once again there's the same fine attention to detail, including the noise of the pack being shuffled, and versatility to this two-disc pack.



You can play solo against the computer, or with two or three other humans and different skill levels are available. Novices will find the ability to play with all the hands revealed or to replay cards useful. When a program is as comprehensive as this in all that it offers - including a variety of game and bidding options - there's always a danger that you'll get lost in a maze of control keys, but the program uses the functions keys intelligently.

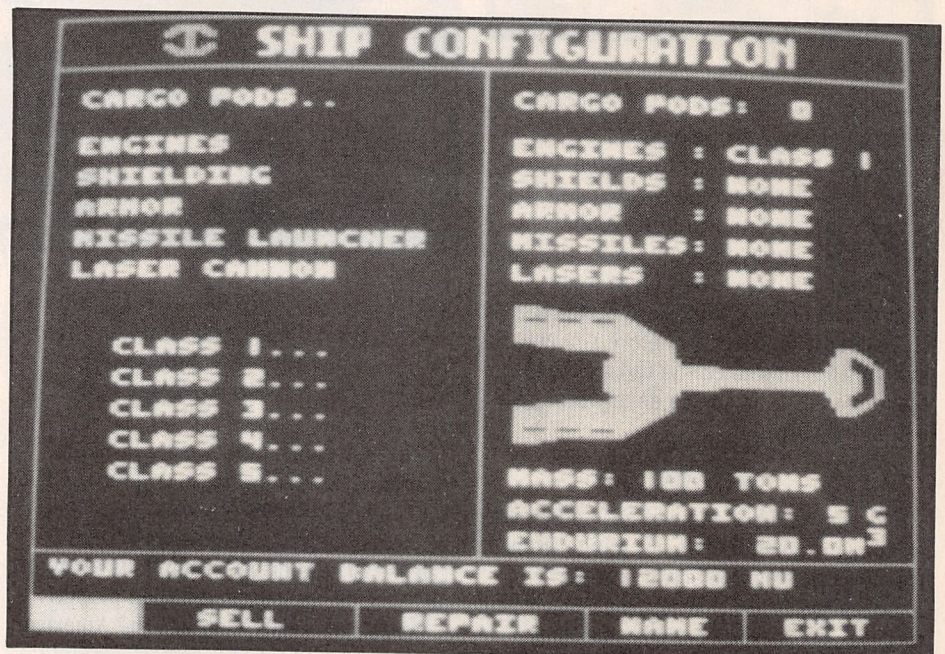
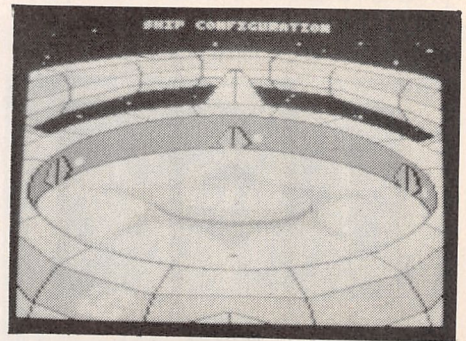
Other classics for the PC, available now or in the near future, are **Scrabble** from Leisure Genius, a firm favourite on many machines and **Trivial Pursuit** from Domark. But there are also some traditionally styled games which have been designed with the computer in mind. Ariolasoft's **Archon** resembles chess, but adds mythological creatures with special powers in a game of strategy. Brian Clough's **Football Fortunes** from CDS, the multi-player, micro board game that features a real board is also being converted for the PC. It's great fun for the family.

Turbo Gameworks from Borland is something rather different. Best known for their languages, such as Turbo Pascal,

this release takes the form of a book about games on computers, complete with two discs which contain bridge, chess and Go-Moku, also known as Pente. These are written in Turbo Pascal, so you can modify the code, with the help of the text, so developing an insight into an increasingly important area of programming, computer intelligence.

There are also plenty of games of pure strategy for thinkers. Mindscape's **Balance of Power**, available from Mirrorsoft, presents you with the chilling problem of keeping the superpowers from each other's throats. Presentation is right

the globe to dictate your policy, without triggering World War III. World events



up to standard, and the game comes complete with a softback book which sets the context, provides instructions, and even contains a bibliography!

There's a fair bit of installation needed to get Balance of Power up and running, because it works under Microsoft's Windows, which is included on the Setup disc. You'll also need a double disc system, and a colour monitor is advisable, but once you've configured the program, you can play Balance of Power at four levels of difficulty, from Beginner to Expert and the accurately named Nightmare.

After that you can take your seat in the White House and, as successor to Ronnie Reagan, use pull down menus and a map

Starflight

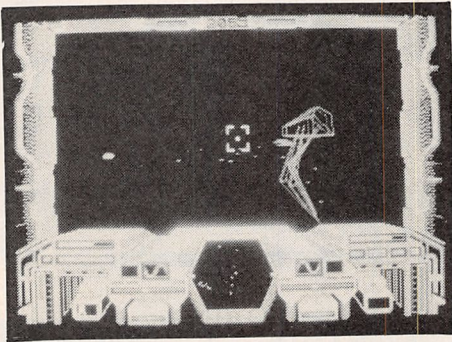
include political and civil rights, treaties and the diplomacy, and various economic factors. For the ultimate in taking on an unpredictable opponent, there's a two player option. A nuclear holocaust is viewed as a no-win situation!

If that all sounds too heavy, then **Starflight** is another twin disc pack from Electronic Arts/Ariolasoft, which sets you trekking across uncharted galaxies to boldly go where no PC has gone before. With 270 star systems and 800 planets to investigate, plus seven alien races to interact with, you'd better take a packed lunch!

Training

The first trick is to pick your crew carefully and train them in the basic skills of space exploration. You'll need to be a bit of an entrepreneur too, because only if you trade successfully can you outfit your ship properly. You play in real time, giving commands from on-screen menus. Like **Elite**, which it vaguely resembles, Starflight comes with lots of back-up material, including a star map and Security Access Code Wheel. It could easily become a way of life.

There's a lot of strategy to a simulation like **GATO** too. This Spectrum Holobyte program, available from Mirrorsoft, puts you in charge of a WWII GATO class attack submarine in the Pacific. There are



Starglider

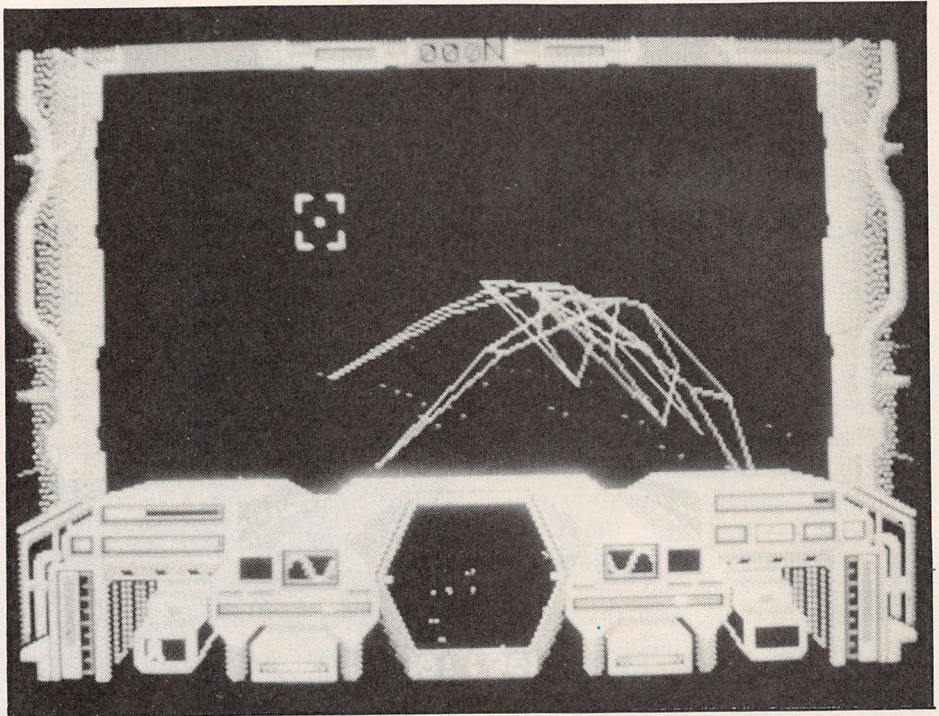
two main screens. The first combines a periscope view with instruments.

Using a combination of function and letter keys and the numeric keypad, which can be a handful until you've become accustomed to captaining the craft, you set the speed and direction, or arm the torpedoes, then send them on their deadly course. But before you get into battle you'll need the radar screen, to trace the positions of the enemy and your refuelling ship.

Flight

It's very much a game of cat and mouse as you surface and dive, or change from the noisy diesels to electric power, between the islands. When you've got your target in range you change to the main screen, and it appears in wireframe 3D in the periscope. **GATO** isn't the fastest moving game, though you can 'cheat' time, but it's definitely engrossing.

Silent Service from MicroProse presents more submarine action, but if you prefer aerobatics to aquatics there are many flight simulators to lift your PC



off the ground. Titles to watch out for are **Solo Flight 2** and **Flight Simulator II**, or for a more military feel, **Spitfire Ace**, **Dambusters**, **F15 Strike Eagle** and **Hellcat**.

There are elements of simulation in **Starglider** too, once again demonstrating that the boundaries of game types cannot be clearly defined. What this Rainbird release is 'simulating', though, is air to air and ground combat on an alien planet.

Starglider easily matches the American style of packaging as it comes complete with a wallchart, a manual with separate keyguide, and even a 64 page novella by James Follett to set the scene. But it's the program that dominates the package. Though its colour scheme is rather lurid and the sound effects are a little sparse, **Starglider** compares well with versions for other micros.

For anybody who's not seen it running on another machine, **Starglider** puts you at the controls of a fighter, skimming across a planet surface shooting at anything that moves, and the odd inanimate object, too. But it's more than a straight shoot 'em up and you'll require a bit of strategy, as well as skill with the controls, if you're to win through. With its fast, vector 3D graphics it creates a real sensation of soaring and swooping, and can prove highly addictive!

That only really leaves adventure games. If you want to get into this area of problem solving with your PC, there are a lot of great titles available.

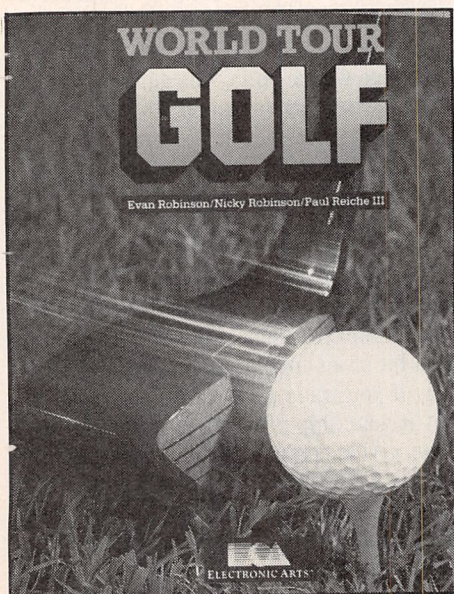
American masters of the genre, Infocom's interactive fiction, is readily available and combines wit with fiendish problems. Thankfully they grade their titles according to difficulty. Magnetic

Scrolls is probably their nearest British equivalent with **The Pawn**, an innovative and sophisticated journey into a fantastic land. Keep an eye open for their new release, out soon.

In the field of traditional adventures, Level 9 provides lots of brain-teasers in their two trilogies, the fantastic **Jewels of Darkness**, which is based, in part, on the original mainframe Adventure, and the sci-fi **Silicon Dreams** series. Like Magnetic Scrolls, Level 9 is distributed by Rainbird.



If it comes as a surprise to find out how much entertainment software there already is for the PC, you can be sure that even more is on the way. It will be interesting to see whether the arcade games field takes off too. But whatever happens, you've no excuse for only using your machine for business. ◀



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Disassembler

Jason Bargent

To disassemble any machine code, load it into memory, being careful not to load it over the disassembler itself, and run it. Enter the start address of the code and then the finish

address.

Options for using the printer, displaying *Ascii* codes and turning paged mode on are all given. To exit the program press the *escape* key.

<pre> 10 MODE6 20 DIM mnemonic\$(56):RESTORE 1000:FOR A=1 TO 56:READ mnemonic\$(A):NEXT A 30 PROCinput 40 CLS:IF page\$="Y" THEN VDU14 ELSE V DU15 50 IF pri\$="N" THEN VDU3 ELSE VDU2,1, 27,1,64,3:VDU2:PRINT' 60 ON ERROR VDU7:PROCkey:GOTO 60 70 start=EVAL(start\$):finish=EVAL(fin ish\$) 80 ascii\$="" 90 IF start>finish THEN VDU7:PROCkey: GOTO 30 100 b=?start:b1=?start+1:b2=?start+ 2):GOTO 110 110 PRINT" ";~start;" - ";:print=FALSE 120 IF b>&1F AND b<&7F THEN ascii\$=asc ii\$+CHR\$(b) 130 IF b<16 PRINT"0"; 140 PRINT;~b;" "; 150 IF print THEN RETURN 160 RESTORE 830:REPEAT:READ data\$:UNTI L data\$="EOF" OR (EVAL("&"+data\$)AND &FF)=b 170 IF data\$="EOF" THEN found=FALSE EL SE found=TRUE 180 addtype=EVAL("&"+LEFT\$(data\$,1)) 190 IF NOT(found) THEN PRINTTAB(20);"#" **";start=start+1 ELSE GOTO 220 200 IF asc\$="Y" THEN PRINTTAB(36);asci i\$ ELSE PRINT 210 GOTO 80 220 IF (addtype AND addtype<5) OR (add type>8 AND addtype<12) PROCprint(b1):sta rt=start+2 230 IF addtype=5 OR addtype=6 OR addty pe=7 OR addtype=12 PROCprint(b1):PROCpri nt(b2):start=start+3 240 IF addtype=8 OR addtype=0 start=st art+1 250 mnemonic\$=mnemonic\$(((EVAL("&"+dat a\$)AND&FF00)DIV&100)+1) 260 PRINTTAB(20);mnemonic\$;" "; 270 PROCsetupprint 280 GOTO 200 290 : 300 DEF PROCprint(bbc%) 310 IF bbc%>31 AND bbc%<127 ascii\$=asc ii\$+CHR\$(bbc%) 320 IF bbc%<16 PRINT"0"; 330 PRINT;~bbc%;" "; 340 ENDPROC 350 : </pre>	<pre> 360 DEF PROCsetupprint 370 IF addtype=0 PRINT "A";:ENDPROC 380 IF addtype=1 PRINT "##";~b1;:ENDPR OC 390 IF addtype=2 PRINT "&";~b1;:ENDPRO C 400 IF addtype=3 PRINT "&";~b1;"X";:E NDPROC 410 IF addtype=4 PRINT "&";~b1;"Y";:E NDPROC 420 IF addtype=5 PRINT "&";~b1+256*b2; :ENDPROC 430 IF addtype=6 PRINT "&";~b1+256*b2; "X";:ENDPROC 440 IF addtype=7 PRINT "&";~b1+256*b2; "Y";:ENDPROC 450 IF addtype=8 ENDPROC 460 IF addtype=9 AND b1<128 PRINT"&";~ start+b1;:ENDPROC ELSE IF addtype=9 PRIN T"&";~start-(256-b1);:ENDPROC 470 IF addtype=10 PRINT("&";~b1;"X"); :ENDPROC 480 IF addtype=11 PRINT("&";~b1;"Y"); :ENDPROC 490 IF addtype=12 THEN PRINT("&";~b1+2 56*b2;"");:ENDPROC 500 : 510 DEF PROCinput 520 CLS:ON ERROR GOTO 530 530 REPEAT:VDU23,1,0;0;0;0; 540 PRINTTAB(0,3);STRING\$(255," ");TAB (0,3);"START ADDRESS "; 550 VDU23,1,1;0;0;0;:INPUT start\$ 560 UNTIL EVAL(start\$)<=&FFFF 570 ON ERROR GOTO 580 580 REPEAT:VDU23,1,0;0;0;0; 590 PRINTTAB(0,5);STRING\$(255," ");TAB (0,5);"FINISH ADDRESS "; 600 VDU23,1,1;0;0;0;:INPUT finish\$ 610 UNTIL EVAL(start\$)<=EVAL(finish\$): ON ERROR OFF 620 VDU23,1,1;0;0;0;:PRINTTAB(0,7);"AS CII TEXT OUTPUT? (Y/N) "; 630 REPEAT:A\$=GET\$:UNTILA\$="Y" OR A\$=" N":PRINTA\$:asc\$=A\$ 640 VDU23,1,1;0;0;0;:PRINTTAB(0,9);"PR INTER OUTPUT? (Y/N) "; 650 REPEAT:A\$=GET\$:UNTILA\$="Y" OR A\$=" N":PRINTA\$:pri\$=A\$ 660 VDU23,1,1;0;0;0;:PRINTTAB(0,11);"P AGED MODE ON? (Y/N) "; 670 REPEAT:A\$=GET\$:UNTILA\$="Y" OR A\$=" N":PRINTA\$:page\$=A\$:VDU23,1,0;0;0;0; 680 GOTO 40 </pre>	<pre> 690 : 700 DEF PROCkey 710 VDU3:PRINT'TAB(6);:COLOUR 129:COL OUR 0 720 PRINT" P R E S S A N Y K E Y " ;:COLOUR 128:COLOUR 7 730 ON ERROR OFF 740 *FX21,0 750 VDU23,1,0;0;0;0;:A\$=GET\$ 760 ENDPROC 770 : 780 REM ** DATA aabbcc ** 790 REM aa is the addressing mode 800 REM bb is the mnemonic number 810 REM cc is the operational code 820 : 830 DATA 80A00,A2201,22205,20206,82408 ,12209,20A,5220D,5020E,90910,82211 840 DATA 32215,30216,80D18,72219,6221D ,6021E,51C20,A0121,20624,20125,22726 850 DATA 82628,10129,272A,5062C,5012D, 5272E,90730,80131,3013B,32736,82C38 860 DATA 70139,6013D,6273E,82940,A1741 ,21745,22046,82348,11749,204A,51B4C 870 DATA 5174D,5204E,90B50,B1751,31755 ,32056,80F58,71759,6175D,6205E,82A60 880 DATA A0061,20065,22866,82568,10069 ,286A,C1B6C,5006D,5286E,90C70,80071 890 DATA 30075,32876,82E78,70079,6007D ,6287E,A2F81,23184,22F85,23086,81688 900 DATA 8358A,5318C,52F8D,5308E,90390 ,B2F91,33194,32F95,43096,83798,72F99 910 DATA 8369A,62F9D,11FA0,A1DA1,11EA2 ,21FA4,21DA5,21EA6,833A8,11DA9,832AA 920 DATA 51FAC,51DAD,51EAE,904B0,81DB1 ,31FB4,31DB5,41EB6,810B8,71DB9,834BA 930 DATA 61FBC,61DBD,71EBE,113C0,A11C1 ,213C4,211C5,214C6,81AC8,111C9,815CA 940 DATA 513CC,511CD,514CE,908D0,B11D1 ,311D5,314D6,80ED8,711D9,611DD,614DE 950 DATA 112E0,A2BE1,212E4,22BE5,218E6 ,819F8,12BE9,821EA,518EC,52BED,518EE 960 DATA 905F0,B2BF1,32BF5,318F6,82DF8 ,72BF9,62BFD,618FE,EOF 970 : 980 REM mnemonics to go in an array 990 : 1000 DATA ADC,AND,ASL,BCC,BCS,BEQ,BIT,B MI,BNE,BPL,BRK,BVC,BVS,CLC,CLD,CLI,CLV 1010 DATA CMP,CPX,CPY,DEC,DEX,DEY,EOR,I NC,INC,INY,JMP,JSR,LDA,LDX,LDY,LSR,NOP 1020 DATA ORA,PHA,PHP,PLA,PLP,ROL,ROR,R TI,RTS,SBC,SEC,SED,SEI,STA,STX,STY,TAX 1030 DATA TAY,TSX,TYA,TXS,TYA </pre>
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Memscan

D G Wells

Memscan is designed to display any memory address, the contents of thereof in hex, decimal, the *Chr\$* equivalent and the bit pattern. Where control codes are

present these are shown as numbers and a ? is used in the *Chr\$* column.

The program is easy to use and makes use of either the *Copy* or *Lprint* commands to dump the screen.

<pre> 8000 REM MEMSCA83 SPECTRUM CMP 8005 REM BY D G WELLS 8010 REM 8015 BORDER 0: RESTORE 8035 8020 PAPER 0: INK 7: CLS 8025 FOR A=USR "A" TO USR "B"+5 8030 READ D: POKE A,D: NEXT A 8035 DATA 255,129,129,129 8040 DATA 129,129,129,255 8045 DATA 6,19,205,0,14,201,0 8050 POKE 23658,8: REM CAPS 8055 PLOT 32,154: DRAW -32,0 8060 DRAW 0,17: DRAW 255,0 8065 DRAW 0,-17: DRAW -32,0 8070 PRINT AT 0,12; INVERSE 1;"MEMSCAN"; INVERSE 0;AT 2,4;"(Any other key restor es)" 8075 PRINT OVER 1;AT 1,1;"a=addr\$:";AT 1,9;"s=stop:" 8080 PRINT OVER 1;AT 1,16;"z=copy:";AT 1,23;"l=lprint" 8085 PRINT AT 3,0; PAPER 1; INK 7;"ADDR# HX DEC CHR\$ CTR BIT-PATN" </pre>	<pre> 8090 RANDOMIZE USR USR "B" 8095 INPUT "START ADDRESS? ";SS 8100 PRINT @0;"CTR RESET-SELECT (L)PRINT IF REQ" 8105 LET CTR=1: PAUSE 100 8110 RANDOMIZE USR 3650 8115 IF SS>65535 OR SS<0 THEN GO TO 809 0 8120 FOR A=SS TO 65535 8125 LET LN=8140 8130 LET NL=PEEK 23560 8135 IF NL THEN GO TO (8130-LN AND NL=8 3)+(8090-LN AND NL=65)+(8255-LN AND NL=9 0)+LN 8140 DIM A\$(39): LET D=PEEK A 8145 GO SUB 8240 8150 LET H=INT (PEEK A/16) 8155 LET L=PEEK A-H*16 8160 LET A\$(1 TO 5)=STR\$ A 8165 LET A\$(7 TO 9)=CHR\$ 20+CHR\$ 1+CHR\$ (48+H+7*(H>9)) 8170 LET A\$(10 TO 12)=CHR\$ (48+L+7*(L>9) </pre>	<pre>)+CHR\$ 20+CHR\$ 0 8175 LET A\$(14 TO 16)=STR\$ PEEK A 8180 IF PEEK A>31 THEN LET A\$(18 TO 24) =CHR\$ (PEEK A): GO TO 8190 8185 LET A\$(18 TO 24)="???" 8190 LET A\$(25 TO 31)=CHR\$ 22+CHR\$ 21+CH R\$ 20+STR\$ CTR 8195 RANDOMIZE USR USR "B" 8200 IF NL=76 THEN GO TO 8225 8205 PRINT AT 21,0;A\$ 8210 POKE 23692,255 8215 LET CTR=CTR+1: NEXT A 8220 GO TO 8090 8225 LPRINT A\$ 8230 LET CTR=CTR+1: NEXT A 8235 GO TO 8090 8240 LET v=128: FOR B=32 TO 39 8245 IF d>v THEN LET A\$(B)=CHR\$ 144: L ET d=d-v: LET v=v/2: NEXT B 8250 LET v=v/2: NEXT B: RETURN 8255 COPY : LPRINT : GO TO 8090 8260 SAVE "MEMSCAN" LINE 8015 </pre>
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Programming: Amstrad CPC

Trycall

David Brewer

Trycall allows you to try out a *Call* and see what happens to the flags, registers and stack.

The program comes in two parts. Part one should be typed in and saved. Part two should then be typed in and run, the code that it produces being saved after the main program.

The program invites you to give the address you want to *Call*, the values of

the registers, stack pointer, and the address of the return point, where you want to stop the machine code program. All these will default to a suitable value if you just press *Enter* but you must know where you are going (*Call* value) and how to get back (*Ret* value).

<pre> Listing 1 10 'TRYCALL.1 20 '(C) David Instone Brewer, 1986 30 m=&1F00:MEMORY m-1:IF PEEK(m)<>&ED TH EN LOAD"!TRYCALL.BIN" 40 SP=&BF80 50 PRINT"Printer? "; 60 r\$=UPPER\$(INKEY\$):IF r\$="" THEN 60 EL SE IF r\$<>"Y" THEN 80 70 PRINT"Turn printer on":PRINT#8,CHR\$(1 5):prin=1 80 MODE 2 90 'Input 100 GOSUB 390:n=&3A:i\$="CALL":INPUT "CAL L & ",cl\$:IF cl\$<>" THEN a\$=cl\$:GOSUB 44 0:GOTO 120 110 IF ret=0 THEN PRINT CHR\$(11);:GOTO 1 00 ELSE a\$="":x=ret:GOSUB 440:cl=x:LOCAT E 16,VPOS(@0)-1:GOTO 200 120 n=&20 </pre>	<pre> 130 i\$="AF":GOSUB 420:n=n+2 140 i\$="BC":GOSUB 420 150 i\$="DE":GOSUB 420 160 i\$="HL":GOSUB 420 170 n=n+1:i\$="IX":GOSUB 420 180 n=n+1:i\$="IY":GOSUB 420 190 x=SP:i\$="SP":GOSUB 430:oSP=x 200 i\$=" RET":INPUT "RET & ",ret\$:IF re t\$="" THEN PRINT CHR\$(11);:GOTO 200 ELSE ret=VAL("&"+ret\$):x=ret:GOSUB 480:IF pr in=1 AND t=0 THEN PRINT#8 210 IF ret=0 THEN p1=&CD:p2=&0 ELSE p1=& C3:p2=&2 220 POKE m+&39,p1:POKE m+&40,p2 230 old=PEEK(ret):POKE ret,&F7 'RST 30 240 CALL m 250 POKE ret,old 260 'New values 270 n=&20 280 GOSUB 510:AF=x:A=INT(AF/256):F=AF-A* </pre>	<pre> 256 290 n=n+2:GOSUB 510:BC=x 300 GOSUB 510:DE=x 310 GOSUB 510:HL=x 320 n=n+1:GOSUB 510:IX=x 330 n=n+1:GOSUB 510:IY=x 340 GOSUB 510:SP=x 350 st=0:GOSUB 530:IF prin=1 THEN st=8:G OSUB 530 360 f=FRE("") 'garbage collection 370 GOTO 100 380 'setup RST &30 390 RESTORE 400:FOR p=&30 TO &33:READ q: POKE p,q:NEXT:RETURN 400 DATA &F3,&C3,&3C,&1F 410 'Print and Poke input 420 x=0 430 IF cl\$<>" THEN PRINT i\$;:INPUT " & ",a\$ ELSE 470 </pre>
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continued on page 38 ►

Programming: Amstrad CPC

◀ continued from page 37

```

440 IF a$="" THEN PRINT " ";CHR$(11);HEX$(x,4): ELSE x=VAL("&"a$)
450 x=x-65536*(x<0)
460 x1=INT(x/256):x2=x-x1*256
470 POKE m+n,x2: POKE m+n+1,x1:n=n+3
480 IF prin=1 AND c1<>" THEN PRINT#8,i$;"&"HEX$(x,4);" ";
490 RETURN
500 'Get new values
510 x=PEEK(m+n)+PEEK(m+n+1)*256:n=n+3
520 RETURN
530 'Printout
540 PRINT:GOSUB 660

```

```

550 PRINT#st," ";BIN$(f,8);" ";HEX$(AF,4);" ";
560 x=BC:GOSUB 570:x=DE:GOSUB 570:x=HL:GOSUB 570:x=IX:GOSUB 570:x=IY:GOSUB 570:GOTO 590
570 PRINT#st,HEX$(x,4);" ";;IF x=65535 THEN PRINT#st,"--";ELSE PRINT#st,HEX$(PEEK(x+1),2);
580 PRINT#st,HEX$(PEEK(x),2);" ";RETURN
590 PRINT#st,HEX$(SP,4);IF st=8 THEN PRINT#8," ";HEX$(ret,4);" ";;GOTO 630:ELSE PRINT
600 x=SP:n=1:IF x=0SP THEN 650 ELSE PRINT#8"Stack:";

```

```

610 IF x<>0SP THEN PRINT"(S";HEX$(n);)" ";;n=n+1:x=x+2:GOTO 610 ELSE PRINT
620 PRINT " ";
630 x=SP
640 IF x<>0SP THEN PRINT#st,HEX$(PEEK(x+1),2);HEX$(PEEK(x),2);" ";;n=n+1:x=x+2:GOTO 640 ELSE PRINT#st
650 RETURN
660 IF st=0 OR t=0 THEN PRINT#st,"Flags: S.Z.H.P.M.C Regs: AF BC (BC) DE (DE) HL (HL) IX (IX) IY (IY) SP";IF prin=1 AND st=8 THEN PRINT#8," PC Stack contents...":t=1:ELSE PRINT
670 RETURN

```

Listing 2

```

10 'Trycall.2
20 '(C) D.Instone Brewer,1986
30 'Saves TRYCALL.BIN automatically
40 add=&1F00:lin=100
50 sum=0:FOR n=0 TO 8:READ a$:a=VAL("&"a$):POKE add+n,a:sum=sum+a:NEXT
60 READ check:IF check<>sum THEN PRINT "Data error in line";lin:END

```

```

70 lin=lin+10:add=add+9:IF add<&1F74 THEN 50
80 PRINT"Saving TRYCALL.BIN,b,&1F00,&75"
90 SAVE"!TRYCALL.BIN",b,&1F00,&75
100 DATA ED,43,5F,1F,ED,53,62,1F,22,913
110 DATA 72,1F,F5,E1,22,65,1F,DD,22,1036
120 DATA 6B,20,FD,22,6F,1F,21,00,00,601
130 DATA 39,22,47,1F,21,00,00,E5,F1,696
140 DATA 01,00,00,11,00,00,21,00,00,51

```

```

150 DATA DD,21,00,00,FD,21,00,00,31,589
160 DATA 00,00,FB,C3,00,80,22,2B,1F,682
170 DATA 21,02,00,39,22,36,1F,31,F8,508
180 DATA BF,F5,E1,22,20,1F,ED,43,25,1099
190 DATA 1F,ED,53,28,1F,DD,22,2F,1F,755
200 DATA FD,22,33,1F,01,00,00,11,00,387
210 DATA 00,21,00,00,E5,F1,DD,21,00,757
220 DATA 00,FD,21,00,00,21,00,00,C9,520

```

Programming: MSX

Tascount Matthew Palmer

Want to know how many words in your Tasword files? Easy, type in the listing and run it. You will be prompted for the name of the

file and after entering should position the file to the correct place. After loading the program begins the count.

```

10 REM * Tasword word count *
20 CLS:KEYOFF:CLEAR 5000
30 L=100:DIM B$(L)
40 PRINT" TASWORD word count utility"
50 PRINT" -----"
60 PRINT:PRINT:PRINT
70 INPUT"File name to count ";G$:OPEN "CAS:"+G$ FOR INPUT AS 1
80 PRINT:PRINT"Found: ";G$
90 LINE INPUT #1,A$:IF EOF(1)=-1 THEN 120
100 IF ASC(MID$(A$,6,LEN(A$)))=32 THEN 90
110 Z=Z+1:B$(Z)=MID$(A$,6):GOTO 90
120 FOR X=1 TO Z
130 C$=B$(X):V=0
140 FOR W=1 TO LEN(C$)
150 IF MID$(C$,W,W)=". " OR MID$(C$,W,W)="." THEN MID$(C$,W,W)=" " :GOTO 190
160 IF MID$(C$,W,W)=" " OR MID$(C$,W,W)="." THEN MID$(C$,W,W)=" " :GOTO 190
170 IF MID$(C$,W,W)="!" OR MID$(C$,W,W)="?" THEN MID$(C$,W,W)=" " :GOTO 190
180 IF MID$(C$,W,W)="-" THEN MID$(C$,W,W)=" "
190 IF ASC(MID$(C$,W,W))>32 AND V=0 THEN V=1:GOTO 230
200 IF ASC(MID$(C$,W,W))>32 AND V<>0 THEN 230
210 IF ASC(MID$(C$,W,W))=32 AND V=0 THEN 230
220 IF ASC(MID$(C$,W,W))=32 AND V<>0 THEN V=0:T=T+1:LOCATE 10,13:PRINT"Word count t = ";T;
230 NEXT W:NEXT X
240 LOCATE 10,18:PRINT "Count ended":END

```

Sprite Extra

Neil Kendall

This program allows 16 sprites to be displayed on the screen at the same time with the limitation that the first eight can only be displayed in the top half of the screen whilst the last eight must reside in the bottom half.

The machine code should be initialised by using *gosub 60000* and enabled with *Sys 49152*.

Apart from this the sprites can be used in exactly the same way that eight sprites are normally used, the registers now being in a different place of course.

50000 Sprite 1 x co-ordinate
50015 Sprite 8 y
50016 Sprite 9 x

50001 Sprite 1 y co-ordinate
50002 Sprite 2 x
50003 Sprite 2 y
50004 Sprite 3 x
50005 Sprite 3 y
50006 Sprite 4 x
50007 Sprite 4 y
50008 Sprite 5 x
50009 Sprite 5 y
50010 Sprite 6 x
50011 Sprite 6 y
50012 Sprite 7 x
50013 Sprite 7 y
50014 Sprite 8 x
50032 Sprite enable register (1-8)
50033 Sprite enable register (9-16)
50034 Sprite multi-colour select (1-8)
50035 Sprite multi-colour select (9-16)
50036 Expand x direction (1-8)
50037 Expand x direction (9-16)

50017 Sprite 9 y
50018 Sprite 10 x
50019 Sprite 10 y
50020 Sprite 11 x
50021 Sprite 11 y
50022 Sprite 12 x
50023 Sprite 12 y
50024 Sprite 13 x
50025 Sprite 13 y
50026 Sprite 14 x
50027 Sprite 14 y
50028 Sprite 15 x
50029 Sprite 15 y
50030 Sprite 16 x
50031 Sprite 16 y
50038 Expand y direction (1-8)
50039 Expand y direction (9-16)
50040 Multi-colour reg 0 (1-8)
50041 Multi-colour reg 0 (9-16)
50042 Multi-colour reg 1 (1-8)
50043 Multi-colour reg 1 (9-16)
50044 Sprite background priority (1-8)
50045 Sprite background priority (9-16)
50046 MSB of x position (1-8)
50047 MSB of x position (9-16)
50048 Sprite/background collision (1-8)
50049 Sprite/background collision (9-16)
50050 Sprite/sprite collision (1-8)
50051 Sprite/sprite collision (9-16)
Sprite colour registers:
50052-50067 Sprites 1-16
50068-50083 Pointers for sprites 1-16



```

60000 L=60020:FORI=49152TO49499:
L=L+10:T=0:FORJ=0TOS:READA:POKEI,A:T=T+1
60010 I=I+1:NEXTJ:READB:IFT<>
BTHENPRINT"ERROR IN LINE:";L:STOP
60020 I=I-1:NEXTI:RETURN
60030 DATA76,47,192,173,25,208,721
60040 DATA24,106,144,34,169,255,732
60050 DATA141,25,208,173,81,192,820
60060 DATA141,18,208,169,127,45,708
60070 DATA17,208,141,17,208,32,623
60080 DATA204,192,120,169,82,141,908
60090 DATA20,3,169,192,141,21,546
60100 DATAS,88,76,49,234,173,623
60110 DATA14,220,41,254,141,14,684
60120 DATA220,120,169,3,141,20,673
60130 DATAS,169,192,141,21,3,529
60140 DATA88,169,255,141,25,208,866
60150 DATA169,1,141,26,208,32,577
60160 DATA79,193,96,0,173,25,566
60170 DATA208,24,106,144,211,169,862
60180 DATA255,141,25,208,173,126,928
60190 DATA192,141,18,208,169,127,855
60200 DATA45,17,208,141,17,208,636
60210 DATA32,127,192,120,169,3,643
60220 DATA141,20,3,169,192,141,666
60230 DATA21,3,88,76,49,234,471
60240 DATA150,160,0,185,80,195,770
60250 DATA153,0,208,200,192,16,769
60260 DATA208,245,173,112,195,141,1074
60270 DATA21,208,173,116,195,141,854
60280 DATA29,208,173,118,195,141,864
60290 DATA23,208,173,120,195,141,860

```

```

60300 DATA37,208,173,122,195,141,876
60310 DATA36,208,173,114,195,141,869
60320 DATA26,208,173,124,195,141,863
60330 DATA27,208,173,126,195,141,870
60340 DATA16,208,32,25,195,173,647
60350 DATA31,208,141,129,195,173,877
60360 DATA30,208,141,131,195,96,801
60370 DATA160,0,185,96,195,153,789
60380 DATA0,208,200,192,16,208,824
60390 DATA245,173,113,195,141,21,868
60400 DATA208,173,117,195,141,29,863
60410 DATA208,173,119,195,141,23,859
60420 DATA208,173,121,195,141,37,875
60430 DATA208,173,123,195,141,38,878
60440 DATA208,173,115,195,141,28,860
60450 DATA208,173,125,195,141,27,869
60460 DATA208,173,127,195,141,16,860
60470 DATA208,32,52,193,173,31,689
60480 DATA208,141,128,195,173,30,875
60490 DATA208,141,130,195,96,160,930
60500 DATA0,185,132,195,153,39,704
60510 DATA208,200,192,8,208,245,1061
60520 DATA160,0,185,148,195,153,841
60530 DATA248,7,200,192,8,208,863
60540 DATA245,96,160,0,185,140,826
60550 DATA195,153,39,208,200,192,987
60560 DATAS,208,245,160,0,185,806
60570 DATA156,195,153,248,7,200,959
60580 DATA192,8,208,245,96,169,918
60590 DATA0,160,0,153,80,195,588
60600 DATA200,192,83,208,248,96,1027

```

Too Busy Earning a Living To Make Any Real Money?

You think you've got problems?

Well, I remember when a bank turned me down for a \$200 loan. Now I lend money to the bank - Certificates of Deposit at \$100,000 a crack.

I remember the day a car dealer got a little nervous because I was a couple of months behind in my payments - and repossessed my car. Now I own a Rolls Royce. I paid \$43,000 for it - cash.

I remember the day my wife phoned me, crying, because the landlord had shown up at the house, demanding his rent - and we didn't have the money to pay it.

Now we own five homes. Two are on the oceanfront in California (I use one as my office). One is a lakefront "cabin" in Washington (that's where we spend the whole summer - loafing, fishing, swimming, and sailing). One is a condominium on a sunny beach in Mexico. And one is snuggled right on the best beach of the best island in Hawaii - Maui.

Right now I could sell all this property, pay off the mortgages - and - without touching any of my other investments - walk away with over \$750,000 in cash. But I don't want to sell, because I don't think of my homes as "investments." I've got other real estate - and stocks, bonds, and cash in the bank - for that.

I remember when I lost my job. Because I was head over heels in debt, my lawyer told me the only thing I could do was declare bankruptcy. He was wrong. I paid off every dime.

Now, I have a million dollar line of credit; but I still don't have a job. Instead, I get up every weekday morning and decide whether I want to go to work or not. Sometimes I do - for 5 or 6 hours. But about half the time, I decide to read, go for a walk, sail my boat, swim, or ride my bike.

I know what it's like to be broke. And I know what it's like to have everything you want. And I know that you - like me - can decide which one it's going to be. It's really as easy as that. That's why I call it "The Lazy Man's Way to Riches."

So I'm going to ask you to send me

PROOF!

Don't take my word for it. These are excerpts from articles in newspapers and magazines:

Time:

He only works half the year in his stunning office on California's Sunset Beach, and even when he's there he puts in short hours... In other words, Joe Karbo, 48, is the prototype for... "The Lazy Man's Way to Riches."

Boston Herald-American:

The book has drawn hundreds of letters from persons who have profited by it...

Los Angeles Herald-Examiner:

An unpretentious millionaire, Joe Karbo of Huntington Harbor is a vibrant, living testimonial to his intellectual, pragmatic conviction.

Money Making Opportunities:

Maybe Joe Karbo has the secret. Don't you think you owe it to yourself to find out what it is all about?... I just finished it - and I'm off on a vacation myself. Get the idea?

something I don't need: money. £10 to be exact. Why? Because I want you to pay attention. And I figure that if you've got £10 invested, you'll look over what I send you and decide whether to send it back... or keep it. And I don't want you to keep it unless you agree that it's worth at least a hundred times what you invested.

Is the material "worth" £10? No - if you think of it as paper and ink. But that's not what I'm selling. What I am selling is information. More information than I give when I'm paid \$1000 as a guest speaker. More information than I give in a one-hour consultation for \$300.

But you're really not risking anything. Because I won't cash your cheque or money order for 31 days after I've sent you my material. That's the deal. Return it in 31 days - and I'll send back your cheque or postal order - uncashed.

How do you know I'll do it? Well, if you really want to be on the safe side, postdate your cheque for a month from today - plus 2 additional weeks. That'll give you plenty of time to receive it, look it over, try it out.

I know what your thinking: "He got rich telling people how to get rich." The truth is - and this is very important - the year before I shared "The Lazy Man's Way to Riches," my income was \$216,646. And what I'll send you tells just how I made that kind of money... working a few hours a day... about 8 months out of the year.

It doesn't require "education." I'm a high school graduate.

It doesn't require "capital." Remember I was up to my neck in debt when I started.

It doesn't require "luck." I've had more than my share. But I'm not promising you that you'll make as much money as I have. And you may do better. I personally know one man who used these principles, worked hard, and made 11 million dollars in 8 years. But money isn't everything.

It doesn't require "talent." Just enough brains to know what to look for. And I'll tell you that.

It doesn't require "youth." One woman I worked with is over 70. She's travelled the world over, making all the money she needs, doing only what I taught her.

It doesn't require "experience." A widow in Chicago has been averaging \$25,000 a year for the past 5 years, using my methods.

What does it require? Belief. Enough to take a chance. Enough to absorb what I'll send you. Enough to put the principles into action. If you do just that - nothing more, nothing less - the results will be hard to believe. Remember - I guarantee it.

You don't have to give up your job. But you may soon be making so much money that you'll be able to. Once again - I guarantee it.

I know you're sceptical. Well, here are some comments from other people. (Initials have been used to protect the writer's privacy. The originals are in my files.) I'm sure that, like you, these people didn't believe me either when they clipped the coupon. Guess they figured that, since I wasn't going to deposit their cheques for at least 31 days, they had nothing to lose.

They were right. And here's what they gained:

"Thanks to your method I'm a half millionaire"

"Thanks to your method I grossed about \$500,000. Would you believe last year at this time I was a slave working for peanuts?"

G.C., Toronto, Canada.

"\$24,000 in 45 days"

"...received \$24,000.00 in the mail the last 45 days.

"Thanks again."

Mr. E.G.N., Matewan, W.VA

"Made enough to retire at 41"

"If it hadn't happened to me, I wouldn't have believed it... A few years ago, I had nothing to lose. I was unemployed and broke."

"Now, thanks to you and the 'Lazy Man's' program, I have made enough money (at age 41) to retire in style.

R.A., Huntingdon Beach, Calif.

"There's no stopping me"

"Since I've got your (Lazy Man's Way to Riches) in July, I've started 4 companies... there's no stopping me and I'm so high I need chains to keep me on the ground."

M.T., Portland, OR

"Wow, it does work!"

"Oddly enough, I purchased Lazy Man's Way to Riches some six months ago, or so, read it... and really did nothing about it. Then, about three weeks ago, when I was really getting desperate about my financial situation, I remembered it, re-read it, studied it, and this time, put it to work and WOW, it does work! Doesn't take much time, either... I guess some of us just have to be at a severe point of desperation before we overcome the ultimate laziness, procrastination."

Mr. J.K., Anaheim, CA

"Made \$70,000"

"A \$70,000 thanks to you for writing The Lazy Man's Way to Riches. That's how much I've made..."

"I use this extra income for all of the good things in life, exotic vacations, classic automobiles, etc. Soon I hope to make enough to quit my regular job and devote full time to making money the easy way..."

Mr. D.R., Newport Beach, CA

"\$260,000 in eleven months"

"Two years ago, I mailed you ten dollars in sheer desperation for a better life... One year ago, just out of the blue sky, a man called and offered me a partnership... I grossed over \$260,000 cash business in eleven months. You are a God sent miracle to me."

B.F., Pascagoula, Miss.

"Steadily upward ever since"

"I ordered Lazy Man's Way to Riches in June... by September, my career was launched and has gone steadily upward ever since."

Mrs. B.A., Walnut Creek, CA

"\$7,000 in five days"

"Last Monday I used what I learned on page 83 to make \$7,000. It took me all week to do it, but that's not bad for five day's work."

M.D., Topeka, Kansas

What I'm saying is probably contrary to what you've heard from your friends, your family, your teachers, and maybe everyone else you know.

I can only ask you one question. How many of them are millionaires?

So it's up to you.

A month from today, you can be nothing more than 30 days older - or you can be on your way to getting rich. You decide.

The wisest man I ever knew told me something I never forgot: "Most people are too busy earning a living to make any money."

Don't take as long as I did to find out he was right.

I'll prove it to you, if you'll send in the coupon to my publisher now. I'm not asking you to "believe" me. Just try it. If I'm wrong, all you've lost is a couple of minutes and a postage stamp. But what if I'm right?

Some have called it a Miracle. Some have called it Magic. You'll call it "The Secret of the Ages."

As for me, I thank God that before he died Millionaire Joe Karbo left, for all to share, the secret of "The Lazy Man's Way to Riches." The above story, which is in his own words, is his gift to you.

Sworn Statement:

"On the basis of my professional relationship as his accountant, I certify that Mr. Karbo's net worth is more than one million dollars."

Stuart A. Cogan

Chartsearch Ltd.,
11 Blomfield Street,
London EC2M 7AY

You may be full of beans, but what have I got to lose? Send me the Lazy Man's Way to Riches. *But don't deposit my cheque or postal order for at least 31 days after it's in the mail.* If I return your material - for any reason - within that time, return my uncashed cheque or postal order to me.

- On that basis, here's my £10
 Please charge my credit card.

A/C Number (Access/Visa/Diners/Amex)

Name

Address

Code

Signed

Date

(Please Print Clearly)

Please allow
14-21 days
for delivery

PCW 06/03

REGISTERED IN ENGLAND No. 134022

Memory Move

Mark Gidley

This BBC routine enables you to move a piece of memory from one location to another. The syntax of the command as follows.

PROCmove(start address, destination address, length).

```
10REM ** Memory Copy **
20FOR I%=&D00 TO&D11 STEP4:READd%:!I%=
d%:NEXT
30DATA &70B100A0,&DOC87291
40DATA &E671E6F9,&FODOCA73
50DATA &00000060
60PROCmove(&1100,&7000,1)
70END
80DEFPROCmove(st%,de%,X%)
90?&70=st% MOD 256:?&71=st% DIV 256
100?&72=de% MOD 256:?&73=de% DIV 256
110CALL&D00:ENDPROC
```

Linefind

Jonathan Temple

This is a useful utility for the BBC computer which enables you to find all occurrences of a specified string in a program.

The syntax is **Line string*

Although it can find variables (ie **Line B%*) it cannot find *Basic* keywords.

```
10 C%=0:N%=&98F9-(?&8015=50)*23
20 FOR M%=&A00 TO &A58 STEP4
30 READ B$:B%=EVAL("&"+B$):C%=C%+B%
40 IF B%=&20E3 !M%=&20E3:M%!2=N% ELSE !M%=B%
50 NEXT
60 IF C%<>&5C8E6CFE PRINT"Error":END
70 ?&200=0:?&201=10:END
80 :
90 DATA F384F286,EE200EA9,8501A9FF
100 DATA 8518A570.B100A071,C82B8570
110 DATA 2A8570B1,A2C8C8,A88A7284
120 DATA 72A4F2B1,11F00DC9,9F070D1
130 DATA DC970B1.DOC80DF0,DOC8E8E5
140 DATA 20E3,A0FFE720,1870A502
150 DATA 70857071,6971A5,A07185
160 DATA BB1070B1,60
```

Underline

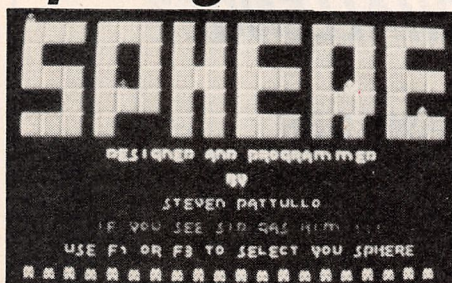
D Crabtree

This program for the Spectrum enables any text to be underlined, smartening up on screen presentation.

The routine is called with *Randomize* *Usr 65494*.

```
1 REM *****
2 REM A PROGRAM TO UNDERLINE
3 REM *****
4 REM TYPE IN THE PROGRAM.
5 REM RUN IT
6 REM THEN DELETE
7 REM LINES 1 TO 60
8 REM CALL PROGRAM WITH
9 REM GOSUB 9999
10 REM RETURN TO NORMAL WITH
11 REM GOSUB 9998
12 REM *****
13 REM *****
15 CLEAR 64725
20 LET tot=0
30 FOR f=65494 TO 65534: READ
a: POKE f,a: LET tot=tot+a: NEXT
f
40 DATA 1,255,2,17,214,252,33,
0,61,237,176,33,214,251,34,54,92
,175,1,96,0,33,221,252,62,255,11
9,125,198,8,111,124,206,0,103,11
,120,177,32,240,201
50 IF tot<>4796 THEN PRINT "E
rror in data"
60 STOP
9998 POKE 23606,0: POKE 23607,60
: RETURN
9999 RANDOMIZE USR 65494: RETURN
```

Programming Spotlight



Programming Spotlight is where long programs are featured and offered for sale to you, the reader, by the author. Programs featured in this spot become the copyright of *Popular* as usual. Also we pay the nominal sum of £10.

Sphere

Steven Pattullo

Sphere is the follow-up to the excellent UFO featuring the same high standard of graphics. The game

puts you in control of a sphere who must find his way to the bottom floor of a five floor maze and escape through the exit.

Each floor is made up of about three screens and some of the doorways are guarded by Demon Heads which can only be killed if you are carrying the correct key. To make life a little harder the walls of the maze are electrified, contact with which is deadly.

For a copy of Sphere send £2.00 to Steven Pattullo, Programming Spotlight, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Still available is Singlestep (R M Wilkin-son) at £2.75.

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Citizen 120-D Printer	£199.95	Trivial Pursuit (Y. Players)	£17.95		Answer Back Quiz (Age 12-Adult)	p.o.a.	
Star N.-10 Printer	£299.95	Waterloo	£12.99		Answer Back Sport (All ages)		
DMP 2000 Printer	£169.95	Graham Gooch	£12.99		Facfile 500 (additional questions for Answer Back) Send S.A.E. for brochure		
DMP 3000 Printer	£184.50	Protect (PCW)	£24.99	£17.99	£37.50		
PC1512 Single Disk + MMon	£449.00	Protect (PCW)	£74.50				
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PC1512 Double Disk + MMon	£559.00	Maxam	£24.99	£18.99	£37.50	DOS Plus Manual for 1512	£17.50
PC1512 Double Disk + ColMon	£729.00	Prospell	£22.99			Using DOS Plus on Amstrad PC	p.o.a.
PC1512 10-Meg Hard Disk + MMon	£799.00	Prospell (R256/8512)	£27.95			Business Presentation Graphics on Amstrad PC	£12.95
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PC1512 20-Meg Hard Disk + CMon	£1069.00	Hisoft Devpac 80	£37.50			Practical Reference Guide to Word Processing on the Amstrad PCW	£5.95
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250K Silicon Disk (6128)	£89.95	Tasprint 464	£11.99	£8.99		PSV with Modulator for 464 to TV	£14.95
250K Silicon disk (464/664)	£89.95	Miri Office II	£18.99	£13.99		As above but for 464/6128	£29.95
Speech Syn with Stereo (6128 ROM)	£37.50	Rainbird Music System	£13.99			DMP 2000/3000 dust Cover	£5.95
64K Memory Expansion (464/664)	£47.50	Laser Basic	£18.75	£13.50		Amstrad DD(FDI) Dust Cover	£4.99
SSAI Speech Synth+Stereo Amp (464)	£27.50	Laser Compiler	£22.99	£18.75		6128 Dust Cover	£6.95
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8256/8512 Lightpen	£77.50	Map Integrated Accounts dBase II (8256)	£137.50	(IBM) £139.50		Centronics Printer Lead	£9.95
		New Word 8256/6128	£64.50			2000 Shaver Fanfold Plain Paper	£15.95
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Gauntlet AMS	£13.50	Tasword 8000	£23.50			AMS Computer Monitor/Power Extension (MCL410)	£8.95
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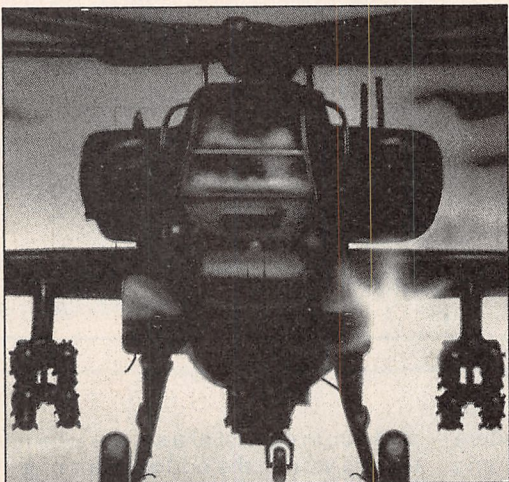
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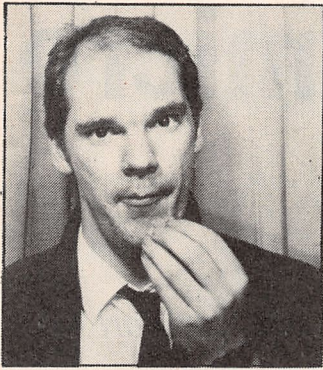
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Shadow Facts

L J Brookes, of Chesterfield, Derbyshire, writes:

Q While writing machine code programs of the Commodore 64, I have been utilising the 'Shadow Rams' by banking in and out the Basic Rom and kernal Rom. I have had no problems with this until I tried to run a program which uses the raster interrupts. When writing such a program, I find that I can bank out either one of the Roms, but if I try both, the machine hangs up. I have no such problems if I turn off the interrupts. I have re-routed the internal vectors but this does not help. At the moment, I am hoping to alternate use of the two shadow Roms; banking one in and one out. The raster interrupt is the only one running, all the others are switched off.

A Your problem might be one of a number of things. Make sure that you are not switching out the I/O section of the memory map when you move the Roms since if the VIC chip is not there, you will get no interrupts at all. If you are using the operating system interrupt vectors, \$314/5, then switching out the kernal Rom will almost certainly crash the machine. You need to use the 6502 vectors at \$FFFE/F but these can only be used with the kernal Rom switched out. If you are using routines from the kernal then you will have to switch off the IRQ interrupt while using them (SEI stops them CLI

reinstates them although you may need to reset the raster interrupt before CLI). Depending on the routine you want to use, this may cause interference on the screen. Either access the kernal routine when the raster scan is off the screen (detect this with an interrupt then turn them off), the start of the bottom border being perhaps the best place, or write your own routine to perform the function you need.

It seems strange that the hang only occurs when both Roms are switched out. Problems should only occur with the kernal Rom since the Basic Rom shouldn't be using or affecting the interrupts at all.

When an IRQ occurs, the 6502 (same as the 6510), uses the routine pointed to via the vector at \$FFFE/F. With the kernal in, it performs all of the operating system requirements and yours if you have redirected \$314/5. In this situation, you don't need an RTI at the end, you will need to jump to \$EA31.

If you bank out the kernal Rom, first of all making sure all interrupts are off, you can put your own vector at \$FFFE/F but you must make sure that you save all of the registers including status, usually onto the stack, and then reinstate them after the interrupt service routine is finished then do an RTI. It looks like your only solution is either to suffer turning off the interrupts when using the kernal, or write the necessary routines yourself, and ignore the kernal by switching it out.

Learning the language

R Ming, of Whalley Range, Manchester, writes:

Q I own a Commodore 128 computer and I know the Basic language, but I would like to learn machine language. Could you tell me what software to buy and any books that might help.

Could you also tell me the difference between assembly language and machine language? In which language do they write computer games?

A There is no difference between machine and assembly language. An assembler is a program that takes a lot of the hassle out of writing machine code. A microprocessor sees everything as numbers: for example, 1 might mean load the a register from the next memory location, or 25 may be the number that tells it to move the contents of one register to another. Instead of having to look up the numbers each time you want to do something, an assembler is used that reads the instructions as mnemonics or easily remembered names, and translates them into the appropriate numbers. So the command LDA (Load Accumulator) would be translated as 1 etc.

If you want to jump from one piece of code to another (like goto or gosub in Basic), labels can be used to mark a position, and then jumped to. The assembler takes care of all the addresses, values, offsets, etc.

The majority of computer games are written in machine code, though some are occasionally written in higher level languages including Basic. The advantage of using machine code is that the computer will use this faster than any higher level language since there is no interpreting to be done - everything is performed at the fastest speed possible.

The oddity of MSX

Barry Allen of Amlwch, Anglesey, Gwynedd, writes:

Q I own a Toshiba IIX 10 computer which is an MSX. What I wanted to know was, when I press the space bar, the return key, and the right cursor key simultaneously it works as a list function. Is this odd or does it happen on all MSX computers?

A This is an oddity but, it does happen on all MSX computers. What is happening is that the keyboard decoding routine interprets the space bar, return, and right cursor keys being pressed simultaneously as

though you had pressed the F4 (function key four) key. If you re-define the F4 key with: *Key 4, "Spc Ret rt"* and press the selection of keys mentioned above, you see SPC RET RT printed up on the screen.

Pressing the space bar, code, and the left cursor key is equivalent to pressing the shift key. There are probably other combinations possible since the keyboard decode programing and hardware rarely expects three keys to be pressed at the same time.

Moving up in the world

Colin Tinto of Chapelhall, Airdrie, writes:

Q I have recently upgraded from a Commodore 64 to a Commodore 128. Unfortunately, I don't have an RGB monitor. This means that 80 column mode is unobtainable to me. I have read adverts for RGB to RGB converters, but would this give me 80 column mode on a normal TV screen? The TV I own has a composite video input, but not RGB port. I would also like to know if it is possible to convert the format of the CP/M discs so that they will load on a 1541 disc drive.

A As far as I know, the only way to get 80 column mode out of a Commodore 128 is to use the RGB port with an RGB monitor. It should be possible to get an RGB to composite converter but I know of no one who makes such a thing and even if they did, the 80 column mode would not be very readable on a domestic TV. The best solution would be, of course, to get a Commodore 1901 monitor which copes with both RGB and PAL composite video. This is rather expensive but will provide the best picture.

The possibility of reading CP/M discs on the 1541 seems pretty unlikely. However, since the 128 can read 64 discs, it may not be totally impossible.



Eine kleine micro music

Mark Jenkins with a report back from the Frankfurt Music Fair

This year's Frankfurt Music Fair was something of a mixed bag, with the software market having a better time of it than many other sectors of the industry. Technological innovation seems to come in two-year cycles, with any company presenting a really revolutionary product one year often being too busy selling it to follow up their success the following year. Frankfurt 1986 was a classic, and so the 1987 show was somewhat lacking in sparkle – very much “the year of the Mk. II”, with items such as the Yamaha DX7 Mk. II, the Alesis MidiVerb Mk. II and the Ensoniq DSK sampler (their “Mirage Mk. III”!) stealing the limelight.

However, there was plenty of software with new music packages on show from Steinberg, Jellinghaus, Beam Team, C-Lab, GCG, Hybrid Arts and many others. The general trend is very much towards the Atari ST series (logical enough, since they're the only production micros with built-in Midi music interfaces) and although the Commodore 64 is still fairly well-supported, we saw little or nothing for the MSX range, the Amstrads, the IBM compatibles or even the Apple Macintosh. No-one appeared to be using the Apple IIGS yet, and it seems the influence of the Amstrad PC has yet to catch on in the States since few American companies thought it worthwhile to make the journey across the Atlantic to show any IBM-oriented packages.

So, a brief look at some of the packages on show with some indication of possible UK availability. On the Hybrid Arts stand the star of the show was ADAP, a professional sampler for the ST which delivers CD-quality sound. ADAP consists of an interface unit, a rack-mounting memory unit and the appropriate software, and the screens which have been completed so far allow you to sample sounds, reverse, splice and combine them, assign them to particular keys

under Midi control on a “keyboard” page, select different Midi channels, and so on. ADAP could be used as a straightforward sampler or, one suspects, as a multi-track long-term digital recorder using hard disc drives to sling together a complete “recording” of sampled sounds and live vocals. Remember, if you can create anything 27.5 seconds long you've got a standard advertising jingle, and sadly it's this sort of market at

sive SMPTETrack version only) the film industry's standard time code. SMPTE-Track comes with software and a large interface box – you can copy the software until you're blue in the face but it won't run unless it sees an interface box, which is one way to solve the piracy problem on a program which costs several hundred pounds. Again, a professional product, and again handled by Syndromic in the UK.

Hybrid also had almost-finished versions of GenPatch, which loads sounds, patterns and samples into Midi-equipped musical instruments before you start playing a sequence, which means you'll never again have to remember which sounds you used when you go back to do a remix. Hybrid are still supporting the Atari 130 as well – if you have this micro they can supply you with a Midi interface and some very powerful Midi composition software.

C-Lab software is available through Sound Technology in the UK and up until now has been chiefly distinguished by MasterTracks, by far the best Commodore 64 Midi package. Now the company has gone into ST software with *Creator*, a multi-track composer which simulates a tape machine in many ways. Each track can have separate values for quantisation, transposition, velocity, compression, accent, loop and delay, each pattern can have 16 named instruments playing on different Midi channels, and each song can consist of any combination of patterns with the pattern names constantly on display. The package is divided into Realtime Sequencer, Arranger and Event Editor sections, and is backed up by X-Alyser, a Yamaha DX7 editor which allows you to display waveshapes in two or three dimensions and carry out fast fourier transformations upon them, which is something of a first and which seems to allow the DX7 (an FM synthe-



Gibson are handling a pads-to-Midi converter – even drummer can program a micro!

which ADAP is aimed with a UK cost of around £2,000. More information from Syndromic Music.

Also from Hybrid, the latest versions of SyncTrack and SMPTETrack, their 60-channel polyphonic Midi composer packages for the ST range which can synchronise to Midi and non-Midi drum machines, tape, or (on the more expen-



Korg's impressive stand (above) included the budget DS8 multi-timbral synth

siser) to imitate sounds created off the Prophet 2000 or other samplers. This one we must see . . .

Beam Team, who are not American as their name may suggest but German, have yet to organise UK distribution, but we'll let you know if this does occur. They have an interesting range of software including X-Syn, a "modular" music system for the ST consisting of the following units:

Manager: data dump management for the DX7, Casio CZ range, Roland JX8P, Yamaha FB01, DX21/27/100, and more to come.

Sequencer: a polyphonic realtime recorder with a graphic five-octave keyboard to play synths direct from the computer using the mouse.

Bank Manager: to transfer whole sets of sounds from computer to synth.

Sound Editor: to edit and create new sounds on the synths mentioned using a "sliders, knobs and switches" or a graphic approach, with all information on one screen.

Sound Creator: to allow the computer to create new sounds on your synth once you've defined a few fixed parameters.

Beam Team also have stacks of Commodore 64 and Mac software, although they're currently emphasising only the ST range. You can write to them for full lists at the address below.

Jellinghaus is another German company currently re-organising their UK distribution, and we'll be able to present some full reviews shortly. They are marketing a complete ST-controlled automation package for small mixers which could be fun, but on the more conventional side are manufacturing Midi interfaces for the C64, Spectrum and Apple II, a Recording Studio/ScoreWriter package, a 16-Track Sequencer/Editor, a 6-Track Midi Step Time Composer (might be handy for beginners), a Midi Master Keyboard which splits the output of one

synth in several different Midi "directions", editors for the SCI Six Trak, SCI Max and Casio CZ, an Apple II-based Akai S612 Sampler Editor, and so on.

GC Geerdes (GCG) are a new company to us and have many interesting products including (on the 64) a DX7 File Transformer and Data Dump, a Drumtraks Composer/Dump, an Ensoniq Mirage Editor/Dump with Light Pen control, a DW8000/EX8000 Editor/Dump, a Casio Editor/Dump and lots more, plus on the Atari ST, an Akai S-900 Sampler Editor, a DX Library and so on. No UK distribution yet, but you can write to them at the address below for complete lists and the latest import position.

Apple Master Tracks, although released a while ago is still very highly spoken of, and you can get hold of it in the UK via Rittor Music who also have a large selection of MSX software and other Passport products.

Steinberg had several new products which weren't in a complete state of readiness, including some sampling hardware for the Atari ST which seems quite powerful. We'll be reviewing that in the near future along with the latest version of their SMPTE-code reading Pro 24 Midi composer and their Akai S900 Sampler editor.

Syndromic Music, 24-26 Avenue, Mews, Muswell Hill, London N10 3NP, 01-444 9126

Sound Technology, 6 Letchworth Business Park, Avenue 1, Letchworth, Herts SG6 2BB, 0462 675675

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"Frankfurt 1986 was a classic, and by comparison the 1987 show was somewhat lacking in sparkle - very much the year of the Mk. II, with the Yamaha DX7 Mk. II, the Alesis MidiVerb Mk. II and the Ensoniq DSK stealing the limelight"



Synthesists Klaus Schulze, Edgar Froese (Tangerine Dream) and Eberhardt Schoerer



A new breed of modems

David Wallin returns with reviews of some new modems of particular interest to home communications buffs

There is a new breed of modems now beginning to hit the market. At the moment, the range primarily consists of the WS4000, Pace's Linnet and Astracom's AC1000.

These devices offer the ease of use, and to a certain extent the range of features, found on expensive intelligent modems (such as the WS3000 or Series 4 modems) at the price of a low cost manual modem. Generally, they lack some of the frills of the more expensive modems but give home users what they want and need.

Cheap modems like this are achieved mainly by the well-established modem manufacturers who can afford to cut the modem's features down a bit and substantially lower the price.

The WS4000 is Miracle Technology's entry into this market of low-cost Hayes-compatible modems. It could either be described as a cut down WS3000 or a beefed up WS2000 (Miracle's manual dial modem) with the main two cuts from the WS3000 being the loss of battery backup – more about that below – and the lack of speeds.

Aimed at the home user, speeds of 300/300, 1200/75, 75/1200 and 1200/1200 (half duplex) in CCITT (European standard) and BELL (USA standard) are standard with upgrades taking the top speed up to 2400 bps (taking the price from £172.50 to £460) available. Being Hayes, autodial is standard, as is auto-answer and baud rate scanning.

All three work very well and the baud rate scan seemed to have no problems in determining the speed in use. If your computer can't handle 1200/75 then the presence of speed buffering will please you. But simply, speed buffering lets you connect to the modem at 1200/1200, yet the modem transmits at 1200/75. Your transmission speed of 1200 baud is automatically converted to 75 baud to allow connection to services like Prestel.

In fact, Prestel can be an awkward

system for 1200/1200 to 1200/75 speed buffering modems to work with, but, as with most things on the WS4000, it worked very well and any errors in transmission that I incurred could easily be put down to a noisy line.

Possibly my biggest complaint about the WS4000 is that it lacks *Battery Backup* for its 60 number telephone directory. Most modems with built-in directories of telephone numbers have small internal batteries which recharge whilst the unit is switched on and provide a small amount of power when the

you accidentally switch it off. Your directory can be quite long and having to re-enter it due to just one second loss of power, for any reason, is an annoying and time consuming task.

To produce a cheap intelligent modem you do have to miss out some features, but why battery backup? I would have thought it was more important than auto answer and 75/1200 to the average user.

The modem itself is fairly well constructed in a plastic case which can comfortably take a telephone on top,

with six LEDs at the front and all the interfaces at the rear.

The six LEDs show:

whether or not the modem is switched on (ON)

whether or not the modem is on-line (OL)

whether or not a carrier is being detected on the line (CD)

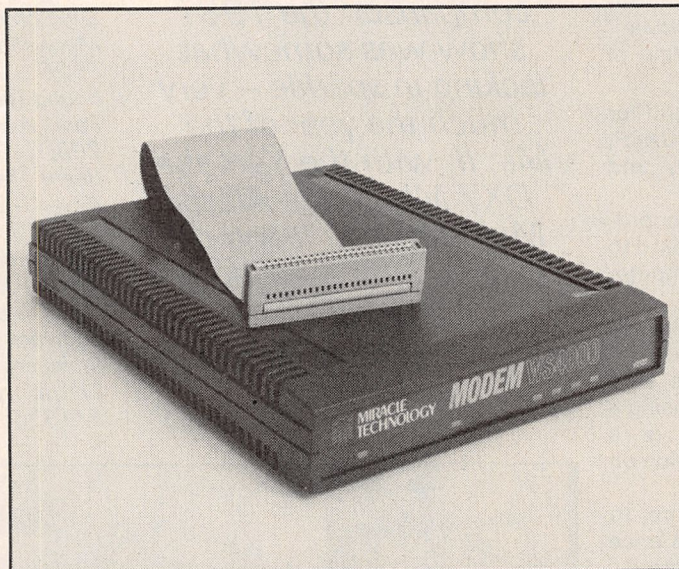
whether or not you are sending data (SD)

whether or not you are receiving data (RD)

lastly, whether or not the modem is in auto answer mode (awaiting a call – AA)

At the rear, there is a lead to connect to the phone system (the WS4000 is BAPT approved) and a through connector for you to plug a

telephone into (this is invaluable). There is a standard 25 way RS232 female 'D' connector to connect the modem to the computer and also a power connection. A transformer is supplied to connect the modem to the mains, though the power lead (as on most modems) is a little short. On the subject of the RS232 connector, you may communicate with the modem at any of the speeds it can handle, the one the service you are using uses is the best.



The WS4000 modem from Miracle House: what home users want and need

modem is 'off' or disconnected from the mains. The small amount of power is sufficient to keep the directory stored for up to several months on end, depending on the condition of the batteries and the type of battery in use.

This power can also be used for other things, for example, Pace's Series 4 modems, amongst others, have a built-in clock and calendar. The battery backup keeps these running (they are not displayed, but they are updated – accurately) even when the modem is disconnected.

Battery backup is very useful if there is a power cut (or even a power surge), or if

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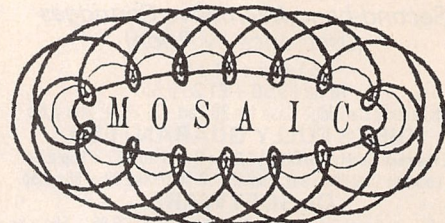
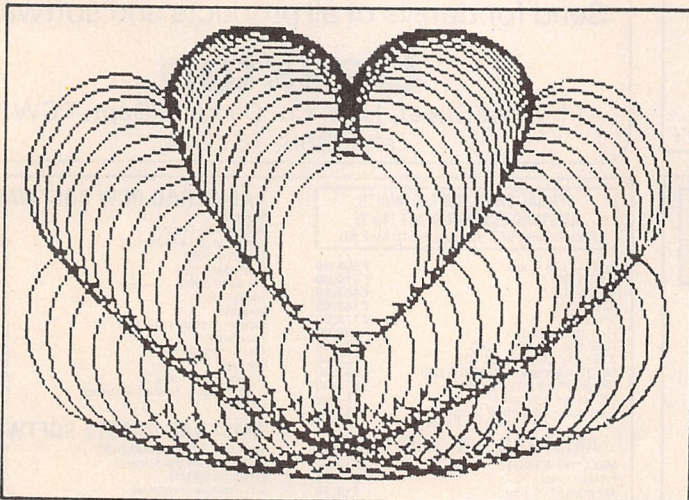
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
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BBC B, 5 $\frac{1}{2}$ " 100K drive + discs, cassette + £320 worth of games, twin joysticks, b/w portable, 3 volumes Micro User. All v.g.c., worth £1000+, sell £450 o.n.o. Gary, 90 Lyndhurst Road, Corringham, Essex SS17 7SN.

ATARI ST public domain software service. Hundreds of titles. For details send stamped S.A.E., or for list send disc and stamped S.A.E. to: ST U.K., 2 Marina Gardens, Cheshunt, Herts EN8 9QY. Large S.A.E. please.

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ATARI 520 ST, two 1MB drives, mono monitor, bundled software, monitor and drive stand, address book, Laserbase, £500. Vpagem Int. £175, Easydraw £50. Printlaser Art Gallery 1-2 £50, Dbase II £75. Tel: 01-407 5892.

SHARP disc drives wanted for MZ80B, interface not needed. Also wanted, software for MZ80B. Please contact M. Bamford, Nant-y-Brithyll, Llangynyw, Welshpool, Powys SY21 0JS.

WANTED for Epson HX20, Intext, Spreadsheet, other manuals and software. Tel: Martin 01-240 9905.

AMSTRAD 6128 colour monitor. As new, still boxed. Unwanted Xmas gift. Accept any reasonable offer. Buyer collects. Tel: Leics 557076.

COMMODORE 64/128. Listings of any basic program (cassette or disc), printed in letter quality. Send £1 to Mr. A. Spilsbury, 29 Ashleigh Road, Solihull, West Midlands B91 1AF.

QL, THERMAL PRINTER, Metacomco 'C', plus books £100. Spectrum, micro drive, cassette recorder, various languages, games, adventures, Flight Simulator, £80. Wanted Lattice 'C' for ST. Tel: Mike 0272 713091 evenings.

COMMODORE C64, 1541 disc drive, C2N cassette, Superbase, Superscript, Busicalc. Future Finance, joystick, games, adventures, books, all original discs, dust covers. £300 o.n.o. Tel: 061-437 5788.

CBM 64, C2N cassette 1541 disc drive. B and W monitor, expansion board, joysticks, many games and business software plus lots of instructional books etc. Best offer over £275. Tel: Tony 01-504 3364 evenings.

SPECTRUM PLUS, £35. Interface 1, £25. Microdrive, £25. Brother HR5, £50. QL Cash Trader, offers (unused). 14 Madin Street, New Tupton, Chesterfield S42 6EH.

STAR U.K. USER GROUP for Atari ST users. Free software, special offers, six newsletters per year, hints/tips, etc. Send S.A.E. for more information to: Star U.K., Elmdale House, 8 Elm Place, Aberdeen.

SPECTRUM + computer plus demo tape, manuals, plus Tatung cassette recorder, plus joystick. Quick sale, £65. Tel: John 01-863 1435.

WANTED. Expansion box to turn Advance Technology 86A micro into 86B. Must be perfect. Tel: 0909 721654.

BROTHER M1009 dot matrix printer with centronics interface - excellent condition - includes manual, all boxed, £110. Tel: 01-644 9759 (Sutton area).

FOR SALE RS232 daisywheel printer, brand new and working. Tel: 0782 637259 evenings for details.

BBC B (issue 7). Solidisc 64K/swr, STL/DFDC, DF S/ADFS21 (excluding disc drive), analogue joystick. Roms - G+R/Rom, Fileplus and manual. Watford S.D. DFS and manual, Com/Con. Graphic, discs include Elite, Micro-Aid Account, etc. £400 o.n.o. Tel: Raymond 0247 458855.

BPS1101 CBM daisywheel printer plus extras £199. Superbase 64 £35. Superscript £35. Quill £7. Elyte £7. Battle for Normandy £7. Tel: 0506 411634.

MONITOR. Philips CM 8533 composite video, RGB linear, RGB/RGBI TTL input, audio input, green screen switch. Medium resolution colour. As new, warranty, next day delivery nationwide, £200. Includes leads Atari, Sinclair QL. Tel: 0454 318928.

I.C.L. O.P.D. complete with mono monitor. Xchange version 2-3 plus all usual OPD features. As new, £400. Tel: 01-952 9104.

SWAP Ferguson green screen monitor c/w lead for QL, for a QL compatible printer or any peripherals e.g. memory expansion for QL. Tel: Airdrie (023 64) 51359 ask for Jim.

AMSTRAD CPC 6128 with colour monitor. Five disc games, Tasword, Mastercalc, spare discs, basic course, joystick, cassette lead. £295 o.v.n.o. Tel: Dunstable 0582 607126 evenings/weekends.

AMSTRAD 6128 in excellent condition, + disc drive, + tape recorder, + accelerator, 80 + games, lots of utilities (Laser-Basic, Laser-Compiler, Music-System, Genesis, Discovery-Plus) etc. Cost over £600, sell to first £250. Bargain price, in original box + £100 of magazines. Tel: 0555 71911.

EINSTEIN 80K Tatung colour monitor, printer lead, BBC Basic WDPPO, Spreadsheet, Tasword, Tasprint, Basic Tutor (on disc). 6 games, Home Budget, Graphics, Dump, User magazines, all manuals etc., etc. £220. Tel: 097 883 4013.

ATARI ST software titles are A Mind For Ever, Voyaging, Deep Space, Brattcas and many more! Tel: Syre-sham 384 after 7pm ask for Stephen. **FOR SALE.** Spectrum software! Inc. Starglider £8.50, Dandy £4.50, Quill, Illustrator, Patch £14.95. Artist £4.50, Tomahawk £4.50. Kemp. Int. £5. FREE! postage and packing orders over £10. Tel: Rick, 0239 78379 after 6pm.

COMMODORE 128, 1570 drive, C2N, two joysticks, music software, £200 of games including Pawn, Gauntlet, Sanxion etc. Manuals, leads. Cost £600 will take £480 o.n.o. Tel: 01-598 8693 after 5pm Mon.-Fri.

CPC 464 colour monitor, hardware, software, mags., books, storage systems. Worth over £1000. Will anyone give me a modest £450. Tel: Chris (0924) 828222 ext. 22 10 9am-4pm. Are you curious?

MCP 40 colour printer with Oric interface, complete with coloured pens and paper. Scarcely used in original packaging, £70 o.n.o. Tel: Dumfries (0387) 52656.

WANTED for Transtec business computer 5 $\frac{1}{4}$ " operating disc also instruction manual. Houghton, Birds Road, Thurston, Suffolk IP31 3RJ. Tel: 0359 70696.

ZX SPECTRUM + for sale and 3-channel sound synthesiser, joystick, software, only £60. Tel: Chris, 0772 717607 after 4.30pm.

COMMODORE 64C and mouse and software, tape recorder. Still under guarantee, £180 o.n.o. or will swap for Einstein + extras. Also high resolution monochrome monitor £35 o.n.o. Tel: Sheffield 551782.

FOR SALE. Atari top DOS, 1-5A DOS XL, The Trans Pac, disc utilities £10 each. Tel: Belfast 0232 774060 ask for John.

WANTED AMSTRAD CPC 464 Computing on Tape magazines, any numbers. Contact Ross Carter on 0705 696543.

ADVENTURE PROBE is a monthly magazine for adventurers containing hints, reviews, discount software and much more. Send £1 for sample copy to: Adventure Probe, 78 Merton Road, Highfield, Wigan WN3 6AT.

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COMMODORE 128D, 1701 monitor, 801 printer, Datasette freeze frame, 200 discs including many business programmes, cassettes, manuals, magazines. A bargain at £650. Tel: 051-426 9989 during office hours.

SPECTRUM 128K, Opus 3 $\frac{1}{2}$ " disc drive, Echo synth keyboard, tape recorder, joystick, plus over £700 software. All boxed, excellent condition. Only £350 o.n.o. For details tel: 0787 79741.

AMSTRAD. Circuit modem, interface, enhanced Prestel link 2 software on disc, batteries, £65 new, asking £29 only. Printer lead, £5. Svensoft comms. interface/software, ex-Voyager, £15. Tel: Sunbury 0932 787023.

AMSTRAD CPC 664 computer keyboard, disc drive unit and cover, £135. Green monitor if required, £60. Colour modulator, £10. Cassette player, £15. The lot, £199. All as new. Tel: Sunbury 0932 787023.

BBC B computer, 200K disc drive, teletext receiver, Smith Corona daisy-wheel printer, Rom expansion board, Wordwise+, 1/sheet, Graphics, D/doctor. Lots of software, books. Price £499. Tel: (Oxon) 0993 844453.

COMMODORE 128D and RGBI 1901 colour monitor. Total cost £838, sell at £650 o.n.o. plus software. Tel: 0402 374856.

Amiga

Program Macro Assembler
Type Utility **Price** £69.95
Supplier Metacomco, 26
 Portland Square, Bristol BS2
 8RZ.

From the authors of *Amiga-DOS* and the original *Amiga Assembler* comes the expanded, faster Mk II system.

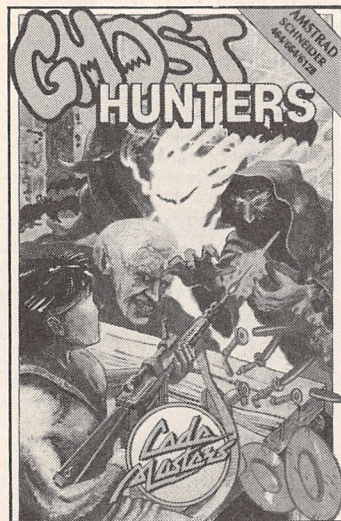
Amstrad CPC

Program Shockway Rider
Type Arcade **Price** £8.95
Supplier Faster Than Light,
 Sedgely Road East, Tipton,
 West Midlands DY4 7UJ.

Just as playable as the excellent Spectrum version, but with enhanced graphics. Nice.

Program Ghost Hunters
Type Arcade **Price** £1.99
Supplier Code Masters, 1
 Beaumont Business Centre,
 Beaumont Close, Banbury,
 Oxon OX16 7RT.

Arcade adventuring with a difference. Great value.



Program Chimera **Type** Arcade Adventure **Price** £1.99
Supplier Firebird Silver, 74
 New Oxford Street, London
 WC1A 1PS.

Program Grange Hill - The Computer Game **Type** Arcade Adventure **Price** £9.95
Supplier Argus Press Software, Victory House, Leicester Place, London WC2.

Amstrad PCW

Program Steve Davis Snooker

Type Arcade Simulation
Price £14.95 **Supplier** CDS
 Software, CDS House, Beck-
 ett Road, Doncaster House,
 Doncaster DN2 4AD.

Yes, it's green, but the game plays well – and as an extra, you can also wop the interesting one at Billiards and Pool. Which leaves only one question. What else are they going to convert it for?

Program Datastore **Type** Application **Price** £39.95
Supplier Digita International,
 Kelsey House, Barns Road,
 Budleigh Salterton, Devon
 EX9 6HJ.

Program Supertype **Type** Utility **Price** £19.95 **Supplier** Digita International, Kelsey House, Barns Road, Budleigh Salterton, Devon EX9 6HJ.

Renamed packages previously published as *Data Gem* and *Font Gem* respectively, both now under new management.

BBC B

Program Artroom Colour Extension **Type** Utility **Price** £15.00 **Supplier** Clares Micro Suppliers 98 Middlewich Road, Northwich, Cheshire CW9 7DA.

Two programs you might find useful if you have Clares' *Artroom* package – a Colouriser and Mode Changer.

Program The Ket Trilogy **Type** Adventure **Price** £9.95 **Supplier** Incentive Software, 2 Minerva House, Calleva Park, Aldermaston, Berkshire RG7 4QW.

Three excellent adventures for a tenner – not state of the art stuff, but enough to keep you going for weeks, unless your name's Tony Bridge.

Commodore 16/Plus 4

Program G Man **Type** Arcade **Price** £1.99 **Supplier** Code Masters, 1 Beaumont Business Centre, Beaumont

Pick of the week

On the rebound

Program Arkanoid **Type** Arcade **Micro** Spectrum **Price** £7.95 **Supplier** Imagine, 6 Central Street, Manchester M2 5NS.

Breakout was always one of my favourite games, and when *Arkanoid* hit the arcades about a year back (from Taito incidentally) I could hardly wait for it to come out on the home front – and here it is – as faithful as you could expect.

Yes, *Arkanoid* is a *Breakout* variant. If you never liked *Breakout* or any of its clones, you won't like this. On the other hand, if you found yourself obsessed with knocking down those little bricks, then you'll be pleased to know that *Arkanoid* adds enough extras to please, but leaves enough of the same to retain the compulsion of the original.

You still control a bat (now a space capsule) at the bottom of the screen, which you can move left/right, only now the walls are different shapes, some bricks need more than one hit to break them, while others are immovable. Sometimes when you hit a brick, it will release a power pill that starts to fall towards the bottom of the screen. If you can move the bat to absorb the pill, you find that it will vary the game in some way – slow the ball down, allow you to catch it, give an extra life, etc, with the most powerful being the one that turns you into a



laser base! Zap those bricks!

The final addition is the introduction of strangely shaped aliens that start floating down from the top of the screen about half way through the scene. These won't kill you, but tend to get in the way and deflect the ball at that vital moment.

The Spectrum version we've tested so far is smooth and fast most of the time – although the speed of the bat across the screen did seem to vary unaccountably on the odd occasion.

The graphics were of a high standard – although expect better on the other formats – and the first six screens seemed to be fair copies of the coin-op, maybe a bit easier.

If *Gauntlet* ever gets off the number one spot, this could well replace it.

Close, Banbury, Oxon OX16 7RT.

Manouver little man with Jet Pac on back, get fuel, avoid low flying meteorites – get the picture?

Program Danger Zone **Type** Arcade **Price** £1.99 **Supplier** Code Masters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon OX16 7RT.

Commodore 64

Program Armourdillo **Type** Arcade **Price** £1.99 **Supplier** Code Masters, 1 Beaumont Business Centre, Beau-

mont Close, Banbury, Oxon OX16 7RT.

Original zapper with reasonable graphics and sound. Why not?

Program Mutants **Type** Arcade **Price** £8.95 **Supplier** Ocean Software, 6 Central Street, Manchester M2 5NS.

Despite the departure of certain key staff – like Steve Cain and 'Kenny' Everet – Denton Designs can still do the business sometimes. *Mutants* is another original concept, but unlike *Infodroids* is playable, as you teleport your ship from zone to zone to pick up pieces of a self destruct

mechanism, each defended by a different sort of alien. I liked it a lot, and as an extra, the music is wonderful, several degrees removed from the average plinky-plink sequences served up as accompaniment.



Program Grange Hill – The Computer Game Type Arcade Adventure **Price** £9.95 **Supplier** Argus Press Software, Victory House, Leicester Place, London WC2H 7NB.

See Amstrad CPC listing for comment.

Program Jail Break Type Arcade **Price** £8.95 **Supplier** Konami, via Nemesis Management, PO Box 67, London SW11 1BS.

Disappointing conversion considering the playability on Amstrad.

Program Shao-Lin's Road Type Arcade **Price** 8.95 **Supplier** The Edge, 36–38 Southampton Street, Covent Garden, London WC2E 7HE.

Dragon

Program Air Ball Type Arcade **Price** £5.95 + £1.00 p&p **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Bouncy-bouncy action for Dragon owners.

MSX

Program Sea King Type Arcade **Price** £1.99 **Supplier** Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

Program Fire Hawk Type Arcade **Price** £1.99 **Supplier** Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

PC and Clones

Program Checkmate Type Chess **Price** £14.95 **Supplier** Robtek, Unit 4 Isleworth Business Complex, St Johns Road, Isleworth, Middx TW7 6NL.

Almost famous chess program licensed from the US by Robtek's new Diamond label that will be dealing exclusively with PC and ST software. Not a bad price either.

Spectrum

Program Thrust II Type Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1A 1PS.

Essentially more of the same. In vector style graphics you manoeuvre your little ship through twisty caverns to bring orb-like objects to the surface, while trying not to get zapped.

In *Thrust II*, the orbs are of variable weight, the graphics are tidier and you maim the aliens slightly differently. Still, at budget price, still highly recommended training for space cadets.

Program Into the Eagles Nest Type Arcade **Price** £9.95 **Supplier** Interceptor Micro's, Mercury House, Calleva Park Industrial Estate, Aldermaston, Berks.

Gauntlet inspired graphics in a one player *Where Eagles Dare* type scenario. Great stuff.

Program Brainache Type Arcade Adventure **Price** £1.99 **Supplier** Code Masters, 1 Beaumont Business Centre, Banbury, Oxon OX16 7RT.

OK arcade adventure – but marred by the smallest graphics I've seen on a Spectrum for ages.

Program White Heat Type

Arcade **Price** £1.99 **Supplier** Code Masters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon OX16 7RT.

If Mark Baldock's mum is reading this, can you have a quiet word with the boy and tell him not to give up his daytime job?

Program Transmuter Type Arcade **Price** £1.99 **Supplier** Code Masters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon OX16 7RT.

In the absence of *Nemesis* (still not 100% ready as I write) then this will get you used to the general concepts before you play the real thing.

Program Mad Nurse Type Silly Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

Silly game about life in a maternity ward that originally came from the warped imagination of Simon Pick, who will be receiving no awards from the NSPCC.

Warning to very stupid readers – do not try sticking the fingers of your local newborn into an electricity socket to see if they go the same colour as in the game. Take my word for it – I tried it myself and they do.

Program Dizzy Dice Type Simulation **Price** £1.99 **Supplier** Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

One of the most complex fruit machine simulations I've seen that should keep all but the most compulsive gamblers happy.

Program Grange Hill – The Computer Game Type Arcade Adventure **Price** £9.95 **Supplier** Argus Press Software, Victory House, Leicester Place, London WC2H.

Atari ST

Program ST Protector & Space Station Type Arcade **Double Pack Price** £24.95 **Supplier** Eidersoft, Hall

Farm, North Ockendon, Upminster, Essex RM14 3QH.

Program War Zone & Fire Blaster Type Arcade **Double Pack Price** £24.95 **Supplier** Eidersoft, Hall Farm, North Ockendon, Upminster, Essex RM14 3QH.

Eidersoft has recently re-packaged four of its arcade games into two double packs. A good deal at this price.

Program Pro-Sprite Designer Type Utility **Price** £39.95 **Supplier** Eidersoft, Hall Farm, North Ockendon, Upminster, Essex RM14 3QH.

The second ST sprite designer to come in recently, the other being from Microdeal. I think I feel a comparative review coming on.

Program Techmate Chess Type Chess **Price** £19.95 **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Program Skyfox Type Arcade **Price** £24.95 **Supplier** Ariolasoft, 68 Long Acre, London WC2E 9JH.

Long awaited conversion – but we decided that zipper/flight sim award still goes to *Strike Force Harrier*.

Program Zoomtracks II Type Application **Price** £69.95 **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Interesting relational database, produced under licence in the UK from Quickview Systems in the States, where it was very well received. Cut down version available for £39.95.

Program Shuttle II Type Arcade Simulation **Price** £24.95 **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Long awaited from Microdeal, this is not the super complex simulation we'd been hoping for – rather four arcade sequences joined together. Still, not totally without merit.

Too much, too hard, too late

I briefly encountered my first micro on sabbatical in 1982. I learned to run the BBC's *Welcome* tape. That was all. Fascinating I thought; but worth the hassle of learning the jargon, the skills? What about the costs involved?

A year later, a journalist friend, recently a micro convert, visited us. She left a couple of magazines - I devoured both with interest. Soon, I was reading them regularly, absorbing computerspeak and exploring a whole new world. Would a micro also be useful in my job? I wondered.

Headquarters had a mainframe for accounts and mailshots. I need up to date information on my clientele. Getting it in a useful format from HQ was difficult, however. Could a home computer do more for me than a card index and address book? Would it relieve the frustrations of being dependent on Head Office services? Would it be worth the outlay?

After months' agonising, I raided my nest egg to buy an Amstrad CPC464. "It'll be good for the kids to learn on, as well as me," I reasoned. At first, we played *Harrier Attack* together, or painstakingly typed in the demo programs from the manual. Then, months of late lonely nights and tempers. Resentments from excluded frustrated kids. Dad was learning Basic. Soon Arnold was moved

"Is a computer more use than a card index and address book?"

from living room to study. So much for my justification of the purchase.

After years of typing even elementary word processing, the relaxed pace of *Easi-Amsword* was a revelation. Working for a charity, as I do, means having to minimise overheads. At last, a way of coping without secretarial help! A loan to buy a printer seemed right.

Learning to use it was another matter. Even less time for the kids to enjoy Arnold. Would adding a disc drive improve access for them as well as me? More expense. More hours deciphering manuals. I kept my DD1 guiltily in its box for four days, before confessing that I'd raided my nest egg again.

Then came software, books, and the occasional game; savings ebbing away. Poor kids. "Sorry you can't play now, I've got this deadline, and I can't program the printer correctly." If only software reviews referred more concretely to the number of hours required for keying in data, or learning to control more complex programs. Perhaps this is deliberate, to save putting people off.

I suspect many first generation computer users prefer

their address book, card index, and notepad when they realise the time it takes to go electronic instead. The resurgence of games machines reflects a default pattern of use for many micro owners, given the time demands of practical alternatives.

Finally, the kids have Arnold to themselves. After twenty months I've upgraded. Connector wear and tear made Arnold too unreliable for work. Unlike address books, my new CPC6128 won't stray from the phone when needed. Word processing's a pleasure and datafiles of usable information grow - but so slowly. I admit I'm hooked, though I still resent the cost of becoming computerate.

Should benchtests include timings for program familiarisation and entry of a standard record file, both by novices and experienced users starting from scratch? That would help determine the real value of a program to users. And who'll make a dedicated word processor/database system for beginners? A junior, user-friendly, idiot proof version of the PCW is needed.

Industry has met demands for greater sophistication. Simpler systems, meeting basic needs, in labour-saving ways are also required. The tools are there, but not the imagination to engage the masses of late and slow learners like me.

Keith Kimber

NEXT WEEK

Hanover Fair report

What with Commodore's new Amiga machines, and Atari launching its PC compatible and Mega STs in Europe, it promises to be an exciting show.

We'll be bringing you all the details from one of Europe's premier exhibitions.

ST hard disc

Third party companies are getting in on the act - Eidersoft has moved into the hardware market with a hard disc system for the Atari STs. Duncan Evans brings you the details.

Mini Office II on C64

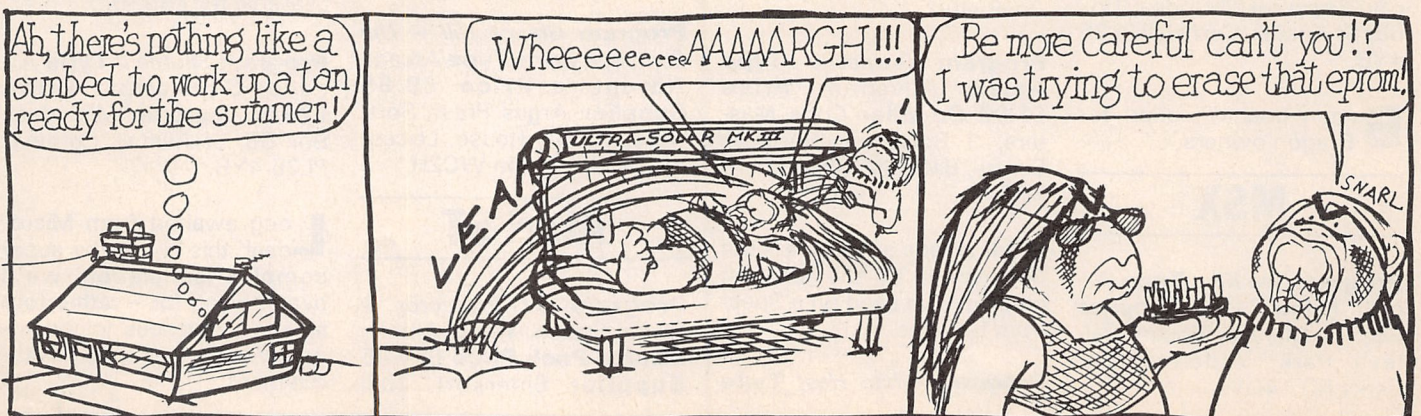
Last year's winner of the business software of the year category in the *Popular Readers' Poll* has now been converted to the Commodore 64. A full review in next week's issue.

Micronet

News from Steve Gold of Micronet's Sunday Extra section, the networking alternative to the colour supplements.

And as for Nemesis, featured regularly in this column to date... we can't promise anything. There have been, we understand, delays in producing the final version.

Hackers



Nº1

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The advertisement features a collage of game covers. At the top left is a cover for 'IAN BOTHAM'S TEST MATCH' showing a cricketer in a stadium. Below it is a portrait of Ian Botham. To the right is a cover for 'BOMB' featuring a character with a bomb. Further right is a cover for 'WORLD CUP II' showing a soccer player with a trophy. The background is yellow with black text.

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