

Home Computing WEEKLY

An Argus Specialist Publication

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No. 16

38p

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Oric, Atari,
Sharp
MZ-80A,
TI-99 / 4A

Software reviews for:
Spectrum,
BBC, VIC,
Dragon, Oric,
BBC and 64

Micro tips for:
ZX81
Spectrum,
VIC, Oric,
TI-99 / 4A

HOW I'LL PROBE THE PIRATES

EXCLUSIVE

LAWYER Anne Staines has begun a probe into software piracy with a bid to uncover the scale of the problem.

Mrs Staines is putting questions to software companies — and she appealed for facts from readers of Home Computing Weekly.

In an exclusive interview she said: "There are two things I want to find out first.

"One is the size of both the hardware and the software market and the relationship between the two.

"My findings so far have tended to the idea that they are closely related. I want to know about the turnover, the profit margins and estimates of growth.

"And the other thing we want to find out is the amount of piracy. It's so unscientific at present. We have got all sorts of weird statistics."

One of these doubtful statistics said that for every one of the VisiCalc database package for businesses there were 10 copies.

Mrs Staines said: "I thought that was ridiculous. They were talking about 11m copies of VisiCalc."

Mrs Staines, 28, is a barrister and has a second degree in international law.

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Anne Staines

Vicar defeated over micro

EXCLUSIVE

A VICAR was forced to remove his electronic hymn board, run by a 16K ZX81, because of complaints from worshippers.

"Some people thought it was too gimmicky," said the Rev Malcolm Kitchen, of St Mary's, Wollaton Park, Nottingham.

Mr Kitchen had mounted a TV monitor in his church and one of his sons operated the computer

to display 10in numbers showing hymns and pages in the new-style Anglican prayer book.

He said "I would program it before the services and my son would just press a key to move it forward.

"I'm not using it now because, although the congregation liked it, one or two people

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HCW16

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Continued from front page

She is a senior lecturer at Newcastle Polytechnic's School of Law and the city has given her a grant — to include a research assistant — to carry out a two-year investigation.

So far she has found that there are three different types of software piracy:

- The commercial black market. Many crooks had moved into software after being driven out of video piracy when the industry cracked down. The British Videogram Association had pressed trading standards officers to use the Trade Descriptions Act. Fake software — mainly cartridges — was also coming in from countries like Taiwan.

- The disguised imitation. Mrs Staines said: "This is the reverse of counterfeiting — the idea of the software is the same, but you market it as your own idea."

- Seeping. This is where users make copies for each other. Mrs Staines said: "It's like a friend asking for a copy of record. You wouldn't dream of refusing. This to date seems to be the biggest problem."

In the next few weeks Mrs Staines will be sending out a detailed three-part questionnaire to software houses, including members of the Computer Trade Association.

She said "I'm trying to get feedback from both industry and the home users.

"First of all we hope to find out the state of the software market and what the market is doing.

"And we need to find out if piracy is going to adversely affect the market. It may be that cheap software may encourage more sales."

Mrs Staines' questionnaire will cover these points:

- Type of business, product line, number of employees, turnover, profit.

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Continued from column 1

- The kind of piracy they have discovered and what they do when it is discovered — legal action or out-of-court settlement.

- What do they think of the present law? Should there be a tightening up with higher penalties?

Mrs Staines expects to have some conclusions within 12-18 months with some broad guides in six months.

The School of Law, Newcastle Polytechnic, Newcastle NE1 8ST

Doing the light fantastic

Publicity given to Chris Sievey's new single with ZX81 programs on the B-side (see HCW 11) has caused much gnashing of teeth in Hertfordshire. For Hemel-Hempstead-based band Mainframe say that they did it first.

"We had the idea of doing a single incorporating a computer program back in June last year, and released a record in February," said Mainframe's John Molloy. "But because we don't have the backing of a big record company like EMI, our record wasn't publicised — even though the master was made at EMI's Abbey Road studios."

Now Mainframe is about to release a new single, Talk To Me, under its own MC² record label. The A side will contain music, and the B side will have four programs, one each for the ZX81, Spectrum and BBC as well as the Apple.

The ZX81 program will just generate a text message. But owners of the other three micros will be able to use their programs as a sound-to-light generator, producing a version of the video display that the two-man band — John Molloy on keyboard and vocals, and Murray Munro on guitar, vocals and keyboard — use in their live show.

MC² Music, 24 Missden Drive, Hemel Hempstead, Herts

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thought it was too gimmicky, even though it did not look like a TV.

"I was defeated in the end by people's reaction to modern technology.

"Older people liked it because if they lost their place they could just look up and see where they were.

"It was students who took most offence — they didn't like it at all. I was taking a bit of stick from on or two so we withdrew it after it had been in use for about a year."

But computers are steadily moving into other aspects of church life. The Church Computer Users' Group has 340 members paying £2 annual subscription and it publishes three 28-page newsletters each year.

Mr Kitchen keeps his congregation's names and addresses in a database which reminds him at the beginning of each week who he is due to visit.

And his ZX81 also helps him select hymns. They are listed according to theme and when they last sung in his church. These two programs are also being used by other clergymen.

A Birmingham vicar, the Rev Nigel Hardcastle, has put maps of the Holy Land and Bible stories on his 48K Spectrum.

Children at Sunday school are asked questions in the map program and if the answer is correct animated figures appear — the Three Wise Men move across the screen to Jerusalem and Joseph travel from Nazareth to Bethlehem.

The Bible stories program again uses question and answers with cartoon versions of stories like the Prodigal Son. Mr Hardcastle sells these two programs at £3.50 each.

He also uses his computer to help choose hymns. Using Campbell Systems' Masterfile, he has built a database of 200 hymns from Ancient and Modern, listed by first line, metre, tune and theme.

A sample newsletter is available from Mr Hardcastle on receipt of a stamped addressed envelope. The group is not confined to clergy.

The newsletter editor is the Rev R. Stoker Wilson, vicar of St John's, Ryton, Tyne and Wear. He said group membership spanned most denominations and a wide range of computers.

The two main uses for computers were word processing and for storage of parish files, including lists of church members, baptisms, weddings and funerals.

Mr Wilson uses his Genie and Epson printer to cut stencils for parish notices, including a wedding checklist for couples to be married.

He said: "Using computers gives you more time for people." *The Rev Nigel Hardcastle, Church Computer Users' Group, 112 Rotherfield Road, Garretts Green, Birmingham B26 2SH*

Programs for primaries

Book publishers Longman and Ladybird have joined forces to bring out a range of software for use in primary schools.

There are four programs initially, all for the BBC B.

Rally, which comes in two versions A and B for different abilities, encourages children to learn arithmetic. Cars visit different towns on a grid, getting more fuel each time the child gets a sum right.

Terrible Tales is a text-based program in which children read about monsters and giants and then invent their own. The computer then asks them to estimate the sizes of things the giant might use.

And in **Sheepdog**, the child has to use Bonzo the dog to direct sheep into a pen. Younger children can use the cursor keys, while older ones use points of the compass.

The programs were developed at Loughborough University and masterminded by teacher Tony Gray. They were tried out in a wide range of primary schools in Leicestershire and Nottinghamshire before being put on to the market.

According to David Jamieson: "We will be doing trade versions of the programs at a later date, but this is essentially a school-based project."

A new batch of programs out in September will include Basic Number Help and Other Worlds.

The programs cost £9.95 including teacher's notes and pupil's work cards.

Geoff Gallagher, Longman Group Resources Unit, 33-35 Tanner Row, York YO1 1JP

'Surprised' Sir Clive

Computer wizard Clive Sinclair said his knighthood came as "a wonderful surprise."

Sir Clive, 42, chairman and chief executive of Cambridge-based Sinclair Research, was knighted in the Queen's Birthday Honours.

He said: "The award of a knighthood is a truly great honour and one I value very highly. It was completely unexpected and a wonderful surprise.

"More than ever, I feel committed to achieving success here, in and for Britain."

And a spokesman for the company said: "We are all delighted for him."

Sir Clive, London-born, left school at 17 and was a technical journalist for four years. He formed his own company in Islington in 1962, selling kits for radios and amplifiers by mail order.

Despite losses over a Black Watch project — blamed on chip supplies — he progressed through calculators, pocket TVs and other products until, in 1979,



Sir Clive Sinclair

the National Enterprise Board and the then Mr Sinclair parted company. He formed Sinclair Research.

Now the company expects its Spectrum computer — which followed the ZX80 and the ZX81 — to sell more than 400,000 worldwide this year. With the ZX81 still selling in healthy numbers, Sinclair says it expects to have 60 per cent of the personal computer market in the UK this year.

Both computers are also on sale in more than 30 other countries.

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Software firms in compiler clash

According to Softek boss Tim Langdell, Silversoft has set a "dangerous precedent" by using the Softek Super C compiler for commercial programs without Softek's permission.

The compiler automatically converts Basic programs to machine code, and was used in Silversoft's latest batch of Spectrum programs, including Slippery Sid.

Page one of the manual supplied with the compiler states that Softek retains the right to control over the sale of commercial programs produced using Super C. Softek has offered to let Silversoft use the compiler for its programs on payment of a 5 per cent royalty.

Tim Langdell said: "If Silversoft get away with this, then conditions of sale — which they've fought for — aren't valid.



Silversoft's David Paterson

They're cutting their own throats by taking this action.

"If they'd had to write Slippery Sid from scratch in machine code, it probably wouldn't be finished yet. Seeing that you'd pay a machine code programmer a 25 per cent royalty, I don't think that 5 per cent is a lot to ask. The ironic thing is that if this case comes to court, the legal costs will amount to far more than the 5 per cent anyway."

David Paterson of Silversoft said: "A compiler is a tool — just like a Black and Decker drill. You wouldn't expect to pay a royalty

to Black and Decker every time you drilled a hole, would you? There are other compilers on the market, and no-one else charges a royalty for using them.

"The conditions of sale angle does put me in a difficult position as regards credibility. But the point is, when software libraries contravene conditions of sale, they're ripping software companies off. I don't think we're ripping Softek off by using their compiler. A compiler has no other function than to compile."

According to Tim Langdell, "We offer a refund to anyone who finds the condition of sale unacceptable. So far only two people have asked for the refund, and we've sold well over 3,000 now — the compiler has sold like an arcade game."

But David Paterson says that for the condition of sale to be valid, it should be displayed at the point of sale — and that when Silversoft bought Super C, the condition was only stated in the manual.

Tim Langdell is still considering what action to take against Silversoft, but says he definitely will take action. "They're in blatant breach of our sales agreement. If copyright exists, they've breached it. Our legal adviser thinks we've got a watertight case."

Silversoft's lawyers, on the other hand, reckon that Softek "hasn't got a leg to stand on."

Lock up your joysticks

Thorn EMI is aiming to give your joysticks a nervous breakdown with four new cartridge games for the VIC and Atari.

VIC owners can travel seven thousand leagues under the sea with *Submarine Commander*, or fight off power-and aliens in *Fourth Encounter*.

While Atari owners can go to the aid of trapped explorers in *River Rescue* or defend castle battlements in *Oric Attack*.

Thorn-EMI Video, Thorn EMI House, Upper Saint Martin's Lane, London WC2H 9ED

Get it down on paper

If you need plain paper printouts from time to time, but don't want to spend upwards of £200 on a plain printer, Loophole Software has a service for you.

It has started a club which for an annual membership fee of £12.50 offers members the use of a printer and operator for producing listings, letters, graphics printouts and other copying facilities. Apart from the annual fee, you just pay for the cost of paper at around 1p per sheet.

So far, the club caters for the BBC micro, Spectrum and ZX81. It will soon be supporting View and Wordwise, enabling BBC owners to have the advantage of word processing for just the cost of the ROM chip.

For the future, Loophole hopes to add more computers to the service and install modems so that work can be sent in along telephone lines instead of by post. It is also renting space on Micronet 800, and will be able to take orders through Micronet's mail service.

Loophole Software, Arkright House, Alexandra Road, Llan-drindod Wells, Powys LD1 5NG

You could be on our pages

We welcome programs articles and tips from our readers.

PROGRAMS should, if possible, be computer printed to a width of 48 characters (use a new ribbon) and/or sent on cassette. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

ARTICLES on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.

TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

Competitive rates are paid.

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 0EE

Tiny discs for BBC

Three-inch disc drives are now available for the BBC micro — painted to match the computer.

Made by Hitachi, they cost £225 for the single drive and £399 for the dual model. Each disc has 100K of storage on each side and is enclosed in a rigid plastic envelope. At present the drives are only available by mail.

Advanced Memory Services, Woodside Technology Centre, Green Lane, Appleton, Warrington



Hitachi's dual 3in disc drive perched on top of a BBC micro

Top Ten programs for the ZX81

- | | | |
|----|-------------------|--------------------|
| 1 | 3D Monster Maze | New Generation (2) |
| 2 | Flight Simulation | Psion (1) |
| 3 | Ches | Psion (3) |
| 4 | QS Scramble | Quicksilva (4) |
| 5 | Galaxians | Artic (6) |
| 6 | Space Raiders | Psion (7) |
| 7 | Alien Dropout | Silversoft (8) |
| 8 | Avenger | Abacus (9) |
| 9 | 10 Games for 1K | J K Greye (10) |
| 10 | Catacombs | J K Greye (5) |

Compiled by W. H. Smith. Figures in brackets are last week's figures

Top Ten programs for the VIC-20

- | | | |
|----|------------------|----------------|
| 1 | Intro to Basic 1 | Commodore (1) |
| 2 | Panic | Bug Byte (5) |
| 3 | Wacky Waiters | Imagine (8) |
| 4 | Asteroids | Bug Byte (6) |
| 5 | Arcadia | Imagine (-) |
| 6 | Amok | Audiogenic (9) |
| 7 | Cosmiads | Bug Byte (7) |
| 8 | Alien Blitz | Audiogenic (-) |
| 9 | Sea Wolf | Audiogenic (-) |
| 10 | Chess | Bug Byte (-) |

Compiled by Boots. Figures in brackets are last week's figures

Top Ten programs for the Dragon-32

- | | | |
|----|--------------------|-----------------|
| 1 | The King | Microdeal (1) |
| 2 | Space War | Microdeal (2) |
| 3 | Katerpillar Attack | Microdeal (5) |
| 4 | Planet Invasion | Microdeal (-) |
| 5 | Dragon Trek | Salamander (10) |
| 6 | Alcatraz II | Microdeal (-) |
| 7 | Defense | Microdeal (3) |
| 8 | Mansion Adventure | Microdeal (7) |
| 9 | Madness & Minotaur | Dragon (-) |
| 10 | Chess | Dragon (8) |

Compiled by Boots. Figures in brackets are last week's figures

Top Twenty programs for the Spectrum

- | | | |
|----|---------------------|-----------------------|
| 1 | Flight Simulation | Psion (1) |
| 2 | Jet Pac | Ultimate (3) |
| 3 | Penetrator | Melbourne House (2) |
| 4 | Transylvanian Tower | Richard Shepherd (4) |
| 5 | The Hobbit | Melbourne House (6) |
| 6 | 3D Tanx | dk'tronics (5) |
| 7 | Ah Diddums | Imagine (8) |
| 8 | Horace Goes Skiing | Psion/M. House (7) |
| 9 | Arcadia | Imagine (9) |
| 10 | Hungry Horace | Psion/M. House (11) |
| 11 | Orbiter | Silversoft (12) |
| 12 | Chess | Psion (12) |
| 13 | Ground Attack | Silversoft (17) |
| 14 | Test Match | Computer Rentals (15) |
| 15 | Space Raiders | Psion (13) |
| 16 | Football Manager | Addictive (14) |
| 17 | Battle of Britain | Microgame (16) |
| 18 | 3D Tunnel | New Generation (18) |
| 19 | Time Gate | Quicksilva (20) |
| 20 | Escape | New Generation (19) |

Compiled by W. H. Smith. Figures in brackets are last week's figures

We pay the price for cheap micros

With all the recent decreases in the price of home computers here, there has been some recent attention to the fact that such price cuts are in fact just cleverly, if not thinly, disguised marketing tools.

The manufacturers realised some time ago that they could capture the mass market by placing heavy advertising emphasis on the "affordability" of their computers. Once the consumer has purchased the machine, he or she then becomes dependent on so-called "aftermarket" accessories in order to expand the system.

I suppose there is nothing legally wrong with such an approach. Morally, however, it borders on "let the buyer beware."

Here are a few examples of what I am talking about. One computer manufacturer has taken to "unbundling" the user manuals and other documentation, and selling them as "accessories" for about \$50. This, of course, makes the selling price of the computer lower. But how many users, first-timers or otherwise, would be capable of utilising the computer to anywhere near the limit of its capabilities without the documentation?

Or how about another manufacturer who has dropped the price of its computer so much that it has become in essence a throw-away item. This computer now sells, in some areas of the country, for less than twice the price of the minimum charge for service. The same is essentially true for another well known domestic computer brand.

I am not against price reductions. However, the unfortunate aspect of the situation is that few users realise how much they will have to pay to obtain real computing power over and above the price of the computer itself.

For example, there are several companies who make low cost home computers that will only work with the firms' disc drives, and those drives in some cases cost well over three times the cost of the computer itself. The cost of software notwithstanding, in most cases the prices of the interface units, memory expansion devices, and peripherals are so expensive in comparison with the price of the computer, that the manufacturer could well afford to give the computer away "free" as part of a package.

My guess is that this situation would actually occur if most home computers were sold through computer store outlets. In reality, most of the low cost computers are sold through discount stores and large department stores. In such cases, accessories are not for sale or even on display.

This means the customer is in for a very unpleasant surprise when he or she visits the local computer store with plans to expand his or her system.

The surprising thing is that the customers accept all this. It is quite unlikely that, let's say, consumers of stereo equipment would accept lower prices on receivers and speakers if they then had to pay \$50 each for "aftermarket accessory" cords to connect the speakers to the receiver.

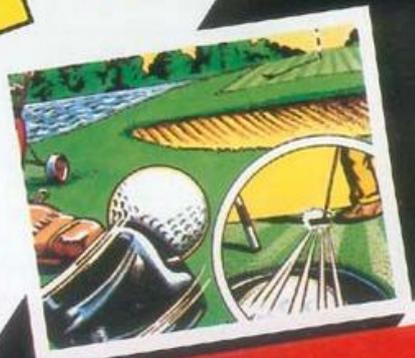
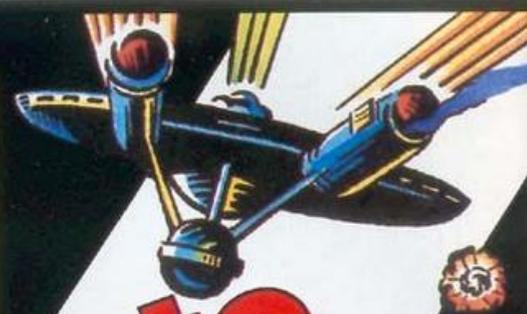
It will be interesting to see, once enough people catch on to what is happening, if any consumer organisations become involved. I'll keep you posted.

Out of room again. See you next week.

Bud Izen
Fairfield, California

Virgin
Games

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GOLF Spectrum VCA & 48K
CHAMPIONSHIP GOLF IN YOUR OWN HOME by David Thomson VCA 1004



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BUT BEWARE THE ASTEROID BIRDS by Steve Lee VCA 2001





YOMP (Spectrum 286 & MSX) **COMMAND THE PARAS AND TAKE ON THE IMPOSSIBLE**
By T. Murray & R. Poole VGA 1001



STARFIRE (Spectrum MSX) **RID THE GALAXY OF THE XTARDAN BATTLE CRUISERS - A GAME OF STRATEGY AND SKILL** by Martin Davies VGA 1002



SHEEPWALK (Spectrum MSX) **A SHEEPDOG TRIAL IN YOUR LIVING ROOM! IT'S A ONE-MAN SHEEPDOG TRIAL** by Gregory Tisdale VGA 1003



SPACE ADVENTURE (MSX) **A GRAPHIC ADVENTURE SET ON A SEEMINGLY ABANDONED SHIP DRIFTING THROUGH SPACE**
By B. Thomas & A. Thomas VGA 1005



BUG BOMB (MSX) **A SKIN-TINGLING NEW ARCADE GAME**
By Simon Bunn VGA 1004



LANDFALL (MSX) **AN EXCITING AND REALISTIC SPACE SHIP LANDING SIMULATOR**
By Gregory Tisdale VGA 1002

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A NEW SERIES FOR FIRST TIME USERS

"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
June 1983*

*Learning to Use the Oric 1
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Commodore show: your guide to the best of the new products

What's new for you? Paul Liptrot found out at the Commodore show

Commodore's fourth annual show was marked by a flock of new software for the Commodore 64 — and new hardware from Commodore itself.

Held over three days at Hammersmith's Cunard Hotel, the show attracted 74 exhibitors, — and 16,500 visitors — plus novelist Tom Sharpe, writing another sequel to his best-seller, *Wilt*, with a word processing package.

The new products announced by Commodore included:

- A four-colour printer/plotter for the VIC-20 and Commodore 64 at £169.99. It uses black, blue, red and green ballpoint pens to create graphics and text — up to 80 characters per line — on 4½in-wide plain paper. Commodore's product, designated the 1520, uses the same mechanism as the printer from Tandy, Oric and, now, Micro Peripherals.

- A speech module for the Commodore 64, due on sale in the autumn at under £50, designed to educate children of primary and pre-school ages.

- A new printer for the VIC-20 and Commodore 64. Catalogued as 1526, it offers — through built-in software — automatic line counting and error diagnostics. It can produce an original and two copies on stationery up to 10in wide. As well as the keyboard characters, it can print enlarged characters and reverse field. The 1526 costs £345.

- A new colour monitor, numbered 1701, will cost £230.



Bleu Granville-Hamshar — promotions girl at the show

- The Commodore SX64 — a portable version of the Commodore 64 with built-in screen and disc/s drives was shown following its European debut in Hanover. It is due on sale later this year at £650-£995, depending on the model.

- The new Commodore Educational 64 has the same technical features of the standard Commodore 64, plus a colour monitor and the LOGO educational language in PET casing.

- New 64 software from Commodore includes *Labyrinth*, a 3D maze game on cassette at £4.99 and *High Flier*, at £14.95 on disc.

Here is our selection of the best of the other products at the show:

of 10 will be on sale within two months.

As promised, Anirog showed *Slap Dab*, a £6 painting game for the unexpanded VIC-20. There is now a new version of *Krazy Kong*, called *Mini Kong* and priced at £6, also for the unexpanded VIC. The first of a series of four graphic adventure games on one theme will be launched by Anirog at the Earls Court Computer Fair which opens on Thursday. The *Dungeon* will be priced at £5.95 and run on the VIC-20, plus 16K. In the next few weeks the company will have programs for the Commodore 64 and the BBC micro.

Among the new business software on show were two low-price disc-based databases for the Commodore 64 — *Magpie* from Audiogenic at £99.95 and *Precision Software's Superbase 64*, costing £115.

Audiogenic previewed *Alice*, based on *Alice in Wonderland*, an American graphic adventure for the Commodore 64. Using high-resolution graphics, it even includes a croquet match with the Queen of Hearts and music on a theme by Beethoven.

Five £7 games were released by *Interceptor Micros* for the Commodore 64 — *Scramble*, *Sprite Man*, *Crazy Kong*, *Frogger* and *Panic*.

Llamasoft brought out a version of its *Laser Zone* space game for the Commodore 64 at £6.

Andrew Trott, 20, was demonstrating a pre-production version of his Commodore 64 game called *Stix* on one of *Supersoft's* two stands. The game will cost £9.20 when it goes on sale in about a fortnight. Andrew, who is studying computer and control systems at *Lanchester Polytechnic*, Coventry, described the game as "electronic geometry". *Supersoft* launched *Mikro Assembler*, a £50 cartridge for the Commodore 64; *Pet Link* at £36.80, which allows PETs and

Honeyfold brought out the fifth in its series of tape-and-book packages at £14.95. The latest, *Beginners Assembly Language* for the CBM 64, was written by Dr Peter Holmes, 43, a director of the three-man company, who teaches at *Middlesex Polytechnic*. The books are called the *Dr Watson Computer Learning Series*... because of Dr Holmes' surname.

Number Gulper, a game to help children with arithmetic, was demonstrated by *Applied Systems Knowledge* along with two other educational games — all previewed by *Home Computing Weekly*. *ASK* has reached agreement with Commodore to produce a further seven educational games. The first of the total

SPECIAL REPORT

64s to work together; and Graphix 64, a Commodore 64 utility at £10, or £13.80 for the disc version.

It took Nick Strange, 26, eight weeks to write Hustler, a new Commodore 64 game costing £6.99 from Bubble Bus. It is a screen version of pool, including six options and a tune which sounds remarkably similar to TV's Shoot Pool theme tune. Nick said: "It was a challenge to write because there was quite a lot of maths involved in all the angles."

Ram Electronics showed its VICsprint, a £57.50 module for the Commodore 64 and VIC-20, which converts the maker's IEEE output to Centronics-type and VICsprint 80, costing £49.95, which fits inside Epson printers enabling it to accept the VIC-20's output.

Two Commodore 64 utilities on cartridge — plus dealer-fitted chip — were brought out at £37.80 each by DAMS. They are the VIC Aid toolkit and, for machine code, VIC Mon. DAMS also showed an anti-glare screen. Add-on makers Stack Computer Services will soon be bringing out a range of games, priced at £5-15, for the VIC-20, Commodore 64, BBC micro, Atari and Dragon. At the show the company had a revised version of its light pen, costing £28.75, offering greater accuracy, better resolution and a free £5 game. And there was also a cartridge at £44.85, allowing the VIC-20 and Commodore 64 to drive PET peripherals.

Rabbit's Floyd Thomas revealed that the company is converting six of its range of VIC-20 and Commodore 64 games for the Spectrum. They are Escape MCP, Race Fun, Quackers, Centropods, Frogger and Phantasia.

Kobra Micro Marketing had a multi-user system for the VIC-20 and Commodore 64 called 64 Switch. A two-user system costs £109.25 and a system for eight users is £134.55. Kobra also brought out two spreadsheets for the Commodore 64 — Easy CalcResult at £69 and its big brother, CalcResult, costing £94.

Computer World showed its £95 Prestel/Viewdata adaptor at £101, including £6 shipping from Holland.

Among the exhibitors at the show's educational section was EDATA, a four-man partnership which is bringing out talking books for the Commodore 64. They use Commodore's sound box to teach reading skills to children as young as three. The first releases are a series of five called The Magic Garden and five called Mr Bits.

They show pictures with a sentence below which is "spoken" by placing the cursor under the words and pressing the space bar. They are due on sale at £15 cartridges in two-three months, marketed by Commodore.

Richard Riding and Lilian Simmons showed their Get Ready to Read package, costing £15, which contains four cassettes, a children's book and manual. Dr Riding, lecturer in educational psychology, and Mrs Simmons, a headmistress, designed the package of computer activities for children aged three-five to prepare them for reading.

They will be published by Commodore in September. And in the spring of next year, Dr Riding and Mrs Simmons are bringing out Start to Read, for children of five-seven, and Get Ready for Numbers, designed for three-five-year-olds.



Martin Shoebridge, of Ram — plus VIC Sprint



Stack's Jane Hanna — with revised light pen

Where to find them

Commodore Business Machines,
675 Ajax Avenue, Slough, Berks
SL1 4BG
Honeyfold Software, Standfast

House, Bath Place, High Street,
Barnet, London

ASK, 68 Upper Richmond Road,
London SW15 2RP

Anirog, 26 Balcombe Gardens,
Horley, Surrey

Audiogenic, P.O. Box 88,
Reading, Berks

Precision Software, 4 Park Ter-
race Worcester Park, Surrey KT4
7QX

Interceptor Micros, Lindon
House, The Green, Tadley,
Hants

Llamasoft, 48 Mount Pleasant,
Tadley, Hants RG26 6BN

Supersoft, Winchester House,
Canning Road, Wealdstone,
Harrow, Middx HA3 7SJ

Bubble Bus, 87 High Street, Ton-
bridge, Kent

Ram Electronics (Fleet), 106
Fleet Road, Fleet, Hants GU13
8PA

DAMS Business Computers,
Gores Road, Kirby Industrial
Estate, Liverpool L33 7UA

Stack Computer Services,
290/298 Derby Road, Bootle,
Liverpool L20 8LN

Rabbit Software, 380 Station
Road, Harrow, Middx HA1 2DE

Kobra Micro Marketing, P.O.
Box 28, Henley, Berks RG9 1PF

Computer World, 99 Hivert-
sweg, 1214 JB Hilersum, Holland

EDATA, 3 Chancel Way,
Charlton Kings, Cheltenham,
Gloucs GL53 7RR

Dr Richard Riding, Department
of Educational Psychology,
University of Birmingham

Newsagents looking Sharp

SHARP'S new home computer, due here in September at £250, will go on sale in electrical stores, stationery shops... and even corner newsagents.

Sales boss Richard Buckland explained: "People like to buy from shops they are familiar with. They are probably going into electrical shops every week anyway to pay their TV rental.

"And the service these give is pretty good already because they are accustomed to it."

The MZ711 is due to make its UK debut at the Microtrade show at London's Barbican centre on July 6-7 and the first shipment of 10,000 from Japan should be on dealers' shelves in September.

Sharp describe it as a "clean machine" — the computer language has to be loaded before use.

Roughly the size of a portable typewriter, it has 69 keys — including four cursor keys, two editing keys and five function keys — in an off-white casing.

It has 64K of RAM, leaving 32K free after BASIC has been loaded, 4K of video ROM and 4K of ROM to handle the 512 characters, which include 400 ready-defined characters designed to make programming easier.

Characters are constructed out of eight by eight pixels and the screen can display 25 lines, each of 40 characters. Eight foreground and eight background colours are available with all 16 possible on screen at once.

Although most cassette recorders and RS-232 printers can be used, Sharp is marketing its own which will fit into the top of the computer after two panels have been removed.

The printer/plotter, costing

£130, uses the same mechanism as the models sold by Tandy, Oric and Micro Peripherals. It uses tiny ballpoint pens, in red, blue, green and black, to print on 4½in-wide plain paper.

Sharp's cassette player will cost £40.

Graham Knight, the big Aberdeen-based Sharp distributor, has been signed as an approved software supplier.

Every MZ711 will come with a free BASIC cassette plus two tapes with a total of 10 games.

The MZ711 would offer outputs for colour and black and white TVs and video monitor, two joysticks ports, input-output for RS-232, reset button and volume control for the speaker.

It would use an extended version of Sharp's BASIC, with 71 commands, and up to 256 characters could be in one line.

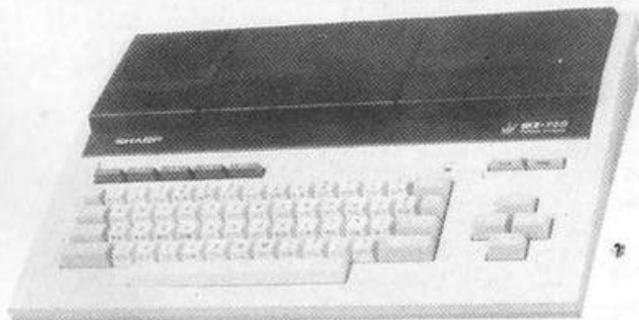
Mr Buckland said the computer was aimed at the same market as the Commodore 64 and the Atari 800 and he expected to sell 40,000 by the end of the year through high street multiples, mail order, electrical shops, office equipment suppliers, stationery stores — "and even your local newsagent, believe it or not."

The novel sales outlets are explained by Mr Buckland's experience in selling Sharp's calculators — he put them in blister packs so they could be sold in a wide range of retailers.

How easy is it to use? He said: "I took it home a few evenings ago and between us my 14-year-old son Martin and myself spent a pleasant few evenings learning about the machine."

The MZ711 has been on sale in Japan since November and the launch in Britain is simultaneous with the European mainland. Sharp's models MZ-80A and 80B are to continue, he said.

Sharp UK, Thorn Road, Newton Heath, Manchester M10 9BE



Sharp's MX711 — on the shelves in September

Here endeth the first lesson

In the beginning God created the heavens and the earth. And the earth was without form, and void.

And God said, let there be light, and there was light. And God divided the light from the darkness, and called the light Day and the darkness he called Night.

And when God had created heaven and earth he did create everything that did swim in the seas and walk or crawl upon the face of the earth.

And on the sixth day of creation God went forth and created man.

By the seventh day man was sorely vexed. And God saw it and created the mainframe computer. Man looked on the mainframe computer and said that it was good.

Once again man became sorely vexed and yeah the Lord did come down and gave unto him the minicomputer. And man for a while was content.

Then man once again became bored and God said, I will give unto you a miraculous game called Adventure. Man did like this new game and God saw this and said that it was good.

Anon, the computer shrank in size and became the microcomputer, and the microcomputer begat the personal computer, and there were a multitude of these personal computers on the face of the earth. And some of them were called home computers.

Soon it came to pass that there was a great wailing and gnashing of teeth as different races of man did take unto themselves one micro alone and did raise it up above all others and did communicate with computer magazines for untold riches and to claim superiority over any other machine.

Meanwhile there was increasing a race of creatures that could program computers in a strange tongue called masheen coad. And some of them did earn exceeding great wealth.

And God did call them Eugene and the like. They multiplied and covered the face of the earth, and many grown men and women did fear for they did not understand the strange machines like the young ones did.

Once more it came to pass that there was a great war, neither was the dispute solved as to whether one computer was superior to all the rest. And many of the youth did sit at home all night and day and did raise up unto themselves a false god (or two). And the names of the gods were BBC and Spectrum and Atari and VIC. The young people worshipped them and brought them gifts of printers and made sacrifices to them called software.

And great quantities of software were bought and software houses saw that it was good and Psion made a pretty penny and so did the rest.

It came to pass that man was divided into two tribes. One was called the computer literate, and they did rise up and become mighty. And there were two great elders of that tribe were called Clive Sinclair and Herman Hauser. They did organise the computer literate and world domination did soon follow and they did even persuade the mighty film companies to make films about computers. And the first of these great films was called Tron.

The other tribe remained nameless and without form, and went in for great races called marathons and did suffer greatly and did soon dwindle in number until there was left only the computer literate. And they did all live happily ever after.

Peter Mirtitsch

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

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Reaction games — across the Spectrum

Horace and Spiders £5.95

Psion, 2 Huntsworth Mews, Gloucester Place, London NW1 6DD

The story so far: having satisfied his appetite and relaxed (!) by spending a few days skiing, our rotund hero is now about to attempt to fend off invasion of deadly spiders.

To do this he must first climb a mountain (also jumping over wandering spiders), do a Tarzan act across a valley using dangling spider web threads and, finally, climb up and along various levels of spider web, stamping to create holes into which the spiders pop to repair. This allows Horace to stamp on their heads until they fall to their death. (Some similarities, methinks, to a well-known arcade game.)

As you would expect from Psion excellent graphics and animation, good sound, careful use of colour, clear, simple instructions and a tape which loaded easily.

The control/keys are well set out, the game is fast and the difficulty level increases for each set of spiders stamped to death. Pressing S holds the game while you get your breath back. Addictive factor: 100 percent

	R.E.
instructions	96%
playability	100%
graphics	95%
value for money	100%



The action ranges far and wide, from motorways to far-off planets, in this selection of Spectrum games. Our reviewers have ventured into known and unknown territory to bring you their ratings

ETX £5.95

Abbex, 20 Ashley Court, Great Northway, London NW4

Similar in format to the Atari VCS games Adventure and Superman, this is the first of its type that I've seen for the Spectrum.

In a nutshell, you move ETX (any resemblance to a well-known film alien is entirely intentional) round different screens, collecting fruit and avoid the mad professor and MI5 agent.

Helped by his friend Ernie, ETX must collect three pieces of his "telephone", phone home and escape. You can choose the level of difficulty and, in certain positions, make use of ETX's special powers.

Speech is effective and must be at the limit of the Spectrum's capabilities. Graphics are excellent and animation superb.

A combination of graphics adventure, maze and chase games makes this an unusual, fascinating and addictive program which must rank among the Spectrum classics. You've wept over the film, read the book, bought the souvenirs — now get the tape!

	R.E.
instructions	85%
playability	90%
graphics	100%
value for money	100%



Road Toad £4.95

Elfin Software, Hudsons House, Battery Road, Great Yarmouth NR30 3NN

How do you decide on one version of Frogger out of all the versions on the market! One important factor is cost, of course — and this game is competitively priced.

For those who aren't au fait with the arcade game genre, the aim of Frogger and its look-alikes is to get a series of frogs safely home, first moving them across hazards including a busy multi-lane highway, a fast-flowing river and, in this case, a snake pit.

Your frogs can hop up, down, left or right — and, in Elfin's version, the control keys are bunched a little too close for comfort.

No written instructions came with Road Toad, and the only details appearing on screen were those of the four direction keys. But on the whole, a good reproduction of the arcade game.

	D.N.
instructions	20%
playability	70%
graphics	80%
value for money	90%



Jet Pac

£5.50

Ultimate Play the Game, The Green, Ashby de la Zouch, Leics LE6 5JU

You are a space-suited adventurer on an alien planet. First you must assemble your rocket from its component parts, then collect fuel to power it. At the same time you are fighting off the local aliens with your Quad Photon Laser Phaser and collecting the goodies (gems, gold etc) that you find lying around.

Having refuelled you head off for another planet where you proceed to slaughter the locals and plunder their valuables all over again. But after four planets your spaceship wears out, and you must build another one from scratch.

You can choose a one- or two-player game and use either keyboard or a Kempston joystick. Good graphics, with many small touches that put this program well ahead of the pack.

Movement is easy to control, and the degree of difficulty such as to make this an entertaining and addictive game.

	P.F.
instructions	90%
playability	90%
graphics	90%
value for money	90%



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Ramdram Vic 20 £13.90

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Can you tunnel through the rock in time?

You're on an errand of mercy in Dave Slinn's game for the TI-99/4A. So don't delay — it's a matter of life and death.

Deep underground, under four layers of rock, there's a trapped miner — and your job is to rescue him. But there's no time to lose, for any minute now the mine could blow up.

Once you think you've become an expert rescuer, you can increase the challenge by altering line 1720.

How it works

- 10-220 instructions
- 300-530 define characters
- 560-1000 set up playing area
- 1010-1480 set up random layers of 4 different layers of rock
- 1490-1610 explosion sound & graphics
- 1720 initial start time
- 1730-1800 start of countdown
- 1840-1870 test for direction of movement
- 1880-2010 update position of rescuer
- 2020-2120 keep rescuer in playing area
- 2140-2350 check future position of rescuer
- 2370-2700 update position of rescuer, colour flash and drill sound
- 2710-2810 check old position of rescuer
- 2820-3100 determine length of time to drill rock
- 3220-3290 countdown routine
- 3310-3360 message print routine.

Variables

- R new row position of rescuer
- C new column position of rescuer
- RR old row position of rescuer
- CC old column position of rescuer

```

5 REM MINE MAZE D.H.SLINN.
10 CALL CLEAR
20 PRINT "      ****MINE MAZE****"
30 PRINT
40 PRINT "YOU HAVE TO RACE AGAINST"
50 PRINT "TIME THRO' DIFFERENT LAYERS"
60 PRINT " OF ROCK TO SAVE THE MINER."
70 PRINT
80 PRINT "      THERE ARE 4 DIFFERENT"
90 PRINT "HARDNESS'S OF ROCK RANDOMLY"
100 PRINT "PLACED. AS EACH SECTION IS"
110 PRINT "DRILLED IT'S HARDNESS AND"
120 PRINT "THE POSITION OF ROCK OF THE"
130 PRINT "SAME HARDNESS IS SHOWN FOR A"
140 PRINT "      SHORT TIME"
150 PRINT
160 PRINT "SOME OF THE ROCK IS TO HARD"
170 PRINT "      FOR YOUR DRILL."
180 PRINT
190 PRINT "      ****USE ARROW KEYS****"
200 PRINT
210 PRINT
220 PRINT "      PRESS ANY KEY TO START."
230 PRINT
240 CALL KEY(0,K,S)
250 IF S=0 THEN 240
260 CALL CLEAR
270 FOR I=9 TO 16
280 CALL COLOR(I,2,2)
290 NEXT I
295 REM DEFINE GRAPHICS
300 CALL CHAR(128,"3C18181818181818")
310 CALL CHAR(129,"1C18101F1C1C1476")
320 CALL CHAR(130,"03071F3F7F7FFFFF")
330 CALL CHAR(131,"FFFFFFFFFFFFFFFF")
340 CALL CHAR(132,"1818181818181818")
350 CALL CHAR(133,"FFA5A5A5A5A5A5FF")
360 CALL CHAR(134,"00C0C0E0F9F8FCFF")
370 CALL CHAR(135,"0")
380 CALL CHAR(136,"3F40FF4040585858")
390 CALL CHAR(137,"FC02FF02FAAFAA02")
400 CALL CHAR(138,"3F40DF55555F4040")
410 CALL CHAR(139,"FC02FBAAAFD0202")
420 CALL CHAR(140,"FF010A5B0818181")
430 CALL CHAR(141,"3C42A599999A5423C")
440 CALL CHAR(142,"18242424243C5A5A")
450 CALL CHAR(143,"5A99999999999999")
460 CALL CHAR(144,"FFFFFFFFFFFFFFFF")
470 CALL CHAR(145,"030F1F3F3F7FFFFF")
480 CALL CHAR(146,"0000030F1F1F7FFF")
490 CALL CHAR(147,"00000C0C0E0F8FFF")
500 CALL CHAR(148,"00C0C0E0F8F8FCFF")
510 CALL CHAR(149,"0000000E0FFFFF22")
520 CALL CHAR(150,"18183C5A5A18183C")
530 CALL CHAR(152,"FFC3A49999A542FF")
540 CALL CLEAR
550 CALL SCREEN(6)
560 CALL HCHAR(4,11,141)
570 CALL HCHAR(5,11,142)
580 CALL HCHAR(6,12,136)
590 CALL HCHAR(6,13,137)
600 CALL HCHAR(6,15,138)
610 CALL HCHAR(6,16,139)
620 CALL HCHAR(6,19,145)
630 CALL HCHAR(6,20,144)
640 CALL HCHAR(6,21,144)

```

Hints on conversion

TI Basic is almost the same as other micro basics with the following exceptions

CALL HCHAR pokes the screen with the character named eg CALL HCHAR (12,6,32) puts a space at row 12 column 6

eg CALL HCHAR (12,6,32, 8) will put 8 spaces horizontally across the screen starting at row 12 column 6.

CALL VCHAR same as HCHAR but vertical

CALL CHAR defiges user graphics

CALL GCHAR peeks the screen, same format as HCHAR

CALL KEY inputs data direct from the keyboard without having to press return/enter key

CALL CLEAR clears the screen
The TI screen is divided into 32 vertical columns and 24 horizontal rows.

```

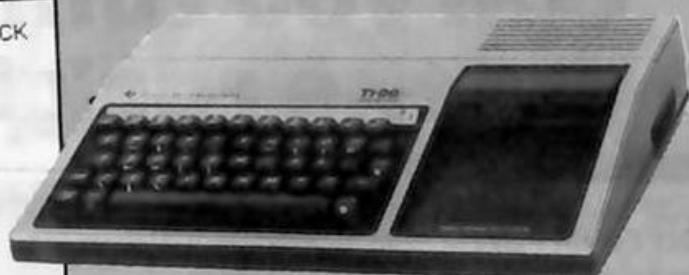
650 CALL HCHAR(6,22,148)
660 CALL HCHAR(5,20,146)
670 CALL HCHAR(5,21,147)
680 CALL HCHAR(6,14,140)
690 CALL HCHAR(6,11,143)
700 CALL HCHAR(17,1,131)
710 CALL HCHAR(17,2,134)
720 CALL VCHAR(7,1,120,18)
730 FOR I=3 TO 10
740 CALL HCHAR(17,I,135)
750 NEXT I
760 CALL VCHAR(23,11,131,2)
770 CALL VCHAR(7,11,132,15)
780 CALL HCHAR(22,11,133)
790 CALL HCHAR(17,3,135,8)
800 FOR I=3 TO 9 STEP 2
810 CALL HCHAR(17,I,128)
820 NEXT I
830 CALL HCHAR(6,1,32,10)
840 CALL VCHAR(7,11,132,15)
850 CALL HCHAR(6,17,32,2)
860 CALL HCHAR(6,23,32,10)
870 CALL HCHAR(6,19,145)
880 CALL HCHAR(6,20,131,2)
890 CALL HCHAR(6,22,148)
900 FOR I=13 TO 27 STEP 2
910 CALL HCHAR(22,I,128)
920 NEXT I
930 FOR I=12 TO 26 STEP 2
940 CALL HCHAR(22,I,135)
950 NEXT I
960 CALL HCHAR(22,29,130)
970 CALL HCHAR(22,30,131,3)
980 FOR I=3 TO 9 STEP 2
990 CALL HCHAR(17,I,128)
1000 NEXT I

```

TI-99/4A PROGRAM

```

1005 REM ' POSITION DIFFERENT LAYERS OF ROCK
1010 RANDOMIZE
1020 C=12
1030 R=7
X 1040 A=INT(4*RND)+12
1050 CALL HCHAR(R,C,A*8,3)
1060 C=C+3
1070 IF C>32 THEN 1080 ELSE 1040
1080 C=12
1090 R=R+1
1100 IF R=22 THEN 1090 ELSE 1110
1110 IF R=25 THEN 1120 ELSE 1040
1120 C=2
1130 R=7
1140 A=INT(4*RND)+12
1150 CALL HCHAR(R,C,A*8,3)
1160 C=C+3
1170 IF C>10 THEN 1180 ELSE 1140
1180 C=2
1190 R=R+1
    
```



```

1200 IF R=17 THEN 1210 ELSE 1220
1210 R=R+1
1220 IF R=25 THEN 1230 ELSE 1140
1230 FOR I=1 TO 3
1240 C=INT(17*RND)+13
1250 CALL VCHAR(7,C,96,10)
1260 NEXT I
1270 FOR I=1 TO 3
1280 C=INT(9*RND)+2
1290 CALL VCHAR(8,C,96,7)
1300 NEXT I
1310 FOR I=1 TO 4
1320 R=INT(14*RND)+7
1330 C=INT(7*RND)+2
1340 CALL HCHAR(R,C,152,3)
1350 CALL VCHAR(R,C+2,152,2)
1360 NEXT I
1370 FOR I=1 TO 12
1380 R=INT(16*RND)+7
1390 C=INT(19*RND)+12
1400 CALL HCHAR(R,C,152,2)
1410 CALL VCHAR(R,C+1,152,3)
1420 NEXT I
1430 CALL HCHAR(22,28,129)
1440 CALL COLOR(13,2,15)
1450 CALL VCHAR(7,1,120,18)
1460 CALL HCHAR(17,2,134)
1470 CALL COLOR(14,15,6)
1480 CALL COLOR(15,2,6)
1485 REM EXPLOSION
1490 CALL SOUND(1000,-4,0)
1500 CALL SOUND(100,-7,0)
1510 CALL HCHAR(22,26,134)
1520 CALL SOUND(100,-6,0)
1530 CALL HCHAR(22,25,144)
1540 CALL SOUND(50,-7,2)
1550 CALL HCHAR(22,18,144,7)
1560 CALL SOUND(600,-6,2)
1570 CALL HCHAR(22,17,130)
1580 CALL SOUND(1000,-7,0)
1590 CALL HCHAR(22,15,134)
1600 CALL HCHAR(22,14,130)
1610 CALL HCHAR(22,11,134)
1620 FOR I=1 TO 3
1630 CALL HCHAR(6,2,150)
1640 FOR D=1 TO 200
1650 NEXT D
1660 CALL HCHAR(6,2,32)
1670 FOR D=1 TO 100
1680 NEXT D
1690 CALL SOUND(50,1000,5)
1700 NEXT I
    
```

```

1710 CALL HCHAR(6,2,150)
1715 REM SET UP START OF COUNT
1720 TIME=90
1730 R=6
1740 C=2
1750 TIME=TIME-1
1760 IF LEN(STR$(TIME))=1 THEN 1770 ELSE 1780
1770 CALL HCHAR(4,26,32)
1780 FOR I=1 TO LEN(STR$(TIME))
1790 CALL HCHAR(4,I+24,ASC(SEG$(STR$(TIME),I,1)))
1800 NEXT I
1810 CALL SOUND(100,-4,2)
1820 CALL KEY(0,K,S)
1825 REM TEST FOR 'OUT OF TIME'
1830 IF TIME=0 THEN 3380
1840 IF K=68 THEN 1900 ELSE 1850
1850 IF K=83 THEN 1920 ELSE 1860
1860 IF K=69 THEN 1940 ELSE 1870
1870 IF K<>88 THEN 1750 ELSE 1880
1880 DR=+1
1890 GOTO 1950
1900 DC=+1
1910 GOTO 1990
1920 DC=-1
1930 GOTO 1990
1940 DR=-1
1950 RR=R
1960 CC=C
1970 R=R+DR
1980 GOTO 2020
1990 CC=C
2000 RR=R
2010 C=C+DC
2020 IF C>32 THEN 2030 ELSE 2050
2030 C=32
2040 GOTO 1750
2050 IF C<1 THEN 2060 ELSE 2080
2060 C=1
2070 GOTO 1750
2080 IF R<6 THEN 2090 ELSE 2110
2090 R=6
2100 GOTO 1750
2110 IF R>24 THEN 2120 ELSE 2140
2120 R=24
2130 GOTO 1750
2135 REM TEST FOR HARDNESS OF ROCK
2140 CALL GCHAR(R,C,X)
2150 IF X=96 THEN 2370
2160 IF X=104 THEN 2450
2170 IF X=112 THEN 2560
2180 IF X=120 THEN 2820
2190 IF X=32 THEN 2920
2200 IF X=131 THEN 2950
2210 IF X=128 THEN 2990
2220 IF X=134 THEN 3020
2230 IF X=144 THEN 3020
2240 IF X=138 THEN 3020
2250 IF X=148 THEN 3020
    
```

TI-99/4A PROGRAM

```

2260 IF X=145 THEN 3020
2270 IF X=135 THEN 2990
2280 IF X=129 THEN 3060
2290 IF X=143 THEN 3460
2300 IF X=132 THEN 3480
2310 IF X=136 THEN 3550
2320 IF X=137 THEN 3550
2330 IF X=138 THEN 3550
2340 IF X=139 THEN 3550
2350 IF X=152 THEN 2660
2360 GOTO 1750
2370 CALL COLOR(9,11,11)
2380 CALL SOUND(200,30000,30,30000,30,440,30,-4,0)
2390 CALL SOUND(400,30000,30)

```

```

2960 CALL HCHAR(RR,CC,135)
2970 CALL HCHAR(R,C,150)
2980 GOTO 1750
2990 CALL HCHAR(RR,CC,135)
3000 CALL HCHAR(R,C,150)
3010 GOTO 1750
3020 CALL SOUND(100,110,9,140,9,440,30,-4,0)
3030 CALL HCHAR(RR,CC,135)
3040 CALL HCHAR(R,C,150)

```

```

2400 CALL COLOR(9,2,2)
2410 GOSUB 3220
2420 CALL HCHAR(RR,CC,135)
2430 CALL HCHAR(R,C,150)
2440 GOTO 1750
2450 REM
2460 FOR D=1 TO 2
2470 CALL COLOR(10,10,10)
2480 CALL SOUND(200,30000,30,440,12,440,30,-4,0)
2490 CALL SOUND(400,30000,30)
2500 CALL COLOR(10,2,2)
2510 GOSUB 3220
2520 NEXT D
2530 CALL HCHAR(RR,CC,135)
2540 CALL HCHAR(R,C,150)
2550 GOTO 1750
2560 FOR D=1 TO 3
2570 CALL COLOR(11,5,5)
2580 CALL SOUND(200,30000,30,880,12,440,30,-4,0)
2590 CALL SOUND(400,30000,30)
2600 CALL COLOR(11,2,2)
2610 GOSUB 3220
2620 NEXT D
2630 CALL HCHAR(RR,CC,135)
2640 CALL HCHAR(R,C,150)
2650 GOTO 1750
2660 FOR D=1 TO 3
2670 CALL COLOR(16,16,2)
2680 CALL SOUND(200,30000,30,1000,12,440,30,-4,0)
2690 CALL COLOR(16,2,2)
2700 NEXT D
2710 IF K=68 THEN 2760
2720 IF K=83 THEN 2780
2730 IF K=69 THEN 2800
2740 R=R-1
2750 GOTO 1750
2760 C=C-1
2770 GOTO 1750
2780 C=C+1
2790 GOTO 1750
2800 R=R+1
2810 GOTO 1750
2820 FOR D=1 TO 4
2830 CALL COLOR(12,4,4)
2840 CALL SOUND(150,30000,30,880,12,440,30,-4,0)
2850 CALL SOUND(400,30000,30)
2860 CALL COLOR(12,2,2)
2870 GOSUB 3220
2880 NEXT D
2890 CALL HCHAR(RR,CC,135)
2900 CALL HCHAR(R,C,150)
2910 GOTO 1750
2920 CALL HCHAR(RR,CC,32)
2930 CALL HCHAR(R,C,150)
2940 GOTO 1750
2950 CALL SOUND(100,200,4,210,4,-4,3)

```

```

3050 GOTO 1750
3060 FOR I=1 TO 4
3070 CALL SOUND(100,1000,2)
3080 FOR D=1 TO 50
3090 NEXT D
3100 NEXT I
3105 REM WINNING ROUTINE
3110 M$="YOU DID IT!"
3120 R=18
3130 C=19
3140 GOSUB 3310
3150 M$="PRESS ANY KEY"
3160 R=20
3170 C=18
3180 GOSUB 3310
3190 CALL KEY(0,K,S)
3200 IF S=0 THEN 3190
3210 GOTO 780
3215 REM TIME COUNTDOWN ROUTINE
3220 TIME=TIME-1
3230 IF LEN(STR$(TIME))=1 THEN 3240 ELSE 3250
3240 CALL HCHAR(4,26,32)
3250 FOR I=1 TO LEN(STR$(TIME))
3260 CALL HCHAR(4,I+24,ASC(SEG$(STR$(TIME),I,1)))
3270 NEXT I
3280 CALL SOUND(100,-4,2)
3290 IF TIME=0 THEN 3380
3300 RETURN
3305 REM PRINT MESSAGE ROUTINE
3310 FOR I=1 TO LEN(M$)
3320 CD=ASC(SEG$(M$,I,1))
3330 CALL HCHAR(R,C,CD)
3340 C=C+1
3350 NEXT I
3360 RETURN
3370 STOP
3375 REM LOSE ROUTINE
3380 CALL SOUND(100,200,4)
3390 CALL SOUND(250,110,1)
3400 M$="***FAILED***"
3410 R=18
3420 C=17
3430 GOSUB 3310
3440 GOTO 3150
3450 END
3460 C=18
3470 GOTO 1750
3480 FOR D=1 TO 4
3490 CALL SOUND(200,400,4,200,4,-4,2)
3500 GOSUB 3220
3510 NEXT D
3520 CALL HCHAR(RR,CC,135)
3530 CALL HCHAR(R,C,150)
3540 GOTO 1750
3550 R=7
3560 GOTO 1750

```

The company with a superiority complex

"Having a high opinion of our programs and believing that our overall standard was as good as anything else then available, gave us our name." So says John Dyson, one of the partners of Superior Software.

John and his partner Richard Hanson set out in autumn last year to market their own arcade game software. For Richard, who has a degree in computing science, this is more or less his first job since leaving university. "While studying I spent a year Cobol programming for an insurance company, probably best forgotten", he said.

Both had previously written games for the Acorn Atom, which they marketed through other software companies. But dissatisfaction with the way their games were treated made them decide to see if they could do a better job themselves. John says one company didn't advertise his programs properly, and both believe that screen pictures of the game are essential for the purchasers to get an idea of what they are buying.

After meeting to try to help each other develop their programming skills they began to work together. Now each game is usually coded by one and criticised by the other.

Richard works for the company full time, both programming and dealing with marketing. John, who still works as an electronics engineer for a broadcasting company, "only works part time for Superior".

While taking a university degree in physical sciences, John didn't like computing at all. "It was the Space Invader machine at work which first awakened me to its potential", he recalled.

"The Acorn Atom was the first cheap, good quality computer and from opening mine up I was hooked. So much so that I stayed up two nights running just using the machine that first week, until exhaustion took over!"

So Superior Software was born, with four arcade games for the BBC micro. Their launch just before Christmas was well timed. They despatched over 300 cassette

When you call yourself Superior Software, you've got a lot to live up to. Dave Carlos met partners John Dyson and Richard Hanson, and got the lowdown on their company's high aspirations



Superior's tape duplicating is carried out in-house

tes during November and over 4,000 during December, and Richard claims that Superior now sells considerably more than that.

The rise in standard of other software writers gives both men a continuing challenge. "Our new Frogger and Road Runner programs are undoubtedly our best yet and are selling very well. But we are still on the lookout for other games, and have some exciting games from other writers still to come.

"We are getting more programs from other writers now and are impressed by the increasing standard, but wish we could respond more quickly to the authors. Our new staffing plans should help remove this problem."

Day to day administration is in the hands of Cyril Dove, whose role is as hard to define as it is vital to the company. He deals with despatch, correspondence, the telephone, and copying, which is

presently carried out in-house at 69 Leeds Road, Bramhope, Leeds.

But due to the interest of the big retail chains the copying is likely to go out of house soon. A single order, likely to be in the thousands, would swamp their current arrangements.

In common with other software houses Superior reports that sales to dealers are now outstripping mail order, but see this as good for customers, who get to see that they are buying before spending any money. They do not plan to drop mail order though.

One project now in the pipeline is a target shooting game for the BBC micro, which will be sold as a gun and cassette package. The gun fits into the joystick port and responds to a bright dot on the screen. At the moment the project is still at the testing stage, with both partners shooting moving stars in their quieter moments, but they see it as an interesting departure for the future.

The addition of more machines to their range is also imminent, with Assembler and Toolkit packages for the Oric-1 completed recently and due for release. Arcade games are likely to be the next on the list for this machine. "The public like arcade games more than original ones", Richard said, "but eventually we plan some original arcade quality releases for both machines." The Oric programs may be released in ROM form as well as on cassette.

"We feel we have missed the Sinclair boat now, but would like to write for any new machine they release. The problem is getting in quickly enough, which is why we are working on the Oric at the moment."

One problem they have already encountered with writing for the Oric is that it doesn't have a checksum on loading. "This means that a program may appear to have loaded correctly when it hasn't, and therefore won't run. To get around this we have written a routine which does check our programs and gives an error message if all is not well."

PROFILE

Another difficulty with the Oric is that the break key, hidden under the machine, doesn't provide a full hardware reset, so sometimes the only way out of a program is to pull the plug and lose it completely.

John and Richard hope to convert their existing catalogue to run on the BBC-compatible Electron. That doesn't mean that they don't expect problems. Like other software houses, the new operating systems and the new Basic which have appeared for the BBC have brought problems. "But at least the Calls are documented on the Acorn machines", said Richard. "On the Oric we are exploring uncharted territory and don't even know if there is more than one issue of the ROM chip.

"We would like to give a money-back guarantee to our customers so that they could return a tape which they didn't like, but the amount of copying which goes on in this business prevents us from doing so" says John. "People don't really think about the effect of their actions in these cases. Libraries also pose a



John takes aim at a new game for the BBC

threat to our existence and if too many spring up they will put not only us but themselves out of business. If they were to pay a royalty to the programmer for each loan then things would be fairer."

With so many plans and ideas, this company should be worth watching. And they don't intend that anyone should ever be able to take their title 'Superior' away from them either. So be warned!



John Dyson and Richard Hanson feeling superior

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All M/C version of SCRAMBLE. Lasers, bombs, continuous scoring and sound effects give all the thrills of arcade game. Pilot your space ship through the tortuous tunnels and caverns, destroying enemy missile launchers, fuel dumps and airborne fire saucers. Four ships to complete mission. 10 skill levels.

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JS VIC 20 Unexp. £5.95

PHARAOH'S TOMB

Once you enter, the only way out is with the aid of a key which unlocks the mystery of the Pharaoh's tomb. Beware of the mummies, the ancient Egyptians so painstakingly built. One false move and you will meet the same fate as befell other tomb robbers over thousands of years. A multi-screen big graphical adventure with M/C movements.

KB VIC 20 16K £5.95

KRAZY KONG

An EXPANDED-D screen, large graphics, rotating barrels, hammer, fireballs, life handbags and umbrellas as you try to rescue the damsel Kong has abducted. Spectacular collapse of Kong's lair in the fourth screen. Uses all 21K of your expanded Vic for this 100% M/C thriller. Complete with high score table.

KB/JS VIC 20 16K £7.95

SLAP DAB

An exciting game based on the arcade game PAINTER, which combines fast action with strategy. Giant insects hiding under the old paint surface are released by your paint brush. You require fast action and quick thinking to outwit them and finish the panel. The game is 100 percent machine code and HI-RES graphics also includes Hi-score and running score with brilliant sound effects.

KB/JS VIC 20 UNEXP £5.95

DOTMAN

Ghosts chase you as you try to eat the dots and collect points. You can turn the tables on them by eating the pills. Don't forget the ghosts have been given intelligence and will try to corner you. This feature makes Dotman exciting and challenging. All M/C game complete with running and highest scores and tunes.

JS/KB VIC 20 Unexp. £5.95

ZOK'S KINGDOM

Your starliner badly damaged in a meteor storm is forced to crash land on the planet ruled by ZOK, a time space generated image of Dracula. You are challenged to a battle of wits and endurance as the battle for survival starts in earnest in this big multi-screen graphical adventure in hi-res graphics and M/C movements.

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3D TIME TREK

At last a 3D game for the VIC! Although badly wounded, you are determined to seek and destroy the marauding space pirates who have now dispersed around the galaxy in search of fresh prey. A brilliant Star Trek game with a difference - spectacular 3D graphics and real arcade actions.

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DRACULA

Count Dracula is asleep somewhere in his castle. He rises at midnight and you must find him and drive a stake through his heart before he rises. A multi-screen graphic adventure.

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Super games pack for younger children with bright colour graphics and sound effects. Everybody's favourite Simon plus Super Snap, O's and X's, Word Jumble, Bomber, Duck Shoot and Mad Drivers.

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XENO II

An EXPANDED-D screen presentation with superb action packed space thriller, written entirely in machine code with four action packed stages. To destroy the power source of Xeno II, you have to fight off waves of robot attack, plasma bombing by the legions of the outer sanctum and finally attack the power source protected by a force field, continuous bombardment by guardians and blocking by wild whirling suicidal space ships. Truly a game for all arcadians.

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GALACTIC ABDUCTORS

A stunning action packed game which uses all of your TV screen for the superb large animated graphics. Giant Space Hawks whirl and weave in intricate patterns as they drop their deadly lightning mops which will destroy your base on contact. While you are busy defending yourself the Hawks will feed on your helpless population retaining only their skulls. All M/C game complete with high score table that will blow your mind with its graphics and sound effects.

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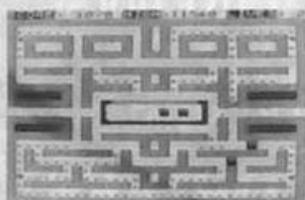
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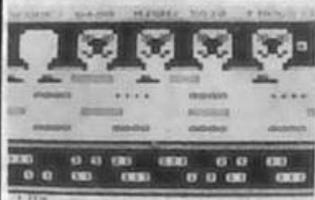


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HCW16

Graphics System Dragon £9.95

Salamander, 27 Ditchling Rise,
Brighton, East Sussex

This graphics system lets you draw pictures using all the Dragon's hi-res modes and colour sets. One joystick is used to manipulate a moving cursor, and the keyboard controls the graphics facilities.

The eight-page manual supplied with the system explains the numerous features and commands that are available reasonably well, but you can go back to the "help" menu at any point if you get stuck.

You can choose to draw lines, boxes, arcs, ellipses, polygon or any kind of irregular shape. You can paint your picture with a "fill" command, and write in text of any size.

Having drawn your masterpiece, you can save it on cassette. The shapes you have created can also be stored in a shapes library so that they can be used later on.

The text feature in the graphics system is also supplied as a separate program and data file, so that you can easily incorporate text in hi-res mode in any of your own programs.

Once all the commands had been mastered, I found the system easy to use. With its comprehensive range of facilities, it offers a slick method of adding colourful graphics to your programs.

C.D.

instructions	80%
ease of use	90%
display	85%
value for money	85%



Software to put a picture in your program

Which to choose from the graphics packages coming on to the market? Our reviewers have had designs on four of them — here are their opinions



Draftmate BBC B Disk £12.50 Cass. £9.95

Computasolve, 8 Central
Parade, St Marks Hill,
Surbiton, Surrey KT6 4PJ

Interactive graphics programs (picture drawing to you and me!) seem to be appearing in profusion at the moment. This one is a good one of its kind with most of the facilities you're likely to need.

You can create pictures, using keys or joysticks, to be dumped to the printer or to be saved for later use. They can even be incorporated into other programs when needed (this facility is not documented in the cassette version but is there, I believe).

Among its many facilities, two I particularly like are Update and Magnify. Update means that the screen you are creating can be saved in part and then different trials can be made based on that part without corrupting it in any way.

Magnify is a powerful editing procedure allowing the alteration of single (yes, single!) pixels. Unfortunately the booklet provided doesn't explain this facility very well.

The only parts of the package that were less than satisfactory were the circle plotting, which is very slow (compared to Grafdisk) and the documentation, which could be clearer in places.

instructions	60%
ease of use	90%
display	80%
value for money (disk)	90%
(cassette)	70%



Design Aid 48K Oric-1 £5.50

Kenema Associates, 1 Marlborough Drive, Worle, Avon

There has been a trend for user-defined graphics programs to appear in magazines soon after the launch of new micros with the udg facility. This is true for the Oric 1 (see HCW no. 3), and so to persuade Oric owners to actually part with cash, a udg program needs to have something special. This one doesn't, quite.

It lets you modify or re-design any character in the standard or alternative character set.

Having specified which

character you wish to alter, you move a cursor around an enlarged character square display, setting or re-setting pixels until you have the character you want. The character you are creating is also shown in normal size.

Alongside the enlarged character square are the byte addresses and values of the new character. You have to jot these down when complete — there are no options to save on cassette or obtain a printer listing (the 'extras' that this program lacks).

D.N.

instructions	60%
ease of use	80%
display	40%
value for money	30%



Easy Sprite Commodore 64 £3.00

TUE Software, 1 Brackenhill,
Sandy Lane, Cobham, Surrey,
KT11 2EW

As the name suggests, this package allows you to create your own Sprites (moveable graphics characters similar to these on the Atari machines), and use them in future programs of your own. Upon running, the display shows a large box representing the area occupied by a Sprite on the screen.

A moveable cursor which is controlled by the CSR keys can then be used to colour in squares and so build up the shape of the

Sprite. When complete, the Sprite is then converted into a series of data statements.

Other options include: Display Sprite, which moves the created shape across the main screen in its true size; Change Sprite, which allows alteration of the current character, and Create New Sprite, which features an audible and visual warning that any previous shapes will be lost.

There was no documentation supplied with the review copy, and bugs in the program were apparent throughout its use.

instructions	25%
ease of use	60%
display	50%
value for money	50%



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ORIC-1 PROGRAM

```

600 SOUND4,200,0:PLAYA,A,6,100
605 XM=XM+XQ:YM=YM+YQ
610 B=SCRN(XM,YM)
620 IFB=H1 THENI=0:GOTO820
630 IFB<>SP THENPLOTXM=XQ,YM=YQ,SP:PLOTX,Y,Z:Z1=0:RETURN
640 PLOTXM,YM,Z4:PLOTXM=XQ,YM=YQ,SP:PLOTX,Y,Z:RETURN
650 SOUND4,500,0:PLAYA,O,A,100:POKE47065,30
    
```

```

655 FORB4=A3TOA4
660 IFD(B4)=ATHEN750
670 PLOTR(B4),C(B4),SP
680 F1=(R(B4)>X)-(R(B4)<X):B1=R(B4)+F1
690 F2=(C(B4)>Y)-(C(B4)<Y):B2=C(B4)+F2
700 X2=SCRN(B1,B2)
710 IFX2=SP THEN740
720 IFX2=Z THEN760
730 B1=B1-F1:B2=B2-F1:IFF1=0 THENF1=A1:GOTO700
740 R(B4)=B1:C(B4)=B2:PLOTR(B4),C(B4),M1
750 NEXT:RETURN
760 FORI=100TO200STEP10
765 SOUND4,I,0:PLAYA,O,A,1
770 PLOTX,Y,ZR:PLOTX,Y,Z
780 NEXT
790 PLOTX,Y,SP:L1=L1-A:W1=0:IFL1=0 THENB90:IFB>30 THENB=8-10
800 GOTO50
810 PLOTXM=XQ,YM=YQ,SP
820 FORI=100TO300STEP20
825 SOUND4,I,0:PLAYA,1,1,1
830 PLOTXM,YM,HR:PLOTXM,YM,125
840 NEXT:SS=SS+CO:K1=K1+A
850 FORB5=A4TOA2
860 IFXM=R(B5)ANDYM=C(B5) THENB90
870 NEXT
880 D(B5)=A1:PLOTXM=XQ,YM=YQ,SP:PLOTX,Y,Z
885 IFK1=4 THEND(INT(RND(1)*3+1))=0:K1=K1-A
887 RETURN
890 CLS:PRINTSPC(B5)"YOU SCORED:";SS1"POINTS"
900 WAIT100
910 IFM1=ATHEN960
920 PRINTSPC(B1)"Do you want to try again?"
930 T=KEY$1:GET1$
940 IF T="Y" THENSS=0:GOTO20
950 PRINTCHR$(20);CHR$(17);CHR$(6):END
960 PRINTSPC(B1)"NOW IT GETS A LITTLE HARDER!"
970 WAIT80
1000 GOTO50
1010 IFPEEK(46850)=12 THEN1060
1020 FORI=1TO48
1030 READA,B:POKEA,B
1040 NEXT
1060 DATA 46848,12,46849,12,46850,30,46851,63,46852,63,46853,51,468
54,51
1070 DATA 46855,51,46852,12,46853,12,46854,30,46855,45,46856,12
1080 DATA 46857,12,46858,18,46859,33,46860,0,46861,0,46862,0,46863,
    
```

```

12,46388
1090 DATA 12,46389,12,46390,0,46391,0,47072,63,47073,33,47074,33
1100 DATA 47075,33,47076,33,47077,33,47078,33,47079,63,47080,30,470
65,18
1110 DATA 47081,63,47082,30,47083,30,47084,30,47085,18,47086,18
1120 DATA 47087,22,47088,18,47089,63,47090,10,47091,20,47092,14,470
86,28
1130 DATA 47093,63
1200 INK$=PAPER:PRINTCHR$(20);CHR$(6);CHR$(17)
1210 PRINTCHR$(4);CHR$(27)"J ANDROID ATTACK!"
1220 FORI=1TO10
1230 C=INT(RND(1)*6+1)
1240 PLOT0,1,C:PLOT0,2,C
1250 NEXT:PRINTCHR$(4)
1260 PLOT4,4,"While on a spying mission for the"
1270 PLOT2,6,"Federation you have been trapped -"
1280 PLOT2,8,"in the Control Complex by the Guard"
1290 PLOT2,10,"Androids."
1300 PLOT4,13,"Armed only with your trusty Photon"
1310 PLOT2,15,"pistol you must try to fight your"
1320 PLOT2,17,"way to freedom."
1330 PLOT6,23,"Press any key to continue"
1340 GETR$
1350 CLS:PLOT4,2,"To move around the Complex use the"
1360 PLOT2,4,"cursor controls. Both the walls and"
1370 PLOT2,6,"the Androids are radioactive -"
1380 PLOT2,8,"will die if you touch them."
1390 PLOT2,11,"To shoot the Androids press"
1400 PLOT2,13,"SHIFT key at the same time"
1410 PLOT2,15,"cursor control for the dire"
    
```

```

1420 PLOT2,17,"which you wish to fire."
1430 PLOT6,23,"Press any key to continue"
1435 GETR$:CLS
1440 PLOT4,2,"Unfortunately your Photon pistol"
1450 PLOT2,4,"disables the Androids for only a"
1460 PLOT2,6,"few seconds, so you will have to"
1470 PLOT2,8,"keep moving. The doors on each"
1480 PLOT2,10,"level are closed to begin with."
1490 PLOT2,12,"As soon as a door opens you must"
1500 PLOT2,14,"escape quickly before the deadly"
1510 PLOT2,16,"Master Android appears."
1520 PLOT6,23,"Press any key to begin"
1530 GETR$
1540 CLS:INK$:PAPER:RETURN
    
```



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Smiler BBC B £5.95

GTM Software, 864 York Road, Leeds, Yorks

A word is displayed with one letter missing, and the player has to enter any letter that will make a real word. After each correct entry, the option is given to use the same letters or try another word.

A score is kept and, after all possibilities are exhausted, the player can try another set. Suitable faces are displayed for correct or wrong inputs.

The program is incredibly well error trapped — I had trouble trying to get out of it! — and very user friendly. Supplied with the tape is a printout of instructions, including a detailed method for changing the word lists and aimed at the non-programmer.

Aimed at junior schools, it would also be useful for remedial children who have problems with phonics/letter recognition.

Colour is used sparingly and graphics are minimal, but the program is easy to use and the ability to turn off the sound is a bonus which stops any classroom irritation. A nice, friendly request for comments and an offer to help with problems makes you feel that this company cares!

R.E.

instructions	90%
playability	83%
graphics	50%
value for money	85%



Map of UK 48K Spectrum £11.95

Kuma, 11 Work Road, Maidenhead, Berks

This is a map in search of an application. It offers a lot of information at the press of a few keys, but not the kind of information — on roads, for example, or major landmarks — that would make it useful for applications like route-planning. Its major use will be in schools (and scout huts?), where its novelty value may prove to be educational value too.

What it does do is present you with a large-scale outline map of the UK, with hundreds of place names plotted in their relevant positions. The program is menu-driven, allowing you easy access to its various functions.

You can search for a given

Get smart with the latest software

These programs for a range of ages and micros aim to take the pain out of learning. Here's how our reviewers rated them

At the Circus VIC-20 plus 8 or 16k £5.95

Sumlock, Royal London House, 198 Deansgate, Manchester M3 3NE

Based on a circus theme, this game is designed for young children from about four to seven years old and introduces them to basic maths.

Inside the circus tent is a high wire act, and the aim is to count the number of acrobats. If the correct answer is entered, the number of performers changes — otherwise the display is repeated until the child gets it right.

Occasionally the men jump off the wire and after bouncing in a safety net form a human pyramid to demonstrate the difference between tens and units.

The program includes some basic addition and subtraction, and the speed of operation can be altered to suit the child's ability. A score card is kept of correct answers.

Parental supervision will be needed, at least to set up the programme.

V.R.

instructions	60%
playability	70%
graphics	50%
value for money	90%



Forensic BBC B £5.00

Worm Software, 70 Hurstwood Road, New Oscott, Birmingham B23 5BY

Here's your chance to be a forensic scientist and help solve some dastardly murder! Each game begins by the discovery of a body which has been contaminated with some chemical plus ink stains. But for each murder the scenario is different.

Your task is to discover by chemical analysis what the contamination on the body is and try to detect the murderer from a given list of suspects, all of whom have some sort of contamination on the soles of their shoes. Each suspect is given an alibi which may or may not be true.

The various tests include; flame, HCL, barium chloride, sodium chloride, chromatography etc.

This is an interesting game to play and could be quite useful for those studying O-level chemistry. In any event it is fun. A pity that, except in the chromatography tests, so little use was made of graphics.

P.C.

instructions	80%
playability	65%
graphics	40%
value for money	75%



place name, determine the distance between two positions on the map, find the latitude/longitude of any specified point, remove/restore all place names, carry out a quick scan of the entire map, copy the screen to a printer and play a hot-air balloon game.

Having chosen a particular area for study, you can scroll the map across the screen using the cursor control keys. A small grid pattern at the top right of the screen show where you are in relation to the map as a whole.

The program is easy to use, and although the graphics are rudimentary, the display and place name positions are clear and easy to read.

P.F.

instructions	90%
ease of use	90%
graphics	70%
value for money	60%



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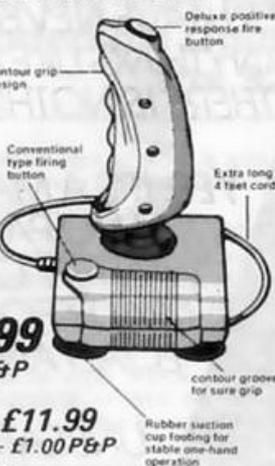
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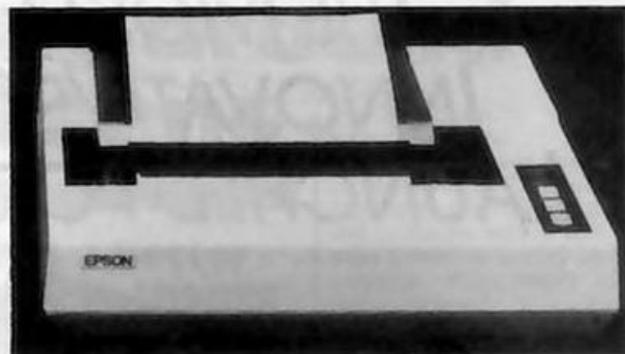
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Bike your way around nine screens

The basic structure of my Light Cycle game comes from a fairly well established concept — two objects leave trails behind them and they have to avoid colliding with each other or the trails.

Many versions are for two players — this being easier to program — but some do allow for a computer player.

There are two main problems with a computer bike.

First, if you write the game in BASIC it is likely to run very slowly as all the computer's decision-making takes up time.

Secondly, the screen is a very limited area in which to play, so a human player has a

Your computer has a better chance of beating you, thanks to the way Marc Freebury has coded his Light Cycle game for the 32K Atari

far better idea of what is going on than even the best computer algorithm.

To solve the first problem, I wrote the entire main game in assembler and then placed it in data statements in a BASIC program.

This allows the simpler pieces of code which are not time-critical — like the front page — to be handled efficiently.

The second program needed thought. In the end I decided to use the screen as a window into a much larger playing area, thus negating some of the human advantage.

The playing area I settled on is the size of nine screens (see

diagram) and takes more than 15K of memory. For this reason you will need a 32K machine to run this game — sorry.

Hints on conversion

I have one simple suggestion — don't. The game is far too machine dependent to warrant a detailed conversion guide. The basic ideas contained within the game are fairly simple, and if you have a BBC or Atom machine with on-board assemblers you should have little difficulty with a full rewrite.

The character set is also slightly redefined.

My different approach caused problems. The computer cycle is very often out of sight and collisions with a trail that wasn't there a second ago are common. Play testers found this a challenge.

Second, the computer cycle can box itself in off-screen, thus ending the game unexpectedly. This is annoying, but you do get used to it.

There are more than 700 DATA points in this game so there is a very high chance of typing them in wrongly.

So a checksum variable is provided. If CHK does not equal 61237, the main game has not been typed in correctly. SAVE it before running.

How it works

- 100-230 initialisation of machine code, redefinition of character set
- 240-350 front page and difficulty level handling
- 360-420 entry to and exit from the main game, with scoring
- 430-450 disable BREAK key routine
- 460-470 machine code routine to relocate character set
- 480-490 new characters
- 500-760 main game machine code data

Variables

- DIFF difficulty level
- CHK checksum. MUST equal 61237
- ME computer wins
- YOU player wins

```

100 REM *****
110 REM *
120 REM * LIGHT-CYCLES *
130 REM * BY M.FREEBURY *
140 REM *
150 REM *****
160 GRAPHICS 0:GOSUB 430:SETCOLOR 2,0,15
:SETCOLOR 4,0,15:DIFF=1
170 A=PEEK(560)+PEEK(561)*256:POKE A+3,7
1:POKE A+6,7:CHR$(125);" * LOADING M/C
*"
180 RESTORE 500:FOR I=13568 TO 14204:REA
D N:POKE I,N:CHK=CHK+N:NEXT I:IF CHK>61
237 THEN GRAPHICS 0:?"M/C ERROR":STOP
190 GRAPHICS 0:GOSUB 430:SETCOLOR 2,0,0:
SETCOLOR 4,0,0
200 A=PEEK(560)+PEEK(561)*256:POKE A+3,7
1:POKE A+6,7:POKE A+14,6:POKE A+15,6
210 RESTORE 460:FOR I=0 TO 31:READ N:POK
E 1536+I,N:NEXT I
220 X=USR(1536,57344,7168):POKE 756,28
230 RESTORE 480:FOR I=0 TO 39:READ N:POK
E 7192+I,N:NEXT I
240 POSITION 5,0:?"light cycle"
245 REM PRECEDING LINE ALL INVERSE.
250 POSITION 2,2:?"OBJECTIVE IS TO AVOID
D COLLISION WITH"
260 POSITION 7,4:?"WALLS TRAILS E
NEMY"
270 POSITION 9,6:?"%":POSITION 18,6:?"
&":POSITION 28,6:?"
280 POSITION 7,8:?"wins":POSITION 21,8:
    
```



Layout of the nine screens used in Light Cycle

```

? "YOU ";YOU;" COMPUTER ";ME;"
290 POSITION 14,10:?"DIFFICULTY ";DIFF
300 POSITION 10,12:?"PRESS button TO BE
6IN":POSITION 6,14:?"PRESS select FOR D
IFFICULTY"
305 REM PRECEDING LINE,WORDS 'BUTTON' AN
D 'SELECT' IN INVERSE.
310 POSITION 9,16:?"(c) 1983 Marc Freeb
ury"
    
```

ATARI PROGRAM

```

320 A=(PEEK(711)+1)*(PEEK(711)*255):POKE
711,A
330 A=PEEK(53279):POKE 77,0
340 IF A=5 THEN DIFF=(DIFF+1)*(DIFF<5)+(
DIFF=5):GOTO 290
350 IF STRIG(0) THEN 320
360 GRAPHICS 0:GOSUB 430:SETCOLOR 2,0,0:
SETCOLOR 4,0,0
370 FOR I=0 TO 3:SOUND I,[I*15,I*4,8]:NEXT
I
380 POKE 14200,(5-DIFF)*2+1
390 X=USR(14090)
400 FOR I=0 TO 3:SOUND I,0,0,0:NEXT I
410 W=PEEK(14196):ME=ME+(W=1):YOU=YOU+(W
=2)
420 GOTO 190
430 IF PEEK(16)>127 THEN POKE 16,PEEK(16
)-128:POKE 53774,PEEK(16)
440 POKE 752,1:" "
450 RETURN
460 DATA 104,104,133,204,104,133,203,104
,133,206,104,133,205,162,4,160,0
470 DATA 177,203,145,205,136,208,249,230
,204,230,206,202,208,240,96
480 DATA 255,129,129,129,129,129,129,255
,0,66,195,60,36,60,195,66
490 DATA 85,170,85,170,85,170,85,170,255
,255,255,255,255,255,255,255,189,60,
195,219,195,60,189
500 DATA 169,0,141,0,6,169,64,141,1,6,16
5,88,141,2,6,165,89,141,3,6,96,173,0,6
510 DATA 133,0,173,1,6,133,1,173,2,6,133
,4,173,3,6,133,5,169,0,141,4,6,160,0
520 DATA 177,0,145,4,200,192,40,208,247,
165,0,24,105,160,133,0,144,2,230,1,165,4
,24,105
530 DATA 40,133,4,144,2,230,5,238,4,6,17
3,4,6,201,24,208,213,96,173,0,6,133,0,17
3
540 DATA 1,6,133,1,169,0,141,110,55,141,
111,55,160,0,169,5,145,0,230,0,165,0,201
,0
550 DATA 208,2,230,1,238,110,55,173,110,
55,201,0,208,3,238,111,55,173,111,55,201
,7,208,222
560 DATA 173,110,55,201,128,208,215,96,1
73,0,6,133,0,173,1,6,133,1,169,0,141,112
,55,160
570 DATA 0,169,5,145,0,200,192,19,208,24
9,169,3,145,0,200,192,139,208,249,169,5,
145,0,200
580 DATA 192,160,208,249,165,0,24,105,16
0,133,0,144,2,230,1,238,112,55,173,112,5
5,201,72,208
590 DATA 206,96,72,201,14,208,16,198,1,1
65,0,24,105,96,133,0,144,64,230,1,76,42,
54,201
600 DATA 13,208,14,165,0,24,105,160,133,
0,144,46,230,1,76,42,54,201,11,208,13,19
8,0,165
610 DATA 0,201,255,208,29,198,1,76,42,54
,201,7,208,13,230,0,165,0,201,0,208,12,2
30,1
620 DATA 76,42,54,104,173,113,55,76,218,
53,104,96,173,114,55,133,0,173,115,55,13
3,1,160,0
630 DATA 169,6,145,0,173,0,6,133,0,173,1
,6,133,1,173,120,2,32,218,53,141,113,55,
165
640 DATA 0,141,0,6,165,1,141,1,6,173,0,6
,24,105,147,141,114,55,173,1,6,105,7,141
650 DATA 115,55,173,114,55,133,0,173,115

```

```

,55,133,1,160,0,177,0,201,3,240,5,169,1,
141,116
660 DATA 55,169,4,145,0,32,161,54,32,21,
53,172,120,55,162,0,202,208,253,136,208,
248,173,116
670 DATA 55,201,0,208,3,76,44,54,96,173,
118,55,133,0,173,119,55,133,1,160,0,169,
6,145
680 DATA 0,173,117,55,32,218,53,72,160,0
,177,0,201,3,240,46,104,162,144,173,10,2
10,201,4
690 DATA 176,249,168,173,118,55,133,0,17
3,119,55,133,1,185,121,55,32,218,53,72,1
60,0,177,0
700 DATA 201,3,240,10,104,202,208,219,16
9,2,141,116,55,72,104,141,117,55,173,10,
210,201,250,176
710 DATA 200,165,0,141,118,55,165,1,141,
119,55,169,7,160,0,145,0,96,104,32,0,53,
32,90
720 DATA 53,169,71,141,1,6,169,128,141,0
,6,32,152,53,169,116,141,1,6,169,128,141
,0,6
730 DATA 32,90,53,32,0,53,169,7,141,113,
55,169,72,141,115,55,169,211,141,114,55,
169,0,141
740 DATA 198,2,169,28,141,244,2,169,0,14
1,116,55,169,81,141,119,55,169,106,141,1
18,55,169,11
750 DATA 141,117,55,169,65,141,1,6,169,6
4,141,0,6,32,44,54,169,224,141,244,2,96,
0,0
760 DATA 0,0,0,0,0,0,0,0,0,7,11,13,14

```

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Time for a Spectrum games inspection

The Black Hole £5.50

Quest, 119 The Promenade, Cheltenham, Gloucs

The game itself couldn't possibly live up to its superlative-laden advertising (Simply the Best: A New Dimension etc etc). It is pretty good, though, with excellent graphics. The "incredible ... sound effects" are fair but unimpressive, the "100% machine code" is very fast, and the control keys are responsive if somewhat unorthodox.

In the centre of the screen is the Black Hole, from which alien spacecraft emerge in three directions. You have three weapons to destroy them with.

Your spaceship is confined to the left half of the screen, where you are in danger of colliding with indestructible objects in constant motion up and down.

The game is difficult and takes practice — happily Quest have included a practice mode. But to egg you on is the thought that your high score might get to win a T-shirt, or even to compete in a championship at the end of the year...

R.E.

instructions	70%
playability	68%
graphics	73%
value for money	80%



This week's line-up is a mixture of old and new themes. Our review panel has assembled to give its verdicts, so if you're sitting comfortably...



Galakzions £5.95

Mikro-gen, 24 Agar Crescent, Bracknell, Berks

You can tell you're tangling with Galakzions rather than Space Invaders because the hostile aliens move more unpredictably — and you have no bases to cower behind. The aliens at each end of the advancing horde tend to peel off and dive down towards you. When they do, all you can do is keep out of their way. You can't really win this kind of game — it's more a matter of how long you can stay alive.

Mikro-gen's version has simple, effective graphics. I particularly like the continuously scrolling stars in the background.

It's a game for one or two players, using either keyboard or joysticks, both of which give you easy control over your ship. There's a high score option, and you can choose your playing speed.

For all that this is a neat interpretation and will probably get a fair amount of play, though, I feel that software companies ought to be thinking in terms of more elaborate plot and presentation.

P.F.

instructions	80%
playability	85%
graphics	60%
value for money	60%



Spectrum Safari 48K £5.00

A J Rushton, 194 Shay Lane, Walton, Wakefield, W Yorks WF2 GNN

The theme of escaping from an island links together nine mini games within this program. The whole thing is a hybrid of adventure and arcade games — but hardened adventurers will find the random factor too high and lack of purely logical processes frustrating, while arcade addicts will find the reaction games too easy.

But I applaud the concept, and feel that the game has a lot to

offer younger users or those who just want something a bit different. Moreover the graphics are good, colour is used effectively, and the tunes are cleverly selected.

You can choose three levels of play, and there's a practice mode for any of the nine sub-games. These vary from a version of Simon to a simple version of Asteroids called Leaping Lemmings, and a nice touch of humour runs throughout.

R.E.

instructions	80%
playability	68%
graphics	72%
value for money	75%



Panic £5.95

Mikro-gen, 24 Agar Crescent, Bracknell, Berks

Moving around a strange landscape of floors connected by different lengths of ladders are your alien adversaries, cunningly disguised as vicious Granny Smiths. To dispose of these rotten apples you must first dig a hole for them to fall into, and then quickly batter them to death.

If they climb out before you get to them, they change colour, and you then have to arrange for

them to fall through two or more holes before they die.

As you progress from level to level their numbers increase, and some really tough characters join the fray too.

This is a competent, colourful variation on an unoriginal theme. Hardly a game for the pacifists among us, but jolly good fun all the same. I'll still enjoy playing it a year from now.

P.F.

instructions	80%
playability	85%
graphics	70%
value for money	65%



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SHARP MZ-80A PROGRAM

Trapped . . . and only your reflexes can save you

Use your laser bolts to fight your way to safety in Archie Glendinning's game for the Sharp MZ-80A. He's made full use of his micro's screen features

Your spaceship is trapped in a narrow corridor and to survive you must avoid the sides and use your laser cannons to good effect.

There are comprehensive rules in the program listing, but here is a brief resumé.

Your ship, symbol Y, is launched into the corridor after a warning count of 40. This warning is actually setting up the course.

As you start to move off "crash ships" will start moving inwards from both sides of the corridor. You can shoot these . . . but they'll reappear.

You can also shoot the stars and these vanish for good.

You have only seven laser bolts, but be warned — you must keep one to shoot a hole through the finishing line.

Next you move into a slightly narrower corridor and this will continue until you have finished on a width of eight characters.

The program, which occupies just over 5K of RAM, makes use of the Sharp MZ-80A's memory mapped screen.

Unlike any other computer I know, it has what is called a roller-coaster screen which means you can roll it up and down to your heart's content.

Therefore, instead of only one screen of memory — from 53248 to 54247 — you also have from 54248 to 55247.

So what I did in my program was to use this super screen to set up the game before it starts, thereby saving time on working and increasing the speed. The screen working is done from line 97 to 199.

The main chunk of the game is from line 200 to 299.

The POKE codes are as follows: 25 is a Y, 107 is a star, 231 is a ship going right, 232 is a ship going left, 67 is a single solid block, 0 is obviously a space, 46 is d to.

The lines that contain music are 113, 114, 507 and 601.

As the corridor becomes narrower the game slows down slightly (variable P12) to make it easier.



```
1 REM ***** MADE 5/2/83 *****
2 REM *****
3 REM ***** BY *****
4 REM ***** A. GLENDINNING *****
5 REM *****
6 REM ***** LAUNCH *****
7 REM
8 REM
9 REM
15 Y=12:SHIP=3:P12=0
70 PRINT"INSTRUCTIONS ? (Y/N)
71 GETR$:IFR$="N"THEN97
72 IFR$="Y"THEN80
73 GOTO71
80 GOSUB800
97 Y=Y-1:P12=P12+10:IFY<BTHENGOTO450
98 TIM=42:DIMN(30):FORHH=1TO30:N(HH)=0:NEXT:PRINT" ":S=0:LK=0:LASER=7
99 GOSUB150:REM** LINES 100-SET SCREEN
100 A=INT(Z-(Y/2))
102 I=INT(RND(1)*4):IFI=0THEN102
```

SHARP MZ-80A PROGRAM

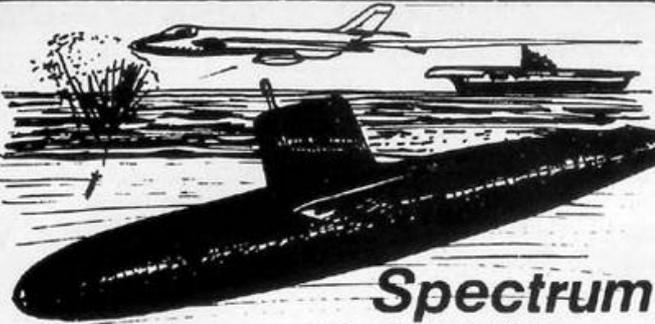
```

105 IFI=1THENL=39
107 IFI=2THENL=40
109 IFI=3THENL=41
110 IFA+L=>55207THENGOTO170
111 A=A+L:POKEA,67:POKEA+Y,67
112 PRINT"TIME BEFORE LAUNCH:-    ";TIM;"SHIPS:-    ";SHIP:TIM=TIM-1
113 PRINT"WIDTH:-";Y:IFTIM=0THENMUSIC"+B5"
114 W2=W2+40:IF(TIM=14)+(TIM=9)+(TIM=4)THENMUSIC"+G1"
115 G=INT(RND(1)*2):GG=INT(RND(1)*2):IFGG=1THEN130
117 GOTO140
118 H=INT(RND(1)*3):IFH=0THEN118
119 IFH=1THENPOKEA+1,231:N(S)=A+1
120 IFH=2THENPOKEA+Y-1,232:N(S)=A+Y-1
125 S=S+1:GOTO149
130 F=INT(RND(1)*Y-1):IFF=0THEN130
132 F=F+A+1
134 POKEF,107
135 IF(PEEK(F)=231)THENPOKEF,231
136 IF(PEEK(F)=232)THENPOKEF,232
137 IF(PEEK(F)=67)THENPOKEF,67
140 IFG=1THEN118
149 GOTO102
150 REM** Z=ME START GAME AT 200
155 Z=53248+260:W2=53248+240
156 PRINT" ";
157 PRINT" ";
160 POKEZ,25:RETURN
170 REM** PRINT FINISH
172 FORWW=55208TO55208+39:POKEWW,68:NEXT
174 POKEA+42,6:POKEA+43,9:POKEA+44,14:POKEA+45,9:POKEA+46,19:POKEA+47,8
199 Q=40
200 REM** GAME START
205 GETE$
210 IFE$="1"THEND=39
212 IFE$="3"THEND=41
218 IFE$="X"THENGOSUB500
219 IF(PEEK(Z+Q)<>0)THEN600
225 Z=Z+Q:POKEZ,25:POKEZ-Q,0:Q=40
227 IFZ<54507THENPRINTCHR$(4)
228 IFZ>53748+1459THEN400
230 IFZ=>N(LK)THENLK=LK+1
232 IF(PEEK(N(LK))=231)*(PEEK(N(LK))+1<>67)THEN235
233 IF(PEEK(N(LK))=232)*(PEEK(N(LK))-1<>67)THEN238
235 N(LK)=N(LK)+1:POKEN(LK),231:POKEN(LK)-1,0:GOTO245
238 N(LK)=N(LK)-1:POKEN(LK),232:POKEN(LK)+1,0
245 REM** PICK RANDOM ONE TO MOVE
246 IF(LK<2)+(LK>=5)THEN299
248 MM=INT(RND(1)*5)+LK-1
250 JK=PEEK(N(MM)):IFJK=231THEN253
251 IFJK=232THEN255
252 GOTO299
253 N(MM)=N(MM)+1:POKEN(MM),231:POKEN(MM)-1,0:GOTO299
255 N(MM)=N(MM)-1:POKEN(MM),232:POKEN(MM)+1,0
260 REM
299 FORPP=1TOP12:NEXT:GOTO200
400 REM** LAUNCH FINISHED-WITHOUT LOSS
410 PRINT"WELL DONE"
415 PRINT"YOU NOW GO ONTO A SMALLER WIDTH"
420 PRINT"YOU HAVE ";SHIP;" SHIPS LEFT"
425 PRINT"press space to continue"
426 GETR$:IFR$=" "THENGOTO97
427 GOTO426
450 REM** TOTAL SUCCESS
452 PRINT"YES - YOU DID IT !!!!!"
454 PRINT"YOU HAD ";SHIP;" SHIPS LEFT"
456 PRINT"DO YOU WANT ANOTHER GAME ? (Y/N)"
457 GETR$:IFR$="Y"THENRUN

```

SHARP MZ-80A PROGRAM

```
458 IFR$="N"THENEND
459 GOTO457
500 REM** ME FIRE
502 IFLASER<1THENRETURN
505 J=Z
507 FORF1=1TO50STEP5:POKE4514,F1:USR(68):NEXT:USR(71)
510 FORCC=J+40TOJ+200STEP40
512 IFPEEK(CC+40)=67THENRETURN
515 POKECC,46:POKECC-40,0
560 NEXT:POKECC-40,0
570 USR(71):LASER=LASER-1:RETURN
600 REM** CRASH:POKEZ+0,25:PRINT"
601 FORI1=1TO70:I2=INT(RND(1)*255):POKE4514,I2:USR(68)
602 X1=X1+1
603 IFX1<25THENPRINTTAB(X1);"BOOM"
604 A1=INT(RND(1)*79):A2=INT(RND(1)*49):SETA1,A2:NEXTI1:USR(71)
605 SHIP=SHIP-1:X1=0
606 IFSHIP<1THEN650
610 PRINT"YOU'VE LOST A SHIP !!
613 PRINT"You have ";SHIP;" ships left .
615 PRINT"press the space bar for next launch.
616 GETR$:IFR$=" "THEN98
617 GOTO616
650 REM** END OF GAME
652 PRINT"END OF GAME
654 PRINT"YOU'RE LAST ATTEMPT WAS ON A WIDTH OF";Y
656 PRINT"ANOTHER GAME (Y/N)
657 GETR$:IFR$="N"THENCLR:END
658 IFR$="Y"THENRUN
659 GOTO657
800 REM** RULES
810 PRINT" LAUNCH
820 PRINT"You have the task of flying through a test launcher.
822 PRINT"The keys are :-1 move left":PRINTTAB(16);"3 move right
824 PRINTTAB(16);"X to fire
826 PRINT"You only have 7 laser-bolts to fire on each launch .
830 PRINT"YOUR SHIP - Y
831 PRINT"EDGE OF TEST AREA -
832 PRINT"CRASH SHIPS - ":POKE54062,231:POKE54064,232
834 PRINT"ASTEROIDS - ":POKE54100,107
870 PRINT"press the space bar to cont.
872 GETW$:IFW$=" "THEN885
873 GOTO872
885 PRINT"You will have a count of 40 in which":PRINT"to ready yourself.
887 PRINT" It is advisable for you to have your
889 PRINT"hands on the correct keys.
891 PRINT" Upon the game starting you will move
893 PRINT"down the screen fairly fast.
895 PRINT" The crash ships will move out towards you.You must avoid these.
897 PRINT" You can shoot the asteroids but the crash ships may continue";
899 PRINT" across the screen.
901 PRINT" Eventually the screen will stop moving and you will see a row of";
903 PRINT" diamonds (◆) and the word FINISH it is vital you have ";
905 PRINT"one laser bolt left to fire throughany part of this word.
906 PRINT" PRESS THE SPACE BAR TO CONTINUE
907 GETR$:IFR$=" "THEN911
908 GOTO907
911 PRINT" So count you're laser bolts carefully you only have 7.
913 PRINT" As you complete each launch the width will become smaller.
915 PRINT"GOOD LUCK AND HAPPY FLYING !!!!
916 PRINT"press the space bar to continue
917 GETR$:IFR$=" "THENRETURN
918 GOTO917
```



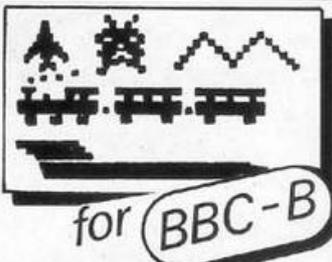
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Fast action version of the popular arcade game. 4 types of Galaxian (in 3 initial screen formations) swoop down individually or in groups of two or three. 6 skill levels, hi-score, rankings, bonus laser bases, increasing difficulty, superb graphics and sound.
- CENTIPEDE (32K)** £7.95 Cassette/£11.95 Disc
Incredible arcade type game featuring mushrooms, flies, snails, spiders, and the centipedes of course. Excellent graphics and sound. 6 skill levels, hi-score, rankings, bonuses, and increasing difficulty as the spiders become more active and the mushrooms increase.
- FRUIT MACHINE (32K)** £7.95 Cassette/£11.95 Disc
Probably the best fruit machine implementation on the markets. This program has it all... HOLD, NUDGE, GAMBLE, moving reels, realistic fruits and sound effects, multiple winning lines. This is THE fruit machine program to buy.
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Superior version of the old classic arcade game including a few extras. 48 marching invaders drop bombs that erode your defences, and 2 types of spaceship fly over releasing large bombs that penetrate through your defences. Hi-score, increasing difficulty, superb sound effects and graphics.
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Make space for characters TI-99/4A

Here's a useful tip for all TI-99/4A owners. In TI BASIC, four rows of characters are allowed for each program line.

You'll often find that this isn't enough, especially when using the PRINT statement. It's very frustrating to type in a line, only to find you have run out of space with just one or two characters to go.

Try my solution to your space problems. If you enter the unfinished line and then edit it, you'll find you can add an extra row and a half of characters on to the end of the program line.

A. Platt

Steady that tremble Oric-1

Oric users who have a problem with screen tremble may find that entering the following statement either directly or within a program improves matters: PRINT CHR\$(27);"X"

James Weaver

Defining characters Spectrum

Most home computers have a set number of characters that can be defined by the user.

This is usually done by drawing the character on an eight by eight grid. Each "on" pixel is then represented by a one, and each "off" pixel by a zero. Each row of the grid is then represented by a single binary number, so that eight binary numbers define the whole grid.

On the Spectrum these binary numbers are entered using the BIN command, a very untidy and tedious method. Other machines simply require the decimal value.

This routine allows each row to be entered in binary, and outputs the equivalent decimal value. It could be altered to draw the graphic character as the numbers are entered, and to POKE the values directly in.

```
1000REM BINARY TO
DECIMAL CONVERTER
1010INPUT "INPUT BINARY
NUMBER";B$
1020IF LEN B$ 8 THEN GOTO
1010
```

Helpful hints for your micro

Take a tip from us, and make programming your micro easier. Why not share your tips, too? Just send them to the address on page 3

```
1030IF B$="0" THEN STOP
1040LET Z=0:LET D=0
1050FOR C=LEN B$ TO 1
STEP -1
1060IF B$(C)="1" THEN LET
D=D+(2^Z)
1070LET Z=Z+1:NEXT
1075NEXT C
1080PRINT "BINARY";B$;
"DECIMAL";D
1090GOTO 1010
```

Variables used

B\$ — Binary number entered as a string.
Z — count of value of each heading (2^Z).
D — decimal value of binary number.
C — Loop starting at end of string (2^C) and ending at start of string (2^1).

Robert Walker

Tidy up your listings ZX81

This short program will renumber untidy listings. To use it, just add it on to the end of your program, and enter as a direct command GOTO 9000.

The program will print to the screen the new line numbers as it develops them. When the line number on the screen equals the number of program lines, press BREAK and delete the listing. This leaves your program intact with line numbers in multiples of 10.

If you have machine code stored in a REM line, then the value of Y in line 20 will have to be adjusted accordingly. To do this, just add the number of bytes in the REM plus 4 to Y.

```
9000 LET X=0
9010 POKE 16510,X
9020 LET Y=16511
9030 IF PEEK Y=118
THEN GOSUB 9060
9040 LET Y=Y+1
9050 GOTO 9030
9060 LET X=X+10
9070 PRINT X
9080 POKE Y+2,X
9090 RETURN
```

D.S. Holden

Ex-static Any micro

Trouble loading or saving programs is often put down to incorrect volume setting or a fault on your tapes. Similarly, a sudden program crash or lock-up is often put down to a spike in the mains supply. In fact, the problem is often due to static electricity.

A human being can discharge an energy spark of up to 15kV and sometimes even more, so it's not surprising that many micro manufacturers are looking at ways of guarding against static.

But if your micro has not been built with anti-static protection, don't despair. The following measures will help matters a lot.

Try using your micro on a wooden topped table — never a metal or bonded table top.

Keep your micro away from nylon, whether in the form of shirt sleeves, carpets etc. Nylon is a great storer of static.

Dry atmospheres encourage static. If you have flowers and pot plants in the room where you use your micro — so much the better.

Richard Smith

Stop your stop key VIC-20

The usual way of disabling the VIC's stop key is to POKE a value of 194 into location 788, which points to the hardware interrupt vector. This method works perfectly on an unexpanded VIC.

But if you have a cartridge such as the Super Expander plugged in, then this POKE will hang the machine.

My program gets around this problem by directing the stop key testing pointer to a user defined routine which will not test for this key.

Once entered as part of your program, the stop key is disabled and can be pressed like the function keys. That is, it has a CHR\$(code (in this case it is 3), but no function.

As the routine which tests for the stop key is now disabled, you cannot press Stop/Restore to reset the system.

```
10 POKE 0,169: POKE 1,255:
POKE 2,96
20 DATA 169,0,141,40,3,141,
41,3,96
30 FOR I=900 TO 908: READ J:
POKE I,J: NEXT
40 SYS 900
50 REM ****YOUR PROGRAM****
```

Kevin Irving

Print out a TRACE Spectrum

The Spectrum needs a TRACE command to print program line numbers, variables etc as each one is executed by the computer. This is a useful aid to debugging.

My tip makes use of the printer to print out TRACE information — I find that printing the same information on screen leads to confusion.

By setting a "switch" at the start of the program, you can turn the TRACE on and off.

The following listing shows the system applied to the program on p 38 of the Spectrum manual.

L. V. Phillips

```
1 LET TRACE=1: REM The switch
'on' to use trace. To turn off
the trace use this line
2 LET TRACE=0
100 LET X=10: IF TRACE THEN PRI
NT X;X: REM This will give the
value of the variable.
110 GO SUB 500
120 IF TRACE THEN PRINT #3;"L12
0" PRINT 5
130 LET X=X+4
140 GO SUB 500
150 IF TRACE THEN PRINT #3;"L15
0" PRINT 5
160 LET X=X+2
170 GO SUB 500
180 IF TRACE THEN PRINT #3;"L18
0" PRINT 5
190 STOP
200 IF TRACE THEN PRINT #3;"L20
0" LET X=140: REM The 'L' to indi
cate line number rather than var
iable value.
210 FOR Y=1 TO X
220 LET S=X+Y
230 NEXT Y
240 RETURN
```

Call your micro to account

Personal Bank Account Management System 48K Spectrum £9.95

Micromega, 230-236 Lavender Hill, London SW11 1LE

Nicely packaged and presented, this product comes with an excellent 17-page user's guide which clearly explains how the system works.

On loading the tape you find that the files already contain a fictitious account in the name of some chap called Clive Sinclair. I can't help feeling they missed a few zeros off the final balance. It's helpful to play with the example entries to get a feel for the operation prior to entering your own data.

The system holds 160 transactions and up to 10 standing orders, and this, for me, would comfortably hold a complete annual bank statement.

The operation is handled through a menu and is both simple to use and virtually impossible to crash.

It also has facilities which allow searching the data files by

Mortgage & Loan

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Mortgage is designed to calculate mortgage payments on loans from either banks or building societies.

Having entered the mortgage you want and the interest rate, you then specify whether the mortgage is with a building society or not. If not, you enter the number of instalments per year.

The program will also work out the minimum instalment to pay off the interest — the repayment period theoretically lasting for ever — which is information of dubious value for the average house buyer.

The Table of Payments shows outstanding balance (not total paid to date, as quoted in the introduction), total interest to date, interest this instalment, and

Do you wonder where your money goes? These programs are intended to help you find out. Our review panel found some did the job better than others...

cheque number, details, etc. and reconciling the computer entries with your actual bank statement.

The reconciliation feature reports any discrepancies between the computer's version and the bank's version. If you've been accurate with your data entry, you might find a bank error in your favour which recoups the original price of the software.

This software is professionally written and bug free and will appeal to users wanting to apply their micros to do a real job of work. **M.B.**

instructions	90%
useability	90%
features	90%
value for money	90%



amount paid off the capital this instalment.

Personally, I would rather not be told how much interest I am paying, and the outstanding balance shows me how much has been paid off the capital. Far more useful would be the amount of tax relief and net payment.

Loan is a variation on the same theme. From a list of parameters, amount of loan, instalment, number of instalments, and interest rate, the program will calculate any one on receipt of the other three. If you query the meaning of a parameter, an explanation is given.

Bug trapping is minimal in both programs, which don't seem to match the high standard associated with this company.

	K.P.
instructions	60%
ease of use	80%
display	50%
value for money	30%



Home Budget 48K Spectrum £5.75

Flowchart 62, High Street, Irthlingborough, Northants NN9 5TN

Home Budget enables you to set up a record of your estimated monthly expenses and income and work out your finances for the year ahead.

You are allowed up to ten categories of expenditure, which will cover the main items but

Vu-Calc BBC (cass. and disc) £14.95

Psion, 2 Huntsworth Mews, Gloucester Place, London NW1 6DD

Vu-calc is a powerful spreadsheet program for those who seriously want help in budgeting, either at home or in a small business.

It is complex to use, though Psion has tried hard to make the user guide easy for even a newcomer to spreadsheets to follow. And an example on side two of the tape gives you an insight into how to go about laying out a spreadsheet if you've never done it before — I found this a great help!

The program can be used from tape or transferred to disc, which I did without problems. A pity, though, that the worked example can't be transferred to disc.

	J.H.
instructions	80%
ease of use	45%
display	n/a
value for money	70%



means that a degree of grouping is necessary in order to encompass all expenses.

Having set up your forecast for the year, options include displays of monthly results, year end totals and histograms, and saving, verifying and loading to and from tape (using a six-digit security code — which seems a bit like overkill for a personal banking scheme.)

Two very good points about this program are the facility to convert forecasts into actual expenditure, say at the end of each month, and see the 'knock-on' effects on the rest of the forecast, and the ability to 'roll' the forecast year forward at monthly or greater intervals.

As personal banking systems go, this one is better than most. **K.P.**

instructions	85%
ease of use	90%
display	90%
value for money	80%



Comp-U-Tax 48K Spectrum £9.95

Micromega, 230-236 Lavender Hill, London SW11 1LE

This program rather reminds me of Christmas after shave; a small cassette and manual in an impressive box. Disappointment lurked within however. Not only did the glued cassette jam, but once freed, it failed to load first time.

I read the manual only to find that there were a number of circumstances it wouldn't deal with, advising the services of an accountant instead. I managed to load the program eventually and then crashed it quite by accident!

After such a catalogue of misfortune, I don't feel that I would trust it to calculate my tax liability for 1982-83. (You need a new program every time the tax laws change). **D.M.**

instructions	60%
ease of use	60%
display	n/a
value for money	20%



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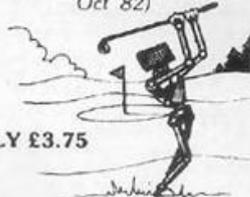
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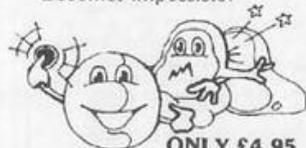
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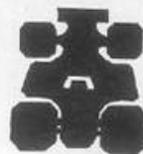
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