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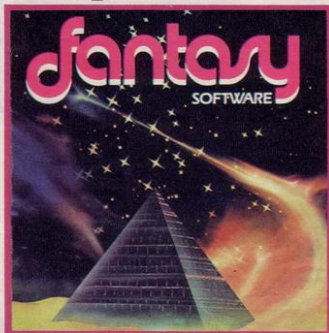
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AMONGST the queries which are received in the *Sinclair Programs* office, there are two which appear again and again. Firstly, "What do the underlined letters in your program listings mean?" and, secondly, "Why does this listing tell me to go to a line which does not exist?"

Both have simple answers. Underlined letters in our listings are graphics instructions, and they can always be interpreted by referring to the graphics instructions at the bottom of this page. They are included in the listings because no Spectrum printer prints graphics characters in a way which is instantly comprehensible. We therefore give instructions as to how graphics should be entered, and then underline the instructions to let you know that they should not be entered exactly as they appear.

Many of our listings have instructions to GOTO or GOSUB lines which do not exist. This is not a mistake, and these lines can be entered exactly as they are printed. Sinclair computers will simply go to the next line following the one stated. Such statements occur because lines have been removed while the program was being developed.

Any more problems? Let us know, and we will do our best to answer them, either personally, or in the magazine.



Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6 * isp" means six inverse spaces and "g4:4 * i4:g3" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.

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Programs should be on cassette. We cannot undertake to return them unless a stamped, addressed envelope is included. We pay £25 for the copyright of listings published and £10 for the copyright of listings published in the *Beginners'* section.

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Merge pictures	•			
U.D.G. creation	•	•	•	•
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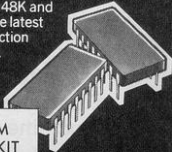


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LETTERS

Send your thoughts to us at Letters, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. We pay £2 for every letter published.

I AM writing to say that I have finished **Underwurde** on 6th January, 1985. It took me four hours and twelve minutes to kill all four guardians, collect all the gems and reach level 0. On reaching this level I was greeted by the message: "Congratulations. You have completed Underwurde. Your next adventure is **Knight Lore**."

My score was 403,243 and I had 58%. I claim to be the ultimate devil of the Underwurde.

Johnny Ioannou,
North London.

Speech synthesis

CAN anyone help me? I own a ZX-81 and, before Christmas, I bought a speech synthesis module. Having loaded the demonstration tape into the ZX-81 I thought I understood how to use the module, but I was wrong. Can anyone help me to understand how to use it?

L Moxam,
Sheffield.

Record breakers

IN REPLY to A Milner's letter, concerning **Daley Thompson's Decathlon**, I have achieved a high score of 228,575 on Day 1, and 504,431 on Day 2.

I have completed the 100 metres in 8.76 seconds, the 400 metres in

29.37 seconds, the 110 metres hurdles in 11.47 seconds and the 1500 metres in 259.7 seconds.

In addition, I have thrown the javelin 121.17 metres, the discus 75.9 metres and the shot putt 29.03 metres.

My jumping records are 10.46 metres for the long jump, 2.47 metres for the high jump and 5.1 metres for the pole vault.

Richard Harrison,
Barnsley, Yorkshire.



AFTER reading Andrew Milner's letter about **Daley Thompson's Decathlon** I set out to beat his high score of 164,265. My high score at that time was 120,322, so it did not have far to go. After sinking into the game I managed, on Day One, a high score of 290,172 and, on Day Two, a high score of 347,625.

I think that this game is the best ever, except Ocean's new release,

Match Day.

If anyone has beaten my score I should like to hear from them.

Shaun Lowe,
Quedgely, Gloucs.

Keyboard upgrade

SINCE reading about the lack of response from ZX-81 owners, in the January issue of *Sinclair Programs*, I felt I had to write to you. I am a ZX-81 owner, and have been one for a year. Although I do not do much programming I have found the flat keys on the ZX-81 very annoying and I resolved to buy a new **File-sixty** keyboard (priced £9.95). It is great!

Printing out programs is now a lot quicker. The keyboard comes complete with a separate overlay and stickers which make games playing a lot easier. It is great value for money.

So, all you annoyed ZX-81 owners, ask for one for your birthday; you will notice the difference. The keys are like Spectrum keys.

R Stephens, aged 12,
Colyton, Devon.

Booty is brilliant

I HAVE recently bought **Booty** for my 48K Spectrum. Since I bought it, I have not played any other game, it is brilliant. I have played on it for hours, and find it very addictive.

I have visited most rooms and have managed to find 73 pieces of

booty. One thing I cannot do is get key 5 on the first board. I have nearly got it, but the pirate always gets me. I would like to know whether anyone has beaten my score of 73 and can reach key 5.

Mark Simpson,
Newcastle-upon-Tyne.



Hi-score rockets

SINCE reading the January issue of *Sinclair Programs* I noticed that the high score on **Rocket Man** stood at 110,570, which was scored by Nicholas Mann.

On looking further, I found that M Pleasance of Brampton had achieved 1,019,796. I would like to add that my high score stands at 2,356,515 but my game crashed when I had 39 men left. Has anybody beaten that?

Mark Heaton,
Shipley, Yorkshire.



Please complete this form and enclose it with any program which you send to us for possible publication.

To: Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

I enclose.....Program(s) for thecomputer.

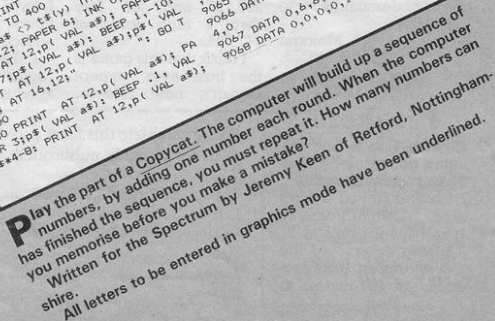
I guarantee that each program submitted is my original work.

Signed

Name

Address

A cartoon illustration of a fluffy white cat with a large, bushy tail, holding a sign that says '222'. The cat has a wide, toothy grin and is looking towards the viewer. The sign is a small white rectangle with a black border and the number '222' in a bold, black, sans-serif font. The cat is standing on its hind legs, with its front paws holding the sign. The background is a plain, light gray. In the top right corner, there is a small, partially visible text box with some illegible text.

[illegible]



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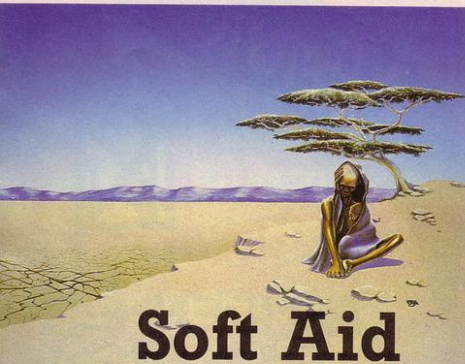
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NEWS



Soft Aid

SOFTWARE companies are teaming up in a major effort to help the Ethiopian Famine appeal.

Tapes containing several top programs will be issued under the title **Soft Aid**. The tapes will retail at £2.99. The list of programs and contributors is: **Spellbound** — Beyond, **Starbike** — The Edge, **Kokotini Wilf** — Elite, **The Pyramid** — Fantasy, **Horace goes skiing** — Melbourne

House/Psion, **Gilligan's Gold** — Ocean, **Ant Attack** — Quicksilver, **3D Tank Duel** — Real Time, **Jack and the Beanstalk** — Thor and **Sorcery** — Virgin.

The project is the brainchild of Rod Cousins, managing director of Quicksilver and it has been endorsed by Bob Geldof.

Soft Aid tapes will be on sale from mid February with all profits going directly to the appeal.

Perilous Appeal

CHEETASOFT are also helping to raise money to help Africa.

Profits from all future sales of the game **The Perils of Bear George** are to be donated to the African Appeal Fund and the company hope to be endorsed by The Save The Children Fund.

Although the game centres around the fact

that Bear George is likely to starve in the game Howard Jacobson, director of CheetaSoft does not feel that it warrants too much notice. "The Save The Children Fund are not concerned with this aspect of the game," he said.

They've Won

WINNERS of our January competition will each receive a framed poster of **Tir Na Nog** plus the game itself. The five winners are: Michele-Ann Okolotowicz from London. She is 17 years old and taking her 'A' levels this summer. She owns a ZX-81 but tends to use her boyfriend's ZX Spectrum more often. Nicola Goode, from Bushy is the second female winner this month. Although

only 12 years old she learnt to program from her friend's machine and her parents bought her a ZX Spectrum last Christmas.

James Donald from Swansea is 16 years old and, like fellow winner David Ahrens, from Gravesend he is studying for his 'O' levels. Alastair Bain, the fifth prize winner, is a 28 year Architect living in Liverpool. He is attempting to learn all about his Spectrum.

Gone Beyond

MARC PIERSON, member of the Beyond Software team, is also working on a project which is not connected with Beyond. He is writing a program in conjunction with the book publishers, Dorling Kindersley, which should be released in

mid April.

Called **The White Feather Cloak**, it will be an educational game with text and graphics. The text is written in rhyming couplets and Marc expects anyone from 14 years and upwards to enjoy playing it. It will sell for around £14.

Sinclair shake out sweeps out Spectrum

SINCLAIR Research have stopped producing the ZX Spectrum in favour of the Spectrum Plus, which has been reduced in price, as has the microdrive cartridge.

Upgrade kits are now available for 48K Spectrum owners. You can send your machine to Sinclair who will convert

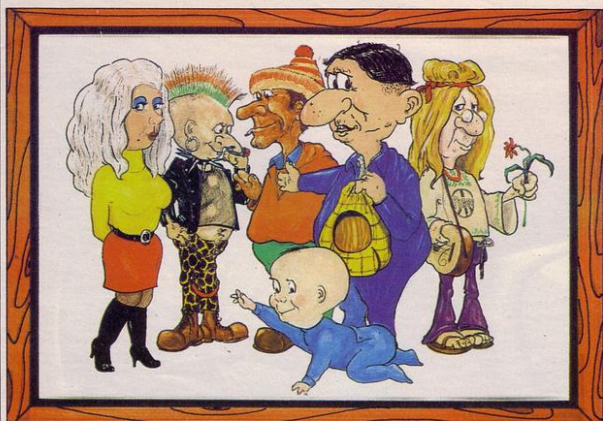
it to a Spectrum Plus for £30 or buy a kit and do it yourself for £20.

There is no longer a minimum price on the ZX Spectrum, making it possible in some cases to buy one cheaply and upgrade it, thereby making it considerably cheaper than a new Spectrum Plus, which has been reduced from £179.95 to £129.95.

ZX-81 enthusiasts will be pleased to hear that "Sales of the ZX-81 are steady and there is no intention of dropping it from production," according to a spokesman from Sinclair Research.

Microdrive cartridges, have been reduced to £1.99.





No. 1 Wally

FEBRUARY 23rd saw the release of **Everyone's a Wally** from Mikro-gen, who expect it to go to number one in the games and pop charts.

The game is a sequel to the Wally games and has a song recorded on

the 'B' side which is also being released as a single record. It is written by John Watkins and sung by Mike Berry of **Are You Being Served** fame. The game's characters include Wally aided by Tom, Dick, Harry and Wilma, and the

game revolves around a building site with you controlling all five characters.

Mikro-gen are hoping to make a dent in the pop charts with this new release. The single will sell at the normal price for a record and the game will cost £9.95.

Scientists Play

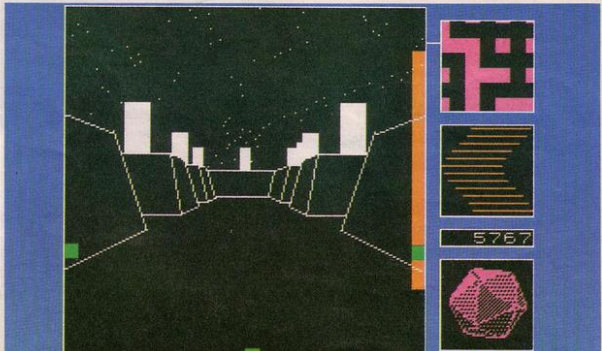
FOUR SCIENTISTS have devoted the last fourteen months to a new game which is to be released shortly by Firebird Software.

Described by James Leavey, Marketing Man-

ager of Firebird as "a form of inverted rubik cube with arcade action", the game is set in a series of mazes of which there are billions of permutations. Included with the game is a competi-

tion to win a Porsche or money to that value.

A name has yet to be agreed, but it is presently known as **Gyron**. Firebird promise that it will be "Exciting and excellent value for money".



Adventure in-waiting

LLEVEL 9 have five new adventure games in the final stages of production. Their release dates will be staggered over the whole year.

Emerald Isle, which has suffered some production problems, should now be on sale. It is a graphics adventure set on a tropical island with 150 different locations, and it will cost £8.95.

Three more of the games have been given names, while the fifth has yet to be decided because the name clashed with one already on sale. **Price of Magic** should be available around Easter, **Worms in Paradise** in mid summer and **Red Moon** in early autumn. They are expected to retail at £9.95 and all will have the adventure theme expected of Level 9 games.

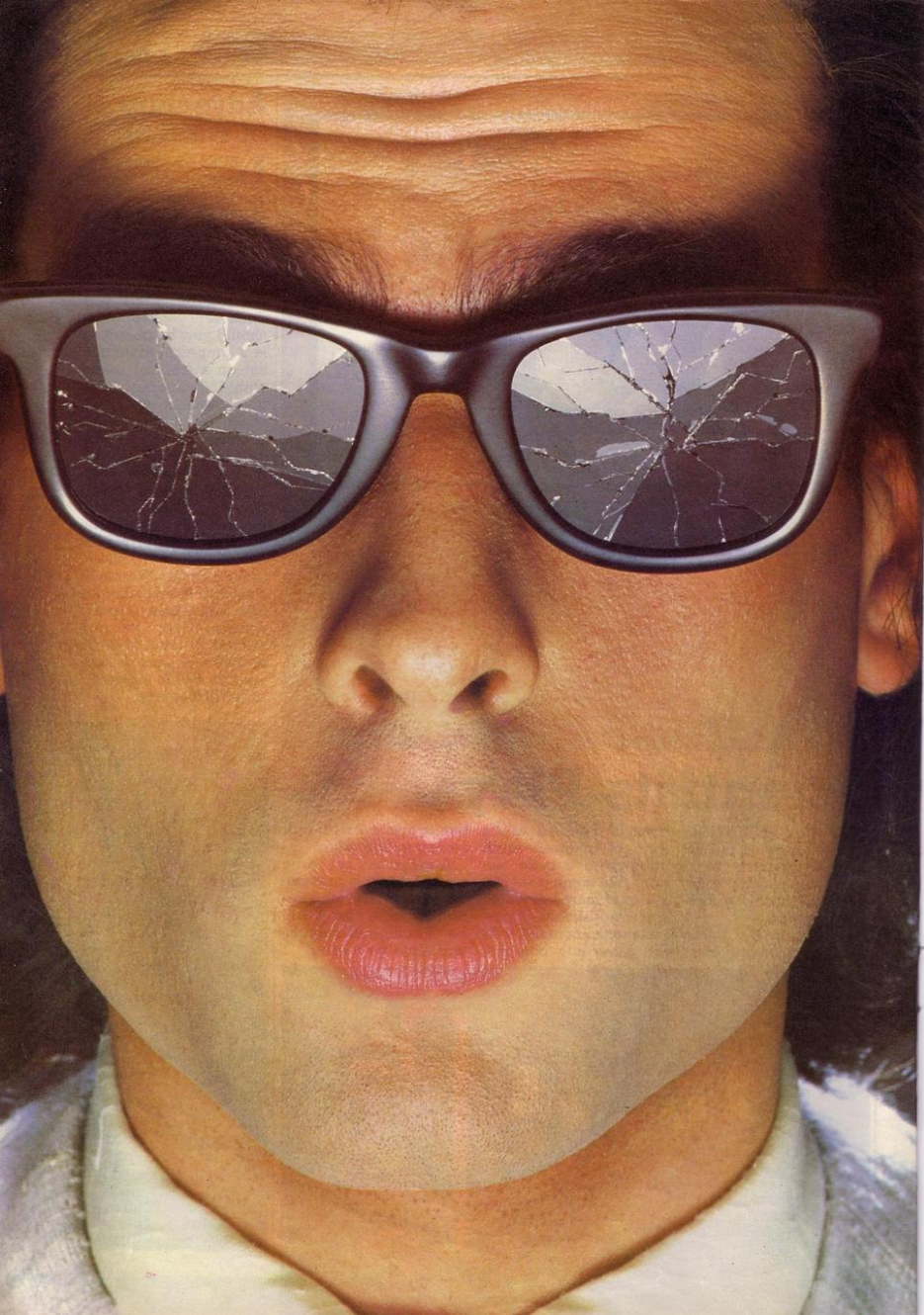
Vulcan has landed

VULCAN Electronics Limited are producing a joystick and interface compatible with both the Spectrum and the Spectrum Plus.

Formerly a distribution company, they have decided to move into the market with some reasonably priced additions for the Sinclair machines.

At £8.95 the Gunshot Joystick has suction pads, moulded grip handle, and there is a rapid fire version available at £11.95. The Spectrum Interface is compatible with the Kempston and Gunshot joysticks. It costs £11.50.

Vulcan can be contacted at: 200, Brent Street, Hendon, London, NW4.



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Chesterfield, Boots, 35-37 Low Street, Tel: 0532 31191.
Derby, 0246 203591.
Chesterfield, Computer Stores, 14 Stephen Place, Tel: 0426 208802.

DEVON

Exeter, Boots, 251 High Street, Tel: 0932 32244.
Exeter, Open Channel, Central Station, Queen Street, Tel: 0292 218187.
Plymouth, Syntax, 76 Cornwall Street, Tel: 0275 28705.
Seaton, Comp Computer Services, 51 Harbour Road, Tel: 0297 222347.
Tiverton, Actron Microcomputers, 37 Barton Street, Tel: 0884 252854.

DORSET

Bournemouth, Brook Computers, 370 Charnmister Road, Tel: 0202 533054.
Bournemouth, Landowne Computer Centre, 1 Landowne Crescent, Landowne, Tel: 0202 20615.
Dorchester, The Paper Shop, Kings Road, Tel: 0305 64564.

ESSEX

Chelmsford, Maxton Hayman, 5 Brookfield Road, Tel: 0243 354595.
Colchester, Boots, 5-6 Lion Walk, Tel: 0206 577303.
Grays, H. Reynolds, 28a Southend Road, Tel: 0373 31041.
Harlow, Laskys, 19 The Harvey Centre, Tel: 0279 443495.
Southend-on-Sea, Computer Systems, 14 North Street, Tel: 0402 445741.
Ilford, Boots, 177-185 High Road, Tel: 01-553 2116.
Southend-on-Sea, Computera, 88 London Road, Tel: 0702 335443.
Southend-on-Sea, Computer Centre, 336 London Road, Tel: 0702 337161.
Southend-on-Sea, Estuary Personal Computers, 318 Chertwell North, Victoria Circus Shopping Centre, Tel: 0702 014131.

GLOUCESTER

Cheltenham, Laskys, 206 High Street, Tel: 01242 528979.
Cheltenham, Screen Scene, 144 St Giles Road, Tel: 0242 528979.
Gloucester, Boots, 38-46 Eastgate Street, Tel: 0452 423501.

HAMPSHIRE

Basingstoke, Fishers, 2-3 Market Place, Tel: 0256 22079.
Southampton, Business Electronics, Microimage, At Atkins, 7 Civic Centre Road, Tel: 0703 25903.
Southampton, Tyrrell & Green, Above Bar, Tel: 0703 27711.

HERTFORD

Hitchin, County Computers, 13 Bucklebury, Tel: 0462 36757.
Hitchin, G.K. Photographic & Computers, 68 Hertsmere Road, Tel: 0462 59285.
Porten Bar, The Computer Shop, 100-102 High Street, Tel: 0707 44417.
Stevenage, DJ Computers, 11 Town Square, Tel: 0438 65501.
Watford, Laskys, 18 Charter Place, Tel: 0232 31903.
Watford, SRS Microsystems, 94 The Parade, High Street, Tel: 0923 26602.
Watford, Towns, Queens Road, Tel: 0923 44266.

Welwyn Garden City, DJ Computers, 40 Fetherne Road, Tel: 96 2844.
Welwyn Garden City, Welwyn Department Store, Tel: 0707 323456.

HUMBERSIDE

Beverley, Computing World, 10 Swaby Way, Dyer Lane, Tel: 0482 881831.

KENT

Beckenham, Supa Computers, 425 Croyn Road, Tel: 01-650 3569.

Beesleyheath, Laskys, 15-16 Broadway Shopping Centre, Tel: 01-301 3478.
Bromley, Boots, 145-154 High Street, Tel: 01-460 6488.
Bromley, Computers Today, 31 Market Square, Tel: 01-290 5652.
Bromley, Laskys, 22 Market Square, Tel: 01-464 7829.
Bromley, Walters Computers, Army & Navy, 64 High Street, Tel: 01-460 9991.
Chatham, Boots, 30-34 Wilmet Square, Pentagon Centre, Tel: 0634 405471.
Sevenoaks, Ernest Fielder Computers, Dorset Street, Tel: 0732 456800.
Sittingbourne, Computer Plus, 65 High Street, Tel: 0732 25677.
Tunbridge Wells, Modata Computer Centre, 28-30 John Road, Tel: 0892 41553.

LANCASHIRE

Blackburn, Temco Computers, 9 Railway Road, Tel: 0254 691333.
Blackpool, Blackpool Computer Store, 179 Church Street, Tel: 0253 20239.
Burnley, I.M.O. Business Systems, 39-43 Standish Street, Tel: 0682 54299.
Preston, A.Mat Computer, 67 Friargate, Tel: 0772 561952.
Preston, Laskys, 141 Guildhall Arcade, Tel: 0772 24558.
Wigan, Willings Computer Centre, 11 Mesnes Street, Tel: 0942 44382.

LEICESTERSHIRE

Leicester, Boots, 30-36 Gallowtree Gate, Tel: 0533 21641.
Market Harborough, Harborough Home Computers, 7 Church Street, Tel: 0858 63056.

LONDON

W1, Computers of Wigmore Street, 10 Wigmore Street, Tel: 01-486 0373.
W1, HMV, 363 Oxford Street, Tel: 01-486 1240.
W1, John Lewis, Oxford Street, Tel: 01-629 7711.
W1, Laskys, 42 Tottenham Court Road, Tel: 01-636 0845.
W1, Lion House, 227 Tottenham Court Road, Tel: 01-637 1601.
W1, Rother Computers, 25-27 Tottenham Court Road, Tel: 01-580 5826.
W1, The Video Shop, 18 Tottenham Court Road, Tel: 01-580 5380.
W1, Walters Computers, DH Evans, Oxford Street, Tel: 01-629 8800.
WC2, Transam Micro Systems, 59-61 Theobalds Road, Tel: 01-405 5240.
WS, Laskys, 18-19 Ealing Broadway Shopping Centre, Tel: 01-567 477.
W8, Walters Computers, Barkers, Kensington High Street, Tel: 01-937 5432.
SW1, Peter Jones, Sloane Square, Tel: 01-730 3434.
SW1, Square Deal Computers, 373-375 Footscray Road, New Etham, Tel: 01-859 1516.
Lewisham, Laskys, 164 High Street, Tel: 01-852 1373.
SE13, Walters Computers, Army & Navy, 33 and 63 High Street, Tel: 01-852 4321.
SE15, Caelehurst Ltd., 28 Rye Lane, Peckham, Tel: 01-639 2025.
EC2, Devron Computer Centre, 18 St George's, Tel: 01-638 5339.
N7, Jones Brothers, Holloway Road, Tel: 01-607 2727.
N14, Logic Sales, 19 The Bourne, Tel: 01-202 2273.
N1, The Pressy, Southgate, Tel: 01-882 4942.
NW3, Maycraft Micros, 38 Rosslyn Hill, Hampstead, Tel: 01-431 1340.
NW4, Davinci Computer, 12 Brent Street, Hendon, Tel: 01-202 2273.
NW7, Computers Inc., 86 Golders Green, Tel: 01-209 0401.
NW10, Technomatic, 17 Burnley Road, Wembley, Tel: 01-208 1177.

MANCHESTER

Manchester, Boots, 32 Market Street, Tel: 061-832 6533.
Manchester, Laskys, 61 Arndale Centre, Tel: 061-833 9149.
Manchester, Laskys, 12 St. Marys Gate, Tel: 061-833 0268.
Manchester, Mighty Micro, Sherwood Centre, 168 Wilmslow Road, Fallowfield, Tel: 061-224 8117.

MERSEYSIDE

Merseyside, NSC Computer Stores, 39 Hanging Ditch, Tel: 061-832 2269.
Oldham, Home & Business Computers, 91 Yorkshire Street, Tel: 061-633 1608.
Swinton, Micro, 69 Partington Lane, Tel: 071-728 2282.

MIDDLESEX

Enfield, Laskys, 44-48 Palace Garden Shopping Centre, Tel: 01-363 6627.
Enfield, The Queens Arms, 42 St. Anns Road, Tel: 01-427 5469.
Hounslow, Boots, 139-199 High Street, Tel: 01-570 0516.
Uxbridge, Andrews, 100 High Street, Tel: 01-977 4716.
Twickenham, Twickenham Computer Centre, 72 Heath Road, Tel: 01-892 7896.
Uxbridge, JKL Computers, 7 Windsor Street, Tel: 0895 51813.

NORFOLK

Norwich, Bonds, All Saints Green, Tel: 0603 24617.

NOTTINGHAMSHIRE

Sutton in Ashfield, HN & J. Fisher, 87 Outram Street, Tel: 0623 54734.
Nottingham, Jessops, Victoria Centre, Tel: 0602 418828.
Nottingham, Laskys, 45 Smithy Row, Tel: 0602 413429.

OXFORDSHIRE

Abingdon, Ivor Fields Computers, 21 St. Peter Street, Tel: 0235 21207.
Banbury, Computer Plus, 1 Church Lane, Tel: 0253 55890.
Oxford, Science Studio, 7 Little Clarendon Street, Tel: 0865 54022.

SCOTLAND

Edinburgh, Boots, 101-103 Princes Street, Tel: 031-225 8331.
Edinburgh, John Lewis, St James Centre, Tel: 031-556 9121.
Edinburgh, Laskys, 43 James Street, Tel: 031-556 1864.
Glasgow, Boots, 200 Sauchiehall Street, Tel: 041-332 1925.
Glasgow, Boots, Union Street and Argyle Street, Tel: 041-248 7387.

SHROPSHIRE

Telford, Telford Electronics, 38 Mall A, Tel: 0932 504911.

STAFFORDSHIRE

Newcastle-under-Lyme, Computer Cabin, 24 The Parade, Tel: 0782 636911.
Stafford, Computera, 59 Foregate Street, Tel: 0785 41899.
Stoke-on-Trent, Computera, 15 The Square Arcade, Hanley, Tel: 0782 268524.

SUFFOLK

Bury St Edmunds, Boots, 11-13 Cornhill, Tel: 0284 701516.
Stowmarket, Laskys, 24 Crown Street, Tel: 047 350965.

SURREY

Croydon, Laskys, 77-81 North End, Tel: 01-681 8443.
Croydon, The Vision Store, 96-98 North End, Tel: 01-681 7339.
South Croydon, Concise Computer Consultants, 1 Carlton Road, Tel: 01-681 6844.
Epsom, The Micro Workshop, 12 Station Approach, Tel: 0372 721533.
Guildford, Walters Computers, Army & Navy, 105-111 High Street, Tel: 0483 68171.
Haslemere, Haslemere Computers, 17 Lower Street, Tel: 0428 54428.
Wallingford, Surrey Micro Systems, 53 Woodcote Road, Tel: 01-647 3636.
Woking, Harpers, 71-73 Commercial Way, Tel: 0486 225537.

SUSSEX

Bexhill-on-Sea, Computera, 22 St. Leonards Road, Tel: 0242 223333.
Brighton, Boots, 129 North Street, Tel: 0273 27088.
Brighton, Gamez, 71 East Street, Tel: 0273 68221.
Brighton, Laskys, 151-152 Western Road, Tel: 0273 725625.
Brighton, 0273 623333.
62 The Boulevard, Tel: 0293 37842.
Crawley, Laskys, 6-8 Queensway, Tel: 0293 544622.

TYNE & WEAR

Newcastle-upon-Tyne, Bairbridge, Eldon Square, Tel: 0632 325000.
Newcastle-upon-Tyne, Boots, Eldon Square, Tel: 0632 329844.
Newcastle-upon-Tyne, Laskys, 6 Northumberland Street, Tel: 0632 617224.
Newcastle-upon-Tyne, R.F. Computing, 12 Jesmond Road, Tel: 0632 815580.

WALES

Aberdare, Inky Computer Services, 70 Mill Street, The Queens Arms, Tel: 0985 881828.
Aberystwyth, Aberdare at Galloways, 23 Pier Street, Tel: 01646 55551.
Cardiff, Boots, 26 Queens Street & 105 Frederick Street, Tel: 0222 31291.
Cardiff, P & P Computers, 41 The Hayes, Tel: 0222 26666.
Swansea, Boots, 17 St. Marys Arcade, The Quadrant Shopping Centre, Tel: 0792 43461.

WARWICKSHIRE

Coventry, Coventry Micro Centre, 33 Far Gosford Street, Tel: 0203 58942.
Coventry, JBC Micro Systems, 200 Earlsdon Avenue, North Earlsdon, Tel: 0203 73813.
Coventry, Laskys, Lower Precinct, Tel: 0203 73813.
Leamington Spa, IC Computers, 43 Russell Street, Tel: 0926 36244.
Leamington Spa, Leamington Hobby Centre, 12 Regent Street, Tel: 0926 2921.
Nuneaton, Micro City, 14 Queens Road, Tel: 0222 38204.
Rugby, OEM Computers Systems, 9-11 Regent Street, Tel: 0788 70522.

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Birmingham, Boots, City Centre House, 16-17 New Street, Tel: 021-633 7582.
Birmingham, Laskys, 19-21 Corporation Street, Tel: 021-632 6303.
Dudley, Central Computers, 35 Churchill Precinct, Tel: 0384 238169.
Stourbridge, Walters Computer Systems, 12 Hagley Road, Tel: 0384 307811.
Walsall, New Horizon, 1 Goodall Street, Tel: 0922 24821.
West Bromwich, D.S. Peakman, 7 Queens Quay, Tel: 02125 7910.
Wolverhampton, Laskys, 125-127, Tel: 0902 714568.

YORKSHIRE

Bradford, Boots, 11 Darley Street, Tel: 0242 39089.
Leeds, 0242 78511.
Sheffield, Cole Brothers, 100-102, Tel: 0114 263636.
Sheffield, Laskys, 8 Leopold Street, Tel: 0742 750971.
York, York Computer Centre, 10-12, Tel: 0904 61862.

micronet
800



Today was the deadline for my Sinclair Programs problem page, so I had to start asking myself questions about computers. And not sensible questions like, "Why can't I kill more aliens," but basic, boring ones about how computers do what they do. Trouble is, I'm no more interested in these basic questions than I am in why the sky is blue.

"Why is the sky blue?" I wondered.

I was busy driving a tank at the time. Out of the narrow gun-sight I could see a blue strip of sky and a green strip of dirty, churned-up battle-field.

Actually, I decided, I could probably work that one out for myself. All I had to do was change the top half of the screen to paper colour 5, and the bottom half to paper 4.

After the kind of sweat that would normally produce the death of entire galaxies

full of many-tentacled monsters, I'd written the following program

```
10 FOR I=1 TO 352: PAPER 5: PRINT " ";
```

```
NEXT I: FOR I=1 TO 352: PAPER 4: PRINT
```

```
" ";
```

```
NEXT I
```

But when I showed it, with modest pride to my sister Eustacia — she laughed! "Don't send that off to the magazine," she said. "I'd hate them to take the problem page away from us."

"Us!" I thought. Doesn't she realise that, whatever trifling help she's given me from time to time, the authorship of the column was mine alone. We wouldn't even have the job if I hadn't lied so well about my computing skills.

I must admit, though, that the earth and sky did take quite a while to appear with my little program. "It's like waiting for the dawn to come up on a foggy day," said Eustacia cruelly.

She also claimed that my routine would paint over any existing graphics, so I'd always have to fuss around making sure that I put aliens and such on last. "Who cares about aliens?" I said. But she knew I was lying again.

The next thing I knew, a piece of disgusting pink scented paper had appeared under my nose with the following program written on it.

```
10 REM paper colours (top cyan, bottom green)
```

```
20 LET S=0: FOR I=64000 TO 64028: READ N: POKE I,N: LET S=S+N: NEXT I
```

```
30 READ SUM: IF S<>SUM THEN PRINT "error in data entry — retype line 40":
```

```
STOP
```

```
40 DATA 22,40,33,255,87,6,12,197,6,32,35,126,230,199,130,119,16,248,
```

```
193,16,242,122,254,32,200,22,32,24,232,3162
```

```
60 CLEAR 63999: LIST: RANDOMIZE USR 64000: STOP
```

```
70 SAVE "m";1;"paper" CODE 64000,29
```

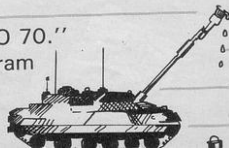
"The LIST command shows how the existing character set hasn't been affected," said Eustacia.

"Very comforting," I replied.

"And you can save the program to microdrive with GOTO 70."

"What do I want to do that for," I said. "This tank program paints the sky very effectively, thank you."

Sid.



TRAVEL IN TIME

DRIVE-IN

SOME GAMES you can load into your computer and play as soon as they appear on screen, without even glancing at the story on the cassette insert. **Drive-In**, the new release from Fantasy is not like that at all. It is complex. Really complex.

To start with there are lots of different rooms, 189 in all, each complete with two different brands of energy sapping alien. Then you have to find the parts to build a space ship, although you can only carry four things at a time. You must carry them to room 189, which you must, of course, find, and then assemble them in the correct order.

To help you on your

way there are garages, swap shops, banks and time machines. Even reading the cassette insert will be no help here, and you are left to work out for yourself which of these machines is which, what they all do, and how you make them do it.

You will need all your wits about you for this game. A map is essential, and making notes on what you have collected is also important. There is a maze so, following adventure techniques, you must enter it carrying enough objects to enable you to map it. You must remember what is going on everywhere, and you must ei-



ther zap the aliens, or act fairly nippy in order to avoid them.

Clues? Well, just this once. The map is wrap-around vertically, so if you keep moving upwards you will unsuspectingly find yourself at the bottom of the map. Room 189 is down and to the right of the start. You cannot remove anything from a swapshop until you have put something

in the bank. Now go and solve the rest yourself.

Totally addictive, with the complexity of all the other arcade games from Fantasy, **Drive-in** is produced by Fantasy Software, Fauconberg Lodge, 27a St George's Road, Cheltenham, Gloucestershire.

Price: £5.50

Game type: Arcade

Rating: 80%

TOY BIZARRE

IN THE role of Merton the maintenance man, you have been allocated the job, in **Toy Bizarre**, of facing a night in the Gizmo Automated Toy factory. Naturally, your period on duty coincides with the time at which the toys decide to revolt. To survive the night you must burst the toy dispersing balloons, destroy the toys and avoid Hilda the clockwork doll.



The game is set on a series of platforms set on different levels, and it is possible to jump from one to another. Remaining on the lowest levels leads to a quick death, while climbing to the higher levels as quickly as possible makes the game straightforward to play.

The game is based on an amusing idea, even though it is rather simple to play. Inattention to detail on the part of the programmer makes it a less attractive game than it could easily have been.

Fun, but not very professionally presented, **Toy Bizarre** is produced by Activision, 15 Harley House, Marlebone Road, Regent Park, London.

Price: £7.99

Rating: 50%

SKI STAR 2000

APPROACH any *Sinclair* Programs reviewer, say "skiing program" in their ear, and watch them get very pale and nervous. After all, guiding a little dot down your screen, avoiding other little dots is a relatively easy program to write, and we see several each week. Rest assured, **Ski Star 2000** is nothing like that. It is nothing like any skiing program that you have ever seen, and it is great fun.

Your view is the view seen by the skier, and you must move down the slalom course, round each one of the flags, and past the final banner as quickly as possible. A three dimensional view is drawn in outline, in a style reminiscent of *Battlezone*. Once you can do

this, you can redesign the course to make life more difficult for yourself.

You can, for example, make life really difficult by wearing view-restricting goggles, adding a multitude of flags, and then hemming in the course with high mountains.

This is a difficult game, and a high score fast time will be a great achievement. You can zoom downhill at break-neck speed, but if you hit a flag or lean over too far you will fall, and will have no option but to start again.

This well-planned and enjoyable simulation is produced by Richard Shepherd Software.

Price: £7.95

Rating: 70%

PLUMMET

WHAT IS Orson doing? "What are you doing, Orson?" "Can't stop, must save the mayor from an awful fate," "Eh?" "I said, can't stop, must save..." and he is gone, rushing into the distance, trailing a long rope behind him.

He soon returns. "Forgotten something, old chap?" He shakes his head, "Hit by a mutant revolving door," "?" Off he goes again, trailing his rope.

Next time round, "Mutant revolving door again?" "Choulish hunch-backed Zombie doorman." Right, fine,

not much to say to that, is there?"

Some time later, Orson returns in the search of another rope. As he emerges in the lobby there is a screeching sound, cries for help and then a sickening thud. Orson collapses into a chair. "Just tell me all about it, old son."

Turns out that the Mayor was stuck in a lift which was giving way. Orson, instead of calling the lift maintenance operatives, had decided to secure it by rushing around this doom-laden hotel in search of ropes and then tying them to



the lift. Up and down, through three screens he ran, but the slightest mistake sent him back to reception and, with the Mayor's life at stake, the slightest mistake could not be tolerated.

Plummet is produced

for the 48K Spectrum by Interceptor Micros, Lindon House, The Green, Tadley, Hampshire.

Price: £5.50
Game type: Arcade
Rating: 40%

WIZARD'S WARRIORS

WIZARD'S WARRIORS, from Mastertronic, takes the form of a complex version of Pacman. Your task is to survive each one of a series of mazes. In each maze are several of the Wizard's warriors, each of which is out to get you.

Blue warriors are easy to spot, and can be shot whenever you are in direct line with them.

When they are killed, white and yellow warriors will appear, and these can only be seen some of the time. To pinpoint their movements at other times you must refer to the radar at the bottom of the screen. This shows the position of the warriors, but not the positions of any walls in the maze. After the white warriors the Wizard's eagle appears, and

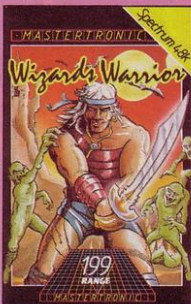
then the Wizard himself.

Having survived all these perils, you can move on to the next maze, which will contain fewer hiding places.

Maze enthusiasts will love this game, although it will probably prove slightly too easy for experienced maze movers.

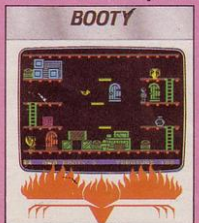
Produced for the 48K Spectrum by Mastertronic, 54 George Street, London W1.

Price: £1.99
Rating: 55%



BOOTY

FROM the time the title screen, showing a pirate galleon in a shimmering ocean appears, it is clear that **Booty** is a



game on which a lot of time and care has been spent. As the game progresses it gets better and better with a variety of problems and a multitude of different ways of producing the final solution.

In the role of Jim the cabin boy, your aim is to collect all the booty from the pirate galleon. In your way are many locked doors, for which you must collect the keys, angry pirates waving their swords, ran-

domly appearing rats and parrots and booty trapped booty.

As if this were not enough, each screen or hold is different in layout. All are on several levels, attached by ladders or lifts, but there is a vast variety involved in the arrangement of each element on screen.

Demonstration mode at the beginning of the program shows you the various holds but does not give you any idea of how they are connected. On most screens there are doors leading to three other holds, and it

depends where you land on a screen as to how far you will be able to move easily. Some of the screens are very complex in arrangement and to arrive at them through a one way door often proves a mistake.

An excellent game, astonishingly good value for money, Booty is produced for the 48K Spectrum by Firebird, Wellington House, Upper St Martin's Lane, London WC2.

Price: £2.95
Game type: Arcade
Rating: 83%

AVAILABLE FROM
High Street Computer Retailers
and branches of W. H. Smith, Boots,
John Lewis Partnership, Laskys, Currys.

EVEN THE PRICE WILL KEEP YOU IN THE BLACK

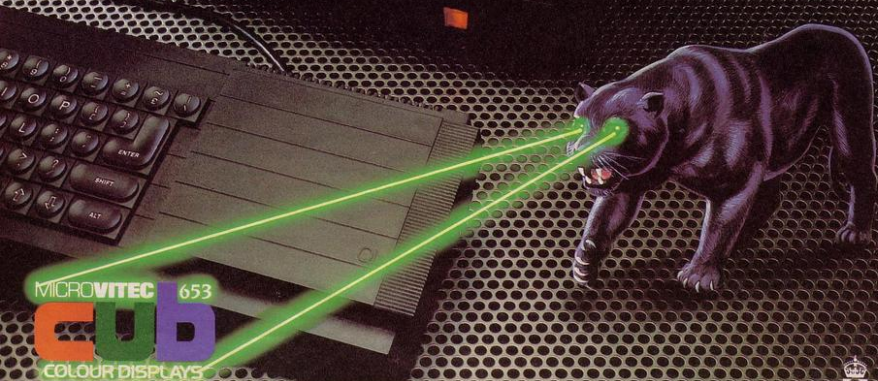
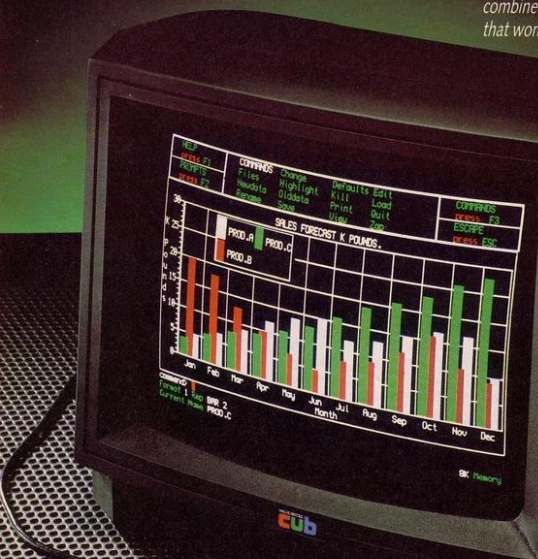
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MONTY IS INNOCENT

BREATHE it softly in games circles, *Sinclair Programs* was not impressed by Monty Mole. Nevertheless, the charts showed that everyone disagreed with us, and so we were ready to find signs of excellence in the follow up, **Monty is Innocent**, which had gone unnoticed in Monty Mole.

By the beginning of Monty is Innocent, Monty is incarcerated for life in a huge prison for liberating a bucket of coal from a coal mine. His friend, Sam Stoot, following his conscience rather than the letter of

the law, has decided to break into the prison and free him.

This is where you come in. As Sam Stoot, you must break into the prison, move through a variety of three-dimensionally presented screens, fend off a series of opponents such as skulls and reporters by shooting them, collect keys and try them in cell doors until you have freed Monty. For some reason, Sam is not struck by the dubious morality of slaughtering hundreds in order to save one mole.

The graphics in this

game are its weakest point. They are appalling. Stiff and jerky little characters run around screens which look impressive until anything moves. Then the old attributes problems strikes, and strikes with a vengeance. The resulting mishmash of colours and confusion of colours with background would be funny if it were not so bad.

The idea behind the game is good, but it is badly presented. Doors to other screens are often invisible, and the 3D pictures are confusing. On the whole, the game is not a patch on Monty Mole.



Produced for the 48K Spectrum by Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield.

Price: £6.95
Game type: Arcade
Rating: 40%

TECHNICIAN TED

SOMEWHERE, although exactly where is hard to define, there lies a difference between a game which is enjoyably difficult, and a game which is absurdly difficult. **Technician Ted** falls quite solidly into the latter of these two categories.

There you are, an unexciting animated character, saddled with a load of unexplained jobs, trapped amongst a series of hostile graphics, each of which appears to be drawn to a completely different scale. The first sign of a problem is when, faced with a lethal, rampaging penny farthing on the

first screen, your first thought is not: "Oh, yes, good, I am looking forward to finding out what to do and how to do it" but you instead find yourself thinking how exciting it would be to switch the computer off and go to do something completely different.

Ted has to complete his 27 daily tasks by 5.30pm Spectrum time, but his boss has failed to tell him what the tasks are, or where they can be located. Trying to reach your desk in order to find a clue is a major problem in itself, as all the screens look like ineffectual parodies of **Jet Set Willy**. Almost everything you touch is lethal, almost every jump you attempt is either too long or too high for your limited capabilities.

Totally uninspiring, **Technician Ted** is written for the 48K Spectrum by Hewson Consultants, 60a St Mary's Street, Walingford, Oxon.

Price: £5.95
Game type: Arcade
Rating: 45%

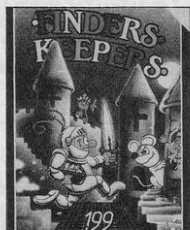


FINDERS KEEPERS

FINDERS KEEPERS is a charming program in which you play the part of the Magic Knight. You have two choices in the game. Either you can please the king by collecting all the treasure in the castle of Spiritland so that the king can give it to his daughter for her birthday and you can win a place on the Polygon table. On the other hand, you could just keep all the treasure and make your escape.

The castle is made up of an elaborate series of rooms, many of which are based on the time-honoured **Jet Set Willy** principle, with weird creatures which sap your energy crossing and recrossing them, a series of tunnels and ledges and even a teleport which sends you spinning to another section of the castle.

Other sections of the game take the form of mazes, which scroll continually as you move through them, producing an eye-straining effect for anyone playing



the game on a television rather than on a monitor.

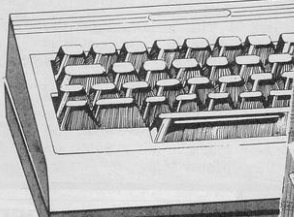
Only five objects can be carried at any one time. Others can be dropped (except the glue, of course), or sold to the trader. Some objects can be combined with others to produce new ones, although it takes some experimentation to find which objects will combine. For some reason, all objects which you find look like small heaps of salt.

Minor reservations apart, this game is good fun, and represents excellent value for money.

Price: £1.99
Game type: Arcade
Rating: 60%

A PERFECT COUPLE

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COME
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talks



KONG STRIKES BACK

KONG STRIKES BACK is based on a very simple concept, which is surprisingly successful and addictive. Your aim is to travel along a curving and looping track in order to reach the other end. Moving in the opposite direction are roller coaster cars, which Kong pushes towards you. You can avoid the cars by climbing ladders, but you must be careful to position yourself near a ladder as a car approaches, and you must keep an eye open

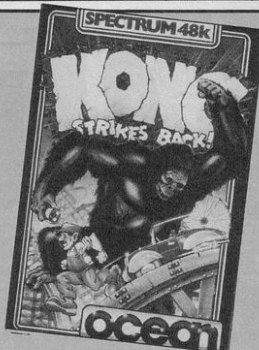
to check that no car is approaching on the track above.

Movement of cars is completely predictable, and you have a supply of bombs with which you can fend off on-coming cars at the last minute, but this remains a remarkably difficult game to perfect. Added complications are that if you pick up bonus points at the right time, you will be able to collect a bonus life and that, if you complete a screen quickly, you will gain more points. These dis-

tractions are enough to divert all but the most eagle-eyed players.

There are four screens, each with a different track layout. Once you have completed these four, you run through the same track layouts again, this time with the additional hazards of what appear to be rolling balls, and bouncing hour glasses, but which the cassette sleeve describe as pies and springs.

A well-thought out and immaculately constructed arcade game, Kong Strikes Back is produced by Ocean, 6 Central



Street, Manchester.

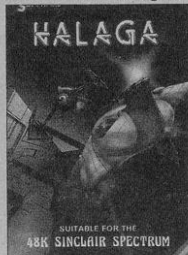
Price: £5.90

Rating: 65%

HALAGA

WHY WRITE a shoot-'em-up invader game in 1985? If you feel there is a good reason, and that this is the type of program for which the public are clamouring, then answer me this. Why write an invader game which is not compatible with the Kempston joystick?

Halaga is perhaps best described in its own words: "The game



consists of four high-res screens moving left and right, you must evade the alien missiles and attempt to clear the sky of aliens." Have we not heard this somewhere before? Do we want to hear it again?

The aliens swoop onto

the screen, firing at your base at the foot of the screen. When all the aliens have swept onto the screen, they relax, and hang in the air, moving jerkily a few millimetres to left or right. Unfortunately, in so doing, they partially erase their neighbours, which produces an interesting pattern, although not a very realistic effect.

Once you have destroyed all these rather unintelligent creatures, another attack wave appears, in a different formation, but moving and attacking along very similar lines.

For some reason, although you inhabit one screen, from the sides of which you cannot escape, the aliens inhabit a wraparound screen world, and they are able to leave the left of the screen to appear on the right, or vice versa.

Halaga is produced for the 48K Spectrum by Interceptor Micros, London House, The Green, Tadley, Hampshire.

Price: £5.50

Game type: Invaders

Rating: 35%

HUNCHBACK 2

TIMING IS what you need in Hunchback 2. Co-ordination and perfect timing. Arcade enthusiasts may already have these. Less favoured mortals will be spending a very, very long time on screen one.

The aim of the game, as can be guessed by the subtitle, *Quasimodo's Revenge*, is to collect, move or ring the bells on every screen. These are arranged in the most unlikely places; holes in the ground, on islands and even, surprisingly, at the tops of ropes.

Various lethal objects move regularly around the screen. The trick is to collect all the bells, or to complete some other appointed task involving bells, without being hit by any of these things. Quite why you are being attacked by a bouncing meteorite or by what appear to be flying oysters is not clear, but who cares about a coherent story line, when it is the game that counts?

Work out the correct route across a screen once, and you will prob-

ably be able to do it every time. Working out routes, though, must be done by trial and error, trial and repeated error.

This is, in essence, a one route game. You must complete one screen in order to reach the next, and there is a limited amount of room for manoeuvre on any one screen.

Hunchback 2 is produced for the 48K Spectrum by Ocean Software, Ocean House, 6 Central Street, Manchester.

Price: £6.90

Game type: Arcade

Rating: 50%



Questline

Mountains of Ket

After the prize for the Ket trilogy had been won, Cathy Foot felt free to look at the mountain in detail.

THE MOUNTAINS OF KET should be a straightforward enough adventure game. So? Why isn't it? Try it my way.

I feel like a quick adventure and dig out my copy of Ket. It loads safely and a map is begun, but it doesn't get very far, since no-one present can break out of the immediate environs of the village. Re-read such instructions as come with the game. Ah, yes, the mountains are a day's journey away by horseback and there is a horse in the village. Buy horse? Naw — the horse costs twice what I have in my pocket.

If I cannot buy a horse, can I steal one?

The following document was discovered in a cairn at the foot of the cliff. Nothing has been seen of that particular stupid female adventurer since:-

"Swear to God, Mister, I never meant to kill the stableman, all I wanted was his horse. I meant to knock him out, not kill him, but he wouldn't give up. I was forced to kill him. I know Edgar keeps telling me "Don't just kill everything" but horse-thieving is notoriously difficult to get away with, and with my record, deserved or not, I cannot afford to be caught.

"Honest, Mister, I was innocent of that first murder, it was just that the evidence pointed in my direction — if only I had spent that night sober and in my own inn, instead of playing dice and drink-

ing bad beer in that crooked bar down by the waterfront . . . innocent, but proved guilty as sin. Sure, I took the mission, who wants to die? But I didn't expect to have to kill to get my job done.

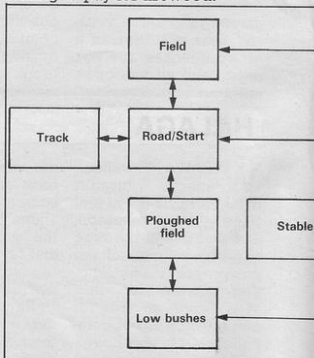
"After I had stolen a horse, I could hardly stay in the village, could I? So off into the wide blue yonder, heading east as fast as the horse can go, only to come to a series of dead-ends. The valley is blocked; the cliff face unclimbable and there is no way out of the field full of boulders. I used the tried and true 'put something down, look, move, look' system and I just had not moved.

"I write these few words and leave them where whoever comes after me will find them. If I return from this mission I will pay bloodgeld for the stableman and also pay for the horse I stole. "Let whoever finds this message pray for me and my continued survival until I have paid for these my acknowledged misdeeds."

Shall we try again? What went wrong? Yes, I DO know what went wrong. Trust only to your own efforts. If someone tries to convince you that something is useless, pointless or boring, especially boring, and you then get stuck on the horns of a dilemma, the point where this helpful person misdirected you is a useful point to return to. My son was to blame for the earlier fiasco — he wanted to load **Doomdark's Revenge** and had no patience for Ket. His idea of fun and games has loads of blood, murder and mayhem in it. And, let you not forget, we had not found the way into the mountain, where the level of bloodshed fast reaches his high standards.

If you are reading this you may well have played some or all of the Ket trilogy. If you have, you will know where I went wrong.

Yeah, I left the cartographer before finding out that he needed wood to keep warm with and was willing to pay for firewood.



Yes, I have enjoyed a good adventure in Ket. It must rank as one of the better adventures on the market, but I am left a little bewildered as to how the average player manages to break into the real game before going round the bend in utter boredom and despair. I admit quite cheerfully that, without the aid of the Landlord of the Dancing Ogre, I would still be stuck in the village and its environs even though I had decided that more attention should be paid to the cartographer.

In our house, my son got as far in one direction as to buy the axe in the village shop and cut up the log. He failed to make any use of the firewood so made, and, after a few desultory wanderings in and around the village, the game was put away for a few months as uninteresting. When I came to play the game we had forgotten that the log could be chopped up, and thus lost a clue, so it was all to do from scratch.

Another clue which reached me in a somewhat garbled format was The Voices. This is another very important clue. Those voices give you the password which allows you to pass the sentry orcs and goblins without having to fight, so this clue can save you from having to fight your way past the nasties, thus keeping luck and power for more important and necessary battles. As I remember the published form of the clue it says "listen to the voices," which we tried. In my discussion with Mine Host of the Dancing Ogre, I was given the same advice, but I still cannot

should drop all your treasure in the room with the dog. Did you remember to take the chain from the field to the west of the village? How can you chain the dog up without it? Too bad, if you left it in the field, it will have to stay there now. You will have to get out or die without it this time.

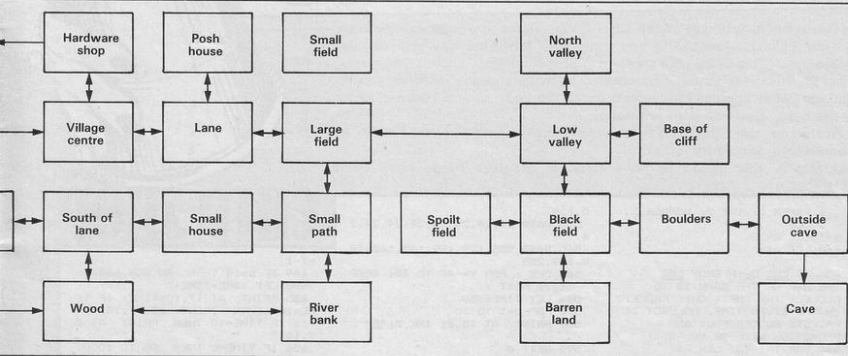
If you want him to be your guard dog, perhaps you had better feed him — and where better to find food in this Godforsaken place than in the barracks? A few orcs and goblins bother you? Why ever did you take on this mission, then?

Take it from me — EVERY-

Oh, yes, I hope you can swim. If not, forget the ogre, you have to swim to get there, but not among piranha fish, this time.

This is a game with the wall in mint condition when you reach it. I'm sure you remember what to do to pass through the wall with ease and grace, but if you have forgotten — oops, what brand was it again? Never mind, you will remember if you try, you want a hole, don't you?

I am very impressed with the combat system. It is both neat and, once you get used to the fact that it only ever expects two inputs from you, very fast. If you



find the right word to convince the computer that I AM LISTENING. If you have the same problem, the password, suitably encoded, is "SZKOR" (move the letters one further forward in the alphabet to make use of this clue), and is the name of another computer game writ backwards. That ought to be some help to you.

Once you pass into the mountain, the game really takes off. The pace becomes fast and furious. Some of the characters with you in there ignore you, some talk to you and some will fight whatever you do. The guard dog will guard your treasure from those pesky pack rats — while the breed of rats is not specified, they MUST be pack rats, else why would they grab anything you drop almost before you drop it? Perhaps that should have been a guard CAT?

Mind you, there is more to the above statement than that you

THING is important somewhere. That pair of dice on which I spent so much time and effort, which can be discovered at the base of the cliff, comes into its own after you discover a copy of the Goblin Gazette which includes a report on an ogre who loves to gamble. If you lose, you lose the dice, but if you win, you win a magic sword.

keep a finger on the y and one on the n you can keep that combat moving so fast, you will wonder what hit you as luck and energy run out before your very eyes, especially if you are up against an orc or a goblin. In the village, I made a very good horsethief and murderer, but those orcs and goblins are mean fighters!

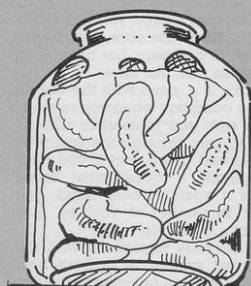
Go to it and win!

To: Questline, Sinclair Programs,
Priory Court, 30-32 Farringdon Lane,
London EC1

From:

HELP OFFERED

HELP WANTED



Life is hard, working in the Chip Shop. There are bugs everywhere, your boss is mean, and you hate your job. One day you ask for promotion. "Collect 20 chip packets in 350 seconds," scowls your boss, "and promotion is yours." Of course, he knows just as well as you do that, almost as soon as the packets touch the floor, they are carried away by the bugs. Can you earn promotion?

Written for the Spectrum by Wayne Vaughan and Michael Nelson of Wednesfield, Wolverhampton.

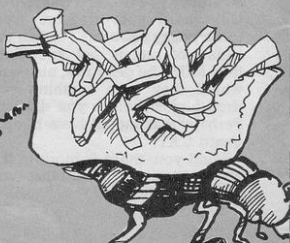
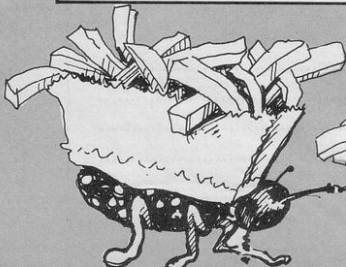
Letters in this listing to be entered in graphics mode have been underlined>.

CHIP SHOP

```
1 PAPER 0: INK 2: BORDER 2
2 CLS
445 LET B=30
460 LET A=
"
    CCC CHIP SHOP CCC
    THE AIM OF THE GAME IS TO
    COLLECT THE EMPTY CHIP PACKETS
    IN THE GIVEN TIME, COLLECT 20
    PACKETS SUCCESSFULLY AND
    PROMOTION WILL BE YOURS!!!"
    470 FOR I=1 TO LEN A$
    475 PRINT A$(I);
    480 IF A$(I) <> " " THEN BEEP
    .0006,G
    485 IF B=60 THEN LET B=10
    497 LET B=6+1
    490 NEXT I
    495 PRINT AT 12,2: FLASH 1; IN
    K 4;"DDDBUT BEWARE THE BUGS!!!"DD
    D"
    497 PRINT AT 15,8;"-----": PRINT
    T AT 15,8: OVER 1;"KEYS": PRINT
    "
    S-LEFT
    8-RIGHT"
    498 PAUSE 300
    500 FOR U=USR "A" TO USR "F"+
    7: READ V: POKE U,V: NEXT U
    510 DATA 24,60,126,36,36,36,24,
    24
    520 DATA 126,66,126,66,126,66,1
    26,66
    530 DATA 255,231,110,102,60,60,
    24,24
    540 DATA 90,189,60,126,189,60,9
```

```
0,129
555 DATA 24,24,24,24,24,24,2
4
560 DATA 255,129,189,165,165,18
9,129,255
565 CLS : FOR Y=-40 TO 40: BEEP
.01,Y: NEXT Y
567 LET TIME=350
570 FOR D=1 TO 30
580 PRINT AT 15,D; INK 5;"E"
590 NEXT D
591 LET S=0
593 PRINT AT 17,1;"TIME=": PRI
NT AT 19,1;"SCORE " :S
600 LET X=15
615 LET A=INT ( RND *28)+2
617 LET B=1
620 PRINT AT B,A;"D": BEEP .00
1,B
640 PRINT AT B-1,A; INK 1;"E"
643 PRINT AT 14,A; INK 3;"C"
644 LET B=B+1
645 IF X=A AND B <> 13 THEN LE
T S=S+10: PRINT AT 19,6; INK 7;
S: IF TIME=0 OR S=200 THEN GO T
O 2000
646 PRINT AT 13,X; INK 7;"A"
": PRINT AT 14,X; INK 6;"B"
647 IF INKEY$="B" AND X <= 27
THEN LET X=X+1
648 IF INKEY$="5" THEN LET X
```

```
=X-1
649 IF B=14 THEN GO SUB 660
650 LET TIME=TIME-1
655 PRINT AT 17,10;TIME: IF TI
ME=100 THEN PRINT AT 17,10;"
": IF TIME=10 THEN PRINT AT 1
7,10;"
656 IF TIME=0 THEN GO TO 1000
659 GO TO 620
660 FOR B=13 TO 0 STEP -1
670 PRINT AT B,A;"D"
675 PRINT AT B+1,A;" ": BEEP .
01,B
678 IF B=1 THEN GO SUB 615
680 NEXT B
2000 CLS : IF S=200 THEN PRINT
AT 2,10; INK 6: FLASH 1;"WELL D
ONE": PAUSE 100: GO TO 2011
2010 PRINT AT 2,10; INK 5; FLAS
H 1;" SORRY TIME OUT ": PAUSE 10
0
2011 PRINT : PRINT " DO YOU WA
NT ANOTHER GO?": INK 3;"(Y/N)"
2012 IF INKEY$="Y" OR INKEY$
="y" THEN CLS : GO TO 565
2013 IF INKEY$="N" OR INKEY$
="n" THEN STOP
2015 GO TO 2012
```



S P R O G S

THE SPROGS MEET JIM THE CABIN-BOY ON BOARD THE PIRATE SHIP 'BOOTY'

I MUST COLLECT ALL THE KEYS ON THE SHIP IN ORDER TO ESCAPE

HOW CAN WE AVOID THE PIRATES?

DISGUISES!

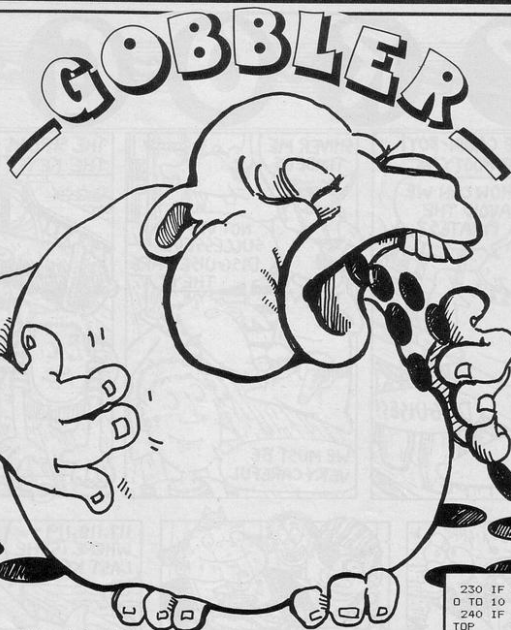
SHIVER ME TIMBERS

NOT VERY SUCCESSFUL DISGUISES, ARE THEY?

WE MUST BE VERY CAREFUL

THE SPROGS GO IN SEARCH OF THE KEYS





Move around the plain of dots using the cursor keys. Your aim is to accumulate as many points as possible by munching the dots. As the game progresses, walls will be built on the plain, which block your way. Occasionally red and green apples will appear, which can be eaten for extra points.

Gobbler was written for the Spectrum by Anthony Pope of Quedgeley, Gloucester. It is compatible with the Currah Micro-speech system, but works whether or not you own the system.

Some letters in this listing have been underlined to show that they should be entered in graphics mode.

```

1 GO SUB 300: LET hi=0
10 LET c=0: LET k=50: LET l=10
0: LET x=11: LET y=16: LET sc=0:
LET ti=400: LET key=0
15 FOR b=0 TO 31: PRINT AT 1,
b; " ": NEXT b
20 PRINT AT 1,0:"SCORE:";sc;
AT 1,12:"HI:";hi: PRINT AT 1,23
;"TIME:";ti; " ": LET ti=ti-1
30 FOR e=2 TO 21: PAPER 1: PRI
NT AT e,0;"A": PRINT AT e,31;"
A": NEXT e: FOR f=1 TO 30: PRINT
AT 2,f;"A": PRINT AT 21,f;"A"
: NEXT f
40 PAPER 0: FOR g=3 TO 20: FOR
h=1 TO 29: PRINT AT g,h; BRIGH
T 1;"BB": NEXT h: NEXT g
50 IF INKEY$="5" THEN LET y
=y-1: LET c=0

```

```

60 IF INKEY$="6" THEN LET x
=x+1: LET c=0
70 IF INKEY$="7" THEN LET x
=x-1: LET c=0
80 IF INKEY$="8" THEN LET y
=y+1: LET c=0
90 IF INKEY$="9" THEN LET c=
c+1
95 IF ATTR(x,y)=4 THEN LET
sc=sc+100: BEEP .2,-20: BEEP .1,
-10
100 IF ATTR(x,y)=2 THEN LET
sc=sc+500: BEEP .3,-10: BEEP .1,
-20: BEEP .2,1
105 IF ATTR(x,y)=15 THEN GO
TO 200
110 IF ATTR(x,y)=71 THEN LET
sc=sc+5: BEEP .1,-50
115 PRINT AT x,y: INK 6;"D"
120 IF k=10 THEN PRINT AT RN
D *17+3, RND *29+1: PAPER 0: INK
4;"C"
125 IF l=10 THEN PRINT AT RN
D *17+3, RND *29+1: PAPER 0: INK
2;"C"
130 LET k=k-1: LET l=l-1
140 IF k <= 0 THEN LET k=30
145 IF l <= 0 THEN LET l=60
150 PRINT AT RND *18+3, RND *
30+1: INK 7: PAPER 1;"AA"
155 IF c=15 THEN GO TO 200
160 IF INKEY$="p" THEN PAUSE
0
170 PRINT AT 1,0:"SCORE:";sc;
AT 1,12:"HI:";hi: LET ti=ti-1: P
RINT AT 1,23;"TIME:";ti; " "
180 IF ti <= 0 THEN GO TO 200
185 PRINT AT x,y: " "
190 GO TO 50
200 BEEP .5,-20: BEEP .2,-30: P
RINT AT 12,11: PAPER 2: INK 6;
FLASH 1;"GAME OVER!": LET s="g(
ay)m (eau)v(er)": LET s="m"
210 PAUSE 50: INPUT #1;"Do you
want another go(y/n)?" ;g$
220 IF hi<sc THEN LET hi=sc

```

```

230 IF g$="y" OR g$="Y" THEN G
O TO 10
240 IF g$="n" OR g$="N" THEN S
TOP
250 STOP
300 FOR g=USR "a" TO USR "e"+
7
310 READ hi: POKE g,hi: NEXT g
320 DATA 255,128,128,128,255,16
,16,16
330 DATA 0,0,16,56,56,16,0,0
340 DATA 16,8,42,127,127,127,62
,28
350 DATA 60,126,219,153,255,219
,102,60
360 DATA 0,136,136,136,136,244,
128,128
400 BORDER 0: PAPER 0: INK 7
410 CLS: PRINT AT 0,8;"BBB"GO
BBLER"BBB": AT 0,7: INK 6;"D": A
T 0,23;"D"
420 PRINT AT 1,11;"(ESPEECH)"
430 PRINT AT 3,0;" You are t
he gobbler and must eat as many
dots,green or red apples as yo
u can in the time allowed."
440 PRINT AT 8,0;" Little wa
lls appear and get bigger and l
onger as the game progresses a
nd they will block or trap you.
"
450 PRINT AT 13,0;" The game
ends if the time runs out,if
you run into a wall or hang abo
ut too long."
460 PRINT AT 17,6;"USE ARROWED
KEYS:5-B"
470 PRINT AT 18,4: INK 6;"SCOR
INTS: " : INK 7;"B": INK 6;"=5 P
OINTS: AT 19,13: INK 4;"C": INK
6;"=100 " : AT 20,13: INK 2;"
C": INK 6;"=500 "
480 PRINT AT 21,7: INK 7;"PRES
S "p" TO PAUSE: PAUSE 100: LET
s="press en(ee) k(ee) t(ouu) pl
(ay)": PRINT AT 21,4: FLASH 1;"
PRESS any key TO PLAY " : PAUSE
0
500 RETURN

```

You star in this program as a spotty faced lout. After eating too many bars of unhealthy chocolate you have been infested by a plague of ZitZ. Move your medicated sponge with cursor keys 5 to 8 in order to clear your face of as many spots as possible in the time given.

Written for the 16K ZX-81 by Steve and Jason Kennedy of Warminster, Wiltshire.

ZITZ

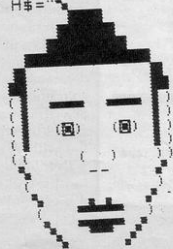


```
40 PRINT AT 0,3;"*****"
*****"
50 PRINT AT 1,3;"* PRESEN
TED BY *";AT 2,3;"*STEVE AND
JASON KENNEDY*"
60 PRINT AT 3,3;"*****"
*****"
100 PRINT AT 5,8;"
```

ZITZ

```
200 PRINT AT 13,0;"
300 PRINT AT 16,1;"PRESS ANY KE
Y FOR INSTRUCTIONS"
310 IF INKEY$="" THEN GOTO 310
320 CLS
350 PRINT AT 5,0;" YOU ARE A SP
OTTY FACED LOU. YOU MUST TR
Y TO CLEAR THE ZITZ OFF I
N A LIMITED TIME WITH THE S
PONGE *".YOUR HIGHEST SC
ORE WILL BE IN THE
360 PRINT AT 17,6;"PRESS A KEY
TO PLAY"
370 PRINT AT 16,0;" USE NORMAL
CURSOR KEYS TO MOVE."
400 IF INKEY$="" THEN GOTO 400
700 LET S$="ZX-81"
720 LET HI=0
730 CLS
740 LET H$="
```

```
745 PRINT AT 1,5;H$
750 LET T=0
1020 LET D=VAL "25"
1030 LET S=VAL "0"
1040 LET C=VAL "12"
1050 LET D=D+(INKEY$="8")-(INKEY
$="5")
1060 LET C=C+(INKEY$="6")-(INKEY
$="7")
1070 PRINT AT C,D;
1080 LET A=VAL "PEEK (PEEK 16398
+256*PEEK 16399)"
1100 IF A=VAL "27" THEN LET S=S+
VAL "10"
1110 PRINT AT C,D;"
1115 IF INKEY$<>{} THEN PRINT AT
C,D;
1120 PRINT AT AND#4-15,RND#10-12
;"";AT 0,20;"SCORE ";S
1125 PRINT AT 1,10;"HIGH ";HI;"
BY ";S$
1130 LET T=C
1140 IF T=15 THEN GOSUB 5000
1200 GOTO 1050
3020 GOTO 1020
5000 CLS
5010 PRINT AT 11,9;"YOUR SCORE W
AS ";S
5050 PRINT AT 9,10;"**WELL--GONE
**"
5060 PRINT AT 21,5;" PRESS ANY
KEY "
5070 IF INKEY$="" THEN GOTO 5070
6010 IF S>HI THEN GOTO 6030
6011 IF S<HI THEN GOTO 6012
6012 FOR N=1 TO 10
6013 NEXT N
6020 IF INKEY$="" THEN GOTO 6020
6022 CLS
6024 GOTO 730
6030 PRINT AT 5,0;"YOU HAVE CLEA
RED THE MOST ZITZ."
6035 PRINT "PLEASE ENTER YOUR FI
RST NAME."
6040 LET HI=S
6050 INPUT S$
6060 IF LEN S$>10 THEN GOTO 6050
6070 CLS
6080 GOTO 730
7000 SAVE "ZITZ"
7100 GOTO 1
```





CROCODILE MENACE

```

10 LET SCORE=0
20 LET SHOTS=20
30 LET A=15
40 LET B=1
50 LET X=20
60 FOR F=1 TO 22
100 FOR F=1 TO 22
110 PRINT " "
120 NEXT F
130 PRINT AT 21,1," "
140 PRINT AT X,Y," "
150 PRINT AT A,B," "
160 PRINT AT A,B," "
170 LET A=A+(INKEY$="A" AND A<20)-INKEY$="A" AND A=0
180 IF INKEY$="P" THEN GOTO 200
190 GOTO 150
200 PRINT AT A,B," "
210 FOR F=1 TO 24
220 PRINT AT A,B," "
230 PRINT AT A,B," "
240 LET B=B+1
250 NEXT F
260 FOR F=1 TO 20
300 PRINT AT A,B," "
310 PRINT AT A,B," "
320 PRINT AT A,B," "
330 LET A=A+1
340 NEXT F
400 IF B=Y THEN GOTO 360
410 IF B=(Y-1) OR B=(Y+1) THEN
GOTO 500
420 PRINT AT A,B-1," "
430 FOR F=1 TO 2
435 NEXT F

```

```

440 PRINT AT A,B-1," "
445 PRINT AT X,Y-1," "
446 PRINT AT X,Y-1," "
448 FOR F=1 TO 10
449 NEXT F
450 LET SHOTS=SHOTS-1
460 IF SHOTS=0 THEN GOTO 1000
465 CLS
470 GOTO 30
480 FOR F=1 TO 5
510 PRINT AT X,Y-1," "
511 "+++" AT X,Y-1,"+++" AT X,Y-1
512 "+++" AT X,Y-1,"+++" AT X,Y-1
520 NEXT F
530 PRINT AT 10,10," "
540 FOR F=1 TO 50
550 NEXT F
560 LET SHOTS=SHOTS+1
570 LET SCORE=SCORE+1
580 IF SHOTS=20 THEN GOTO 1000
590 CLS
595 GOTO 30
600 PRINT AT A,B-1," "
610 PRINT AT A,B-1," "
615 PRINT AT X,Y-1," "
617 FOR F=1 TO 10
620 PRINT AT X,Y-1," "
621 "+++" AT X,Y-1,"+++" AT X,Y-1
630 NEXT F
640 PRINT AT 10,10," "
650 FOR F=1 TO 50
660 NEXT F
670 LET SHOTS=SHOTS+1
680 LET SCORE=SCORE+1
690 IF SHOTS=20 THEN GOTO 1000
695 CLS
700 GOTO 30
1000 CLS

```

```

1010 PRINT AT 0,10," "
1020 PRINT " "
1030 PRINT " "
1040 PRINT " "
1050 IF SCORE<5 THEN LET R$="COO
K"
1052 IF SCORE<5 AND SCORE<10 THE
N LET R$="BOHARDIER"
1054 IF SCORE<10 THEN LET R$="OF
FICER"
1060 PRINT " "
1070 PRINT AT 10,5,"PRESS (A/K)
TO PLAY AGAIN"
1080 PAUSE 4E4
1090 CLS
1100 RUN
5000 SAVE "BATTLE"
5010 RUN

```

A AAARGH! On your screen you see the ship of the evil Baron von Crocken. On board that ship is the lethal purple spotted crocodile which he hopes will help him in his ruthless bid to take over the country. Only you can save all that is dear to you by shooting down the ship and the purple spotted crocodile it contains. Move your gun sights up with 1, down with A and fire with P.

Crocodile Menace was written for the 16K ZX-81 by Jason Singleton of Dibden, Southampton.

SON OF BLAGGER



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Son of Blagger for 48K Spectrum

Relive the daring exploits of Roger the Dodger through his prodigy Slippery Sid. More skill, more nerve, this cool little character seeks not only to follow in his famous parent's footsteps, but to establish some amazing feats of his own. Money's not his game. Espionage is his middle name and having forced his way into the National Security HQ he's faced with a no return journey through one of the most dangerous, most complex buildings in the land. Can he successfully complete a nerve tingling search for the golden keys – his only means of escape – or this time has his skill and daring taken him too far. Watch out for those weird killer security guards – you never know what chilling surprises the mad scientists have produced – and beware the floor doesn't disappear from under your feet, sending you to an early grave.



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TO GAIN infinite lives on **Kosmic Kanga**, add POKE 36212 to the loader program.
S Lambert,
South Humberside.

IF 48K Spectrum owners enter POKE 23609,40 a BEEP will be heard whenever a key is pressed on the computer.
Nicholas Moyle,
Coaley, Glos.

POKE 16511,0 will prevent anyone from editing any part of your ZX-81 programs. If anyone attempts to edit or alter a line after this has been entered, the program will crash. Cancel this command with POKE 16511,255.

Stephen Tait, aged 12,
Tyne and Wear.

GAIN infinite lives on **Manic Miner** by adding 25 POKE 35136,0 to the loader program.
Gregory Hill,
Henleaze, Bristol

GAIN infinite lives on **Moon Alert** by Merging the loader program and adding POKE 39754,0.
S Lambert, aged 9,
Grimsby, Humberside

IF ZX-81 owners want to stop people breaking into their machine code programs using RAND USR 836 they should enter the following lines at the end of their programs.

9996 LET X=PEEK 16397
9996 POKE 16397,0
9997 SAVE "program name"
9998 POKE 16397,X
9999 GOTO 5
Donal Horgan, aged 12,
Mayfield, Cork

TIPS for The Hobbit from Melbourne House are: Wear the ring twice in each location in the forest. Do not answer Gollum's riddles, or you will be killed from behind. Examine the magic door in the great halls, and then open it. In the goblin's dungeon ask Thorin to open the window, pick you up and then go.
Steven Martin,
Craigend, Glasgow.

GAIN INFINITE lives on **Atic Atac** with POKE 36519,0. Stop energy drains in the same program with POKE 35353,0. To add these POKEs to the program, load the game with MERGE "" instead of LOAD "". When OK appears on screen; stop tape, list the program and enter the POKEs. Then RUN and start tape.

Thomas Hindson,
Oldham, Manchester.

TO PRINT on line 23 of your 16 ZX-81 screen, enter POKE 16418,0.

John Bigginton,
Ashford, Kent.

To get the lazer gun in **Pyjamarama**. Put £1 coin in the change machine to give you the penny. Take the penny to the toilet and exchange it for the hammer. Use the hammer to smash the glass in the lift and reach the fire extinguisher. Go to the fire, fall down and get the key. Take this key to the snooker room and exchange it for the lazer gun. To fill the lazer gun, go to the battery.
Jason Humphries,
Coventry.



THE FOLLOWING items in **Pyjamarama** are red herrings although, to score 100%, it is necessary to pick up and drop all items: towel, crystal orb, plant pot, joy stick, radio, cooking bowl, sword, moon crystal, beach ball and round key.

Hugo Pena,
Bishopston, Bristol.

TO REMOVE the monsters from **Sabre Wulf**, load the program with **MERGE** and stop the tape and list the program when the OK message comes up. Then enter **POKE 39702,30**. Start the tape again, and **RUN** the program.
S Lambert,
Grimsby, Humberside

ZX-81 OWNERS, break into machine code programs by entering these two commands before you load a program.
FAST (Newline) RAND
USR 836 (Newline)
When the game had loaded C/O should appear on the left hand side of your screen.
Paul Saunders,
Sheerness, Kent.

Pen-friends

Jurg Romann, Dorfstrasse 47, CH 8184 Bachenbulach, Switzerland is 16 years old and owns a 48K Spectrum with Interface 2. Currah speech, light pen and some programs. He would like to write to someone with whom he can exchange hints, tips and programs. Jurg is willing to correspond in French, German or English.



Carol Davies, 39 Annesley Road, Wallasey, Merseyside would like to hear from anyone who is crazy about the 48K Spectrum. Carol has been playing **The Hobbit** recently, and has many useful playing tips.

Ann u.d. zon, P Breughelstrasse 40, 1964 EP Heemskerk, Holland owns a 48K Spectrum with two microdrives. She would like to correspond with someone with whom she can swap program listings and information.

Neil Mealey, Eastwood, Balquhiddy, by Lochearn Head, Perthshire owns a 16K ZX-81 and is having great problems in finding new programs for it. He is also having problems with one of the adventure programs he does own, **Inca Curse**. He would like to hear from other 16K ZX-81 owners.

Michael Lenyhaugh, 152 Park Lane, Knypesley, Biddulph, Stoke-on-Trent, ST8 7BQ would like to correspond with other English ZX-81 owners who are around the age of 10 and who own a ZX-81.

Billy Bennett, 3 Beaumont Road, Yate, Bristol owns a 16K ZX-81. He is a beginner and needs a penfriend who can give him some help with the more complicated aspects of Basic programming, such as **PEEKs** and **POKEs**.

HEROIC

Heroic Hubert is an animated text adventure written by Darren Wombwell of Skegby, Nottingham.

In it, you play the role of the intrepid hero, Hubert, who must cross the caverns of fire in search of the fire rings. On the way he meets many terrors: swinging spiders, perpetual flames and flying vampire bats. There are pits in which he can hide, steps to negotiate, and ropes on which he can swing to safety. He is also racing against the clock, and the time is shown slowly ticking away. Hubert moves left with key p, right with key o and climbs with key z. He will jump to the left with 0, and to the right with P.

Due to the complexity of this program, it will only RUN on the 48K Spectrum.

The listing includes a large number of graphics characters. Where letters are to be entered in graphics mode they have been underlined. Where block graphics are to be entered, the appropriate graphics instructions have been put within brackets and underlined. Refer to page five for help with the graphics instructions. Remember that the brackets are there to separate the instructions from the main body of the listing, and that the colons are there to separate the instructions from each other. Consequently, neither brackets nor colons should be entered.

```
1 CLEAR 65000: BORDER 0: PA
PER 0: CLS : GO SUB 700
3 DIM h(8): DIM l(8): DIM m(8)
4 LET l(1)=88: LET l(2)=176:
LET m(1)=10: LET m(2)=10
5 LET h(1)=255: LET h(2)=254
6 FOR n=3 TO 7 STEP 2: LET m(n)
=(1): LET l(n)=1(1): LET h(n)
=h(1): NEXT n
7 FOR n=4 TO 8 STEP 2: LET m(n)
=(2): LET l(n)=1(2): LET h(n)
=h(2): NEXT n
9 LET t=0: LET r="": LET i=1
3
10 LET y=7: LET x=8: LET i$=""
: LET ly=7: LET lx=8
11 FOR f=1 TO 8: LET a$(f,6,35)
="S": LET a$(f,10,56)="S"
12 LET a$(f,10,84)="G": LET a$(f,7,117)
="S": NEXT f
14 PAPER 0
```

```
15 PRINT AT 0,6: INK 6:"HEROIC
HUBERT AND THE": AT 1,9:"CAVERN
OF FIRE"
```

```
16 PRINT AT 1,6: INK 2: ("3*G3
"): AT 1,24: ("3*G3"): AT 2,9: ("1
5*G3")
```

```
17 FOR n=6 TO 15: PRINT AT n,
1: INK 5: ("7*15*5"): AT n,24:
("G5:7*15*5") NEXT n
```

```
18 PRINT AT 6,8: INK 5: ("G4:
15*G3:G7"): AT 15,8: ("G1:15*G3
:G2"): AT 4,2: ("9*G3:11*G9:
G3"): AT 5,2: ("3*15*4*G2:1*15*
1*15*3*15*4*G2:1*15*1")
```

```
19 PRINT AT 3,5: INK 6:"BEST
TIME": AT 5,5: AT 3,22: INK 7:
"YOUR TIME": AT 5,25:t
```

```
20 PRINT AT 17,2: INK 4: ("G4
:5*G3:G4:3*G3:G7:sp:G4:9*G3:G7
:1*G4:4*G3:G7"): AT 18,2: ("G5:5*
sp:1*G5:3*sp:G5:sp:G5:2*sp:G5:1*G
5:4*sp:G5"): AT 19,2: ("G1:5*G4:G
3:1*G5:3*sp:1*G5:1*G5:1*G5:1*G5:1
:1*G4:3*G3:G2"): AT 20,2: ("6*15*1
G1:3*15*3:1*G2")
```

```
21 PRINT AT 18,3: INK 7:"LIVE
S": AT 18,15: INK 3:"FIRERINGS":
AT 18,26: INK 2: PAPER 6:r$
```

```
22 FOR n=1 TO 3: PRINT AT 18,
8+n: INK n:"H": AT 19,8+n: INK n
:"L": NEXT n
```

```
23 PRINT AT 21,3: INK 7:"crea
ted BY D.WOMBWELL ©1984": AT 10,
16: INK 1: PAPER 6:"E": AT 11,16
: INK 1: PAPER 6:"G"
```

```
24 INK 2: PAPER 6
25 LET f=1: GO SUB 412
```

```
30 BORDER INT (RND *6)+1
31 IF INKCV$="" THEN PAUSE
50: GO TO 30
```

```
34 BORDER 0: GO SUB 540
100 FOR f=1 TO 8
```

```
101 GO SUB 412: GO SUB 430
102 IF a$(f,y-1,x) >= "1(isp)" 0
```

```
R a$(f,y,x) >= "1(isp)" THEN LET
1=104: GO TO 500
```

```
104 GO SUB 400: NEXT f
105 FOR f=7 TO 2 STEP -1
```

```
106 GO SUB 412: GO SUB 430
108 IF a$(f,y-1,x) >= "1(isp)" 0
```

```
R a$(f,y,x) >= "1(isp)" THEN LET
1=109: GO TO 500
```

```
109 GO SUB 400: NEXT f
110 GO TO 100
```

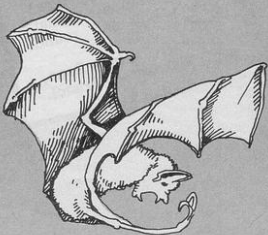
```
399 REM ***movement subroutine**
**
```

```
400 IF a$(f,y+1,x)<"1(isp)" OR a
$(f,y,x)<"E" THEN LET v=y+1:
FOR n=1 TO 5: NEXT n: LET i$= IN
KEY$: GO TO 406
```

```
402 LET i$= INKEY$
403 IF i$="P" THEN GO TO 458
```

```
404 IF i$="O" THEN GO TO 462
406 IF i$="P" THEN GO TO 450
```

```
408 IF i$="G" THEN GO TO 454
409 IF i$="Z"~AND a$(f,y,x)="E"
```



```
THEN LET y=y-1
410 IF t<10000 THEN LET t=t+1:
PRINT AT 5,25: INK 7: PAPER 0:
t
```

```
411 POKE 23675,1(f): POKE 23676
,h(f): RETURN
```

```
412 PRINT AT 7,9:a$(f,y-4,x-7
TO x+7): AT 8,9:a$(f,y-3,x-7 TO
x+7): AT 9,9:a$(f,y-2,x-7 TO x+7
)
```

```
414 PRINT AT 10,9:a$(f,y-1,x-7
TO x-1): AT 10,17:a$(f,y-1,x+1
TO x+7)
```

```
416 PRINT AT 11,9:a$(f,y,x-7 T
O x-1): AT 11,17:a$(f,y,x+1 TO x
+7)
```

```
418 PRINT AT 12,9:a$(f,y+1,x-7
TO x+7): AT 13,9:a$(f,y+2,x-7 T
O x+7): AT 14,9:a$(f,y+3,x-7 TO
x+7)
```

```
420 RETURN
429 REM ***print out 2***
```

```
430 IF i$="p" THEN PRINT AT 1
0,16: INK 1: PAPER 6:"E": AT 11,
16:"G": BEEP .0125,m(f): GO TO 4
40
```

```
432 IF i$="o" THEN PRINT AT 1
0,16: INK 1: PAPER 6:"H": AT 11,
16:"I": BEEP .0125,m(f): GO TO 4
40
```

```
434 IF i$="p" THEN PRINT AT 1
0,16: INK 1: PAPER 6:"E": AT 11,
16:"G": FOR n=1 TO 7 STEP 2: BEE
P .01,n:n: NEXT n: GO TO 440
```

```
436 IF i$="o" THEN PRINT AT 1
0,16: INK 1: PAPER 6:"H": AT 11,
16:"I": FOR n=1 TO 7 STEP 2: BEE
P .01,n:n: NEXT n: GO TO 440
```

```
438 IF i$="z" THEN PRINT AT 1
0,16: INK 1: PAPER 6:"E": AT 11,
16:"G": FOR n=2 TO 6: BEEP .01,n
*n: NEXT n
```

```
440 RETURN
450 IF a$(f,y,x+1)<"1(isp)" OR a
$(f,y,x+1)>"D" THEN GO TO 452
```

```
451 GO TO 410
452 LET x=x+1: GO TO 410
```

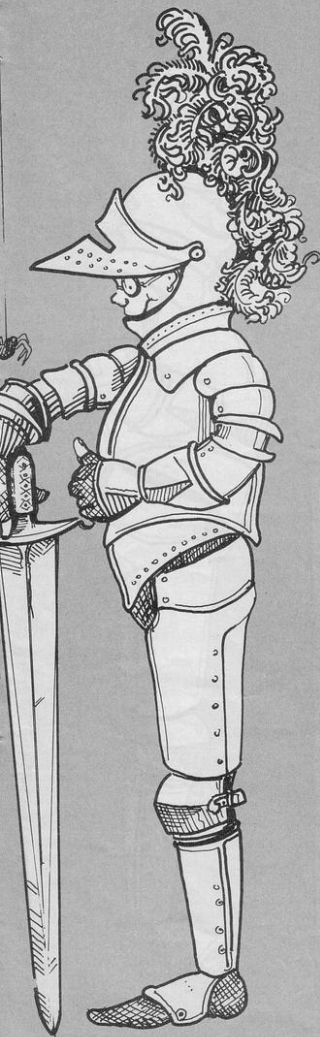
```
454 IF a$(f,y,x-1)<"1(isp)" OR a
$(f,y,x-1)>"D" THEN GO TO 456
```

```
455 GO TO 410
456 LET x=x-1: GO TO 410
```

```
458 IF a$(f,y+1,x)<"1(isp)" OR a
$(f,y+1,x)>"E" THEN LET i$=""
```

```
GO TO 410
```

HUBERT



```

459 IF a$(f,y-1,x+1)<"(isp)" OR
a$(f,y-1,x+1)>"D" THEN GO TO 4
61
460 LET i$="": GO TO 410
461 LET x=x+1: LET y=y-1: GO TO
410
462 IF a$(f,y+1,x)<"(isp)" OR a
$(f,y+1,x)>"E" THEN LET i$="":
GO TO 410
463 IF a$(f,y-1,x-1)<"(isp)" OR
a$(f,y-1,x-1)>"D" THEN GO TO 4
65
464 LET i$="": GO TO 410
465 LET x=x-1: LET y=y-1: GO TO
410
501 IF a$(f,y-1,x) <> "E" AND a
$(f,y-1,x) >= "(isp)" THEN GO T
O 800
503 IF a$(f,y-1,x)="E" AND a$(f
,y,x)="E" THEN GO TO 1
506 IF a$(f,y,x)="S" THEN GO T
O 525
507 IF a$(f,y,x)="E" THEN GO T
O 1
510 GO TO 800
525 FOR n=1 TO 8: LET a$(n,y,x)
=" ": NEXT n
526 LET r$=r$+"S": PRINT AT 18
,26: INK 2: PAPER 6:r$
527 GO SUB 540
528 IF r$="SSSS" THEN GO TO 95
0
529 LET ly=y: LET lx=x: GO TO 1
549 REM ***ring tune***
550 BEEP .15,-4: BEEP .22,-2: B
EEP .9,7
552 FOR n=1 TO 2
553 BEEP .2,-4: BEEP .2,-2: BEE
P .25,-.75: BEEP .25,3.5
554 NEXT n
555 BEEP .8,-2: BEEP .15,-7: BE
EP .2,-9
556 RETURN
700 REM ***SCENARIO SET-UP***
701 DIM a$(B,16,124)
702 FOR f=1 TO 8
704 FOR n=1 TO 16: LET a$(f,n,1
TO 7)="(7*isp)": LET a$(f,n,118
TO 124)="(7*isp)": NEXT n
706 LET a$(f,1,8 TO 117)="(110*
isp)"
708 LET a$(f,2,8 TO 117)=a$(f,1
,8 TO 117)
709 FOR n=14 TO 16: LET a$(f,n,
8 TO 117)=a$(f,1,8 TO 117): NEXT
n
710 LET a$(f,3,8 TO 117)="(isp)
D(isp)D(isp)D(isp)D(10*isp)DDDD
DDD"
711 LET a$(f,3,34 TO 117)="(56*
isp)DDDDDDDDDDDD(15*isp)"
712 LET a$(f,4,8 TO 25)="D D
D(9*isp)D": LET a$(f,5,16 TO 24
7)="DDDDDD(2*isp)": LET a$(f,6,2
3 TO 24)="(isp)D"
714 LET a$(f,4,34 TO 50)="DDDD
DDDDDDDDDDDD": LET a$(f,6,56 TO
98)="DDDDDDDDDDDDDDDDDDDDDD
DDDDDD"
715 FOR n=4 TO 5: LET a$(f,n,51
TO 98)="(32*isp)": NEXT n
716 LET a$(f,5,90 TO 117)="DDDD
DDDDDDDD(15*isp)": LET a$(f,4,1
03 TO 117)="DDDDDDDDDDDDDDDD"
718 FOR n=8 TO 12: LET a$(f,n,8
TO n+2)="(7*isp)": NEXT n
720 LET a$(f,8,10)=" ": LET a$(
f,10,13)="Q": LET a$(f,13,8 TO 3
4)="(12*isp;sp;4*isp)DDDDDDDDDD"
722 LET a$(f,12,23 TO 34)="(2*
isp)DDDDDDDDDDDD": LET a$(f,11,24)
="(isp)": LET a$(f,10,24 TO 25)
="(isp)"
724 FOR n=7 TO 11: LET a$(f,n,2
3)="E": NEXT n
725 FOR n=11 TO 13: LET a$(f,n,
35 TO 45)="(isp)RRRRRRR(2*isp)
": NEXT n
726 FOR n=7 TO 10: IF n=9 THEN
LET a$(f,n,35 TO 36)="(isp)D":
GO TO 728
727 LET a$(f,n,35)="(isp)"
728 NEXT n
729 LET a$(f,7,34)="D": LET a$(
f,9,45 TO 50)="(isp;4*isp;isp)":
LET a$(f,10,44 TO 50)="(2*isp)RR
RR(isp)": LET a$(f,11,44 TO 56)
="(2*isp)RRRR(2*isp)"
730 LET a$(f,12,44 TO 57)="(14*
isp)": FOR n=11 TO 13: LET a$(f,
n,75 TO 117)="(14*isp)RRRRRRRR
RRRR(isp)RRRRRRRRRR(3*isp)": NE
XT n
732 LET a$(f,13,46 TO 74)="(29*
isp)": LET a$(f,12,74)="(isp)":
LET a$(f,10,76)="D"
734 LET a$(f,10,88 TO 117)="(is
p)D D(isp)D
(3*isp)"
735 LET a$(f,9,103)="Q": LET a$(
f,9,116 TO 117)="(2*isp)": LET
a$(f,8,117)="(isp)"
738 LET a$(f,10,44-f)="A"
739 REM ***MONSTER ANIMATION***
740 LET a$(f,11,14+f TO 15+f)="
KL"
741 IF f<5 THEN LET a$(f,9,47
TO 48)="BC": GO TO 743
742 LET a$(f,9,47 TO 48)="TC"
743 LET a$(f,12,57+f TO 58+f)="
UU": LET a$(f,12,64+f TO 65+f)="
UU"
745 LET a$(f,10,102-f)="A": IF
f=8 THEN LET a$(f,10,102-f TO 1
03-f)="A"
746 LET a$(f,9,93+f TO 94+f)="K
L"
748 IF f<5 THEN LET a$(f,10,15
0 TO 113)="BC TC BC": GO TO 750
749 LET a$(f,10,106 TO 113)="TC
BC TC"
750 NEXT f
751 FOR f=1 TO 5: LET a$(f,3+f,
10 TO 11)="MN": NEXT f
752 FOR f=6 TO 8: LET a$(f,13-f
,10 TO 11)="MN": NEXT f

```

continued from page 33

```

753 FOR f=26 TO 33: LET a$(f-2
5,4,f)="+": FOR n=1 TO 10: LET a
$(f-25,n,f)="+E": NEXT n: NEXT f

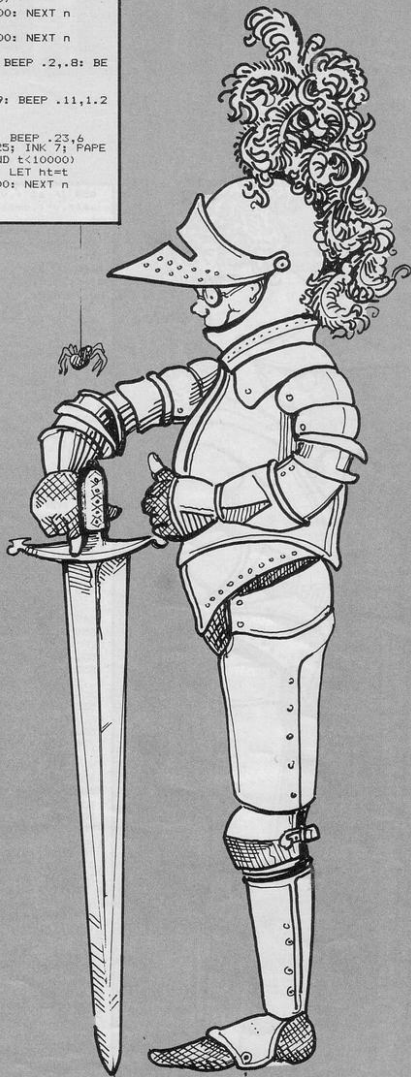
758 FOR f=1 TO 4: LET a$(f,6+f,
75+f TO 76+f)="+KL": NEXT f
759 FOR f=1 TO 4: LET a$(f+4,11
-f,79+f TO 80+f)="+KL": NEXT f
760 FOR f=1 TO 4: LET a$(f,6+f,
85 TO 86)="+MN": LET a$(f,10,94-f
TO 95-f)="+AA": NEXT f
761 FOR f=1 TO 4: LET a$(f+4,11
-f,85 TO 86)="+MN": LET a$(f+4,10
-f,89+f TO 90+f)="+AA": NEXT f
762 RESTORE 764: FOR f=1 TO 8:
READ m: LET a$(f,6+m,34-f TO 35-
f)="+KL": NEXT f
764 DATA 0,1,2,3,2,3,2,1
765 FOR f=1 TO 5: LET a$(f,5+f,
51 TO 55)="+Q Q Q": FOR n=6 TO f+
5
766 IF n<5+f THEN LET a$(f,n,5
1 TO 55)="+E P P"
767 NEXT n: NEXT f
768 FOR f=1 TO 3: LET a$(f+5,10
-f,51 TO 55)="+Q Q Q": FOR n=6 TO
9-f: LET a$(f+5,n,51 TO 55)="+E
P P": NEXT n: NEXT f
769 LET ht=400
770 REM UDS'g
771 RESTORE 780: FOR n=65200 TO
65535: READ a
772 POKE n,a: NEXT n
780 DATA 255,255,85,170,85,255,
255,0,0,0,224,161,255,170,85,255
,0,56,124,228,214,254,255,255,25
5,103,118,52,96,64,0,0,48,24,12,
24,48,24,12,24
781 DATA 0,56,124,254,0,124,100
,110,124,230,206,222,124,253,203
,102,0,28,62,127,0,62,38,118,62,
103,115,123,62,191,211,102,60,10
2,78,94,94,126,60,24
782 DATA 4,4,14,27,57,111,194,1
28,32,32,112,216,156,246,67,1,22
4,175,191,141,63,102,76,8,7,245,
253,177,252,102,50,16,56,56,56,5
6,254,124,56,16
783 DATA 56,56,56,56,56,56,56,5
6,0,16,40,84,170,68,130,68,51,20
4,51,204,51,204,51,204,0,0,56
,108,198,108,56,224,160,248,175,
10,0,85,255,28,55,61,1,31,112,19
2,252
784 DATA 255,255,85,170,85,255,
255,0,0,0,224,161,255,170,85,255
,0,56,100,196,214,214,255,255,25
5,103,118,52,96,64,0,0,12,24,48,
24,12,24,48,24
785 DATA 0,56,124,254,0,124,100
,110,124,222,206,230,124,189,223
,102,0,28,62,127,0,62,38,118,62,
123,115,103,62,189,251,102,60,10
2,207,159,191,255,126,24
786 DATA 196,68,110,57,27,15,2,
0,35,34,118,156,216,240,64,0,56
,57,105,207,154,178,166,36,240,15
6,150,243,89,77,101,36,56,56,56,
56,254,124,56,16
787 DATA 56,56,56,56,56,56,56,5
6,0,0,16,40,84,40,40,40,15,240,1
5,240,15,240,15,240,16,40,16,56,
108,198,108,56,224,160,248,175,1
0,0,85,255,3,119,221,241,7,12,25
,31
790 RETURN
801 LET li=1-1
802 BEEP 1.1,-25: BEEP .20,-20:
BEEP .34,-18: BEEP .18,-19
803 FOR n=1 TO 4
805 BEEP .1,-16: BEEP .1,-14: N
EXT n
806 BEEP .1,-16
807 LET x=1x: LET y=1y
808 IF li=0 THEN GO TO 900
809 FOR n=1 TO 11: PRINT AT 18
,8+n: INK n+1: PAPER 0: "": AT 1
9,8+n: INK n+1: PAPER 0: "I": NEX
T n: PRINT AT 18,8+n: PAPER 0: "
": AT 19,8+n: " ": GO TO 1

```

```

900 PRINT AT 18,9: PAPER 0: " "
: AT 19,9: " "
901 PRINT AT 5,25: INK 7: PAPE
R 0: (t AND t<10000)
902 FOR n=1 TO 500: NEXT n
905 GO TO 8
950 FOR n=1 TO 100: NEXT n
952 BEEP .6,1
954 BEEP .2,95: BEEP .2,8: BE
EP .2,85
955 FOR n=1 TO 2
956 BEEP .11,1.29: BEEP .11,1.2
2: BEEP .29,1.25
957 NEXT n
958 BEEP .18,3.5: BEEP .23,6
959 PRINT AT 5,25: INK 7: PAPE
R 0: FLASH 1: (t AND t<10000)
960 IF t<ht THEN LET ht=t
961 FOR n=1 TO 500: NEXT n
965 GO TO 8

```



Poor Alf!

Poor Alf is trapped in a hellish series of rooms. In each room lurks a deadly demon. To escape from one room to the next, Alf must collect 25 of the 29 objects scattered around the room. If he can collect the 25 objects in one room without touching the demon or the parameter fence, he moves on to the next room, where the demon moves slightly faster.

Written for the Spectrum by D Collard of Bury, Lancashire.

Some letters in this listing have been underlined to show that they are to be entered in graphics mode.

```

6 GO SUB 400
7 DEF FN R()=.2+(.1*SC AND SC
<6>): LET SCORE=0: LET SC=0
20 POKE 23693,6: POKE 23624,5

30 CLS: PRINT AT 10,10;"GET
READY!!!!";
40 FOR T=-40 TO 40 STEP 5: BEE
P .01,T: BEEP .01,T+10: BEEP .01
T+20: NEXT T
60 CLS: PRINT AT 21,31;"@":
AT 0,31;"@": AT 21,0;"@": AT 0,0
1:"@": PLOT 7,7: DRAW INK 7;0,16
1: DRAW INK 7;241,0: DRAW INK
7;0,-161: DRAW INK 7;-241,0
70 POKE 23560,55: LET A=10: LE
T S=10: LET D=1: LET F=1: LET Z
10: LET X=10: LET V=1: LET B=1

80 LET SCORE=SCORE+1: LET SC=5
C+1: LET A=10: LET S=10: FOR P=1
TO 28: PRINT INK 4: AT ( RND *
19)+1,( RND *29)+1;"!": NEXT P-

90 GO TO 300
100 PRINT AT S,A: INK 3;"A";

110 PRINT AT X,Z;"!";
120 LET Z=A: LET X=S
130 IF RND < FN R() THEN GO S
UB 0210
140 LET A$=CHR$( PEEK 23560)

150 LET S=S+(A$="6" AND S<21)-(
A$="7" AND S>0)
160 LET A=A+(A$="B" AND A<31)-(
A$="5" AND A>0)
170 IF SCORE < 0 AND (SCORE/25
)=INT (SCORE/25) THEN GO SUB 6
00: LET SCORE=SCORE+50: GO TO 00
40:
180 IF SCREEN$(S,A)="" THEN
LET SCORE=SCORE+1: BEEP .01,50:
GO TO 300
190 IF ATTR (S,A) < 7 THEN G
O TO 0100

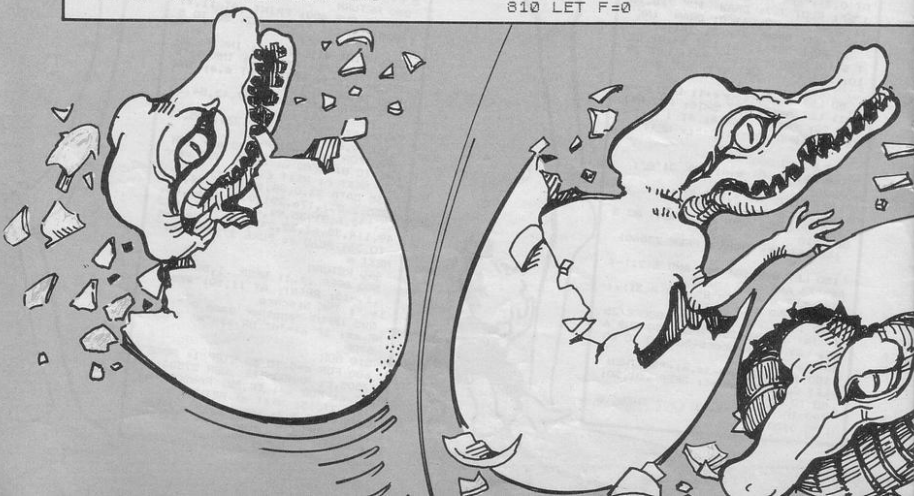
```

```

200 BEEP .1,40: GO TO 0290
210 LET D=D+(D<A)-(D>A)
230 LET F=F+(F<B)-(F>B)
240 PRINT AT F,D: PAPER B: INK
2: OVER 1;"B";
250 PRINT AT V,B: INK 4: PAPER
0: OVER 1;"B";
255 PRINT AT 1,1: FLASH B: INK
8: PAPER B;" "
270 LET V=F: LET B=D: IF D=A AN
D F=S THEN GO TO 0290
280 RETURN
290 GO SUB 600: PRINT AT 11,11
1:"BAD LUCK"; PAUSE 1E2: GO TO 5
00:
300 PRINT #1: AT 0,0: INK 4;"SC
ORE=": SCORE: AT 0,15: INK 4;"S
CREEN=": SC: PRINT AT S,1: INK
5;" ": GO TO 190
400 DATA "a",65,93,127,42,54,20
,42,73
410 DATA "b",126,219,231,255,12
9,90,90,60
420 FOR T=1 TO 2: READ A$: FOR
R=1 TO B: READ U: POKE USR A$+R
,US: NEXT R: NEXT T
435 DATA 33,0,88,17,1,88,54,5,1
,255,2,237,176,201,0,33,0,64,85,
62,192,6,31,35,94,43,115,35,16,2
49,114,35,61,32,242,201: FOR M=1
TO 36: READ C: POKE 27500+M,C:
NEXT M
440 RETURN
500 BEEP .1,1: BEEP .1,50: BEEP
.1,10: PRINT AT 11,10;"score
is "; INK 5:score
505 INPUT "another game ? ": LI
NE A$: IF A$="n" OR A$="N" THEN
STOP
510 RUN
600 FOR C=0 TO 50 STEP 1: POKE
27508,C: RANDOMIZE USR 27500: N
EXT C: FOR A=1 TO 32: RANDOMIZE
USR 27515: NEXT A: RETURN
9999 PLOT 7,7: DRAW 0,161: DRAW
241,0: DRAW 0,-161: DRAW -241,0:
PAPER 0

```







```

820 IF A$="0" THEN LET A$="10"
830 LET A=3+VAL A$-2
840 IF X=A THEN PRINT AT I-1,U-
1,"???"
850 RAND
860 PRINT AT 21,0;V$;V$;V$
870 PRINT AT 21,A;" ",AT 22,A
;" ",AT 23,A;"0"
880 PRINT AT I-1,U-1;" "
890 GOTO 500
900 REM SCORE
1000 IF X>A THEN GOTO 1200
1010 IF F THEN GOTO 1700
1020 PRINT AT 20,A;"",TAB
A+1;" "
1030 LET H=H+1-(H=50)
1040 LET N=N+1
1050 PRINT AT 0,16*(X<16);"SCORE
:N
1060 GOSUB 250
1070 PRINT AT 20,A;" ",TAB A;" "
1080 PRINT AT 0,16*(X<16);V$( TO
16)
1090 IF NOT 0 THEN GOTO 140
1099 REM HELP
1100 PRINT AT 21,0;V$;" 1 2 3
4 5 6 7 8 9 0 ";V$
1110 GOTO 140
1199 REM HELP
1200 PRINT AT 21,0;V$;V$;V$
1210 PRINT AT 23,X+1;"",AT 22,
X;"",AT 21,X-1;"",

```



```

1220 GOSUB 1500
1230 PRINT AT 23,X;"( )";AT 22,X
;"",AT 21,X-1;" "
1240 PRINT AT 21,0;V$;V$;AT 23,X
-1;" "
1250 PRINT AT 23,X-1;" "
1260 CLS
1270 PRINT AT 5,8;"OOPS, MISSED.
AT 8,0;"SCORE:";N
1300 IF 0 THEN PRINT "(PRACTICE
ONLY)"
1299 REM SCORE
1300 PRINT AT 11,0;"RATING:";
1310 IF NOT 0 THEN LET N=INT (N*
(J+1)/4)
1320 LET A$="USELESS"
1330 IF N>10 THEN LET A$="ROTTEN
"
1340 IF N>20 THEN LET A$="ORDINA
RY"
1350 IF N>30 THEN LET A$="FAIR"
1360 IF N>40 THEN LET A$="GOOD"
1370 IF N>60 THEN LET A$="EXCELL
ENT"
1380 IF N>100 THEN LET A$="ACE"
1390 PRINT A$
1400 LET B=80
1410 GOSUB 1510
1420 CLS
1430 LET Q=(N<5)
1440 GOTO 20
1499 REM HELP
1500 LET B=10
1510 FOR I=1 TO B
1520 NEXT I
1530 RETURN
1699 REM HELP
1700 PRINT AT 20,A;"",TAB
A;" "
1710 GOSUB 1500
1720 GOTO 1200
9990 REM SCORE
9990 CLEAR
9910 SAVE " "
9920 GOTO 9100
9930 PRINT "WHAT LEVEL OF PLA
Y? (1 TO 5)"
9940 POKE 16418,2
9950 INPUT A$
9960 IF A$<"1" OR A$>"5" THEN GO
TO 9950
9970 LET J=VAL A$
9980 CLS
9990 GOTO 15
9999 REM START
9100 CLS
9110 PRINT AT 10,7;"ALIEN EGG DR
OP"
9120 LET B=25
9130 GOSUB 1500
9140 CLS
9149 REM INSTRUCTIONS
9150 PRINT "THE MARTIANS ARE COM
ING"
9160 PRINT "THE MARTIANS WANT
TO COLONISE EARTH BY DROPPING
MARTIAN EGGS WHICH THEY THINK W
ILL HATCH OUT TO BECOME LITTLE G
REEN CROCODILES"
9170 PRINT "BUT THEY HAVE FORGOT
TEN THAT OUR PLANET IS BARO AND E
GGS WILL BREAK. MEANWHILE R
ONNY RAY-GUN HAS FOUND THAT THE E
GGS MAKE GOOD LASER-BEAM LENS
ES"
9180 PRINT "YOU MUST CATCH AS
MANY AS POSSIBLE. WHEN Y
OU DROP ONE THE ALIENS SEE IT
BREAK, REALISE THEIR MISTAKE AND
GO HOME"
9190 PRINT "HIT A NUMBER (1 T
O 0) TO CATCH"
9200 GOTO 9030

```


Puzzle

If you thought Rubik's cube was difficult, you are going to be completely bemused by Checka Puzzle. On screen appears a mixed up chequer board grid. By moving horizontal and vertical strips around the board, how quickly can you return the board back to its original arrangement? We gave up in the Sinclair Programs office after sixty moves.

Written for the 16K ZX-81 by Robert Street of Belper, Derbyshire.

Written for
of Belper, Derbyshire

```

085 IF US=0 THEN PRINT AT 16, "GUN ? (U/D)"
090 GOTO 170
200 PRINT AT 16, " "
205 PRINT AT 16, 0; " "
    US="V" THEN PRINT AT 16, "GUN ? (U/D)"
    LUN="L/R" THEN PRINT AT 16, " " OR K

```

[illegible]

```

300 PRINT
310 LET L=INT(100*AND L)
320 IF L=0 THEN GOTO 340
330 GOTO 310
340 GOSUB 350
350 IF R$="" THEN
360 LET L=VAL(L)+1
370 LET L=INT(L/10)+1
380 LET L=VAL(L)+1
390 LET L=INT(L/10)+1
400 GOTO 310
410 LET L=VAL(L)+1
420 LET L=INT(L/10)+1
430 IF L=10 THEN
440 GOTO 310
450 IF R$="" THEN
460 GOTO 310
470 IF R$="" THEN PRINT AT 1
480 IF R$="" THEN PRINT AT 1
490 IF R$="" THEN PRINT AT 1
500 IF R$="" THEN PRINT AT 1
510 IF R$="" THEN PRINT AT 1
520 IF R$="" THEN PRINT AT 1
530 IF R$="" THEN PRINT AT 1
540 IF R$="" THEN PRINT AT 1
550 IF R$="" THEN PRINT AT 1
560 IF R$="" THEN PRINT AT 1
570 IF R$="" THEN PRINT AT 1
580 IF R$="" THEN PRINT AT 1
590 IF R$="" THEN PRINT AT 1
600 IF R$="" THEN PRINT AT 1
610 IF R$="" THEN PRINT AT 1
620 IF R$="" THEN PRINT AT 1
630 IF R$="" THEN PRINT AT 1
640 IF R$="" THEN PRINT AT 1
650 IF R$="" THEN PRINT AT 1
660 IF R$="" THEN PRINT AT 1
670 IF R$="" THEN PRINT AT 1
680 IF R$="" THEN PRINT AT 1
690 IF R$="" THEN PRINT AT 1
700 IF R$="" THEN PRINT AT 1
710 IF R$="" THEN PRINT AT 1
720 IF R$="" THEN PRINT AT 1
730 IF R$="" THEN PRINT AT 1
740 IF R$="" THEN PRINT AT 1
750 IF R$="" THEN PRINT AT 1
760 IF R$="" THEN PRINT AT 1
770 IF R$="" THEN PRINT AT 1
780 IF R$="" THEN PRINT AT 1
790 IF R$="" THEN PRINT AT 1
800 IF R$="" THEN PRINT AT 1
810 IF R$="" THEN PRINT AT 1
820 IF R$="" THEN PRINT AT 1
830 IF R$="" THEN PRINT AT 1
840 IF R$="" THEN PRINT AT 1
850 IF R$="" THEN PRINT AT 1
860 IF R$="" THEN PRINT AT 1
870 IF R$="" THEN PRINT AT 1
880 IF R$="" THEN PRINT AT 1
890 IF R$="" THEN PRINT AT 1
900 IF R$="" THEN PRINT AT 1
910 IF R$="" THEN PRINT AT 1
920 IF R$="" THEN PRINT AT 1
930 IF R$="" THEN PRINT AT 1
940 IF R$="" THEN PRINT AT 1
950 IF R$="" THEN PRINT AT 1
960 IF R$="" THEN PRINT AT 1
970 IF R$="" THEN PRINT AT 1
980 IF R$="" THEN PRINT AT 1
990 IF R$="" THEN PRINT AT 1
1000 IF R$="" THEN PRINT AT 1

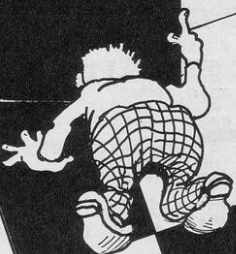
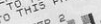
```

1155 IF
 F 130 NEXT F
 440 GOTO 130
 500 PRINT AT 16.0; "UN"
 510 LET L\$=INKEY\$
 520 IF L\$="0" THEN LET L\$=A\$(L)
 530 GOTO 510
 540 LET L\$=A\$(L)
 550 IF L\$="0" THEN LET L\$=A\$(L)
 560 IF L\$="1" THEN LET L\$=A\$(L)
 570 IF L\$="2" THEN LET L\$=A\$(L)
 580 IF L\$="3" THEN LET L\$=A\$(L)
 590 IF L\$="4" THEN LET L\$=A\$(L)
 600 IF L\$="5" THEN LET L\$=A\$(L)
 610 IF L\$="6" THEN LET L\$=A\$(L)
 620 IF L\$="7" THEN LET L\$=A\$(L)
 630 IF L\$="8" THEN LET L\$=A\$(L)
 640 IF L\$="9" THEN LET L\$=A\$(L)
 650 IF L\$="A" THEN LET L\$=A\$(L)
 660 IF L\$="B" THEN LET L\$=A\$(L)
 670 IF L\$="C" THEN LET L\$=A\$(L)
 680 IF L\$="D" THEN LET L\$=A\$(L)
 690 IF L\$="E" THEN LET L\$=A\$(L)
 700 IF L\$="F" THEN LET L\$=A\$(L)
 710 IF L\$="G" THEN LET L\$=A\$(L)
 720 IF L\$="H" THEN LET L\$=A\$(L)
 730 IF L\$="I" THEN LET L\$=A\$(L)
 740 IF L\$="J" THEN LET L\$=A\$(L)
 750 IF L\$="K" THEN LET L\$=A\$(L)
 760 IF L\$="L" THEN LET L\$=A\$(L)
 770 IF L\$="M" THEN LET L\$=A\$(L)
 780 IF L\$="N" THEN LET L\$=A\$(L)
 790 IF L\$="O" THEN LET L\$=A\$(L)
 800 IF L\$="P" THEN LET L\$=A\$(L)
 810 IF L\$="Q" THEN LET L\$=A\$(L)
 820 IF L\$="R" THEN LET L\$=A\$(L)
 830 IF L\$="S" THEN LET L\$=A\$(L)
 840 IF L\$="T" THEN LET L\$=A\$(L)
 850 IF L\$="U" THEN LET L\$=A\$(L)
 860 IF L\$="V" THEN LET L\$=A\$(L)
 870 IF L\$="W" THEN LET L\$=A\$(L)
 880 IF L\$="X" THEN LET L\$=A\$(L)
 890 IF L\$="Y" THEN LET L\$=A\$(L)
 900 IF L\$="Z" THEN LET L\$=A\$(L)
 910 IF L\$=" " THEN LET L\$=" "
 920 IF L\$="." THEN LET L\$="."
 930 IF L\$="," THEN LET L\$=","
 940 IF L\$=";" THEN LET L\$=";"
 950 IF L\$=":" THEN LET L\$=":"
 960 IF L\$="@" THEN LET L\$="@"
 970 IF L\$="#" THEN LET L\$="#"
 980 IF L\$="\$" THEN LET L\$="\$"
 990 IF L\$="%" THEN LET L\$="%"
 1000 IF L\$="&" THEN LET L\$="&"
 1010 IF L\$="'" THEN LET L\$="'"
 1020 IF L\$="(" THEN LET L\$="("
 1030 IF L\$=")" THEN LET L\$=")"
 1040 IF L\$="{" THEN LET L\$="{"
 1050 IF L\$="}" THEN LET L\$="}"
 1060 IF L\$="[" THEN LET L\$="["
 1070 IF L\$="]" THEN LET L\$="]"
 1080 IF L\$="~" THEN LET L\$="~"
 1090 IF L\$="!" THEN LET L\$="!"
 1100 IF L\$="?" THEN LET L\$="?"
 1110 IF L\$="*" THEN LET L\$="*"
 1120 IF L\$="/" THEN LET L\$="/"
 1130 IF L\$="=" THEN LET L\$="="

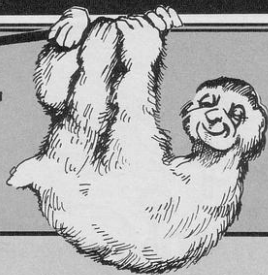
750 PRINT "MOVES ANOTHER GU" RUN
 760 GOTO 130
 770 IF INKEY\$="L" THEN RUN
 780 IF INKEY\$="R" THEN RUN
 790 IF INKEY\$="N" THEN STOP
 800 GOTO 770
 810 PRINT
 820 GOTO 130

moving it, how
the board, original
board back to its original
position in the Sinclair Street
sixty moves. by Robert Street
hire.

950 PRINT "INSTRUCTIONS"
960 LET US=INKEY AND US<"N" THEN
970 IF US=70
980 GOTO 900
990 GOTO 900
1000 PRINT "INSTRUCTIONS"
1010 IF US="N" THEN GOTO 3
1020 PRINT "TRY TO TURN THE JU
1030 MELE UP BOARD INTO THIS PATTERN:"
1040 FOR I=7 TO 11 STEP 2
1050 PRINT AT I,19;
1060 NEXT I
1070 PRINT "AS POSSIBLE"
1080 PRINT "PRESS (N/L)"
1090 GOTO 900
1100 GOTO 3



Programming - Slow and easy with Computer Sloth



VARIABLES

A variable is a name given to a location in memory used to store a number. The value of a variable may change as the program is run, so the Spectrum changes the contents of memory locations to suit. There are just a few variables used in Binary: a description of each will help you to understand how it works:

n is the decimal to be converted to binary, though this is changed by the program as you will see.

col is the column number at which the program has to print the current binary digit.

a\$ is a string variable, so called because it can hold a string of characters (still interpreted as

numbers as far as the computer is concerned). In this program, it is used simply to hold the user's yes or no reply for another number.

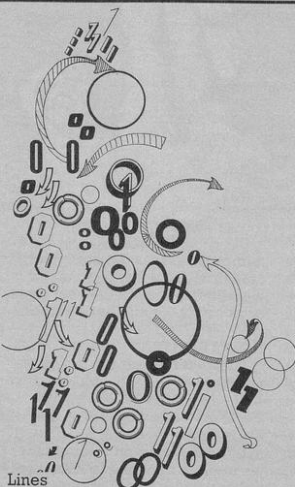
HOW IT WORKS

The binary form for a decimal number is found by adding $1+2+4+8+16+32+\dots+2^n$. This is the same as saying $2^0 + 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \dots + 2^n$. (**n** in this case is the number of times we need to continue to keep multiplying by 2 to get the decimal we want to convert, NOT the decimal itself). For example, the decimal number nine would be $2^0(=1)+2^1(=2)+2^2(=4)$ and so the binary form is 1001. The conversion using a program is quite simple

BINARY

once you understand this principle as it is just a matter of continually dividing the number by 2 and checking to see if there is any remainder, in which case we put a one (otherwise zero). Take the number nine again. The first time we divide by two we get a remainder so we write down a 1 at the right hand side. Ignoring this remainder, we take the whole number of times we were able to divide by 2 (i.e. 4) and repeat the process. This time, we get 2 with no remainder, so we write down 0. Next time we divide we get 1, again with no remainder, so we write down another 0. Finally, we get zero (which means we can go no further) but this time with a remainder, so the last number we write down is 1. Before trying to understand the program, make sure you understand how to do the conversion with pencil and paper on a few other numbers.





Lines

- 10 Sets screen colours and clears.
12-13 Print title etc.
20 Prompts for decimal number n to be converted. Note how POKE

23617,158 (system variable for cursor mode) can be used to obtain a flashing black square.

25 Sets up for printing at right hand side of screen to start.

30 Confirms the number to be converted. Note how INT is used to make sure that the user realises that the program will only convert the integer part of the decimal number.

45-60 This is the loop which simulates the process we have just looked at. Line 45 can only print 1 or 0 (for remainder or no remainder). Line 50 resets n to the number of whole divisions by 2 and moves "col" to print in the next character position to the left (on row 15). Line 52 is the means by which the program escapes from the loop when there is nothing left to divide further.

200-215 Find out whether another number is to be entered.

9999 Saves and verifies "Binary" on cassette for you to use any time you need perform binary conversion.

```

10 BORDER 0: PAPER 0: INK 7: C
LS
12 PRINT AT 0,10: FLASH 1: PA
PER 6: INK 2: " B I N A R Y "

13 PRINT AT 3,4: PAPER 7: INK
1: FLASH 1: @1984 Ramses Valv
ekens"
20 POKE 23617,158: INPUT "Give
DECIMAL number...":n
25 LET col=31
30 PRINT AT 12,0: BRIGHT 1:"T
he binary number for" INT n: " i
s"
45 PRINT AT 15,col:n-2* INT
(n/2): < > 0
50 LET col=col-1: LET n= INT (
n/2)
52 IF n=0 THEN GO TO 200
60 GO TO 45
200 INPUT "Another number? ": L
INE a$
205 IF a$="y" OR a$="Y" THEN R
UN
210 IF a$="n" OR a$="N" THEN G
O TO 220
215 GO TO 200
220 CLS: PRINT AT 12,1: BRIGH
T 1:"THANKS FOR USING 'BINARY'!!
!"
230 BEEP .2,0: BEEP .2,3: STOP

235 GO TO 230
9999 SAVE "Binary" LINE 10: BEEP
.2,0: VERIFY "Binary": BEEP .2,
0

```

Easter Greeting

This simple program will allow you to display an animated Easter Greeting on screen for relatives and friends. Watch as the egg cracks open, and as the chicken breaks out and starts to cheep.

Written for the Spectrum by A Pye of Chalfont St Peter, Buckinghamshire.

```

10 BORDER 1: PAPER 1: INK 5: d
LS
20 PLOT 50,50
30 DRAW -20,-30,1
40 DRAW 20,-10,1
50 DRAW 20,30,1
60 DRAW -20,10,1
70 PAUSE 100
80 PLOT 50,30
90 DRAW 4,4
91 DRAW 4,-4: PAUSE 5:

```

```

92 DRAW 4,4: GO SUB 1000: DRAW
4,-4: GO SUB 1000
93 PLOT 50,30: GO SUB 1000
94 DRAW -4,4: GO SUB 1000: DRA
W -4,-4: GO SUB 1000: DRAW -4,4:
GO SUB 1000
95 DRAW -4,-4
96 PAUSE 100
97 INK 6
98 INK 7: PLOT 45,47: GO SUB 1
000: DRAW 5,-5: GO SUB 1000: DR
AW 5,5: GO SUB 1000: DRAW 5,-5:
GO SUB 1000: DRAW 5,3: GO SUB 10
00
99 PAUSE 10
100 PLOT 50,50: DRAW 5,5: DRAW
5,-5
105 PAUSE 150
110 INK 1: PLOT 50,50: DRAW 5,5
: DRAW 5,-5: INK 7

```

```

115 PAUSE 10
120 FOR N=14 TO 16: PRINT INK
1: AT n,0: " "
130 NEXT n
135 PLOT 54,40: DRAW -5,10,4
140 DRAW -5,-3: DRAW 5,-3: DRAW
5,-3,1
145 PLOT 52,48
160 PLOT 50,50
170 PLOT 37,40: DRAW 10,3
180 PLOT 55,40: DRAW 4,-10
182 FOR N=1 TO 5: BEEP .1,60: P
AUSE 5: NEXT N: FOR N=1 TO 5: F0
R N=1 TO 5: BEEP .1,60: PAUSE 5:
BEEP .1,65: PAUSE 5: NEXT N
190 PRINT AT 0,9: INK 7: FLASH
1:"HAPPY EASTER"
900 STOP
1000 FOR N=1 TO 3: BEEP .1,-50:
NEXT N
1010 RETURN

```



DIY music

Use your Spectrum as a simple keyboard with DIY Music. Keys q,w,3,e,r,s,t,y and u can each be used to produce a note when this program is run. Simple, one octave tunes can be produced, or the program can be modified to extend its range.

```

10 PRINT "D I Y MUSIC"
20 PAUSE 0
30 IF INKEY$ ="q" THEN BEEP
.1,1
40 IF INKEY$ ="w" THEN BEEP
.1,3
50 IF INKEY$ ="3" THEN BEEP
.1,5
60 IF INKEY$ ="e" THEN BEEP
.1,7
70 IF INKEY$ ="r" THEN BEEP
.1,9
80 IF INKEY$ ="5" THEN BEEP
.1,11
90 IF INKEY$ ="t" THEN BEEP
.1,13
100 IF INKEY$ ="y" THEN BEEP
.1,15
110 IF INKEY$ ="u" THEN BEEP
.1,17
120 GO TO 20

```

```

3 CLS
4 GOTO 160
5 LET S=0
10 LET R=INT (38*AND#25)
30 PRINT AT 10,X;CHR$ R
40 LET A$=INKEY$
50 IF A$=CHR$ R THEN GOTO 100
60 LET X=X-1
70 IF X=0 THEN GOTO 130
80 GOTO 30
100 LET S=S+1
110 CLS
120 PRINT AT 0,0;"SCORE=";S
130 IF Y$="1" THEN LET X=12
140 IF Y$="2" THEN LET X=25
150 GOTO 10
160 CLS
170 PRINT AT 0,10;"LETTER KRAZY"
180 PRINT AT 4,0;"SELECT DIFFICULTY LEVEL"
190 PRINT "1 OR 2"
200 INPUT Y$
210 IF Y$="1" THEN LET X=12
220 IF Y$="2" THEN LET X=25
230 CLS
240 GOTO 5

```



Letter crazy tests the skills of those learning to type, or trying to get acquainted with the ZX-81 keyboard. A letter will appear on the right of the screen and move quickly towards the left of the

screen. Press the corresponding key on the keyboard to score a point.

Written for the 1K ZX-81 by J Parkinson of Borehamwood, Hertfordshire.

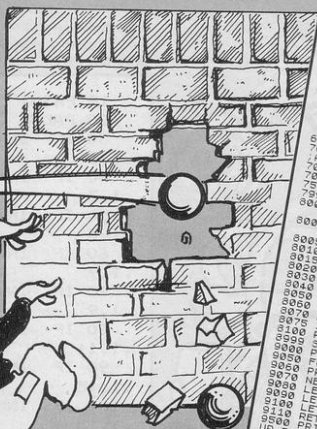
Letter Crazy



A wall of grey bricks appears at the top of the screen. This can be broken down using a bouncing ball. You move a bat at the bottom of the screen using keys five and eight. Each time you miss a ball, a new one will appear, and you have ten balls altogether.

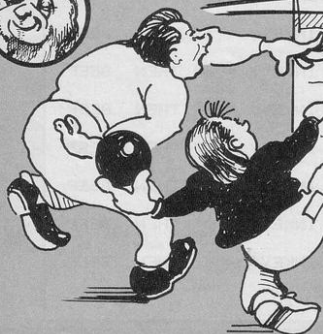
Simple Breakout was written for the 16K ZX-81 by Steven Harrison, aged 14, of Blaydon, Newcastle upon Tyne.

Simple Breakout



```

10 GOSUB 3000
20 GOSUB 3000
30 IF PEEK (33+Y+X+1) PEEK 1639
64266+PEEK 16397)R THEN GOSUB 7
000
50 PRINT AT Y,X;A$
60 PRINT AT Y,X;A$
70 PRINT AT 20,Y;A$
80 IF Y=0 OR Y=16 AND ABS (H-
90 IF THEN LET U=0
140 IF X=2 OR X=30 THEN LET U=
150 IF Y=20 THEN GOSUB 3000
160 LET Y=Y+1
170 LET Y=Y-1
180 GOTO 50
190 PRINT AT Y,X;A$
200 IF Y=0 OR Y=16 THEN LET Q=0
210 RETURN
220 STOP
230 PRINT AT 19,0;
240 PRINT AT 20,0;
250 LET A=41
260 PRINT AT 0,7,5
270 IF A=165 GOTO 9500
280 LET S=CHR$ (A)
290 LET Y=16
300 LET H=INT (RND*26+4)
310 LET M=1
320 LET O=1
330 IF AND 1
340 IF AND 1.5 THEN LET U=-1
350 STOP
360 PRINT "SCORE "
370 PRINT "J=1 TO 126"
380 NEXT J
390 LET S=156
400 LET S=0
410 LET S=136
420 RETURN
430 PRINT AT 10,2;
440 PRINT "IS "INT (S*1000/3618)
450 "10 " PERCENT
    
```



Biorhythm



Biorhythms are recurring cycles of physical, emotional or intellectual activity which are said to occur in people's lives. Use this program, written for the 16K ZX-81 by A West of Dolphinhole, Lancaster to chart your biorhythms and see if you believe the theory holds true for you. Input the day, month and year of your birth, followed by the month and year for which you would like your rhythms charted.

```

5 LET A$=" "
10 PRINT AT 0,0;"NAME";
20 INPUT N$
30 PRINT TAB 16,N$;AT 2,0;"INP
UT: A=";AT 4,0;"DATE OF BIRTH"
" B " C ";AT 6,0;"MONTH + YEAR"
40 INPUT A
50 INPUT B
60 INPUT C
70 INPUT D
80 INPUT E
90 PRINT AT 4,16;A;A$;B;A$;C;A
100 PRINT AT 19,1;"PHYSICAL,MEN
TAL OR EMOTIONAL?"
110 LET T=INT (((E-C)*365.25)+(
120 IF INKEY$("<") THEN GOTO 16
130 IF INKEY$(">") THEN GOTO 16
140 IF INKEY$="P" THEN LET X=23
150 IF INKEY$="E" THEN LET X=23
160 CLS
170 PRINT "MENTAL "EMOTIONAL" AND X=23
180 AND X=23; AND X=33; PHYSICA
190 PRINT AT 1,0;" "N$
200 A$;D;A$;E;" "N$
210 AT 11,31;" "AT 9,31;
220 PRINT AT 10,0;" "
230 LET Z=2*PI*(T-INT (T/X))
240 LET W=2*PI*(33-X)*.03
250 FOR Q=Z TO Z+W*.8 STEP .5
260 PRINT AT 10+5*INT Q/7,(Q-Z)*
270 IF INKEY$="" THEN GOTO 320
280 GOTO 140
    
```





1 Decathlon	Ocean
2 Knight Lore	Ultimate
3 Jet Set Willy	Software Projects
4 Ghostbusters	Activision
5 Lords of Midnight	Beyond
6 Manic Miner	Software Projects
7 Underwulde	Ultimate
8 Sabre Wulf	Ultimate
9 Matchday	Ocean
10 Pyjamarama	Mikrogen

HEIGHTS ↑ DEPTHS ↓

1 Transylvanian Tower	Richard Shepherd
2 3D Tunnel	New Generation
3 Horace Goes Skiing	Psion
4 Great Space Race	Legend
5 Full Throttle	Micromega

To register your votes, let us know the program you like most, and the program you hate most. Add your name and address, which will make you eligible for the £10 chart prize. Send your votes to CHARTLINE, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

Winner of this month's chart prize is Alun Davies of Liverpool.

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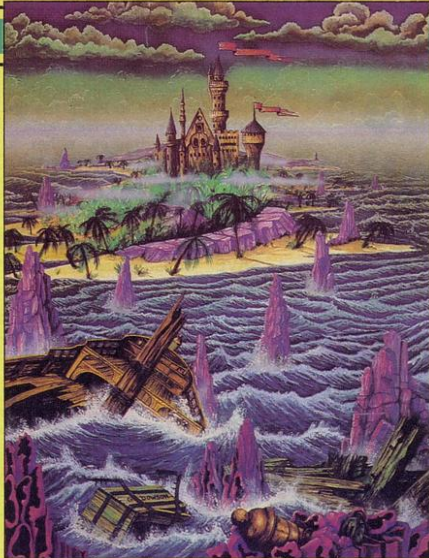
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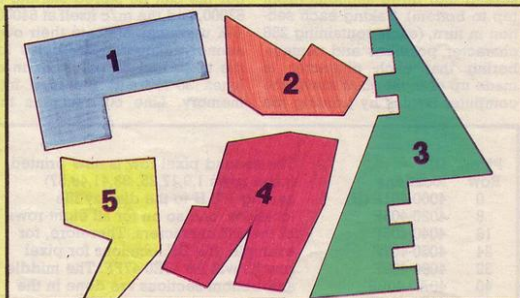
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ENTRY FORM

HOW TO ENTER

There are five keys to the Emerald Isle. Unfortunately, due to crystallising problems within the Bermuda triangle, each one has doubled in size. In each case, one line will divide the five shapes below so that the area of each half is equal. Work out exactly where the dividing lines should go, then mark them on the entry form and send it, together with your name and address, to Sinclair Programs, Priory Court, 30-32 Farrington Lane, London EC1, to arrive on or before April 30th.



Machine code vertical scroll

VERTICAL scrolling is more involved than sideways scrolling because we require a clear understanding of how the Spectrum display file works. To make the learning task easier, the problem is best tackled in two stages. In this first part, you will find out how the display file is set up and how to use a small machine code (m/c) routine to set up the data required for the scroll routines themselves in the next part.



For sideways scrolling, all we had to know about the display file was that it occupies memory locations from 16384-22527 (hex 4000-57FF). The routines we used which rotated the bit patterns of each consecutive byte of the display file may have created the illusion that the computer was also working progressively up and down the screen. You might like to go back to one of the two routines in the last issue and change line 60 to read LD B,96 (instead of LD B,192). This line sets the loop counter for the number of rows to be scrolled. Halving the number of rows does not mean scroll just the top half of the screen, as you will find out.

The Spectrum translates the bits of the display file into dots on the screen, by first dividing the screen into three sections (from top to bottom). Taking each section in turn, (each containing 256 character positions and remembering that each character is made up of eight pixel rows), the computer begins by printing the

top pixel row of all 256 characters as shown in fig. 1.

Note that hex notation is used for DF locations. This is because a hex number can be divided into a high and low order byte (explained in last article), and it makes it easier to work out a set of rules governing changes to both parts for a m/c routine which works out column 0 addresses for all pixel rows (these will be pre-computed and stored in a "file" for use by the scroll routines later). These rules are:

1. The start addresses for each section are 4000 H (HOB=40H LOB=00H), 4800 H (HOB=48H, LOB=00H) and 5000 H (HOB=50H, LOB=00).
2. For a group of eight pixel rows (one character row), HOB increases by one for each pixel row.
3. A new character row resets HOB (reduce HOB by eight), except for a change to a new section (when eight character rows have been done).
4. The LOB changes by character row (i.e. it is identical for all pixel rows within a group of eight). Thus, a new character row increments LOB by 20H and resets to zero at start of new section.

The program to set up the file of Column 0 addresses based on these rules is listed as Program 1 (Basic and Assembler). First, the Basic: Line 15 sets RAMTOP to 62999 so that, for a 48K Spectrum, our file can be stored starting at 63000, and the m/c itself at 64000. 16K users can allocate their own memory allowing 384 bytes for the table and 38 bytes for m/c. Lines 30-40 read the m/c into memory. Line 60 executes the

code and sets up the file. Lines 65-88 allow you to PEEK the file just created and receive a table of column 0 addresses, either in decimal or hex. It will give you a much better guide to screen locations than any published source. If you type GO TO 90, the m/c will be SAVED to cassette. You can also save the file by typing: SAVE "addresses" CODE 63000,384.

The flowchart in Figure 2 will help you to understand the assembler listing (encapsulated in line 40 of the Basic). Line 30 loads the start of the display file into the BC register pair and line 40 loads the start of the file we wish to create into HL. Register pairs are obviously necessary because both numbers are two bytes long. There are only three register pairs to choose from when setting up addresses in this way: BC, DE and HL. HL is the favoured register pair and is the best choice for two byte numbers which have to be manipulated the most. The "£" sign in line 30 is the way my assembler/printer combination indicates a hex number i.e. LD BC,4000H. As I have already said, hex numbers are best for display file addresses, especially as we

Program one:

```

10 REM Program one-display file
   addresses (column 0)
15 CLEAR 62999: LET h=" "

20 LET s=0: FOR i=64000 TO 640
37: READ n: POKE i,n: LET s=s+n:
   NEXT i
30 READ sum: IF s < sum THEN
   PRINT "error in data entry-qty
   pe line 40": STOP
40 DATA 1,0,64,33,24,246,22,0,
   113,35,112,35,4,120,230,7,32,246
   ,121,198,32,79,20,122,214,24,200
   ,122,230,7,40,232,120,214,8,71,2
   ,4,228,3628
50 PRINT "data entry o k " : "no
   running machine code": PAUSE 10
60: CLS
60: RANDOMIZE USR 64000
65 INPUT "Do you want to inspe
   ct a table of results?" : IF s="n"
   THEN STOP
66 INPUT "Decimal (d) or Hexad
  ecimal (h)?" : IF s="d" THEN
   GO TO 66
67 IF s < "d" AND s < "h"
   THEN GO TO 66
70 PRINT "TABLE OF COLUMN 0 AD
   DRESSES" : "ROW ADDRESS ROW ADDR
   ESS"
80 FOR i=1 TO 192: LET m=i*2-2
   : LET d=PEEK (63000+m)+256*PEEK
   (63001+m): IF s="d" THEN GO
   TO 86
82 FOR x=4 TO 1 STEP -1: LET x
   1=d-INT (d/16)*16: LET h$(x)=C
   HR$(x+1) CODE "0"+7*(x1>9): LET
   d=INT (d/16): NEXT x
84 PRINT i: "h$,": GO TO 88
86 PRINT i: "d",
88 NEXT i
89 STOP
90 SAVE "dfcode" CODE 64000,38
    
```

Pixel Row	DF locations
0	4000-401F (H)
8	4020-403F
16	4040-405F
24	4060-407F
32	4080-409F
40	40A0-40BF
56	40E0-40FF

The second pixel row is now printed (pixel rows 1,9,17,25, 33,41,49,57) adding 100 H to the display file locations, and so on for all eight rows of the 256 characters. Therefore, for example, the DF locations for pixel row 63 will be 47E0-47FF. The middle and bottom sections are done in the same way.


```

10 ;ASSEMBLER FOR PROGRAM 1- DISPLAY FILE ADDRESSES
20 ;
010040 30 LD BC,64000 ;START OF DISPLAY FILE
2118F6 40 LD HL,63000 ;START ADDRESS OF STORE
1600 50 LD D,0 ;SET CHARACTER ROW COUNTER TO ZERO
71 60 STORE LD (HL),C ;STORE COL 0 ADDRESSES
23 70 INC HL ;WITH LOB FIRST
70 80 LD (HL),B
23 90 INC HL
04 100 INC B ;INCREMENT
78 110 LD A,B
E607 120 AND 7 ;TEST FOR NEW CHARACTER ROW
20F6 130 JR NZ,STORE
79 140 LD A,C
C520 150 ADD A,$20 ;ADD 32 TO LOB
4F 160 LD A,D
14 170 INC D ;INCREMENT CHARACTER ROW COUNTER
7A 180 LD A,D
D618 190 SUB 24 ;TEST FOR ALL 24 CHARACTER ROWS
C8 200 RET Z
7A 210 LD A,D
E607 220 AND 7 ;TEST FOR NEW SECTION
2BE8 230 JR Z,STORE
78 240 LD A,B
D608 250 SUB 8 ;DECREMENT HOB BY B
47 260 LD B,A
1BE2 270 JR STORE

```

now know that register B holds the HOB and C the LOB.

In line 50, a counter is set up in register D to hold the number of character rows processed, initially zero. Line 60 labelled STORE is the start of the loop. Lines 70-90 contain the four instructions needed to store a two byte number: two of these do the actual storing while two update the memory pointer HL. Note how the LOB in register C is stored first using the normal convention.

The storage instructions use the same principle of "indirect addressing" seen in the last article (for rotating the bit pattern of a location in memory). The use of brackets around a register pair always indicates indirect addressing where the contents of a memory location pointed to by the register pair (NOT the contents of the register pair) are to be manipulated.

For example, LD (HL),C means Load the memory location pointed to by HL with the contents of register C. Here we see the versatility of the HL pair as locations pointed to by BC or DE can only be loaded from (or to) register A e.g. LD(BC),A and LD(DE),A. Locations pointed to by HL can be loaded from (or to) registers A,B,C,D,E,H and L, so HL is the



obvious choice for transfer from B and C. You may well ask why the two bytes cannot be stored in one go? Unfortunately, there is no Z80 instruction to do this indirectly unless we specify an "absolute" address such as LD(63000),BC.

This would be all right for the first transfer but not for others to follow.

Line 100 increments the HOB by one with lines 110-130 testing for a new character row and jumping back to STORE if not. LD A,B in line 110 copies the contents of register B to A. This type of instruction is known as a "single register to register" copying instruction and is often used to get a number into the A register which offers the widest scope for manipulation. The manipulation here is done by AND, 7.

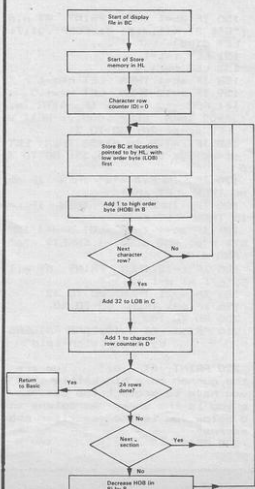


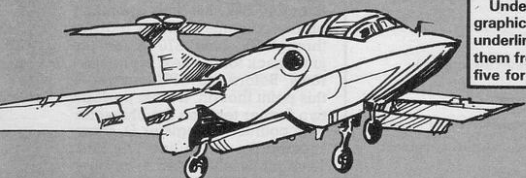
I briefly referred to logical operators last month. This is a good example of the use of the powerful AND which is here being used to check whether the HOB is divisible by 8 (to indicate next character row). Suppose B contains 48H (HOB) = BIN 01001000. By ANDing with 7 = BIN 00000111 (looks at each bit of both numbers in turn and gives 1 only if both bits are 1), the result in the A register is 0. Any number in B which is not divisible by 8 will give a non-zero result (try experimenting with a few numbers), and it is the non zero results we are using here to jump back to STORE in line 130. With the zero flag set by this AND, the routine can move on to the next character row and the LOB incremented by 20H. Lines 140-160 transfer the LOB from C to A registers and back again after the addition.

Provided we are still working with the same one-third section of the screen, the next step would be to reduce the HOB by eight (so

that, for example, the second row has column 0 addresses of 4020,4120...4720H. This is done by lines 240-260, this time operating on the contents of the B register through A. Line 270 gives the jump back for the next eight pixel rows. Before the CPU can get to this point though, it must perform two further tests on the character row counter in register D, incremented by one in line 170. First, have all 24 character rows been completed? If so, then the CPU can exit back to Basic. Lines 180-200 do this by subtracting 24 from D (again doing the actual operation in A) and RETURNing on the condition that the zero flag is set (called a "conditional return"). Next, have eight or 16 character rows been done? (marking the next section). If so, then we can jump back to STORE without reducing HOB by eight. For example, the last pixel row of the top section (row 63) has a Col 0 address of 47E0H. When line 170 is reached, b=48H and C=00H (E0H+20H=00H: remember our "milometer" analogy in the last article which can only read up to 255 (FFH) miles before resetting to zero?). 4800H is the first address of the middle section, so we can go back to STORE without altering HOB or LOB. To test for a new section, AND 7 can be used again, this time on the character row counter in D (line 220).

Figure two:





On the right of the screen is a dam which is under heavy attack from both air and sea. Your job, as the gunner on a battleship, is to protect the dam by destroying the remote-control enemy aeroplanes and submarines.

Dam Raiders was written for the Spectrum by Alec Letchfield of Chelmsford, Essex.

Underlined capital letters are those to be entered in graphics mode. Other graphics instructions have been underlined, and placed within brackets to distinguish them from the main body of the program. Refer to page five for help in entering these.

```
10 GO SUB 300
15 GO SUB 210
20 LET hs=0: LET os="alec"
30 LET sc=0: LET g=3
31 LET r=0: LET s=17+ INT (RN
D *4)+1
32 LET z=11: LET w=13
36 LET i=0: LET e=1+ INT (RND
*5)+1
50 LET d=13: LET d1=13: LET ab
=0: LET n=9
60 CLS
80 PLOT 0,79: DRAW 230,0: PLOT
230,0: DRAW 0,90
85 FOR i=0 TO 95 STEP 10
86 PLOT 230,1: DRAW 25,0: NEXT
i
90 PRINT AT 0,16: "WATER LEVEL
"; (" (LSB105:G5105) " AND q=3):
(" (LSB105:G5105) " AND q=3):
" AND q=1): IF q=0 THEN GO TO 2
60
100 PRINT AT 0,0: "SCORE "; sc
```

```
101 PRINT AT 11,11: "ACBD "
102 BORDER = PAPER 7
110 PRINT AT s,r: " "; INK 3: A
T s,r+1: "E"; AT s,r+2: "G"; AT s,
r+3: "H"
112 FOR u=r TO 27 STEP 1
115 IF r>17 THEN PRINT AT s,u
+5: ">"; AT s,u+4: " "; BEEP .01,u
: NEXT u: LET g=g-1: GO TO 31
120 PRINT AT e,i: " "; INK 2: A
T e,i+1: "I"; AT e,i+2: "J"
130 FOR k=e TO 19 STEP 1
140 IF i=29 THEN PRINT AT k+2
,30: "K"; AT k+1,30: " "; BEEP .01
,k: NEXT k: LET g=g-1: GO TO 32
```

```
150 IF ab=1 THEN PRINT AT n,d
: "E"; AT n+1,d1: " "; BEEP .01,7:
LET d1=d
151 LET i=i+1
152 LET r=r+4
158 IF ab=1 THEN LET n=n-1
159 IF z=12 THEN LET w=w+3
161 FOR v=0 TO 60: IF ATTR (w,
13)=59 THEN BEEP .005,v: NEXT v
: LET sc=sc+20: GO TO 31
165 IF ATTR (n,d)=58 THEN LET
sc=sc+10: BEEP .005,33: GO TO 3
6
```

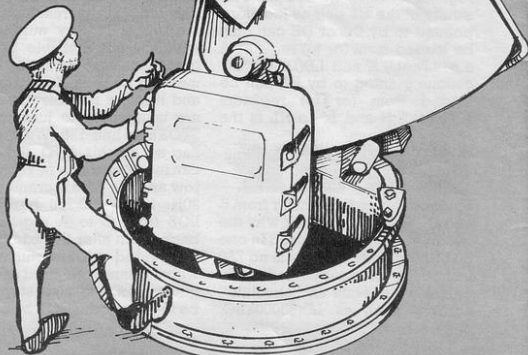
```
170 IF INKEY$="w" THEN IF ab
=0 THEN LET ab=1
180 IF INKEY$="q" THEN IF z=
11 THEN LET z=12
181 IF ab=1 THEN LET d=d+( INK
E$="p" AND d<30)-( INKEY$="o"
AND d>0)
185 IF z=12 THEN PRINT AT w,1
3: "X"; AT w-1,13: "
186 IF w>21 THEN GO TO 32
190 IF n=1 THEN GO TO 50
200 GO TO 100
210 PRINT AT 0,10: "DAM RAIDERS
by Alec Letchfield"
```

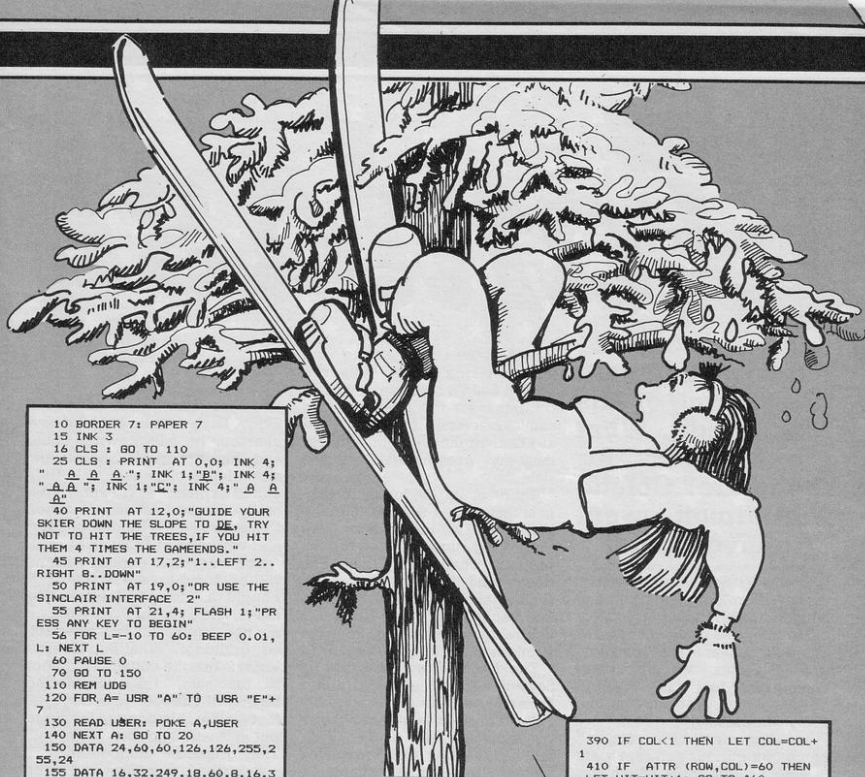
```
220 PRINT AT 3,0: " You are
the gunner on a battleship and
you have to protect the dam. Above
you is the enemy aeroplane and
below you is the nuclear sub-
marine"
225 PRINT " " You =
ACBD"
```

```
226 PRINT " " Aeroplane =
13"
227 PRINT " " Submarine =
FGH"
228 PRINT " " Missile left =
o"
229 PRINT " " Missile right =
p"
230 PRINT " " Fire missile =
w"
231 PRINT " " Fire detonator =
q"
240 PAUSE 0
250 RETURN
260 CLS : IF sc>hs THEN LET hs
=sc: INPUT "YOU HAVE TODAY'S HIGH
EST SCORE PLEASE ENTER YOUR NA
ME "; os
```

```
270 CLS : PRINT AT 0,10: "DAM R
AIDERS"; AT 7,0: "has today's
highest score of ";hs
275 PRINT "press any key to pl
ay again": PAUSE 0
280 GO TO 30
300 FOR f=1 TO 11
310 READ a$
320 FOR t=0 TO 7: READ a
330 POKE USR a$+t,a
340 NEXT t: NEXT f
350 DATA "a",31,28,28,255,255,2
55,127,63
360 DATA "b",130,134,142,255,25
5,255,255,255
370 DATA "c",132,132,196,255,25
5,255,255,255
380 DATA "d",0,64,255,254,252,2
48,240,192
390 DATA "e",8,8,28,28,28,28,62
,127
400 DATA "f",0,0,0,0,127,255,25
5,127
410 DATA "g",60,126,126,255,255
,255,255,255
420 DATA "h",0,14,8,8,254,255,2
55,254
430 DATA "i",0,0,224,240,248,25
5,255,255
440 DATA "j",0,0,0,96,240,254,2
55,254
450 DATA "k",124,56,16,56,124,2
54,124,56
460 RETURN
```

DAM RAIDERS





SKI

Use keys one, two and eight to guide your skier down the hill, round the trees, and to the end of her course. The faster your time, the better. Complete four screens to be nominated for the Olympics.

Ski was written for the Spectrum by Stephen Nichols of Lewes, East Sussex.

Letters to be entered in graphics mode have been underlined>.

```
10 BORDER 7: PAPER 7
15 INK 3
16 CLS : GO TO 110
25 CLS : PRINT AT 0,0: INK 4:
" A A A "; INK 1;"B": INK 4:
" A A "; INK 1;"C": INK 4;" A
A"
40 PRINT AT 12,0:"GUIDE YOUR
SKIER DOWN THE SLOPE TO DE, TRY
NOT TO HIT THE TREES, IF YOU HIT
THEM 4 TIMES THE GAMEENDS."
45 PRINT AT 17,2;"1..LEFT 2..
RIGHT 8..DOWN"
50 PRINT AT 19,0:"OR USE THE
SINCLAIR INTERFACE 2"
55 PRINT AT 21,4: FLASH 1;"PR
ESS ANY KEY TO BEGIN"
56 FOR L=10 TO 60: BEEP 0.01,
L: NEXT L
60 PAUSE 0
70 GO TO 150
110 REM UDG
120 FOR A=USR "A" TO USR "E"+
```

```
7
130 READ USR: POKE A,USR
140 NEXT A: GO TO 20
150 DATA 24,60,60,126,126,25,2
55,24
155 DATA 16,32,249,18,60,8,16,3
2
160 DATA 8,4,159,72,60,16,8,4
9,161,161
162 DATA 255,1,1,1,121,73,73,73
163 LET SCREEN=1
165 LET HI=99
169 LET D=50
170 REM VARIABLES
171 IF D >= 240 THEN CLS : PRI
NT AT 16,0:" CONGRATULATIONS!
YOU SHOULD ENTER THE QLY
MPICS!": FOR U=1 TO 50: BEEP 0.0
1,U: NEXT U: LET D=50: LET SCREE
N=1: GO TO 510
173 CLS
180 LET TIME=99
190 LET ROW=1: LET COL=30
210 LET HIT=0
220 REM BACKGROUND
230 FOR I=1 TO D
240 PRINT AT INT ( RND *21), (
RND *30): INK 4;"A"
250 NEXT I
255 PRINT AT 21,20:"SCREEN ";S
CREEN
260 PRINT AT 0,0:"TIME ";TIME
270 PRINT AT 0,11:"BEST ";HI
280 PRINT AT 0,24:"HITS ";HIT
```

```
285 LET A$="B"
290 REM PRINT SKIER
298 PRINT AT 20,0:"DE"
300 PRINT AT ROW,COL: INK 1;A$
305 PRINT AT ROW,COL: " "
310 LET K$=INKEY$
320 IF K$="6" OR K$="1" THEN L
ET COL=COL-1: LET A$="B"
330 IF K$="7" OR K$="2" THEN L
```

```
ET COL=COL+1: LET A$="C"
340 IF K$="8" OR K$="3" THEN L
ET ROW=ROW+1
360 IF ROW>20 THEN LET ROW=ROW
-1
370 IF ROW<1 THEN LET ROW=ROW+
1
380 IF COL>30 THEN LET COL=COL
-1
```

```
390 IF COL<1 THEN LET COL=COL+
1
410 IF ATTR (ROW,COL)=60 THEN
LET HIT=HIT+1: GO TO 460
425 IF ROW=20 AND COL=1 THEN F
OR F=1 TO 25: BEEP .15,F: NEXT F
: GO TO 550
429 IF TIME=9 THEN PRINT AT 0
,61: " "
430 PRINT AT 0,0:"TIME ";TIME:
LET TIME=TIME-1: IF TIME <= 0 T
HEN BEEP 1,1: GO TO 500
435 IF HIT=4 THEN GO TO 500
440
445 PRINT AT ROW,COL: INK 1;A$
446 PAUSE 5
450 GO TO 305
460 BEEP 0.1,1: BEEP 0.1,9
470 PRINT AT 0,24:"HITS ";HIT
```

```
475 IF HIT=4 THEN GO TO 500
480 LET ROW=ROW+1: LET COL=COL-
1
490 GO TO 310
500 PRINT AT 10,60: FLASH 1;"G
AME OVER"
505 FOR I=10 TO -20 STEP -1: BE
EP 0.01,I: NEXT I
510 PRINT AT 19,3:"PRESS 'O' F
OR ANOTHER GO "
520 IF INKEY$="O" OR INKEY$
="5" THEN LET SCREEN=1: LET D=5
0: LET HIT=0: GO TO 170
530 GO TO 520
550 PRINT AT 10,8: FLASH 1;"CO
NGRATULATIONS!": FOR I=1 TO 50: B
EEP 0.015,I: NEXT I
570 LET T=99-TIME: IF T<HI THEN
LET HI=T
580 LET D=D+1.5: LET SCREEN=SCR
EEN+1
585 PAUSE 120: GO TO 170
590 GO TO 580
600 SAVE "SKI" LINE 1
```


Fantasy

Fantasy Software has a string of hits to its credit. What are its plans for the future? Colette McDermott went to investigate.

FANTASY Software appears to have broken up. Programming brain Bob Hamilton, according to the news on the street, has decided to leave the company. Does this mean we are experiencing the first case of pop-group-split-up syndrome in the computer industry?

Realising my duty to you, and being of a curious nature, I went in search of the truth. Lunch was arranged. Would the atmosphere be tense?

Paul Dyer and Bob Hamilton are the joint directors of Fantasy. They appeared relaxed and on good terms, was this to fool their public? Using my close questioning technique I established that underneath this humorous and outwardly friendly facade the old friendship really was intact and that their personalities are still in perfect harmony.

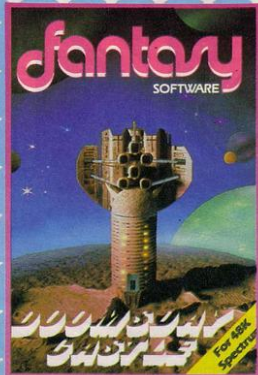
They sat together, as though shielding each other from my scrutinizing and mighty pen. When talking they constantly looked to each other for assurance that what was being said was accepted; it usually was. Paul is the more public man of the partnership, used to dealing with the world at large, and he often, but politely, took over Bob's conversation as though defending him from me, as if that should be necessary!

It was immediately established

that Bob was not leaving, but merely taking a well deserved rest. "I need a break from writing programs for the Spectrum and similar machines. I've gone as far as I can, for the moment, and fear that my work might become stale."

There is no evidence to suggest that such a thing is happening. Indeed all their games have been a big success in the top ten program chart. With titles like **Beaky and the Egg Snatchers**, **Doomsday Castle**, **The Pyramid** and **Backpackers Part 1** this successful partnership is going from strength to strength.

The Pyramid was released in September 1983 and **The Super Pyramid** will be released early this summer. It is a sequel, with the same scenario as The Pyramid and the plot revolving around the same character.



Ziggy. In the original version Ziggy zaps the aliens, but in the new one they also attack and fire at him. There are not as many chambers but the game is going to be more difficult. An extra fea-

ture has also been added to Ziggy. Each time he enters a new chamber he falls down a chute and his backpack shoots him around the chamber. "It's difficult to explain," said Paul, "but it really has the best arcade action I've ever seen." The Super Pyramid will retail at £7.50.

Bob went on to explain what he will be doing for the next year "I bought a cottage deep in the countryside so that I can work on my new projects." Paul interjected, grinning: "What Bob doesn't know is that the cottage next door is for sale, I'm considering buying it. The lounge is huge, 20 feet square, big enough for me to put a giant snooker table in!" They grinned at each other.

Bob wants to design and write some games for the QL "There is a growing market and it is not being catered for. I have been 80 per cent happy with the work I have already done and I now feel that I have reached saturation point," he said.

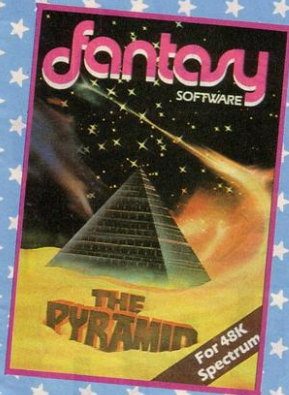
Fantasy Software is owned by Paul and Bob, each holding 50 per cent of the company. Paul spoke again with a more serious tone in his voice. "We have worked hard over the last two years setting up the company, sometimes sitting up all night to make sure the programs work properly." They both confessed that they are poor games players "Bob's worse than me," said Paul.

"We've had some near disasters, which were always caused by distributors going into receivership, but we have been able to weather this, unfortunately a lot of companies have not."

Backpackers Part 1 galloped straight into the charts on its release, but in nearly did not make

it, Paul explained "We got into a legal squabble with the author of *Hitch-hikers Guide to the Galaxy* because of the title we had intended to use. We managed to resolve this and in fact we may be doing a project sometime with the publishing house. Anyway, the game was meant to be released in September 1984. All the distributors and retailers were waiting for it and we had begun advertising.

Just as it was ready to go off for duplication we discovered an error in the program. We ended up sitting up 24 hours a day, Bob rewriting while I gave moral support and Ann, my fiancée making the coffee. Having sorted that one out, and knowing that the duplicators were on 24 hour stand-by we dashed off and headed for the motorway — and found ourselves fog bound!



The duplicators got straight on with the job as soon as we arrived and all the retailers had vans waiting to take the game away. Backpackers Part 1 was on sale in the shops 18 hours after we arrived at the duplicators. I would really like you to mention the duplicators because of all the hard work they put into it." Well, alright Paul, but just this once. Their name is I.T.D.

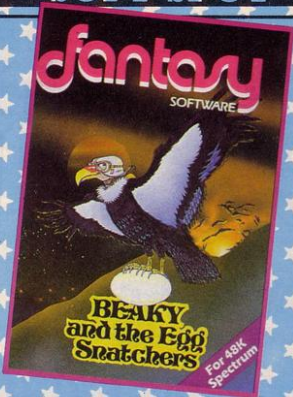
Partnerships, as we know, begin in some of the most obscure places, Bob and Paul are no exception. They worked for an engineering firm involved in aerospace technology, but on dif-

ferent projects, Paul, at this stage, was determined to tell me all about his work there, but again my skills were called into play. "No Paul," I thought "you are wandering off the subject." Using all my subtle and persuasive charm I butted in. "Paul, I don't want to know about that!" It worked.

Having eventually got to know each other Bob began to confide in Paul his idea of making a computer game. "He wasn't sure how to go about the business side of it," continued Paul, having taken my hint about waffling in a most gentlemanly manner. "I felt that I could handle the business side, I've always had a flair towards that sort of area. We threw up our steady and secure jobs. It was quite a wrench. Although we had worked hard there we never felt the pressure that comes with running your own business."

"Our first company was called Quest Software," continued Paul "the two games we produced, **Black Hole** and **Violent Universe** received a marvellous response from the public and distributors alike. However, after six months of trading and establishing ourselves we received a severe letter from solicitors of another firm trading under that name." Bob sat glumly recalling the event. Paul continued. "It was apparent from our solicitors that we must change our name."

Paul and Bob would like to thank Lloyds Bank for their help in finding a name for the company. They look at each other and grin. Bob's expression to Paul was "you-tell-her." "Well," began Paul. "We had a visit from an amazingly boring banker," Bob laughed "you could say he was a boring banker from a boring

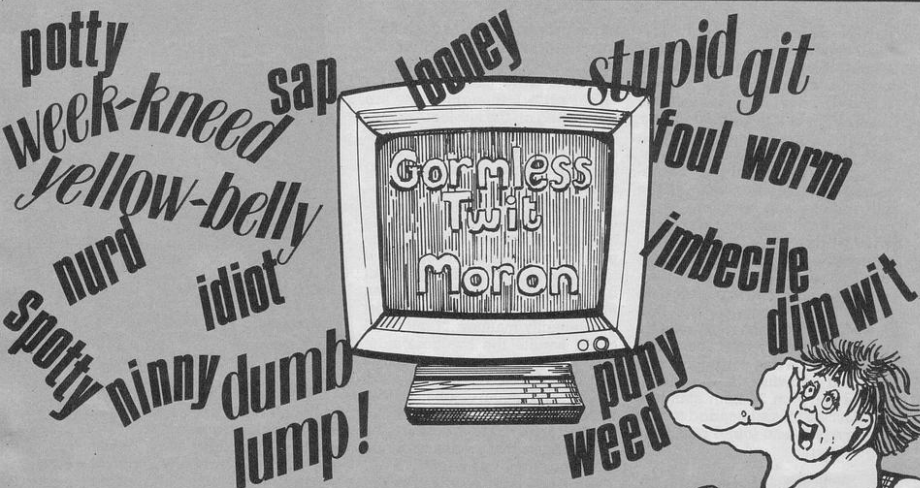


bank on boring business." We all roared with laughter. Bob at this stage was looking very boyish and tried to avoid eye contact, which is yet another of my truth uncovering techniques. Just what did happen with the boring banker, had Bob subjected him to some dastardly deed? Yes, he had committed the sin of dozing off. "But at least he had the decency to keep his eyes open," continued Paul. Suddenly Bob jumped out of his seat and cried "I've got it, we'll call ourselves Fantasy Software."

Fantasy Software have now been in business for 18 months and both Paul and Bob are delighted with the success they have achieved. It is because of this success that they can afford to let Bob have a break.

So what will Paul be up to? "I shall continue with my work but I want to pursue some other projects. I have been approached to manage a few enterprises, one of which is a pop group."





You may have heard of the famous program, Eliza, which takes on the role of psychiatrist, and which appears to have a sensible conversation with its 'patients'. Insulter also functions as a psychiatrist, but not the sort that anyone would like to meet. Any psychiatrist who calls you a "foul worm" at first sight, and then goes on to say that the fact that you have problems is the funniest thing that he has heard for weeks, must be lacking some of the professional graces.

Written by Simon Brodbeck for the 16K ZX-81. Insulter will antagonise anyone who runs it. Try it on your friends. Better still, try it on your enemies.



INSULTER

```

2 REM "INSULTER"
5 GOSUB 500
10 LET R$="WHO ARE YOU AND UHA
10 YOU WANT YOU "
20 GOSUB 1000
25 LET R$=R$+"?"
30 GOSUB 300
40 INPUT Y$
45 SCROLL Y$
50 LET Y$=Y$+"
57 LET R$="
60 IF Y$(1 TO 2)="HE" THEN LET
R$="PLEASE ELABORATE"
65 IF Y$(1 TO 4)="SHUT" THEN L
ET R$="SHUT UP YOURSELF"
70 IF Y$(1 TO 3)="UHY" THEN LE
T R$="SHUT UP, I'M SUPPOSED TO
DO THE ASKING"
75 IF Y$(1 TO 6)="NO " THEN
LET R$="NOBODY REFUSES WHEN I'M
AROUND"
77 IF Y$(1 TO 5)="OH " THEN
LET R$="TALKATIVE TODAY, AREN'T Y
YOU"
80 IF Y$(1 TO 4)="YOU " THEN L
ET R$="WHY BRING ME INTO IT?"
85 IF Y$(1 TO 5)="I DO " THEN
LET R$="NO YOU DON'T"
90 IF Y$(1 TO 5)="SHUT " THEN
LET R$="DON'T SPEAK TO ME LIKE

```

```

THAT"
95 IF Y$(1 TO 8)="YES I DO" TH
EN LET R$="NO YOU DON'T"
100 IF Y$(1 TO 6)="I HATE" THEN
LET R$="WELL SO WHAT, I HATE Y
U"
105 IF Y$(1 TO 8)="WHO SAYS" TH
EN LET R$="HE, AND MY WORD IS LA
W"
110 IF Y$(1 TO 7)="ARE YOU" THE
N LET R$="WHATS IT GOT TO DO WI
H YOU?"
115 IF Y$(1 TO 10)="NO IT ISNT"
THEN LET R$="YES IT IS"
120 IF Y$(1 TO 7)="SO DO I" THE
N LET R$="GLAD WE AGREE ON SOMET
HING"
125 IF Y$(1 TO 7)="SO WHAT" THE
N LET R$="YOU'RE A MANIAC, THAT
'S WHAT"
130 IF Y$(1 TO 10)="HOW REVOLT"
THEN LET R$="JUST LIKE YOU"
140 IF Y$(1 TO 9)="NO IM NOT" T
HEN LET R$="YES YOU ARE"
150 IF Y$(1 TO 11)="YES YOU ARE
" THEN LET R$="NO I'M NOT"
160 IF Y$(1 TO 12)="NO YOU AREN
T" THEN LET R$="YES I AM"
162 IF Y$(1 TO 11)="NO YOUR NOT
" THEN LET R$="YES I AM"
167 IF Y$(1 TO 13)="NO YOU'RE NO

```

```

T" THEN LET R$="YES I AM"
170 IF Y$(1 TO 8)="YES YES I AM" TH
EN LET R$="NO YOU'RE NOT"
180 IF Y$(1 TO 6)="I LIKE" THEN
LET R$="NEVER MIND WHAT YOU THI
NK"
190 IF Y$(1 TO 7)="I THINK" THE
N LET R$="YOU'RE NOT PAID TO TH
INK"
200 IF Y$(1 TO 7)="YOU ARE" THE
N LET R$="NO I'M NOT"
210 IF Y$(1 TO 9)="YOU ARENT" T
HEN LET R$="YES I AM"
220 IF Y$(1 TO 4)="I AM" THEN L
ET R$="DON'T BE STUPID, OF COUR
SE"
230 IF Y$(1 TO 9)="IM NOT" THEN
LET R$="DON'T TALK RUBBISH, YO
U ARE"
240 IF Y$(1 TO 5)="YOUR " THEN
LET R$="WELL WHAT ABOUT YOURS, T
HEN?"
250 IF Y$(1 TO 3)="MY " THEN LE
T R$="CAN'T YOU TALK ABOUT SOME
ONE ELSE FOR A CHANGE?"
260 IF LEN R$>0 THEN GOTO 30
270 LET F=INT (RND*16)
280 GOSUB (F*10)+300
290 GOTO 30
300 LET R$="STOP DIGRESSING"
305 RETURN

```



```

310 LET R$="ABRAHAM LINCOLN ONC
E SAID THAT"
315 RETURN
320 LET R$="YOU DO SPOUT RUBBIS
H, WHAT ON EARTH ARE YOU ON AB
OUT?"
325 RETURN
330 LET R$="WHY DON'T YOU GO A
ND PLAY ON THE M1?"
335 RETURN
340 LET R$="EXCUSE ME, YOU SEEM
TO HAVE DROPPED YOUR FALSE
TEETH"
345 RETURN
350 LET R$="BIT OF A BORE, AREN
A YOU?"
355 RETURN
360 LET R$="THAT'S THE KIND OF S
UB-ADOLESCENT INFATURATION I WOULD
EXPECT FROM A"
365 RETURN
370 GOSUB 1000
375 GOTO 300
380 LET R$="VERY INTERESTING I
DON'T THINK"
385 RETURN
390 LET R$="DID YOU KNOW THAT Y
OU'VE GOT A PIECE OF FLUFF HAN
DING FROM YOUR EAR?"
395 RETURN
400 LET R$="YOU" "VE GOT A BIG H
OUTH FOR A"
405 GOSUB 1000
410 RETURN
415 LET R$="THAT'S THE FUNNIEST
THING I" "VE HEARD FOR WEEKS"
420 RETURN
425 LET R$="WERE YOU ALWAYS SUC
H A JERK? LOOK AT ME-I" "M PER
FECT"
425 RETURN
430 LET R$="NEGATIVE LITTLE TUE
DE"
435 RETURN
440 LET R$="ARE YOU A POLITICIA
N, YOU"
445 GOSUB 1000
445 LET R$="?"
445 RETURN
450 LET R$="YOU" "VE GOT VERBAL
DIARRHOEA BY THE SOUND OF IT. N
OT UNCOMMON FOR A"
455 GOSUB 1000
460 RETURN
500 LET G=INT (RND*3)
510 IF G=0 THEN LET R$="ITS BEE
N REALLY BORING TALKING TO YOU.
SHOVE OFF"
520 IF G=1 THEN LET R$="GO AWAY

```

BEFORE I ELECTROCUITE YOU NEXT MO
RON PLEASE"
530 IF G=2 THEN LET R\$="OH BUZZ
OFF BEFORE I DIE OF ,BOREDOM
GOOD RIDDANCE"
535 GOSUB 200
540 GOTO 1100
550 CLS
560 IF INKEY\$="" THEN GOTO 650
570 PRINT

INSULTER

```

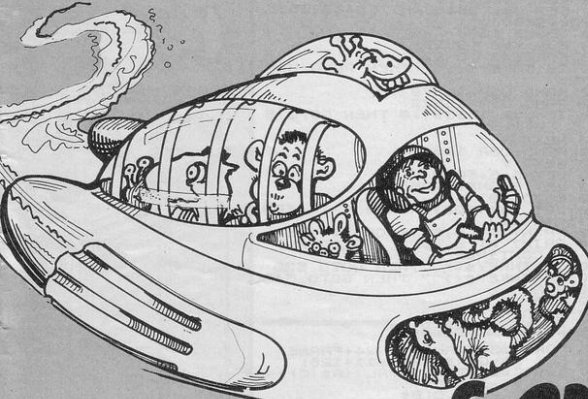
620 PRINT "HAVE A SESSION"
630 PRINT "WITH YOUR COMPUTER"
640 PRINT "PSYCHIATRIST"
650 PRINT AT 8,0,"HIT ANY KEY"
660 PRINT AT 8,0,"IF YOU DO"
670 IF INKEY$="" THEN GOTO 650
680 CLS
690 RETURN
700 SCROLL
705 IF LEN R$<32 THEN PRINT R$
710 IF LEN R$<32 THEN RETURN
720 PRINT R$(1 TO 32)
730 SCROLL
740 IF LEN R$<64 THEN PRINT R$(
33 TO LEN R$)
750 IF LEN R$<64 THEN RETURN
760 PRINT R$(33 TO 64)
770 SCROLL
780 PRINT R$(65 TO LEN R$)
790 RETURN
1000 LET R$="POTTYSTUPIDPEURILED
AFTCONSTIPATEDANHYDROUSREGURGITA
TEPOULSILTHEY"
1010 LET B$="LUNATICBUZZARPOHEG
RANETOTARDORHPESTILENCEHANIACHO
RONHOSQUIT"

```

```

1020 LET C$="?"
1030 LET D$="?"
1040 LET E$="?"
1045 LET B=INT (RND*9)+1
1050 LET R$=R$(CODE C$(A) TO
CODE C$(A+1)-1)+ "45$(CODE D$(
1) TO CODE D$(B+1)-1)"
1070 RETURN
1100 STOP
1200 SAVE "INSULTER"
1210 RUN

```



```

10 CLS
20 PRINT "R SANTY PRESENTS"
30 PRINT "LANDING"
40 PRINT "-----"
50 PRINT "GOOD LUCK"
60 LET T=0
70 LET H=500
80 LET U=50
90 LET F=120
100 PRINT "TIME: T, HEIGHT: H"
110 PRINT "VEL: U, PETROL: F"
120 IF F=0 THEN GOTO 140
130 PRINT "BURN? (0 TO 30)"
140 INPUT B
150 IF B=0 THEN LET B=0
160 IF B=30 THEN LET B=30
170 IF B>F THEN LET B=F
180 LET U1=U-B*5
190 LET F=F-B
200 IF (U1+U)/2>H THEN GOTO 22
210 LET H=H-(U1+U)/2
220 LET T=T+1
230 LET U=U1
240 CLS
250 GOTO 70
260 LET U1=U-(5-B)*H/U
270 IF U1>5 THEN PRINT "YOU CRA
SHED-ALL DEAD"
280 IF U1<1 AND U1<5 THEN PRIN
T "OK,BUT SOME INJURIES"
290 IF U1<1 THEN PRINT "GOOD L
ANDING"
300 STOP

```

LANDER

Today disaster struck Menagerie, the space ship zoo of galaxy nine, and the space ship was destroyed. In your escape pod you have several rare animals which you are attempting to rescue. Used to a relaxed life in zero gravity they will all be killed if you strike the ground at more than five parsecs an hour, and several will be injured if you land at more than one parsec per hour. By carefully controlling your use of fuel, can you make a perfect landing?

Lander was written for the 16K ZX-81 by Richard Santy, aged 10.


```

10 REM **DARTS BY DAVID ROONEY
**
20 BORDER 2: PAPER 1: INK 6: C
LS
30 GO SUB 8000: REM INSTRUCTIO
NS
40 REM DEFINE VARIABLES
50 LET A=1: LET B=1: LET C=20
0: LET D=20: LET E=0
60 REM SET UP DART BOARD
65 CLS
68 PRINT AT 0,0: INK 0: PAPER
7: "DARTS LEFT=";D: AT 0,14: "POI
NTS TO GET=";C
70 FOR F=2 TO 20 STEP 2: BEEP
.009,1: PRINT AT F,28: INK 7: "L
2+1sp": NEXT F: BEEP .5,10
80 FOR F=1 TO 19 STEP 2: BEEP
.009,1: PRINT AT F,28: INK 0: "L
2+1sp": NEXT F: BEEP .5,10
81 PRINT AT 6,3: FLASH 1: "ANY
KEY TO CONTINUE": PAUSE 0: BEEP
.5,0: PRINT AT 6,3: FLASH 0: "
82 DIM K(20): FOR H=1 TO 20

```

```

B3 LET K(H)= INT ( RND *19)+1
84 PRINT AT H,30:K(H)
85 NEXT H
90 PRINT AT A,B: INK 6: "AB"
100 LET A=+( INKEY$ ="z" AND A
<20)-( INKEY$ ="q" AND A>1)
110 LET B=B+1
120 BEEP .0,06,0
130 IF B=27 THEN BEEP .8,10: B
0 TO 150
140 GO TO 90
150 LET C=C-K(A)
180 LET D=D-1
185 IF E=0 OR E=1 THEN GO TO 1
90
186 IF D>0 AND C <= 0 THEN GO
TO 600
187 IF D=0 AND C <= 0 THEN GO
TO 600
188 IF D>0 AND C>0 OR D=C AND D
>0 THEN LET A=1: LET B=1: GO T
0,60
190 IF D=0 AND C>0 THEN GO TO
300

```

```

200 IF D>0 AND C>0 THEN LET B=
1: LET A=1: GO TO 60
210 IF E=0 THEN PAUSE 1: IF D>
0 AND C <= 0 THEN GO TO 400
211 IF E=1 THEN GO TO 500
300 FOR F=0 TO 7: FOR G=0 TO 7:
BORDER G: BEEP .001,F: NEXT G:
NEXT F
305 CLS
310 FOR F=1 TO 14
320 PRINT AT 10,F: "HARD LUCK!
": AT 12,F+2: "BEATEN AGAIN": AT
14,F+4: "MUTTON HEAD": BEEP .05
,F*2
330 NEXT F
335 PAUSE 0
340 GO SUB 9000: REM ANOTHER GA
ME
400 FOR F=0 TO 7: FOR G=0 TO 7:
BORDER G: BEEP .001,F: NEXT G:
NEXT F
401 CLS
405 FOR F=1 TO 10
410 PRINT AT 10,F: "EXCELENT":
AT 12,F+2: "NOW IT GETS HARDER"
: AT 14,F+4: "CHAMP": BEEP .05,F
*2
415 NEXT f
417 PAUSE 0
420 LET C=350
425 LET D=20
427 LET E=E+1
430 GO TO 200
500 FOR F=0 TO 9: FOR G=0 TO 7:
BORDER G: BEEP .009,F: NEXT G:
NEXT F
505 CLS
510 FOR F=1 TO 10: PRINT AT 6,
F: "WELL DONE!": BEEP .009,F: N
EXT F
520 PRINT : PRINT : PRINT " BUT
HAVE YOU GOT THE SKILL TO
WIN THE CUP"
530 PRINT AT 21,1: FLASH 1: "RE
MEMBER 101 WITH SIX ARROWS"
540 LET D=6: LET C=101: LET E=E
+1: LET A=1: LET B=1
545 PAUSE 0
550 GO TO 60
600 CLS: PRINT AT 2,3: BRIGHT
1: FLASH 1: "YOU'VE WON THE CUP"
605 PRINT AT 21,1: FLASH 1: "P
RESS A KEY": PAUSE 0
610 PLOT 90,40: DRAW 0,60: DRAW
60,0: DRAW 0,-60: DRAW -60,0
620 PLOT 150,90: DRAW 20,0: DRA
W 0,-40: DRAW -20,0
630 PLOT 150,80: DRAW 10,0: DRA
W 0,-20: DRAW -10,0
640 PRINT AT 12,13: FLASH 1: "T
EA"
650 BEEP .5,7: BEEP .5,7: BEEP
.5,7: BEEP .5,9: BEEP .5,7: BEEP
.5,7: BEEP .8,2: BEEP .5,4: BEE
P .5,2: BEEP .5,4: BEEP .5,6: BEE
P .8,7: BEEP .5,7
660 DIM A$(5): INPUT "ENTER INI
TIALS":A$: FOR F=1 TO 5: PRINT
AT 14,F+11:A$(F): BEEP .5,0: NEX
T F
670 PAUSE 100: GO TO 9000
8000 PRINT AT 0,8: "WELCOME TO D
ARTS"
8010 PRINT : PRINT : PRINT "HAVE
YOU THE SKILL TO SCORE MORETHAN
200 WITH JUST 20 DARTS HAVE
YOU THE SKILL TO SCORE MORETHAN
300 WITH JUST 20 DARTS HAVE
YOU THE SKILL TO SCORE MORETHAN
101 WITH JUST 5 DARTS "
8020 PRINT : PRINT " PRESS A K
EY TO FIND OUT"
8030 PRINT AT 13,3: "q" up
"z" down"
8400 PAUSE 0
8500 FOR F=0 TO 7: READ V: POKE
USR "A"+F,V: NEXT F: FOR G=0 TO
7: READ Q: POKE USR "B"+G,Q: N
EXT G
8510 DATA 248,132,130,127,127,13
0,132,248,0,130,255,255,130,0,
0
8600 RETURN
9000 CLS: PRINT AT 12,5: "ANOTH
ER GAME?(Y/N)": INPUT X$: IF X$=
"Y" THEN RUN
9010 PRINT : PRINT "BYE BYE"
9020 STOP
9100 SAVE "DARTS" LINE 1: VERIFY

```

Check your reactions with Darts, written for the Spectrum computer by David Rooney of Middlesbrough, Cleveland.

You must throw your dart from the left hand side of the screen and guide its flight in order to score 200 with 20 darts, 350 with 20 darts or 101 with 5 darts.



DOUBLE JUMP

```

1 BEEP .1,10: GO SUB 9000
10 RANDOMIZE : LET sc=0: LET 1
1=3
15 LET bus=INT ( RND *17)+2

20 GO SUB 1000
21 RANDOMIZE USR 32069
30 LET m=0
32 PRINT AT 1,1;"0 M.P.H."

35 IF INKEY$="" THEN GO TO
35
40 LET m=m+5+INT ( RND *6)
41 BEEP .17,.50: BEEP .1,.55

45 IF m>170 THEN LET m=170
50 PRINT AT 1,1;m;" M.P.H."

60 IF INKEY$ "<" THEN GO
TO 40
65 LET mp=m
70 LET z=INT ( RND *11)
80 LET m=m+(z-5)-40
90 LET j=9+INT (m/7.5+.5)
91 FOR o=1 TO 100: NEXT o
100 IF m<-5 THEN LET j=6
110 FOR n=1 TO 3
120 PRINT PAPER 6; AT 10,n-1;"
"; AT 10,n-1;" EG"
121 BEEP .1,.50
130 NEXT n
140 FOR o=10 TO 15: BEEP .01,o:
NEXT o: PRINT AT 10,3;" "; AT
9,5;"IH"; AT 9,5;" "; AT 8,6;"
IH": POKE 32046,10: RANDOMIZE U
SR 32044
160 IF j=6 THEN GO TO 200
170 FOR n=6 TO j
180 PRINT AT 8,n-1;" "; AT 8,n
1;" IH"
181 BEEP .1,-40: BEEP .1,-50: B
EEP .1,-59
190 NEXT n
200 FOR o=1 TO 5: BEEP .01,j: N
EXT o: PRINT AT 8,j;" "; AT 9
,j+1;"IH"; AT 9,j+1;" "; AT 10
,j+2;"IH"
220 IF j <> bus+7 THEN GO TO 2
000
230 POKE 32071,1: RANDOMIZE US
R 32069: FOR n=j+3 TO 29: PRINT
AT 10,n-1;" "; AT 10,n;" FB":
BEEP .1,-50: BEEP .01,45: BEEP .
01,55: BEEP .1,-59: NEXT n: POKE
32071,5
260 PRINT AT 10,29;"EG": RAND
OMIZE USR 32000
270 RANDOMIZE USR 32022: BORDE
R 7: PAPER 7: INK 0: CLS
280 PRINT AT 4,11;"GREAT JUMP"

290 PRINT AT 6,2;"YOU CLEARED
ALL.";bus;" BUSES AT"
300 PRINT AT 8,6;"A SPEED OF "
;mp;" M.P.H."
310 FOR x=1 TO 400: NEXT x

```

```

311 LET sc=sc+100
312 LET li=li+1
313 RANDOMIZE USR 32022: CLS

319 GO TO 15
999 STOP
1000 BORDER 5: PAPER 6: INK 0: C
LS
1010 PRINT AT 11,0; INK 3;" "
1020 PRINT AT 10,5;"AB"
1030 FOR n=7 TO bus+6
1040 PRINT AT 10,n;"E": NEXT n

1050 PRINT AT 10,bus+7;"DC"
1070 FOR o=3 TO 5: FOR l=0 TO 31
: PRINT AT o,l; INK 0: PAPER (
INT ( RND *5)+2);"L": NEXT l: NE
XT o
1075 PRINT AT 2,0;" "; FOR j=12
TO 21: PRINT AT j,0; OVER 1; IN
K 4;" "
1080 "": NEXT j:
1076 PRINT AT 7,0; INK 4; OVER
1;" "
1080 PLOT 0,152: DRAW 255,0
1090 DRAW 0,-32
1092 DRAW -255,0
1093 DRAW 0,32
1094 PLOT 0,128: DRAW 255,0: PLO
T 0,120: DRAW 255,0
1096 PRINT AT 6,8; BRIGHT 1; OV
ER 1;"S T U N T M A N"; AT 6,0;

```

```

OVER 1; BRIGHT 0; PAPER 7;" "
1099 PRINT AT 14,10; PAPER 3; I
NK 7;"SCORE:";sc;" "; AT 16,10;
PAPER 3; INK 7;"LIVES:";li;" "

1100 RETURN
2000 FOR n=1 TO 10: POKE 32046,
INT ( RND *10)+1: LET l=USR 320
44: BEEP .1,-50: BEEP .1,-50: PR
INT AT 10,j+2; OVER 1; BRIGHT 1
; FLASH 1;"JK"; AT 10,j+2; OVER
1;"KJ": NEXT n
2010 RANDOMIZE USR 32022: BORDE
R 7: PAPER 7: INK 0: CLS
2020 PRINT AT 4,3;"YOU HAVE CRA
SHED"
2040 FOR j=1 TO 300: NEXT j: LET
l=USR 32022
2050 LET li=li-1
2055 IF li <= 0 THEN GO TO 3000

2060 GO TO 20
3000 CLS : BORDER 0: PAPER 0: IN
K 6: CLS
3005 FOR z=0 TO 8: POKE 32046,12
: LET l=USR 32044: BEEP .1,-50:
BEEP .1,-45: PRINT INK 6; AT 1
4,z;" YOU SCORED ";sc: PRINT AT
14,z+19;" IH": NEXT z
3010 FOR z=0 TO 29: POKE 32046,
INT ( RND *5)+1: LET l=USR 3204
4: BEEP .1,-50: BEEP .1,-45: PRI
NT INK 7; AT 12,z;"END OF GAME.
NO LIVES LEFT " (z+1);"IH":

```



```

9260 FOR j=24 TO 29: BEEP .1,-50
: BEEP .1,-55: BEEP .1,-45: PRIN
T AT 18,j;" IH"; AT 19,j;" IH";
AT 20,j;" IH": NEXT j
9270 PRINT AT 12,8;"SINCLAIR PR
OGRAMS"; OVER 1: AT 12,8;"-----

```

```

9995 SAVE "STUNTMAN" LINE 1
9999 BORDER 7: PAPER 7: INK 0

```

58,254

```

,z;" IGSTUNTMANIG"(z+
1);"IH"; AT 20,z;" IGIGIGIGIG
IGIGIGIGIGIGIG"(z+1); "IH"; NEXT =

```

A line drawing of a double-decker bus, viewed from a front-three-quarter angle. The bus has two levels of windows. The front features a large rectangular grille with a central emblem, two round headlights, and two smaller round fog lights. The wheels are large and have a simple tread pattern. The drawing is done in a sketchy, hand-drawn style with black outlines on a white background.

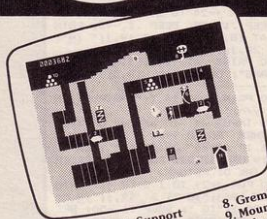


LOOK!

NOW THERE ARE HI-RES PROGRAMS FOR THE 16K ZX-81

3

FORTY NINER



1. Nuggets
2. Giant Rats
3. Burrowing Rat
4. Support
5. Cave In
6. Snake
7. Snake Nest
8. Gremlin
9. Mound
10. Pile of Earth
11. Cave

In 1849 the Great American Gold Rush started. Almost everyone who could sold up everything and dashed to the west coast to look for this precious metal – including you!

You must excavate this precious metal – but can you survive the giant rats and that vicious Gremlin which will come to infest your mine? Can you trick the snakes into leaving their comfortable nests and destroy the rats for you? Can you keep the Gremlin at bay?

Riches await you – but so do the hazards!

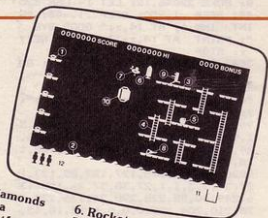
ROCKET MAN

Get rich quick by collecting Diamonds that are simply lying there waiting for you! Oh... I forgot to mention that there are one or two problems!

There is an expanse of shark infested water between you and the Diamonds and a strange breed of Bubble that seems hell bent on getting you in it! Somehow you must cross it...

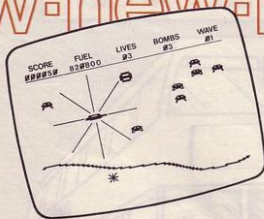
You have a Rocket Pack to help you (a Vulture on higher levels) but you must rush around the platforms and ladders collecting cans of fuel (legs of lamb with the Vulture) and cursing that weird Bubble. Once you have enough fuel then it's Chocks Away!

Oh... but don't run out of fuel on the way – otherwise it's... SPLASH!



1. Diamonds
2. Sea
3. Platforms
4. Ladders
5. Fuel Cans
6. Rocket
7. Vulture
8. Leg of Lamb
9. Player
10. Bubble
11. Fuel Gauge
12. Men remaining

Z-XTRICATOR



A long time ago, in a galaxy far, far, away a terrible war took place between two hostile races. Any prisoners taken could not expect to live very long in the hands of their captors. Their only hope lay with a group of valiant warriors – the XTRICATORS – whose task it was to rescue fellow beings from the alien planet's surface. You are about to take on the role of such a warrior...

Please send me:

	QTY	TOTAL AMOUNT
FORTY NINER £5.95		
ROCKET MAN £5.95		
Z-XTRICATOR £5.95		
TOTAL		

Available from all good computer shops or send cheque/P.O. for £5.95 (inc. P&P) to:

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