NEW

Home Computing WEEKLY

An Argus Specialist Publication

April 5-11, 1983 No. 5 35p

QUIZ MICRO EXPERTS ON TV PHONE-IN

EXCLUSIVE

Questions from home micro users will be answered by experts in a phone-in during a live two-hour TV show.

And director Patrick Titley, who came up with the idea, has asked Home Computing Weekly to tell its readers: You could take part if you write in.

His show, a follow-up to the highly successful Making the Most of the Micro series, will have Ian McNaught-Davis as link-man.

He was a natural choice, since he presented the two series, and Mr Titley pointed out: "Mac is very high in mountain climbing and presented the first live climb — so he's got experience of live TV."

John Coll, writer of the BBC micro manual, will lead a team of three or four problem solvers in a demonstration area equipped with the popular home micros. They will tackle some of the phoned-in queries on-air.

Freelance software writer Ian Trackman, a consultant in the series, will be giving his advice.

Among the other experts will be David Ellis, whose area is music on computers; John Vince, of Middlesex Polytechnic, on graphics; Malcolm Peltu, a freelance journalist and commentator on the impact of computers; computer journalist Henry Budgett; Chris Webb, manager of the Notting Dale Information Technology Centre; Richard Hooper from Prestel; Richard Fothergill, from the Government-funded Microelectronics Project; and a representative from BBC's Ceefax service.

The programme will go out on BBC-1 from the Television Centre in White City, before an invited audience of 25, starting at 11am on Sunday October 2.

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Reviews of programs for Spectrum, Video Genie, Dragon, ZX81
Programs to type in for: BBC, VIC-20, Spectrum, TI99/4A
Prize crossword

Talks to end software row

Confidential talks were being held in a bid to settle a legal action over software copyright.

Quicksilva, the big-selling software company, served a writ to try to stop a buy-back scheme called Buy 'n Try, run by Software Centre in London's Wigmore Street.

The action was taken against Computer Aided Systems (UK), a sister of Software Centre.

Quicksilva was seeking an injunction, alleging infringement of copyright, or aiding or conspiring to help infringement.

Buy 'n Try officially opened 24 days ago offering to buy back any tape returned within six months for 80 per cent of its value off another cassette.

The scheme was being offered also by phone and mail and managing director Bill Cannings, 42, was planning to offer dealerships.

He emphasised that customers' names and addresses and details of their purchases were logged and that they were warned that copying tapes was illegal.

Advertisements named 36 well-known software houses as

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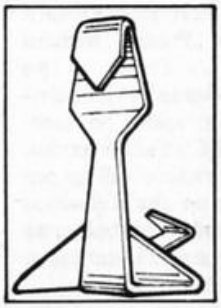

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IN BRIEF

A new company, Zone Distribution, has been formed to distribute add-ons to home computer dealers.

Its first deal is with Kayde Electronic Systems, which produces a range of products for the ZX81 and the Spectrum.

Zone Distribution, 13 Old Court, Long Melford, Suffolk

• • •

Now...slim with a 48K Spectrum, says CustomData, which has brought out a £4.95 cassette called Dietron.

Enter facts about yourself and it will work out what you need to stay healthy or lose weight, giving the choice of more than 150 types of food.

CustomData, 20 Friars Quay, Colegate, Norwich, Norfolk NR3 1ES

• • •

Chalksoft, which specialises in educational programs for the VIC-20, BBC micro and the Spectrum, has signed deals to sell its software in Australia and South Africa.

A spokesman said other deals were pending for European countries and said it proved the worldwide popularity of British computer and software.

Chalksoft, Lowmoor Cottage, Tonedale, Wellington, Somerset DA21 0AL

Let us know

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

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Argus Specialist Publications Ltd.
145 Charing Cross Road, London WC2H OEE. 01-437 1002

Home Computing Weekly is published on Tuesdays. Distribution by Argus Press Sales and Distribution Ltd, 12-14 Paul Street, London EC2A 4JS. Printed by Alabaster Passmore & Sons Ltd, of London and Maidstone, Kent. Design and origination by MM Design and Print, 145 Charing Cross Rd., London WC2H OEE

Continued from front page

suppliers of hundreds of programs. Several said they feared the new operation would hit the business, leading to less choice for customers.

The High Court proceedings, attended by Mr Cannings and Quicksilva managing director Nick Lambert, were adjourned for four days.

In the meantime, both sides undertook not to discuss the case with anyone not involved in the proceedings.

Alistair Kelman, counsel for Quicksilva, told Mr Justice Mervyn Davies that it would not be a breach of the undertaking to "say that negotiations are to take place, or are taking place, or have taken place and that there is no further comment."

Quicksilva also undertook in the meantime not to "counsel, encourage or induce" any person to refuse or cancel any advertisement placed by Computer Aided Systems or Software Centre or to refuse to accept or fulfil any order for the supply of software to Computer Aided Systems or Software Centre.

Mr Kelman said it was possible that the parties might come to an agreement before the end of the four-day adjournment.

LATE NEWS

"Agreement in sight"

Talks to settle dispute look like producing agreement, High Court Judge told.

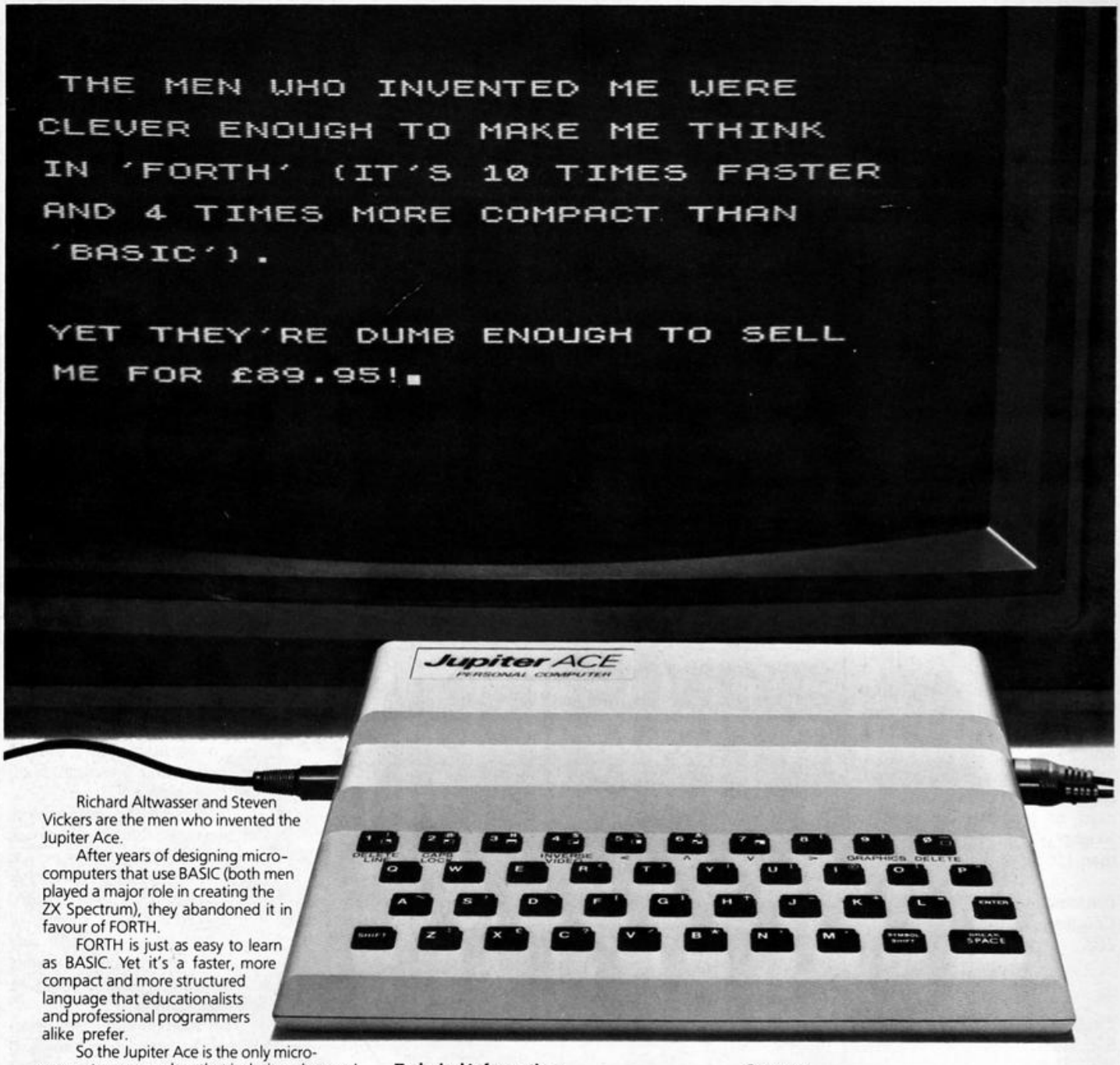
Mr Justice Mervyn Davies adjourned proceedings to April 13.

Earlier undertaking not to discuss the case with anyone not renewed.

Island welcome

John Lloyd's five-minute interview on Radio Guernsey led to so much response that a club for ZX computer users has been formed.

Details from John at flat 3, Weighbridge House, Lapollat, St Peter Port. Phone 0481 22769.



Richard Altwasser and Steven Vickers are the men who invented the Jupiter Ace.

After years of designing micro-computers that use BASIC (both men played a major role in creating the ZX Spectrum), they abandoned it in favour of FORTH.

FORTH is just as easy to learn as BASIC. Yet it's a faster, more compact and more structured language that educationalists and professional programmers alike prefer.

So the Jupiter Ace is the only micro-computer you can buy that is designed around FORTH.

Using it, there's little fear of accidentally 'crashing' programs halfway through and having to start all over again (a common fault with BASIC). The Jupiter Ace's comprehensive error checking sees to that.

The Jupiter Ace has a full-size keyboard, high resolution graphics, sound, floating point arithmetic, a fast, reliable cassette interface, 3K of RAM and a full 12 month warranty.

You get all that for £89.95. Plus a mains adaptor, all the leads needed to connect most cassette recorders and T.V.'s, a software catalogue (35 cassettes available, soon to be 50), the Jupiter Ace manual and a free demonstration cassette of 5 programs

The Jupiter Ace manual is a complete introduction to personal computing and a simple-to-follow course in FORTH, from first principles to confident programming.

Plug-on 16K and 48K memory expansions are also available, at very competitive prices. (There'll be a plug-on printer interface available soon, too.)

It'll take you no time at all to realise how clever Richard and Steven were to design the Jupiter Ace around FORTH. And even less time to realise what a silly price £89.95 is to charge for it.

Technical Information

Hardware
Z80A; 8K ROM; 3K RAM.

Keyboard
40 moving keys; auto repeat; Caps Lock.

Screen
Memory mapped 32 col x 24 line flicker-free display upper and lower case ascii characters.

Graphics
High resolution 256 x 192 pixel user defined characters.

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Continued from Front Cover

Mr Titley, 28, said: "I don't know how many viewers we will get — no-one's ever done it before — but I would expect about three million."

He explained how he thought up the idea: "Our department, Continuing Education, has slots set aside on Sunday mornings and we felt we ought to do more with them.

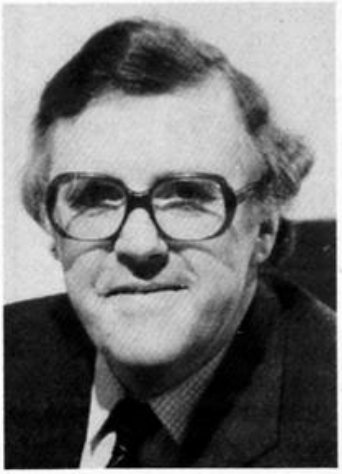
"I wanted to do something entertaining on a Sunday morning. I had a few ideas and when I started working on Make the Most of the Micro I had the idea of a phone-in. This was after Tuesday Call, on Radio Four, had a phone-in about microcomputers and got an awful lot of response.

"There's such an interest in microcomputers and we have the expertise in out team...after all, we are the only people doing anything in this area on TV.

"David Allen, the producer, and I sat down and thrashed it out. I believe quite strongly though, that ideas are nothing — it's putting the show together that counts.

"We wanted to do it at the end of the series, but the idea was too late. So now it's going out at the beginning of the repeats.

"I would like readers of Home Computing Weekly to write in and tell me what they would like to see in the show. If they include a daytime phone number and questions for our panel they may be able to put them to the team by phone during the show.



Ian McNaught-Davis

Among the features of the show will be "out-takes" from the series — including a scene showing Mr McNaught-Davis, demonstrating an older computer, inserting punched cards into a feed tray. Suddenly the cards leap out and shower over the floor.

There will be a general discussion, a demonstration by John Coll, film of stars with their computers, an item on jargon and film showing the work of the Notting Dale Centre.

There will also be a live interview with information technology minister Kenneth Baker.

Mr Titley said the series had a regular audience of three million — totalling the viewers for the three screenings each week — and more than 150,000 wrote to the BBC's referral service for more information.

David Allen

Each episode of Making the Most of the Micro took 12 hours in the studio and half a day to edit into 25 minutes. Mr Titley said everything looked as if it was running smoothly and explanations were as clear as the team could make them.

He said: "The reality of working with computer hardware and software is, of course, that things do go wrong — but a great deal can be learned when they do.

"So we are hoping to capture some of that reality by attempting to do things live."

"It's exciting because it's never been done before."

● Three more computer series are on the way from the BBC. Six 25-minute programmes are being prepared called the Electronic Office; another is called Computers in Control and features the BBC buggy; and the third, with the working title Computer Club, will be a magazine for young people.

Write to: Micro Special, P.O. Box 7, London W3 6XJ

Aim straight the paras are coming

If you're a games fan with a VIC-20 you will enjoy Paratrooper, from an Arizona company. You need quick reflexes to fire a gun, mounted at the bottom of the screen, at paratroopers dropping from helicopters.

If as many as three paratroopers land successfully they sneak away and return in a tank to destroy you. You get points for destroying helicopters and paratroopers.

You lose if a paratrooper, if three land near you and allow a tank assault or if you miss a target. This last means that firing at random is — unlike most other similar games — heavily penalised.

It has excellent graphics and sound effects and takes only minutes to learn, using either a joystick or the keyboard.

It is available in cartridge form with expanded features. For details write to The Electric Company, Lake Havasu City, Arizona.

Here's a shopping list of books for the ZX81 (we call it the Timex 1000) from a company accustomed to receiving overseas orders. Send in dollars only — an international money order is best — adding four dollars for airmail shipping. The company is ARCsoft Publishers, Post Office Box 132A, Woodsboro, Maryland 21798.

***101 Timex 1000/ZX81 Programming Tips and Tricks**, 128pp, includes 101 ready-to-enter programs as well as learn-by-doing hints and techniques. $7.95*

***37 Timex 1000/Sinclair ZX81 Computer Programs for Home School and Office**, 96pp, is listed as a source of practical ready-to-run programs. $8.95*

***Practical Timex/Sinclair Computer Programs for Beginners**, 96pp, includes 36 programs to type in. $7.95*

***Timex/Sinclair Computer Games Programs**, 96pp, has 24 all-new games. $7.95*

***Timex/Sinclair Computer Program Writing Workbook**, 96pp, includes program writing worksheets, graphics grids and instruction in BASIC. $4.95*

ARCsoft also offers books on the Tandy, Sharp, Casio, Atari, Texas Instruments and Apple computers. Write to them for a list.

In what is thought to be the first transmission of its type here, KMPS, an AM/FM radio station in Seattle, Washington, recently broadcast computer data and software.

KMPS hoped that about 25 to 30 people took advantage of the event. The station sent a 27-second English text message on both AM and FM bands. Listeners had 10 seconds to set up and then the message, at 300 baud, was sent in three versions — seven bit even, odd and no-bit parity.

The message was also broadcast verbally and users were asked to write in if they made it work. To certify response a keyword was transmitted only as data.

Several local user groups helped to set up the project and the owners of the station may try the same thing with other stations they control

Although sending computer information by radio is not a particularly new idea, doing so via conventional transmission is new here.

One telecommunications company is asking for permission to use the areas between assigned FM stations to send out special subcarriers. The approval has not yet been obtained. Meanwhile, the concept of doing the same thing over a regular channel, requiring no special equipment other than an acoustic modem, presents many possibilities.

And this is the end of my transmission...see you next week

Bud Izen **Fairfield, California**

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Store more on tape

The Hobbit is a book, a computer game — and, now, a tape storage device for the BBC micro.

Makers Ikon Computer Products describe it as a cheap alternative to a floppy disc drive.

Each cassette, says the company, has a capacity of 60K each side and a read/write speed which, at 750 bytes per second, is nearly seven times faster than a standard cassette recorder.

Reliability is said to be more than 100 times greater than most cassette recorders and 10 times better than some floppy disc drives.

Two drives may be connected direct to the input-output port and up to five files may be opened for reading or writing at one time.

All BBC file commands are supported, says Ikon, with these additions: *FORMAT "TITLE", *DELETE "TITLE", *RECOUP "TITLE", KILL.

Ikon, which made a similar product for the Nascom, says The Hobbit is compatible with all operating systems, has all plugs and connectors and comes with operating software on an EPROM to plug into a spare socket and a full manual.

The Hobbit costs £155.25, a second drive is £138 and a box of six cassettes is priced at £20.13. Postage and packing is £3 per order.

Ikon Computer Products, Kiln Lake, Laugharne, Carmarthen, Dyfed SA33 4QE

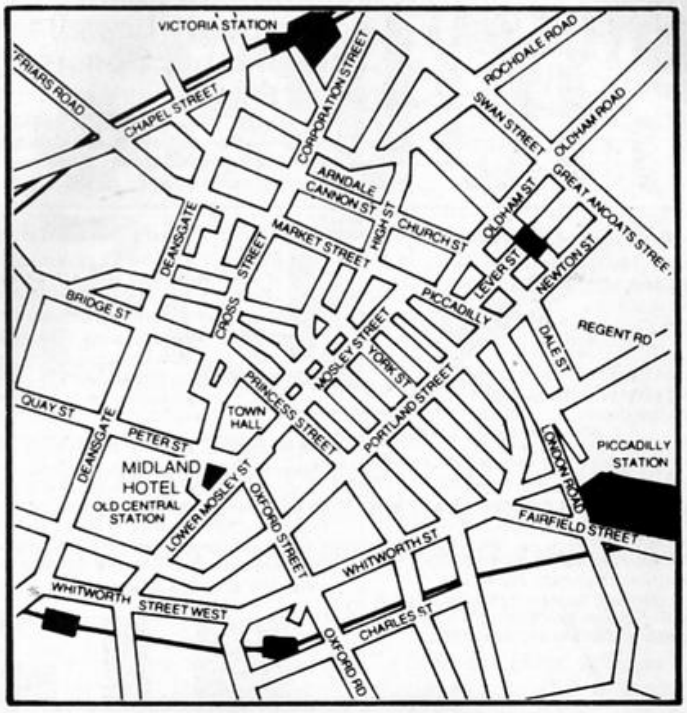
Look it up . . . quickly

A quick reference car for ZX81 users is being imported by Elkan Electronics.

It has 20 pages in accordion style and contains basic information for programming both the ZX81 and its predecessor, the ZX80.

Written in America by Paul Nanos, of Nanos Systems, the cards cost £3.50 each. They are also available for other popular computers, including Apple and Tandy.

Elkan Electronics, 11 Bury New Road, Prestwich, Manchester M25 6LZ



Next stop, Manchester

Our computer show arrives in Manchester in just 16 days — and there's a chance to win two computers, one for you and one for the school of your choice.

The first Manchester Home Computer Show will also feature a computer advice centre where visitors can try micros and examine programs covering games, small businesses and education.

Entry forms for the free-to-enter computer competition will be sent with advance tickets and with the show guide during the three-day event.

On display will be a wide selection of computers and software for the home user, particualrly in the £50 to £400 range.

Products and prizes

More then 150 exhibitors will be showing their products at the 4th International Commodore Computer Show.

It will be held at the Cunard International Hotel, Hammersmith, on June 10 and 11 with a trade-only day on June 9.

Entrance is £1, or £2.50 for families — with discounts for early applications — and Commodore says prizes worth more than £3,000 are on offer for visitors.

Commodore Business Machines (UK), 675 Ajax Avenue, Slough, Berks SL1 4BG

The show is to be held at the Midland Hotel, near Old Central Station, at the junction of Peter Street and Lower Mosley Street, on April 21 (12 noon-7pm), April 22 (10am-6pm) and April 23 (10am-6pm).

It is one of a series of country-wide shows being staged by ASP Exhibitions, part of Home Computing Weekly's publishers Argus Specialist Publications.

Advance tickets are £1 from ASP Exhibitions with free entrance for children under eight and pensioners. There is a 25 per cent discount for groups of 20 or more.

The series of shows began in London in January and from Manchester visits Brighton in May, Birmingham (June), Nottingham (September), Newcastle (October), Cardiff (December) and London again in January next year.

John Graham, Manchester Home Computer Show, ASP Exhibitions, 145 Charing Cross Road, London WC2H 0EE. 01-437 1002

Our show is being held at Manchester's Midland Hotel

Small letters, small people

Young children have difficulty recognising capital letters because they are first taught the alphabet in lower case.

So Leeds-based GTM Software is selling lower case key caps, at 75p per sheet, with a glare-free matt finish. They are designed for the BBC micro, but should fit other comupters with typewriter-style keyboards.

They are free with BBC programs from GTM: Smiler, a "phonic" word game to encourage children to sound out words; Wordbuild, which involves putting together a word from letters on the screen; and High Flyer, a game which teaches homophones — words which sound the same — and contains more than 280 sentences. The first two are £5.95 each, or £11 for both, and High Flyer, which occupies 24K of RAM, is £9.95. All are supplied with a manual.

Add a pair of zeroes

Have you got a ZX8100? One company says you can add the two zeroes — if you buy its upgrade.

For £42.50, Telford Electronics and Computing will fit a ZX81 into a new casing which adds 42 moving keys — including an extra shift key for easy RUBOUT — a reset button, switch for inverse video and a power on light. A RAM pack and power supply could also be put inside the case, says TEC.

The price includes the fitting charge and a six-month guarantee. It costs £40 for those who want to fit it themselves, using a soldering iron.

TEC also offers a range of optional extras including a pair of joystick sockets and an output socket to drive a standard computer monitor.

Telford Electronics and Computing, 26A Bradford Street, Shifnal, Shropshire TF11 8AU

Four years ago

Sargon, a chess program in Z80 assembly language, cost £9.75 for the book . . . the Independent NASCOM Users' Club said: "We are growing at a fantastic rate." Annual subscription was £5 . . . An advertisement for the Exidy Sorcerer offered a 32K RAM micro for £850, plus eight per cent VAT

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48k Spectrum £5.95

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●● SPECTRUM FORTH ●● NEW!!

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Also available from:
Buffer Microshop – Streatham, London
Philip Capley – Ossett, West Yorks
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FORTH FOR THE DRAGON 32

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As well as the enormous power of the FORTH language, 'DRAGONFORTH' can also execute BASIC statements. This combines the superb DRAGON sound, graphics and Floating-Point commands with the tremendous speed of FORTH to produce an unparalleled hybrid. You can write a whole program in BASIC or a whole program in FORTH or any mixture of both.

If not already convinced send £2.50 for the 60-page manual (redeemable against first order).

'DRAGONFORTH' is professionally packaged, sensibly priced, guaranteed for life and will be despatched by return complete with free demonstration graphics program.

AUTHORS: Oasis Software will market high quality programs you write in 'DRAGONFORTH'. We pay a lump sum on acceptance and a generous royalty. Lets hear from you!

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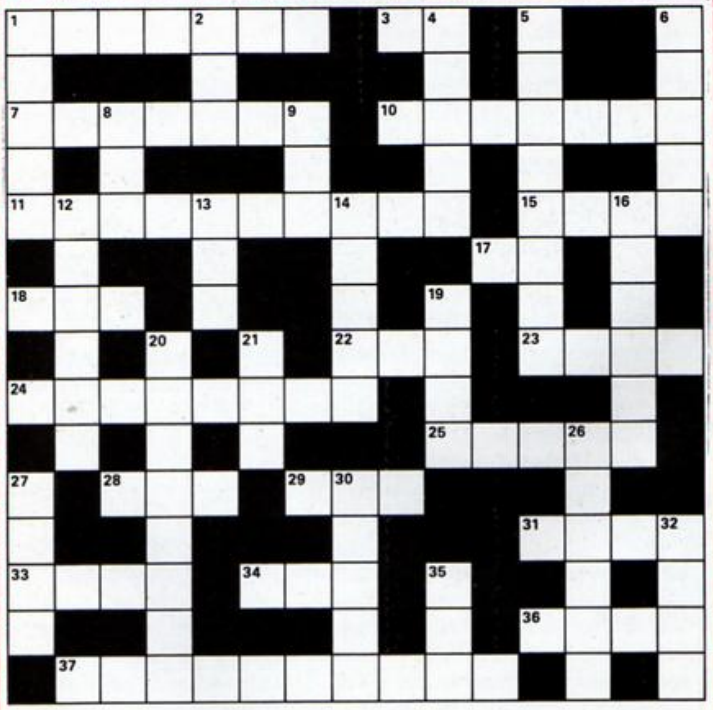
HCW5

WIN A TENNER

CROSSWORD PUZZLE

There's a crisp £10 cheque for the first correct entry out of the hat on Friday April 15. That gives you 10 days to complete Geoff Turners's puzzle and get it to us



Entry coupon

Name .....

Address .....

.....

.....

.....post code .....

Please write clearly, in capitals, and send your entry to: Crossword, Home Computing Weekly, 145 Charing Cross Road, London CW2H 0EE. Closing date is first post on Friday April 15

Across

1 Name associated with an early computer, also has connections with a current TV quiz game
2 A short electronic component?
7 Valley in the USA
10 Golden adventure for someone?
11 This could come between your computer and its printer
15 Clear screen and send the cursor here?
17 Constant companion to 4 down?
18 Happiness from a computer accessory?
22 This BASIC message could help you find your mistake
23 see 25 across
24 A new computer may be fast in opera, but slow in this report
25 and **23 across.** Go here for your TRS 80?
28 First computer from another planet?
29 **He has recently shown us how to make the most of our micro**
31 Files are usually full of it
33 Inside a Colour Genie package you should find its manufacturer
34 See 16 down
36 Turtle talk?
37 Often seen around the computer?

Down

1 Elementary language?
2 Request your computer to tell you the value of a character?
4 Components from the Chinese take-away?
5 Important feature of many computer games
6 Found at the back of a large computer?
8 This man will tell you how long a string is
9 Definitely not a p.n.p. transistor
12 Could allow the teacher to communicate with his pupils
13 Make comments about your programs?
14 Don't wait for an input?
16 and **34 across.** You may need this to find your way around your computer
19 Make plans to put graphics in your program?
20 His first computer was the M.K.14
21 Who will look after this computer when you are away on holiday?
26 Did St George own one of these computers?
27 Take a look inside a computer...
30 ...and take a byte from this one?
32 Computer not visible to the naked eye?
35 This chip is often responsible for delays in computer production

The small print

The first correct entry drawn at noon on Friday April 15 will be the winner.
Incorrectly addressed entries will not be considered.
Entries wil not be accepted from employees and their families, of Argus Specialist Publications and Alabaster Passmore & Sons.,
The winner's name and the solution will be published in the Home Computing Weekly.
The editor's decision is final and no correspondence will be entered into.

We're watching says Currys

Currys, with 514 high street stores, is keeping an eye on the micro market with a view to increasing its computer business.

Already there are 34 shops called Micro C, run by a separate arm of the company, and there have been suggestions that computers will be sold in Curry's main stores.

Marketing director Richard Ford said: "At the moment the matter is in the hands of Micro C which sells machines like the VIC-20, Dragon and Atari.

"We are very naturally considering our position. There's only one answer – it's just a matter of timing."

Currys, 46-50 Uxbridge Road, Ealing, London W5 2SU

Keep 'em rolling

Join the Oregon trail with your 48K Oric, says Ozark Software.

Next week the company is bringing out a cassette called Pioneer 1847, costing £6.95 and complete with wagon, riders, vandits, oxen and mountains.

Tony Reid, who wrote the program, said: "I've got quite a lot of general knowledge about the old West and I've seen quite a few westerns."

Ozark Software, 96 Seal Road, Bramhall, Stockport, Cheshire SK7 2LB

Keeping it in the family

Two little girls called Poppy and Sophie helped their mother and father start a small software firm.

It began when Vera and Geoffrey Sampson bought a 16K Spectrum in autumn last year, planning to use it as a teaching aid — only to find few programs for children of their daughters' age group.

Mrs Sampson, a 40-year-old American with a degree in Eastern archeology, said: "Sophie was then four and ready for school but they would not accept her, so we bought the Spectrum.

"We could not find any programs so we wrote our own. I went to the schools and asked the teachers for advice. Then people said we should try selling them — so we did."

The first cassette, priced at £5.50 contains Telling the Time and Money.

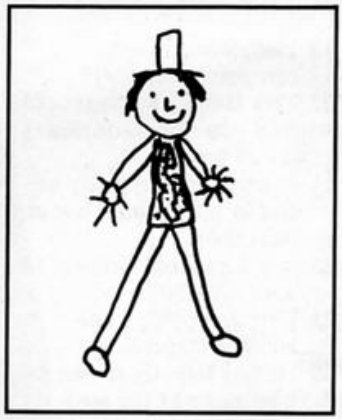
The first sets the hands of a clock at random and asks the child to type the time in words. Money names a small amount and shows pictures of coins. The child is asked to make up the value using these coins, with sound effects and coloured screen scores. Correct results on a long series are rewarded with a gold-coloured screen.

Geoffrey Sampson, 38, is a reader in linguistics at Lancaster University. The couple met at London University.

He was the author of the first cassette and is now working on a second, an introduction to maths.

Mrs Sampson said: "We are going to try and stick to infants, not over 10s, because there's a gap in the market. We try to find out what kids need, write the programs and try them out. A computer will not replace pen and paper, but it can help."

The children, now aged seven and five, even helped with the cassette design. Mrs Sampson said: "I just sat them down and said: 'I want some drawings.' And I used the best one on the cassette."



Poppy's drawing on the cassette card

Poppy Programs is based at the Sampson's Lancashire home — half the house built for a Victorian mill owner. Mrs Sampson said: "It gets noisy in the spring with the lambs bleating."

Mr Sampson is also involved in another project. He is writing another book, this time on writing systems. And he is using a Newbrain with a word processor he wrote for himself.

Poppy Programs, Richmond House, Ingleton, Carnforth, Lancs LA6 3AN

Games are killing the micro market

A third of all microcomputers sold in the past decade have been bought in the last three years. This incredible upswing has been brought about by the misconceived notion that the micro is nothing but a glorified games console, capable of putting arcade quality video games on to home television screens.

Not only is this misconception on the part of the purchaser, but also an unrealistic proposition for the manufacturer — for to make a truly arcade-quality micro would add at least an extra nought on to the purchase price.

Many people have taken for granted the computer's ability to create dazzling reproductions of its arcade counterparts.

Often the advertisements, especially for software, are alone an adequate incentive for immediate purchase. Exciting artwork and careful packaging disguises the fact that, in the case of games software, the game you have purchased is not up to arcade standards.

For those whose illusions have been totally destoyed, a small ad in the local paper, a classified in a computer magazine or a return to the shop announces their defeat.

People should realise that a micro is a means to an end, not an end in itself. You have to take the time and effort to learn how to program in order to experience the benefits (and frustrations) of your own creativity — to develop a unique video game or design a program that satisfies you and satisfies a need. And in doing so it will become obvious that there is no way a program written in Basic or Forth can give the level of quality taken for granted on an arcade machine.

If games are all that interest you, it makes more sense to buy a games machine dedicated to nothing but displaying a colourful array of games modules. But too often the prospective micro buyer gets caught up in the mania of buying a machine;

Because of this, the market will eventually suffer. People will sell off their machines as their interest wanes in what has turned out to be a poor investment. As an analogy, the secondhand car market has taken a lot of business away from showroom sales of new models, simply because the numbers, choice and, most importantly, price of secondhand cars make buying a brand new car pointless.

So it will be with microcomputers, with an obvious decline in demand and a parallel rise in the numbers of machines being offered for sale through magazines and newspapers. In fact, I predict that the near future will see the publication of supplementary magazines devoted to the sale, purchase and exchange of microcomputers in their hundreds, if not thousands. Economies of scale will rule within the mass market for these machines, culminating in a bottoming-out of sales to the general public.

This could all come about simply because of the present emphasis on micros for use as games terminals. Could it one day be said that gaming software killed an expanding market for microcomputers?

Aldo G Rabaiotti
Freelance programmer, Port Talbot

● What makes you pleased or annoyed about the micro scene, hardware or software? We welcome contributions for this column. Send them to: Paul Liptrot, Opinion, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Please include your occupation and your interest in computing.

Manchester Home Computer Show
MIDLAND HOTEL
April 21/22/23

Your diary dates are:

Brighton . . . . . May
Birmingham . . . . . June
Nottingham . . . . September
Newcastle . . . . . October
Cardiff . . . . . December

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At the Home Computer Shows will be a complete cross section of the hardware and software available to the home user. The emphasis is on the lower end of the price bracket with computers from £50-£400.

If you are interested in computers and what they can do for you then come along to our **COMPUTER ADVICE CENTRE:** experts will be on hand to give you impartial advice on equipment available.

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Thursday 21 April '83 (12am-7pm)
Friday 22 April '83 (10am-6pm)
Saturday 23 April '83 (10am-6pm)

The Manchester Home Computer Show
Midland Hotel. (Opposite Town Hall).

For advance tickets send cheque/postal order to:
ASP Exhibitions
Argus Specialist Publications
145 Charing Cross Rd,
London WC2H OEE
Tel: 01-437-1002

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A micro in your trolley

Supermarket giant Carrefour has opened the first of a chain of in-store computer shops.

It is being run in Telford, Shropshire, by Jentech Services as Jentech Home Computers and stocks the ZX81, Spectrum, Vic-20, Commodore 64, Atom, BBC micro, Dragon and the NEC PC8000 with a range of software, peripherals and add-ons.

Power protection

B and R Electrical has introduced an earth leakage circuit breaker which, it says, is designed for use around the home, particularly for computers.

Called the H04, it is about the size of a standard double socket power point and suitable for wall mounting or portable use. It costs £29.50 and the appliance to be protected is plugged into the standard three-pin socket.

B and R Electrical Products, Temple Fields, Harlow, Essex, CM20 2BG

I'm not fooling

Software boss Clement Chambers was being accused of playing an April Fool prank last week — because of a program he is selling.

His company, Computer Rentals, says its high resolution tool box cassette, at £5.95, for the 16K ZX81 can create a display of 192 by 256.

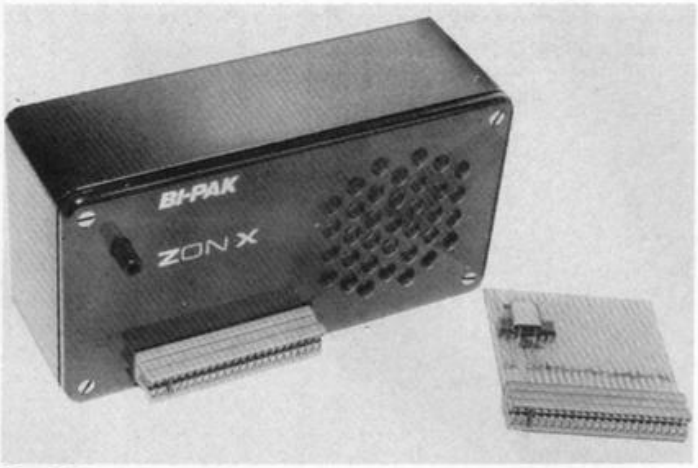
"It's true," said Mr Chambers. "I'm not making it up but three people rang up to ask if it was a joke. There's nothing like it on the market."

The program was written by a 14-year-old East Anglian schoolboy called Richard Taylor, who gets 20 per cent royalties.

Richard has written another program, this time for either Spectrum model and costing £5.95, which adds 36 new screen colours, says Mr Chambers.

And there is a third coming, a £3.50 ZX81 adventure called Escape from Manhattan.

Computer Rentals, 140 Whitechapel Road, London E1 1EJ



Zon X alongside special Spectrum adaptor — sound for Sinclair

Sinclair sounds off

Add sound to your silent Sinclair computer.

Bi-Pak Semiconductors has brought out a modified version of its sound generator, called the Zon X, for the ZX81 and the Spectrum.

Inside a black plastic case in a loudspeaker with manual volume control. It plugs into the back of the computer and does not need power supply or batteries.

Bi-Pak says it offers a wide range of sound effects — including pianos, bells, organs, helicopters, lasers and explosions — to add to programs.

Zon X has a sound chip with three channels plus noise and pitch and volume can be controlled by simple BASIC statement on the attack-decay envelope.

There is a further plug-in adaptor, for use with the Spectrum, which contains a crystal and other devices to give, says Bi-Pak, unlimited sound facilities.

Zon X costs £25.95, special adaptor is £32.75 and the Spectrum special adaptor only is priced at £6.80. Prices include postage.

Bi-Pack Semiconductors, The Maltings, 63A High Street, Ware, Herts SG12 9AG

You could be on our pages

We welcome programs and articles from our readers.

PROGRAMS should, if possible, be computer printed (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 and tips. Please include example programs. We will convert any sketched illustrations into finished artwork.

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

Fireworks for show

Organisers of a computer show are laying on a bonfire and fireworks display at Birmingham's National Exhibition Centre. Called Brainwave-83, the exhibition is being held on November 4, 5 and 6.

Clapp and Poliak, 232 Acton Lane, London W4 5DL

Send them now

Don't forget – have only until first post on April 8 to enter our great Spectrum/Quicksilva competition with £6,200 in prizes. Only correctly addressed envelopes containing coupons (not copies) from issues 1, 2 and 3 of Home Computing Weekly will be accepted. Good luck!

BBC micro ad complaint

Acorn has been rapped on the knuckles again over its advertising.

This time the Advertising Standards Authority upheld a complaint about an advertisement for the BBC microcomputer.

It showed how the computer could be expanded along with peripherals and software implying, says the ASA in its latest report that all these items were available.

An order form gave details of many of them. The ASA says that not only were some not available "but in certain instances they were not yet in production."

The authority upheld the complaint and said it was concerned that the material had been prepared without due regard to its code of practice.

Acorn had said it did not claim all the items were available and that the advertisement was purely informative. It agreed to amend future advertising to make this clear.

One man went to mow — but can you?

Let your computer take you into the garden. Allen Webb's program, for the VIC-20 plus 8K extra RAM, makes a change from shoot 'em up games

How does your garden lawn grow? This Qualcast mower is more efficient than the one you're given in our program

Here is a game in which no aliens or monsters appear, no spaceships are used and in which you don't have a laser cannon. In fact, all you have to do is cut grass.

Imagine that you are trying to make a living by cutting other people's lawns. You have a petrol mower which works well but has a sticky throttle and won't stop once it's moving.

There are three customers on your lists, each with a different garden layout.

The gardens all contain trees, ponds and garden gnomes and they are bordered by fences, walls and paved paths. You must cut the grass without hitting any of the items on the lawn.

A collision will result in damage to both your mower and the object you hit. This costs you money to repair everything. Once you complete the lawn you are paid. The faster you cut the grass, the more money you will get.

A collision with a tree, or if you fall in a pond, will mean an overnight stop to repair the mower or to dry out. The grass grows again overnight so you will have to start again.

You must be careful to move economically or you will run out of petrol. The mower is

refilled if you do, but it costs you money.

The program needs at least 8K expansion to run. Before loading or typing in the program, you must raise the start of BASIC with the following direct command:

POKE642,32: SYS 64824

When you run the program, you will be asked for the level of difficulty. 0 is the slowest speed and 9 is the fastest. The program will then draw one of the gardens and position your mower on it. You must then press any key to start. You move the mower with the following keys:

A — move up
Z — move down
Cursor right — move right
Cursor down — move left

If you hit anything, you will be given a message at the top of the screen. press any key to get going again after a collision.

The program uses a number of features which may be of interest. Lines 470-480 set up a screen of 32 rows of 24 characters. This screen is cleared by the SYS 6000 call. The user defined characters are stored in RAM starting at 5120 and are pointed to by a POKE 36869,205.

In order to speed things up, the lawn is scanned in line 1130 by the SYS6036. If all the grass has been cutr, then location 1 will contain 0, else it contains 1.

Sound effects have been included to give the program that added undefinable quality.

How it works

Line 90 sets up sound registers and clear keyboard buffer
Line 100 movement increments
Line 110 loads machine code
Line 430-440 load characters
Line 450-460 save screen status
Line 470-480 set up and clear screen
Line 490-940 draw lawn
Line 960-1000 get key press and change direction and mower character
Line 1020-1030 check petrol
Line 1040-1110 check for collision
Line 1120-1200 cut grass and scan lawn
Line 1210 message routine
Line 1220-1330 grass growing routine
Line 1340-1460 lawn finished, calculate cash, new lawn?
Line 1470-1520 cut grass around tree
Line 1530-1670 instructions
Line 1680-1690 mower noise
Line 1700-1840 collision effects

```
10 PRINT"■■■■■■"TAB(5)"■■■■■■■■■■■■"
20 PRINTTAB(5)"■■LAWN-MOWER■"
30 PRINTTAB(5)"■■■■■■■■■■■■"
40 PRINT"■"TAB(5)"■  A.E.WEBB"
50 PRINT"■■■"TAB(2)"■INSTRUCTIONS? (Y/N)"
60 GET1$:IF1$<>"Y"ANDI$<>"N"THEN60
70 IF1$="Y"THEN1530
80 PRINT"■DIFFICULTY LEVEL 0-9":INPUTLE:LE=(9-LE)*5:IFLE<0ORLE>45THEN80
90 VO=36878:W=V0-1:POKEVO,15:POKE198,0
100 OF(1)=-24:OF(2)=1:OF(3)=24:OF(4)=-1
110 FORI=0TO97:READA:POKE6000+I,A:NEXT
120 DATA 162,0,169,32,157,0,16,157,208,16,157
130 DATA 160,17,157,112,18,169,0,157,0,148
140 DATA 157,208,148,157,160,149,157,112,150,232
150 DATA 224,209,208,223,96
160 DATA72,152,72,138,72,169,0,133,1,133,87
170 DATA169,16,141,88,0,162,0,160,0,177
180 DATA 87,201,74,240,26,200,192,24,208,245
190 DATA 232,224,32,240,20,24,165,87,105,24
200 DATA 133,87,165,88,105,0,133,88,76,166,23
210 DATA169,1,133,1,104,170,104,168,104,96
220 DATA 3,7,15,31,15,31,13,29
230 DATA 224,240,240,252,240,240,176,216
240 DATA 3,1,1,1,1,1,2,0
250 DATA 128,128,128,128,128,128,192,0
260 DATA 0,0,85,170,170,170,170,255
270 DATA 0,255,34,255,136,255,34,255
280 DATA 255,129,129,129,129,129,129,255
290 DATA 71,31,127,127,255,255,255,255
300 DATA 197,240,252,254,255,255,255,255
310 DATA 127,127,191,31,71,0,170,0
320 DATA 255,254,254,252,229,0,170,0
330 DATA 85,0,170,0,85,0,170,0
340 DATA 87,1,171,1,85,1,171,0
350 DATA213,128,170,128,213,128,234,0
360 DATA87,7,175,31,95,31,175,29
370 DATA245,248,250,252,253,240,186,216
380 DATA24,60,24,60,90,24,36,36
390 DATA124,124,124,16,16,16,16,56
400 DATA56,16,16,16,16,124,124,124
410 DATA7,135,135,255,135,135,7,0
420 DATA224,225,225,255,225,225,224,0
430 FORI=0TO504:POKE5120+I,PEEK(32768+I):NEXT
440 FORI=0TO167:READX:POKE5624+I,X:NEXT
450 Z1=PEEK(36864):Z2=PEEK(36865):Z3=PEEK(36866)
460 Z4=PEEK(36867):Z5=PEEK(36869)
470 POKE36869,205:POKE36864,10:POKE36866,24:POKE36867,64:POKE36865,22
480 PT=0:TC=0:POKE36879,93:SYS6000
490 FORI=0TO768:POKE4096+I,74:POKE37888+I,6:NEXT:GOTO500
500 POKELO,77
510 POKELO+1,78
520 POKELO+24,75
530 POKELO+25,76:RETURN
540 POKELO,70
550 POKELO+1,71
560 POKELO+24,72
570 POKELO+25,73:RETURN
580 Z=INT(RND(1)*3)+1
590 FORI=0TO23:POKE4096+I,67:POKE37888+I,4:NEXT
600 FORI=0TO23:POKE4040+I,68:POKE36632+I,2:NEXT
610 FORI=1TO30:POKE4096+I*24,69:POKE37888+I*24,0
620 POKE4119+I*24,69:POKE37912,0:NEXT
630 ONZGOSUB650,730,810
640 GOTO910
650 MP=4132:DI=3:MC=81:LO=4221:GOSUB500
660 LO=4260:GOSUB500
670 LO=4470:GOSUB500
680 LO=4812:GOSUB500
690 LO=4323:GOSUB540
700 FORI=4793TO4799:POKEI,69:POKE33792+I,0:NEXT
710 FORI=4799TO4151STEP-24:POKEI,69:POKE33792+I,0:NEXT
720 RETURN
730 MP=4218:DI=3:MC=81:FORI=4145TO4162:POKEI,69:POKE33792+I,0:NEXT
740 LO=4579:GOSUB500
750 LO=4582:GOSUB500
760 LO=4689:GOSUB500
770 LO=4653:GOSUB500
780 LO=4716:GOSUB540
790 LO=4688:GOSUB540
800 FORI=4490TO4503:POKEI,69:POKE33792+I,0:NEXT:RETURN
810 MP=4218:DI=3:MC=81:FORI=4130TO4250STEP24:POKEI,69:POKE33792+1,0:NEXT
820 FORI=4251TO4258:POKEI,69:POKE33792+I,0:NEXT
830 FORI=4282TO4402STEP24:POKEI,69:POKE33792+I,0:NEXT
840 FORI=4450TO4433STEP-1:POKEI,69:POKE33792+I,0:NEXT
850 LO=4246:GOSUB540
860 LO=4701:GOSUB500
870 LO=4732:GOSUB500
880 LO=4614:GOSUB500
890 LO=4500:GOSUB500
900 RETURN
910 POKEMP,MC
920 FORI=1TO3
930 LL=4096+INT(RND(1)*768):IFPEEK(LL)=74THENPOKELL,79:NEXT:GOTO950
940 GOTO930
950 GET1$:IF1$=""THEN950
960 GOSUB1680:KE=PEEK(197):IFKE=64THEN1010
970 IFKE=23THENDI=2:MC=82
980 IFKE=31THENDI=4:MC=83
990 IFKE=17THENDI=1:MC=80
1000 IFKE=33THENDI=3:MC=81
1010 NP=MP+OF(DI)
1020 PT=PT+1:IFPT<800THEN1040
1030 GOSUB1700:M$="■PUTT PUTT..OUT OF PETROL":TC=TC+5:PT=0:GOTO1210
1040 PE=PEEK(NP)
1050 IFPE=74ORPE=32THEN1120
1060 GOSUB1750: IFPE=67THENM$="■HIT FENCE..NEW GRASS BOX":TC=TC+10:GOTO1210
1070 IFPE=68THENM$="■HIT WALL.....NEW ROLLER":TC=TC+10:GOTO1210
1080 IFPE=69THENM$="■HIT PATH.....NEW BLADES":TC=TC+10:GOTO1210
1090 IF(PE>69ANDPE<74)THENM$="■POND.GO HOME TO DRY OUT":GOTO1220
1100 IFPE=79THENM$="■HIT GNOME.....NEW BLADES":TC=TC+10:GOTO1210
1110 M$="■HIT TREE.TAKE FOR REPAIR":TC=TC+10:GOTO1220
1120 IFPE=74THENPOKEMP,32:MP=NP:POKEMP,MC
1130 SYS6036:IFPEEK(1)=0THEN1340
1140 IFPE=32THENPOKEMP,32:MP=NP:POKEMP,MC
1150 OF=1:GOSUB1470
1160 OF=-1:GOSUB1470
1170 OF=24:GOSUB1470
1180 OF=-24:GOSUB1470
1190 FORDE=1TOLE:NEXT
1200 GOSUB1680:GOTO960
1210 PRINT"■"M$:FORDE=1TO4000:NEXT:POKE198,0:PRINT"■■■■■■■■■■■■
```

Have a drawing, squeaking, playing, speaking micro

You'd be surprised what your micro can do — with a little software help. Our reviewers tell you how they rate the new utility programs

Softalk II — Spacegames 48K Spectrum £6.95

This is a good idea and quite successful. The program enables the Spectrum to 'speak', enabling a vocabulary of 46 pre-defined words to be stored above Ramtop.

This set includes all whole numbers, plus a vocabulary derived from Star Trek, including words like "phasor" and "starbase" as well as some colours and directions.

Also included is the "s" sound to pluralise many words. Clever programmers might also be able to split words by altering the addresses of the stored data, for example to get "speed" from "s" and "torpedo".

The quality of the sound is surprisingly good, though it takes a bit of getting used to. But there is a great deal of background fuzz, and amplifying the output sometimes seems to amplify the fuzz at the expense of the speech.

It takes two lines of program to produce a word, but long utterances can easily be programmed. However very few long sentences are possible with the vocabulary provided. Most applications will be simple single word warnings or hints in games programs.

Certainly not as good as most speech chips, but quite a remarkable manipulation of the Spectrum's primitive sound system.

N.W.

instructions	70%
ease of use	70%
graphics	n/a
value for money	80%

★★★

Auto Graphics Video Genie £6.95

Buttercraft Software, 14 Western Avenue, Riddlesden, Keighley, Yorks.

Another program development aid from Buttercraft, this time an aid to designing graphics to be incorporated in your own programs.

Written in Basic, Auto Graphics allows graphics characters to be designed on the screen by individual pixels. As the design is built up, larger screen areas can be defined as single graphics "blocks". Once the design is to your liking, it is saved as a Basic program line.

As the Auto Graphics line numbers start at 9000, you have the option of including the generated strings either as lines at the start or as a subroutine at the end of your own program. Instructions are also given on saving the graphics lines on tape and then merging with another program.

But remember that the program uses AS to store its generated strings — don't use the same variable in your program.

An eight-page instruction book accompanies this tape, and I would strongly advise anyone buying the program to study the instructions carefully.

R.M.D.

instructions	90%
ease of use	50%
graphics	n/a
value for money	90%

★★★★

Auto Sonics Video Genie £4.99

Buttercraft Software, 14 Western Avenue, Riddlesden, Keighley, Yorks.

I didn't know quite what to expect when this tape arrived for review, but it turned out to be a really excellent utility for those who write games in BASIC and want to include sound effects.

After adjusting your sound equipment with the aid of a signal output by the program, you are faced with a menu of 26 possible effects, including animal noises, sirens and space sounds.

Select the sound you want, and a list of parameters appears on the screen. Using these, you can adjust the quality and duration of the sound in sixteen different ways, and keep testing the result until you find exactly the effect you are after. Pressing the / key will then produce the BASIC program line which gives the effect, and this can then be copied for use as a subroutine in a program.,

This tape will no doubt go down well with games specialists. I look forward to the appearance of programs rivalling the performances of Percy Edwards or the BBC Radiophonic Workshop.

R.M.D.

instructions	90%
ease of use	90%
graphics	80%
value for money	90%

★★★★

Spectsound Spectrum £5.95

PDQ Software, Parsley Rye, Hilders Lane, Edenbridge, Kent TN8 6JU.

Spectsound lets you use the Spectrum's keyboard rather like the keys on an electric organ, to play notes and compose simple tunes. Though by no stretch of the imagination could the Spectrum be described as a musical instrument, the booklet suggests that it could be used as an elementary music teaching aid.

A keyboard overlay is provided to show you which keys produce which notes, and the instruction book is very comprehensive and easy to follow.

The program loaded first time, and launched straight into a pleasant jingle and a display of the musical stave, with notes appearing in the appropriate places. On entering GOTO 45 as directed, I was serenaded with the demonstration tune, Hava-Nagila.

The main program, however, is rather less ambitious. Pressing a key produces a note, plus the name of the note displayed on the screen. You do not, unfortunately, see the note's position on the stave.

By adding this to the progam, Spectsound's usefulness as a teaching aid would be much greater. Maybe the programmer would like to take that idea up?

B.B.

instructions	100%
playability	90%
graphics	50%
value for money	70%

★★★★

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A real brain twister, White Barrows requires both brains and brawn from its players. It's no good just hacking your way through the Barrows and hoping to fall over the Sorcerer. Eventually you'll meet a Dragon, and they don't hack easily! You'll need all your strength and cunning to survive this one for long.

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Flight program didn't take off

After reading of Mr Hasting's problems with C-Tech Software, I thought I'd let readers know about the difficulties I've had with the same company.

In November last year, I sent off for a Flight Simulator program for the Dragon. About two weeks later (so much for the advertised despatch within 48 hours) I received a tape in a box and nothing else — no documentation at all.

The program turned out to be written in Basic, and, contrary to what was stated in the advertisement, dials and runway could not be shown on the screen together.

I sent this tape back, and another in the same state as the first arrived about three weeks later. This one would not load — the only time I've ever had any problems with loading.

This tape was returned on January 7 by registered post, along with a request for my money to be refunded. On February 21 I sent a further letter, but have still heard nothing from them.

C.P. Davies, Colwyn Bay, Clwyd.

Winter's tale of woe

My experiences with Oric Products have been similar to your corresponents'. My tale of woe is as follows:

Order 48K Oric in the first week of November, on a promise of delivery in the first week of December.

End of November — despatch now second week in December.

Early December — despatch now by Christmas.

Mid-December — letter confirming despatch Christmas or early New Year.

December 22 — machine posted!

Christmas/New Year holiday — numerous calls to GPO, but no Oric.

First week in January — apologies for a mix-up between factory and sales — despatch now by end of January.

February 5 — Oric arrives, posted on February 3.

Second week in February — I write to complain and ask for Forth language, Oric User magazine, cassette leads and explantation of various bugs. No reply to date.

Mid-February — machine breaks down and is returned to Oric. Delivery confirmed, but no date for despatch given. Then delivery denied.

End of February — delivery confirmed. Despatch by 25th.

March 3 — still no Oric. Wrote to demand refund.

March 5 — Oric delivered (despatched March 3).

The above represents just some of the phone calls I have had to make to Oric — has the company got shares in British Telecom?

G.D. Evans, Luton, Beds.

Calling all Dragon owners

The Scottish Dragon Club has a current membership of 517 from all over the country. As well as publishing a regular club newsletter, we have obtained members discounts from seven different software and hardware manufacturers so far.

We charge an £8 membership fee which includes membership and free games tape.

D.J. Anderson, President, The Scottish Dragon Club, Top Flat, 1 Walker Street, Edinburgh EH3 7JY.

My computer language barrier

Having finally committed myself to a Colour Genie, what do I find in issue 1 of your magazine? My computer will be out of date as soon as Mr Whitford, of Lowe Computers, can get his new ideas imported from Japan. Well, you pays your money and you takes your choice.

But I do feel there is a bit of a con going on in the computer market on the subject of language. When I bought my computer, I was told that is used BASIC instructions. Seeing a number of magazines all advertising BASIC programs, I thought I was well away.

Then I found that BASIC does not mean what my dictionary says it means — in fact there are as many different BASICs as there are computers.

Has anyone thought of writing a BASIC comparison dictionary? Perhaps you could use the idea for a series. As you are a weekly, we wouldn't have long to wait before being able to add to our understanding.'

I hope you will be carrying Colour Genie programs in future issues.

Peter Holme, Kendal, Cumbria.

More Atari hints, please

Up till two months ago I thought a pixel was something like a leprechaun and a byte was teeth marks on an apple.

Since then I have acquired an Atari j400, and have learned what a pixel and byte really are. But I have not find many useful hints on using my machine without paying exorbitant prices for US magazines.

So your first issue, with the article on Atari graphics, was heaven-sent. Please keep it up — I am sure all your other Atari-owning readers will agrfee.

Sgt. M Garnett, RAF C10, Blackpool, Lancs.

Multiplicity of micros

Please can you give our micro club a mention? We held our first meeting on March 9 and were very pleased with the response — 70 people present. Among the micros represented were ZX81, Spectrum, TRS-80, Nascom III, Dragon, Pet and BBC, though not everyone who came was a micro owner.

We are the Thurnscoe and District Micro Club, and we will be meeting every Wednesday evening. As the secretary, I will give further details to any readers who are interested.

Peter James Davis, 62 Tudor Street, Thurnscoe East, Near Rotherham, South Yorks S63 0DS.

Want readers to hear about your micro club? Send us the details.

No guilt about games

I'm not a computer person but I have got a Spectrum. It's on my living room floor and I only use it for playing games.

I don't know how to program and I don't want to know. It is as much as I can do to actually load the games into the Spectrum.

Most of my friends and family are in professional programming and they all play games too. So why should I feel guilty?

Mrs Patricia Smith, Co Londonderry, Northern Ireland

Tell me the same old story

I too am having problems with Oric Products, as is a friend of my son's. Only today I rang the company, to be told the same story I have been hearing for the past six weeks.

My order was first placed in October last year. What annoys me most is that, not only have Oric not delivered our goods, but it also cashed our cheque on January 13. This money could have kept our account in balance rather than theirs!

P. Fustow, Hull, Humberside.

We have received a number of letters complaining about Oric's delivery delays.

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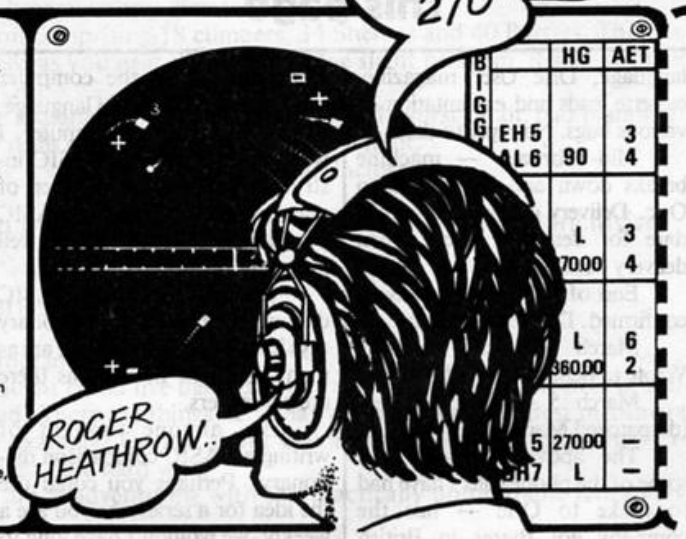

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HCW 5

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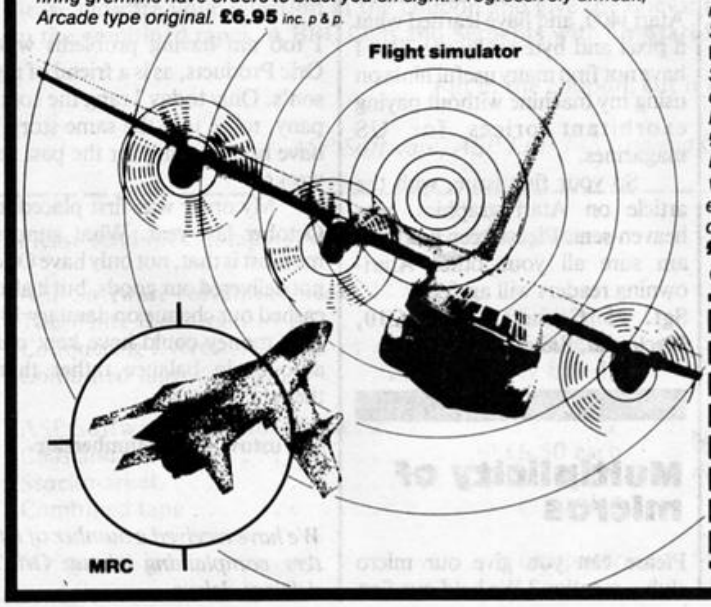

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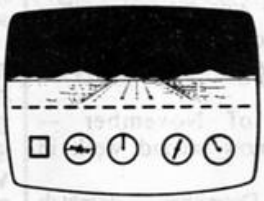

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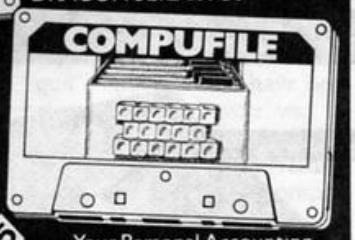

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★ poor
★★ average
★★★ good
★★★★ very good
★★★★★ excellent

Mines of Saturn/ Return to Earth Spectrum £5.95

Mikro-Gen, 24 Agar Crescent, Bracknell, Berks

Two simple adventure-type programs on one cassette. The format of both is the same — a series of situations followed by the question "what will you do now?" — but the scenarios are slightly different.

In Mines of Saturn, you have to pick up "Di-Lithium Crystals" in order to refuel your spaceship, which has made a forced landing on Saturn.

Return to Earth is the sequel, in which you have to find your way round a deserted earth Station to try and alert Earth of your predicament.

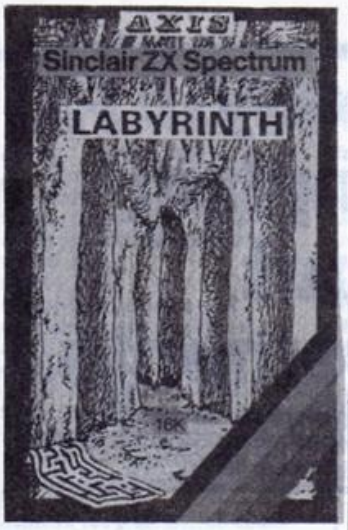
I was entertained by the display of my spacecraft and Saturn while the program was loading. Sadly, once the game proper had begun, that was the last I saw of them.

The program wouldn't accept a lot of my proposed solutions, but got full marks for politeness, responding with "pardon?" to suggestions it did not understand.

Though I found no bugs as such, there was some evidence of bad design. For example, at one point I was offered, and accepted, a boat, only to find that the only way to proceed was upwards! Well, it did say a *light* boat.

	B.B
instructions	70%
playability	50%
graphics	n/a
value for money	70%

★★



Labyrinth Spectrum £5.95

Axis Software, 71 Brookfield Avenue, Loughborough, Leics LE11 3LN

Labyrinth challenges you to find your way in three dimensions through a randomly-generated maze. Easy to play, the game tests your memory and perception of patterns to the full . . . all too often you find yourself trying to exit through the entrance or walking straight past the exit!

After loading, you can opt to look at the simple instructions or plunge straight into the maze. There you can go forwards or backwards, move left or right, or, if things get really tough, choose to "give up" or call on the "help" facility. The latter briefly displays a plan of the maze showing your position; otherwise you can only see the walls facing you.

You choose the size of the maze yourself, from a 4 x 4 grid to a 10 x 15 grid, and the computer then creates a random maze and shows you the plan once before you enter.

On leaving the maze you can choose to see an action replay of your progress through the labyrinth. Time taken to find your way out, and a score based on time and number of moves are shown, and the highest score is recorded.

The tape loaded perfectly everytime, and the game proved both enjoyable . . . and extremely frustrating!

	P.F.
instructions	80%
playability	90%
graphics	70%
value for money	80%

★★★★★

Everest Ascent 48K Spectrum £6.50

Richard Shepherd Software, Freepost, Maidenhead, Berks SL6 5BX

Combining aspects of adventure and resource management, this program requires the player to control ten Sherpas with varying cost/performance merit, ten items of equipment, and cash flowing in at an unpredictable rate.

The concept is good, but more attention might have been paid to the player's convenience. It was irritating to be offered a menu of options, only to find that the option I chose was invalid in the current circumstances. For example, if there are stars in the sky, indicating night time, the only valid option is to camp.

Limited availability of key information, such as the remaining cash in hand, may deliberate policy, but it results in the need to make copious notes. You can get at the information by asking for a 'Position' report (which means 'status'), but it is not available while consequent changes are being made.

No serious bugs were found, bar the appearance of equipment in the list of Sherpas, which may have been due to user error, but the program is not uncrashable. A "quit" option would have been welcome where disaster was inevitable.

Nevertheless, an interesting, if frustrating game. With practice the disadvantages can be minimised and reasonable progress can be made.

D.T.

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

★ ★ ★ ★

Pimania Dragon £10

Automata, 65a Osborne Road, Portsmouth, PO5 3LR

Your quest in this adventure game is to hunt through time and space for the Golden Sundial of Pi. But watch out for the Pi Man — he may not be all he seems!

A new twist to this game is that the object of your quest actually exists. If you can work out the overall meaning of the game, you could win the real Sundial, made of gold and diamonds and valued at £6,000.

And as well as the program, the Pimania cassette also contains the Pimania theme tune, sung by the strangely familiar Clair Sinclive and the Pi-Men.

These frills aside, rich use of colour graphics and music is the first thing you notice about Pimania. The text is also neatly presented, within the constraints of the Dragon's display.

But though the animation and "full musical score" are quite fun for a while, they soon begin to pall because of the inadequacies of the game itself.

Compared with other adventure games, Pimania has very few (about 20) different places to explore. I found the Pi-Man's requests (invariably accompanied by an irritating bit of music) absurd. And the program can only understand the simplest of instructions.

However, the program loaded first time, and adequate running instructions are supplied. Instructions on how to play are another matter — here you are left in the dark.

Nice gimmicks — shame about the game.

G.M.P.

instructions	40%
playability	60%
graphics	80%
value for money	60%

★ ★ ★

Black Crystal 16K ZX81 £7.50

Carnell Software, 4 Staunton Road, Slough, Berks SL2 1NT

Black Crystal is the most ambitious adventure game I've seen for ZX81, with elements of Lord of the Rings grafted on to the adventure format.

You take on the role of warrior, elf or wizard, with corresponding values for physical and spiritual strength, before setting off into the valley of Beroth. Your aim is to retrieve all seven rings of light and eventually, by placing them in exact locations around the black crystal itself, to rid the valley of evil.

The program is large and is divided into six segments preceded by a short load test. Unless you are starting a new game, you enter each segment by specifying a map reference determined in the segment previously played; the order is not fixed in advance.

Myself, I'm not far into the quest yet: it takes some time to master the use of keys controlling movement and weapons, and to discover the right tactics for various monsters. Still, Black Crystal has impressed me by its sheer quantity and generally high quality of presentation. I'm afraid I've become an addict.

C.C.

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

★ ★ ★ ★

The Trader Trilogy 16K ZX81 £9.95

Quicksilya, 92 Northam Rd, Southampton SO2 0PB

In this space-adventure game, you are an entrepreneur visiting the six planets of the Meridien system. The aim is to return safely to your starting point while maximising your profits.

The main program is preceded by a short memory test, which also sets up a block of control data. Thereafter prompts are given to load each part of the trilogy.

The loading procedures are described in an amusing accompanying booklet. This also contains, besides a trading certificate, an account of the planetary system, its several curious types of inhabitant, the commodities they deal in, recommended support equipment, and dangers to guard against.

The program itself offers an enjoyable mixture of text and graphics, and contains several different sorts of games that could be marketed separately.

Arguably, Trader is just a shade overpriced. But it's cleverly devised, nicely presented, and if you're feeling indulgent, well worth considering.

C.C.

instructions	90%
playability	85%
graphics	90%
value for money	75%

★ ★ ★ ★

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Watch out . . . the Pucmen are after you

Arcade action from Jeremy Ruston in a well-structured program which shows the versatility of BBC BASIC . . . and offers hours of fun

Pucman is based on the arcade favourite but written entirely in BASIC.

The game demonstrates what can be achieved in BBC BASIC, just using integer variables, and a compact algorithm. What makes the program even more interesting is that it has been written with a structured approach. That is, it is modular, legible and doesn't include a single dreaded GOTO or GOSUB.

It's only disadvantage is that it requires a model B computer, or a model A with 32K of RAM, to run (it uses mode 2).

You start with three lives. A life is lost if you are eaten by one of the three Pucmen roaming around the maze, homing in on you. A display is kept up on the right hand side of the display of the number of lives you have left.

There are four special dots in the corners of the maze, called "power pills". Eating one of these pills instead of a dot endows you with enough power to alter the course of the game for a limited period, so that roles are reversed, and you must start to eat the pucmen.

If you manage to eat one of the men while in this condition, you are given a bonus life. To inform you of this alteration in the game a number of special effects start.

The first of these is a continuous high tone which lasts the duration of the power pill's influence. Secondly, the pucmen change colour to a pulsing black/white combination. Thirdly, your speed around the maze, relative to that of the pucmen, increases.

Your monster is controlled by using these keys:

Up — : (colon)
Down — / (slash)
Left — Z
Right — X

```
 90 *Tv 255
100 LOW%=150
110 D%=0
120 REPEAT
130 MODE 2
140 PROCscreen
150 REM **************************
160 REPEAT
170 PROCmove_man
180 PROCmove_puck
190 COLOUR 4
200 PRINT TAB(6,1);N%;"    "
210 UNTIL L%=0 OR N%=0
220 TIME=0
230 REPEAT UNTIL TIME>100
240 MODE 7
250 IF L%=0 THEN PROClose
260 IF N%=0 THEN PROCwin
270 IF N%<LOW% THEN LOW%=N%
280 *FX 15,1
290 UNTIL GET<>13
300 *FX 12
310 *FX 4
320 END
330 REM **************************
340 DEF PROCscreen
350 LOCAL A%,T%,G%,A$,B$
360 VDU 23;8202;0;0;0;
370 CLS
380 RESTORE
390 COLOUR 4
400 @%=0
410 PRINT "Low score:"LOW%'"Score:"'
420 DATA FF,FF,FF,FF,FF,FF,FF,FF
430 DATA 00,00,08,1C,08,00,00,00
440 DATA 3C,7E,FF,FF,FF,FF,7E,3C
450 DATA 3C,7C,F8,F0,F0,F8,7C,3C
460 DATA 3C,3E,1F,0F,0F,1F,3E,3C
470 DATA 00,00,C3,E7,FF,FF,7E,3C
480 DATA 3C,7E,FF,FF,E7,C3,00,00
490 DATA 18,3C,7E,5A,7E,66,7E,5A
500 DATA 00,00,00,18,18,00,00,00
510 FOR T%=224 TO 232
520 VDU 23,T%
530 FOR G%=0 TO 7
540 READ A$
550 VDU EVAL("&"+A$)
560 NEXT G%,T%
570 DATA "0000000000000000"
580 DATA "0*.....0.....*0"
590 DATA "0.0.000.0.000.0.0"
600 DATA "0.0.000.0.000.0.0"
610 DATA "0.............0"
620 DATA "0.0.0.00000.0.0.0"
630 DATA "0...0...0...0...0"
640 DATA "000.000.0.000.000"
650 DATA "  0.0.......0.0  "
660 DATA "000.0.00000.0.000"
670 DATA ".....0   0....."
680 DATA "000.0.00000.0.000"
690 DATA "  0.0.......0.0  "
700 DATA "000.0.00000.0.000"
710 DATA "0.......0.......0"
720 DATA "0.0.000.0.000.0.0"
730 DATA "0.............0"
740 DATA "000.0.00000.0.000"
750 DATA "0...0...0...0...0"
760 DATA "0.00000.0.00000.0"
770 DATA "0*...........*0"
780 DATA "0000000000000000"
790 FOR T%=1 TO 22
800 READ A$
810 FOR G%=1 TO 17
820 B$=MID$(A$,G%,1)
830 IF B$=" " THEN VDU 32
840 IF B$="." THEN VDU 17,1,225
850 IF B$="0" THEN VDU 17,2,224
860 IF B$="*" THEN VDU 17,3,232
870 NEXT G%
880 PRINT
890 NEXT T%
900 *FX 12,1
910 *FX 11,1
920 *FX  4,1
930 *FX  9,5
940 *FX 10,5
950 *KEY 0 "*FX 12|M*FX 4|M"
960 COLOUR 3
970 X%=7:Y%=11
980 L%=3
```

```
  990 Z%=227
 1000 N%=150
 1010 Q%=0
 1020 R%=FALSE
 1030 VDU 31,X%,Y%,Z%,31,18,7,231,31,18,
9,231,31,18,11,231
 1040 DIM U%2,V%2,K%2
 1050 FOR T%=0 TO 2
 1060 U%?T%=7+T%
 1070 V%?T%=15
 1080 K%?T%=225
 1090 NEXT T%
 1100 ENDPROC
 1110 REM ***************************
 1120 DEF PROCmove_man
 1130 LOCAL A%,T%
 1140 VDU 17,7,31,X%,Y%,226
 1150 TIME=0
 1160 A%=INKEY(D%)
 1170 IF A%<136 OR A%>139 THEN A%=Q%
 1180 REPEAT UNTIL TIME>D%
 1190 *FX 15,1
 1200 *FX 15,6
 1210 IF A%=139 THEN PROCup
 1220 IF A%=138 THEN PROCdown
 1230 IF A%=137 THEN PROCright
 1240 IF A%=136 THEN PROCleft
 1250 Q%=A%
 1260 VDU 31,X%,Y%,Z%
 1270 ENDPROC
 1280 REM ***************************
 1290 DEF PROCup
 1300 C%=FNread(X%,Y%-1)
 1310 IF C%=224 THEN A%=Q%:ENDPROC
 1320 VDU 31,X%,Y%,32
 1330 Y%=Y%-1
 1340 IF C%=225 OR C%=232 THEN N%=N%-1:S
OUND 1,-15,10,2 ELSE SOUND 1,-15,200,2
 1350 IF C%=232 THEN PROCchange
 1360 Z%=229
 1370 ENDPROC
 1380 REM ***************************
 1390 DEF PROCdown
 1400 C%=FNread(X%,Y%+1)
 1410 IF C%=224 THEN A%=Q%:ENDPROC
 1420 VDU 31,X%,Y%,32
 1430 Y%=Y%+1
 1440 IF C%=225 OR C%=232 THEN N%=N%-1:S
OUND 1,-15,10,2 ELSE SOUND 1,-15,200,2
 1450 IF C%=232 THEN PROCchange
 1460 Z%=230
 1470 ENDPROC
 1480 REM ***************************
 1490 DEF PROCright
 1500 C%=FNread(X%+1,Y%)
 1510 IF C%=224 THEN A%=Q%:ENDPROC
 1520 VDU 31,X%,Y%,32
 1530 X%=X%+1
 1540 IF C%=225 OR C%=232 THEN N%=N%-1:S
OUND 1,-15,10,2 ELSE SOUND 1,-15,200,2
 1550 IF C%=232 THEN PROCchange
 1560 Z%=227
 1570 IF X%>16 THEN X%=0
 1580 ENDPROC
 1590 REM ***************************
 1600 DEF PROCleft
 1610 C%=FNread(X%-1,Y%)
 1620 IF C%=224 THEN A%=Q%:ENDPROC
 1630 VDU 31,X%,Y%,32
 1640 X%=X%-1
 1650 IF C%=225 OR C%=232 THEN N%=N%-1:S
OUND 1,-15,10,2 ELSE SOUND 1,-15,200,2
 1660 IF C%=232 THEN PROCchange
 1670 Z%=228
 1680 IF X%<0 THEN X%=16
 1690 ENDPROC
 1700 REM ***************************
 1710 DEF FNread(X%,Y%)
 1720 LOCAL A%
 1730 A%=135
 1740 VDU 31,(X%+17) MOD 17,Y%
 1750=(USR(&FFF4) AND &FFFF) DIV &100
 1760 REM ***************************
 1770 DEF FNdir(X%,Y%)
 1780 LOCAL D%
 1790 D%=0
 1800 IF FNread(X%-1,Y%)<>224 THEN D%=D%
+1
 1810 IF FNread(X%,Y%-1)<>224 THEN D%=D%
+2
 1820 IF FNread(X%,Y%+1)<>224 THEN D%=D%
+4
 1830 IF FNread(X%+1,Y%)<>224 THEN D%=D%
+8
 1840=D%
 1850 REM ***************************
 1860 DEF PROCmove_puck
 1870 LOCAL T%,J%,I%,H%
 1880 IF R% THEN S%=S%-1:IF S%=0 THEN R%
=FALSE
 1890 FOR T%=0 TO 2
 1900 I%=U%?T%:J%=V%?T%
 1910 IF K%?T%=225 THEN COLOUR 1 ELSE CO
LOUR 3
 1920 VDU 31,I%,J%,K%?T%
 1930 PROCnew_direction
 1940 IF I%>16 THEN I%=0
 1950 IF I%<0  THEN I%=16
 1960 U%?T%=I%
 1970 V%?T%=J%
 1980 IF R% THEN COLOUR 8 ELSE COLOUR 4+
T%
 1990 K%?T%=FNread(U%?T%,V%?T%)
 2000 O%=FALSE
 2010 IF (K%?T%<>225 AND K%?T%<231 AND K
%?T%<>32) OR (I%=X% AND J%=Y%) THEN PROC
what_next
 2020 IF K%?T%=231 THEN K%?T%=225
 2030 VDU 31,U%?T%,V%?T%,231
 2040 IF O% THEN T%=5
 2050 NEXT T%
 2060 ENDPROC
 2070 REM ***************************
 2080 DEF PROCnew_direction
 2090 LOCAL D%,L%,M%,H%,P%
 2100 D%=FNdir(I%,J%)
 2110 IF R%=FALSE THEN L%=SGN(X%-I%):M%=
SGN(Y%-J%) ELSE L%=SGN(I%-X%):M%=SGN(J%-
Y%)
 2120 H%=0
 2130 IF L%=-1 THEN H%=H%+1
 2140 IF L%=+1 THEN H%=H%+8
 2150 IF M%=-1 THEN H%=H%+2
 2160 IF M%=+1 THEN H%=H%+4
 2170 P%=H% AND D%
 2180 IF P%=1 THEN I%=I%-1:ENDPROC
 2190 IF P%=2 THEN J%=J%-1:ENDPROC
 2200 IF P%=4 THEN J%=J%+1:ENDPROC
 2210 IF P%=8 THEN I%=I%+1:ENDPROC
 2220 IF D%=1 THEN I%=I%-1:ENDPROC
```

```
 2230 IF D%=2 THEN J%=J%-1:ENDPROC
 2240 IF D%=4 THEN J%=J%+1:ENDPROC
 2250 IF D%=8 THEN I%=I%+1:ENDPROC
 2260 REPEAT
 2270 P%=D% AND (2^(RND(4)-1))
 2280 UNTIL P%
 2290 IF P%=1 THEN I%=I%-1:ENDPROC
 2300 IF P%=2 THEN J%=J%-1:ENDPROC
 2310 IF P%=4 THEN J%=J%+1:ENDPROC
 2320 IF P%=8 THEN I%=I%+1:ENDPROC
 2330 STOP
 2340 REM **************************
 2350 DEF PROClose
 2360 PRINT 'CHR$(131);CHR$(141);TAB(10)
;"G A M E   O V E R"
 2370 PRINT  CHR$(130);CHR$(141);TAB(10)
;"G A M E   O V E R"
 2380 PRINT 'CHR$(132);"You have lost wi
th a score of ";N%
 2390 PRINT '''CHR$(129);"Press 'return'
 to restart..."
 2400 ENDPROC
 2410 REM **************************
 2420 DEF PROCwin
 2430 PRINT 'CHR$(131);CHR$(141);TAB(10)
;"G A M E   O V E R"
 2440 PRINT  CHR$(130);CHR$(141);TAB(10)
;"G A M E   O V E R"
 2450 PRINT 'CHR$(132);"You won !!!"
 2460 PRINT '''CHR$(129);"Press 'return'
 to restart..."
 2470 ENDPROC
 2480 REM **************************
 2490 REM **************************
 2500 DEF PROChit
 2510 VDU 31,18,L%*2+5,32
 2520 L%=L%-1
 2530 X%=0
 2540 Y%=13
 2550 K%?T%=32
 2560 SOUND 0,-15,2,20
 2570 O%=TRUE
 2580 ENDPROC
 2590 REM **************************
 2600 DEF PROCchange
 2610 SOUND 2,-15,255,10
 2620 R%=TRUE
 2630 S%=30
 2640 ENDPROC
 2650 REM **************************
 2660 DEF PROCgain
 2670 L%=L%+1
 2680 IF L%<10 THEN VDU 17,3,31,18,L%*2+
5,231
 2690 K%?T%=32
 2700 X%=0
 2710 Y%=13
 2720 SOUND 2,-15,100,70
 2730 O%=TRUE
 2740 ENDPROC
 2750 REM **************************
 2760 DEF PROCwhat_next
 2770 IF R% THEN PROCgain ELSE PROChit
 2780 ENDPROC
 2790 REM **************************
>
```


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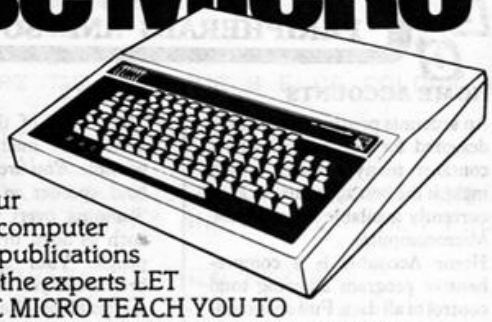

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Where the action is for your ZX micro

Our panel has tested out the new games for the ZX81 and Spectrum, and reports back with star ratings

Night Gunner 16K ZX81 £4.95

Digital Integration, 22 Ash Church Road, Ash, Aldershot, Hants GU12 6LX

"You are the rear gunner in the turret of a bomber aircraft under attack by enemy fighters. Survival depends on your skill to defend your plane as the enemy weaves about the night sky. . ."

So begins the blurb accompanying this game, and very exciting it is too. The blurb, that is. The game itself is something of a disappointment, although its repeated failure to load did lead me to feel at least a modicum of aggression.

Around the cross hairs of a gunsight, enemy planes cunningly disguised as punctuation marks jump and jerk. You aim your gun with the cursor keys, and fire with letter Q.

A score is kept, calculated on how long you take to shoot the baddies down, and if they get you, HIT is flashed across the screen. That is more or less all there is to the game.

It was not a good idea to select the cursor keys as controls: they cannot be used without concentration and discomfort. A program is designed for a computer, but a game is a thing for a human to play. The more that software reflects this the better for us humans.

T.D.

instructions	90%
playability	10%
graphics	25%
value for money	15%

★

Devilbirds/ Digger Man Spectrum £4.95

Macronics, 26 Spiers Close, Knowle, Solihull, West Midlands B93 9ES

A very pleasing two-game package.

In Digger Man your task is to dig a tunnel whilst being pursued by Devil Dan. You can take a break by dashing back to the surface, where Dan is powerless to follow.

You choose your own control keys, which I throught was a very good idea.

The game, which loads in two sections, is a good easy-paced introduction to electronic gaming and particularly appealed to my eight-year-old son.

Devilbirds is ideal for the "blasters" among you. From the floor of a dark cavern you fire away at a winged creature who glides slowly about above you occasionally unleashing his own deadly laser in your direction.

Another target for your own weaponry is the bat-like creatures hanging from the cavern roof, which turn out to be embryonic Devilbirds.

You score progressively more points for hits as you advance automatically through the skill levels.

D.J.

instructions	70%
playability	70%
graphics	75%
value for money	70%

★★★

Space Intruders Spectrum £4.95

Quicksilva, Palmerston Park House, 13 Palmerston Rd, Southampton

Superbly packaged, Quicksilva's version of the standard Space Invaders format comes with a helpful keyboard overlay, a hold facility (useful for stiff fingers) and a high score table. The solid machine code program never failed to load while I was testing it.

A good display, with finely-detailed invader graphics, though I didn't like the pink forts. The laser base responds quickly and moves smoothly, with the intruders reaching an impressive speed in the endgame. High quality sound effects add excitement.

Occasionally a silent blue ship flits across the screen. This is billed in the attract mode as carrying mystery points, but on destruction none are displayed — a real mystery. And invaders sometimes die, awarding points, before a shot is fired. But there are no other serious bugs.

Fun to play, and great dexterity is required to clear more than ten screens. A good implementation of the arcade game, all it lacks is originality.

C.L.

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

★★★

Triad 48K Spectrum £9.80

Amba Software, Freepost, Cambridge CB1 78R

Triad is a collection of three games — a variant of Pacman, a game called Sub Attack and a maze game called Treasure Hunt — in one machine code program.

The first of these is a reasonable copy of the original arcade game. It offers 14 different mazes and nine different speeds of play, the last being the only one fast enough to make the game worthwhile. The ghosts come straight at you with none of the dawdling often associated with spirits of this sort.

Sub Attack is a fairly mindless game in which you drop depth charges on to submarines, which are firing back at you. Even in the highest level of play it requires little skill.

Treasure Hunt, on the other hand, is a fairly original game of the maze variety, in which you go round collecting treasure instead of chasing ghosts. There are many

levels of play involving combinations of different attributes, such as moving walls and limits on the length of time for which each object appears.

Not a bad little package, through a shade overpriced. Reasonable graphics and sound, and adequate documentation.

I.O.

instructions	70%
playability	60%
graphics	65%
value for money	55%

★★

Crevasse/ Hotfoot Spectrum £4.95

Microsphere, 72 Roseberry Road, London N10

A two-game package, but one game is better than the other.

In Crevasse, you are exploring the Polar ice cap, and are in need of supplies kept aboard your expedition's ship.

To get them, you have to cross and re-cross a terrain made treacherous by crevasses opening across your path — and then closing as quickly as they appeared.

You travel in an ice buggy, represented by a cross which you guide across the screen using the cursor control keys.

Points are awarded for successful journeys, with a bonus for quick crossings. You have ten ice buggies to lose, and there is a high score recording facility.

A fairly lightweight game — I doubt its ability to sustain long-term interest. Uninspiring graphics, though I quite liked the way the cravasses form their jagged way across the screen. Hotfoot is a different matter both in quality and scenario. You take the role of a hungry rabbit sitting in its burrow. Your task is to get to a supply of carrots (represented by numbers) in the surrounding fields, then scuttle back to safety.

But the open fields are dangerous to would-be Bugs Bunnies. If you stay out too long, foxes represented by a moving graphics scale and a rising pulsating tone will eat you .

To further complicate matters, the fields keep changing colour. You can only travel to the next field it it is the same colour as the one you are already in. And you have to move faster and faster as the game goes on.

It may sound complicated, but it's worth persevering with, and gave my family a lot of fun.

Attractive graphics, with a particularly handsome rabbit in the star role. I found the moving colour combinations of the fields rather hard on the eyes after a time, but the game works just as well in black and white.

	D.J.
instructions	70%
playability	60%
graphics	65%
value for money	70%

★ ★ ★

Meteoroids Spectrum £4.95

Softek, 324 Croxted Road, London SE24

When a game is advertised as offering Arcade Action, comparisons are bound to be made with the arcade version, and the home computer version inevitably comes off worse.

Having said that, the action of this machine-code game is very smooth. With a total of eight commands at your disposal, the game itself is very playable, once you have got the hang of the controls.

I enjoyed the graphics display while the program was loading, though in contrast with it, the program itself seemed a bit flat. The spacecraft looked remarkably like a fly, and using my favourite command — hyperspace — hopped about like one. No high score option is included.

	B.B.
instructions	90%
playability	85%
graphics	90%
value for money	

★ ★ ★

Arcade Action ZX81 £4.95

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

Contrary to the label on the tape, these games all loaded and ran in an unexpanded ZX81 — you don't need the 16K RAM. All examples of good, fast, machine code programming: they all loaded first time and the instructions are comprehensive.

In Overtaker, you are driving a car. You have to increase speed and weave in and out of the traffic, and the faster you go, the more you score — unless you crash! An addictive game.

Missile Man is the best implementation I have seen of Invaders on a 1K machine. Four rows of aliens plus one swooping bombard your battery, and the explosions when you hit an alien are impressive. The game plays well and is great fun.

I am surprised that Starfighter Pilot fits into 1K. You can flip in and out of hyperspace, with stars rushing towards you, and in normal space a landscape scrolls towards you with missiles rising from its surface. You destroy them by positioning your gunsight over them, whereupon they explode. It's difficult to get a good score, but fun trying.

Guess what Greedy Gobbler resembles? You have four ghosts chasing you as you eat the food capsules, and the power pills turn the ghosts grey long enough for you to catch them. A clever implementation.

Don't be misled — the last game, Extra Terrestrial, bears no resemblance to the film. You are in an alien spacecraft orbiting the world which you attempt to exterminate. It's only a matter of time.

	D.C.
instructions	80%
playability	85%
graphics	90%
value for money	90%

★ ★ ★ ★

Challenge ZX81 £4.95

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

Five programs on one tape, all on the theme of challenging the player's skill. The games all loaded first time, and the tape is accompanied by a booklet of comprehensive playing instructions.

Two of the games, Brands Hatch and Road Race, involve negotiating a course, using only left and right instructions.

These I found virtually impossible to master, and continuallybounced off the sides of the course. Road Race is marginally easier as you are at least shown a steering wheel indicating which direction to go in.

Cartoon Man is rather pointless it merely consists of moving a figure, cleverly animated, I will admit, across the screen at different speeds.

Juggler uses the same figure, this time trying to catch four moving objects. If one hits the floor you lose a life. I soon got bored.

Meteor Strike displays a map of the world which cleverly rotates left or right. The object is to avoid a meteor storm descending from the top of the screen by moving the world so that the meteors land in the sea. The display is so near the top of the screen that you cannot see the meteors in time. But was by far the best game.

	D.C.
instructions	80%
playability	10%
graphics	75%
value for money	15%

★ ★

Superball Spectrum £4.95

Axis, 71 Brookfield Avenue, Loughborough, Leics

If you are a breakout addict, this is the game for you. If you aren't familiar with the game, the idea is to knock bricks out of a wall by hitting a ball with a bat.

In this version, you choose from three games: practice, progressive and acceleration. One or two people can play, and there is a choice of ball speeds.

You can even have three balls in the court at the same time — too much for me to cope with, but experienced players will no doubt be in their element.

Superball loaded first time, and the instructions were easy to follow. I didn't encounter any bugs, and found the game easy to play — at very slow speeds! I would like to see Superball included on a compilation tape, along with other similar games.

	B.B.
instructions	100%
playability	80%
graphics	60%
value for money	

★ ★ ★ ★

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A complete reprint of the Valley article is also available for those wishing to do their own conversions for £1.95.

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ASP SOFTWARE

Lowdown on the latest look-alike games

With software simulations of real-life games, you can play golf or go to the races without ever leaving your living-room. But some simulations are better than others: here are our reviewers' ratings of the new releases

Backgammon 48K Spectrum £5.95

CP Software, 17 Orchard Lane, Prestwood, Great Missenden, Bucks

Backgammon has been around for quite a time. Its pedigree reaches back to the time of the ancient Egyptians, with tenuous links to games played around 3000 B.C.

A computerised version of Backgammon has been the goal of many a programmer, and this version for the Spectrum follows the classical (traditional, not Egyptian!) layout. It is a one player game just you versus the computer.

The tape loaded perfectly everytime and the cassette inlay contains a summary of the International Backgammon Association Rules together with a brief but explicit introduction to the game for beginners. The screen display is clear and easily understood in colour. In black and white, through, the black pieces merge with the background.

Once you understand what the game is about it is simple to play — but not so easy to win!

Technically, the computer plays a reasonable game. Its play is straightforwared and predictable, without any great finesse, but unlike a human player it does not make silly mistakes. It is also fast, taking only about four seconds to decide what to do and then do it.

Do not try to match its speed of play. . . take your time and plan your moves carefully. Like many of the classic games Backgammon is quite addictive, so allow yourself plenty of time to get your own back on the computer!

	P.F.
instructions	90%
playability	90%
graphics	75%
value for money	85%

★ ★ ★ ★

Golf Dragon £4.95

Apex Trading, 115 Crescent Drive South, Brighton BN2 6SB

One to four people can play this game, which simulates a nine-hole course by displaying it, a hole at a time, as an aerial view.

Mode 3 resolution graphics is used to give a clear and colourful picture. Players with bad eyesight may have problems seeing the ball, though, since it only consists of a single dot!

When the ball is within putting distance of each hole, the aerial view is replaced by a close-up of the green. To aim at the hole, you specify the club number you want to use, a strength rating and the direction of the shot.

The need to specify a direction was, I thought, the game's weakest point. You have to provide an angle between 0 and 360 degrees, and this could be a problem to those who have difficulty with maths. But the program's Help facility will come to the rescue.

The program loaded easily and, though few written instructions are supplied, plenty of guidance is displayed by the program itself.

All in all, Golf is great fun. Though the course stays the same between games, a slight random factor means that you can never master it completely.

	G.M.P.
instructions	80%
playability	70%
graphics	75%
value for money	85%

★ ★ ★ ★

Handicap Golf Dragon £6

Computer Rentals, 140 Whitechapel Road, London E1

Written in Basic, this is a reasonable golf simulation, and once I had got used to its little eccentricities I found it enjoyable to play.

I had trouble with loading at first, but once the volume had been set correctly the program loaded in about 50 seconds. Clear instructions included with the cassette make up for the lack of instructions or rules in the program itself.

Each hole in the course is displayed separately, using low resolution graphics to show the fairway with randomly placed trees and other obstacles. The programmer has gone overboard, so to speak, on the lakes, which appear on every fairway, and it is sometimes difficult to see the fairway for the trees.

Either one or two people can take part, but if two are playing, handicaps for both must be entered. To play each shot you have to enter direction (by using a clockface format from zero to 12), and then strength (0-250).

Great care must be taken to enter these numbers correctly — one false move and the screen scrolls, and the whole program has to be re-run.

instructions	75%
playability	50%
graphics	20%
value for money	30%

★ ★

Spectrum Golf Spectrum £3.95

B.S. McAlley, 1 Cowleaze, Chinnor, Oxon OX9 4TJ

There are a number of golf programs on the market, and this is as good as any. The supplied tape has a 16K version on one side and 48K on the other. Both loaded first time.

The only difference between them seems to be that instructions are added for the 48K version, but a printed version is included anyway. Instructions are simple and straightforward.

The program is quite well designed, most likely errors being trapped. You can select the number of holes, which is useful for practice but I don't know of any real courses with 10,000 holes!

I think play might become a little boring after a while, as you can only choose the direction and the strength of each shot (no choice of clubs, for example), and the computer plays you out of the bunkers.

Display is clear, each hole being set out quite quickly, and col- ▶

our choices make play on a black and white TV perfectly possible.

Spectrum Golf is quite attractive and fun to play, good value if you've never played the game before, but offering nothing special. Since it's written in BASIC, though, it should be easy to improve.

	N.W.
instructions	90%
playability	75%
graphics	65%
value for money	70%

★ ★ ★

Derby Day 48K Spectrum £5.95

Computer Rentals, 140 Whitechapel Road, London E1

It's Saturday at the races. Place your bets with Honest Clive the bookie and the race begins. This race simulation game from Computer Rentals should prove a cheap and harmless way to quell the family's gambling instincts.

Up to five players can bet at one time, and there are seven races

to a meeting. Three levels of play are offered, from "fun" to "dead serious punter" — the highest level lets you enter horses' names and odds of your own choice.

At the start of the game, you also choose whether to bet for pounds or pence — if you choose pence, one of the players becomes Honest Clive's partner and runs their own book.

For the rate itself, a machine code routine scrolls the screen from left to right as the horses thud along the track. As they near the finish, the action changes to slow motion. If the occasion arises, a photo finish result is given.

If you win your bet, your total is increased according to the odds on the winning horse, and if your horse comes in second, you get one quarter of the odds.

	I.O.
instructions	80%
playability	80%
graphics	85%
value for money	75%

★ ★ ★ ★

Jackpot 48K Spectrum £4.95

Computer Rentals, 140 Whitechapel Road, London E1

Yet another of those 'one-armed bandit' simulations where the only money you stand to lose is what you paid for the program in the first place.

Computer Rental's version provides all the facilities of a large casino machine, such as Nudge, Gamble and Hold, depending on the contents of a Features box. You start off with a modest 200 units (£s, $s or whetever, the program does not say) to bet with. Each spin costs 10 units.

The graphics are very good and reasonably fast, although the program is written entirely in BASIC. As well as the three reels, all the payout possibilities are displayed. When money is put in the machine a little token with '1' on it rolls along the bottom of the screen into the money slot.

If a winning combination occurs, these little tokens also cascade into a little box at the bottom of the screen. Should you be lucky enough to win the jackpot you can sit back for a bit, since the impressive payout sequence takes about 20 seconds.

Jackpot is well documented with on-screen instructions. But anyone thinking of buying it should be warned of its addictiveness.

	I.O.
instructions	85%
playability	90%
graphics	85%
value for money	80%

★ ★ ★ ★

ZX81 16K | SPECTRUM 16/48 | DRAGON 32 | TANDY LEVEL 2 | BBC A/B

AWARI

★ The ancient African game of logic. It takes 2 minutes to learn the rules but far longer to master the tactics.

★ Select the 'Goat-herd' level of play and it's an addictive game for children (8+) that exercises their minds – not their laser fingers.

★ Select the 'Witch-doctor' level and it's a threat to your sanity. We haven't beaten it and we wrote it!

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for 16K Spectrum **GULPMAN** game of the '.....man' variety with 15 mazes, 4 chasers, laser defence, 9 grades, 9 speeds, demo mode, choice of joystick control. "An extraordinarily good program" raves Boris Allan for Popular Computing Weekly. We think you will agree. £5.95

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for 16-64K ZX81 **THE FAST ONE** is the predecessor to MASTERFILE and is in use all over the world now. Specification is very similar to MASTERFILE. £12.00

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Learning how to make faces

Remember how long it took you to learn the keyboard? David Gray's TI 99/4A program teaches youngsters where the keys are and rewards correct responses

Faces is a very simple game to acquaint young children with the use of the keyboard.

The program simply displays large versions of the letters A to Z and the child must press the key for the displayed letter. Pressing the wrong key results in a beep; pressing the right key is rewarded by a face at the top of the screen.

When all the letters have been dealt with, pressing the space bar causes the entire game to be repeated.

How it works

To display a face or a large version of a letter the program uses four ordinary TI 99/4A characters arranged as shown in Figure 1. The patterns needed for these sets of four characters are supplied in data statements (Lines 700 to 1260).

Line-by-line details of how the program works:

140-180 clear the screen and set the colours to be used in the program. Line 170 sets the colours of the letters and line 180 sets the colours of the faces.

190-230 read in the four patterns which define a face and assign them to the characters 152 to 155.

250 sets the variable LETTER to 1 to indicate the first letter (A).

260-550 make up the main loop of the program. This loop works by having two nested FOR statements which enumerate all the positions at which a face may be placed.

We terminate this loop when there are no more letters, ie we do not wait until there are no more positions for faces. Instead we jump out (line 530) when we have no more letters.

280-320 read in the four patterns which define the next letter and assign the patterns to characters 128-131.

330-370 display a large version of the next letter in the centre of the screen.

380-440 wait for the user to type in the correct letter; either in upper (line 410) or lower (line 420) case. Any invalid input results in a beep.

450-490, once valid input has been received, display a face at the current (X,Y) position.

500-530 increment LETTER. If all the letters have been processed then line 530 causes an exit from the main loop.

560-600 remove the last letter from the screen by overwriting it with spaces.

610-660 wait for the space bar to be pressed.

670-690 restore the data and jump back to the start of the program.

700-720: data for a face.

730-1260: data for the letters.

Hints on conversion

This program can easily be converted to run on any machine which allows user defined characters. To convert it for another machine will require changing all the CALL statements and the DATA statements.

On the TI 99/4A computer the CALL statement is used to perform machine dependent activities by calling built-in subroutines. In this program the following subroutines are used.

CALL CLEAR	Clears the screen.
CALL SCREEN (N)	Defines the background colour of the screen.
CALL COLOR (N,M,P)	Defines background colour (M) and foreground colour (P) of the group of characters (N). In this program we define the colours of characters 152-159 in line 180 and the colours of characters 128-135 in line 170.
CALL CHAR (N,S$)	Defines a pattern (given by S$) for character code N.
CALL HCHAR (Y,X,CH)	Outputs the character with character code CH at the position (X,Y). The top left hand corner of the screen is position (I,I).
CALL KEY (O,CH,STATUS)	Tests the keyboard to see if a key has been pressed. If a key has been pressed then a non-zero value is returned in STATUS and the character code of the pressed key is placed in CH. If no key has been pressed, zero is returned in STATUS.
CALL SOUND (D,P,V)	Generates a sound of duration D, pitch P and volume V.

The DATA statements supply data in the form of strings suitable for the subroutine CHAR. Converting this program requires that this data be changed to a form suitable for the other machine.

Within this program characters from the keyboard are held as integers, ie as their ASCII character codes. A conversion to another machine may require that these be held as single character strings.

```
100 REM  FACES
110 REM              A.E.Gray
120 REM
130 REM
140 REM  Clear screen and set up colours.
150 CALL CLEAR
160 CALL SCREEN(1)
170 CALL COLOR(16,7,1)
180 CALL COLOR(13,5,1)
190 REM   Read in the characters to
          define a face
200 FOR I=1 TO 4
210 READ S$
220 CALL CHAR(151+I,S$)
230 NEXT I
240 REM  Enter the main loop of the program.
250 LETTER=1
260 FOR Y=1 TO 22 STEP 3
270 FOR X=4 TO 28 STEP 3
280 REM  Read in characters to define
         the next letter.
290 FOR I=1 TO 4
300 READ S$
310 CALL CHAR(127+I,S$)
320 NEXT I
330 REM  Display the next letter.
340 CALL HCHAR(15,14,128)
350 CALL HCHAR(16,14,129)
360 CALL HCHAR(15,15,130)
case.
390 CALL KEY(0,CH,STATUS)
400 IF STATUS=0 THEN 390
410 IF (CH-64)=LETTER THEN 460
420 IF (CH-96)=LETTER THEN 460
430 CALL SOUND(-100,220,0)
440 GOTO 390
450 REM  Display a face for getting
         the correct answer.
460 CALL HCHAR(Y,X,152)
470 CALL HCHAR(Y+1,X,153)
480 CALL HCHAR(Y,X+1,154)
490 CALL HCHAR(Y+1,X+1,155)
500 REM  Move onto the next letter.
510 LETTER=LETTER+1
520 REM  If we have finished all the letters
         then exit the main loop.
530 IF LETTER>26 THEN 560
540 NEXT X
550 NEXT Y
560 REM  Remove last letter form the screen.
570 CALL HCHAR(15,14,32)
580 CALL HCHAR(16,14,32)
590 CALL HCHAR(15,15,32)
600 CALL HCHAR(16,15,32)
610 REM  Wait for a space to be input.
620 CALL KEY(0,CH,STATUS)
630 IF STATUS=0 THEN 620
640 IF CH=32 THEN 680
650 CALL SOUND(100,440,0)
660 GOTO 620
670 REM  Start the whole
         program again.
370 CALL HCHAR(16,15,131)
380 REM   Wait for the user to input the
          correct letter ; either UPPER or lower
680 RESTORE
690 GOTO 100
700 REM  Data for a FACE.
710 DATA 0F1020448E848080,908887804020100F
720 DATA F008042271210101,0911E101020408F0
730 REM   Letters A to Z; 4 characters each.
740 DATA 000007070C0C1818,1F1F18181818
750 DATA 0000E0E030301818,F8F818181818
760 DATA 00000F0F0C0C0C0F,0F0C0C0C0F0F
770 DATA 000080C0606060C0,C0606060C080
780 DATA 000003070C0C0C0C,0C0C0C0C0703
790 DATA 000080C06060
800 DATA 00006060C080
810 DATA 00000F0F0C0C0C0C,0C0C0C0C0F0F
820 DATA 000080C060606060,60606060C080
830 DATA 00000F0F0C0C0C0F,0F0C0C0C0F0F
840 DATA 0000E0E000000080,80000000E0E0
850 DATA 00000F0F0C0C0C0F,0F0C0C0C0C0C
860 DATA 0000E0E00000008,8
870 DATA 000003070C0C0C0C,0C0C0C0C0703
880 DATA 000080C0606,00F0F060E0E
890 DATA 00000C0C0C0C0C0F,0F0C0C0C0C0C
900 DATA 00003030303030F0,F0303030303
910 DATA 00000F0F01010101,010101010F0F
920 DATA 0000F0F080808080,B080808F0F
930 DATA 00000F0F01010101,0101010D0F07
940 DATA 0000F0F08080808,B080808
950 DATA 00000C0C0C0C0D0F,0F0D0C0C0C0C
960 DATA 0000303060C08,0080C060303
970 DATA 00000C0C0C0C0C0C,0C0C0C0C0F0F
980 DATA 0,00000000F0F
990 DATA 000018181C1E1A1B,191818181818
1000 DATA 0000181838378A8D8,9818181818
1010 DATA 00001C1C1E1B1B19,191818181818
1020 DATA 0000181818181898,98D8D8783838
1030 DATA 000003070C0C0C0C,0C0C0C0C0703
1040 DATA 0000C0E030303030,30303030E0C
1050 DATA 00000F0F0C0C0C0F,0F0C0C0C0C0C
1060 DATA 000080C0606060C,8
1070 DATA 000003070C0C0C0C,0C0C0C0C0703
1080 DATA 0000C0E030303030,3030B070F0F818
1090 DATA 00000F0F0C0C0C0F,0F0D0C0C0C0C
1100 DATA 000080C0606060C,8080C060303
1110 DATA 000003070C0C0C0F,07000C0C0703
1120 DATA 0000C0E0303000E,F0303030E0C
1130 DATA 00001F1F01010101,010101010101
1140 DATA 0000F8F880808080,80808080808
1150 DATA 00000C0C0C0C0C0C,0C0C0C0C0707
1160 DATA 0000303030303030,30303030E0E
1170 DATA 0000181818C0C0C0C,060606030301
1180 DATA 000018181830303,606060C0C08
1190 DATA 0000181818181819,1B1A1E1C1818
1200 DATA 0000181818181898,D85878381818
1210 DATA 0000203018OC0603,0103060C183
1220 DATA 0000040C183060C0,C06030180C04
1230 DATA 0000181818OC0603,010101010101
1240 DATA 000018181830606C0,80808080808
1250 DATA 00001F1F00000001,03060C181F1F
1260 DATA 0000F8F83060C080,00000000F8F8
```

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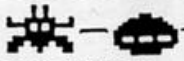

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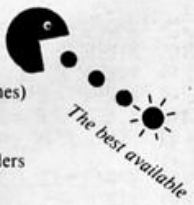

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If you get rid of the zombies another lot appears, so it's a matter of seeing how many you can take with you.

Type in Phil Garratt's program for the Spectrum and you will be kept on the edge of your chair for the rest of the day

These are the keys which will move you around the screen:

9 — north
0 — north-east
P — east
Enter — south-east
L — south
K — south-west
I — west
8 — north-west

Where the program refers to PRINT A and PRINT B, graphics A and graphics B should be entered.

The program itself is highly documented.

Each set of zombies is worth more than the last...so hang in there.

● Available on cassette, with Alien, at £3 from Phil Garratt, 82 Avenue Road, London N15 5DN.

```
   2 LET hs=0
   3 RANDOMIZE
   5 GO SUB 8000
   7 LET n=1
   8 LET sc=0
   9 LET nz=8: LET nz1=8
  10 DEF FN q(x,y)=ATTR (x,y)-8*
INT ((ATTR (x,y)/8))
  15 PAPER 6: BORDER 5: INK 4: C
LS
  30 DIM a(nz): DIM b(nz)
 100 FOR i=1 TO nz
 110 LET a(i)=INT (RND*21)
 120 LET b(i)=INT (RND*32)
 130 IF FN q(a(i),b(i))=2 THEN G
O TO 110
 140 PRINT INK 2;AT a(i),b(i);"A
"
 145 BEEP .1,30
 150 NEXT i
 160 FOR i=1 TO 8+INT (RND*10)
 170 LET e=INT (RND*21)
 180 LET f=INT (RND*32)
 190 IF FN q(e,f)<>4 THEN GO TO
170
 200 PRINT INK 1;AT e,f;"O"
 205 BEEP .1,15
 210 NEXT i
 220 LET e=INT (RND*21)
 230 LET f=INT (RND*32)
 240 IF FN q(e,f)<4 THEN GO TO 2
20
 250 PRINT INK 0;AT e,f;"B"
 260 BEEP .4,10
 300 LET t1=e: LET t2=f
 305 PRINT PAPER 5; INK 0;AT 21,
0;"What's your move?
"
 310 IF INKEY$="" THEN GO TO 310
 320 LET a$=INKEY$
 325 PRINT PAPER 5;AT 21,0;"
"
 330 LET e=e+(a$="k" OR a$="l" O
R a$=CHR$ 13)-(a$="8" OR a$="9"
OR a$="0")
 340 LET f=f+(a$="0" OR a$="p" O
R a$=CHR$ 13)-(a$="8" OR a$="i"
OR a$="k")
 350 IF e>=0 AND e<21 AND f>=0 A
ND f<32 THEN GO TO 400
 360 LET e=t1: LET f=t2
 370 PRINT PAPER 5; INK 0;AT 21,
0;"No swimming away, scaredy-cat
"
 375 GO SUB 7700
 380 FOR i=1 TO 100: NEXT i
 390 GO TO 300
 400 PRINT INK 4;AT t1,t2;" "
 410 IF FN q(e,f)=1 THEN GO TO 9
000
 420 IF FN q(e,f)=2 THEN GO TO 9
100
 430 PRINT INK 0;AT e,f;"B"
 440 BEEP .1,25
 500 FOR i=nz TO 1 STEP -1
 510 LET flag=0
 520 LET t1=a(i): LET t2=b(i)
 530 IF RND<.5 THEN GO TO 700
 600 LET flag=flag+1
 610 IF a(i)=e THEN GO TO 700
 620 LET a(i)=a(i)+(e>a(i))-(e<a
(i))
 630 GO TO 800
 700 LET flag=flag+3
 710 IF b(i)=f THEN GO TO 600
 720 LET b(i)=b(i)+(f>b(i))-(f<b
(i))
 800 LET g=FN q(a(i),b(i))
 810 IF g<>2 THEN GO TO 850
 815 LET a(i)=t1: LET b(i)=t2
 820 IF flag=1 THEN GO TO 700
 830 IF flag=3 THEN GO TO 600
 840 GO TO 1200: REM no move pos
sible,next zombie
 850 PRINT INK 4;AT t1,t2;" "
 860 IF g=0 THEN GO TO 9200
 870 IF g<>1 THEN GO TO 1150
 875 IF RND<.18 THEN GO TO 1000
 880 PRINT PAPER 5; INK 0;AT 21,
0;"There goes a zombie!!!!!!"
 890 PRINT FLASH 1; INK 1;AT a(i
),b(i);"O"
 900 BEEP .5,20
 905 LET sc=sc+n*10
 910 FOR k=1 TO 70: NEXT k
 920 PRINT FLASH 0; INK 1;AT a(i
),b(i);"O"
 925 LET a(i)=a(nz): LET b(i)=b(
nz)
 930 LET nz=nz-1
 940 IF nz=0 THEN GO TO 9300
 950 GO TO 1200
1000 PRINT INK 0; PAPER 5;AT 21,
0;"Ha-ha,pit full,zombies can cr
oss"
1010 FOR j=0 TO 7: BEEP .1,j: NE
XT j
1020 BEEP .2,7
1150 PRINT INK 2;AT a(i),b(i);"A
"
1200 NEXT i
1210 GO TO 300
5000 DATA 0,BIN 01100011,BIN 011
01011,BIN 00001000,BIN 00011100,
0,BIN 01010101,BIN 01010101
5010 DATA BIN 00001100,BIN 00001
000,BIN 00011100,BIN 00101010,BI
N 01001001,BIN 00010100,BIN 0001
0100,BIN 00110110
6000 INK 0: CLS
6010 PRINT "Your heartless slaug
hter of the peace-loving local p
opulation    has given you a scor
e of ";sc
```

```
6012 PRINT
6015 IF n=1 THEN PRINT TAB 5; FL
ASH 1;"BEGINNER'S LUCK!!!"
6020 IF n=2 THEN PRINT TAB 5; FL
ASH 1;"NOW WE'RE REALLY MAD!!"
6025 IF n=3 THEN PRINT TAB 2; FL
ASH 1;"THIS TIME YOU'RE FOR IT!!
"
6030 IF n=4 THEN PRINT FLASH 1;"
YOU'RE REALLY GOING TO REGRET IT
"
6035 IF N>4 THEN PRINT FLASH 1;"
WE HAVE NOT YET BEGUN TO FIGHT!
"
6040 PRINT
6050 PRINT "Reinforcements are b
eing exhumed"
6060 PRINT
6065 GO SUB 8990
6070 FOR i=1 TO 138: PRINT "A
";
6080 NEXT i
6085 PRINT "A";
6090 INPUT "Press enter when you
 stop        trembling!!!"; LINE
d$
6095 GO SUB 8990
6100 LET n=n+1
6110 LET nz=nz1+INT (RND*3*n)+2
6120 LET nz1=nz
6130 GO TO 10
7000 INK 7: BORDER 0: PAPER 2
7010 CLS
7100 PRINT
7110 PRINT TAB 12;"
7120 PRINT TAB 10;"
7130 PRINT TAB 9;"
"
7140 PRINT TAB 8;"
"
7150 PRINT TAB 7;"
"
7160 PRINT TAB 7;"
"
7170 PRINT TAB 6;"
"
7180 PRINT TAB 6;"
"
7190 PRINT TAB 6;"
"
7200 PRINT TAB 6;"
"
7210 PRINT TAB 6;"
"
7220 PRINT TAB 6;"
"
7230 PRINT TAB 6;"
"
7240 PRINT TAB 7;"
"
7250 PRINT TAB 7;"
"
7260 PRINT TAB 8;"
"
7270 PRINT TAB 10;"  "; INK 2; PA
PER 6;"  "; PAPER 2; INK
 7;"  "
7280 PRINT INK 2;TAB 10;"  "; PAP
ER 6;"  "; PAPER 2;"  "
7290 GO SUB 8990
7300 PRINT AT 9,9;"HIGH";AT 9,18
;"SCORE"
7310 GO SUB 7600
7320 PRINT AT 19,10;"You scored
";sc: IF sc<=hs THEN GO TO 7500
7330 PRINT TAB 4; FLASH 1;" A NE
W HIGH SCORE!!!!!!!!"
7340 LET hs=sc
7350 PAUSE 8
7360 BEEP .2,0: BEEP .2,2: BEEP
.2,4: BEEP .2,5: BEEP .3,0: PAUS
E 6: BEEP .2,5: BEEP .2,4: BEEP
.2,5: BEEP .2,7: BEEP .3,2
7490 GO SUB 7600
7500 PRINT AT 21,9;"Another visi
t?"
7505 LET m$=INKEY$: IF m$="" THE
N GO TO 7505
7510 IF m$<>"n" THEN GO SUB 8990
: GO TO 7
7520 PRINT AT 21,0;"          CH
ICKEN!!!!!!
7540 GO SUB 7700
7550 POKE 23624,0
7560 STOP
7600 PRINT AT 14,14+(hs<1000);hs
7610 RETURN
7700 BEEP .2,5: BEEP .1,5: BEEP
.2,2: BEEP .1,7: BEEP .3,5: BEEP
.2,2
7710 RETURN
8000 INK 0: PAPER 6: BORDER 5: C
LS
8005 PRINT
8010 PRINT TAB 12;"ZOMBIES"
8020 PRINT
8025 PRINT
8030 PRINT "The inhabitants of t
he Island ofLost Souls welcome y
ou to their"
8040 PRINT "domain."
8050 PRINT
8060 PRINT "They hope you will s
tay a long"
8070 PRINT "time, perhaps foreve
r....."
8075 GO SUB 8990
8080 PRINT
8090 PRINT "If you wish to leave
 the island,you will have to lur
e them into the pits, which are
dotted aboutthe island."
8100 PRINT
8110 PRINT "Unfortunately, some
of the pits are very shallow, so
 beware!!"
8120 PRINT
8130 PRINT "You can move about t
he island  by pressing the foll
owing keys:"
8140 PRINT
8150 PRINT TAB 12;"8 9 0"
8160 PRINT
8170 PRINT TAB 12;"I * P"
8180 PRINT
8190 PRINT TAB 12;"K L ENTER"
8200 PRINT
8210 PRINT "Any other key will l
eave you  where you are."
8220 PRINT
8225 PRINT "Press ENTER to start
. Good luck!"
8230 FOR i=0 TO 7
8240 READ j: POKE USR "a"+i,j
8250 NEXT i
8260 FOR i=0 TO 7
8270 READ j: POKE USR "b"+i,j
8280 NEXT i
8300 INPUT d$
8310 GO SUB 8990
8320 RETURN
8900 FOR j=-15 TO -40 STEP -1
8910 BEEP .05,j
8920 NEXT j
8925 BEEP 1.5,-45
8930 FOR j=1 TO 150: NEXT j
8940 RETURN
8990 BEEP .2,2: BEEP .2,2: BEEP
.1,2: BEEP .25,2: PAUSE 4: BEEP
.2,5: BEEP .1,4: BEEP .1,4: BEEP
 .1,2: BEEP .1,2: BEEP .1,1: BEE
P .4,2
8995 RETURN
9000 PRINT PAPER 5; INK 0;AT 21,
0;"Plop into a hole. What a twer
p!!"
9010 PRINT FLASH 1; INK 1;AT e,f
;"O"
9020 GO SUB 8900
9030 PRINT FLASH 0; INK 7; PAPER
 1;AT e,f;"O"
9040 GO TO 7000
9100 PRINT PAPER 5; INK 0;AT 21,
0;"Straight into the zombie's ar
ms!"
9105 PRINT FLASH 1; INK 2;AT e,f
;"A"
9110 GO SUB 8900
9120 GO TO 7000
9200 PRINT PAPER 5; INK 0;AT 21,
0;"Yum-yum, din-dins for zombies
```

SPECTRUM PROGRAM

```
!!!"
9210 PRINT FLASH 1; INK 2;AT a(i
),b(i);"A"
9215 GO SUB 8900
9230 PRINT FLASH 0; PAPER 2; INK
 7;AT a(i),b(i);"A"
9240 GO TO 7000
9300 PRINT PAPER 5; INK 0;AT 21,
0;"Well done, all zombies gone!!
!!!"
9310 BEEP .1,12: BEEP .1,11: BEE
P .1,12: PAUSE 3: BEEP .1,7: BEE
P .1,5: BEEP .1,7
9320 BEEP .1,12: BEEP .1,11: BEE
P .1,12: PAUSE 3: BEEP .1,4: BEE
P .1,2: BEEP .1,4
9330 BEEP .1,12: BEEP .1,11: BEE
P .1,12: PAUSE 3
9340 BEEP .1,0: BEEP .1,2: BEEP
.1,4: BEEP .1,5: BEEP .3,7
9350 GO TO 6000
9999 SAVE "zombies" LINE 2
```

```
You scored 10
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Another visit?
```

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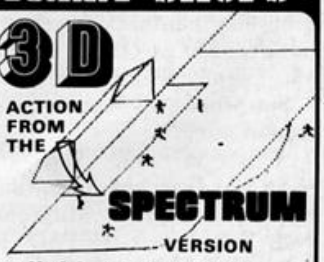

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SINCLAIR USER FEBRUARY 1983

Although I'm no great football fan, I really enjoyed playing this game — excellent use is made of colour and user-defined graphics. The game is very logically put together, so that the development of strategy and tactics has a real effect. For example, one of my teams got through to the fourth round of the F.A. Cup where it was beaten by a second division side. This upset morale and meant that our promotion bid failed. Perhaps I should have given up the F.A. Cup run and held some good players back — the possibilities are endless. Brian Clough had better watch out!
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Software with an international touch

In America, Europe and Japan, computer fans play Melbourne House games. But there are problems as well as advantages to being a multinational software company. Fred Milgrom, of Melbourne House, talked to Candice Goodwin about his company's plans, and the obstacles it has to overcome

Melbourne House's Australian managing director Fred Milgrom was in England for only a few days before flying off again to visit the company's office in Los Angeles. "I do have a home, in Australia", he grinned, "but I'm not there very much at the moment".

As multinationals go, Melbourne House is not large. Originally founded in the UK as a books publisher, it now has 20 employees scattered around the UK, US and Australia.

Neverless, the company has made quite an impact over here. Several of the progams it originated are among W. H. Smith's Top 10 best-sellers, headed by The Hobbit, an adventure game which, in the four months since it was launched, has become a legend in the software world.

But when Fred Milgrom started out in business back in 1977, he had no idea that he would end up getting involved in computing. He set out with "four and a half" employees, publishing hardback novels by authors such as Gerald Green, who wrote Holocaust, and Robin Moore, of French Connection fame.

Then in 1980 Sinclair's ZX80 was launched on an unsuspecting world. Milgrom, who had taken a PhD in chemistry, maths and physics in Australia, and who had "always been interested in computers", decided to try and publish a collection of 30 programs for the ZX80. This was, he reckons, the first book to be brought out for the machine.

In 1980, before the home computer boom had begun, selling a book of software through ordinary bookshops was out of the question — "they would have laughed at us'. So ads were placed in the only two computer magazines in existence at the time, and to Milgrom's surprise, the book turned out to be a "runaway success".

More books for the ZX80 followed and, in February 1981, Melbourne House brought out its first program cassette — a flicker-free version of Space Invaders.

Milgrom remembers with amusement the "amazing contortions that were needed to write programs in the early days". The discipline of programming to the limitations of the ZX80 has, he believes, stood Melbourne House's programmers in good stead, enabling them to write tighter, more economical software than their rivals.

Though it was Sinclair's launch of the ZX80 that took Melbourne House into the software market in the first place, its follow-up launch of the ZX81 in early 1981 nearly finished the company off again.

Fred Milgrom of Melbourne House: "I think people are happier if they can work where they want"

Veronika Megler, consultant programmer at the Melbourne office

"The demand for books for the ZX80 fell overnight", according to Milgrom. At that time Melbourne House's business was in books rather than cassettes, so this was a serious setback.

But its US sales saved the day. The ZX81 did not hit the US market until a couple of months later, and continuing sales of ZX80 products in the States tided the company over as it hastily brought out products for the new Sinclair machine.

"Then in March 1982 they did it again with the Spectrum!" But by then Melbourne House had started to safeguard itself against that kind of devastating fluctuation in the market.

It now spreads its products around several different countries and machines, selling books and software in Japan, Australia and Europe as well as the US and UK.

It caters for the TRS-80, the VIC-20, the Dragon and Spectrum as well as the ZX81.

"By establishing more than one market, setting up marketing and distribution organisations overseas and becoming more professional, we're trying to keep one step ahead, so in five years time we'll still be around".

But what about the language problems of selling software in so many different countries? Isn't a lot of translation involved? Milgrom says not.

Though the paper documentation is usually translated into the appropriate langage, English has become a kind of universal language for arcade games. "Even in Japan, they recognise English words like score and fire".

Without quoting specific figures, Milgrom will say that Melbourne House's turnover has doubled each year over the three years that it has been in the microcomputing market. "And in January, we sold 30% of what we sold in the whole of 1982".

Linden Loader takes care of publicity...

Programming Down Under — from left to right, Alan Blake, William Tang, Philip Mitchell

But he does not see software publishing as the source of instant wealth it is sometimes made out to be: "it may be a get-rich-quick business for people who are not committed to staying in the industry. We see ourselves as publishers, rather than as individuals with a good idea".

He sees profit margins on software being slashed over the coming couple of years, and less emphasis on small software firms. "It's interesting that large companies like Thorn-EMI, with a lot of money, are coming into the market. I think they'll end up dominating it".

This is, he says, already happening in the US, where video games are widely advertised on TV and companies may spend $4 million on promoting a single game.

But according to Milgrom, home computing means rather different things in the UK and the US. "I think the UK's more computer-literate. People are prepared to put more time into it, while people in the US are more consumerist.

"They don't like cassette software — they want plug-in cartridges, so that they can plug them in and go straightaway."

Though the Sinclair machines still reign supreme in the home market over here, in the US Melbourne House sells more software for the VIC-20 and TRS-80, through big chains like Computerland. "There's no equivalent to stores like Smiths in the US".

Selling software for the Sinclair machines presents problems because, although three-quarters of a million ZX81s have been sold in the US, "the computer community don't take it seriously ... the Sinclairs aren't seen as computers".

As a result, Computerland won't stock the ZX81 (or the TS1000, as it is known over there). It is mainly sold through discount stores — without the software, which is sold by mail order.

To complicate matters still further, mail order in the States is not just a matter of advertising in the computer press. "Mail order there is not through the magazines but by establishing a rapport with the users. The emphasis is more on direct mail.

"Few companies here follow up on computer sales. Follow up is more common in the States. And the reputation of the company is more important over there". Milgrom is currently trying to set up a network of representatives and warehouses in the US.

As a company that started in the UK, Melbourne House's reputation is bound to take time to build up in the States. On the other hand, it has the advantage that "the US market is lagging behind the UK market". According to Milgrom, UK software is currently better quality, despite the "big bucks" going into software promotion in the US.

Melbourne House employs five full-time programmers, some of them British and some Australian, but none from the US — yet. It also uses "as many freelancers as we can lay our hands on!"

Most of the programmers are computer science graduates in their middle twenties, but two of them, Clifford Abrahams and Clifford Ramshaw, are still at school.

Rather than being concentrated in a few central offices, the company's employees are scattered about the countries it operates in, and some of them work from home.

"It seems silly for a high-technology company to be rigid. I think people are happier if they can work where they want, and everyone works very hard. There's that relationship of trust."

The company "puts a whole lot of work into not cutting corners", and aims to maintain a reputation for high-quality products. Milgrom thinks that software is moving towards "more elaborate storyline games, that aren't over in 60 seconds ... more imaginative and interesting graphics."

All these things are true of The Hobbit, the adventure game that took four of Melbourne House's people 18 months to complete. "We didn't think that the current adventure games were very exciting. We set ourselves a more interesting challenge".

One of the programmers involved in producing The Hobbit had taken a combined degree in English literature and computing, and developed routines that enable the program to recognise quite complex English sentences.

The concept of "friend" and "enemy" is also built into the program, so that if you are unfriendly to one of the characters, he will be unfriendly back for the rest of the game.

But what Milgrom most likes about The Hobbit is that "the characters have independent life — they can behave quite unpredictably".

Melbourne House may well use the concepts developed in The Hobbit for other adventure games. Meanwhile, among its forthcoming releases is a "4-D" (3-D in real time) game set in the jungle, in which the player must fight off savage beasts. "When the sun sets, all you can see is the whites of their eyes".

...And Christine Laugharne is UK Sales Director

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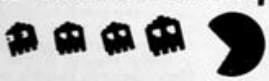

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