Home Computing WEEKLY

NEW

An Argus Specialist Publication

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PIRACY: LAW EXPERTS ARE BROUGHT IN

Legal experts have joined the fight against software pirates as leading figures in the industry tighten up their trade.

Members of the newly-formed Computer Trade Association are gathering facts to help a study being carried out by the Department of Legal Studies of Newcastle Polytechnic.

CTA secretary Nigel Backhurst said: "The association has agreed to link up and give them information. The main thing that will come out of it will be facts we can put to Parliament and to our MPs.

"It is generally recognised that something has got to be done about the copyright laws."

Nigel Backhurst — "make piracy a crime"

Already CTA members have agreed to new rules for supplying software to shops:

- Wording on cassettes must forbid unauthorised copying and hiring
- Retailers are being asked to put up signs saying programs are for the sole use of the purchaser

Chairman Tony Sheil, of Knot Komputing, said: "Once that has gone ahead we can then go back to the software libraries and say to them that what they are doing is illegal.

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Buy-back row settled

Software company Quicksilva and a tape buy-back shop have settled their row out of court.

When the Software Centre began its Buy 'n Try scheme in London's Wigmore Street, Quicksilva served a writ in a bid to have it stopped.

Like other software houses, it saw the scheme as an invitation to copy its programs and then return for more.

Under the scheme customers could buy a tape and take it back within six months for 80 percent of its value off another purchase.

But now, after hearings in the High Court, the two have agreed:

- The return period will be cut to one month
- Quicksilva has the right to monitor the level of exchanges
- Advertisements will warn against copying and state that Buy 'n Try is not a library
- Quicksilva will supply programs and use its best endeavours to encourage other suppliers to accept the system — two had said

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ARCADIA
SCHIZOIDS
WACKY WAITERS
Three mind benders from
imagine
..the name of the game
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A+F SOFTWARE A+F

SINCLAIR SPECTRUM BBC DRAGON ATOM SINCLAIR SIRIUS

PAINTER — BBC, SPECTRUM, ATOM

Completely machine coded Arcade game. 6 levels. 16 different screens. Runs in colour on the Atom without F.P. BBC cassette **£8**. Disk **£11.50** Atom cassette **£6.90**

Spectrum cassette **£5.75p**

PLANES — BBC 32K

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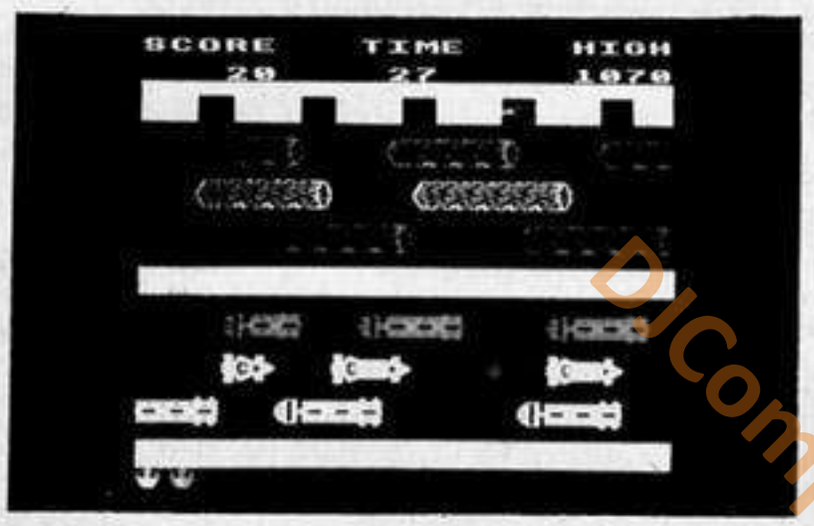

FROGGER — BBC & SPECTRUM

More arcade action for the BBC (as photo) and Spectrum. Get your frog across the road, use the logs to navigate the river and get home. Beware the Crocodile and snake, collecting the lady frog gains valuable bonus points. Beat the time limit or die.

BBC cassette **£8.00** Disc **£11.50**
Spectrum cassette **£5.75**

ORIC Two adventure games for the ORIC available NOW, **Death Satellite** and **Zodiac**. Both will run on the 16K machine. Cassettes at **£6.90** per game.

DRAGON Dead wood Monopilise a western town — (1-4 players), set your own time limit. Cassette **£6.90**. **Buccaneers** A piratical game again for 1-4 players. Cassette **£6.90**

ATOM Space Panic **£6.90**, Death Satellite **£6.90**, Zodiac **£6.90**, Cyclon Attack **£6.90**. Atom Utilikits still available from stock at **£18.50**

SPECTRUM Crazy Balloons, an excellent game for the 16K machine at **£5.75**. **Specfile** stock control/data management system for the 48K machine **£10.00**

BBC Pharaoh's Tomb, an interactive graphic adventure game for the Model B. Cassette **£8.00** Disc **£11.50**

Tower of Alos Another graphic adventure game — this will run on the A or B machine. Cassette **£6.90** Disc **£11.50**

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Continued from front page

"People are hiring tapes and then copying them. It's got completely out of hand in the video market and we've got to stop the same thing happening to us.

"Feelings are running very high at the moment. It's imperative that we act together."

At present, he said, if action was taken by one software company against a library they would just start hiring out another company's products.

Mr Backhurst, a computer consultant and dealer, said piracy

Tony Sheil — "feelings are running high"

was also likely to hit the careers of young people.

Companies would not take on more staff if their business was being hit by libraries.

He said: "I know of one software house which was going to take on four more staff in the next 12 months. Now they are using freelances until they know what's going to happen."

The industry was being hampered by the 1952 Copyright Act — brought in when there were about 10,000 tape recorders in the UK — which was very hazy on computer software.

He said: "There's no way we can stop what you might call 'personal piracy.' But we want commercial piracy written into the criminal law. We also want it pro-

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QUEST
SPECTRUM SOFTWARE WILL BE HERE NEXT WEEK
DON'T MISS IT!

tected by more than copyright — perhaps something like a patent."

Some programmers were developing secret protection routines, but unless they were shared new ideas would not spread and improve standards, maintaining the country's lead in software.

One way to protect these ideas was to give them legal protection for a time, provided they were published.

To settle industry wrangles, members are considering lodging original programs with the association so that claims about theft of ideas can be judged.

Another suggestion to tackle the pirates was to sell a licence to use the program so that, technically, the cassette remained the property of the maker. Then legal restrictions could be written into the licence.

Mr Backhurst said: "Some of our members believe they can produce games which would only be available through libraries."

These might be lengthy adventure games on up to nine tapes, which would have to retail at about £50. They could be hired at £5-£10, but only under strict control.

Libraries were hiring out games now at about £1 and needed a minimum profit of £150-£200 a week.

"As you can see, you have got to shift an awful lot of tapes," he said. The hire fee should be £2.50. In our opinion a library could not operate on less and provide the back-up."

He told of one man with a 16K Spectrum who paid his £10 joining fee and hired two cassettes at £1 each, only to find they were for the 48K model — and the man running the library did not know the difference.

The CTA now has a membership of 30, including companies like Quicksilva, Bug Byte, Camputers, Tandy UK, Grundy Business Systems, A and F, Silversoft, Atari and Carnell. About 40 more are expected to join soon.

General Secretary, Computer Trade Association, 108 Margaret Street, Coalville, Leics LE6 2LX

homecomputers.cz

U.S. SCENE

Play happy families on a computer

Home computers can reunite families, says the editor of the American Family Newsletter, Rowan Wakefield.

He says that by placing the centre of technology back in the home, the family can be restored as the main influence on work, health, education and entertainment, all of which had been lessened by the government.

And he sees software as useful for family counselling — programs to reduce stress, improve marriages and combat drug addiction and alcoholism.

Mr Wakefield also recommends studies on how families use their time. He feels that the more time is given to computers, the less will be spent watching television or reading books.

He wants to see formed a lobby of opinion-formers, believing that users should have the greatest say in the type of technology that is developed.

This is certainly food for thought. Most of us computer addicts know the hardest control to find is the off switch and that quite a few of the people we live with are calling themselves computer widows or widowers.

If enough Americans suffer the same addiction think of the effect on the economy, particularly on TV advertising. By the way, when did you last read a good book? And I don't mean Programming Proverbs and Practices...

Want to learn how to type, spell, and play a game on your Atari 400, all at the same time? Typo uses the format of a space-maze game to do just that. By setting the desired words per minute, you get the opportunity to test your typing and spelling ability at the same time as you are being chased through the maze. Your space ship travels at the same rate of speed as you type.

If you need practice spelling certain words, you can enter your own list into the program. This little gem comes from Romox, Inc, 501 Vandell Way, Campbell CA 95008, (408) 374-7200, and costs $44.95, plus shipping. This same firm makes other games for an assortment of small computers. Write to them for a catalogue. Beam me up!

Four new games for the Atari 400 and 800 and VIC-20 have just been announced by CBS Software, a division of CBS Inc, the American broadcasting company. K-Razy Atiks is a multi-level maze game in which, you guessed, hungry ants with exploding eggs try to get you. You also have to avoid hungry anteaters and flash floods.

In K-Razy Shootout, you get the opportunity of blasting your way through evil alien droids, while having to control radio-active walls and escape the deadly control sectors.

K-Razy Kritters puts you in charge of a command ship which requires you to blast alien attackers to save your home base. If you fail, your mighty ship is towed off to the galactic junkyard.

In K-Star Patrol, you are the star ship's only hope of survival as you defend against the alien attackers while trying to avoid the intergalactic leech (!). All this while trying to replenish your force field energy.

Typically violent games from America, I hear you sigh. Oh well, I don't pass judgment, just information.

All four are presently available for the Ataris in cartridge form. Antiks and Patrol will be out soon formatted for the VIC-20. These should be available through regular distributers. If not, contact CBS at 41 Madison Avenue, New York 10010, for more information.

See you next week...

Bud Izen
Fairfield, California.

NEWS

Complaints: a jury decides

Complaints about computers and software will now be handled by a jury set up by the industry.

But they can only deal with companies which belong to the newly-formed Computer Trade Association.

The three-stage arbitration service, now being set up, was described by secretary Nigel Backhurst. It works like this:

- First, Mr Backhurst attempts to settle the dispute between customer and company

- If that fails, a board of arbitratiors — one member of the public, an executive from the trade and someone with legal training — will decide the issue

- Finally, if the complaint cannot be resolved, the CTA's council will step in — with the power to expel a member, if necessary.

Mr Backhurst said: "That's our final big stick. But we hope most complains could be settled by myself.

"This arbitration service will also deal with disputes within the trade, for example, when two companies bring out virtually identical programs. There has been quite a bit of bad feeling about this in the past.

"It's better than court battles."

The association is drawing up a code of practice and looking at claims made in advertisements, like "high resolution", "real" keyboards and useable RAM.

Mr Backhurst recalled seeing a computer which was claimed to have 48K of RAM. But 16K was occupied by the language — called from ROM — and 16K was used for the video display, leaving just 16K.

Members also wanted standars set for after-sales service. Computers should be supported by the manufacturers for at least five years after production ceased.
General Secretary, Computer Trade Association, 108 Margaret Street, Coalville, Leics LE6 2LX

'Real thing' in monitors

Our new colour monitor is the real thing, says Hampshire company Electronequip.

Technical director Peter Coates said: "Instead of being a modified TV, it is a dual-purpose unit which has been specifically built to perform both functions."

Price at £244.95, the 14in monitor is suitable for resolving up to 80 characters across the screen, says the company, and claims it has better resolution than the competition.

Input is for RGB (red, green, blue) TTL-compatible, composite video and sound and there are two earphone sockets. The monitor has a silver cabinet measuring 19in by 13in by 15½in with a black front panel and comes with an RGB cable suitable for a BBC micro, or an alternative.
Electronequip, 36-38 West Street, Fareham, Hants PO16 0JW

Assemble at the poly

Students will be able to program in assembly language after just two evenings study, says Rosemary Royds, of the City of London Polytechnic.

The short course takes place at the poly on June 28 and 30 and is designed to introduce assembly language programming of the Z80 processor, heart of computers like the Spectrum, ZX81, Newbrain and most Japanese imports.

Rosemary Royds, Short Course Unit, City of London Polytechnic, 84 Moorgate, London. EC2M 6SQ

Let us know

If you are in the home computer business, please keep us in touch with what your company is doing. News items and review samples of your products — software and hardware — should be sent to: Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Phone 01-437 1002.

Fire away for £16.50

New joysticks, priced at £16.50, have been brought out for the VIC-20 and Atari 400 and 800.

They are versions of the £25 Competition-Pro joystick for the Spectrum, from Kempston (Micro) Electronics. There are eight direction commands and two fire buttons.

Kempston (Micro) Electronics, 180A Bedford Road, Kempston, Bedford MK42 8BL.

Computer Pages

Continued from Front Cover

they would refuse supplies

Similar conditions will apply to other software companies.

Legal action had been taken against Computer Aided Systems, the company that bought the tapes, but both CAS and the Software Centre are headed by the same man, Bill Cannings.

He has insisted that all he was doing was giving customers the opportunity to exchange programs they found unsuitable.

Quicksilva's international sales manager, Rod Cousens, said his company had been approached when legal moves got under way and decided to start talks.

He said: "We were trying to negotiate the return period down to seven days. We've got it down to one month which we feel is realistic.

"To be quite honest, we don't believe there will be a high exchange rate for Quicksilva software so it will act as a normal retail outlet. We will be watching its progress over the next few months.

"We have achieved the objects that our action was intended to achieve without incurring further costs."

New for the Spectrum

Cobra Technology, an Islington-based peripherals company, is working on a £40 interface for the Spectrum.

Unlike Sinclair's own £30 version, it will be switchable between RS-232 and Centronics-type.

Managing director Ray Baars said: "We've got the circuit working so now it's ready for the production line and should be on sale in a month to six weeks."

Prestel adaptors for the ZX81 and the Jupiter Ace are due to be lanuched by Cobra within the same time-scale.

Costing £40-£45, they will plug into the back of the computers.

Mr Baars said: "We've had a lot of people asking, but the trouble was that the ZX81 cannot cope properly with Pretsel's 1,200 baud. So we are putting in a 2K memory buffer so the ZX81 can take it out at about 1,000 baud."

Cobra Technology, 378 Caledonian Road,Islington, London N1 1DY

Street wise to Eugene

Eugene Evans, aged 16, earns about £140 a day and gets fan mail because of his best-selling programs. But now he is being stopped in the street as well.

His face has become familiar due to national newspaper publicity. He insists, however, that success will not change him — and he is determined to stay with Liverpool's Imagine Software, where he heads a team of three programmers.

Eugene, who lives in a council house and pays £20 a week housekeeping money, said: "I've been recognised from my picture. People have said: 'I saw you in the paper — it's nice to see someone getting somewhere.'"

And he pointed out: "I have worked very hard in the last few years to get to this position. I haven't had a rich mummy or daddy behind me. I come from a council estate like the rest.

"I started as a tea boy in a computer shop and you can't start much lower."

Eugene earns £17,000 a year and expects bonuses to increase this to around £35,000.

Until his bank recently relented, he was not allowed a credit card or cheque guarantee card. So to buy a video recorder he ad to draw out, £400, all in £5 notes.

He is saving much of his money to buy a house.

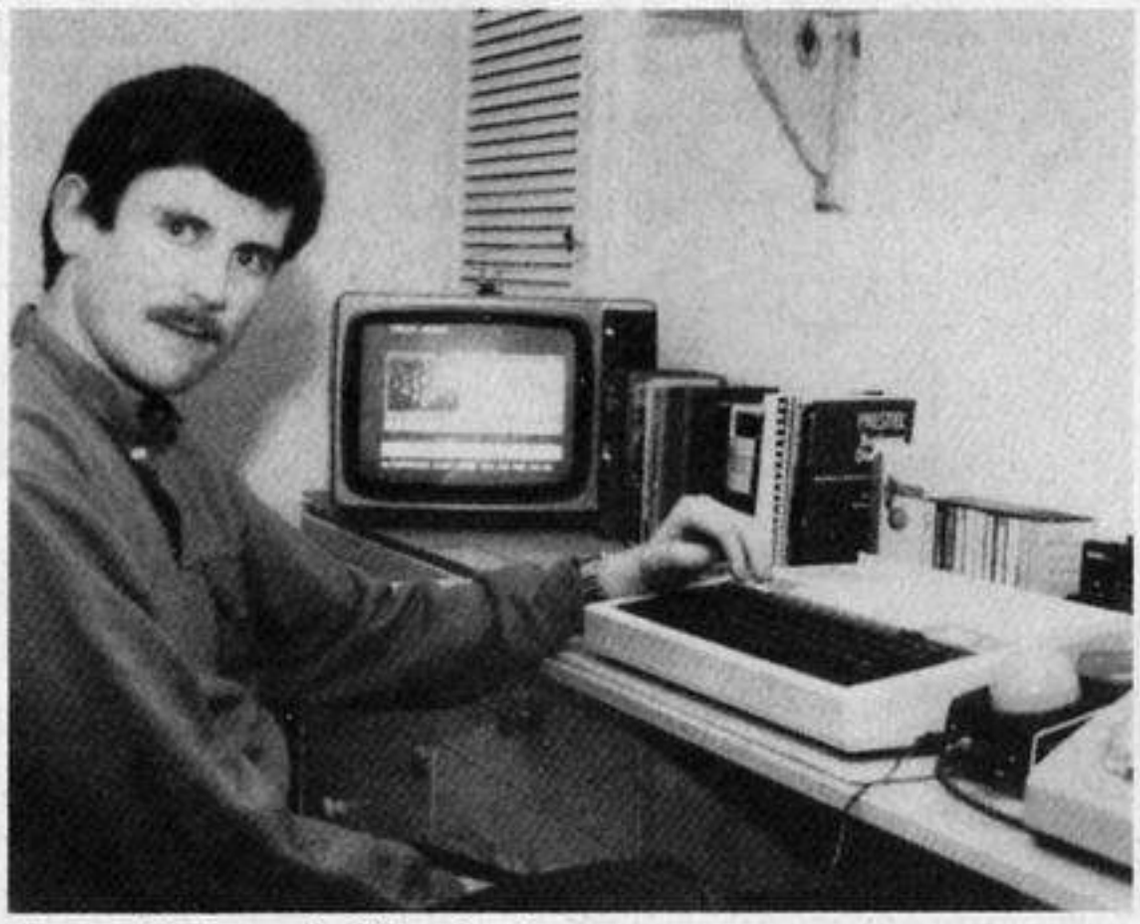
He said: "At the moment I haven't got a girlfriend — but that's just at the moment."

Eugene taught himself machine code programming from books and magazines and is now completing a new game for the unexpanded VIC-20, called Frantic, whcih simulates flying throught a tunnel on the moon while avoiding obstacles. Like all Imagine's programs, it will cost £5.50.

The programmers are named in Imagine's cassettes, so fans know who to write to. Eugene recalls one letter from a buyer of his Wacky Waiters game who wrote: "I think it's fantastic."

Imagine now produce two new games a month and soon plan to double this. Eugene said: "We want to get as big a range as possible as quickly as we can. We can sell all we make.

Imagine Software, Masons Building, Exchange Street East, Liverpool L2 3PN



Jeremy Dredge — holidays by phone

Micronet signs 1,000

More than 1,000 subscribers have signed up with the Micronet 800 database in the month since it was launched.

All have BBC micros, the first computer that can use the service. More home computer will follow.

Phone lines connect Micronet 800 users to a database of programs and information via British Telecom's Prestel service.

The first to join was Jeremy Dredge, a Surrey estate agent, who said he had downloaded several free programs, bought two — and booked two holidays.

Micronet 800, Bushfield House, Orton Centre, Peterborough PE2 0UW

You could be on our pages

We welcome programs and articles from our readers.

- **Articles on using home computers should be no longer than 2,000 words. Don't worry too much about your writing ability — just try to keep to the style in HCW. Please include sample routines. We will convert any sketched illustrations into finished artwork. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas and tips.**
- **Programs should, if possible, be computer printed (use a new ribbon) or sent on cassette. Check carefully that they are bug-free. Include details of what your program does and how, hints on conversion and explain the routines you've used.**
- **Reviewers of software, add-ons and hardware need to have a good knowledge of computers. In your application as a reviewer please give your occupation or training and, if under 21, your age. Don't forget to name your computer and any expansion.**

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H

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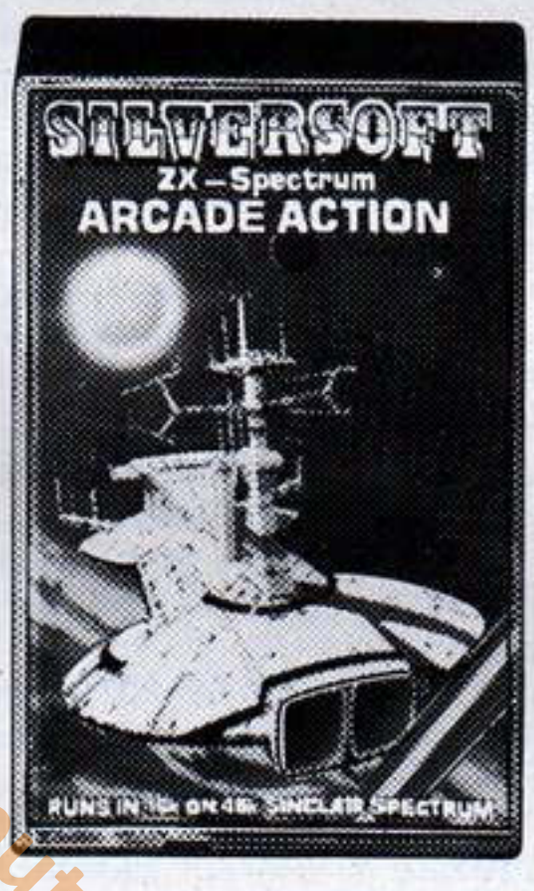

Ground Attack
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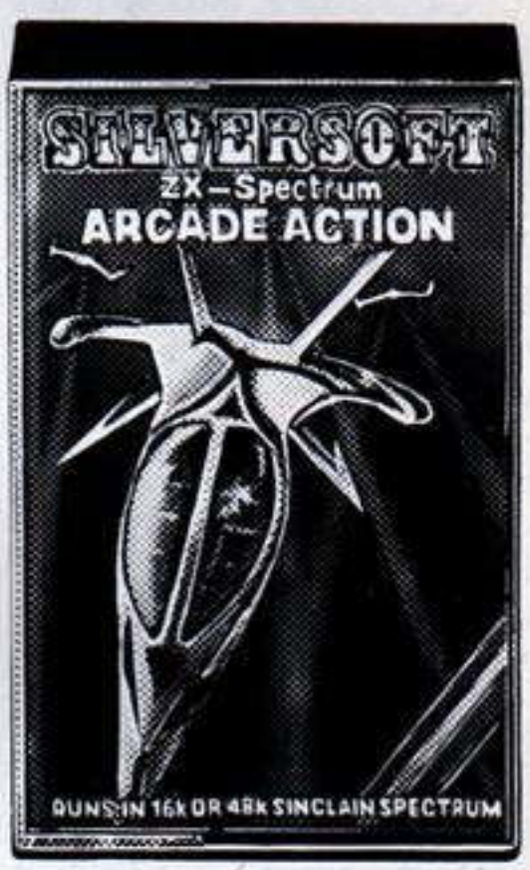
16K £5.95



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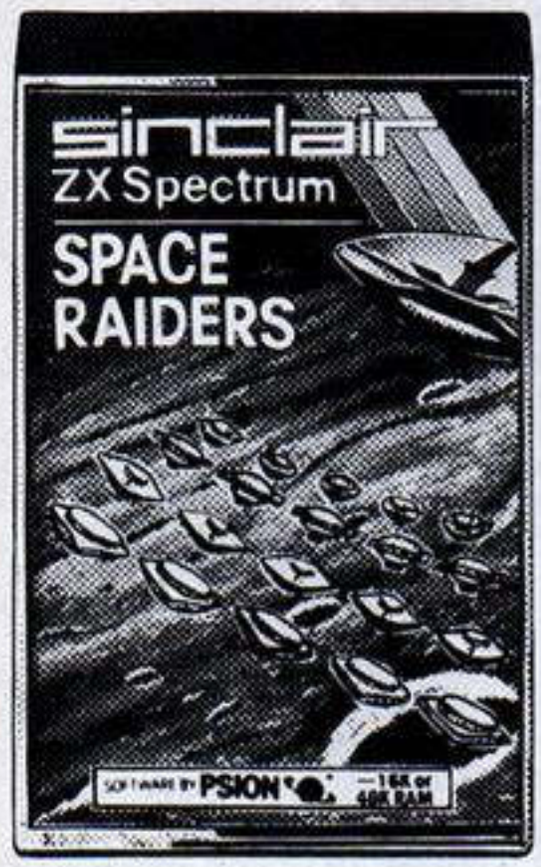

Space Raiders
Sinclair
16K £4.95

Flight Simulation
Sinclair
48K £7.95

Horace Goes Skiing
Sinclair
16K £5.95

Battle of Britain
Microgame
48K £5.95

Sinclair Computer Users

When it comes to software for the Sinclair Spectrum, there's no question who's right up your street. W. H. Smith.

Our range already covers some 65 programs. And it's growing fast.

So fast that every month we select and illustrate a Top Ten to keep you informed of the programs which are proving to be the most popular.

If on the other hand you've already got the Top Ten then why not come in and browse through the rest of our range.

Chess
Sinclair 48K
£7.95

The Hobbit
Sinclair 48K
£14.95 plus book

W. H. Smith Spectrum Software Library

(all 16K programs will run on 48K machines)

Title	Producer	K RAM	Price
Arcade Games			
Space Intruders	Quicksilva	16	£4.95
Time Gate	Quicksilva	48	£6.95
Mined Out	Quicksilva	48	£4.95
Gulpman	Campbell	16	£4.95
Spectral Invaders	Bug-Byte	16	£5.00
Avenger	Abacus	16	£4.95
Meteoroids	Softek	16	£4.95
Planetoids	Sinclair	16	£4.95
Hungry Horace	Sinclair	16	£5.95
Mazeman	Abersoft	16	£4.95
Nightflight	Hewson	48	£5.95
Ground Force Zero	Titan	16	£5.00
Caterpillar	CDS	16	£5.95
Leapfrog	CDS	16	£5.95
Gobble-A-Ghost	CDS	16	£5.95
Centi-Bug	DK Tronics	16	£4.95
3D-Tanx	DK Tronics	16	£4.95
Penetrator	Melbourne Hse	48	£6.95
Cruising	Sunshine	16	£4.95
Arcadia	Imagine	16	£5.50
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Jackpot	Computer Rentals	16	£4.95
3D-Tunnel	New Generation	16	£4.95
Gobbleman	Artic	16	£4.95
Galaxians	Artic	16	£4.95
Sentinal	Abacus	16	£4.95
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Chess	Artic	48	£9.45
Voice Chess	Artic	48	£9.95
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Chess-The Turk	Oxford	48	£8.95
Adventure			
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Planet of Death	Sinclair	48	£6.95
Inca Curse	Sinclair	48	£6.95
Ship of Doom	Artic	48	£6.95
Espionage Island	Artic	48	£6.95
The Orb	Computer Rentals	48	£5.95
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Compiler	Softek	16	£14.95
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Vu-File	Sinclair	16	£8.95
Vu-3D	Sinclair	48	£9.95
Collectors Pack	Sinclair	48	£9.95
Club Record Controller	Sinclair	48	£9.95
Address Manager	Oxford	16	£8.95
Dietron	Custom Data	16	£4.75
Program Collections			
Shiva Special 1	Shiva	16	£5.95
Over The Spectrum 1	Melbourne Hse	16	£5.95
Over The Spectrum 2	Melbourne Hse	16	£5.95
Over The Spectrum 3	Melbourne Hse	16	£5.95

WHSMITH

Prices correct at time of going to press. Subject to availability. At selected branches only.

Djsemputers.cz

Push your Sinclair to the limit

ZX81/SPECTRUM ARCADE GAMES

NEW **INVASION FORCE** (16/48K) fires through the force field to destroy the menacing alien ship. Sounds easy? Two levels of play — normal or suicidal. Full colour. Sound and hi-res. graphics. **£4.95**

Also available for ZX81 at £3.95

NEW **SPEC INVADERS** (16/48K)
SPEC GOBBLEMAN (16/48K)
These exciting high-speed classic games incorporate hi-resolution graphics and sound to bring you the best in arcade action at only **£4.95** each

NEW **SPEC FROG 5/SHOWDOWN** (16/48K)
Hop across the dangerous road avoiding the lethal cars, then lorries. Go back to the wild west for a gunfight! battle amongst cacti and wagons. Features include western music. **£4.95**

NEW **NAMTIR RAIDERS** (ZX81)
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Gobbleman also available for ZX81 at **£3.95**

UTILITIES

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SPEC BUG
A 30 in 1 machine code tool and disassembler for your ZX Spectrum. **£6.95**

ZX BUG
A 30 in 1 machine code tool and disassembler for your ZX81. **£6.95**

Improve your machine code programs with this new 48K Spectrum Assembler

Just released by Artic, this new professional quality assembler is also available for 16K ZX81 and features:—

* Word-processor-like text editor. * High-speed, versatile two-pass mnemonic assembler with labels and detailed error-trapping. Will assemble to any address. * Essential support facilities such as memory-edit, register inspect/modify and search for de-bugging. * Full output to ZX-printer. * Memory-status report and comprehensive user-manual.

ONLY £9.95

ZX81 & SPECTRUM

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It tells you its move, recommends a move, and contains a range of facetious comments. The game is based on the highly successful ZX Chess II and is offered at the Christmas offer price of **£9.95.**

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16K Orics 'Weeks away'

Long-awaited Oric-1s are now promised within 10 weeks.

Mail order customers were being sent 48K models on loan with an option to purchase at a cut price — but Oric Products has not yet decided on the discount.

New managing director Barry Muncaster, a director of Oric-1 designers Tangerine Computer Systems, gave two reasons for the delay of more than six months.

First, out of every 10 orders eight — totalling 350,000 this year — were for the 48K version. Oric had to put all its efforts into meeting this demand "which exceeded all expectations."

The 16K model, at 5p under £100, is £70 cheaper than the 48K version. A 32K model has been abandoned.

Oric Products has now ended sales by post, saying its mail order backlog is down to 28 days and that the 48K Oric is readily available at retailers.

But orders by mail — including the £79 modem — can still be made to Tangerine at the same Ely address as Tansoft, which is bringing out a range of Oric programs. An extended BBC-like BASIC is also promised soon.

Oric Products International, Coworth Park, London Road, Sunninghill, Berks SL5 7SE.

Tangerine Computer Systems, 3 Club Mews, Ely, Cambs. CB7 4NW

Learning about micros

Teachers are running a computer fair in Leeds for people interested in computing in education.

It will be held at the John Taylor Teachers' Centre on June 22, 9.30am-7.30pm, and include lectures as well as exhibits with working demonstrations.

Computer Development Team, John Taylor Teachers' Centre, 53 Headingley Lane, Leeds LS6 1AA.

Bumper batch

Quicksilva is launching a total of 14 programs in one batch — more than some software companies bring out in a year.

Ranging in price from £3.95 to £14.95, they will be on sale in about 10 days.

There are two arcade games, a graphics adventure and a word processor for the Spectrum, three aracade games and two adventures for the ZX81, one Dragon game, an arcade game for the VIC-20 and two arcade games and a mucis processor for the BBC micro.

The Dragon game is a version of Mined-Out, first written for the Spectrum, and one of the Spectrum games is Trader, a version of the VIC-20 best seller.

Quicksilva, 13 Palmerstone Road, Southampton, Hants S01 1LL

Top Twenty programs for the Spectrum

1	The Hobbit	Melbourne House (1)
2	Football Manager	Addictive Games (–)
3	Transylvanian Tower	Richard Shepherd (–)
4	Compiler	Softek (–)
5	Penetrator	Melbourne House (7)
6	VU-3D	Psion (10)
7	Time Gate	Quicksilva (5)
8	3D Tunnel	New Generation (–)
9	Voice Chess	Artic (–)
10	Hungry Horace	Psion/M. House (3)
11	Conflict	Murtech (–)
12	Flight Simulation	Psion (2)
13	Night Flight	Hewson (15)
14	Horace Goes Skiing	Psion/M. House (–)
15	Arcadia	Imagine (12)
16	Planet of Death	Artic (13)
17	VU File	Psion (16)
18	Derby Day	Computer Rentals (–)
19	Golf	R & R (–)
20	Spectral Invaders	Bugbyte (–)

Compiled by W. H. Smith. Figures in brackets show last week's position.

Will this boom turn into gloom?

Without doubt the greatest understatement in the computer world is that it is undergoing a boom.

Not since the record industry in the 60's era of the Beatles has our economy seen such growth in a single sector. What can only be described as amateur businesses have grown, without heavy financial backing or trained management into substantial companies.

Ninety per cent of the minds behind our flourishing software world wouldn't stand a Pac-man's chance in Hell of running a clothing factory. But this isn't the same kind of industry. It is in the main, that rare animal the sellers' market.

If a company produced a beautiful dress, after a lot of door-knocking, phone ringing, singing and dancing, promises and favours, and possibly bribery and corruption, it might find it was selling its product and making a reasonable profit.

On the other hand, produce a first rate commercial program, scrawl the details on the underside of a park bench in the Shetlands, retire to an Andes mountain retreat and you can still begin drawing up plans for you yacht or tax haven mansion.

Around this innovative and exciting atmosphere of new invention and rapid growth, there are an increasing amount of disquieting voices who whisper, "it'll be all over soon", "the end of the software world is nigh "the end of the software world is nigh "just wait until..."

Human nature is once more showing us the future.

In every affluent society, there are always the jobs, the more affluent and secure, the greater their number.

The more secure the prospect, the more it seems people need to feel insecure.

The corollary of this is when everyone agrees that something can only and must only go in one direction, be that boom or slump, it is a sure sign the opposite will soon happen.

The only aspect of the computer market that everyone agrees on, is that no-one agrees about anything.

What the doomsters have not yet thought about and which is a more fertile area for concern is: What will computers do to us? Wh at by their logical training are they turning us into?

Will we become a breed of logical Vulcans or a race of computer introverts, content only with the mental stimulation of playing by ourselves? Program zombie or mental super-men/wonder-women, which is it to be?

Which are you becoming?

Clement Chambers
Managing director, Computer Rentals

● This space is for you to sound off about the micro scene, to air your bouquets or brickbats. Share your views by sending them to: Paul Liptrot, Opinion, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Please include your occupation and your interest in computing.

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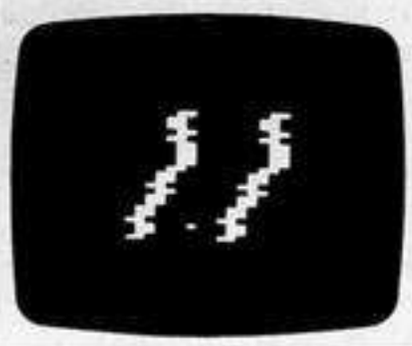
ASTEROIDS, INVADERS, ASTRO SLED & SPACE FIGHTER.

ASTEROIDS
A classic version of the clasic game. Feature packed with thrust, hyperspace, rotate, multiple bolts, etc. This exciting program is written in m/c and employs hi-res graphics and double size screen techniques for maximum effect.



ASTRO SLED
Pilot your high powered sled down the jagged space canyon, but be warned - the further you travel, the harder it gets! With over 50 skill levels -

INVADERS
No machine is complete without this, the original cosmic shootout. In machine code with three invader types (plus mother ship), bonus bases, hi-res, double size screen, etc.

SPACE FIGHTER
A space dog-fight simulator which, like Asteroids, is written in machine code and uses hi res. Guide your fighter through tight loops and turns to centre the elusive alien craft in your sights.
With 10 skill levels.

All the programs are available on cassette for the unexpanded Commodore VIC-20 at only £4.00 each (post free), and make full use of the VICs colour, sound and joystick facilities.

ZX81 SOFTWARE
SPACE FIGHTER, ASTRO SLED.
Feature packed versions of these great games, with machine code performance for the 16K ZX81. On cassette at **£3.50**

Please state **ZX81** or **VIC-20** and mention this magazine when ordering.

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Pocket Computer Routines

Colour it deadly — unless you destroy the subs

Seabattle, a multi-coloured game for the Spectrum, comes from Erik Sanderson in Oslo. Imagine you're fighting in the fjords . . .

My colourful Seabattle game for the ZX Spectrum first asks you for a level of difficulty, from one to 10 — but you can also enter decimal numbers if you want to progress gradually.

Then the screen shows a cyan sky with blue water. On the surface is your magenta-coloured ship and below is a green submarine. You fire yellow bombs and the sub has green torpedoes.

Your object is to destroy as many subs as possible. Each time you have bombed one another will come up. This continues until your ship is destroyed by one of the torpedoes.

You can't drop a new bomb before the previous one has disappeared and it's the same for torpedoes.

To move right press m and to move left press n. Press z to drop a bomb. Press zero to stop game, 1 for a new game with same grade of difficulty and 2 for new game with new grade of difficulty. This might be difficult to read on the screen.

I have used the function IN to read the keyboard and OUT for when your ship is hit for a spectacular display and some radom beeps.

How it works

0-600	initialise variables, ask for difficulty, set up screen
1000-1030	player's move
2000-2100	submarine's move and whether to shoot torpedo
2200-2210	random sub move, dependent on difficulty level
2215-2235	sub's move up and down screen, which seldom happens. If number of hits is greater than four then sub only moves upwards
300-3020	print bomb on way down
3100-3020	print bomb on way down
3100-3135	are used when sub is hit. You will hear bleeps and it then returns to line 10
4000-4090	print torpedo on way to surface
4100-4130	are used when your ship is hit and game is over. Note OUT statement
9000-9220	define graphics (called from line 5)

Variables

a and b are your ship's co-ordinates
e and b its last co-ordinates
y, x, ey and ex are the same for the submarine
c and d are co-ordinates for your bomb
v and w are same for torpedo
hits is your number of hits
high is high scores number of hits
i is your grade of difficulty
hi is the high scores grade of difficulty.

DJComputers.cz

SPECTRUM PROGRAM

```
  1 REM Seabattle
  2 REM @ Erik Sandersen
  4 LET high=0: LET hi=0
  5 GO SUB 9000
  6 INPUT "Grade of difficulty
(1-10)";i
  7 IF i<1 OR i>10 THEN GO TO 6
  9 LET hits=0
 10 LET a=10: LET b=15
 20 LET eb=b
 30 RANDOMIZE : LET y=INT (RND*
6+16): LET x=INT (RND*28)
 40 LET ey=y: LET ex=x
 50 LET c=0: LET v=0
510 BORDER 7: PAPER 5: CLS
514 PRINT AT 11,0;
515 FOR n=11 TO 21
520 PRINT INK 1;"
525 NEXT n
549 REM Graphic A,B,C in next l
ine
550 PRINT INK 3;AT a,b;"
600 PRINT INK 0;AT 0,0;"HITS:";
hits,"Grade:";i
1000 REM players move
1001 IF eb<>b THEN PRINT AT a,eb
;"
"
1002 REM Graphic A,B,C in next l
ine
1003 IF b>eb THEN PRINT INK 3;AT
 a,b;"
"
1004 REM Graphic I,J,K in next l
ine
1005 IF b<eb THEN PRINT INK 3;AT
 a,b;"
"
1006 LET eb=b
1010 LET b=b+(IN 32766=187 AND b
<29)-(IN 32766=183 AND b>0)
1020 IF IN 65278=189 AND c=0 THE
N LET c=11: LET d=b+1: GO SUB 30
00
1030 IF c<>0 THEN GO SUB 3000
2000 REM submarine move
2005 IF RND>i/10 THEN GO TO 2200
2010 IF SCREEN$ (y-1,x)<>" " THE
N IF x<28 THEN LET x=x+1: GO TO
2037
2011 IF SCREEN$ (y-1,x+2)<>" " T
HEN IF x>0 THEN LET x=x-1: GO TO
 2037
2012 IF SCREEN$ (y-2,x+1)<>" " T
HEN LET x=x+(x<=15)-(x>15): GO T
O 2037
2020 IF x<b THEN IF SCREEN$ (y-1
,x+3)=" " THEN IF SCREEN$ (y-2,x
+2)=" " THEN LET x=x+1
2030 IF x>b THEN IF SCREEN$ (y-1
,x-1)=" " THEN IF SCREEN$ (y-2,x
)=" " THEN LET x=x-1
2037 IF RND>.85 THEN GO TO 2220
2039 REM Graphic D,E,F in next l
ine
2040 PRINT PAPER 1;AT ey,ex;"
": PRINT PAPER 1; INK 7;AT y,x;"
"
2050 LET ey=y: LET ex=x
2060 IF v<>0 THEN GO SUB 4000
2070 IF v=0 AND (x=b OR x=b+1 OR
 x=b-1) THEN LET v=y: LET w=x+1:
 GO SUB 4000
2100 GO TO 1000
2200 IF RND>.5 AND x<28 THEN LET
 x=x+1: GO TO 2215
2210 IF x>0 THEN LET x=x-1
2215 IF RND<.85 THEN GO TO 2040
2220 IF RND>.5 AND y<20 AND hits
<5 THEN LET y=y+1: GO TO 2040
2230 IF y>11 THEN IF SCREEN$ (y-
3,x+1)=" " THEN IF SCREEN$ (y-2,
x+1)=" " THEN IF SCREEN$ (y-2,x+2)
=" " THEN LET y=y-1
2235 GO TO 2040
3000 REM drop bomb
3003 LET c=c+1
3005 IF ATTR (c,d)=15 THEN GO TO
 3110
3009 REM Graphic G in next line
3010 PRINT PAPER 1;AT c-1,d;" ":
 PRINT PAPER 1; INK 6;AT c,d;"
3020 IF c>y THEN PRINT PAPER 1;A
T c,d;" ": LET c=0
3100 RETURN
3105 REM hit the submarine
3110 PRINT PAPER 1;AT c-1,d;" "
3115 LET hits=hits+1
3120 PRINT PAPER 1; INK 7; FLASH
 1;AT y,x;"BOOM"
3125 FOR j=0 TO 5
3130 BEEP .01,RND*50
3135 NEXT j
3200 GO TO 10
4000 REM submarine torpedo
4005 LET v=v-1
4010 IF ATTR (v,w)=43 THEN GO TO
 4100
4020 IF v<>y-1 THEN PRINT PAPER
1;AT v+1,w;" "
4025 PRINT PAPER 1; INK 4;AT v,w
;"
"
4030 IF v=10 THEN PRINT AT v,w;"
 ": LET v=0
4090 RETURN
4100 REM game over
4103 IF ATTR (v+1,w)<>15 THEN PR
INT PAPER 1;AT v+1,w;" "
4105 PRINT AT a,b-1;" "
4107 IF hits>high OR hits=high A
ND i>hi THEN LET high=hits: LET
hi=i
4108 PRINT INK 0;AT 0,9;"HIGH SC
ORE:";high;" grade:";hi
4110 PRINT INK 3; FLASH 1;AT a,b
;"BOOM"
4115 PRINT INK 0;AT 3,0;"A new g
ame?(yes:1 no:0)"
4117 PRINT "To change difficulty
 press 2"
4120 BEEP .01,RND*50
4122 OUT 254,RND*8
4125 IF INKEY$="1" THEN GO TO 9
4126 IF INKEY$="0" THEN STOP
4127 IF INKEY$="2" THEN GO TO 6
4130 GO TO 4120
9000 REM define graphics
9010 FOR j=0 TO 7: READ q: POKE
USR "A"+j,q: NEXT j
9020 DATA 0,0,0,80,112,255,255,1
27
9030 FOR j=0 TO 7: READ q: POKE
USR "B"+j,q: NEXT j
9040 DATA 0,0,0,7,63,255,255,255
9050 FOR j=0 TO 7: READ q: POKE
USR "C"+j,q: NEXT j
9060 DATA 0,32,224,228,236,255,2
54,252
9070 FOR j=0 TO 7: READ q: POKE
USR "D"+j,q: NEXT j
9080 DATA 0,0,0,127,255,255,255,
127
9090 FOR j=0 TO 7: READ q: POKE
USR "E"+j,q: NEXT j
9100 DATA 16,126,126,255,255,255
,255,255
9110 FOR j=0 TO 7: READ q: POKE
USR "F"+j,q: NEXT j
9120 DATA 0,0,0,254,255,255,255,
254
9130 FOR j=0 TO 7: READ q: POKE
USR "G"+j,q: NEXT j
9140 DATA 0,0,0,253,255,253,0,0
9150 FOR j=0 TO 7: READ q: POKE
USR "H"+j,q: NEXT j
9160 DATA 16,56,124,124,124,124,
16,124
9170 FOR j=0 TO 7: READ q: POKE
USR "I"+j,q: NEXT j
9180 DATA 0,4,7,39,55,255,127,63
9190 FOR j=0 TO 7: READ q: POKE
USR "J"+j,q: NEXT j
9200 DATA 0,0,0,224,252,255,255,
255
9210 FOR j=0 TO 7: READ q: POKE
USR "K"+j,q: NEXT j
9220 DATA 0,0,0,10,14,255,255,25
4
9999 RETURN
```

BJcomputers.cz

Into battle with your Dragon

Three games of cunning and daring for the Dragon. Our reviewers report back from the front line — with star ratings

CC Poker Dragon 32 £7.95

Compusense, PO Box 169, Palmers Green, London N13.

I'm no card sharp, but I was pleasantly surprised by this game. Card games appeal to me for their ability to engage people in a subtle battle of wits. How does a computer overcome this?

After entering your name you are sitting at the table pitted against Rocky, Harry and Sam. I would suspect some conspiracy if I didn't know better.

The fast flow of action, assisted by machine language subroutines, maintains an air of tension. Sound effects cunningly imitate card handling and highlight other aspects of the game.

You start with a stake of $100 (it's an import from America by Spectral Associates) and the object is to double your money. No previous experience necessary. All players' stakes are displayed, added to and, of course, taken away. You may start the gullible sucker, but as you learn you have a fifty-fifty chance of success.

On higher levels of difficulty (there are five) you increase the frequency of bluffing and the limit of betting — you win more, you loose more!

It's the neat graphics which captivated me. The display of information was clear and involved me as a player in this confrontation. An absorbing game which has addicitve potential — the sting in any game!

M.P.

instructions	90%
playability	90%
graphics	90%
value for money	100%

★ ★ ★ ★

Space Race Dragon £7.95

Compusense, PO Box 169, Palmers Green, London N13.

In Space Race you do battle against four different kinds of marauding alien, each with different actions and values. The 16 levels of play start fast — and go up to extremely fast.

You start the game with four ships, and every 10,000 points you get another one, up to a maximum of five. Your remaining ships are displayed below the track on the right, with the score on the left.

If you're feeling competitive, there's a high-score league table catering for up to nine entries.

Written in machine code, Space Race can be played using either joystick or keys. I tried both methods. Though it is possible to get a reasonable score using keys, the aliens are at an even greater advantage.

Personally, I found the sound effects annoying, but otherwise the game was fun to play, and addictive too. No loading problems, and comprehensive instructions are included.

J.M.

instructions	70%
playability	70%
graphics	60%
value for money	80%

★ ★ ★ ★

C-Trek Dragon £7.95

Compusense, PO Box 169, Palmers Green, London N13.

Just as we were gaining on the advancing invaders, we now are showered by Klingons. Klingon-bashing is fast becoming a popular pastime for those who remember immortal phrases like "More thrust Scottie" and "I dinna think she'll take any more!"

This is an American version distributed by Compusense. It came all presented in a plastic bag containing a full sheet of instructions clearly set out. Loading was straightforward.

The commands for the game are given in three easily mastered letter codes. You see the Enterprise (a letter E) on a black sector of space. Movement is achieved by reference to compass directions — a little awkward at first because you have to keep in mind both where you want to go and any obstructions there might be.

There are no increasing levels of difficulty, which could reduce the game's long-term appeal. Instead, a random procedure gives you a target of between 13 and 26 Klingons. Various starbases replenish essentail supplies.

Very little in the way of graphics — only the Short Range Scan shows any action. The rest of the time you are kept busy navigating, doing battle, repairing and checking.

Enjoyable at first, but weak graphics, and poor staying-power.

M.P.

instructions	90%
playability	80%
graphics	10%
value for money	50%

★ ★ ★

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"Learning to Use" is a new series of books which introduces newcomers to the most widely used micros in the marketplace.

The books assume absolutely no knowledge about computers and the reader is shown even the most fundamental operations such as "switching on" and "loading a program". The books lead the reader through simple programming and then on to graphics, with several programs which show how to achieve pictures and even animation!

The user-friendly approach is consistent throughout the text – not only are program listings clearly shown, but in many cases, a photograph is included to show what the program looks like when actually loaded and run!

All books in the series are £5.95 (incl. postage).

Gower

To be published April–June 1983

Learning to Use the Oric 1 Computer (April)
Learning to Use the Commodore 64 Computer (May)
Learning to Use the Lynx Computer (June)

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Make a knight of it, there's a maiden in distress

Now's your chance to be a hero. All you have to do is rescue a maiden from the clutches of the evil black magician. Vince Apps' program is for the TI-99/4A

Ever fancied being a knight in shining armour? Here's your chance as you strive to rescue the maiden in distress from the black magician's castle.

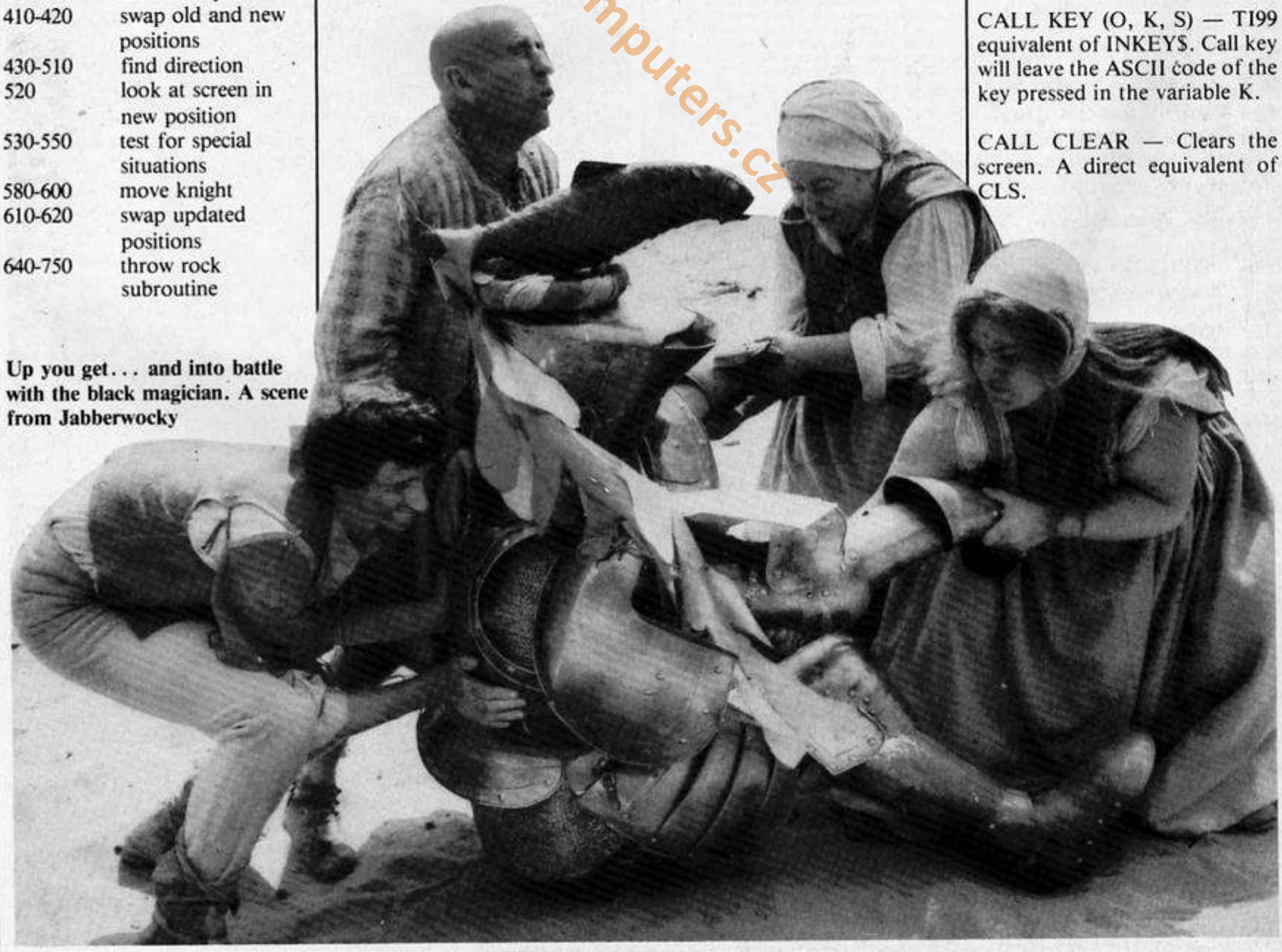
Move your knight using the four arrow keys (ESDX) with the alpha-lock button down. One problem — the evil magician is throwing large boulders at you. If you are hit by, or bump into one, you fail.

A game of strategy and quick reactions, this game, although written for the Texas TI-99/4A, should be easily translatable for any computer with user-defined characters.

The difficulty of the game can be increased by changing the loop count in line 260.

How it works

160	clears screen
170	set screen colour to cyan
190-240	user defined characters
250-330	set up initial screen
340-370	initialise variables
400	look at keyboard
410-420	swap old and new positions
430-510	find direction
520	look at screen in new position
530-550	test for special situations
580-600	move knight
610-620	swap updated positions
640-750	throw rock subroutine
760-790	main program loop
810-840	play music
850-880	print success message
910-1000	crashed into rock
1020-1120	hit by rock
1140-1180	simulation of print @ routine



Up you get... and into battle with the black magician. A scene from Jabberwocky

Hints on conversion

Texas Basic has some unusual commands for graphics and sound:

CALL CHAR (number, hexadecimal string) — Controls the user definition of characters. Number refers to the ASCII code of the re-defined character.

CALL HCHAR (row, column, number) — This prints the character whose ASCII code is number at position row, column on the screen. The TI99/4A has a screen size of 24 rows by 32 columns.

CALL GCHAR (row, column, variable) — This is the equivalent of PEEK. The ASCII code of the character at position row, column on the screen is left in the designated variable.

CALL SOUND (d, f, v) — Sounds a note of frequency f, duration d milliseconds and volume v.

CALL KEY (O, K, S) — TI99 equivalent of INKEY$. Call key will leave the ASCII code of the key pressed in the variable K.

CALL CLEAR — Clears the screen. A direct equivalent of CLS.

DJ Computers.cz

TI-99/4A PROGRAM

```
100 REM
110 REM    RESCUE
120 REM
130 REM
140 REM  V.H. APPS
150 REM
160 CALL CLEAR
170 CALL SCREEN(8)
180 RANDOMIZE
190 REM  DEFINE CHARACTERS
200 CALL CHAR(120,"AAFFFFB6FFFFB6FE")
210 CALL CHAR(121,"AAFEFEDAFEDA7E7E")
220 CALL CHAR(128,"08081C2A2A081414")
230 CALL CHAR(144,"387EFFFFFFFFFF7E")
240 CALL COLOR(15,13,1)
250 REM  SET UP SCREEN
260 FOR J=1 TO 180
270 R1=INT(RND*30+3)
280 R2=INT(RND*23+2)
290 CALL HCHAR(R2,R1,144)
300 NEXT J
310 CALL HCHAR(1,30,120)
320 CALL HCHAR(1,31,121)
330 CALL HCHAR(24,5,128)
340 MRN=24
350 MRO=24
360 MCO=5
370 MCN=5
380 GOTO 770
390 REM   MOVE MAN
400 CALL KEY(0,K,S)
410 MRN=MRO
420 MCN=MCO
430 IF K<>83 THEN 450
440 MCN=MCN-1
450 IF K<>68 THEN 470
460 MCN=MCN+1
470 IF K<>69 THEN 490
480 MRN=MRN-1
490 IF K<>88 THEN 510
500 MRN=MRN+1
510 IF (MCN<3)+(MCN>32)+(MRN<1)+(MRN>24)THEN 630
520 CALL GCHAR(MRN,MCN,X)
530 IF X=32 THEN 570
540 IF (X=120)+(X=121)THEN 810
550 IF X=144 THEN 910
560 GOTO 630
570 IF (MRN=MRO)*(MCN=MCO)THEN 630
580 CALL HCHAR(MRO,MCO,32)
590 CALL SOUND(100,330,2)
600 CALL HCHAR(MRN,MCN,128)
610 MRO=MRN
620 MCO=MCN
630 RETURN
640 REM  THROW ROCK
650 R1=INT(RND*12)+MRO-6
660 IF (R1>24)+(R1<1)THEN 650
670 R2=INT(RND*12)+MCO-6
680 IF (R2>32)+(R2<3)THEN 670
690 CALL GCHAR(R1,R2,X)
700 IF X=32 THEN 730
710 IF X=128 THEN 1030
720 IF (X=120)+(X=121)THEN 750
730 CALL SOUND(50,160,3)
740 CALL HCHAR(R1,R2,144)
750 RETURN
760 REM  MAIN LOOP
770 GOSUB 400
780 GOSUB 650
790 GOTO 770
800 REM  SUCCESS
810 CALL SOUND(500,330,2)
820 CALL SOUND(500,450,2)
830 CALL SOUND(500,360,2)
840 CALL SOUND(900,500,2)
850 M$="YOU MADE IT !!"
860 X=10
870 GOSUB 1150
880 GOSUB 1210
890 INPUT "PLAY AGAIN? ":Q$
900 IF SEG$(Q$,1,1)="N" THEN 1130 ELSE 160
910 FOR J=1 TO 10
920 CALL HCHAR(MRO,MCO,32)
930 CALL SOUND(100,-5,2)
940 CALL HCHAR(MRO,MCO,128)
950 NEXT J
960 REM  WRONG TURNING
970 M$="YOU CRASHED !!"
980 X=10
990 GOSUB 1150
1000 GOSUB 1210
1010 GOTO 890
1020 REM  ROCK HIT
1030 M$="S P L A T !!"
1040 X=11
1050 FOR J=1 TO 10
1060 CALL HCHAR(MRO,MCO,32)
1070 CALL HCHAR(MRO,MCO,144)
1080 CALL SOUND(100,220,2)
1090 NEXT J
1100 GOSUB 1150
1110 GOSUB 1210
1120 GOTO 890
1130 END
1140 REM   PRINT AT
1150 FOR J=1 TO LEN(M$)
1160 CH=ASC(SEG$(M$,J,1))
1170 CALL HCHAR(11,X+J,CH)
1180 NEXT J
1190 RETURN
1200 REM  DELAY
1210 FOR D=1 TO 200
1220 NEXT D
1230 RETURN
```

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Fast reactions are essential for a knight. Nigel Terry and Nicholas Clay in Excalibur

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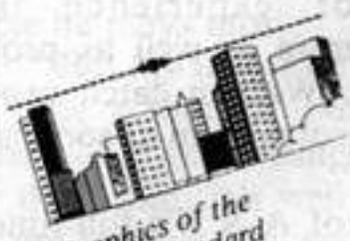

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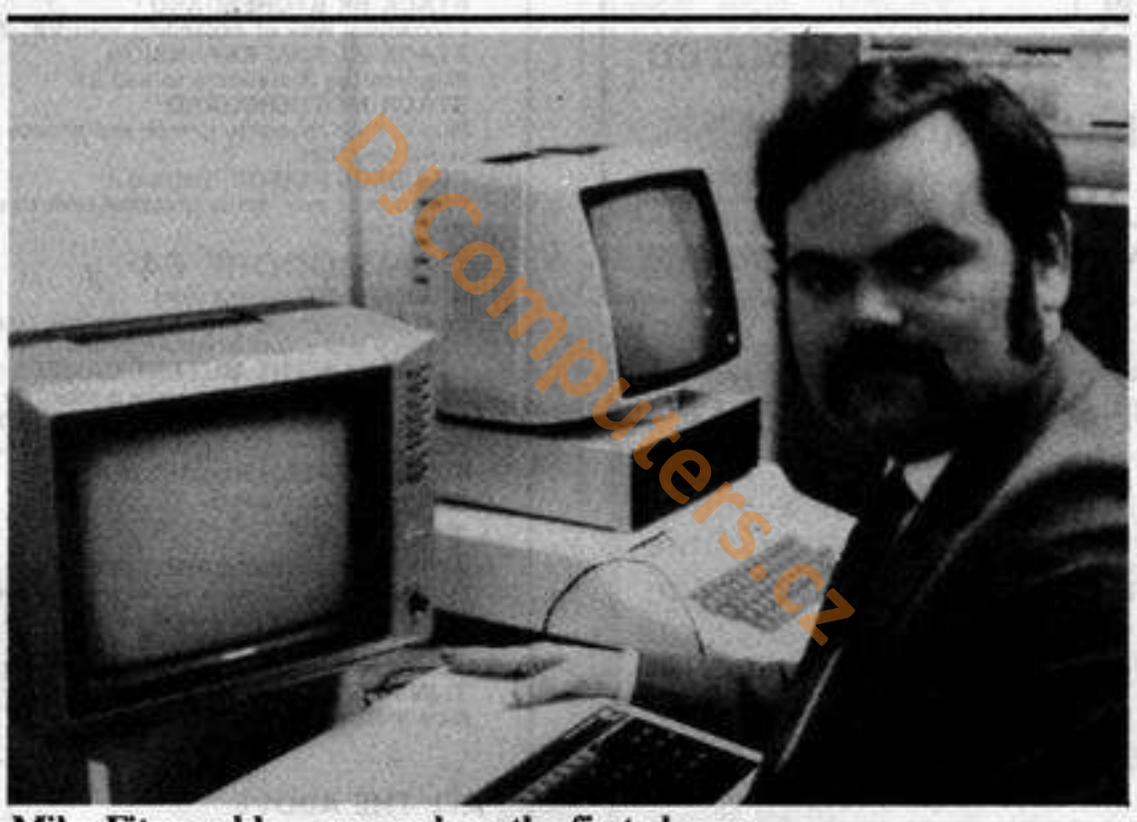
HCW6

Computer Ads

In the beginning was the Atom

From its early days of selling two programs from a box room, A & F Software aims to end up among the top five software companies. Candice Goodwin talks to Mike Fitzgerald and finds out how and why he thinks he can get to the top



Mike Fitzgerald — remembers the first cheque

Mike Fitzgerald still remembers the first order A & F Software ever had. He said: "I opened it, and there was a cheque for £4.95. I felt great. It really felt like we were beginning. And we're still enjoying the business now".

A & F placed the ad that started it all back in November 1981. The company then consisted of Mike Fitzgerald and Doug Anderson, who had both been made redundant in the great ICL reorganisation.

Mike had been a mainframe engineer at ICL, while Doug had been a programmer working on design automation.

With some of his redundancy money, Mike had bought an Atom — but didn't think much of the software that was around for it at the time. So he and Doug decided to see if they could do better.

They started off with Early Warning and Polecat, two programs for the Atom. They made fifty copies of each, and invested £250 in ads. "Within the week, we had to do 100 more of each. After that, we never looked back".

A & F was initially run from Mike's boxroom and Doug's flat. Now, with a staff of nine, it has a showroom and offices at 830 Hyde Road, Gorton, Manchester, about a mile from Bellevue.

Mike now concentrates on sales and administration. Doug still writes programs, and has now been joined by programmers Andrew Houston, Martin Hickling, and Allan Samuel.

Mike O'Neill helps out in the showroom and takes care of tape duplicating, while Tim Kay looks after advertising. Jane Ashton deals with mail order, and Susan, on the secretarial side, completes the team. A & F also has six freelance programmers.

Doug Anderson — still writing programs

From the first two programs, A & F's range has now built up to 23 titles, for the BBC, Spectrum, Oric and Dragon as well as the Atom. "If it hadn't been for the Atom, we might never have started. So we'll continue to support it — at least for the next 12 months."

The range is mainly arcade-style and adventure games, though there is a data management system for the Spectrum, and some small business programs may be in the pipeline for the BBC and Dragon.

Prices range from £4.70 to £11.50, and some of the BBC programs are supplied on disk as well as on cassette. Disks for the Dragon are coming soon.

With the mushrooming of the software market, many software companies are having trouble getting their programs duplicated quickly. Not so A & F.

"We looked into this very carefully and decided to invest some money in a duplicating set-up. We can do 30,000 tapes a week.

"It means that we don't have any delays from suppliers, and we have a very low reject rate — we do real-time rather than high-speed copying."

Having its own duplicating facility also means that the company can react quickly when hardware companies change specifications at short notice.

"We feel we've got an advantage over other companies in that we've got a wealth of experience in manufacturing as well as programming. We can catch problems and solve them as soon as they start."

Most of A & F's full-time programmers are in their mid twenties, though some of the freelancers are still at school. "They're from all walks of life, really. Martin Hickling worked for eight years at Ferranti, but Andrew Houston is self-taught. I think that programming is something you're gifted with".

A & F's programmers tend to be a bit older than the average home micro software writer because "we go for the stability. We like to direct our progammers rather than let them just go off on their own".

"What we try to do is treat each program as a project. Each programmer has his own project to work on, and it's reviewed all the way along. It always has a final aim at the end.

That way, it avoids individual idiosyncracies creeping into the program. You don't get an idea that looks great to begin with but never gets anywhere."

Where do they get ideas for programs from? "We try to take ideas from life in general — there's nothing fixed. It'll generally happen that we'll be having a meeting or something and someone'll have a brainstorm."

One idea that was taken from life was Painter, a game in which the player tries to spray paint round a series of pots

Martin Hickling, programmer

while being chased by man-eating paint rollers. Mike Fitzgerald says that this is the game he plays most.

"But my favourite game of all time is one of our lowest sellers — a game called Robot for the Atom. It's well written, it's got humour and everything. We've had some lovely letters about it. But for some reason it never really caught on".

A & F has not found that customers are put off by games they do not recognise. "We haven't had any trouble selling any of our software. Word of mouth gets along fairly quickly. As long as your product's good, you won't have any problem selling it".

Mike feels it is important, though, to take time in developing each idea. A & F's games take on average two-four months from the initial concept through to the finished product.

"We could have brought Painter out after a month, but we felt that by holding it up for a while we'd get the necessary support. Every game we produce, we aim to be better than the last game".

Programmer Allan Samuel

Jane Ashton — looks after postal sales

Mike sees the market for computer games continuing to hold up for a long time yet. "There will always be room for good games. Each game has a life of only nine to 15 months, plus four to five months' playing time."

But he doesn't think the present boom will continue indefinitely. "Some companies are getting rich quickly. Those companies won't be around in 12 months time."

A & F itself started 1983 with projected turnover of £1.3 million — and had to alter that to £2 million shortly afterwards. But Mike says that "not much" of that will be pure profit — "most of the profits will be ploughed back into the business."

"We would like to be doing the same job in thirty years time — we're trying to make a career of it. We do things properly because in 12 months time there'll only be ten to fifteen major software companies and 20 or so minor companies around.

"We intend to be among the top five companies."

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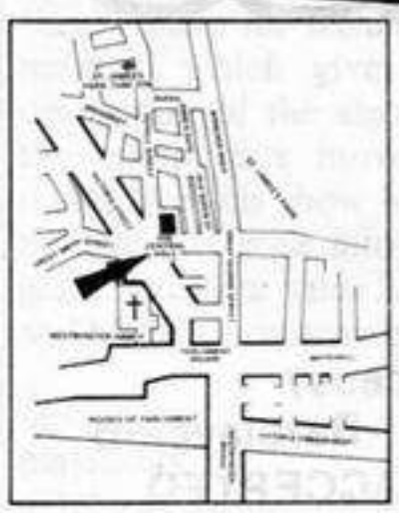

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And now for something slightly different . . .

As a change from arcade games, we review four programs which offer a different challenge. But do they deliver the goods? Our panel gives you its verdicts

Superchess II £7.95

CP Software, 17 Orchard Lane, Prestwood, Bucks HP16 ONN.

"Guaranteed able to beat Sargon II and all other Spectrum chess programs." That's the impressive claim made by CP Software in adverts for its new Superchess program, for the 48K Spectrum.

When put to the test, the game did beat several other chess programs, including one for the Acorn Atom and another for the BBC micro. There are seven levels of play, numbered 0 to 6, the first four being fast enough for tournament chess, and even in level 0 it takes a lot of beating.

Response time is fast, with an average of about three seconds in level 0. However, as in any chess game, the overall response time depends on the complexity of the board layout.

Screen layout and method of entering moves is standard. Both the computer's and your last 10 or so moves are displayed on the screen during play, but unfortunately there is no facility for printing these out or saving the game halfway through.

One nice feature is the ability to change the colours of the board according to your own taste. I found the best combination was red and cyan pieces on a black and white board.

Like most computer chess games nowadays, Superchess will suggest a move for you if the going gets tough. It will even play itself, at any level, if you ask it to.

An analyse facility allows you to rearrange the board for chess problems etc. At one point, while I was losing a game, I switched to analyse mode and removed all the computer's pieces from the board. Not to be deterred, Superchess simply moved one of my pieces.

The menu of features available on demand includes "tec", short for technical information, which gives a short description of the algorithm for the computer's moves. Small things like this show how much thought has gone into this program. Excellent value for money, and highly recommended.

I.O.

instructions	90%
playability	90%
graphics	95%
value for money	90%

★ ★ ★ ★ ★

Painter £5.75

A & F Software, 830 Hyde Road, Gorton, Manchester M18 7JD.

A very good game, this — the trouble is, it might just remind you of those outstanding home decorating jobs you should be doing instead of sitting about playing computer games.

You are Painter Patrick. Your job is to spray paint round 24 pots of paint standing in a room, while trying to evade capture by a decorator-eating paint-roller.

Each pot you surround recharges your dwindling paint supply. As each room is completed the screen clears and the game re-starts. But you are now pursued by more paint rollers.

You move around the room using the O and P keys for left and right and Q and A for up and down — a convenient arrangement, I found. You can also press H to suspend the game while you draw breath or take a worker's tea break.

A score recording facility enables inter-decorator competition.

The program loaded easily and I found the on-screen instructions easy to follow. Arcade-quality graphics, and good use of sound to simulate aerosols puffing and paint rollers laughing as you tumble to the floor.

Great fun — recommended.

D.J.

instructions	80%
playability	85%
graphics	85%
value for money	75%

★ ★ ★ ★

Taipan £4.95

Jaysoft, 6 Wentworth Drive, Bishop's Stortford, Herts.

Following a spate of financial modelling games for the Spectrum comes Taipan, a simulation of the ins and outs of Oriental trading, with the aim of accumulating the princely sum of $1,000,000.

Money is earned by buying and selling various products such as arms, silk, opium, women(!) and general provisions. Goods can be bought cheaply at one of the five far-eastern ports and then sold at a profit at one of the other ports.

Sounds easy, but of course to put a damper on things a particularly nasty piece of work known as Sum Yan (the money lender) is clamouring for your debt of £5,000 (used to buy your junk) to be repaid with hefty interest.

Should Sum Yan become impatient, he will not hesitate to send the boys round, and all your hard-earned cash will be gone. Other hazards include storms while travelling from port to port, and jettisoning of goods to prevent your junk from sinking.

There are three levels of play, from beginner to financial wizard, but the last is the only level really worth playing. Rather repetitive, the same financial tactics applying to nearly every game with little change in the structure of play.

I.O.

instructions	65%
playability	50%
presentation	40%
value for money	50%

★ ★

Venture £6

G & J Bobker, 29 Chadderton Drive, Unsworth, Bury, Lancs

Although the full game is written for 48K, one side of the cassette has been recorded for the 16K machine, with a second loading to play the last three games.

Both sides of the tape loaded first time with no trouble. All the instructions are on the screen, and I found them very easy to follow.

You are given £1,000 and the opportunity to increase the amount by playing a total of seven games. In the first, you bet on which of three ducks will finish a race first.

Game number two is a fruit machine type where you are given 10 "pulls" of the handle . . . this is where you can win a bob or two.

The third is a simple treasure hunt using a grid with hints given on which direction to take. In game four, Mastercode, you have to guess a four-digit code set by the computer. Fifthly, you have to keep a car on a winding road, and the amount of time on the track represents a percentage of £1000 added to your hopefully increasing total. Game number 6 gives you a chance to bomb a ZX81 keyboard, and wipe it off the screen . . . it can be done.

Last but not least is an adventure game set in a maze where you can gather gold. First you must fight off some fearsome monsters with such diverse 'weapons' as cheese, fish, and would you believe, an oil can. This is the game where your fate is decided.

A compendium of simple games strung together to make a game which I am sure will appeal to a wide age group. But for £6, a little overpriced.

B.B.

instructions	90%
playability	85%
graphics	50%
value for money	40%

★ ★ ★

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HCW6

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Send your letters to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Don't forget to name your computer — you could win £5-worth of software. Queries cannot be answered on this page.

Advice from an old hand

I read with great interest about the problems of your correspondents (probably first-time computer buyers) regarding delivery of products by micro manufacturers. Perhaps some advice from an old hand in computing who has had similar problems is wanted:

1 Don't believe all you read

2 If your order for a product is not delivered within the time specified cancel it and buy something else — the high streets are awash with computers

The real reason for this state of affairs is that manufacturers advertise a product they have not even produced, get the customers' money and then make it. So in effect customers are financing companies with cheap capital and a way of testing the market for demand, hence the long delivery delays.

Your publication, as a weekly magazine with short copy dates, is a welcome addition to computing if only to help stop false promises by some companies as to theor products' suitably, available and claims.

It can end the subsequent blame put about that their advertising has to be placed months before the product is available as an excuse for delivery problems.

A 28-day delivery promise often turns into a four-month wait. This is unacceptable. A customer should have his/her computer or whatever in 10 working days.

Finally, regarding advertising claims:

1 The Oric-1 is advertised as having 16 colours. Not true, it only has eight.

2 Software available for all CP/M machines? Again, not true. CP/M is a disc-based operating system and there being so many disc formats around, it's unlikely the software advertised is in your format.

There is, however, one exception. That is if you own 8in IBM compatible disc drives (not completely compatible even then) you should be able to get the software running on your machine after sorting our screen, memory locations, etc.

D. J. Every, Plympton, Plymouth

It's safer by credit card

The answer to Mr R. G. Bennett's worry (Letters, HCW No. 3) about manufacturers holding money for a long period before sending goods and gaining interest at his expense might well be solved by the following, which would also safeguard his money should the manufacturer become insolvent.

Payment should be made by credit card and suppliers should only be allowed to debit the account when goods have been despatched.

In this way the supplier could determine just before the time of despatch that he will get his money and the consumer would not lose interest or run the risk of losing all or part of his money.

Credit card companies should only have dealings with suppliers who undertake to operate in the above manner and consumers should then only deal with suppliers who are prepared to accept credit cards.

The setting up of a bureau to hold the money would seem to be an unnecessary additional expense.

F. L. Ellis, Botley, Oxford

Look a bit harder for us

As one of the few directors of British software houses specialising solely in the production of educational software, I must reply to two of the letters featured in issue No 2.

Mrs Genevieve Ludinski, of LCL, describes "99 per cent of educational software" as "small portions of exotic fare at inflated prices", while Ms Jane Everest says there "must be some programs around for use at home."

There are, Ms Everest. You simply have to look a bit harder to find them. Educational software houses like ourselves are reluctant to commit heavy expenditure on massive advertising campaigns as indulged in by the game software houses.

We prefer at this stage to plough any profits back into developing that to which we are dedicated — the programs.

Mrs Ludinski makes a rash claim which I've seen before. Whilst there is no doubt some truth in it, it is not helpful.

The few small firms who are selling educational software are certainly not making high profits, but at least are providing something which without them would not exist. Neither teachers not sixth-formers have the time or energy to become expert programmers.

Why should teachers burn the midnight oil? The have more than enough to do anyway. Teaching is, as we know all too well, *the* most stressful profession there is.

Increasingly, I am happy to say, teachers are submitting software to companies like ours for publication. Increasingly we foresee moving away from producing our own software to becoming a publishing house.

Educational software is quite a different ball-game. Its development takes time and patience. What the industry needs now are ideas and support and encouragement. We at Chalksoft are pleased to see that Home Computing Weekly is taking this side of the business seriously. We hope that other magazines follow your good example.

Brian Kerslake, Chalksoft, Lowmoor Cottage, Tonedale, Wellington, Somerset TA21 0AL

Unexpanded and happy

In the third issue of Home Computing Weekly a review of the Quicksilva VIC-20 game Tornado appeared. We were astonished and concerned by the implication that an expansion board was required to run Tornado. This is not the case, and Tornado will run quite happily on an unexpanded VIC-20.

The reviewer also had trouble with his joystick, which he seemed to think was due to the game. We are sorry the reviewer is having trouble with his hardware, but wish to point out to him that this has nothing to do with Tornado, which responds quickly and smoothly to a joystick.

In our opinion, Tornado is certainly one of the most exciting games around for the unexpanded VIC.

Mark Eyles, Quicksilva, Southampton

Gather round, TI owners

Congratulations on a first class weekly magazine and thank you for your articles on the TI99/4A, a much-neglected machine.

May I ask through you if anyone is interested informing a TI99 club? If so, can they contact me — to learn is to know.

T. A. Grimshaw, 21 Allingham Street, Longsight, Manchester M13 0ZF

. . . but I still have faith

I sympathise with C. Luke (HCW No. 1). I too have had an Oric on order since November. It is not fair to potential purchasers for companies to advertise products which they cannot supply in a reasonable time.

Even now, though, I still have faith in the Oric 1 and have not, like so many others, cancelled my order.

However I ordered a 48K version, and if John Tullis is going to loan 48K models to those who ordered 16K and give them the option of buying the 48K at a reduced price, it seems hard on those of us who paid the full price.

Is Oric determined to aggravate the situation even more?

M.A. Mercer, Luton, Beds

DJCamputer.cz

Alone in your starship — but not for long . . .

Enemy fighters come spinning out of nowhere in John Wilson's program for the 32K BBC micro. Can you destroy them before they turn you into space debris?

You are alone among the stars, at the controls of your trusty starship. Suddenly you see a moving spot of light. As it closes in you realise it's one of the Empire's deadly fighters.

In my short program — which demonstrates what can done with graphics on the BBC micro — you are seated in the pilot's seat.

Enemy fighters approach one at a time but you have the better odds as your weaponry is superior.

You must manoeuvre your ship until the hairline aiming sight is at the centre of the butterfly-shaped enemy craft. It will only explode with a direct hit on the centre.

If you manage to get that fighter, another will appear — closer this time, so you've less time to react. You have only a limited supply of energy, so don't waste your shots.

How it works

130-340	print instructions
430-460	add stars to screen
510-750	play game
760-850	firing routine
860-1000	explosion routine
1010-1160	enemy fire routine
1170-1320	end program
1330-1400	error routine
1410-1490	scroll routine
1500-1590	draw enemy fighter

Variables used: SCR screen number, SM energy left, S score, F firing flag, T speed of enemy, W size of enemy, I general loop, X co-ordinate of enemy, Y co-ordinate of enemy, M direction of movement of enemy, XL old X position, YL old Y position, J general loop, G distance from enemy fire, AS whether another game is required, ERR error number, VPOS vertical position of cursor.

Hints on conversion

The nice thing about the BBC micro is its use of PROCedures to create well structured programs. The ones I have used are:

PROCL to scroll sentence across the screen

PROCDRAW draws the enemy fighter

PROCFIRE is your firing.

As you would expect, the VDU commands control the screen display.

```
 90 ON ERROR GOTO 1330
100 SCR=0
110 MODE7
120 VDU 23;8202;0;0;0;
130 PRINT''
140 PROCL(CHR$141+"      S T A R  F I G H T E R")
150 PROCL(CHR$141+"      S T A R  F I G H T E R")
160 PRINT
170 PROCL("   Destroy as many of the Empire's")
180 PRINT
190 PROCL("fighters before you are destroyed.")
200 PRINT
210 PROCL("Shoot them with your long range")
220 PRINT
230 PROCL("lasers before they can shoot.")
240 PRINT
250 PROCL("The following keys control your aim:")
260 PRINT
270 PROCL("     Q  W  E")
280 PROCL("     A     D        S to fire.")
290 PROCL("     Z  X  C")
300 PRINT
310 PROCL("You start with 1000 points of energy.")
320 PRINT '
330 PROCL("Press the SPACE BAR to start.")
340 REPEAT UNTIL GET$=" "
350 SH=1000
360 S=0
370 F=0
380 T=SCR DIV 3
390 SCR=SCR+1
400 W=SCR+2
410 MODE1
420 VDU 23;8202;0;0;0;
430 FOR I=0TO RND(100)+50
440 GCOL 0,RND(4)
450 PLOT 69,RND(1280),RND(1024)
460 NEXT
470 X=RND(1280)
480 Y=RND(1024)
490 H=RND(8)
500 PRINT TAB(0,31);"Score = ";S;" Energy = ";SH;" ";
510 GCOL 0,3
520 PROCDRAW(X,Y)
530 IF INKEY(-82) AND SH>0 THEN PROCFIRE
540 IF RND(10)=1 OR X<0 OR X>1280 OR Y<0 OR Y>1024 THEN
H=RND(8)
550 IF RND(10)=1 THEN T=T+1
560 IF T=8 THEN T=6
570 X1=X:Y1=Y
580 MOVE 640,500
590 DRAW 640,524
600 MOVE 628,512
610 DRAW 652,512
620 IF W>150 THEN 1010
630 IF INKEY(-34) OR INKEY(-17) OR INKEY(-35) THEN Y=Y+
16
640 IF INKEY(-67) OR INKEY(-98) OR INKEY(-83) THEN Y=Y-
16
650 IF INKEY(-66) OR INKEY(-17) OR INKEY(-98) THEN X=X-
16
660 IF INKEY(-51) OR INKEY(-83) OR INKEY(-35) THEN X=X+
16
670 IF H<3 OR H=8 THEN Y=Y+T
680 IF H>3 AND H<7 THEN Y=Y-T
690 IF H>1 AND H<5 THEN X=X+T
700 IF H>5 THEN X=X-T
710 GCOL 0,0
```

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BBC PROGRAM

```
  720 PROCDRAW(X1,Y1)
  730 IF F=1 THEN PROCFIRE
  740 W=W*1.05
  750 GOTO 510
  760 DEF PROCFIRE
  770 PRINT TAB(0,31);"Score = ";S;" Energy = ";SH;" ";

  780 IF F=1 THEN F=0:W=W+1 ELSE F=1:SOUND 1,20,100,3:SH=
SH-10
  790 GCOL 0,F
  800 MOVE 0,0
  810 PLOT 21, 640,512
  820 MOVE 1280,0
  830 PLOT 21, 640,512
  840 IF F=1 AND ABS(X-640)<W/4 AND ABS(Y-512)<W/4 THEN 8
60
  850 ENDPROC
  860 FOR J=0 TO 1
  870 FOR I=0 TO 255 STEP 8
  880 IF J=0 THEN SOUND 0,17+I DIV 25,I DIV 80+4,1
  890 GCOL 0,-(I MOD 3)*(J=0)
  900 MOVE X-I,Y-I
  910 DRAW X+I,Y-I
  920 DRAW X+I,Y+I
  930 DRAW X-I,Y+I
  940 DRAW X-I,Y-I
  950 NEXT
  960 *FX15,1
  970 NEXT J
  980 CLS
  990 S=S+(150-INT W)*3
 1000 GOTO 370
 1010 X1=0:Y1=0
 1020 G=8
 1030 MOVE X-X1,Y-Y1
 1040 GCOL 0,2
 1050 DRAW X-X1*2,Y-Y1*2
 1060 MOVE X+X1,Y-Y1
 1070 DRAW X+X1*2,Y-Y1*2
 1080 GCOL 0,0
 1090 MOVE X-X1,Y-Y1
 1100 DRAW X-X1*2,Y-Y1*2
 1110 MOVE X+X1,Y-Y1
 1120 DRAW X+X1*2,Y-Y1*2
 1130 X1=X1+G:Y1=Y1+G
 1140 SOUND 1,17,G,1
 1150 G=G+2
 1160 IF Y-Y1>0 THEN 1030
 1170 FOR I=0 TO 15
 1180 SOUND 0,17+I,5,1
 1190 VDU 19,I,I+1,0,0,0
 1200 NEXT
 1210 MODE7
 1220 PRINT '''"Your score was ";S
 1230 PRINT '''
 1240 IF S>HX THEN HX=S:PRINT "This is the highest score
so far.":GOTO 1260
 1250 PRINT "But the high score is still at ";HX
 1260 *FX15,1
 1270 PRINT '''"Another game ?"
 1280 A$=GET$
 1290 IF A$="Y" THEN RUN
 1300 IF A$="N" THEN END
 1310 GOTO 1280
 1320 END
 1330 IF ERR=25 THEN GOTO ERL
 1340 IF ERR=17 THEN 350
 1350 MODE7
 1360 PRINT '''
 1370 REPORT
 1380 PRINT " in line ";ERL
 1390 *FX 15,1
 1400 END
 1410 DEF PROCL(A$)
 1420 LOCAL X,Y
 1430 Y=VPOS
 1440 FOR X=1 TO 39
 1450 PRINT TAB(39-X,Y);LEFT$(A$,X);" ";
 1460 FOR I=0 TO 50:NEXT
 1470 NEXT
 1480 PRINT
 1490 ENDPROC
 1500 DEF PROCDRAW(X,Y)
 1510 MOVE X-W,Y-W/2
 1520 DRAW X-W,Y+W/2
 1530 MOVE X+W,Y-W/2
 1540 DRAW X+W,Y+W/2
 1550 MOVE X-W,Y-W/2
 1560 DRAW X+W,Y+W/2
 1570 MOVE X+W,Y-W/2
 1580 DRAW X-W,Y+W/2
 1590 ENDPROC
```

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HCW6

Getting down to brass tacks

As a break from playing games, why not make your micro do some work for you? There is software to plan your finances and keep track of your appointments: our reviewers take a critical look at it

Personal Banking System Dragon £9.95

Hilton Computer Services, 14 Avalon Road, Orpington, Kent BR6 9AX.

This program is designed to help you keep track of your finances. You can use it to input, amend, delete and enquire about cash credits and debits, including cheques and standing orders.

These details are presented on screen, rather like a bank statement, and if you have a printer available you can print your own hard copies. All details are saved as data file on cassette, so you can build up a library of different financial accounts.

My first impression was that this is a well-produced package. The documentation supplied was clearly printed and comprehensive. I had no difficulty loading the software from the cassette, which also had a sample data file to help the new user get to grips with the system quickly.

The program is driven by a framework of menus, from which you select the option you want. I found this system very easy to use. Each menu or display had clear instructions for input, and I rarely had to turn to the user manual.

Incidentally, the manual also lists the line numbers and functions of the Basic routines used by the program, so there is scope for adding your own enhancements to the system.

The Personal Banking System is also available for the Spectrum.

N.W.

instructions	80%
ease of use	85%
display	75%
value for money	80%

★ ★ ★ ★

Cashcalc 48K Spectrum £6.95

Wizard Supersoft, 107 Broom Park, Teddington, Middx.

Planning the family finances for the year ahead can be a headache — all those figures to add only to find that you will overspend. Then it's a case of trimming certain expenses, and adding it all up again.

"Now, there's a good application for my home computer" I hear you say, and Cashcalc is designed for that specific purpose. It is designed to give 12 columns of figures, each representing one month's financial activity, and up to 18 rows of various items of income/expenditure.

This one-year plan can be displayed on your TV screen, and manipulated at modest speed. Six columns are displayed at a time, but on the screen the name you have assigned to each row always appears alongside the data.

The instructions provided with the cassette reminded me of the fine print at the bottom of a legal document — even if you can read it, it is difficult to follow.

For those who do have trouble with the written instructions there is a verbal commentary on the reverse side of the tape. A nice idea, this, but it didn't explain the operation of the program any more clearly.

Once mastered, the program is quite powerful, if slow, in operation. Items of income/expenditure can be displayed as cumulative or non-cumulative. Income items are entered as negative numbers, and expenditure items as positive numbers, which feels odd but saves a lot of keying.

Copies of the tables can be dumped onto the ZX printer, and program and data saved on tape for future use (eg to compare actual with predicted expenditure, and modify the plan for the rest of the year).

D.N

instructions	30%
ease of use	40%
display	60%
value for money	30%

★ ★

Figaro II Numeric Database 48K Spectrum £14.95

Saxon Computing, 3 St Catherine's Drive, Leconfield, Beverly, N. Humberside.

"Based on present trends, what will be our total sales in six months?". If, in your business life, you find yourself asking questions like this, then Saxon Computing have a program to make your crystal ball redundant.

Figaro II has some of the features of both spreadsheet and database information programs.

You can generate columns of data, as in a spreadsheet, but each box can be labelled with a descriptive label. The item can then be easily identified should you re-use the data several months later.

All of the formulae are built into the program (good for those not mathematically-minded). These offer a set of powerful number crunching operations which determine averages, standard deviation, linear regression, timer series, seasonal variation, indices, etc, etc...

The 14-page manual is very helpful in guiding you through the program, and explaining some of these terms.

Results are well-laid out on the screen, and can be copied on the printer. Particularly impressive are the flexible graph and histogram generating routines.

The program is written entirely in BASIC. This doesn't cause any speed problems, but it does take up a lot of space. Of 48K of RAM, only 16K is left for user data (about 1000 data items).

For a "serious" micro, Figaro II would be cheap at the price. Even though prices for Spectrum programs tend to be more modest, Figaro II is reasonably priced by present standards.

D.N.

instructions	80%
ease of use	80%
display	70%
value for money	50%

★ ★ ★

Flexicalc 48K Spectrum £9.95

Saxon Computing, 3 St. Catherine's Drive, Leconfield, Beverley, N. Humberside.

Following the success of Visicalc in the business world, several look-alike spreadsheet programs have appeared. Flexicalc is such a program for the ZX Spectrum.

Spreadsheet programs allow calculations to be made on large amounts of inter-related data, set out as a large electronic chart.

Their power lies in the ability to rapidly recalculate results following changes in some of the data. For example, in making finacial decisions, thus allow "what if...?" - type questions to be answered quickly.

Provided with Flexicalc is an 11-page manual. Generally, this explains the principles and use of

the program quite well, but there are some omissions and errors. A worked example would be a great help for the first time user.

Flexicalc has two main advantages over its rivals. It lets the user decide on the number of rows and columns in his spreadsheet, and it allows formulae (as well as data) to be altered at any time.

Its main disadvantage is that it is written entirely in BASIC; computations can take minutes on large spreadsheets. Errors in the formulae or in the logic of the spreadsheet could cause the program to stop with a system error message. Make the mistake of restarting with RUN, and all the data is lost.

In common with other spreadsheet programs, data laboriously entered through the keyboard can be saved on tape for future use. Hard copies of results can also be produced on the ZX printer, although the 32-column format only allows small segments to be copied at one time.

As a product intended for a business user, the obviously home-produced cassette insert and label were disappointing.

However, the program does provide all the calculating power that a user might expect from his Spectrum, and forms a reasonable introduction to microcomputer spreadsheet techniques. **D.N.**

instructions	80%
ease of use	60%
display	50%
value for money	40%

★ ★ ★

Print Shop 48K Spectrum £5.00

Cases Computer Simulations, 14 Langton Way, London SE3 7IL.

"You are the sole proprietor of a small print works, and your objective is to make a net profit of over £4000 in the first three months of trading". That's the challenge set by 'Print shop', a business simulation game from CCS.

You control your business by regularly deciding on numbers of staff, stock levels, production loading, and giving customers quotes on potential orders.

The computer gives you weekly Trading Accounts, and monthly profit/loss and cash flow sheets.

It also presents you with orders and acts as your competitor (quote too high a price and you lose the order). Friendly messages at the end of each week tell you how you may improve your performance.

Full game instructions, with some hints, come with the program. These do not, however, include loading instructions. As the program recording level was low on the review tape, there were problems in loading the program.

Business simulation games are not only meant to be fun, but educational too. This tape was both; I found very soon that despite having profitable dealings, you can still get cash flow problems.

There are some annoying features of the program. Some messages flash on and off the screen before you have the chance to read them carefully.

There are many facts to bear in mind (such as stock levels) while playing the game. It would have been useful to be able to look up these facts and ask 'what if?' questions in making decisions, demonstrating the power of the micro in real business situations.

But worst of all, at the end of a successful game; when fully expected to be congratulated and have my healthy profit figure confirmed, the screen just went blank!

Nevertheless if you are a business student, or simply enjoy business games, 'Print Shop' is well worth a try. **D.N.**

instructions	60%
ease of use	70%
display	50%
value for money	80%

★ ★ ★ ★

Compufile Spectrum £4.95

Jaysoft, 22 Dane Acres, Bishops Stortford, Herts CM23 2PX

Compufile offers the home computer user an unspectacular and basic filing program that's flexible enough for many applications and simple to use.

An excellent seven-page manual takes you through the program by working through an 'Address Book' example.

At the back, there are hints on how to set up files for other home applications such as cataloguing record collections and keeping an appointment diary.

The program is split into two parts, the first setting up the file. The user selects file name, and the number, heading and size of each field (records can have up to nine fields, each up to 15 characters long).

Following this, the main routine is merged into the first program.

The number of records depends on available RAM; this is calculated for you and shown on the screen before you start.

Only three options are available in the main menu: enter data, search/amend and save program plus data on tape.

To search, a field and search word are selected. The search word can be truncated (eg 'Sm' as a search word will pick up Smith, Smyth, etc).

Screen format of displayed records is simple but inflexible; fields are vertically aligned alongside the appropriate field heading.

In essence, a modest program at a modest price.

D.N.

instructions	90%
ease of use	80%
display	60%
value for money	80%

★ ★ ★

Spect-A-Draw 48K Spectrum £17.50

BS McAlley, 1 Cowleaze, Chinnoe, Oxon OX9 4TJ

This program aims to predict draws in league football, claiming to be up to 30% better than random selection. It does not guarantee wins, nor large dividends.

It works by comparing current relative performance of teams with a database of the past results of teams with a similar performance, which is a good strategy.

The package consists of two tapes, the program and its database. They can be bought separately, so you could buy the program itself (at £4.95) and use it to set up your own database but this would be very longwinded. In fact the whole program requires some dedication, as its accuracy depends on keeping the database constantly updated.

A lot work has gone into this program, but it is a shame that little thought has been given to the display. Poor layout and poor presentation can suggest careless programming elsewhere. However I could find no evidence of this except for the failure to trap some errors and the need for seven pages of instruction.

Personally I don't think the tedium of using such a program is worth its possible results, but there may be others for whom the £17.50 would be a worthwhile investment. **N.W**

instructions	70%
ease of use	65%
display	40%
value for money	55%

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My easy way to a set of fresh characters

Don't spend hours grappling with numbers to get new characters on your Atari. Let Marc Freebury's program do it for you

Each character on the Atari computers is built up of a grid of eight by eight dots.

When a dot is lit it is represented internally by a 1 and when it is dark it is represented by a zero.

The Atari takes each row of the character grid and stores it in one memory location, so one character will stretch over eight locations — see my diagram.

The standard Atari character set is held permanently in ROM, but the pointer which defines where the computer looks for character definitions may be changed.

Thus, by a tedious process of drawing, adding up and writing vast numbers of data statements, you can define things like a Pi sign or a Pacman.

The easy answer is to write a program to handle the maths, and allow on-screen editing of an enlarged view of each character as it is re-defined.

My program goes one better. Once you have finished it will remove itself from memory and write a BASIC program — data statements included — to install your new character set, at any line number you specify (up to 32000).

The program explains itself and incorporates a HELP facility.

Note: the program must be typed in with the line numbers **exactly** as they are or problems will occur. Also, when using the program, do not attempt to re-define the graphics characters gained by using the CRTL key.

```
10 DATA 216,104,104,141,185,6,104,141,18
4,6,165,136,133,203,165,137,133,204,32,1
36,6,165,203,133,205,165,204,133
15 DATA 206,104,141,185,6,104,24,105,1,1
41,184,6,144,3,238,185,6,32,136,6,56,165
,144,229,203,141,182,6,165,145
20 DATA 229,204,141,183,6,56,165,203,229
,205,141,186,6,165,204,229,206,141,187,6
,160,0,174,183,6,240,14,177,203
22 DATA 145,205,200,208,249,230,204,230,
206,202,208,242,204,182,6,240,7,177,203,
145,205,200,208,244,162,0,160,4
25 DATA 56,181,138,237,186,6,149,138,181
,139,237,187,6,149,139,232,232,136,208,2
36,96,160,2,177,203,141,188,6,136
30 DATA 177,203,136,201,128,240,30,205,1
85,6,240,4,176,23,144,7,177,203,205,184,
6,176,14,24,173,188,6,101,203
35 DATA 133,203,144,215,230,204,208,211,
96,0,0,0,0,0,0,0
40 RESTORE 10:FOR I=1536 TO 1724:READ A:
POKE I,A:NEXT I
90 OPEN #1,4,0,"K:"
100 GRAPHICS 0:SETCOLOR 2,0,0:POSITION 1
0,0:? "CHARACTER REDEFINER":POKE 752,1
110 POSITION 14,2:? "PLEASE WAIT"
120 A=(PEEK(106)-8)*256
130 FOR I=0 TO 1023:POKE I+A,PEEK(57344+
I):SETCOLOR 4,RND(1)*16,5:NEXT I
140 GRAPHICS 0:SETCOLOR 2,0,0:POKE 752,1
150 ?  "
160 FOR I=1 TO 7
170 ? "I  I  I  I  I  I  I  I"
180 ?  "
190 NEXT I
200 ? "I  I  I  I  I  I  I  I"
210 ?  "
220 GOSUB 6000:? :? "HELP,REDEFINE,INVER
T"
230 ? "BACK,LOOK,END"
240 GET #1,K
250 IF K=72 THEN 1000
260 IF K=82 THEN 2000
270 IF K=73 THEN 3000
280 IF K=66 THEN 4000
290 IF K=76 THEN 5000
300 IF K=69 THEN 10000
310 GOSUB 6000:? "  ILLEGAL OPTION":GOSU
B 6100:GOTO 220
1000 GRAPHICS 0:SETCOLOR 2,0,0:POKE 752,
1
1010 POSITION 18,0:? "HELP":POSITION 18,
1:? "----":?
1020 ? "TYPE THE FIRST LETTER OF THE COM
MAND"
1030 ? "YOU WISH TO USE :"
1040 ? :? "HELP - BRINGS UP THIS MENU."
1050 ? :? "REDEFINE - CHANGE A CHARACTER
.AFTER"
1060 ? "CHOOSING THIS OPTION,YOU MUST TY
PE A"
1070 ? "A KEY TO BE REDEFINED (LOWER CAS
E IS"
1080 ? "ALLOWED).THIS WILL BE DISPLAYED
AS IT"
1090 ? "APPEARS NOW.YOU MAY THEN BEGIN F
RESH"
1100 ? "BY ENTERING A C TO CLEAR THIS,OR
 ALTER";
1110 ? "WHAT IS THERE BY TYPING A.MOVE"
1120 ? "THE CURSOR ('^') TO A SQUARE YOU
"
1130 ? "WANT TO CHANGE USING THE JOYSTIC
K."
1140 ? "PRESSING THE BUTTON WILL ALTER T
HAT"
1150 ? "SQUARE.IF THAT SQUARE WAS PREVIO
USLY"
1160 ? "FILLED IN,IT WILL BLANK IT,OR VI
CE"
1170 ? "VERSA."
1180 ? :? "PRESS ANY KEY TO CONTINUE"
1190 GET #1,K
1200 GRAPHICS 0:SETCOLOR 2,0,0:POKE 752,
1
1210 POSITION 18,0:? "HELP":POSITION 18,
1:? "----":?
1220 ? "INVERT - MAKE A CHARACTER THE EX
ACT"
1230 ? "OPPOSITE OF WHAT IT LOOKS LIKE N
OW."
1240 ? "i.e. 'E' WOULD BECOME 'E'"
1250 ? :? "BACK - CHANGE A CHARACTER BAC
K TO"
1260 ? "THE FORM THE COMPUTER USES.THIS
IS"
1270 ? "IN CASE YOU REDEFINE A CHARACTER
 YOU"
1280 ? "ACTUALLY WANTED."
1290 ? :? "LOOK - LOOK AT THE CHARACTER
YOU"
1300 ? "CHOOSE,AS IT APPEARS ON THE SCRE
EN"
1310 ? "NOT THE ENLARGED VERSION YOU WOR
K ON."
1320 ? :? "END - STOPS THE PROGRAM AND G
IVES YOU"
1330 ? "THE OPTION OF CREATING A PIECE O
F"
1340 ? "BASIC CODE TO USE IN YOUR OWN"
1350 ? "PROGRAMS,THAT WILL INSTALL THE N
EW"
1360 ? "CHARACTER SET FOR YOU."
1370 POSITION 0,22:? "PRESS ANY KEY TO C
ONTINUE"
1380 GET #1,K
1390 GOTO 140
2000 GOSUB 6000:? "  PRESS THE KEY TO":?
 "BE REDEFINED "
2010 GET #1,K
2020 IF K<91 AND K>31 THEN K=K-32
2025 ADDR=A+K*8:GOSUB 6200
2030 GOSUB 6000:? "  ALTER OR CLEAR"
2040 GET #1,K
2050 IF K<>65 AND K<>67 THEN GOSUB 6000:
? "ILLEGAL OPTION":GOSUB 6100:GOTO 2030
2060 IF K=67 THEN FOR I=3 TO 17 STEP 2:F
OR J=1 TO 15 STEP 2:POSITION I,J:? " ":N
EXT J:NEXT I
2070 GOSUB 6000:? "  USE JOYSTICK AND BU
TTON":? "TO ALTER CHARACTER":? "AT END H
IT ESC"
2085 X=3:Y=1:LOCATE X,Y,CHAR:POSITION X,
Y:? "^"
2090 S=STICK(0):IF S=15 THEN 2150
2095 COLOR CHAR:PLOT X,Y
2100 X=X+(S=7)*2-(S=11)*2
2110 Y=Y+(S=13)*2-(S=14)*2
```

ATARI PROGRAM

```
2120 X=X+(X(3)*2-(X)17)*2
2130 Y=Y+(Y(1)*2-(Y)16)*2
2140 LOCATE X,Y,CHAR:POSITION X,Y:? "^"
2150 IF STRIG(0)<>0 THEN 2180
2155 FOR I=1 TO 20:NEXT I
2160 IF CHAR=160 THEN CHAR=32:GOTO 2180
2170 CHAR=160
2180 IF PEEK(764)<>28 THEN 2090
2185 POSITION X,Y:? CHR$(CHAR)
2190 FOR I=1 TO 16 STEP 2:COUNT=128:BYTE
=0:FOR J=3 TO 17 STEP 2:LOCATE J,I,CHAR
2200 IF CHAR=160 THEN BYTE=BYTE+COUNT
2205 COUNT=COUNT/2
2210 NEXT J
2220 POKE ADDR+INT(I/2),BYTE
2230 NEXT I
2240 POKE 764,255
2250 GOTO 140
3000 GOSUB 6000:? " PRESS THE KEY":? "TO
 BE INVERTED"
3010 GET #1,K
3020 IF K(91 AND K)31 THEN K=K-32
3030 ADDR=K*8+A:GOSUB 6200
3040 FOR I=1 TO 15 STEP 2:FOR J=3 TO 17
STEP 2:LOCATE J,I,CHAR
3050 CHAR=(CHAR=160)*32+(CHAR=32)*160
3060 COLOR CHAR:PLOT J,I
3070 NEXT J:NEXT I
3080 GOSUB 6000:? "  ACCEPT OR REJECT":?
 "THIS CHARACTER"
3090 GET #1,K
3100 IF K<>65 AND K<>82 THEN GOSUB 6000:
? "  ILLEGAL OPTION":GOSUB 6100:GOTO 308
0
3110 IF K=65 THEN 2190
3120 GOTO 140
4000 GOSUB 6000:? "  PRESS KEY TO BE":?
"TURNED BACK"
4010 GET #1,K
4020 IF K(91 AND K)31 THEN K=K-32
4030 ADDR=K*8+A:GOSUB 6200
4040 GOSUB 6000:? "CONFIRM Y OR N"
4050 GET #1,J
4060 IF J<>89 AND J<>78 THEN GOSUB 6000:
? "  ILLEGAL OPTION":GOSUB 6100:GOTO 404
0
4070 IF J=78 THEN 140
4080 NORM=57344+K*8
4090 FOR I=0 TO 7:POKE ADDR+I,PEEK(NORM+
I):NEXT I
4092 FOR I=3 TO 17 STEP 2:FOR J=1 TO 15
STEP 2:POSITION I,J:? " ":NEXT J:NEXT I
4095 GOSUB 6200
4100 GOSUB 6000:? "  PRESS ANY KEY TO":?
 "CONTINUE"
4110 GET #1,K
4120 GOTO 140
5000 GRAPHICS 0:SETCOLOR 2,0,0:POSITION
18,0:? "LOOK":POSITION 18,1:? "----":? :
POKE 752,1
5010 ? "PRESS THE KEY TO BE LOOKED AT"
5020 GET #1,K
5030 ? "WHEN READY TO VIEW,PRESS ANY KEY
."
5050 ? "THE CHARACTER IS VIEWABLE IN MOD
ES"
5052 ? "MODES 0,1 AND 2.TYPE THE NUMBER
OF"
5054 ? "THE MODE YOU WISH TO VIEW IN,OR
TYPE"
5056 ? "ESC TO END."
5060 GET #1,J
5070 MODE=0
5080 GRAPHICS MODE:SETCOLOR 2,0,0:SETCOL
OR 4,0,0:COLOR K:POKE 756,A/256:POKE 752
,1:? " "
5090 IF MODE=0 THEN PLOT 20,10
5100 IF MODE=1 THEN PLOT 10,12
5110 IF MODE=2 THEN PLOT 10,6
5120 GET #1,J
5130 IF J=27 THEN 140
5140 IF J>47 AND J<51 THEN MODE=J-48
5150 GOTO 5080
6000 FOR I=20 TO 22:POSITION 0,I
6010 ? "                    "
6020 NEXT I
6030 POSITION 0,20
6040 RETURN
6100 FOR I=1 TO 500:NEXT I
6110 RETURN
6195 GRAPHICS 0:SETCOLOR 2,0,0
6200 FOR I=0 TO 7:LOC=PEEK(ADDR+I):COUNT
=8
6210 LOC2=LOC:LOC=INT(LOC2/2)*2
6220 IF LOC2<>LOC THEN POSITION COUNT*2+
1,I*2+1:? " "
6230 LOC=INT(LOC2/2):COUNT=COUNT-1
6240 IF LOC<>0 THEN 6210
6250 NEXT I
6280 RETURN
10000 GRAPHICS 0:SETCOLOR 2,0,0:POKE 752
,1:POSITION 18,0:? "END    ----":? :?
10010 POSITION 2,5:? "OPTIONS :"
10020 POSITION 5,7:? "E EXIT TO BASIC."
10030 POSITION 5,10:? "C EXIT TO BASIC H
ITH NEW CHARACTER":POSITION 7,11:? "SET
INSTALLED."
10040 POSITION 5,13:? "B CREATE BASIC PR
OGRAM TO INSTALL"
10050 POSITION 7,14:? "NEW CHARACTER SET
."
10060 GET #1,K
10070 IF K=69 THEN GRAPHICS 0:SETCOLOR 2
,0,0:END
10080 IF K=67 THEN GRAPHICS 0:POKE 756,A
/256:SETCOLOR 2,0,0:? "CHARACTER SET INS
TALLED.":? :END
10090 GRAPHICS 0:SETCOLOR 2,0,0
10095 TRAP 10110
10100 ? "ENTER START LINE NUMBER ";:INPU
T START
10105 IF START<32000 AND START>0 AND STA
RT=INT(START) THEN 10120
10110 ? "THAT IS NOT A NUMBER IN THE PER
MITTED":? "RANGE.":? :GOTO 10095
10120 DIM A(128):COUNT=1:? ")":POSITION
13,0:? "DO NOT DISTURB":POKE 752,1:? " "
10130 FOR I=0 TO 1023 STEP 8:ADDR=I+A:FL
AG=0:FOR J=0 TO 7
10140 IF PEEK(57344+I+J)<>PEEK(ADDR+J) T
HEN FLAG=1
10150 NEXT J
10160 IF FLAG=1 THEN A(COUNT)=ADDR:COUNT
=COUNT+1
10170 NEXT I
10180 GRAPHICS 0:SETCOLOR 2,0,0:COUNT=CO
UNT-1:IF COUNT=0 THEN ? "NO CHARACTERS R
EDEFINED.":? :? :? :END
10185 GOTO 32700
32700 X=USR(1536,10,10185)
32701 LL=1:COUNT2=1:LINES=1:POSITION 2,4
:START2=START
32702 ? START;" DATA ";:START=START+10
32704 IF COUNT2=1 THEN ? COUNT;",";
32706 NUM=A(COUNT2):? NUM-A;",";
32708 FOR I=0 TO 7:? PEEK(NUM+I);:IF I<>
7 THEN ? ",";
32710 NEXT I
32712 COUNT2=COUNT2+1:IF COUNT2>COUNT TH
EN 32718
32714 LL=LL+8:IF LL<16 THEN ? ",";:GOTO
32706
32716 LINES=LINES+1:LL=1:? :IF LINES<5 T
HEN 32702
32718 ? :? "CONT":POSITION 2,0:POKE 842,
13:STOP

32720 POKE 842,12:GRAPHICS 0:SETCOLOR 2,
0,0:POSITION 2,4
32722 IF COUNT2<=COUNT THEN LINES=1:GOTO
 32702

32724 START=INT(START/100)*100+100:GRAPH
ICS 0:SETCOLOR 2,0,0:POSITION 2,4
32726 ? START;" A=(PEEK(106)-8)*256":? S
TART+10;" FOR I=0 TO 1023:POKE A+I,PEEK(
57344+I):NEXT I"
32728 ? START+20;" RESTORE ";START2;":RE
AD NUMBER"

32730 ? START+30;" FOR I=1 TO NUMBER:REA
D ADDR:FOR J=0 TO 7"
32732 ? START+40;" READ Z:POKE A+ADDR+J,
Z:NEXT J:NEXT I"
32734 ? START+50;" POKE 756,A/256"
32736 ? :? "CONT":POSITION 2,0:POKE 842,
13:STOP

32738 POKE 842,12
32740 GRAPHICS 0:SETCOLOR 2,0,0:? "CHARA
CTER SET PROGRAM CREATED.TYPE"
32742 ? "RETURN TO LIST PROGRAM.":? :? "
L.":POSITION 2,1
32767 X=USR(1536,32700,32767)
```

BINARY VALUES

128	64	32	16	8	4	2	1	
								0
			1	1				24
		1	1	1	1			60
	1	1			1	1		102
	1	1			1	1		102
	1	1	1	1	1	1		126
	1	1			1	1		102
								0

ZX81 PROGRAM

Bowled over by your micro

Micro Bowls game by Timothy Lowe

If you've ever fancied yourself as a bowls player, my Micro Bowls program for the ZX81 plus 16K could be the next best thing.

When you run the program, it will set up the bowling green as shown in Figure 1. You must try to hit a number with your bowl — but mind you don't hit a space or the gutter.

You have 10 bowls, and as each descends the screen, press B to roll it forward.

If you hit a 10 you get 10 points, if you hit a space you score nothing, and if you hit the gutter, you're in for a nasty surprise.

```
GUTTER GUTTER GUTTER GUTTER GUTTER
                                  10
                                  10
                                  10
O                                 10
                                  10
                                  10
                                  10
                                  10
                                  10
                                  10
GUTTER GUTER GUTTER GUTTER GUTTER
```

Figure 1

```
  1 REM TIMOTHY LOWE "ZX81 MICR
O BOWLS"
  10 LET S=0
  20 FAST
  30 PRINT AT 0,1;"GUTTER GUTTER
 GUTTER GUTTER";AT 21,1;"GUTTER
GUTER GUTTER GUTTER GUTTER";
  40 FOR I=1 TO 20 STEP 2
  50 PRINT AT I,30;10
  60 NEXT I
  70 SLOW
  80 FOR U=1 TO 10
  90 FOR G=0 TO 21
 100 PRINT AT G,0;"O"
 110 PRINT AT G,0;" "
 120 IF INKEY$="B" THEN GOSUB 50
0
 130 NEXT G
 140 NEXT U
 150 PRINT AT 1,0;"YOUR SCORE=";
S
 160 STOP
 500 FOR C=1 TO 31
 510 PRINT AT G,C;"O"
 520 PRINT AT G,C;" "
 530 NEXT C
 540 IF INT (G/2)<>G/2 THEN PRIN
T AT G,30;10
 550 IF G=0 OR G=21 THEN PRINT A
T 1,0;"DISQUALIFIED"
 560 IF G=0 OR G=21 THEN STOP
 570 IF INT (G/2)<>G/2 THEN LET
S=S+10
 580 GOTO 140
```


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How to make your programs child-proof

Your computer can be a better teaching aid for children . . . if you follow these tips from primary school teacher Dave Carlos

Those of us who have to justify the purchase of a micro-computer with a "better" reason than that we like playing games, often use the children and their education as an argument.

What we mean by this is not usually very clear but we have vague notions of maths, English, geography and, of course, logic and computer literacy itself.

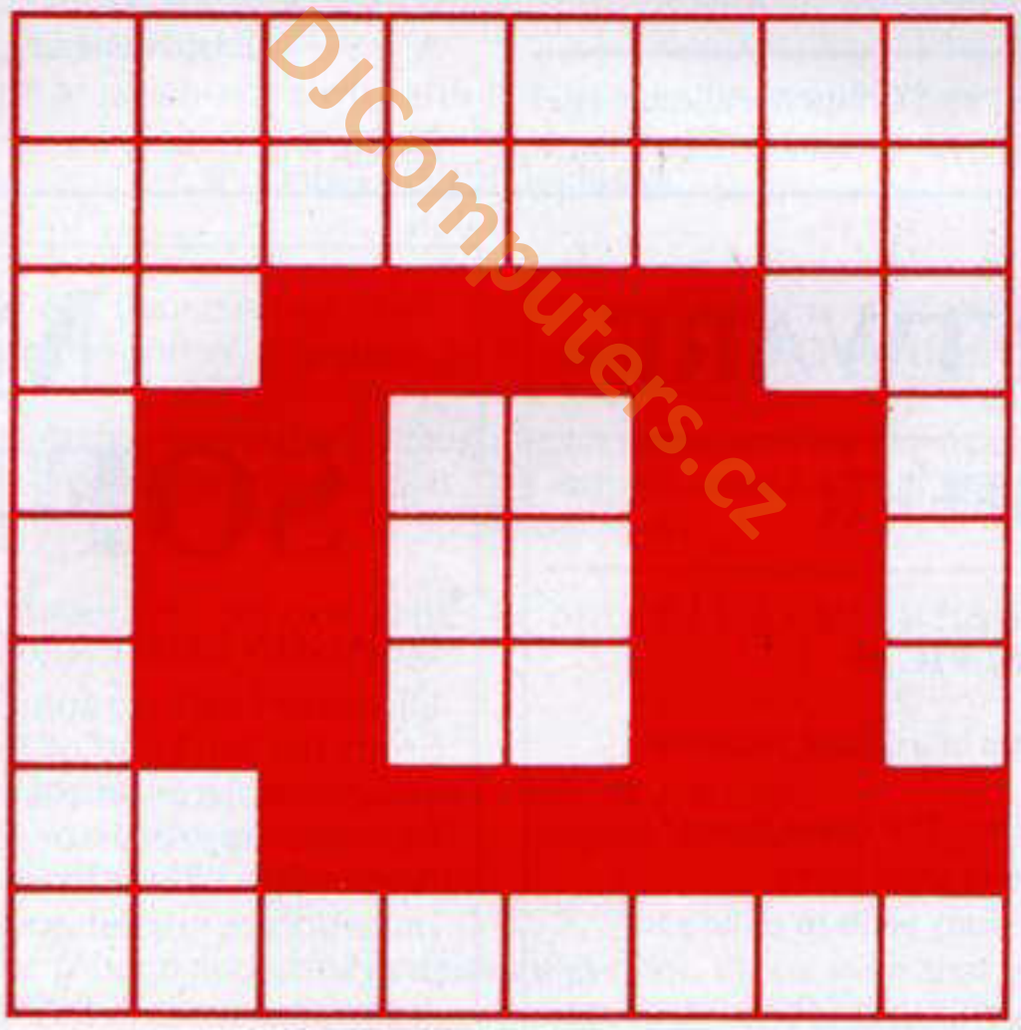
Eventually we may consider the purchase of educational software or may even write some.

Young children are taught to read using lower case lettering with capitals used only where necessary. The use of such things on the screen can give a good indicator of the thought which has gone into planning educational programs.

It is surprising how often all screen output is in block capitals even when the computer has lower case lettering available.

This makes the output much more difficult to read and can put some children off straightaway due to the difficulty of recognising even those words they know on sight. For these reasons it is vital that all output is in lower case. For very young children it may be possible and desirable to redefine certain characters to make them more recognisable and more like those they are taught to recognise in early reading books.

A prime example is the use of the letter 'a' which young children may not recognise while the letter 'ɑ' should present no problem.



BBC: VDU23,97,00,60,102,102,63,0

Figure 1 — user defined character for letter 'a'

```
10000   INPUT NAME$
10010   L=1: NAME2$ = ""
10020   A=ASC(MID$(NAME$,L,1))
10030   IF A>97 NAME2$ = NAME2$ + CHR$ (A - 32)
        ELSE NAME2$ = NAME2$ + CHR$ (A)
10040   L = L+1
10050   IF L>LEN (NAME$) GOTO (Next part of pro-
        gram)
10060   A = ASC (MID$(NAME$,L,1))
10070   IF A = 32 NAME2$ = NAME2$ + "": L=L+1:
        GOTO 10020
10080   IF A<97 NAME2$ = NAME2$ + CHR$ (A+32)
        ELSE NAME2$ = NAME2$ + CHR$ (A)
10090   GOTO 10040
```

Listing 1 — change NAME$ into initialised lower case. Result = NAME2$

The dot pattern for such a character is given in figure 1. User defined characters make things much easier for your child.

Many programs make laudable attempts to be 'user friendly' by asking for names to be input which are then used at regular intervals later. Unfortunately, however, if you have taken the advice of the last paragraph, input of names in capitals will look odd among the normal text. So it's essential that such input is changed to the more normal initialised name for future use.

There are two main methods. Firstly you could accept the input and check it for capitals, at the beginning or after a space, followed by lower case. If the pattern desired is not followed you could output a correction message and ask for more input, hopefully then of the right kind (but it should be rechecked).

The second method, probably better for young children, is to accept the input and change it to the pattern desired within the program.

This may be translated into a program such as Listing 1 (written in BBC Basic).

Remember then to use the output (NAME2$) or assign the new string to the old variable name (NAME$ = NAME 2$) for printing later in the program.

Data validation is also very important for children and this raises the problem of input prompts. ▶

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All programs should be introduced by an adult, so some of the basic information on responding to the program should be understood. But this doesn't do away with the need for the programmer to validate all input data before continuing the program.

Prompts should be obvious (flashing if possible), only on the screen one at a time (so as not to confuse) and should specify the range of input required.

A good prompt might be 'Type a whole number between 60 and 100 now' while the usual (bad) variety is 'Input a number'.

The number input should then be checked and only accepted if it is between 60 and 100 inclusive and an integer value. Anything else should be rejected with an appropriate message and the program should re-prompt for input again.

Letter input is more difficult to check, especially if one is prepared to accept both upper and lower case input. A simple yes/no answer might be validated by this program line:

```
500     INPUT A$ : IF A$<>"Y" AND A$<>"N" AND
        A$<>"y" AND A$<>"n" THEN GOTO 500
10      IF A$ = "Y" OR A$ = "y" GOTO (yes branch)
20      GOTO (no branch)
```

If one is expecting a choice from more than two letters the problems become huge and are better dealt with using character codes eg. for input A — G the validation would be:

```
500     INPUT A$ : IF ASC (A$)<65 OR ASC (A$)>103 OR
        (ASC(A$) >71 AND ASC (A$)<97) GOTO 500
```

Another technique might be to present multiple choice questions with a response number eg. 1 = Yes, 2 = No, 3 = Don't know etc. This makes the response easier to check and may be easier for the child than finding keys on a QWERTY layout.

My solution is to stick an infant lower case alphabet on top of the keys. My four-and-a-half-year-old son Jonathan finds this a great help. It makes very little difference to my speed and shouldn't affect a touch typist at all.

It is good practise always to document your programs, even if they are not intended to leave the house. This should include:

1 Name of program, title it is saved under and date of completion
2 A list of all the variables used and their purpose within the program. As an example see Listing 2
3 A list of all subroutines of procedures and their purposes

How it works

Long variable names are not allowed by some BASICS so change these as required, but remember which one is to be used in future or the procedure is worthless!

ASC (Names$) finds the ASCII code for the particular letter. This is the equivalent of CODE (NAME$) on Sinclair machines.

MID$(String, Letter, no. of Letters) is a slicing operator and can be changed to, say, NAME$ (L) on Sinclair computers.

Line numbering is high to make the point of this being used as a subroutine or procedure. Change this as required.

variable	type	purpose
NAME$	String	Initial input from player
L	Real Numeric	Letter counter
NAME2$	String	Final (output) name after changes
A	Real Numeric	ASCII value of letter being tested

Listing 2 — variable list

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Two modes, both of which can display 16 colours at one time, can be used by letting MU=O or 1. If MU=O, resolution is 320 by 200, with two colours per square. Squares may be different colours and are in the same pattern as character squares.

If MU=1, resolution is 160 by 200, and four different colours can be displayed in each square.

Lines up to 999 contain graphics routines. The first is SYS 40704. This clears the screen via machine code and may be called anywhere in a program.

All other routines are in BASIC and variables needed are given just before each routine. POINT is accessed using GOSUB 400, and only needs the X,Y co-ordinates. LINE uses GOSUB 600 and needs start and finish co-ordinates.

CIRCLE is the most complex routine, and is accessed using GOSUB 800. It uses an x,y radius so you can create ellipses. It also needs the co-ordinates of the circle's centre and the start and finish angle. For a full circle, start is 0 and finish is 2 PI, but arcs can also be made.

The final routine is Normal Screen, accessed using GOSUB 900. It simply puts the screen back into text mode during a program.

Two variables are used for colour. CP is the colour displayed, eg red, and CO is the number of the colour assigned within that square. For mode 0 this is 0 to 1, and for mode 1, 0 to 3.

The final part of the program is from line 1000 onwards, and is used for your programs. A demonstration program shows how to use the routines. Note line 1200, which lets you look at the display for as long as you want. All you do is press a key to return to normal mode.

```
1 REM*    GRAPHICS PLOTTING  *
2 REM*      BY DAVID REES    *
3 REM
5 REM*        INITIALISE     *
6 REM*MU=1 GIVES MULTICOLOUR*
7 REM
10 V=53248:CO=PEEK(V+33):MU=1:CP=1
20 FOR N=0 TO 71
30 READA
40 POKE 40704+N,A
50 NEXT N
60 POKE 55,255:POKE56,31:POKE51,255
70 POKE52,31:POKE781,CO:SYS40704
75 REM*      MACHINE CODE     *
76 REM* TO CLEAR THE SCREEN *
77 REM
80 DATA 169,0,133,251,169,32
90 DATA 133,252,160,0,169,0
100 DATA 145,251,230,251
110 DATA 197,251,240,2,208,246
120 DATA 230,252,169,64
130 DATA 197,252,208,236
140 DATA 169,0,133,251,169,4
150 DATA 133,252,160,0,136
160 DATA 145,251,230,251
170 DATA 169,232,197,251
180 DATA 208,7,169,7,197,252
190 DATA 208,1,96,152
200 DATA 197,251,240,4,138
210 DATA 24,144,230,230,252
220 DATA 24,144,224
230 POKE V+22,PEEK(V+22)OR(MU*16)
240 POKE V+17,PEEK(V+17)OR 32
250 POKE V+24,PEEK(V+24)OR8
260 A(0)=1:A(1)=16:A(2)=1:A(3)=1
270 B(0)=V+33:B(1)=1024
280 B(2)=1024:B(3)=55296
290 C(0)=240:C(1)=15:C(2)=240:C(3)=240
300 GOTO1000
398 REM* POINT CALCULATION AND PLOT *
399 REM*        POSITION=(X,Y)      *
400 XC=INT(X)/8
410 IF XC>39.9 THEN RETURN
420 IF MU=0 THEN 440
430 XB=2↑(2*INT(3-4*(XC-INT(XC))+0.5))
435 XB=XB*CP:GOTO450
440 XB=2↑INT(7-8*(XC-INT(XC))+0.5)
445 XB=XB*(CPAND1)
450 YC=INT(Y)/8
460 IF YC>24.9 THEN RETURN
470 YB=8*(YC-INT(YC))
480 CH=INT(XC)+INT(YC)*40
490 BY=CH*8+YB+8192
500 POKE BY,PEEK(BY)ORXB
510 IF MU=1 THEN 560
520 IF CP=1 THEN PO=PEEK(CH+1024)AND15
530 IF CP=1 THEN POKE CH+1024,PO+CO*16
535 IF CP=1 THEN RETURN
540 POKECH+1024,(PEEK(CH+1024)AND240)+CO
550 RETURN
560 IF CP=0 THEN CH=0
570 PO=PEEK(B(CP)+CH)ANDC(CP)
580 POKE B(CP)+CH,PO+CO*A(CP)
590 RETURN
596 REM*     LINE ROUTINE     *
597 REM*   START=(X1,Y1)      *
598 REM*   FINISH=(X2,Y2)     *
599 REM
600 XD=X2-X1
610 YD=Y2-Y1
620 XS=SGN(XD):IFXS=0THENXS=1
630 YS=SGN(YD):IFYS=0THENYS=1
640 XD=ABS(XD)
650 YD=ABS(YD)
660 D=XD-YD
670 IF D<0 THEN 740
```

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```
680 Y=Y1:YA=YD/XD*YS
690 FOR X=X1 TO X2+1 STEP XS
700 GOSUB 400
710 Y=Y+YA
720 NEXT X
730 RETURN
740 X=X1:XA=XD/YD*XS
750 FOR Y=Y1 TO Y2+1 STEP YS
760 GOSUB 400
770 X=X+XA
780 NEXT Y
790 RETURN
795 REM*    CIRCLE ROUTINE    *
796 REM*    RADIUS=RX,RY      *
797 REM*    CENTRE=CX,CY      *
798 REM*    START ANGLE=A1    *
799 REM*    FINISH ANGLE=A2   *
800 R=(RX↑2+RY↑2)↑0.5
810 S=π/(R↑0.7+0.01)
820 RX=ABS(RXAND511)
830 RY=ABS(RYAND255)
840 FOR A=A1 TO A2 STEP S
850 X1=CX+RX*COS(A):X2=CX+RX*COS(A+S)
860 Y1=CY+RY*SIN(A):Y2=CY+RY*SIN(A+S)
870 GOSUB 600
880 NEXT A
890 RETURN
899 REM* NORMAL SCREEN *
900 V=53248
910 POKEV+24,PEEK(V+24)AND247
920 POKEV+17,PEEK(V+17)AND223
930 POKEV+22,PEEK(V+22)AND239
940 PRINT"□"
950 RETURN
997 REM* DEMONSTATION PROGRAM *
998 REM*     CO=DRAW COLOUR     *
999 REM*    CP=COLOUR PUT IN    *
1000 CO=0:CP=1
1010 X1=150:Y1=60:X2=150:Y2=140
1020 GOSUB600
1030 X1=100:Y1=100:X2=200:Y2=100
1040 CO=1:CP=2:GOSUB600
1060 CX=150:CY=100:RX=35:RY=30
1070 A1=0:A2=2*π
1080 CO=5:CP=3:GOSUB800
1090 CO=1:CP=2
1100 FOR N=0 TO 99
1110 X%=RND(1)*320:Y%=RND(1)*200
1120 X=X%:Y=Y%
1130 GOSUB 400
1140 NEXT N
1200 GETA$:IFA$=""THEN1200
1210 GOSUB900
```

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PLUS — HOT OFF THE PRESS — EPSON HX-20 PORTABLE SOFTWARE

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Dicomputers.cz

Learning letters can be fun with the VIC-20

A micro could become your child's favourite teacher. Vic Rogers presents two programs to teach letter recognition and spelling. And John Cullen has written an anagram game especially for younger children

Letter recognition/spelling

Teaching children basic skills like the alphabet and spelling can be an uphill task — especially if your child would rather run off and play. My two programs for the unexpanded VIC-20 are designed to make learning fun.

The first will encourage three- to five-year-olds to recognise letters of the alphabet — but they will need some help from an adult. Line 100 chooses a letter of the alphabet at random and displays it on the screen for four seconds (line 210).

The child then tries to press the matching key. If they get it right, the computer plays a scale (lines 500-620).

If they press the wrong key the computer makes an explosion sound and shows them the right answer (lines 300-440).

My second program is for older children, and will help with school spelling lists. It is written to cope with 10 words, but can be altered to suit shorter or longer lists by altering lines 210, 215 and 4050.

Parents should make sure the right spellings are input (line 220) to start off with.

Each word is displayed individually and then spelt out letter by letter (lines 520 and 570).

The screen clears and the child is then asked to type the word. If it is spelt wrongly, the correct spelling is given (line 3810) before going on to the next.

A score of correct answers is kept, and the program lets your child run through the list of words again.

DJComputers.cz

Anagrams

My anagram game, Build a House, is written for the VIC-20 plus 3K expansion. It helps young children improve their spelling by getting them to unscramble

```
1 OPEN1,4
2 CMD1:LIST
5 REM**LETTER RECOGNITION**
10 POKE36879,25
20 PRINT"□"
25 FORT=1TO3000:NEXT
28 PRINT"■■■■■■■■■■■■HELLO"
30 PRINT"■■■■■■■■■■■■■■NAME OF CHILD"
40 FORT=1TO5000:NEXT
42 PRINT"□":FORT=1TO2000:NEXT
50 POKE36879,174
60 FORT=1TO2000:NEXT
100 X=INT(RND(1)*90)+1
150 IFX<65GOTO100
180 PRINT"□":PRINT:PRINT:PRINT:PRINT:PRINT
200 PRINTTAB(10)CHR$(X)
210 FORT=1TO4000:NEXT
215 PRINT"□":PRINT:PRINT:PRINT:PRINT:PRINT
240 INPUT"■■■■■■■■■■■■";A$
250 IFA$=CHR$(X)GOTO500
280 IFA$<>CHR$(X)GOTO300
300 POKE36879,59:PRINT"□"
310 POKE36877,220
320 FORL=15TO0STEP-1
330 POKE36878,L
340 FORM=1TO300
350 NEXTM:NEXTL
360 POKE36877,0
370 POKE36878,0
400 PRINTTAB(6)  "■■■■■■■■■■■■■ OH DEAR ■"
410 PRINT"■■■■■■■■■■■■■■■■IT WAS"
420 PRINT:PRINT:PRINT:
430 PRINTTAB(10)CHR$(X)
440 FORT=1TO4000:NEXT:PRINT"□":GOTO50
500 POKE36879,154
510 PRINTTAB(6)"■■■WELL DONE"
520 POKE36878,15
530 FORL=1TO200STEP-2
540 POKE36876,L
550 FORM=1TO100
560 NEXTM:NEXTL
570 FORL=205TO250STEP2
580 POKE36876,L
590 FORM=1TO100
600 NEXTM:NEXTL
610 POKE36876,0
620 POKE36878,0
625 PRINT"□"
640 GOTO50
705 CLOSE1,4
```

Listing 1 — letter recognition

jumbled words.

If they succeed, they see a house being built up layer by layer.

If they get a word wrong, though, the house disappears by one layer and the computer tells them the right word.

Line by line, this is how the program works.

0	CHR$(8) disables the switching case keys
10	dimensions the appropriate variables: B% = data for house. A% = actual characters to be poked for the house. C% = colour of house: 0 = Black, 2 = Red, 7 = Yellow.
20	XX = value to be poked into sound registers 128 =XX =255. SC = location on the screen from which the house is built down. The screen starts at 7680, ends at 8185 and is 22 characters wide, SD = equivalent colour map for the screen, VO = volume. 15 = full volume, 0 = off. S1 = sound register.
30	VO+1 = 36879 = screen and border colours — 138 = orange screen/red border. RI = number of words spelt correctly. WR = number spelt wrongly. WO = number of words given.
40	is a subroutine to input words as data from tape.
50	works out the data for the house.
60	is a subroutine to pick words at random.
70	TI$ = system clock. Used to time up to 20 seconds.
100-150	fetches a character and checks to see if it is alphabetic.
110	just in case you have the shift lock on.
120-130	checks to see if you pressed the delete key.
140	checks for return key.
160-190	checks to see if the word is correct or not.
200-230	Word was wrong, so deletes a line from the house.
240-280	Word was right, so builds up a line on the house.
290-360	House finished, so plays a little tune.
370-470	End routine.
370-390	Score routine — CHR$(14) switches to lower case letter. CHR$(142) switches back to upper case letters.
370	The character before OUR is a shifted letter Y
380	Charters are:-∧N, 0,∧@,∧N, O∧X,∧N.
400	Character is∧W.
480	gradually decreases volume giving piano effect on note played.
490-540	Subroutine to input word data from tape.
550-600	selects and prints out an anagramed word at random.
610-680	Instructions — CHR$(18) prints everything after in reverse.
690-700	House characters and colour.
710-740	House data.

The program in Listing 2 just reads and prints data to tape.

As an extra idea, you could build up several files of data, containing words with just three, four, five and six letters for example. To do this, just alter the DATA in Listing 2.

If you have more than 3K expansion, then type the following BEFORE loading:

POKE 648,30: POKE 642, 32: POKE 36869, 240: POKE 36866,150: SYS 58232.

```
1 OPEN1,4
2 CMD1:LIST
5 REM**SPELLING**
10 PRINT"□"
15 REM**TITLE AND INSTRUCTIONS**
20 PRINT"■■■■■■■■■■■■SPELLING"
40 PRINT"■■■■■■■■■■■■BY"
45 PRINT"■■■■■■■VIC ROGERS"
50 GOSUB5000
60 PRINT"□"
70 PRINT"■■■■■■■■TYPE IN EACH WORD"
80 PRINT"■■■■CAREFULLY AND PRESS"
90 PRINT"■■■■■■■■■■■■RETURN■"
100 GOSUB5000
200 REM**WORD INPUT**
205 PRINT"□"
210 DIMW$(10)
215 FORC=1TO10
220 INPUTW$(C)
230 NEXTC
250 GOSUB5000
260 PRINT"□"
450 REM**SET SCORE**
460 S=0
500 REM**DISPLAY WORDS**
505 PRINT"□"
510 FORQ=1TO10
520 PRINTTAB(2)W$(Q);
530 GOSUB5000
535 FORR=1TO2
540 L=LEN(W$(Q))
550 PRINT"□"
560 FORX=1TOL
570 PRINTTAB(2)LEFT$(W$(Q),X)
580 GOSUB2000
590 PRINT"□"
600 NEXTX
605 NEXTR
610 GOSUB3000
615 GOTO620
620 NEXTQ
630 GOSUB4000
2000 FORT=1TO1000:NEXT:RETURN
3000 REM**TEST ON WORD**
3010 PRINT"□"
3020 PRINT"■■■■■NOW ITS YOUR TURN"
3030 PRINT"■■■■TO SPELL THE WORD"
3040 PRINT"■■■(THEN PRESS RETURN)■■"
3050 INPUTV$
3060 IFV$=W$(Q)GOTO3500
3070 IFV$<>W$(Q)GOTO3750
3500 PRINT"□"
3505 S=S+1
3510 PRINT"■■■■■■■■■■■■ELL DONE"
3520 PRINT"■■NOW TRY THE NEXT WORD"
3530 FORT=1TO3000:NEXT
3535 PRINT"□"
3540 RETURN
3750 PRINT"□"
3760 PRINT"■■■■■■■■■■OH DEAR"
3770 PRINT"■■■■YOU GOT IT WRONG"
3780 FORT=1TO3000:NEXT
3790 PRINT"■■THE RIGHT SPELLING IS■■■■"
3800 FORT=1TO1500:NEXT
3810 PRINTTAB(2)W$(Q)
3820 FORT=1TO3000:NEXT
3830 PRINT"■■NOW TRY THE NEXT WORD"
3840 FORT=1TO2000:NEXT
3845 PRINT"□"
3850 RETURN
4000 REM**SCORE**
4010 PRINT"□"
4020 PRINT"■■THATS THE END OF THE"
4030 PRINT"■■TEST AND YOUR SCORE IS■■■"
4040 PRINTTAB(9)S
4050 IFS=10THENPRINT"■■■■■■■■ELL DONE"
4060 FORT=1TO3000:NEXT
4065 PRINT"□"
4070 PRINT"■■■IF YOU WOULD LIKE"
4080 PRINT"■■ANOTHER GO WITH THESE"
4090 PRINT"■■WORDS PRESS 'Y'■■"
4095 INPUTY$
4100 IFY$=CHR$(89)GOTO450
4110 IFY$<>CHR$(89)GOTO6000
5000 FORT=1TO3000:NEXT:RETURN
6000 END
7000 CLOSE1,4
```

Listing 2 — spelling

DIGITAL computer.ex

```
0 PRINTCHR$(8):ST$="■■HIT A KEY TO BEGIN":GOSUB610
10 DIMB%(238),A%(14),C%(14):DEFFNA(A)=INT(RND(1)*A)+1:PO$="■■■
```

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Let me first of all tell you a little about myself. I am 52 years of age and I am placing this advertisement at a time that is near to my contemplated retirement. I wish retirement in order that I can find time to commence writing my second book, more of this later.

Are you unemployed?—maybe recently made redundant?—or are you just fed up with your work and need a change?—then why not **BECOME YOUR OWN BOSS** and start making some **REAL MONEY** for **YOURSELF**.

CHANGE YOUR WHOLE LIFESTYLE.

THIS WILL BE THE SUCCESS STORY, of not only 1983—**BUT OF ALL TIME**.

Let me tell you—it is not so very long ago that I was BROKE, yes completely and utterly BROKE. The Bank Manager would not even see me for a loan, let alone grant me one, and I was paying off my debts by small instalments to avoid Court Action for Recovery or even Bankruptcy.

We were renting a very small, very old house (since demolished) paying at that time 10/- weekly rent—this sum we had to literally 'scrape' together each week.

We did have (I say **did** have) an old 'banger' of a car, for which I had originally paid £140 on Hire Purchase.

One day along came the Hire Purchase Company Representative to repossess the car—as I then owed them two monthly rentals of £9 each (that was the amount of the monthly rental)—so that was the end of the car and the money paid on it—all lost.

I knew then that I had to do something about this terrible state of affairs—**I KNEW I COULD DO IT**.

I had been 'working on' an idea that I had held **SECRET** for many, many years.

Remember—**I WAS BROKE**—in fact, somehow I managed to save the sum of TWO POUNDS (£2) assisted by my wife who had such great faith in me, however just this two pounds to commence—I have never looked back since and I have come a very, very long way, believe me.

I NOW HAVE THREE CARS.

I HAVE A LUXURY HOME and builders have recently completed an extension for me, quite costly of course, it is worth a SIX FIGURE SUM (£100,000) to me now, or if you prefer American Dollars, about **$189,000**.

My wife, our daughter and myself live very, very comfortably—TO SAY THE LEAST, surely this you now realise.

To give you just two recent examples of my **weekly** payments into my bank account, WORKING PART TIME ONLY REMEMBER—

They were £3,649—THREE THOUSAND, SIX HUNDRED AND FORTY-NINE POUNDS, or if you prefer it in American Dollars, about **$6,896**.

The second one for £1,836—ONE THOUSAND, EIGHT HUNDRED AND THIRTY-SIX POUNDS, again if you prefer it in American Dollars, about **$3,470**.

Proofed this paper.

Remember, THESE ARE JUST TWO RECENT WEEKS AS EXAMPLES FOR YOU, working only PART TIME, now are you interested?

This advertisement has been written for YOU—YOU can decide which is best for you—to be broke or to HAVE MONEY—YOU DECIDE, you have my MONEY REFUND INCLUDED of course. There are ONLY TWO KINDS OF PEOPLE IN THIS WORLD—Those who say it can't be done—**AND THOSE WHO DO IT**—like Myself and now, very shortly YOU.

The book I sell is NOT a book of ideas, whereby you have to 'sort out' and secure your own eventual business ideas—It is NOTHING LIKE THAT—it details ONE BUSINESS ONLY at which I've succeeded and at which you will now succeed—it trains you for this ONE BUSINESS ONLY, there is NOTHING ELSE.

I knew what I wanted, when I was down and out—at that time NO ONE WAS INTERESTED IN MY PROBLEMS, this is natural of course—do you know what you want? If it is the ROAD TO RICHES and you SINCERELY wish it, this is for you.

Protect your future and your self respect, whilst at the same time protecting your Family in the future—START MAKING SOME REAL MONEY FOR YOURSELF and STOP DREAMING about it. I've known absolute poverty, been right down, on the floor, it is not very nice—but I DID NOT INTEND TO REMAIN THERE—compare that position with what I have today—apart from my income—THREE CARS—LUXURY HOME—and, Oh Dear so much more than words can ever tell you.

I made all the mistakes, discovered all the pitfalls along the way—**and I paid for them**—none of these will befall you, as you have MY BOOK to guide you and to train you.

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Within THREE WEEKS of my commencing on my own, in this business, I can tell you—

I HAD PAID OFF ALMOST ALL OF MY DEBTS AND BOUGHT A CAR, yes within the first THREE WEEKS.

YOU can decide how big you wish to become, it was my intention never to get too large, so I simply 'cut down' and worked only part time, enjoying life to the full and the rest of the time doing whatever I WISHED TO DO, no matter what it was—Fantastic—yes, BUT TRUE.

I make my offer at this time, to enable me to secure more time to write my second book, it will take me at least 12-18 months, but when it is published it will prove to be a sensation, believe me.

It is my intention to pass on the SECRET OF MAKING MONEY to YOU, I KNOW you are already very anxious to learn about it. Even if you are at present employed, you will commence part time, you will soon be presenting your notice to your present employer—TO WORK FOR YOURSELF—remember my own first three weeks—I EVEN BOUGHT A CAR.

Why 'line the pockets' of your employer any longer, start 'lining your own' before you leave it too late. I am not making this offer to MAKE YOU RICH, in order to make myself rich, it is not necessary, you already know why. Working part time, my last financial year shows income well in excess of £70,000 with profits at over £11,000—yes JUST PART TIME, this can be multiplied many times if necessary. For those who wish it, in American Dollars again, this amounts to about **$**132,300 and profits about **$**20,790.

I mentioned already that "More than half of the people in the World are Asleep", this is what allows the rest of us (Me and You) to MAKE THE REAL MONEY—because you are about to become one of the AWAKE people—if you WISH TO GROW RICH.

The pessimists say—"It is not possible to succeed on your own any more"—what utter rubbish and absolute nonsense—these people belong to the category that are ASLEEP—believe me, it is easier now than ever it was, but only those who WANT TO MAKE MONEY do so, I KNOW.

I was talking to a Rolls-Royce Owner recently, who said, 'the roads are paved with gold—people just will not help themselves'—it is TRUE you know, it is there for you to help yourself. Just taking, as a small example for you my most recent four years of part time working—on each of those years my income has increased each year over the preceding one—whilst others around me have closed down and gone into Bankruptcy.

Just examine again some of the cash figures I have given you herein, this is only a part, I'm not disclosing everything to you of course, just sufficient to give you an idea of what YOU can now do in my line of business. I started with a capital of just TWO POUNDS.

This offer is made under my MONEY REFUND, it is your GOLDEN OPPORTUNITY OF A LIFETIME TO MAKE MONEY, it is YOUR SUCCESS that matters to me, hence this REFUND OFFER.

Are you prepared to send me just ten pounds (£10) to receive My Book with details of this new business for yourself, you can commence right away. The ROAD TO RICHES awaits you, despatched to your within 48 hours of your order reaching me. Money Refunded if you do not agree and you return to me within 7 days—can I be any fairer than this?

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Name .....

Address .....

.....

..... HCW6

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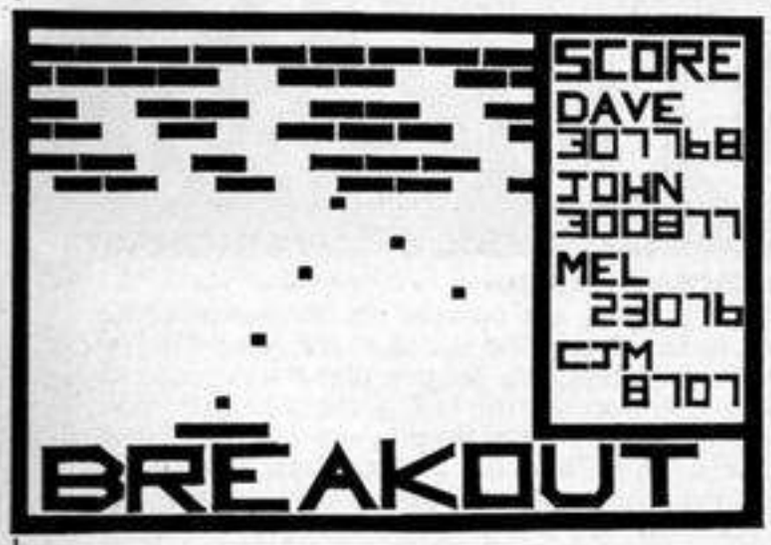

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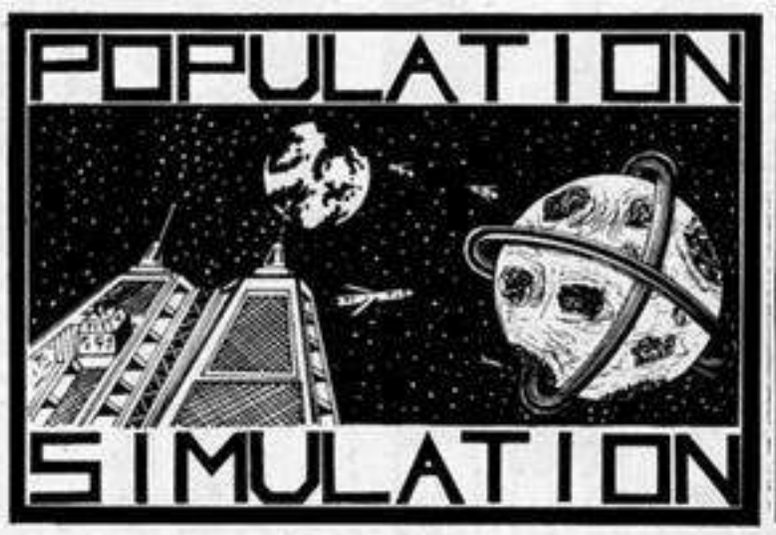

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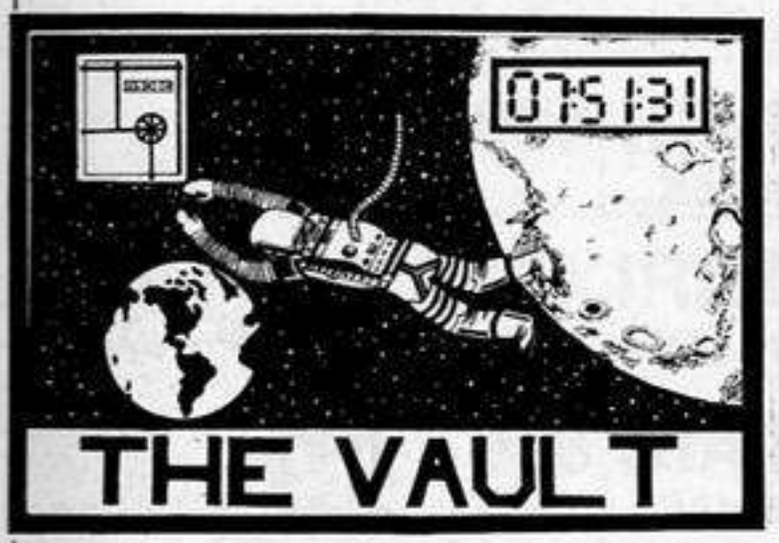

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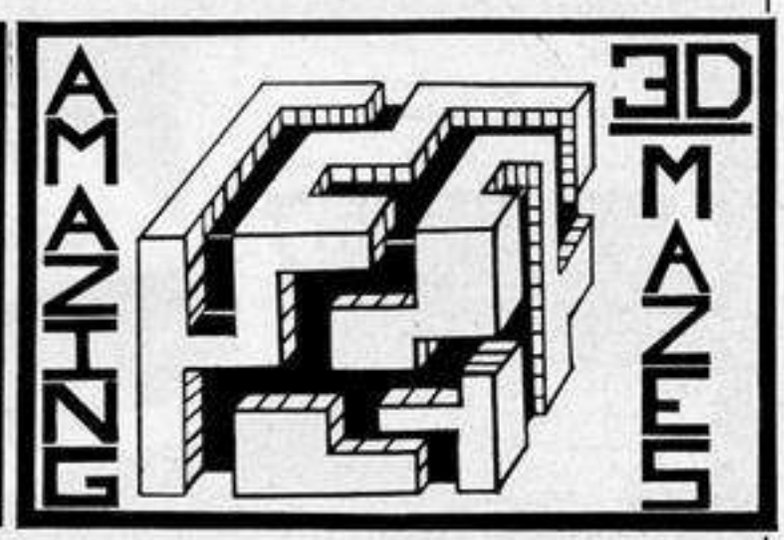

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