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BIRTHDAY  
**3RD**  
ISSUE

ANNIVERSARY  
COMPETITION



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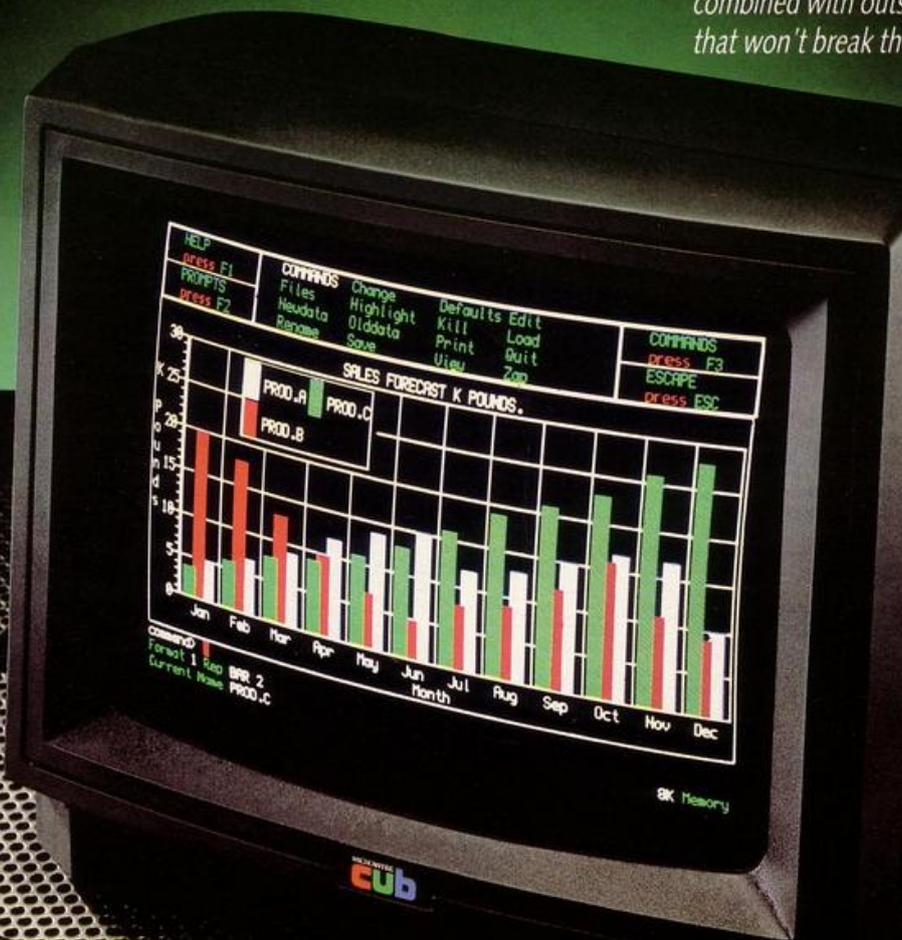
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MICROVITEC 653  
**CUB**  
COLOUR DISPLAYS



# CONTENTS

**Graphics** 5



Soft focus

**Editorial** 5

**Letters** 7

**News** 10

**Soft focus** 14

**Listings** 19

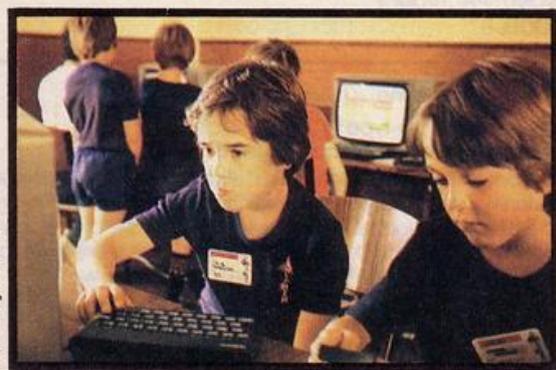
**Notice board** 28

**Questline** 30

**32 Listings** 38

**36 Sprogs** 39

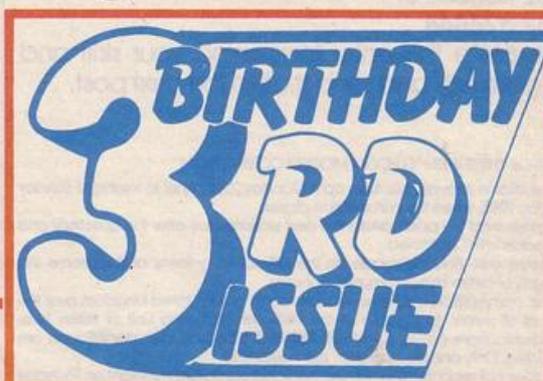
**37 Listings** 40



Holiday offer

**Special holiday offer** 42

**Program tutor** 44



**Anniversary competition** 49

**Chart** 50

**Pro-printout** 52

**Haunted belltower**

**Listings** 55

Link to Giant Mainframes and network to thousands of Micro users via your 'phone with free Modems and Comms software in the British Telecom Modem competition.

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British  
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(Monday 22nd April to Sunday 5th May 6pm to midnight)

For the 5 questions 'phone

01-627 3000 or  
021-449 9944 or  
031-225 8999

To get the Tiebreaker Sentence 'phone

01-627 1199 or  
0532 455030 or  
0632 324444

Complete the entry form using your skill and judgement, and send it off in the next post.

### RULES OF THE BRITISH TELECOM MODEM COMPETITION

- 1) The dial-in is available from 6pm Monday 22nd April to midnight Sunday 5th May 1985, when the competition closes.
- 2) Entries must be postmarked the next working day after the questions and tiebreaker were obtained.
- 3) Entries can only be made on the official entry forms and become the property of British Telecommunications plc.
- 4) The competition is open only to residents of the United Kingdom over the age of 18 years. Employees of the Network Marketing Unit of British Telecommunications plc and PARKER REDMILE LTD, and their dependants are excluded. Only one winning entry per household.
- 5) Entries not reaching the competition address before midnight on Thursday 9th May 1985 will not be considered.
- 6) A list of winners will be provided at the competition address. Please send an SAE if you wish to receive it.
- 7) The winners will be picked as follows from entries received on time and properly completed -  
The entries for each type of prize pack with all correct answers to the 5 questions and with the tiebreaker sentences judged most apt and humorous by the competition organisers will be chosen, subject to the stock of appropriate prize packs.
- 8) The decision of the competition organisers is final and no correspondence will be entered into. Winners will be notified automatically.
- 9) British Telecommunications plc offers winners requesting BT 'phone socket conversion on entry forms to waive the charge normally made for such work.
- 10) Details of how to get on Prestel/Micronet 800/Telecom Gold will be sent to winners. Subscriptions not included in prize.

### OFFICIAL ENTRY FORM

A. Your answers:

Q 1 .....  
Q 2 .....  
Q 3 .....  
Q 4 .....  
Q 5 .....

B. Tiebreaker Sentence complete (25 words or less in total):

" .....  
.....  
....."

C. If I win, I would like the prize pack for the

- SPECTRUM/SPECTRUM +  
 BBC MODEL B (Tick Choice)  
 COMMODORE 64

D. My home telephone line (\* Delete as appropriate)

- (a) already has a square-type BT 'phone socket \* or  
(b) would need converting to square-type BT 'phone socket \*

If (b), the person renting the line from British Telecom must fill in this declaration -  
If this is a winning entry, I agree to ask British Telecom to convert my line to square-type BT 'phone socket at a convenient date before 1st July 1985. My line is on Residential rental, is not a coinbox and is not shared service. I understand British Telecom will not charge for doing the work.

Name ..... (Block Capitals)

Telephone number .....

Signature .....

Date ..... 1985

E. I have read the rules of the British Telecom Modem competition and agree to abide by them. I am over 18 years old.

Signature of entrant .....

Date ..... 1985

Name ..... (Block Capitals)

Address .....

..... Postcode .....

POST IMMEDIATELY TO:-

British Telecom Modem Competition  
PO BOX 73  
MITCHAM  
SURREY  
CR4 2XU

SP

(Postage stamp required)

WINNERS WILL BE NOTIFIED AUTOMATICALLY

**W**ELCOME to our third birthday issue. The first issue of *Sinclair Programs* went on sale in May 1982, and contained forty programs written for the ZX-81 and ZX-80.

A year later we became a monthly, rather than a bi-monthly magazine and, since then, we have gone from strength to strength, expanding our editorial, and constantly improving the quality of our listings.

This month we are pleased to be able to offer you the chance of attending the first ever **Sinclair Programs computer holiday**. We have linked up with **Dolphin holidays**, who are computer camp specialists, to produce a very special holiday for Sinclair Programs readers.

Instruction at the camps is by experts, everyone will be able to use either a ZX-81 or a Spectrum and will have access to an enormous collection of hardware ranging from speech recognition systems to robot buggies.

For those people unable to attend the special **Sinclair Program** we have negotiated cut price rates on other Dolphin Computer Holidays. There are special reductions on both Basic and Advanced courses. Turn to page 42 for more details on this great offer.



**Editor**  
Rebecca Ferguson



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**Sinclair Programs is published monthly by EMAP Business and Computer Publications.**

Telephone 01-251 6222

If you would like your original programs to be published in Sinclair Programs, please send your contributions, which must not have appeared elsewhere, to:  
Sinclair Programs,  
EMAP,  
Priory Court,  
30-32 Farringdon Lane,  
London EC1R 3AU

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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Telephone 01-251 6222

**Cover Illustration—Craig Kennedy**

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.

## Interactive BASIC Programming for 48K ZX Spectrum & Spectrum + ATTENTION ALL SPECTRUM USERS!

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- Popular Computing Weekly 7/3/85

Britain is the Software Capital of the World - far superior to the U.S.A. The computer revolution is just beginning and as the emphasis shifts from hardware to software WE are best placed to shape the future. The writing's on the wall: get actively involved while the industry is young.

(Amstrad, MSX, Atari 800XL, CBM 64, BBC/Electron versions are in preparation.)

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2. SKI JUMP	20. TANKS	37. SPACE SEARCH
3. BASKETBALL	21. SOLAR SHIP	38. WINTERND
4. FROGGER	22. TEN PINS	39. NIM
5. BREAKOUT	23. CARPS	40. VOYAGER
6. CRUSHER	24. STOMPER	41. SKETCH PAD
7. STARTRAK	25. PINBALL	42. BLITZ
8. MARTIAN	26. CAVERN	43. FISHING MISSION
9. KNOCK OUT	27. LASER	44. MYSTICAL DIAMONDS
10. BOGGLES	28. ALIEN	45. GALAXY DEFENCE
11. ALIEN ATTACK	29. CARGO	46. CYPER
12. LUNAR LANDER	30. THE RACE	47. EL MACHIE
13. MAZE RATER	31. THE SKULL	48. BARREL JUMP
14. MICROTRAP	32. ORBIT	49. ATTACKER
15. MOTORWAY	33. MUNCH	50. SPACE MISSION
16. LABYRINTH	34. BOWLS	
17. SKITTLES	35. RAIDERS	
18. RACE TRACK	35. HELD	

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## More than Sufficient

FOLLOWING the repeated failure of my ZX-81 keyboard I decided to try to get hold of a new keyboard and replace it myself. First of all I phoned Sinclair Research. They could not help me, but gave me the number of CPC in Preston, who supply many Sinclair computer parts. However, when I phoned them I was told that, due to the fact that they had a minimum order charge, it would cost me £9.60, for four keyboards!

As I have only one ZX-81 I want only one keyboard. I now have four options: buy four keyboards, buy another sort of keyboard for around £30, send my computer to a repair shop to do a job that I could do myself, or keep my broken keyboard.

Is there anything that anyone can do to help me to get this spare part which should only cost a little over £2?

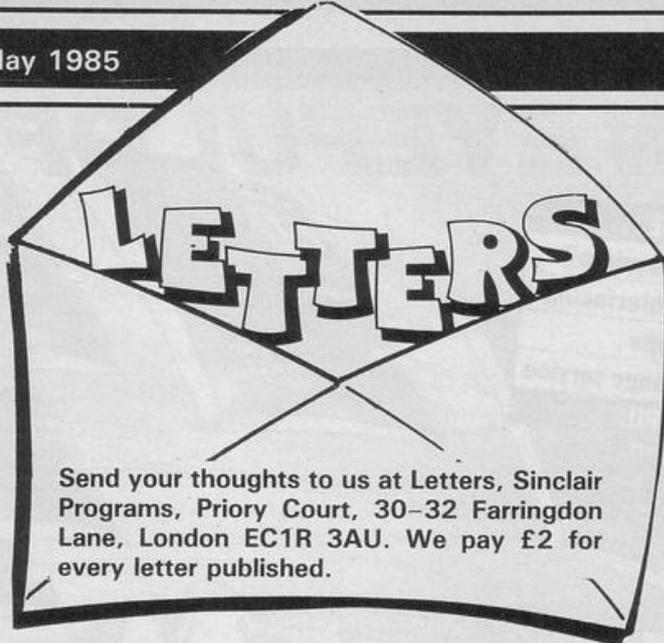
**Peter Sanson,**  
Wisbech, Cambs.



## Stuck on the roof

CAN ANYONE help me with **Jet Set Willy**?

My difficulty centres around the collection or, in my case, non-collection of the four bottles which are located on the Conservatory Roof. What I want to know is: what route do I have to take to gain access to the platform from which you



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.

jump up to collect the four bottles? I have attempted what I feel to have been every conceivable route, and have got absolutely nowhere.

For example, any attempt to jump across from the sloping section of the conservatory roof invariably results in an undignified and remaining-life-removing plunge through the Orangery into the Swimming Pool.

**Peter Lawrence,**  
Capel St Mary, Suffolk  
● Can anyone out there help Peter? Let us know if you can reach those four bottles.

## Beat that Ghostbusters

I AM dropping you a quick line to say that I have just scored my best amount of money on **Ghostbusters**. It is \$855,900, and I was wondering whether anyone has beaten this.

I have also found two bugs in the game. The first one is that, when you are driving your car

and a roamer is on the far left hand side, you cannot suck it up. The second one is that, after you have listened to the logo once, you don't get the words the next time.

Thank you for a brilliant magazine.

**Andy Herrod,**  
Leatherhead, Surrey.

## Total disagreement

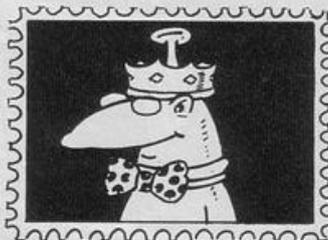
I TOTALLY disagree with your review on **Match Day**. I think that it is probably the best game on the market. You only rated it at 50%. I would have rated it at at least 90%.

**Gavin Wilding,**  
Thorndon, Suffolk

YOUR review of **Match Day** in March 1985 is totally wrong, and might put off would-be buyers. It is worth at least 90%, and is one of the best Spectrum games out. There are many others who would agree with me. It is one of those games which take a lot

of mastering, but once this is done it becomes comparatively easy. The graphics for this game are brilliant, and the movement is authentic, especially the goalkeeper.

**Stephen Luckin,**  
Littlehampton, Sussex



I AM writing to say just how annoyed I am about your review of **Match Day** by Ocean. How could you only give it 50%, the game is fantastic. My friends and I are always playing it. Looking through your magazine we see **Match Day** and read on in the hope of a good review, but we find nothing but comments on what is missing and not what is there. So, whoever reads this letter, **Match Day** is definitely value for money.

**Bradley Swift,**  
Rochdale, Lancs.

## Congrats all round

BRILL, fab, outstanding: what is it? The new-look *Sinclair Programs*, of course. The new magazine is absolutely incredible. Congrats to all, and keep up the good work.

**Michael Meagher,**  
Rosecrea, Ireland.  
● Obviously a man of taste.

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 the .....computer.

I guarantee that each program submitted is my original work.

Signed .....

Name .....

Address .....

# GET AN EYEFUL OF THIS!

INSIDE THE MAY ISSUE . . .

QL's Dilemma: PC or home micro?

Brother EP44 and TC600 interfacing

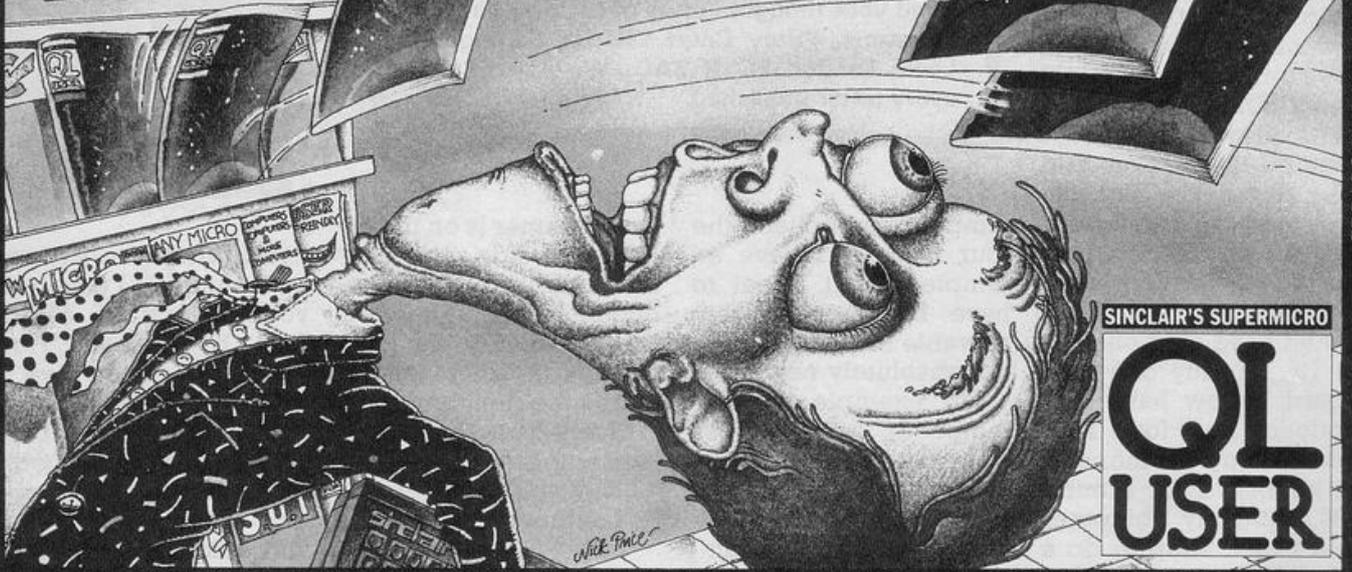
Psion problems page

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1984

Tuesday  
290-76 Week 42

16

**Sinclair User** magazine hits the street on the 16th of every month packed with enough material to keep both you and your Sinclair machine fully occupied until the same time next month.

**Sinclair User** magazine, is devoted entirely to the Sinclair ZX81 and Spectrum. Everything you need to know about the latest peripherals and software releases, as well as letters, book reviews, program listings and competitions. Plus special sections for beginners business and education. We even have a special telephone 'hotline' for those problems that just can't wait.

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INCORPORATING SPECTRUM USER



# A NEW, IMPROVED ZX81 KEYBOARD AT THE SAME OLD PRICE. £9.95.



There's only one thing wrong with the ZX81. Its keyboard.

Or rather its lack of one.

Since it's flat your fingers don't feel as if there's any response to the pressure put on the keys.

ZX81 KEYS

FILESIXTY KEYS

In other words, you're not quite sure which keys you've pressed until the screen actually tells you.

Our new, improved push button keyboard changes all that.

It matches the ZX81 perfectly. And the keys give a real calculator-type feel.

To set it up all you have to do is peel off the adhesive backing and stick it on top of the ZX81 touchpad.

Because no tampering or soldering is involved the guarantee is not affected. And it will last for up to 3½ million operations.

But our keyboard doesn't just come loaded with features. With it comes a separate overlay and a set of coloured stick-on labels to make game playing easier.

It's yours for the original price of £9.95.

Whichever way you look at it, we think you'll agree that it's a keyboard that's quite outstanding.

Orders to Filesixty Ltd., FREEPOST, London W9 2BR.  
Cheques/PO made payable to Filesixty Ltd.  
Please send me \_\_\_\_\_ (qty) Keyboards at £9.95 each  
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Total £ \_\_\_\_\_

Name \_\_\_\_\_

BLOCK CAPITALS

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\_\_\_\_\_  
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## FILESIXTY

Filesixty Ltd., 25 Chippenham Mews, London W9 2AN, England. Tel: 01-289 3059. Telex: 268 048 EXTLDN G 4087.

## Name game

FEBRUARY'S competition was held to decide the most apt name for a creature from Fantasy Software's game, **Backpackers Parts 1 and 2.**

Vincent Burne, Richard Church, David Green, Nagesh Verma, Daher Patrick, Mr I. F. Watts, Andrew Hunt, James Hill, Philip Marston, Neil Gallichan, Jonathan Clark, Duncan McAdam, Paul Colledge,



Fifty winners were chosen, and while we cannot list all the wonderful and hilarious names we think that some deserve a mention:

Tartanpunkas, Multi coloured Skunk Punk, Punkaggis, or perhaps Punk-u-Pine.

The winners, who will receive parts 1 and 2 of the Backpackers game, are:

Craig Herriot, P. Carroll, R. G. Hawley, Nathan Merrills, Jonathan Brewster,

Adam Ledger, Ken Senaei, Mr C. J. Haylett, William Turner, Andrew Smellie, Kevin Bradley, Martin Greenaway, Darren Purcell, Richard Harrison, Neil Drew, Andrew Morton, A. Downs, Stephen Price, J. Gordon, N. Bygate, R. Bayle, Robert Ward, Paul Cox, John Kemp, Mark Thornton, Glenn Field, Philip Evans, Innes Ferguson, J. Downton, Mark Sorrell, H. R. Hawkins, Agustin Malave, David MacFarland, Ed Mansell, Gavin Peebles, Denise Jennians, Ross Morley.

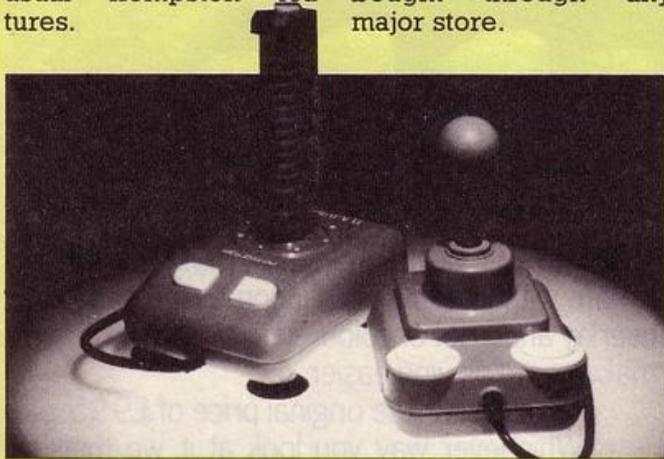
## Good move

**K**EMPSTON Micro Products have launched their new range of joysticks and interfaces, which went on sale on March 1st.

For £11.95 the **Formula 2** joystick is the cheaper of the two, the **Formula 1** will cost £16.95. They will have self centering and improved positive action in addition to the usual Kempston features.

The new interfaces begin at £9.95 for the **Kempston Joystick**, £18.95 for the **Pro joystick** and £39.95 for the **Centronics 'E' interface**. They will have more robust mouldings for increased durability and all will be compatible with the Spectrum Plus.

The new range can be bought through any major store.



## DISC-COVERY

**O**PUS Supplies launched a new range of disc drives in March which are compatible with both Spectrum and Spectrum Plus. They regard their new system as the first to seriously threaten the cassette loading systems.

The Discovery 11, which has duel drive capabilities can be bought for £329.95, or you can start off with the Discover 1 which, at £199.95, has a single disc drive and then upgrade it to a duel drive with the Discovery plus, which

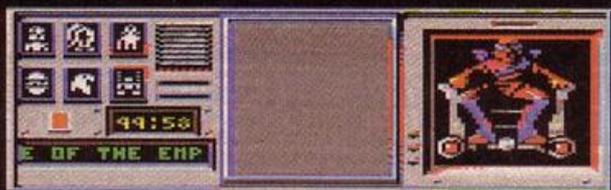
costs £139.95. The Discovery systems will only be available through Boots.

Boots have commissioned six top software houses to produce the first programs for the Discovery range. These will be on three and a half inch discs, costing £14.95 each. The programs and companies involved are: Activision, **Designer Pencil**, Micro-mega with three games on one disc, **Jasper**, **Code Name Mat** and **Kentilla**, Melbourne House with two games,

**Sports Hero** and **Mugsy**, Hewson Consultants with two, **Heathrow Air Traffic Control** and **Technician Ted**, Data Base Publications, **Mini Office**, a program with

word processing graphics and a data base; and Romantic Robot, **Advanced utility and file handling**. They are all now available, and more programs are promised.





-  PRESS F1 FOR KEYBOARD
-  PRESS F3 FOR DIGITAL JOY STICK
-  PRESS F5 FOR ANALOG JOY STICK
-  PRESS F7 FOR LIGHT PEN

## PARTING COMPANY

**B**YOND Software in March, has had a have decided to split their publishing operation into two separate companies. Adventure and strategy games will continue to be produced under the old Beyond Software label, while arcade games will be under the new label. Their first game, which remains unnamed, will be released in June.

**Shadow Fire**, released in March, has had a unique cassette tuner developed to enhance its playability. It enables you to change the perimeters and characters within the game, thereby extending the games usage. The tuner will cost about £2 to £2.70 and is available through Beyond Software, Lector Court, 151 Farringdon Road, London EC1R 3AD.



## ZX-81 reviver

**S**SOFTWARE Farm will launch their new program **Spectrumiser** at the end of April. It is a high resolution graphic program which enables the ZX-81 graphics to obtain the same quality and standard as those on the Spectrum. It also has the ability to convert basic into machine code. **Spectrumiser** will retail at £5.95.

## A STAR IS BORN

**M**ELBOURNE House are also launching a new game, **Starion**, which was due for release at the end of March.

It will cost around £7.95 and is described as "A space epic" by Paula Byrne from Melbourne House. "It has stunning graphics and involves a space pilot travelling through over 243 different scenes. The game also has exploding space ships which when disintegrated form letters which involve you in a puzzle running in conjunction with the main plot of the game."



## Getting Hooked

**O**CEAN have a new game coming out at the end of April called **World Series Baseball**.

Imagine were originally going to market the game, but as Ocean have bought the title of the company they decided to launch it under their own title.

It is a sports simulation and will cost £6.95.

## Digital decide on double release

**D**IGITAL Integration are launching two new games which are due out soon.

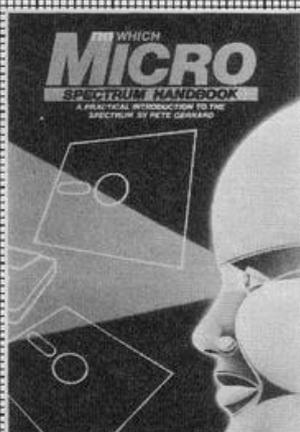
**Tomahawk** is a sequel to **Fighter Pilot** and it is expected to be equally popular. The second new game is **T. T. Racer** which is a motorcycle simulation game. Prices have yet to be decided.



# WHICH MICRO

COMMODORE 64 HANDBOOK

SPECTRUM HANDBOOK



Britain's two most popular personal computers, the Commodore 64 and Spectrum are covered from basic to semi-expert in **Which Micro Magazine's Handbooks**.

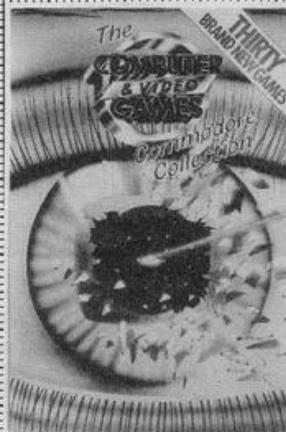
Author Pete Gerrard, a regular columnist for *Which Micro*, has put together an accurate and practical guide to both computers, at £4.99 per book.

Many programs are included and both 160-page books are spiral bound for easy use and are available in all good bookshops from November or direct through your letterbox by sending to EMAP Books, Bushfield House, Orton Centre, Peterborough PE2 0UW.

Commodore  
Collection

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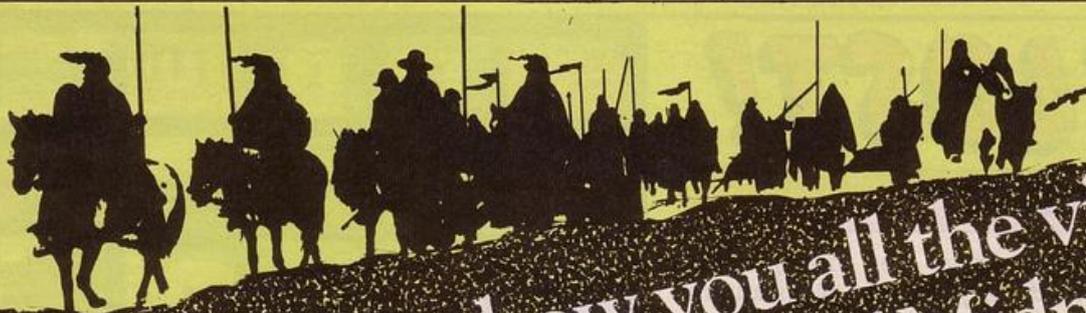
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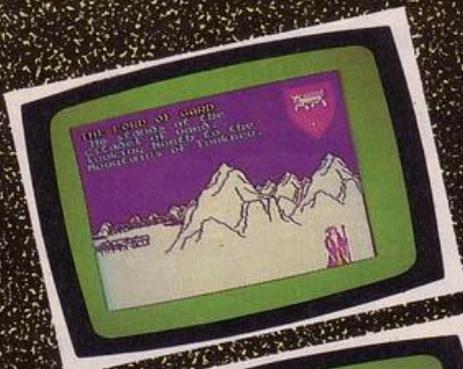
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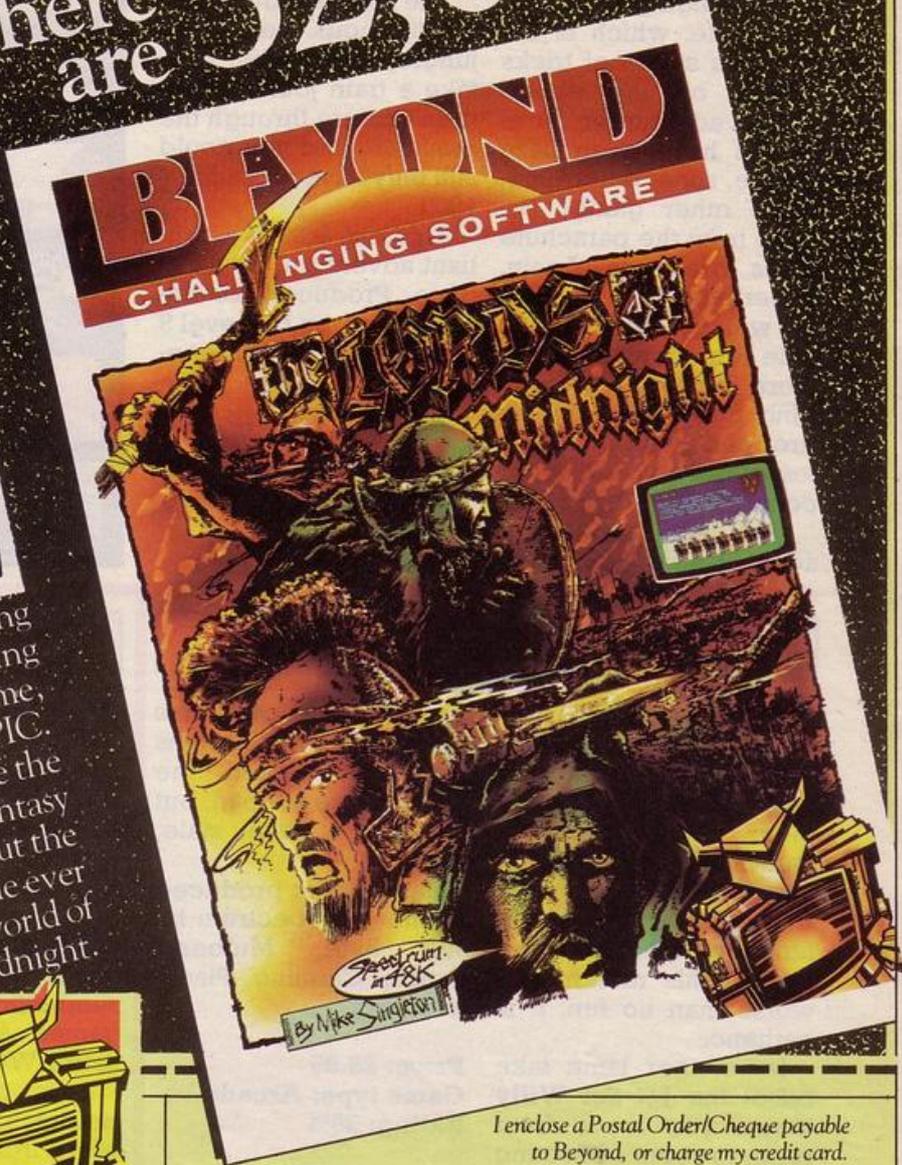


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# GET LOST!

## EMERALD ISLE

**L**LEVEL 9 have done it again. Their new adventure, **Emerald Isle**, is superb. Jam-packed full of problems, pictures, clues and scenarios, Emerald Isle is a definite winner.

You begin the adventure hanging from a parachute, which is the first of a series of tricks played on the experienced adventurer. Surely you have been here before, some other time, some other game? Escape from the parachute leads to a maze. Again, experienced adventurers will cry "Easy", but a little too soon. You see, there is no way of mapping this maze, objects dropped within it are lost forever, and your compass is no use at all.

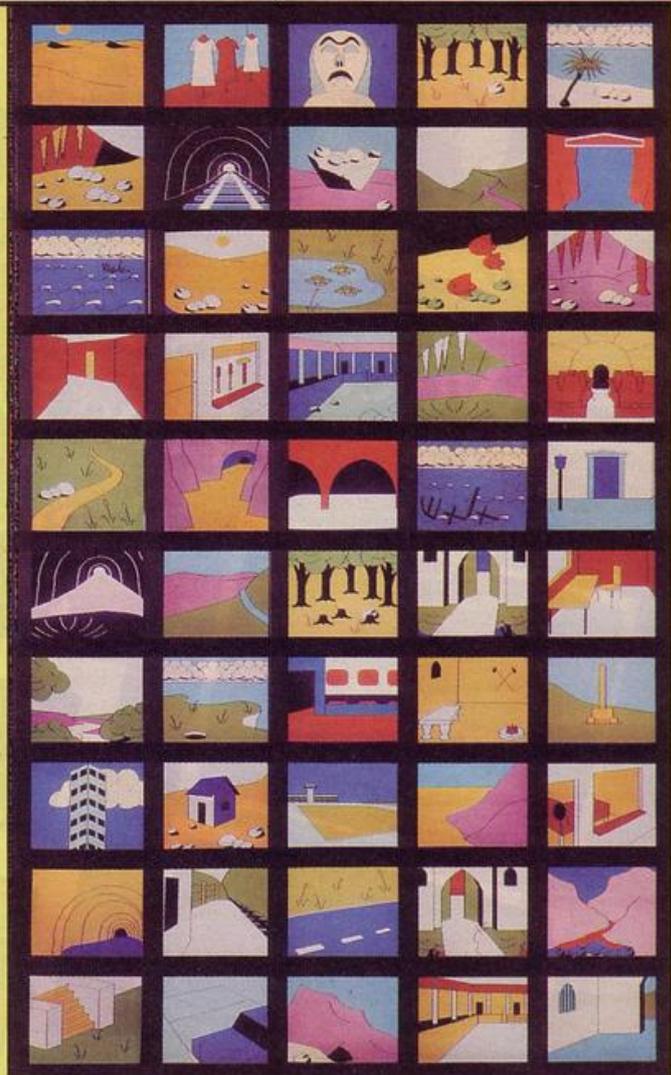
The game appears to adapt itself to your skill

level. For example, everyone who plays adventures frequently knows that you do not go into the dark without a light. Beginners will stumble blindly through, and find themselves on the right track again.

The scope of the game is enormous. Leave the jungle, cross the city, take a train journey and then venture through the mountain and you could still only have scored 30/1000.

Emerald Isle is a brilliant adventure, buy it at once. Produced for the 48K Spectrum by Level 9 Computing, 229 Hughenden Road, High Wycombe, Bucks.

**Price: £9.95**  
**Game type: Adventure**  
**Rating: 90%**



## STAY KOOL

**W**HAT HAS happened to Bug Byte? There was a time when you could rely on them for excellent games. Their latest one, **Stay Kool**, is no fun at all. In the face of the excellent new releases on the market this month it is worse than no fun, it is pathetic.

In another lame take off of the **Jet Set Willy** theme you move from room to room collecting

objects. The problems are ingenious, the rooms are nicely named, the graphics are not bad, but the idea is stale, stale, stale.

Stay Kool is produced for the 48K Spectrum by Bug Byte, Mulberry House, Canning Place, Liverpool.

**Price: £6.95**  
**Game type: Arcade**  
**Rating: 35%**

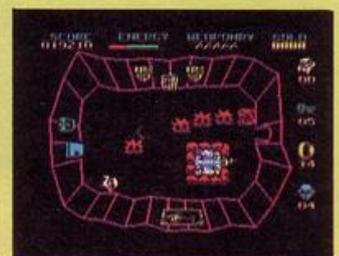


## WIZARD'S LAIR

**O**NCE UPON a time, well over a year ago, a company called Ultimate brought out two games called **Atic Atac** and **Sabre Wulf** for the Spectrum. Now Bubble Bus have produced **Wizard's Lair**, which bears a very very strong resemblance to both games. Atic Atac meets Sabre Wulf.

It is great fun. The graphics are excellent. Move from room to room on a variety of levels, cross the river which flows through the rooms and caverns, avoid the knight and the grim reaper, avoid or zap the energy sapping baddies, collect all objects you find, collect the four parts of the Great Lion, find the exit, and es-

cape. Phew. Bubble Bus cannot claim originality. What they can claim is that



they have produced a very good game. It is fast-moving, it is difficult, there is lots to see and lots to do.

Produced for the 48K Spectrum by Bubble Bus.

**Price: £6.99**  
**Game type: Arcade**  
**Rating: 72%**

## EVERYONE'S A WALLY

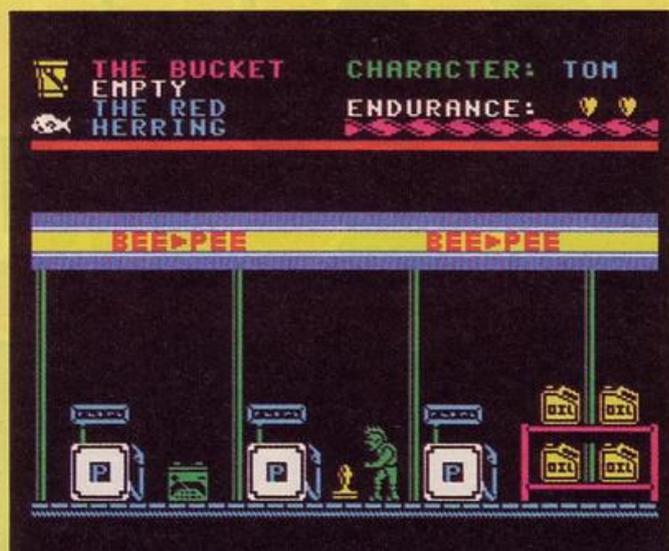
**T**HE WALLY series goes from strength to strength. The follow up to the excellent **Pyjamarama**, **Everyone's a Wally** is even better, and even more difficult.

You move Wally, or Tom or Dick or Harry or Wilma around the screen, trying to complete their appointed tasks. There are roads and shops and houses and building sites, all drawn in wonderful detail, for you to visit. All these locations seem to be crammed full of objects, and doubtless the majority of these objects has a use, if you could only work out what it is.

The trouble is, the

other characters will not stay still. For example, you may decide that the patch beneath the docks is the one way to stop the leak in the fountain. So you make your way to the docks, avoid the shark, and find that the patch is gone, and a massive book is in its place. It strikes you that you just saw Wilma leaving, so you track down Wilma, swap from Wally to Wilma, and find that she is not carrying the patch. However, when, by chance you walk into the house, there is the patch, where Wilma left it, but Harry is now carrying it.

As usual in the Wally games, everything is



against you. Inanimate (or usually inanimate) objects, your friends, even the shuttle service across town is not what it used to be.

Everyone's a Wally is produced for the 48K

Spectrum by Mikrogen, 44 The Broadway, Bracknell, Berkshire.

**Price: £6.95**  
**Game type: Arcade adventure**  
**Rating: 88%**

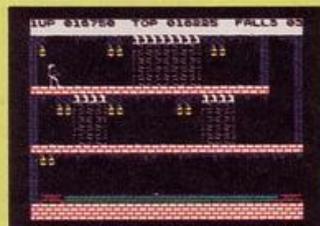
## BRUCE LEE

**F**ACE THE NINJA! Battle against the Green yamo! Avoid exploding t'sung-lin! Who are you? Why, **Bruce Lee**, of course.

The moves that you can make in this game are spectacular. Leap over your opponents' head. Take a running jump and crash both feet into their chin. Deliver a repeated series of punches and watch

them crumple to the floor and vanish.

Your aim is to claim infinite wealth and the secret of immortality from the wizard who dwells within a fortress. On each screen you must hit either all, or a select few of the lanterns you can see, to reveal the exit. Each screen is a little harder than the previous one, and you must be prepared for bushes to explode beneath your feet, particle lifts to carry you into the air, or force



fields to blast you to ashes.

The good news is that these problems are likely to affect your slow moving enemies even more than they do you. The bad news is that, on some of the later screens, this makes next

to no difference.

Bruce Lee is a very polished version of the ladders-and-levels type of game. The movements, although not the sound effects, do manage to capture, to some extent, the excitement of Lee's films. Great.

Bruce Lee is distributed by US Gold, Unit 24, Tipton Trading Est, Tipton, West Mids.

**Price: £7.95**  
**Game type: Arcade**  
**Rating: 75%**

## SOFT AID

**T**HERE ARE some excellent games available on the **Soft Aid** cassette, and it is worth paying £4.99 for any of

the ten games on offer when you know that your money will go to help Ethiopia.

The ten games included in the spectrum Soft-Aid cassette are: **Spellbound**, **Starbike**, **Kokotini Wilf**, **The Pyramid**, **Horace goes Skiing**, **Gilligan's Gold**, **Ant Attack**, **3D Tank Duel**, **Jack & The Beanstalk** and **Sorcery**.



One or two dud games in that list, but they are more than counterbalanced by the good games. **The Pyramid** from Fantasy, for example, is a first-class arcade game which is no longer on sale.

But it is wrong to single out any of these games out for particular praise. They have all been top games, each one of them successful in their own right. Whether you have seen them before and want to

replay them, or whether you have only just bought a computer and have so far missed these games it is worth buying Soft Aid.

This cassette probably represents the best value in the market at the moment. It deserves to go straight into the charts at number one.

All money raised by Soft Aid will go to the Bob Geldof Band-Aid Ethiopian Appeal Fund.

**Price: £4.99**

# COMBAT LYNX

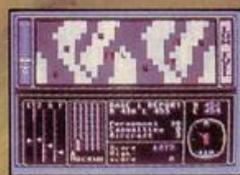
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## SAM STOAT

**G**REMLIN Graphics' games. You either love them or you hate them. Nobody at *Sinclair Programs* loves them, but we may be unusual.

**Sam Stoat Safe Breaker** resembles **Monty Is Innocent** in many ways and, if you liked one, you are likely to enjoy the other.

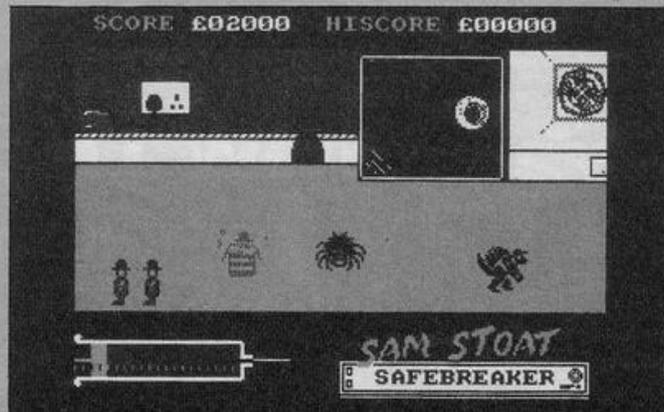
Sam Stoat is trying to break into a series of houses, to rob the owners of all their valuables. To do so, he must find the bomb in each house and take it to the safe, find the match in each house and take it to the safe, break into the safe,

steal the diamond which it contains and then escape.

Each of the screens is littered with the bizarre wandering enemies in which Gremlin specialises. Contact with any of these enemies will sap your energy.

The graphics for each screen are well drawn. In one room Sam must creep past the owner of the house or, at least, past his big toe, which is sticking out of the bath. Movement between series of rooms is done through mouseholes.

As usual, though, it is the flickering graphics



which make this game an eye-straining problem to play. As the enemies move around, the background behind them takes on their colours. With six characters zooming around a room at once, you have to have good eye sight, a well-adjusted TV set,

and a strong stomach to be able to watch the game.

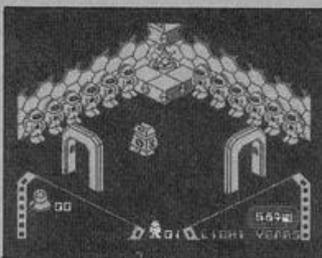
Sam Stoat is produced for the 48K Spectrum by Gremlin Graphics, 10 Carver Street, Sheffield.

**Price: £6.95**  
**Game type: Arcade**  
**Rating: 35%**

## ALIEN 8

**A**LIEN 8 is, in every way, the follow up to **Knight Lore**. If you have played Knight Lore, you will know, almost immediately, exactly what is happening in **Alien 8**, and what to do.

The story line is complex, and well-explained. Your main aim is to move your robot around a space ship, col-



lect various objects which have been stored in a variety of inaccessible places, and carry them to cauldrons which are waiting to receive them.

The graphics are like those in Knight Lore, perfectly drawn, fully three-dimensional rooms although, in Alien 8, they seem to have been constructed from egg boxes, and broken egg

shells.

Movement is tricky, for moving three-dimensionally on a two-dimensional screen is a little difficult to grasp. Still, Ultimate make it as easy for you as they can, with a variety of movement options.

If you have never played Knight Lore, buy that before you buy Alien 8, for it is slightly easier. Alien 8 requires absolute precision and split second timing. As the clockwork mice chase you, you cannot afford to stop to think half way across a room as the ground gives way underneath your feet.

Although Alien 8 has obvious similarities with Knight Lore, it is a completely different and much more difficult game.

Alien 8 is produced by Ultimate, The Green, Ashby de la Zouch, Leicestershire.

**Price: £9.95**  
**Game type: Arcade**  
**adventure**  
**Rating: 93%**

## DRAGONTORC

**A**T LAST! The sequel to **Avalon**, the adventure movie, is on sale, and it is better, far better than Avalon.

**Dragontorc** sets you, as Maroc the wizard, to defeat Morag, the witch queen of the north. You must move your astral projection through a series of three dimensional rooms, find and employ a series of spells, map a route, utilise objects which you find on the way, defeat enemies and make friends.

Make friends? Yes, because each of the characters in the game reacts to you depending on their original characteristics and how you act towards them or others of their race. Skeletons are empty headed, and what brain remains to them tends to be full of death, so it probably saves time to kill them, rather than attempt friendship.

Elves, though, are friendly little chaps, if a trifle shy. If you avoid killing any of them, either on purpose or by mistake, and if you

try out a spot of trading with them, they will become friendly, and willing to help you in any way that they can.

A number of nice touches add to the computer movie effect of Dragon torc. The sound effects let you know what is happening, as far as is possible with the Spectrum. You can hear skeletons thudding around the room, or the elves skipping in. There are some surprises waiting for you too. Wait until you try unlocking one of the boxes. Yeeuch. Or, until you search the wrong skeleton. Aaagh.

Dragontorc is an excellent game. It makes a good film as well. Catch it on your local Spectrum. Produced by Hewson Consultants 60a St Mary's Street, Wallingford, Oxon.

**Price: £7.95**  
**Game type: Arcade**  
**adventure**  
**Rating: 85%**



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- 7. Snake Nest
- 8. Gremlin
- 9. Mound
- 10. Pile of Earth
- 11. Cave

**FORTY NINER**

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!

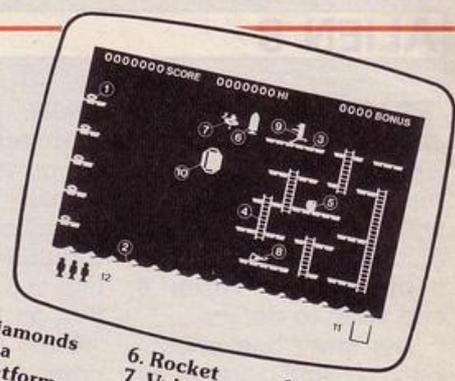
**ROCKET MAN**

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!

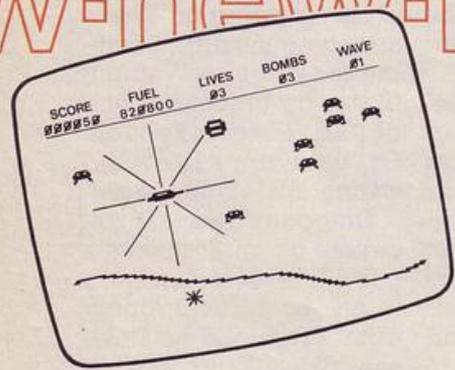
Oh... but don't run out of fuel on the way – otherwise it's... SPLASH!



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

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**Z-XTRICATOR**



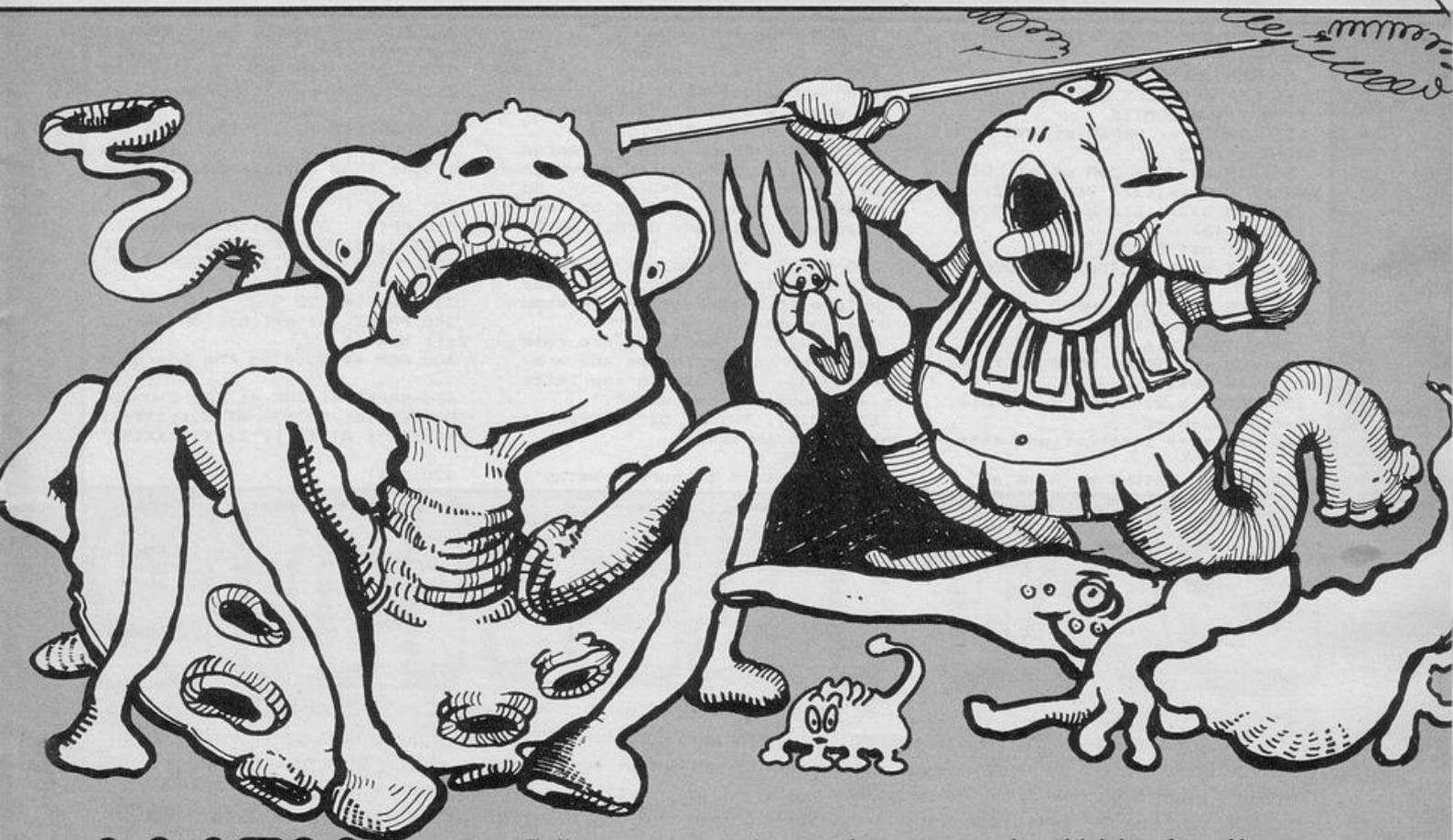
A long time ago, in a galaxy far, far, away a terrible war took place between two hostile races. Any prisoners taken could not expect to live very long in the hands of their captors. Their only hope lay with a group of valiant warriors – the XTRICATORS – whose task it was to rescue fellow beings from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

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# ALIEN 10

**A**liens are appearing on the screen and multiplying fast. You can defend yourself by pressing O = left, P = right and Q = fire. Beware, if 10 aliens are on the screen at the same time you will be eliminated. Alien 10 has five levels of difficulty and has been written for the Spectrum by Adam Parker, Wolverhampton.

All underlined characters are to be entered in graphics mode.

```

6 PRINT AT 12,12; FLASH 1;"A
LEIN 10"
7 PAUSE 0
10 GO SUB 1000
20 GO SUB 1200
30 REM screen setup
35 BORDER 0
40 CLS : PRINT AT 20,2; PAPER
4;"
45 PRINT AT 21,2; PAPER 4;"
50 FOR s=1 TO 20
60 PLOT RND *254, RND *120+40

70 NEXT s
80 LET f1=0: LET l=15
90 LET z=0: LET hits=0
100 REM aliens
110 POKE 23672,0
120 LET t= PEEK 23672
130 IF t >= 80-(a*6) THEN PRIN
T AT RND *17, RND *28+2; INK 2
;"A": LET z=z+1
140 IF z=10 THEN GO TO 400
150 PRINT AT 21,21;z
160 IF t >= 80-(a*6) THEN POKE
23672,0
200 REM lazer base
205 LET l=l+(INKEY#="p")-(IN
KEY#="o")
210 LET l=l+(l=0)-(l=30)
220 PRINT AT 19,1;" L ": PAUSE
4
230 IF INKEY#="q" THEN GO TO
250
240 IF INKEY# <> "q" THEN GO
TO 120
250 FOR c=18 TO 0 STEP -1
260 PRINT AT c,1+1;"D": PAUSE
2
270 PRINT AT c,1+1;" "

275 IF ATTR (c-1,1+1)=58 THEN
GO TO 300
280 NEXT c
290 GO TO 130
300 REM missile hit
310 BEEP .1,z*2
320 LET z=z-1: PRINT AT 21,21;
z
330 PRINT AT c-1,1+1; FLASH 1;
"E": PAUSE 50
340 PRINT AT c-1,1+1;" "
350 LET hits=hits+1
360 PRINT AT 21,3;"HITS=";hits

370 GO TO 130
400 PRINT AT 4,8; INK 0; FLASH
1;"YOU'VE BEEN ELIMINATED"
405 FOR i=30 TO -30 STEP -1: BE
EP .01,i: NEXT i
410 PRINT AT 12,3;"Do you want
another game y/n"
420 IF INKEY#="y" THEN GO TO
20
430 IF INKEY#="n" THEN PRINT
"
GOODBYE
"
440 GO TO 420
1000 FOR n=0 TO 7
1010 READ a: POKE USR "a"+n,a

1020 NEXT n
1030 DATA 129,126,219,126,60,60,
90,129
1040 FOR n=0 TO 7
1050 READ l: POKE USR "l"+n,l

1060 NEXT n
1070 DATA 24,24,24,24,60,126,255
,90
1080 FOR n=0 TO 7
1090 READ d: POKE USR "d"+n,d

1100 NEXT n

1110 DATA 16,16,16,16,16,16,58,4
0
1120 FOR n=0 TO 7
1130 READ e: POKE USR "e"+n,e

1140 NEXT n
1150 DATA 137,74,52,204,51,44,82
,145
1160 RETURN
1200 REM instructions
1210 PRINT AT 3,3;"YOU HAVE TO
DEFEND YOURSELF AGAINST THE A
TTACKING ALEINS THEY WILL RE-
ENERGISE OUT OF HYPERSPASE A
BOVE THE GROUND IT'S YOUR JO
B TO BLAST THE ALEINS OUT O
F THE UNIVERSE USING YOU LAS
ER BASE GOOD LUCK!"

1220 PRINT AT 16,3;"PRESS ANY K
EY TO CONTINUE"
1230 IF INKEY#=" " THEN GO TO
1250
1240 PAUSE 0
1250 CLS : PRINT AT 3,1;"YOU MO
VE YOU BASE WITH THE KEYS
O = LEFT
P = RIGHT
Q = FIRE

IF Y
PRES
ONCE
YOU WILL BE ELIMINATED"
1260 PRINT AT 13,2;"SELECT SKIL
L LEVEL FROM 1 TO 5"
1270 PRINT AT 15,2;"1=EASY 5=I
MPOSSABLE!!"
1280 LET a# = INKEY#
1290 INPUT "SKILL LEVEL=" ;a#
1300 IF a#<"1" OR a#>"5" THEN
GO TO 1280
1310 LET a# = VAL a#
1320 RETURN

```

```

10 REM COMPUTER BATTLESHIPS by
A. Pratt
50 REM Initialise variables
60 LET a=0: LET b=1: LET d=2:
LET e=7: RANDOMIZE
70 BORDER e: PAPER e: INK a: B
RIGHT a: CLS
80 DIM b$(20): DIM w$(b): DIM
n$(6): DIM i$(17): DIM j$(32)
90 DIM h(3): DIM g(3): DIM y(8
): DIM x(8)
100 LET n$="BDDFFF"
110 LET b$="0123456789ABCDEFGHI
J"
120 FOR i=b TO 3: READ h(i): LE
T g(i)=h(i): NEXT i
130 DATA 4,6,6
140 FOR i=b TO 8: READ y(i): RE
AD x(i): NEXT i
150 DATA -b,a,-b,b,a,b,b,b,a,
b,-b,a,-b,-b,-b
160 REM **** Instructions ****
180 PRINT BRIGHT b; AT a,a;"

```

```

COMPUTER BATTLESHIPS "
190 PRINT "Battleships is play
ed on a board of 10 by 10 squares
on which are sited 1 Battleship,
2 Destroyers and 3 Frigates."
200 PRINT "Each ship is repres
ented by a horizontal or verti
cal line of 4*B, 3*D or 2*F. No
two ships are allowed to touc
h each other in any direction."
210 PRINT "The object is to lo
cate and sink the computers ships
before it sinks yours. A scor
e of 16 wins."
220 PRINT "Locations are refe
red to by co-ordinates and are
chosen by pressing the lette
r followed by the number."
230 PRINT BRIGHT b;" Press a
ny key to continue "
240 PAUSE a
250 REM Start of screen setup

```

```

260 FOR i=b TO 21: PRINT AT i,
a;j$: NEXT i
270 PLOT d,34: DRAW a,131: DRAW
251,a: DRAW a,-131: DRAW -251,a
280 FOR i=5 TO 133 STEP 128
290 PLOT i,37: DRAW a,125: DRAW
117,a: DRAW a,-125: DRAW -117,a
300 NEXT i
310 PRINT AT d,b;"HUMAN SCORE:
"; AT d,17;"COMPS SCORE:"
320 PRINT AT 4,3;"ABCDEFGHIJ";
AT 4,19;"ABCDEFGHIJ"
330 FOR i=a TO 9
340 PRINT AT 6+i,b;i; AT 6+i,1
7;i: NEXT i
400 REM ** Sets up the boards *
410 PAPER 4: INK 4: FOR i=d TO
18 STEP 16: PRINT AT 5,i;"XXXXX
XXXXXXX"; AT 16,i;"XXXXXXXXXXXXX"
420 NEXT i

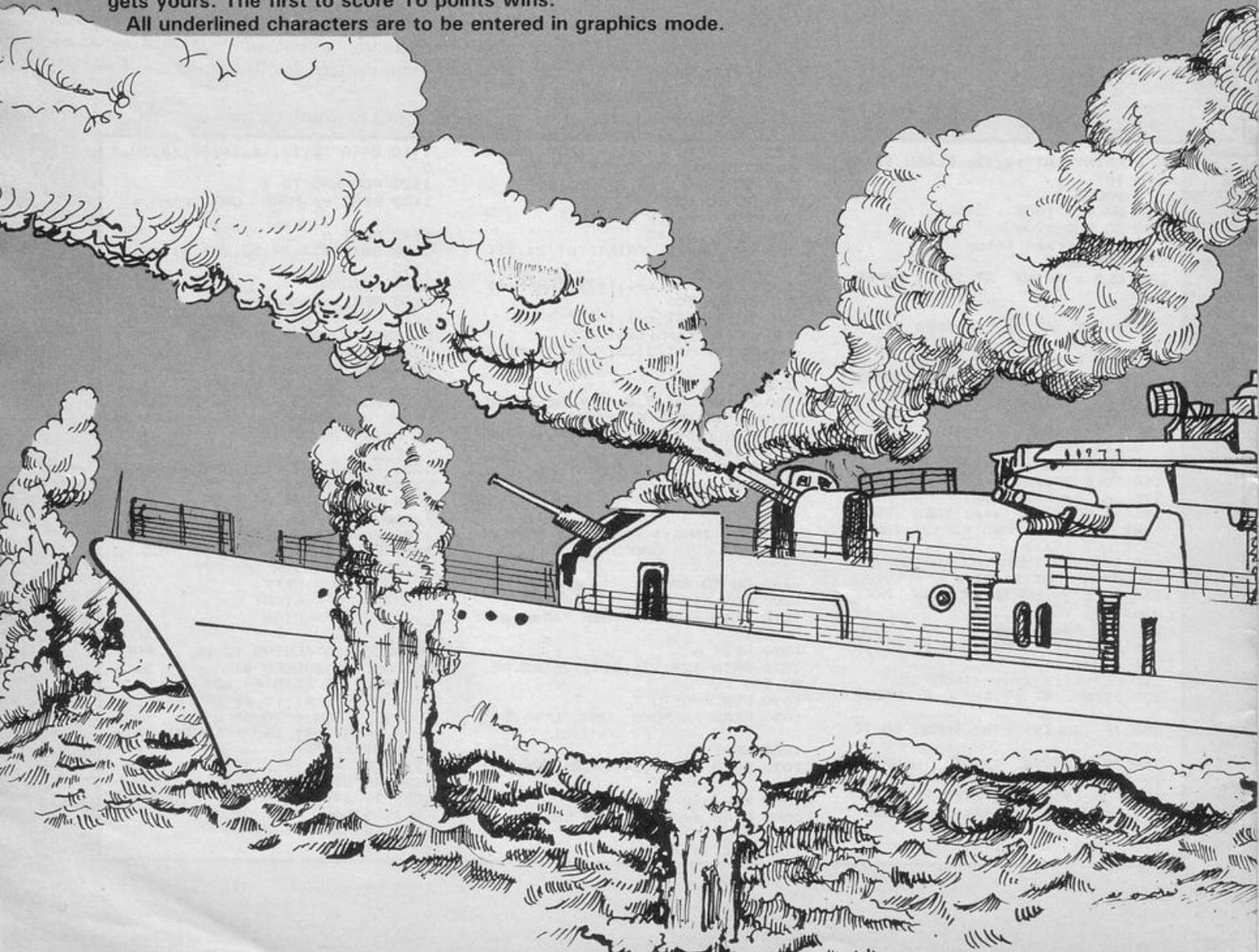
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# BATTLESHIP

**P**it your wits against the computer in Battleship written by A. Pratt from Chelmsford for the Spectrum. Two boards are displayed on screen. Each contains a set of 10 by 10 square boxes each with a unique combination of numbers and letters. Play commences when you position your ships on your board and continues when you select the co-ordinates you think will uncover the computer's ships.

Neither you nor the computer can see the other's fleet, but you must locate and destroy its ships before it gets yours. The first to score 16 points wins.

All underlined characters are to be entered in graphics mode.



```

430 FOR i=6 TO 15
440 PRINT AT i,d;"X"; AT i,13;
"X"; AT i,18;"X"; AT i,29;"X"
450 FOR j=3 TO 12: LET k=(i+j)/
d
460 PRINT PAPER e; BRIGHT ((k-
INT(k))*d); AT i,j;" "; AT i,j
+16;" "; NEXT j
470 NEXT i: PAPER e; INK a
600 REM *** Enter the ships ***

620 BRIGHT b
630 GO SUB 4000: GO SUB 5000
640 LET dir=a: LET max=a: LET r
last=a: LET clast=a: LET h=a: LE
T g=a: GO SUB 990
650 IF RND <.5 THEN GO TO 830

800 REM *** Main game loop ***

810 GO SUB 1000: REM Human move

820 IF h=16 THEN GO SUB 8000:

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PRINT AT 19,a;"Human won ";h;"
to ";g: STOP
830 GO SUB 2000: REM Comps move

840 IF g=16 THEN GO SUB 8000:
PRINT AT 19,a;"Computer won ";g
;" to ";h: STOP
850 GO TO 810
980 REM **** Score update ****

990 PRINT AT d,13;h; AT d,29;g
: RETURN
1000 REM **** Humans move ****

1010 LET j=6-b*(g(b)<3)-b*(g(d)<
5)-b*(g(d)<3)-b*(g(3)<5)-b*(g(3)
<4)
1020 IF j<d THEN LET j=d
1030 GO SUB 8000: LET pos=b
1050 PRINT AT 18,a;"HUMAN has "
;j;" moves. Enter co-ords"
1060 FOR k=b TO j: LET r=a: LET
c=a: LET pos=pos+4
1090 PRINT AT 21,b;"Move Number
";k; FLASH b; AT 21,16;"?"; PR
INT " ";
1100 GO SUB 7000: LET c=c+16
1160 PRINT AT 19,pos;b*(c-8);b*(
r-5); AT 21,a;j$
1170 IF ATTR (r,c)=87 THEN PRI
NT INK d; AT 20,pos;"Mad": GO T
D 1290
1180 LET w$= SCREEN$ (r,c)
1200 IF w$=" " THEN GO SUB 6500
: GO TO 1270
1210 IF w$="B" THEN LET g(b)=g(
b)-b
1220 IF w$="D" THEN LET g(d)=g(
d)-b
1230 IF w$="F" THEN LET g(3)=g(
3)-b
1240 PRINT PAPER d; INK e; FLAS
H b; AT r,c;w$: PRINT AT 20,pos
;"*";w$;"*"
1250 GO SUB 6000
1260 LET h=h+b: GO SUB 990
1270 PRINT PAPER d; INK e; BRIG
HT b; AT r,c;w$:
1280 IF h=16 THEN RETURN
1290 NEXT k
1300 RETURN
1999 REM
2000 REM *** Computer's move ***

2010 LET j=6-b*(h(b)<3)-b*(h(d)<
5)-b*(h(d)<3)-b*(h(3)<5)-b*(h(3)
<4)
2020 IF j<d THEN LET j=d
2030 GO SUB 8000: LET pos=b
2040 PRINT AT 18,a;"COMPUTER ha
s ";j;" moves."
2050 LET r=rlast: LET c=clast
2060 FOR k=b TO j: LET pos=pos+4

2070 IF dir>a AND max>a THEN GO
TD 2500
2100 REM **** Random choice ****

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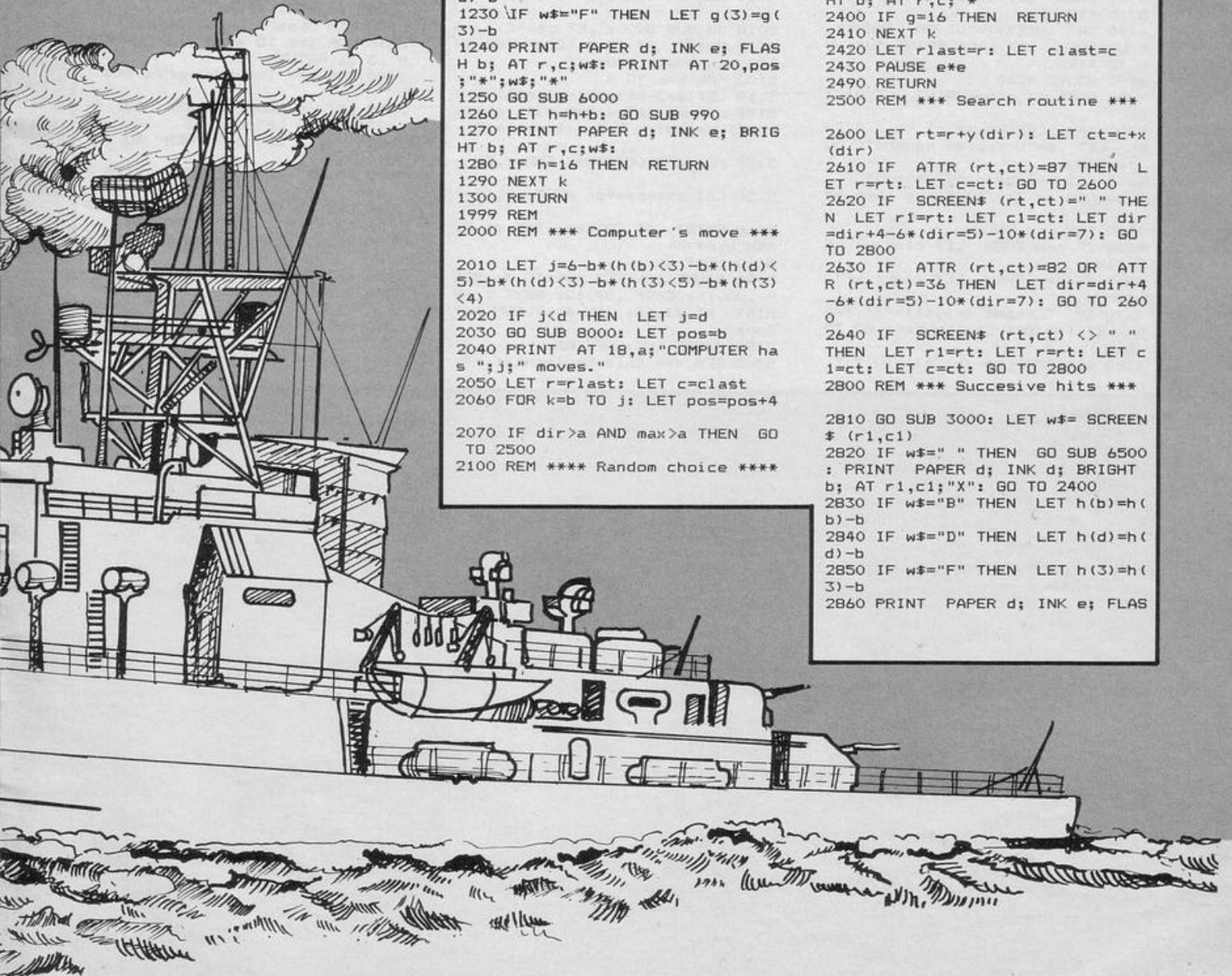
2110 LET r= INT ( RND *10)+6: LE
T c= INT ( RND *10)+3
2120 IF ATTR (r,c)=87 OR ATTR
(r,c)=82 THEN GO TO 2110
2150 REM Isolated square check

2160 LET v=a: FOR i=b TO 7 STEP
d
2170 LET attr= ATTR (r+y(i),c+x(
i))
2180 IF attr=87 OR attr=82 OR at
tr=36 THEN LET v=v+.25
2190 NEXT i: IF v=b THEN GO TO
2110
2200 REM ** Ship close check **
2210 LET v=a: FOR i=b TO 8
2220 IF ATTR (r+y(i),c+x(i))=87
THEN LET v=b
2230 NEXT i: IF v=b THEN GO TO
2110
2300 GO SUB 3000: LET w$= SCREEN
$ (r,c)
2310 IF w$=" " THEN GO SUB 6500
: PRINT PAPER d; INK d; BRIGHT
b; AT r,c;"X": GO TO 2410
2320 IF w$="B" THEN LET h(b)=h(
b)-b: LET max=3
2330 IF w$="D" THEN LET h(d)=h(
d)-b: LET max=d
2340 IF w$="F" THEN LET h(3)=h(
3)-b: LET max=b
2350 PRINT PAPER d; INK e; FLAS
H b; AT r,c;w$: PRINT AT 20,pos
;"*";w$;"*"
2360 GO SUB 6000
2370 LET g=g+b: GO SUB 990
2380 LET dir=b+d*( RND <.5)
2390 PRINT PAPER d; INK e; BRIG
HT b; AT r,c;"*"
2400 IF g=16 THEN RETURN
2410 NEXT k
2420 LET rlast=r: LET clast=c
2430 PAUSE e*e
2490 RETURN
2500 REM *** Search routine ***

2600 LET rt=r+y(dir): LET ct=c+x
(dir)
2610 IF ATTR (rt,ct)=87 THEN L
ET r=rt: LET c=ct: GO TO 2600
2620 IF SCREEN$ (rt,ct)=" " THE
N LET r1=rt: LET c1=ct: LET dir
=dir+4-6*(dir=5)-10*(dir=7): GO
TO 2800
2630 IF ATTR (rt,ct)=82 OR ATT
R (rt,ct)=36 THEN LET dir=dir+4
-6*(dir=5)-10*(dir=7): GO TO 260
0
2640 IF SCREEN$ (rt,ct) <> " "
THEN LET r1=rt: LET r=rt: LET c
1=ct: LET c=ct: GO TO 2800
2800 REM *** Successive hits ***

2810 GO SUB 3000: LET w$= SCREEN
$ (r1,c1)
2820 IF w$=" " THEN GO SUB 6500
: PRINT PAPER d; INK d; BRIGHT
b; AT r1,c1;"X": GO TO 2400
2830 IF w$="B" THEN LET h(b)=h(
b)-b
2840 IF w$="D" THEN LET h(d)=h(
d)-b
2850 IF w$="F" THEN LET h(3)=h(
3)-b
2860 PRINT PAPER d; INK e; FLAS

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```

H b; AT r1,c1;w#: PRINT AT 20,p
os;"*";w#;"*"
2870 GO SUB 6000
2880 LET g=g+b: LET max=max-b: G
D SUB 990
2890 IF max=a THEN LET dir=a
2900 PRINT PAPER d; INK e; BRIG
HT b; AT r1,c1;"*"
2920 GO TO 2400
3000 PRINT AT 19,pos;b#(c+8);b#
(r-5): PAUSE 30: RETURN
4000 REM **** Human's Ships ****

4010 GO SUB 8000: LET pos=8: LET
Bad=4700
4020 PRINT AT 18,a;"HUMAN SHIPS
: Enter start co-ords A-J , 0-9
, R - Right or U - Up"
4025 PRINT AT 20,9; PAPER 5;"
"
4030 FOR n=b TO 6
4035 PRINT AT 21,a;j#: PAUSE e*
e
4040 LET r=a: LET c=a: LET z=a:
LET x=5
4050 IF n=b THEN PRINT AT 21,a
;"Battleship (4 squares) ";
4060 IF n=d OR n=3 THEN PRINT
AT 21,a;"Destroyer "+ STR# (n-b)
+" (3 squares) ";
4070 IF n>3 THEN PRINT AT 21,a
;"Frigate "+ STR# (n-3)+" (2 squ
ares) ";
4080 PRINT AT 21,26; FLASH b;"?
";: PRINT " ";
4100 GO SUB 7000
4160 IF INKEY# ="r" OR INKEY#
="R" THEN LET z=b: PRINT "R": G
D TO 4190
4170 IF INKEY# ="u" OR INKEY#
="U" THEN LET z=d: PRINT "U": G
D TO 4190
4180 GO TO 4160
4190 BEEP .1,e+b: PRINT AT 21,2
6;" "
4200 IF SCREEN# (r,c) <> " " TH
EN LET i#="Occupied square": GO
TO Bad
4210 LET m=3-b*(n>b)-b*(n>3)
4230 REM ** Try to place ship **

4240 FOR x=a TO m
4250 IF z=b THEN LET c1=c+x: LE
T r1=r
4260 IF z=d THEN LET c1=c: LET
r1=r-x
4270 IF SCREEN# (r1,c1)="X" THE
N LET i#="Off the board": GO TO
Bad
4280 IF SCREEN# (r1,c1) <> " "

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THEN LET i#="Overlaps another":
GO TO Bad
4290 REM ** Check neighbours **

4300 LET v=a: FOR j=-b TO b: FOR
k=-b TO b
4310 IF SCREEN# (r1+j,c1+k) <>
" " THEN IF SCREEN# (r1+j,c1+k
) <> "X" THEN LET v=b
4320 NEXT k: NEXT j
4330 IF v=b THEN LET i#="Too cl
ose": GO TO Bad
4340 NEXT x
4350 REM **** Place ship ****
4360 FOR x=a TO m
4370 IF z=b THEN LET c1=c+x: LE
T r1=r
4380 IF z=d THEN LET c1=c: LET
r1=r-x
4390 PRINT AT r1,c1; INK b;n#(n
)
4400 NEXT x
4410 LET pos=pos+d
4420 PRINT AT 20,pos; PAPER 5;
INK b;n#(n)
4430 NEXT n
4440 FOR x=1 TO 100: NEXT x: RET
URN
4700 REM Invalid routine
4710 PRINT AT 21,a; INK e; PAPE
R d;i#;" Try again ": FOR f=
1 TO 3: BEEP .05,3: BEEP .05,12:
BEEP .05,3: BEEP .05,12: NEXT f

4720 FOR f=b TO 100: NEXT f: PRI
NT AT 21,a;j#
4730 GO TO 4040
5000 REM ** Computer's Ships **

5010 GO SUB 8000: LET pos=8
5020 PRINT AT 18,a;"COMPUTER SH
IPS now positioned : "
5100 FOR n=b TO 6
5110 LET m=3-b*(n>b)-b*(n>3)
5120 LET r= INT ( RND *(11-m))+6
: LET c= INT ( RND *(11-m))+19

5130 GO TO 5200+100*( RND <.5)

5150 LET pos=pos+d: BEEP .2,12

5160 PRINT AT 20,pos; INK d; FL
ASH b;n#(n)
5170 NEXT n
5180 PAUSE 20: FOR x=b TO 4: BEE
P .05,15: BEEP .07,12: NEXT x: P
RINT AT 21,14; INK 4; FLASH b;"
Done"
5190 PAUSE 200: RETURN
5200 REM *** Ship horizontal ***

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5210 LET r1=r: FOR x=a TO m: LET
c1=c+x
5220 IF SCREEN# (r1,c1) <> " "
THEN GO TO 5110
5230 GO SUB 5400: IF v THEN GO
TO 5110
5240 NEXT x
5250 FOR x=a TO m: LET k=(r+c+x)
/2
5260 PRINT AT r,c+x; INK e; BRI
GHT ((k- INT k)*d);n#(n)
5270 NEXT x
5290 GO TO 5150
5300 REM *** Ship vertical ***

5310 LET c1=c: FOR x=a TO m: LET
r1=r+x
5320 IF SCREEN# (r+x,c) <> " "
THEN GO TO 5110
5330 GO SUB 5400: IF v THEN GO
TO 5110
5340 NEXT x
5350 FOR x=a TO m: LET k=(r+c+x)
/2
5360 PRINT AT r+x,c; INK e; BRI
GHT ((k- INT k)*d);n#(n)
5370 NEXT x
5390 GO TO 5150
5400 REM Check comp's neighbours

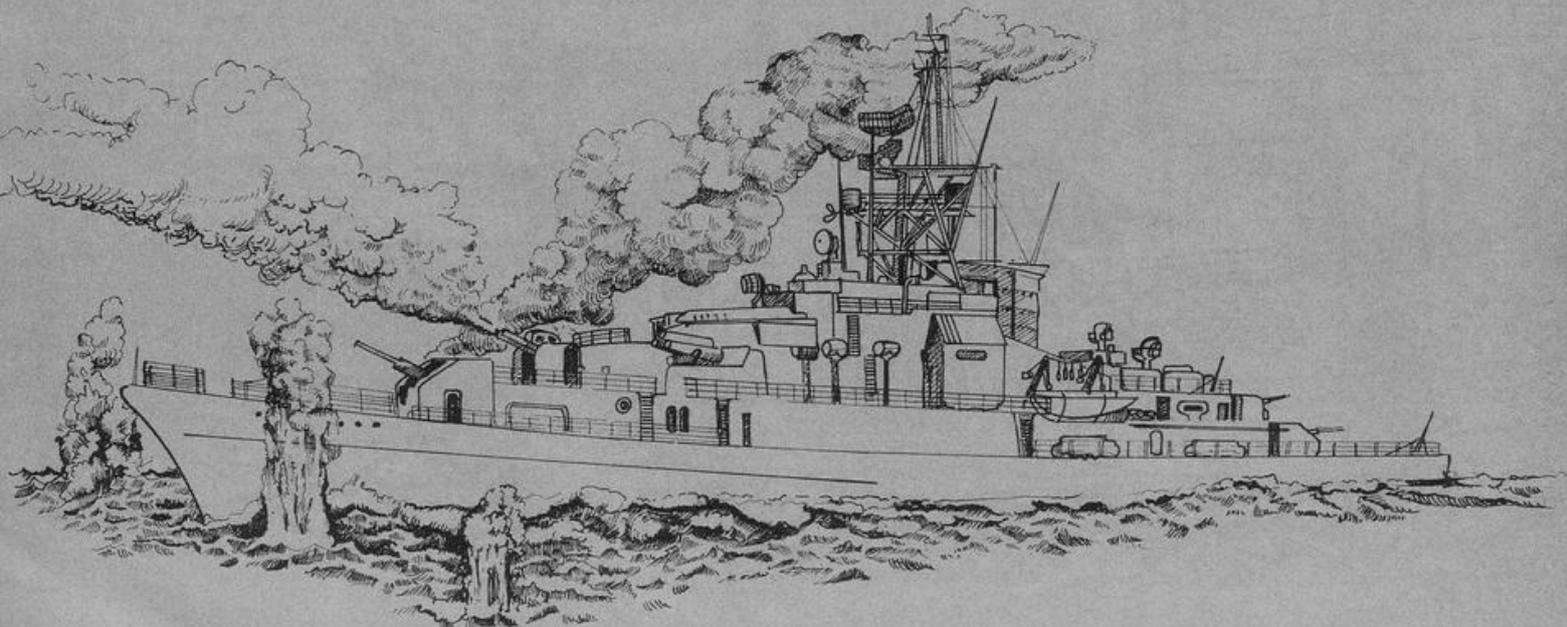
5410 LET v=a: FOR j=-b TO b: FOR
k=-b TO b
5420 IF SCREEN# (r1+j,c1+k) <>
" " THEN IF SCREEN# (r1+j,c1+k
) <> "X" THEN LET v=b
5430 NEXT k: NEXT j: RETURN
6000 REM Hit ship - sound effect

6010 FOR i=e TO a STEP -.1: BEEP
.005,i: NEXT i: RETURN
6500 REM Miss - sound effect
6510 FOR i=a TO e*e: NEXT i: BEE
P .3,3: RETURN
7000 REM *** Input co-ords ***

7010 LET c= CODE INKEY# -62: IF
c>34 THEN LET c=c-32
7020 IF c<3 OR c>12 THEN GO TO
7010
7030 PRINT CHR# (c+62);: BEEP .
1,e-b
7040 LET r= CODE INKEY# -42: IF
r<6 OR r>15 THEN GO TO 7040
7050 PRINT CHR# (r+42);: BEEP .
1,e
7060 RETURN
8000 REM * Clear bottom lines *

8010 PRINT AT 18,a;j#;j#;j#;j#;
RETURN
9999 SAVE "BTSHPS": STOP

```



```

5 GO SUB 9000
10 CLS
20 PRINT AT 10,8;"A A A A A A"
A A
25 INK 0
30 PRINT AT 11,7;"(17*igB)"
40 PRINT AT 12,7;"(17*igB)"
50 PRINT AT 13,7;"(17*igB)"
55 INK 7
60 PRINT AT 14,8;"B B B B B B"
B B
70 FOR a=0 TO 9: FOR b=8 TO 22
STEP 2
80 PRINT AT a,b;"C"
90 NEXT b
100 NEXT a
105 LET score=0: LET energy=3
110 FOR a=15 TO 21: FOR b=8 TO
22 STEP 2
120 PRINT AT a,b;"C"
130 NEXT b: NEXT a
140 LET a=9: LET b=16
150 LET x=0: LET y=INT ( RND
*8)+1
155 PRINT AT 21,1: PAPER 2; IN
K 7;"SCORE=": PRINT AT 21,22; I
NK 7; PAPER 2;"ENERGY=";energy
160 PRINT AT a,b; INK 6; BRIGH
T 1;"E"
165 IF y=1 THEN LET y=8

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166 IF y=2 THEN LET y=10
167 IF y=3 THEN LET y=12
168 IF y=4 THEN LET y=14
169 IF y=5 THEN LET y=16
170 IF y=6 THEN LET y=18
171 IF y=7 THEN LET y=20
172 IF y=8 THEN LET y=22
179 PRINT AT x,y; INK 2; PAPER
7; FLASH 1;"D"
180 PRINT AT x-1,y;"C"
190 LET x=x+1
200 IF x=10 THEN GO SUB 1000
210 IF INKEY#="1" OR INKEY#
="2" OR INKEY#="0" THEN GO SU
B 2000
220 GO TO 160
1000 BEEP .1,-20: LET energy=ene
rgy-1
1010 IF energy=0 THEN GO TO 800
0
1020 PRINT AT x-1,y;"C"
1030 GO TO 150
2000 IF INKEY#="1" AND b>8 THE
N LET b=b-2: PRINT AT a,b+2;"C"
"
2010 IF INKEY#="2" AND b<22 TH
EN LET b=b+2: PRINT AT a,b-2;"
C"
2020 IF INKEY#="0" THEN GO SU
B 3000
2030 RETURN
3000 BEEP .01,50: IF b=y THEN B
EEP .01,5: PRINT AT x-1,y; INK

```

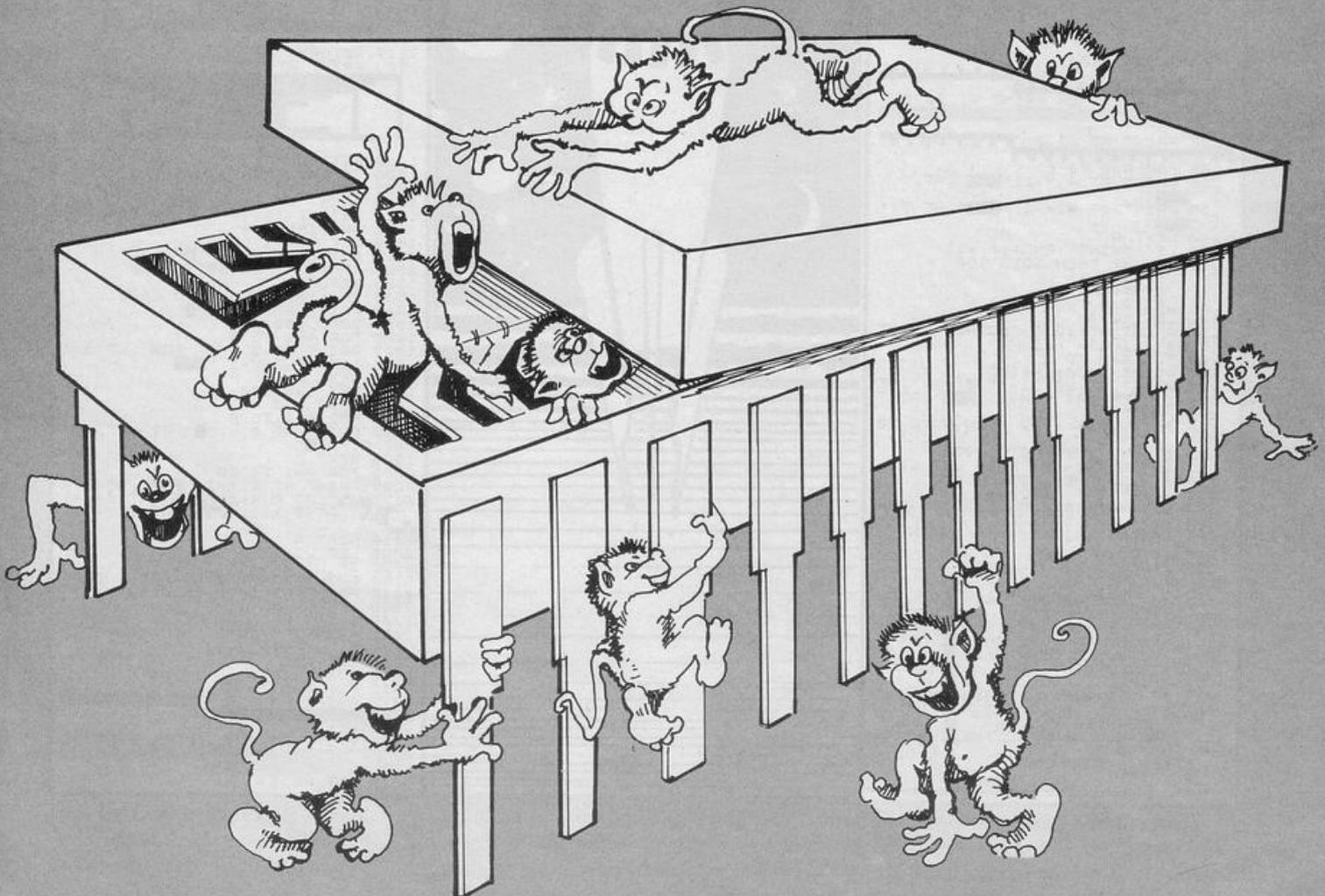
```

7;"C": LET score=score+10: LET x
=0: LET y=INT ( RND *5)+1
3005 PRINT AT 21,7; PAPER 2; IN
K 7;score
3010 RETURN
8000 CLS : PRINT AT 1,10; FLASH
1;"You scored ";score
8030 FOR a=0 TO 20: BEEP .01, RN
D *20: NEXT a: PRINT AT 10,2;
FLASH 1;"Press any key to start
again"
8040 PAUSE 0
8050 RUN 6
9000 FOR a= USR "a" TO USR "e"
+7
9010 READ b: POKE a,b
9020 NEXT a
9025 BORDER 4: PAPER 1: INK 7: C
LS
9030 DATA 24,24,24,24,255,129,12
9,129,129,129,129,255,24,24,24,2
4
9040 DATA 24,24,24,24,24,24,24,2
4,90,153,90,153,90,153,90,153
9050 DATA 90,90,219,219,219,219,
126,60
9055 PRINT AT 2,11; FLASH 1;"CH
IP RAID"
9056 PRINT AT 5,9; PAPER 7; INK
2;"By S.WHITE 1985"
9060 PRINT AT 10,5;"Press any k
ey to start"
9070 PAUSE 0
9080 RETURN

```

**G**remlins are trying to get into your microchip and you must stop them. 0=fire, 1=left and 2=right. Underlined characters are to be entered in graphics mode. Chip Raid, by S White, Hampshire, was written for the Spectrum.

# GREMLINS

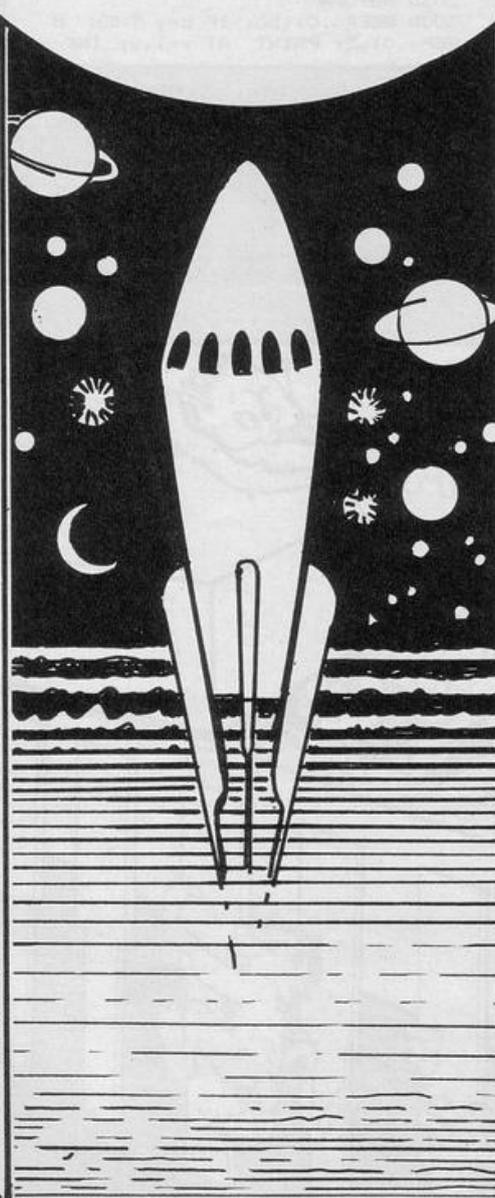


# PLANET DESTROYER

```

100 GOSUB 1000
101 LET L=0
102 LET LI=0
103 LET T=0
104 LET X=0
105 LET Y=0
106 LET W=0
107 LET U=0
108 PRINT "A=0 TO 8"
109 PRINT AT 8,0;" "
110 NEXT A
111 PRINT AT 8,0;" "
112 PRINT AT 11,0;" "
113 PRINT AT 18,0;" "
114 FOR A=12 TO 17
115 PRINT AT A,0;" "
116 PRINT AT A,31;" "
117 NEXT A
118 GOSUB 1200
119 PRINT AT 19,0;" "
120 IF U=5 THEN PRINT AT 20,0;" "
121 PRINT AT 21,0;" "
122 FOR A=0 TO 5
123 PRINT AT A,X-1;"0=0"
124 PRINT AT A,X-1;" "
125 NEXT A
126 LET Y=INT (RND*10)+11
127 IF Y=X THEN GOTO 150
128 LET O=0
129 LET P=5
130 LET Q=6
131 LET X1=X
132 PRINT AT 10,0;"SCORE=";S;AT
133 "10,25;"LIVES=";LI
134 FOR A=0 TO 2
135 GOSUB 1000+(A+100)
136 PRINT AT 20,31-(T/2);" "
137 Y-Y-5;" "
138 AT 6,X-1;"0=0"
139 AT 7
140 IF X<9 OR X>22 THEN GOTO 20
141 IF X=Y THEN GOTO 1900
142 LET INKEY$="0" THEN LET Q=1
143 0) THEN GOSUB 1500
144 LET S=INT (RND*2)
145 Y=Y+(B=0 AND Y<25)-(B=1
146 Y/8)
147 LET X=X+(INKEY$="2")-(INKEY
148 "1")
149 NEXT A
150 LET T=T+2
151 IF T<64 THEN GOTO 200
152 IF W=0 THEN LET A$=" YOU HA
153 PASSED THROUGH THE FIRST
154 LINE OF THE FEDERATIONS DEFENC
155 YOU MUST NOW USE ONLY YOUR F
156 LIGHT COMPUTER,KEEP THE (X) IN
157 THE MIDDLE OF YOUR SIGHTS
158 "
159 IF W=1 THEN LET A$=" HAVING
160 SUCCESSFULLY FLOWN DOWN
161 THE FINAL CHANNEL YOU MUST
162 BLE DUCT,WHEN IT IS
163 BENEATH YOUR SHIP
164 DESTROY IT....."
165

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```

455 FOR A=1 TO 192
456 PRINT A$(A);
457 NEXT A
458 PAUSE 4E4
459 IF W=1 THEN GOTO 5000
460 GOTO 3000
461 STOP
1000 PRINT AT 3,0;" "
1010 RETURN
1100 PRINT AT 3,0;" "
1110 RETURN
1200 PRINT AT 3,0;" "
1210 RETURN
1300 IF Q=2 THEN GOTO 1510
1305 LET X1=X
1310 PRINT AT P,X1;" "
1315 LET X1=X1+(2 AND INKEY$="2"
1320 AND INKEY$="1")
1325 LET P=P-1
1330 PRINT AT P,X1;" "
1335 IF P=3 THEN GOTO 1530
1340 RETURN
1350 IF X1=Y THEN GOTO 1800
1355 PRINT AT P,X1;" "
1360 GOTO 180
1365 FOR A=1 TO 5
1370 PRINT AT 3,Y-1;" "
1375 AT 3,Y-1;" "
1380 NEXT A
1385 LET S=S+100
1390 GOTO 150
1395 FOR A=1 TO 5
1400 PRINT AT A,Y;" "
1405 AT A,Y;" "
1410 NEXT A
1415 FOR A=1 TO 10
1420 PRINT AT 8,X-1;" "
1425 AT 7,X-1;" "
1430 AT 8,X-1;" "
1435 AT 7,X-1;" "
1440 NEXT A
1445 LET LI=LI-1
1450 IF LI<0 THEN GOTO 50
1455 PRINT AT 0,10;"GAME OVER"
1460 PRINT AT 10,0;"SCORE=";S
1465 STOP
1470 CLS
1475 PRINT AT 10,0;"SCORE=";S;AT
1480 "10,25;"LIVES=";LI
1485 LET W=1
1490 GOSUB 1200
1495 FOR A=0 TO 2
1500 PRINT AT A,0;" "
1505 NEXT A
1510 PRINT AT 8,0;" "
1520 LET Y=15

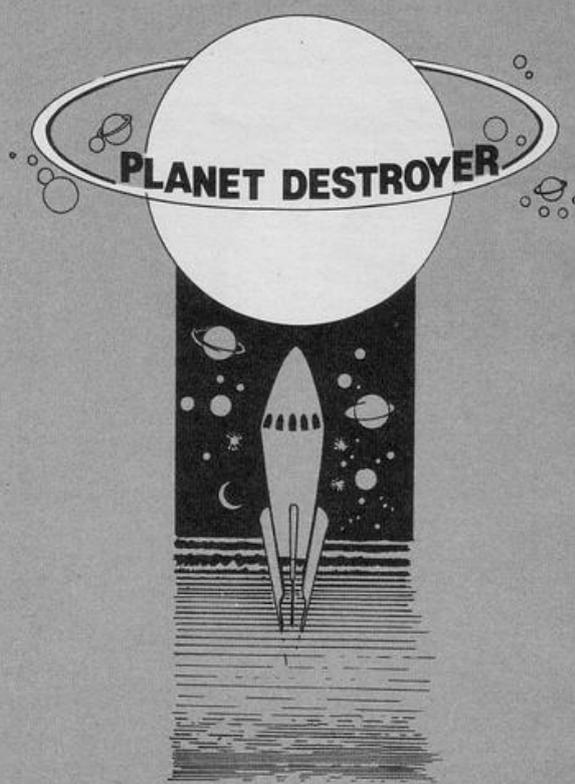
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In the role of Galactic Space Highway Construction Engineer (Demolition Specialist) it is your aim to blast the hapless planet below you to smithereens in order to make way for a new Space Highway. Luckily for the planet, it has members of the Keep Our Galaxy Intact Federation to defend it. Pilot your ship through three game levels in order to destroy the planet, or be destroyed by the Federation.

Planet Destroyer was written for the 16K ZX-81 by P Sansom of Wisbech, Cambridgeshire.

```

3025 LET X=15
3030 PRINT AT 11,0;" ";AT 19,0;" "
3032 FOR A=12 TO 18
3035 PRINT AT A,0;" ";AT A,31;" "
3040 NEXT A
3045 PRINT AT 20,0;" "
3090 FOR F=1 TO 64
3095 PRINT AT 15,X;"X";AT 20,31-
(F/2);" "
3100 PRINT AT 14,Y-3;" ";AT 13,Y-4;" "
3105 PRINT AT 12,Y-5;" ";AT 18,Y-5
3105 IF X<Y-2 OR X>Y+2 THEN GOTO
3500
3110 PRINT AT 15,X;" "
3115 IF X=Y THEN LET S=S+10
3120 LET X=X+(INKEY$="2")-(INKEY
$="1")
3125 LET B=INT (RND*2)
3130 LET Y=Y+(B=0 AND Y<20)-(B=1
AND Y>10)
3200 NEXT F
3250 GOTO 400
3300 FOR A=1 TO 25
3305 PRINT AT 15,X;"X";AT 15,X;"
X";AT 15,X;" "
3350 NEXT A
33510 LET LI=LI-1
33512 IF LI>0 THEN GOTO 3000
33520 PRINT AT 0,10;"GAME OVER";
AT 2,10;"SCORE = ";S
33525 STOP
35000 LET X=15
35010 LET L=INT (RND*25)+10
35020 FOR B=1 TO L
35030 FOR A=0 TO 2
35040 GOSUB 1000+(A*100)
35050 PRINT AT 4,X-1;" ";
35100 LET X=X+(INKEY$="2")-(INKEY
$="1")
35120 IF X<9 OR X>22 THEN GOTO 20
00
35200 NEXT A
35205 NEXT B
35210 PRINT AT 7,X-1;" ";
35215 FOR A=1 TO 5
35220 NEXT A
35230 PRINT AT 7,X-2;" ";AT 8
X;" "
35232 FOR A=1 TO 5
35235 IF INKEY$="9" THEN GOTO 800
35238 NEXT A
35230 PRINT AT 7,X-2;" ";AT 8
X;" "
7000 CLS
7010 PRINT AT 10,1;"YOU HAVE MIS
SED.YOU REAPPROACH"
7020 PAUSE 4E4
7030 CLS
7040 GOTO 10
8000 FOR A=5 TO 8
8005 PRINT AT A,X;" ";AT A,X;" "
8006 FOR B=1 TO 2
8007 NEXT B
8010 NEXT A
8011 FOR A=1 TO 10
8012 NEXT A
8015 FOR A=1 TO 50
8020 FR3T
8030 SLOW
8040 NEXT A
8050 CLS
80550 LET S=S+1000
80600 PRINT AT 10,10;"SCORE = ";S
8070 PRINT AT 20,1;"YOU NOW ATTA
CK ANOTHER PLANET"
8080 PAUSE 4E4
8085 CLS
8090 GOTO 10
80900 PRINT "
PLANET DESTROYER
8905 PRINT AT 3,0;"YOU MUST PILO
T YOUR SHIP (0-9) THROUGH THREE
LEVELS TO
ULTIMATELY BO
MB THE PLANET."
8910 PRINT
8920 PRINT "STEER YOUR SHIP WITH
1 AND 2 AND FIRE WITH 0.ONCE YOU
HAVE FIRED YOU CAN STEER YOUR M
ISSILES BUT MIND YOU DONT CRASH
INTO THE WALLS."
8930 PRINT
8940 PRINT "THE GAGE AT THE BOTT
OM SHOWS THETIME REMAINING ON TH
AT LEVEL."
8950 PRINT AT 20,10;"GOOD LUCK"
8960 PAUSE 4E4
8970 CLS
8980 RETURN
8990 SAVE "DEATHSTAR"
8995 RUN
    
```



# 3

## in a row

```

1 REM #3-IN-A-ROW#
4 DIM A(36)
10 DIM N(36)
10 DIM T(2)
10 LET S=0
10 LET T=0
10 LET Z=0
10 LET X=0
10 LET U=1
10 IF G<>0 THEN GOTO 30
30 GOSUB 7000
30 GOSUB 5000
30 IF U<>1 THEN GOTO 45
40 GOSUB 5999
45 FOR C=1 TO 36
50 LET A(C)=0
50 NEXT C
60 GOSUB 500
70 REM #FIRST PLAYER SELECTION
* 80 IF U=1 THEN LET O=INT (RND*
2)
81 IF U=1 THEN LET E=0-1
82 IF U=1 THEN LET E=0-1
85 FOR I=1 TO 36
90 IF E=0 THEN PRINT AT 5,1;"
TO PLAY "
95 IF E=1 THEN PRINT AT 5,1;"
TO PLAY "
99 REM #GAME BEGINS#
100 INPUT P
105 IF P<1 OR P>36 THEN GOTO 10
0
110 IF A(P)<>0 THEN LET U$=" "
120 IF E=0 THEN LET U$=" "
125 IF E=1 THEN LET U$=" "
130 PRINT AT M(P)-1,N(P);U$
135 PRINT AT M(P)-1,N(P);U$
140 IF E=0 THEN LET A(P)=1
145 IF E=1 THEN LET A(P)=2
150 IF E=0 THEN GOTO 170
    
```

Written for the 16K ZX-81 by Glenn and Paul Jones of Kingsthorpe, Northampton, Three in a Row is a strategy game for two players. Compete to form as many rows of three counters as possible within the six by six game grid. The game is played over four rounds, and the computer takes 18 seconds to calculate the scoring rows.

Continued on next page



```

1 PRINT "Who yer gonna call..
.....GHOSTBLASTERS!
"....."By Michael Durkin"
2 BEEP .3,4: BEEP .15,2: BEEP
.5,4: PAUSE 50
3 OVER 1
4 BORDER 2: PAPER 0: INK 7: D
LS : BRIGHT 1
8 GO SUB 9000
10 FOR f=USR "a" TO USR "d"+
7: READ a: POKE f,a: NEXT f
20 DATA 3,15,27,49,59,63,63,57
,192,240,216,140,220,252,252,220
,24,12,0,0,0,0,0,0,204,102,0,0,0
,0,0,0
30 LET sc=100: LET a=15: LET b
=10: LET ti=1000
32 GO SUB 1000
35 LET x= INT ( RND *21): LET
v=30
37 IF sc<0 THEN GO TO 3000
40 PRINT AT b,a: OVER 0:" ":
LET a=a+( INKEY# =f)- ( INKEY# =
1$): LET b=b+( INKEY# =d)- ( INK
EY# =u$)
42 LET ti=ti-1: IF ti=0 THEN
GO TO 2800
45 IF INKEY# =1$ THEN LET a=
a-1
    
```



The attic room is haunted. As chief Ghostblaster, can you train your sights on the ghosts and shoot them down before they escape through the door at the left of the room?

Written for the Spectrum or Spectrum Plus by Michael Durkin of Preston, Lancashire.

```

50 IF b<0 THEN LET b=0
60 IF a>30 THEN LET a=30
70 IF a<0 THEN LET a=0
80 IF b>21 THEN LET b=21
90 PRINT AT x,y: OVER 1:"AB":
AT x+1,y: OVER 1:"CD"
95 BEEP .005,x+y-10
100 PRINT AT b,a: OVER 0:"+"
110 IF INKEY# =f$ AND b=x AND
a=y THEN FOR g=7 TO 0 STEP -1:
PRINT OVER 0: AT b,a: INK g:"AB
": AT b+1,a: INK g:"CD": BEEP .0
5,g+30: NEXT g: LET sc=sc+( INT
( RND *200))+100: LET p=0: CLS :
GO SUB 1000: GO TO 35
120 IF INKEY# =f$ AND b <> x A
ND a <> y THEN BEEP .01,-5
140 PRINT #0: AT 0,0: FLASH 1:"
GHOSTBLASTERS"
150 PRINT AT x,y: OVER 1:"AB":
AT x+1,y: OVER 1:"CD": LET y=y-
1
160 IF y=0 THEN CLS : LET sc=s
c-10: GO SUB 1000: GO TO 35
170 PRINT #0: AT 0,15:"CASH:";s
c:#0: AT 1,10:"TIME:";ti
175 LET v= INT ( RND *100): IF
v>50 THEN LET v=0
177 IF v<25 AND v>0 THEN LET v
=-1
178 IF v >= 25 AND v <= 50 THEN
LET v=1
180 LET x=x+v: IF x<0 THEN LET
x=0
190 IF x>20 THEN LET x=20
200 GO TO 40
1000 PLOT 0,0: DRAW 50,50: DRAW
155,0: DRAW 0,75: DRAW -155,0: D
RAW 0,-75: PLOT 255,0: DRAW -50,
50: PLOT 255,175: DRAW -50,-50:
50: PLOT 0,175: DRAW 50,-50
PLOT 0,10: PLOT 10,10: DRAW 0,1
1010 INK 5: PLOT 10,10: DRAW 0,1
00: DRAW 20,-5: DRAW 0,-75: PLOT
24,75: DRAW 4,0: PLOT 150,100:
DRAW 30,0: DRAW 0,-30: DRAW -30,
0: DRAW 0,30: INK 7: RETURN
2800 IF sc >= sk THEN GO TO 700
0
2805 CLS : PRINT FLASH 1: AT 10
,10:"GAME OVER": AT 12,3:"TIME U
P AND YOU DIDNT EARN": AT 14,9:"
ENOUGH CASH": GO TO 9500
3000 CLS : PRINT FLASH 1: AT 10
,10:"GAME OVER": AT 12,6:"YOU'RE
OUT OF CASH!"
3010 GO TO 9500
7000 CLS : PRINT "YOU MADE SUFFI
CIENT CASH. WELL DONE!
YOU WERE ON SKILL LEVEL ";sk/100
0:" WHY NOT TRY A HARDER LEVEL"
: FOR f=0 TO 50: BEEP .01,f: NEX
T f: GO TO 9510
9000 INPUT "KEYS:LEFT ? ";l$
9010 INPUT "RIGHT ? ";r$
9020 INPUT "UP ? ";u$
9030 INPUT "DOWN ? ";d$
9040 INPUT "FIRE ? ";f$
9045 INPUT "SKILL LEVEL (1-10)":
sk: IF sk<1 OR sk>10 THEN GO TO
9045
9050 LET sk=sk*1000: RETURN
9500 BEEP .5,4: BEEP .3,1: BEEP
.2,5: BEEP .5,4: BEEP .4,1
9510 PRINT #0, AT 1,0:"Another g
ame? eh? (Y/N)": FOR k=0 TO 50:
NEXT k
9520 IF INKEY# ="y" THEN RUN
9530 IF INKEY# ="n" THEN GO TO
9550
9540 GO TO 9520
9550 CLS : PRINT "Sure?(Y/N)": B
EEP .5,-20
9560 IF INKEY# ="y" THEN RANDO
MIZE USR 0
9570 IF INKEY# ="n" THEN GO TO
9510
9580 GO TO 9560
    
```

# GHOSTBLASTERS



# You've got it



# Licked

**C**heat at **Cavelon** by starting the game and then pressing down as many keys as you can at the same time. This is best done by placing a book on the keyboard and then pressing down upon it. "HI CHRIS WHAT SHALL I DO" will then be printed on screen. Press a key 1 to 6 to choose the sheet on which you wish to start the next game.

**Paul Howarth,**  
Skelmersdale, Lancs.

**D**isable the **BREAK** key on a mark 3 Spectrum by entering **POKE 23613,82** at the start of a program. To make the computer crash when the **BREAK** key is pressed, enter **23613,0** at the beginning of a program.

**Mrs T Burke,**  
Scrafield, Lincs.

**T**his short Basic program will provide infinite lives on some versions of **Underwulde** from Ultimate. Enter it, and then run the tape.

```
10 LOAD "" SCREEN$
20 LOAD "" CODE
30 POKE 23314,201
40 RANDOMISE USR
23300
50 POKE 59377,0
60 RANDOMISE USR
26610
```

**João Prospero,**  
Lisbon, Portugal.

**G**ain infinite lives in **Sabre Wolf** from Ultimate. Load the first section of the program, press break and stop the tape. Type in: **POKE 23756,1: CLEAR 65535**. Edit the line and move the cursor to the end and delete the following: **PRINT USR 23424**. Add line 10 with either of these two pokes: **POKE 43575,255** for infinite lives with one player, or **POKE 45520,255** for infinite lives with two players.

**Gregory Cawthorn,**  
Letchworth, Herts.

**T**o reach the **B.P.** can in **Pyjamarama**: collect the empty water bucket, take it to the bathroom and pass under the tap. Your bucket will now be full. Take the bucket to the room with the **B.P.** can, and you will find that it is now safe to pass the snappers. To fill the **B.P.** can, take it to the fuel dispenser.

**Jason Humphries,**  
Coventry.

**O**btain infinite lives on **Lunar Jetman** from Ultimate by adding this to the loader program:

```
10 CLEAR 24575: PAPER
7: INK 0: BORDER 0: CLS
20 FOR L=1 TO 5: PRINT
AT 6,0,: LOAD "" CODE:
NEXT L
30 POKE 23439,201:
POKE 36965,0: RANDO-
MISE USR 32768
```

**Thomas Hindson,**  
Oldham, Manchester.

**Z**X-81 owners will be less familiar with the end-listing procedure which occurs in machine code programs when **NEWLINE** is pressed and the first line overfills the screen. **POKE 16513,118** to prevent this happening.

**Paul Lockett,**  
Northwich, Cheshire.

**T**o escape from the goblins' dungeon in **The Hobbit** from Melbourne House, say to Thorin "open window", and repeat this until he does so. Then say "carry me" and then say "go". He should then carry you out of the dungeon.

To cross the black river say "Throw rope across" and carry on throwing until the rope lands in a boat. Then pull the rope and climb into the boat.

**Christopher Ryan,**  
Euxton, Lancs.



# Pen-friends

**James White**, 27 River Valley Road, Chudleigh Knighton, South Devon would like to find a pen pal outside the Devon area who also owns a Spectrum, and who would be interested in swapping program listings. He would be interested to hear from anyone who has been reading *Sinclair Programs* since before March 1984.

**Computer Pen-Pal Club**, 1 Constellation Street, Adamsdown, Cardiff CF2 1HJ are just starting up. They hope to be able to arrange contacts between computer users, particularly Sinclair users. If you are interested, send a stamped addressed envelope, together with your age, computer, telephone number, and any other relevant details.

**Andrew Hales**, 26 Queens Annes Drive, Westcliff-on-Sea, Essex owns a ZX-81 and would like to find a penfriend in the Essex area. He is interested in swapping ZX-81 games and ideas.

**Jonathan Roberts**, 5 Troed-y-Bwlich, De-ganwy, Gynedd, North Wales would like a penpal from the York area who owns a Spectrum, preferably a 48K Spectrum.

**Martin Garthwaite**, 127 Dringthorpe Road, Dringhouse, York, is eleven years old. He is looking for a penfriend who is interested in Spectrum software such as *Atic Atac* and *Ghostbusters*, and who knows codes for infinite lives in such games. He would also be pleased to swap program listings.



**Savasan Yurtsever**, Mimarlar ap 6/6, A. Eg-lence, Etlik, Ankara, Turkey has owned a 48K Spectrum for five months and has already written several programs for it. He would like to hear from anyone in search of a penfriend.

**Paul Birch**, Treetops, Whitby, Ellesmere Port, L65 6QT owns a 16K ZX-81. He would like to find a ZX-81 owning pen-pal who lives in the Cheshire area.

**Simon Brodbeck**, Wild Carr Barn, Gressingham, Lancaster, Lancashire feels that the ZX-81 is a very useful machine and that it is treated unfairly both by the general public and by software companies. He would like to hear from other people who think the same way, in order to exchange programs and tips.

**Stuart Bain**, 1 Trenowin Mews, 31 Chancellor Avenue, Durban, South Africa is 14 years old and is looking for a Spectrum owning pen-friend about the same age as himself. He would be willing to swap advice, news, tips and programs. His favourite games are *Sabre Wolf* and *Lords of Midnight*.

# Questline

---

## Urban Upstart from Richard Shepherd

---

**Cathy Foot made the grave mistake of leaving sunny Hampstead for the wilds of Scarthorpe. Will she ever escape?**

"HAD bovver wiv dog the other day — lost! Said Yeah man, you get out this hole. So I tell me, split this dump, which bug me more than I thought. Decide I leave this mong the town hall stuff fo who want to split dis Babylon."

Yah, well that's what I found in the archives when I tried to find out how to get out of here — I mean, well, it's just TOO tacky, not a Habitat in sight, and Julian says the wine bars don't bear thinking about — too, too sick-making. We've taken to drinking lager, but this stripey stuff the previous tenant left in the fridge has the oddest effect on one — Oh, Hampstead! Why did I leave you? Oh God — another can of beer — I can't keep this style going much longer!

If I didn't know that I could escape I might never have made the effort. Living here HAS that effect on folks. But I got this letter, see. It was addressed to me, but the person what wrote it forgot we know our mates by their Christian names and signed S. Jay. Good on yer mate, I hope the schools and fings are better out there than they are in Scarthorpe — don't see how they CAN'T be! But next time give me yer full name, so I'll know who you are!

Still, I'm getting out meself and will look you up. The next grubby tramp that knocks at yer door in Glebelands Road, looking for a

handout or a job COULD be yer old mate from Scarthorpe. Fanks, too, to the postie for gettin through. Only one question, postie, old pal, did yer HAVE to use yer submachine gun on my front door? That's part of the reason I'm getting out. I LIKED my old doss, the only thing this one has going for it is a solid front door.

I'm writing this in hospital while I get over my last mixup with the United supporters, then I'm getting out while the going is good. The problem is that the painkillers they are giving me sometimes effects what I write, so please excuse my wandering fingers . . . you CAN make sense of it if you try.

Oops, here comes the nurse again!

Getting out of jail is easy, once you've sussed it. If you xbjum poh fopvhi (move letters back one), the sergeant jt dbmmfex bxbz and you dbo tofbl pvu.

Boy, that stuff they give you is powerful!

There is not much chance to improve reading skills here, apart from gravestones, posters and signs. There is a useful book in the bookshop, though.

Fellow adventurers might remember to dress before leaving their rooms, the police in this town are GOOD, they have to be, but they can be said to be too keen on arrests — perhaps 'cause we don't believe in staying locked up if we can help it. They seem to spend more time on making arrests for indecent exposure, loitering and littering, when, if they was to arrest the football hooligans this might become quite a decent little town. Still, after the last Football Wars, when we were banned by the F.A. from playing against any club outside the town for the next hundred years — I may have

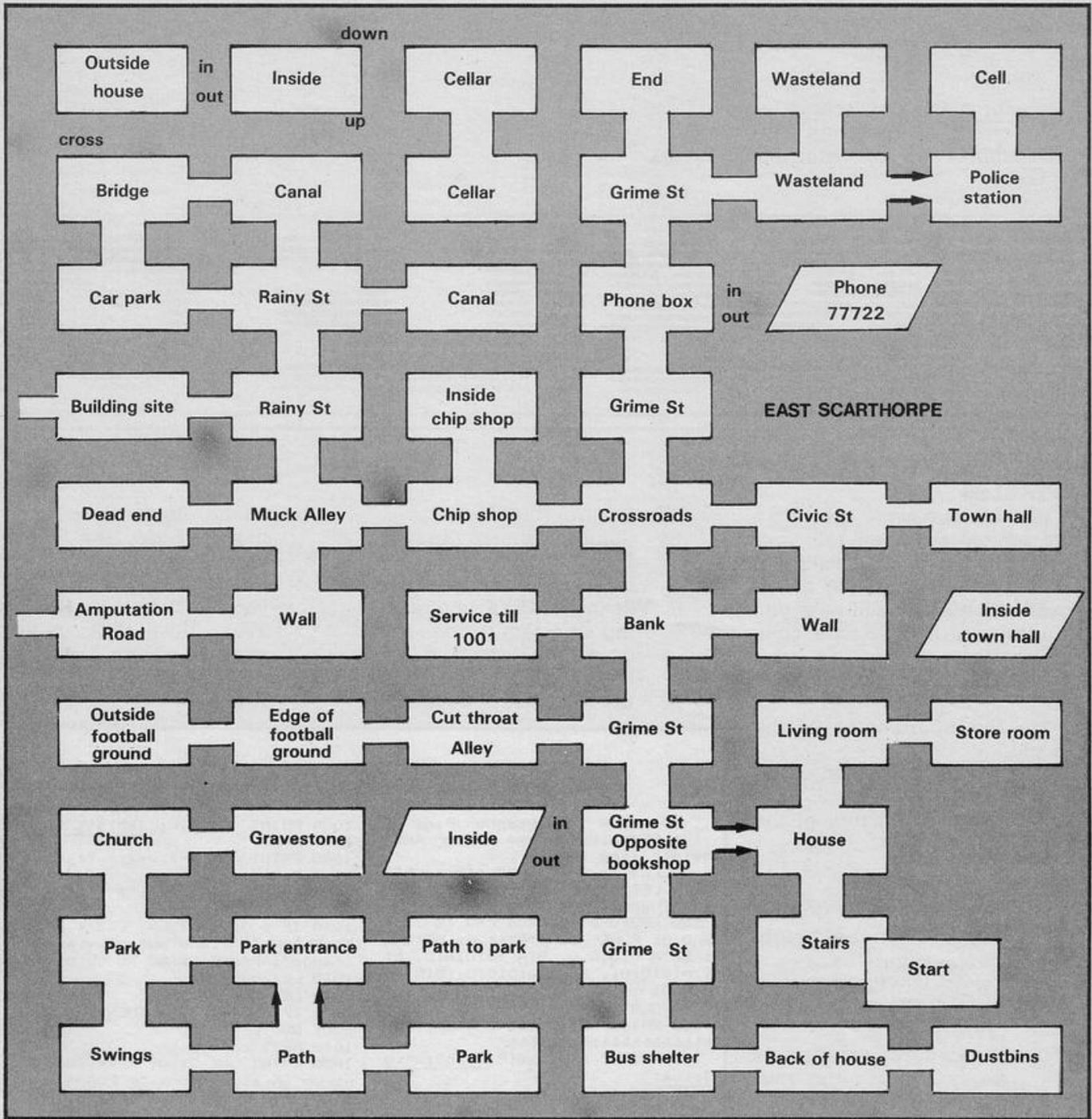
missed a few zeros off that figure, but it don't matter, do it? — the police seem to have lost interest in other thugs and the town has gone right to the dogs.

The worst thing about a charge of indecent exposure is that there is NO WAY to rip off a pair of strides if yore in the nick — the old bill are too attached to theirs and they've learnt to keep their spares at home — if cops HAVE homes.

The worst of the hooligans seem to live off Cut Throat Alley — that used to be such a pretty street once, when it was called Coburn Road. NEVER go down there on yer own, the filth use an armoured car if they get called in. The Ambulance guys are pretty good too; they go everywhere — they can afford to, they got their ambulance from the army experimental center and it sposed to be able to take anything up to an atom bomb. Nobody tried that yet, they closed down the college and moved out a lot of stuff when we got banned — some folks declare U.D.I., we got it forced on us; even Maggie gave up when they stopped her from using a nuke.

The only problem with the hospital is that since the oiks started roaming the corridors the staff don't see no point in letting us out. They say that if they do, it only means getting the ambulance out to pick us up again later. I spoze they right. You CAN get out though, there IS a way through that maze of corridors and if you got a doctor coat, they got so many problems with staff they let you go in case you really ARE the new Doctor.

If you REALLY stuck — god, here comes that \*\*\* nurse again, there is one surefire way out of the hospital, you just txfbs. Leave the mbshf lfz in uif jpvtf before



mfwbjoh boe after vokpdljoh uit epps.

The weird thing about Scarthorpe is that only the binmen seem to have credit cards — and those of you who listen to the Chip Shop are going to have a nasty surprise.

They tell me the telephone works, but at best all I seem to get is that \*\*\*\*\* speaking clock — at the third stroke the time will be seven seventy seven and twenty two seconds — precisely?

At the worst, the place is crawling with fuzzmobiles, all looking for yours truly.

Cathy insists I tell you that they've been real clever with

their graphics, and you can get a long way without being able to read a map. And Julian's friend just loved the Fauviste SCREEN\$.

There's one thing bout living in Scarthorpe, once I get out the world's gonna wonder what hit it.

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

From: .....

HELP OFFERED .....

HELP WANTED .....





## RENUMBER

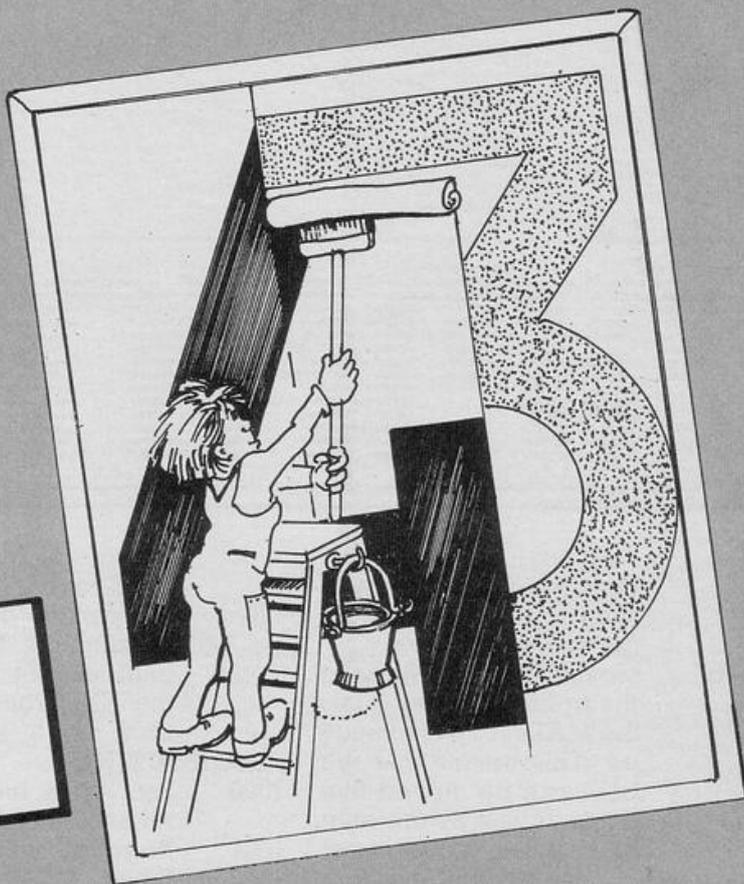
**R**enummering programs is often useful, both to make them look tidy, or to create a little more room in a subroutine. With these lines at the end of your listing, you can **Renumber** programs on the 48K Spectrum or Spectrum Plus as often as you wish. Simply enter GOTO 9997 when you wish to change line numbers, and the program will prompt you.

Note that only line numbers will be changed. Numbers within lines, following statements such as GOTO and GOSUB will not be changed.

Written by G Bennett of Hillingdon, Middlesex.

```

9997 LET s= PEEK 23635+256*( PEEK
K 23636): INPUT "in steps of?";s
t: INPUT "begin at?";b
9998 IF ( PEEK s+1)+(256* PEEK s
)>9996 THEN STOP
9999 POKE s, INT (b/256): POKE s
+1,b-256* INT (b/256): LET s=s+4
+ PEEK (s+2)+ PEEK (s+3)*256: LE
T b=b+st: GO TO 9998
    
```



# BEGINNER

## COIN DROP

**D**rop your coins into the box which appears on the bottom of the screen by pressing any key. Your coin is held in a claw suspended from a rail running across the top. Each time you hit your target you are awarded a sum of money. To continue playing press any key. All underlined characters are to be entered in graphics mode.

Coin Drop was written for the Spectrum by Jamie Monk from Crawley.



```

5 LET mi=0
10 LET mib=0
30 CLS : LET m= INT ( RND *10)
+1
31 IF m=1 THEN LET v=50: LET
a$="D": LET b$="Fifty Pence"
32 IF m >= 2 THEN LET v=1: LE
T a$="o": LET b$="One Penny"
34 IF m >= 6 THEN LET v=5: LE
T a$="*": LET b$="Five Pence"
36 IF m >= 9 THEN LET v=10: L
ET a$="0": LET b$="Ten Pence"
40 PRINT AT 0,5: INVERSE 1;b$
45 PRINT AT 9,0:"(32*ig3)"
50 LET pob= INT ( RND *26)+5
70 PRINT AT 20,pob:"AB"
75 FOR f=0 TO 31
80 PRINT AT 10,f:"C"
90 PAUSE 5
100 IF INKEY# <> "" THEN GO
TO 200
110 PAUSE 1: PRINT AT 10,f:" "
    
```

```

: NEXT f
120 LET mi=mi+1: IF mi=5 THEN
GO TO 300
130 GO TO 30
200 FOR g=10 TO 19
210 PRINT AT g,f;a$
220 PAUSE 2: PRINT AT g,f:" "
230 NEXT g
240 IF f=pob OR f=pob+1 THEN G
O TO 260
241 LET mi=mi+1: IF mi=5 THEN
GO TO 300
245 PRINT AT 20,f;"X": BEEP .3
,-30: BEEP .3,-50
246 PRINT AT 10,0:"YOU MISSED"
: PRINT "PRESS A KEY"
247 PAUSE 0: GO TO 30
260 PRINT AT 20,pob: INK 2;"AB
": BEEP .03,55: BEEP .03,50: BEE
P .04,50: BEEP .04,50: BEEP .03,
55
265 LET mib=mib+v
270 PRINT AT 10,0:"Well Done!"
    
```

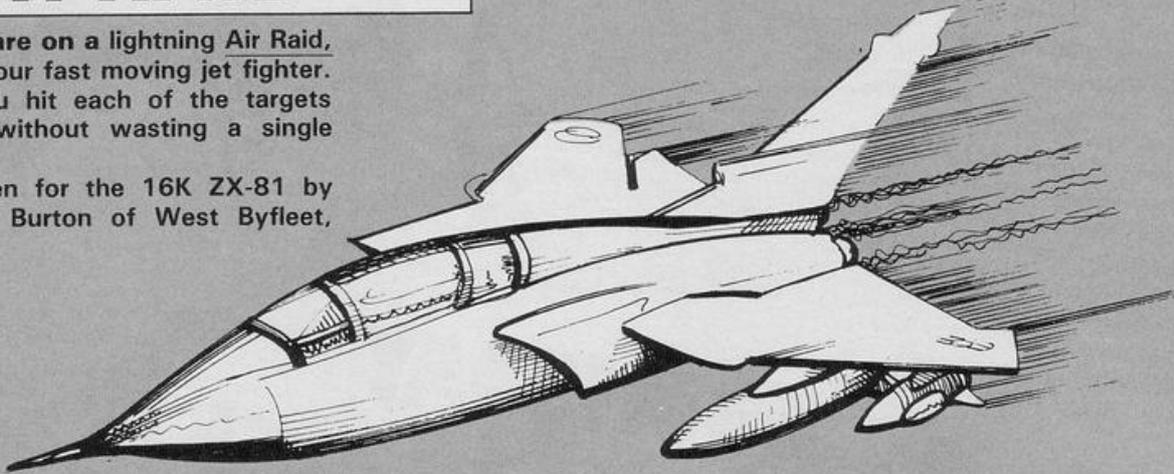
```

You Dropped: "; AT 11,0: INK 2;b
$; INK 0;" In the Box"
280 PAUSE 0: GO TO 30
300 BEEP .5,-40: BEEP .5,-50
310 PRINT "You Have Collected "
;mib;" Pence"
320 INPUT "Play Again ? (y/n) "
:f$
330 IF f$(1)="y" THEN RUN
340 IF f$(1)="n" THEN STOP
350 GO TO 320
9990 FOR f=USR "a" TO USR "d"+
7: READ a: POKE f,a: NEXT f
9991 DATA 0,15,48,48,47,32,32,63
9992 DATA 0,248,4,6,250,2,2,254
9993 DATA 124,124,16,56,84,84,84
,0
9994 DATA 60,66,153,165,165,153,
66,60
9995 RUN
9999 SAVE "Coin Drop" LINE 9990
    
```

## AIR RAID

You are on a lightning Air Raid, in your fast moving jet fighter. Can you hit each of the targets below without wasting a single bomb?

Written for the 16K ZX-81 by Charles Burton of West Byfleet, Surrey.



```

1 LET Z=0
2 DIM U(5)
3 LET S=0
15 PRINT AT 0,10:"AIR-RAID"
20 LET A$=""
21 PRINT AT 20,0;A$+A$+A$+A$
24 FOR D=1 TO 10
26 FOR N=1 TO 5
27 LET U(N)=INT (RND*27)+4
28 PRINT AT 19,U(N);CHR$ 173
29 NEXT N
40 FOR A=27 TO 1 STEP -1
50 PRINT AT 5,A;"-0:"
70 IF INKEY$="0" THEN GOTO 130
80 NEXT A
90 PRINT AT 5,A;" "
95 PRINT AT 19,0;" "
110 NEXT D
117 PRINT AT 5,0;"YOUR HITS/SHOTS=";S;"/"/Z
120 STOP
131 LET Z=Z+1
132 FOR F=7 TO 19
140 PRINT AT F,A+1;"*";AT F-1,A+1;" "
145 NEXT F
150 FOR Y=1 TO 5
153 IF U(Y)=A+1 THEN GOTO 180
160 NEXT Y
165 PRINT AT F-1,A+1;" "
170 NEXT A
180 LET S=S+1
185 PRINT AT F-1,A+1;CHR$ 151
190 NEXT A
195 GOTO 90

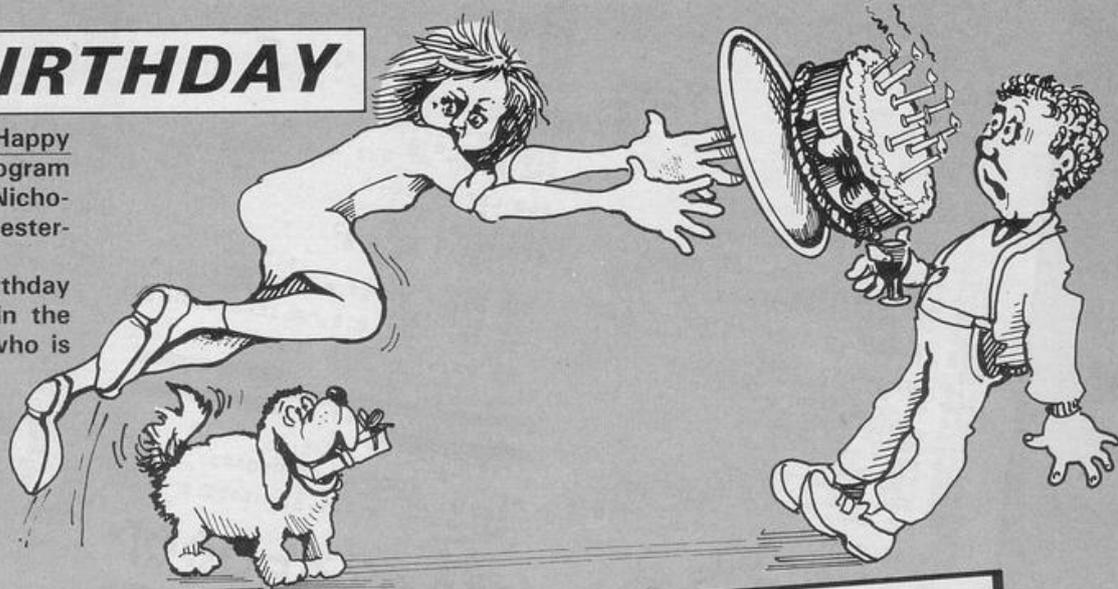
```

## BEGINNER

## HAPPY BIRTHDAY

Wish your friends a Happy Birthday with this program written for the Spectrum by Nicholas Moyle of Dursley, Gloucestershire.

The program will play a birthday tune and display a pattern in the favourite colour of anyone who is having a birthday.



```

1 CLS
10 INPUT "Who has got a birthday today? (Please enter your name) ";a$
20 CLS : INPUT "What is your favourite colour? (Enter a number 0 to 6) ";b
25 CLS
30 INK b
35 BORDER b
40 FOR f=0 TO 3: PRINT AT f,0

```

```

;"HAPPY BIRTHDAY ";a$
50 NEXT f
60 BEEP .25,0: BEEP .25,0: BEEP .5,2: BEEP .5,0: BEEP .5,5: BEEP 1,4
70 BEEP .25,0: BEEP .25,0: BEEP .5,2: BEEP .5,0: BEEP .5,7: BEEP 1,5
80 BEEP .25,0: BEEP .25,0: BEEP .5,12: BEEP .5,9: BEEP .5,5: BEEP .5,4: BEEP 1,2

```

```

90 BEEP .25,10: BEEP .25,10: BEEP .5,9: BEEP .5,5: BEEP .5,7: BEEP 1,5
100 FOR s=-40 TO 40 STEP 1: BEEP .005,s: PLOT s+120,140: NEXT s
110 PLOT 70,110
120 DRAW 4,4,4040
1000 STDP
9999 SAVE "Birthday" LINE 1: RUN

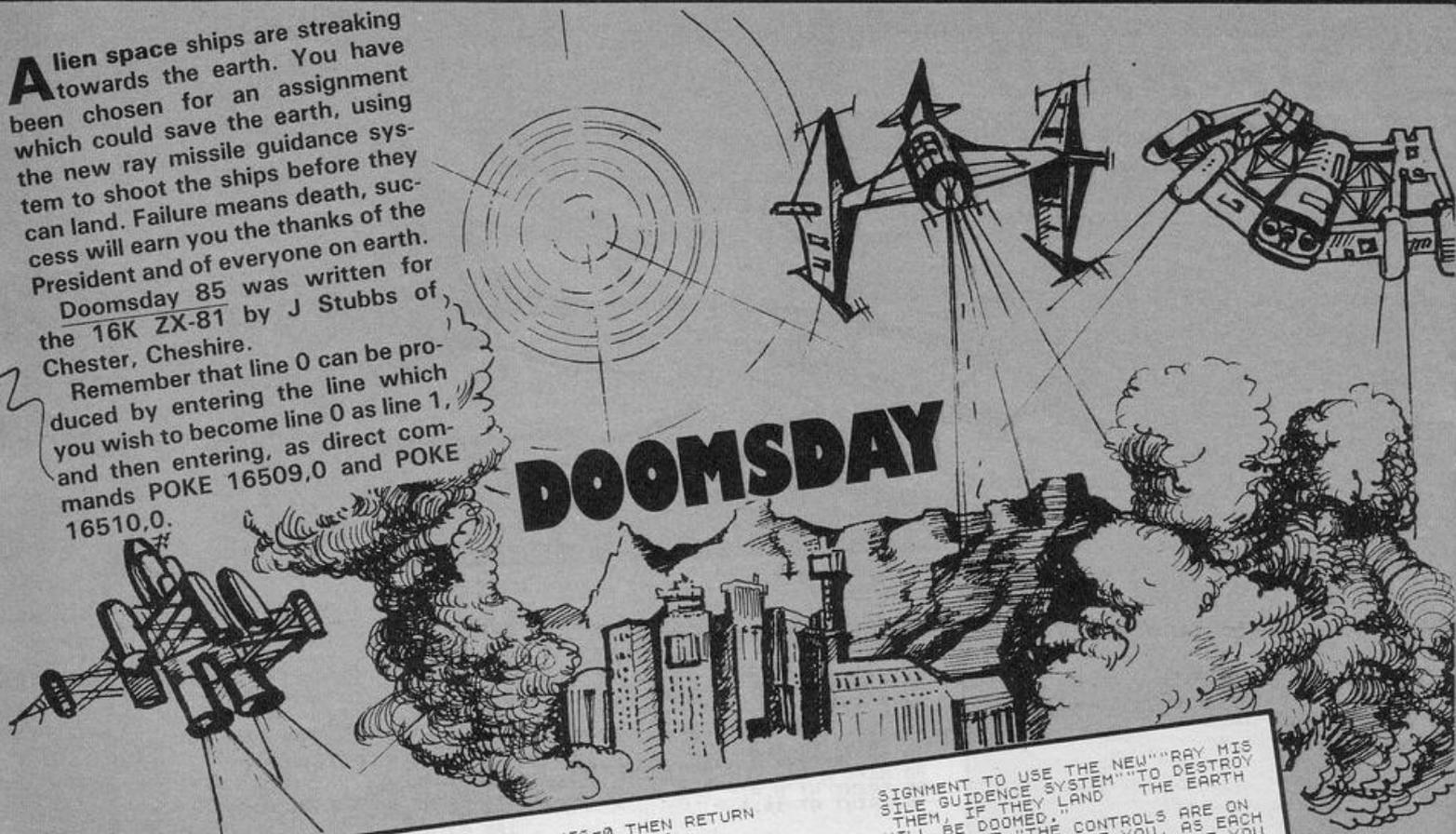
```

Alien space ships are streaking towards the earth. You have been chosen for an assignment which could save the earth, using the new ray missile guidance system to shoot the ships before they can land. Failure means death, success will earn you the thanks of the President and of everyone on earth.

Doomsday 85 was written for the 16K ZX-81 by J Stubbs of Chester, Cheshire.

Remember that line 0 can be produced by entering the line which you wish to become line 0 as line 1, and then entering, as direct commands POKE 16509,0 and POKE 16510,0.

# DOOMSDAY



```

00 REM E,AND? TAN
10 REM MISSILE DEFENCE
40 GOSUB 820
50 LET R=INT (RND*10)+3
60 LET DES=0
70 LET LD=0
80 LET MIS=R*RR
90 LET MS=" "
95 LET T$=" "
100 LET S$=" "
110 GOSUB 750
120 LET F=15
130 LET F=15
140 GOSUB 420
150 LET X=0
160 LET Y=0
170 GOSUB 750
175 IF R=0 THEN GOTO 1100
180 LET A=INT (RND*25)+1
190 LET D=D+1
200 LET B=INT (RND*(25-A))+A
210 LET Z=A TO B
220 FOR Z=A TO B
230 IF RND>.7 THEN PRINT AT D,Z
240 IF RND<.7 THEN PRINT AT D,Z
250
260 LET P=USR 16514
265 IF P<>0 THEN GOTO 550
270 IF X>0 THEN GOSUB 500
280 GOSUB 410
290 PRINT AT D,Z;S$
300 NEXT Z
310 LET D=D+1
320 LET A=INT RND*5
330 FOR Z=B TO A STEP -1
340 IF RND>.7 THEN PRINT AT D,Z
350 IF RND<.7 THEN PRINT AT D,Z
360
370 LET P=USR 16514
380 IF P<>0 THEN GOTO 550
390 IF X>0 THEN GOSUB 500
400 GOSUB 410
410 PRINT AT D,Z;S$
420 NEXT Z
430 GOTO 200
440 IF INKEY$="" THEN RETURN
450 GOTO 17,E-2;
7,E;
430 LET E=E+(INKEY$="8" AND E<2)
9) -(INKEY$="5" AND E>2)
440 IF INKEY$="0" THEN GOTO 460
450 RETURN
    
```

```

460 IF MIS=0 THEN RETURN
470 LET MIS=MIS-1
480 GOSUB 800
490 LET X=X+1
500 FOR F=16 TO 3 STEP -1
510 PRINT AT F,E;
520 LET P=USR 16514
530 LET P=136 THEN NEXT F,E;" "
540 PRINT AT F,E;" " AT F,E;" "
550 IF P=28 THEN GOTO 610
560 PRINT AT F,E;
570 RETURN
580 NEXT F
590 LET X=0
600 RETURN
610 PRINT AT F-1,E;" 0 "
620 PRINT AT 4,10;"YOU GOT HIM?"
630 LET DES=DES+1
640 GOTO 670
650 PRINT AT D-1,Z-2;"HE LANDED"
660
670 LET LD=LD+1
680 LET A=R-1
690 PAUSE 100
700 FOR Z=2 TO 13
710 PRINT AT Z,0;" "
720 NEXT Z
730 PRINT AT 17,E-2;" "
740 GOTO 120
750 PRINT AT 0,5;"ALIENS SIGHTED"
760 PRINT AT 1,5;"DESTROYED:";D
770 PRINT AT 14,0;" "
780 PRINT AT 18,4;"MISSILE GUARD"
790 PRINT AT 19,0;" " "5" " PO
800 PRINT AT 21,21;" "
805 PRINT AT 21,5;"MISSILE STOC"
K:" MIS
810 RETURN
820 PRINT AT 10,0;" "
830 PRINT AT 15,10;"BY JED STUB"
840 PAUSE 4E4
850 CLS
850 PRINT AT 4,0;"ALIEN SPACE C"
RAFTS ARE TRYING TO LAND ON EART"
H, YOU HAVE BEEN GIVEN THE AS"
    
```

```

SIGNMENT TO USE THE NEW"RAY MIS"
SILE GUIDANCE SYSTEM"TO DESTROY"
THEM, IF THEY LAND THE EARTH"
WILL BE DOOMED."
870 PRINT "THE CONTROLS ARE ON"
THE PANEL BEFORE YOU, AS EACH"
CRAFT COMES INTO VIEW, MOVE YOU"
R GUIDANCE SYSTEM:"5" " LEFT,"
"8" " RIGHT, SO THAT THE RAY IS"
CLOSE IN LINE TO THE CRAFT, T"
O FIRE A MISSILE PRESS"0" " FOR"
GUIDANCE USE
872 PRINT AT 20,28;"N/L"
874 PAUSE 4E4
876 CLS
880 PRINT AT 4,0;"YOU MUST PENE"
TRATE THE CENTRAL DEFLECTOR AN"
D DESTROY THE BUBBLE, IF YOU MISS"
WITH YOUR FIRST MISSILE, FIR"
E AGAIN BUT DO NOT KEEP YOUR FI"
NGER ON THE BUTTON OR YOU"LL R"
UN OUT OF MISSILES."
885 PRINT "THE ALIENS FROM TIME"
TO TIME TURN ON A FORCE FIE"
LD WHICH MAKES YOUR MISSILE"
INACTIVE."
887 PRINT AT 20,28;"N/L"
890 PAUSE 4E4
900 CLS
1000 PRINT AT 6,2;"WHAT LEVEL DO"
YOU WISH: 1=1 MISSILE F"
OR EACH SIGHTING 2=2"
3=3"
4=4"
1010 PRINT AT 12,2;"KEY IN THE N"
UMBER:"
1020 INPUT A$
1030 IF A$="5" THEN RETURN
1040 GOTO 1020
1050 RETURN
1100 IF LD=1 THEN PRINT AT 10,10"
YOU FAILED"
1110 IF LD=1 THEN PRINT AT 8,0;""
GROUND FORCES ARE ABLE TO"
DEAL WITH THE ONE THAT LANDED."
THE PRESIDENT WANTS TO"
THANK YOU."
1120 IF LD=0 THEN PRINT AT 8,0;""
WELLDONE YOU DESTROYED"
THEM ALL THE PRESIDENT WANTS TO"
THANK YOU."
1130 STOP
9998 SAVE "MISSILE"
9999 RUN
    
```

## DOOMSDAY 85



# Dear Diary

Dad's been nagging me to write a program. He wants me to prove that I understand the Spectrum. He claims he only bought the machine because I told him it would turn me into a computer programmer.

Showing great patience, I explained that the Spectrum HAD been educational; it had taught me that thinking you needed to be a programmer in order to use a computer was like thinking you needed to be a mechanic in order to drive. Using it to zap aliens, as he correctly described my habits, was the true, progressive way to employ the device.

I also told him I couldn't have got this job writing for Sinclair Programs if I didn't know SOMETHING. He said that all I knew was my sister, "a computer virtuoso"

I decided that if I write a music routine then even someone of Dad's generation would be able to understand the skill involved — and it would be handy for the magazine.



After some lengthy sessions where I explained the principles involved to my little sister Eustacia, I'd sorted out the main part of the program. As I told her, the first line dimensioned an array which would be filled, in line 2, by the values of the notes contained in line 4. Lines 30 and 32, meanwhile, sat in the main loop which created your aliens and your missiles and your smart bombs and your nuclear laser gun.

```
1 DIM P(100): LET P=0
2 FOR X=1 TO 96: READ P(X): NEXT X
4 DATA . . . (the values of the notes) . . .
30 LET P=P+1: IF P=96 THEN LET P=1
32 BEEP .05,P(P)
```

However, I explained, in longer programs this routine might slow the response to key presses for the missiles and bombs and stuff. So we should stop the tune if keys were being pressed by deleting line 32, replacing line 30, and adding new lines.

```
30 IF NOT LEN INKEY$ OR IN 32766=191 THEN
GO TO 100
100 IF LEN INKEY$ OR NOT IN 32766=191
THEN GO TO 35
110 LET P=P+1: IF P=96 THEN LET P=1
115 BEEP .05,P(P)
120 GO TO 100
```



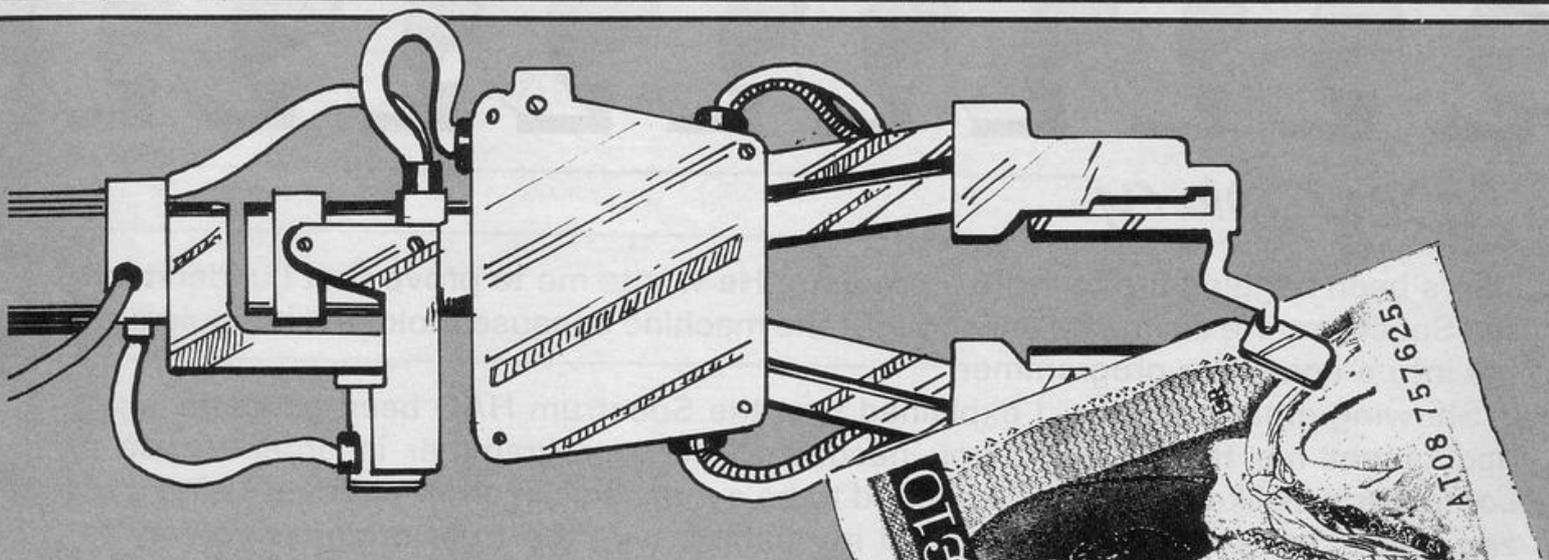
This is when Eustacia shocked me very much by refusing to calculate the DATA values for line 4 — even when I explained how very educational she would find it.

```
Several days later I had written line 4 as follows,
4 DATA 69,2,14,13,14,9,12,10,7,69,-2,2,7,9,69,2,6,9,10,69,2,1,4,13,14,9,
12,10,7,69,-2,2,7,9,69,2,10,9,7,69,69,9,10,12,14,5,15,14,12,3,14,12,10,2,
12,10,9,2,14,13,14,9,12,10,7,69,-2,2,7,9,69,2,6,9,10,69,2,14,13,14,9,12,
10,7,69,-2,2,7,9,68,2,10,9,7,69,69,69
```

However, I made sure Dad saw me sweating over this music. I'm going to convince him that buying me a new stereo system would help me learn classical guitar.



Sid



# MONEY GRABBER

You and the computer take it in turns to collect money from a grid. On this grid it is only possible to move right and down, so you can never retrace your steps. The computer is playing blind so it is allowed three times as many chances as you, and is also allowed an extra pound for luck whenever it finds a pound. Your reactions must be fast and precise in order to beat the computer.

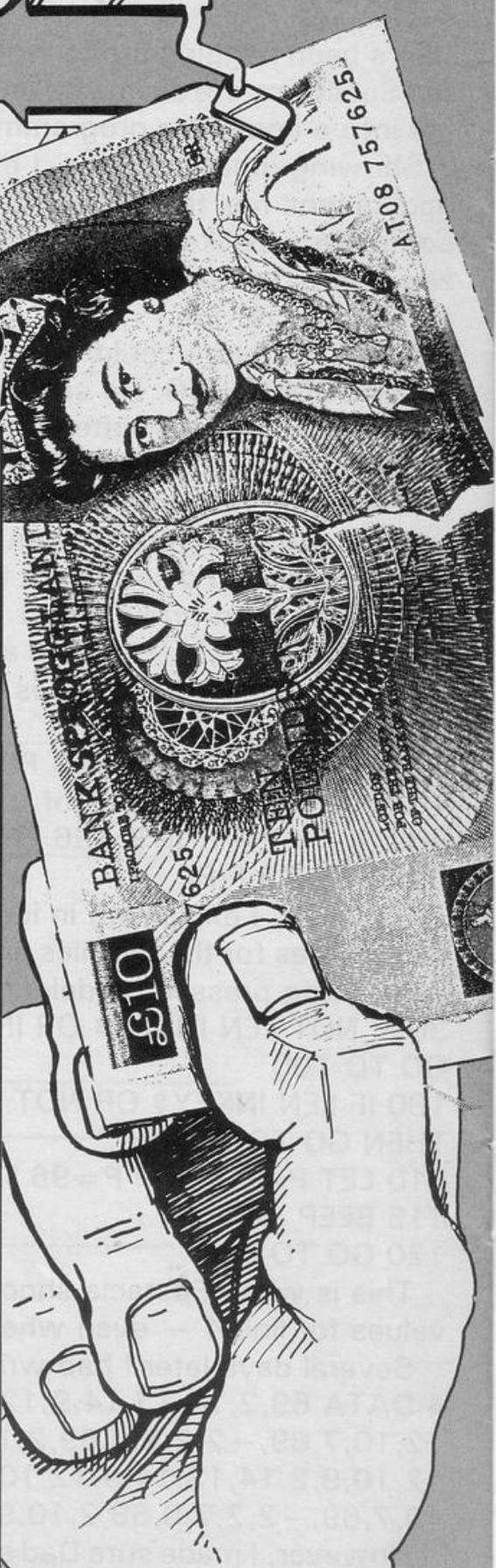
Money Grabba was written for the 16K ZX-81 by M Phillips of Redland, Bristol.

```

00REM COPYRIGHT MAP
01REM $$$ "MONEY GRABBA" $$$
02CLS
03PRINT "    $$$ "MONEY GRAB
04PRINT "    $$$"
05PRINT "
06PRINT " THE COMPUTER: ""
07PRINT " YOU: ""
08PRINT "MOVING WITH KEYS: 8 R
09RIGHT AND: 6 DOWN, YOU TAKE TURNS
10WITH THE COMPUTER TO GRAB MON
11EY, WHEN THE COMPUTER GRABS A POU
12ND IT GAINS ANOTHER (FOR LUCK) I
13T NEEDS TWO POUNDS MORE THAN YOU
14TO WIN."
15PRINT "SOME OF THE MONEY WI
16LL EITHER APPEAR TOO FAR AWAY
17OR ELSE IT MAY DISAPPEAR VERY Q
18UICKLY, THIS GIVES THE COMPUTER A
19FIGHTING CHANCE."
20PRINT "THE COMPUTER GOES FI
21RST AND HAS THREE ATTEMPTS AT GR
22ABBING SOME MONEY, YOU ONLY HAVE
23ONE ATTEMPT SO MAKE SURE YOUR AI
24M IS TRUE."
25PRINT AT 21,10;"GOOD LUCK"
26IF INKEY$="" THEN GOTO 99
27LET B0=4
28LET P0=B0
29GOSUB 5000
30LET O=0
31LET A=0
32RAND
33LET P=23
34LET A=INT (RAND*8)+1
35LET P=P+1
36LET B=INT (RAND*8)+9
37PRINT AT A,B;CHR$(12)
38LET X=1
39LET Y=8
40IF O=1 THEN GOTO 3000
41FOR N=1 TO 12
42LET C=INT (RAND*2)
43IF C THEN LET X=X+1
44IF NOT C THEN LET Y=Y+1
45PRINT AT X,Y;CHR$(128)
46PRINT AT X,Y;CHR$(0)
47IF X=A AND Y=B THEN GOTO 12
48
49NEXT N
50GOTO 1210
51LET R=1
    
```

```

1210 PRINT AT A,B;CHR$(0)
1310 IF R=1 THEN GOTO 2500
1315 IF P=31 THEN GOTO 2000
1320 GOTO 1000
2502 LET O=1
2505 IF R=0 THEN GOTO 2520
2508 PRINT AT 17,P0;CHR$(12);AT
17,P0+2;CHR$(12)
2510 LET P0=P0+4
2520 IF P0>=26 THEN GOTO 6000
2530 IF INKEY$="" THEN GOTO 2530
2600 GOTO 500
3003 LET K=INT (RAND*16)+4
3004 FOR F=1 TO K
3005 PRINT AT X,Y;CHR$(8)
3007 PRINT AT X,Y;CHR$(0)
3009 LET X=X+(INKEY$="8")
3010 LET Y=Y+(INKEY$="6")
3020 IF X=A AND Y=B THEN GOTO 40
00
3030 NEXT F
3032 PRINT AT A,B;CHR$(0)
3037 IF INKEY$="" THEN GOTO 3037
3040 GOTO 400
4000 PRINT AT A,B;CHR$(0);AT 19
40,CHR$(12)
4005 LET B0=B0+2
4010 IF B0=24 THEN GOTO 6000
4020 IF INKEY$="" THEN GOTO 4020
4040 GOTO 400
5000 CLS
5003 FAST
5005 FOR N=0 TO 13
5010 PRINT AT N,7;CHR$(3);AT N,
22;CHR$(3)
5020 NEXT N
5022 FOR N=1 TO 29
5023 PRINT AT 15,N;CHR$(133);AT
21,N;CHR$(133)
5025 NEXT N
5028 FOR N=8 TO 21
5030 PRINT AT 0,N;CHR$(133);AT
13,N;CHR$(133)
5036 NEXT N
5040 FOR N=15 TO 21
5042 PRINT AT N,0;CHR$(2);CHR$(
11);AT N,30;CHR$(3)
5044 NEXT N
5046 PRINT AT 15,1;CHR$(133);AT
21,1;CHR$(133)
5048 PRINT AT 17,2;CHR$(128);AT
19,2;CHR$(8)
5050 POKE 16418,0
5052 PRINT AT 22,5;"$$$ "MONEY
GRABBA" $$$"
5054 PRINT TAB 5;"
5150 SLOW
5152 RETURN
6000 IF P0>=26 THEN GOTO 7000
6002 FOR N=4 TO 22
6004 PRINT AT 19,N;CHR$(8)
6008 NEXT N
6010 FOR N=1 TO 25
6020 PRINT AT 19,B0;CHR$(0)
6040 PRINT AT 19,B0;CHR$(12)
6050 NEXT N
6070 IF INKEY$="" THEN GOTO 6070
6080 RUN
7000 FOR N=4 TO 25
7002 PRINT AT 17,N;CHR$(128)
7006 NEXT N
7008 FOR N=1 TO 25
7020 PRINT AT 17,P0;CHR$(0)
7040 PRINT AT 17,P0;CHR$(12)
7050 NEXT N
7070 IF INKEY$="" THEN GOTO 7070
7777 RUN
9997 CLEAR
9998 SAVE "MONEY GRABBA"
9999 RUN
    
```



# S P R O G S

THE SPROGS MEET A KNIGHT IN ARMOUR



THEY ARRIVE IN WITCHWOOD



MERLIN COMES FORWARD



THEY LEAVE MERLIN AND SET OFF THROUGH THE FOREST



THE DRAGON AWAKES



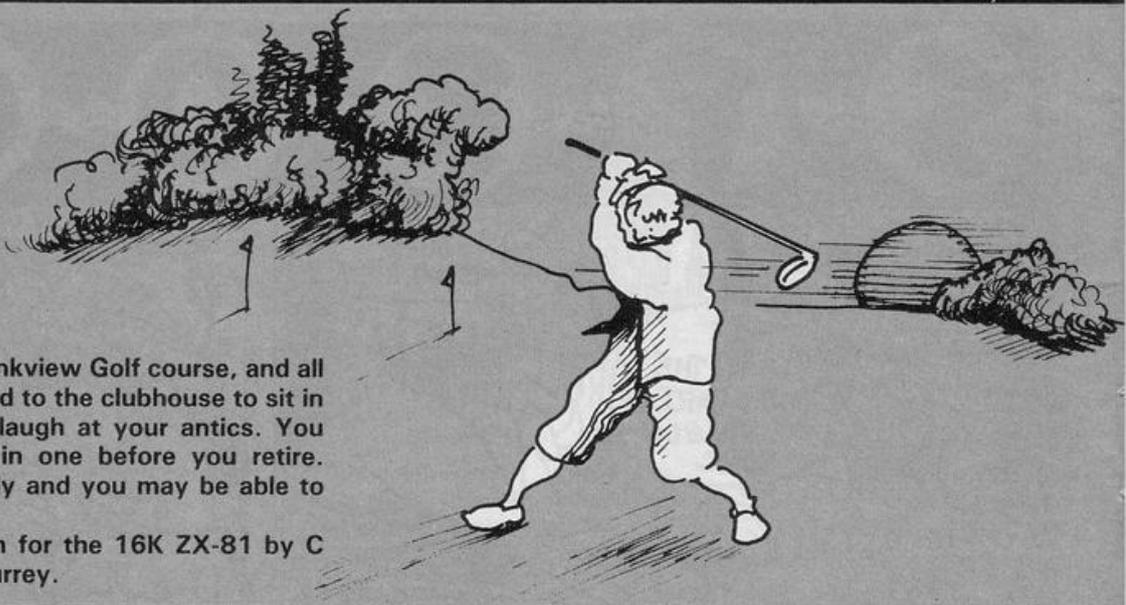
THE SPROGS ESCAPE WITH THE TORC!!



THE SPROGS ESCAPE WITH THE TORC!!



# TEE FOR ONE



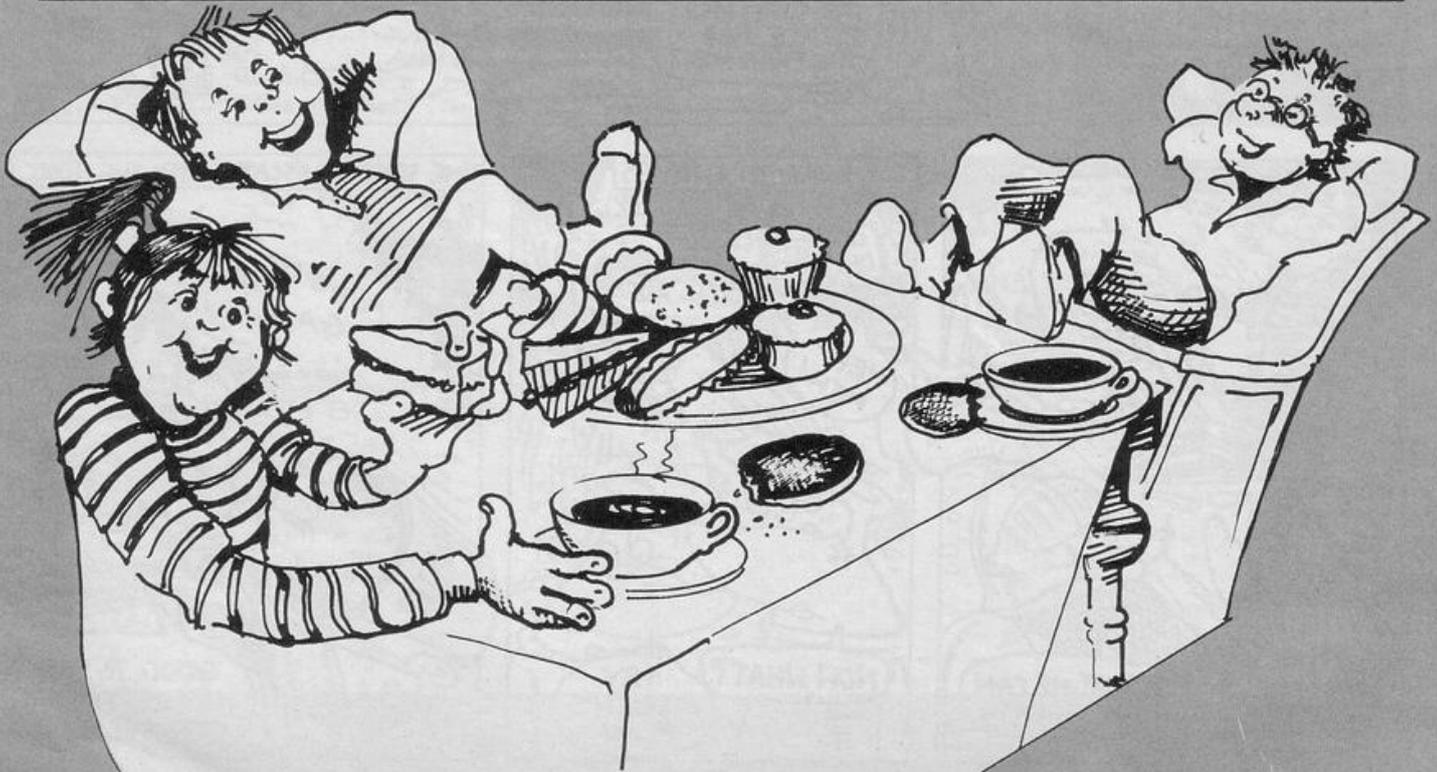
The sun is setting at Dankview Golf course, and all your friends have retired to the clubhouse to sit in armchairs, drink tea, and laugh at your antics. You have determined to hole in one before you retire. Choose your clubs carefully and you may be able to retire before midnight!

Tee for One was written for the 16K ZX-81 by C Burton of West Byfleet, Surrey.

```

220 DIM S(9)
230 LET A$=""
240 LET Z=1
250 LET DIS=INT (RAND*435)+120
260 PRINT AT 19,0;"A$+A$
270 LET B=1
280 PRINT AT 1,0;"YARDS:";DIS
290 PRINT AT 15,25;"0";TAB 24;"
300 PRINT AT 0,0;"HOLE:";Z;"
310 CLUBS:1,4,6,8;"
100 PRINT AT 2,0;"CHOOSE YOUR N
EXT CLUB"
120 LET DRI=INT (RAND*30)+230
130 GOSUB 700
140 LET D=17
150 FOR E=21 TO 1 STEP -2
160 PRINT AT D,E;"";AT D+1,E+2
170 LET D=D-1
180 NEXT E
190 CLS
200 LET D=30
210 FOR E=2 TO 18 STEP 2
220 PRINT AT E,D;"";AT E-2,D+1
230 LET D=D-1
240 NEXT E
250 LET DIS=DIS-INT (DRI*F)
260 IF DIS<-50 THEN LET DIS=ABS
DIS
270 LET B=B+1
280 IF DIS<20 AND DIS>-20 THEN
GOTO 300
290 IF DIS<50 AND DIS>-50 THEN
GOTO 400
300 GOSUB (INT (RAND*3)+20)+800
290 PRINT AT 3,0;"YOU ARE ";DIS
" YARDS FROM THE PIN"
293 PRINT AT 18,27;" "
295 GOTO 80
300 CLS
310 PRINT "YOU ARE ON THE GREEN
ENTER THE LINE OF THE PUTT.(3/
100)"
320 FOR A=3 TO 19
330 PRINT AT A,0;"A$+A$
340 NEXT A
350 LET G=INT (RAND*16)+3
360 PRINT AT G,15;"
370 INPUT H
375 IF H<3 OR H>19 THEN GOTO 37
0
380 FOR A=1 TO 15
390 PRINT AT H,A;"
400 NEXT A
410 IF H=6 THEN GOTO 500
420 LET B=B+1
430 GOTO 300
440 CLS
410 PRINT "FROM HERE YOU MUST P
LAY A PITCH SHOT"
420 PRINT "ENTER A NUMBER (1/3)"
430 INPUT I
440 LET B=B+1
450 IF I<>INT (RAND*3+1) THEN GO
TO 300
450 PRINT "BAD PITCH,TRY AGAIN"
470 GOTO 420
500 CLS
510 PRINT "YOU HOLED IN ";B;" S
TROKES"
520 LET S(Z)=B
530 PRINT "PRESS ANY KEY"
535 IF INKEY$="" THEN GOTO 535
537 CLS
540 LET Z=Z+1
545 IF Z<10 THEN GOTO 31
550 CLS
560 PRINT "THE CARD OF THE COUR
SE";AT 4,5;"HOLE:" SCORE:"
565 LET T=0
570 FOR A=1 TO 9
580 PRINT AT A+6,6;"A;AT A+6,19;
S(A)
590 LET T=T+S(A)
595 NEXT A
596 PRINT ",,";"YOU WENT ROUND I
N ";T
598 STOP
700 INPUT J
701 IF J<>1 AND J<>4 AND J<>6 A
ND J<>8 THEN GOTO 700
710 IF J=1 THEN LET F=1
720 IF J=4 THEN LET F=.817
730 IF J=6 THEN LET F=.815
740 IF J=8 THEN LET F=.41
750 RETURN
800 PRINT AT 19,0;"A$+A$+A$+A$
810 PR: AT 5,0;"YOU ARE ON TH
E FAIRWAY"
815 RETURN
820 LET B$=""
825 PRINT AT 19,0;"B$+B$+B$+B$
830 LET DIS=DIS+70
830 PRINT AT 5,0;"YOU DROVE INT
O THE ROUGH"
835 RETURN
840 PRINT AT 16,0;"A$+";AT 16,
27;"A$( TO 5)
850 PRINT AT 17,16;"";AT 17,27
";TAB 16;"";AT 18,27;"";TAB
16;"( TO 12)
860 PRINT AT 5,0;"YOU FELL IN A
BUNKER"
870 LET DIS=DIS+120
880 RETURN
900 SAVE "GOLF"
910 RUN

```

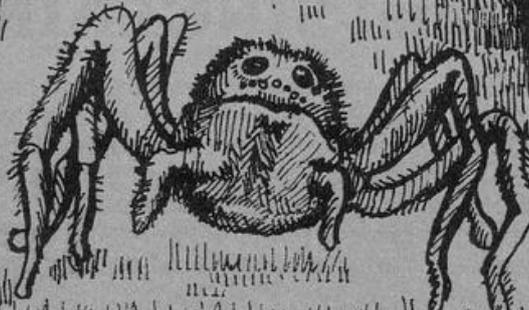


**Y**ou are the spider chief in exile. You wish to return to your spider domain. All you have to do is cross the two persian carpets in the living room. However, the owners of the house hate spiders and have placed a selection of lethal traps on the carpet.

Use keys 5 and 8 to move as many of your people as is possible across the first carpet. Use keys 6 and 7 to move across the second carpet. The first spider to reach the spider domain will open the gates and lead you all to safety.

Spider Domain is based on a program written for the 16K ZX-81 by Paul Arthwell and Simon Hodgkins of Wolverhampton.

# SPIDER DOMAIN



```

85 RAND
90 LET I=0
95 LET Y=0
104 PRINT AT 19,4;"(PRESS (5) T
O START)"
105 IF INKEY#="S" THEN GOTO 107
106 GOTO 105
107 CLS
108 LET X=1
109 LET S=0
110 REM SCREEN 1
111 LET G=0
120 PRINT AT X,Y;"X"
130 LET X=X+1
140 IF X=20 THEN GOTO 150
145 GOTO 120
150 LET A=0
155 LET X=INT (RND*7)+7
156 LET Y=INT (RND*29)+1
165 LET A=A+1
170 PRINT AT X,Y;"X"
175 IF A=65 THEN GOTO 185
180 GOTO 155
185 LET X=19
190 LET P=1
195 LET Q=1
200 LET Y=INT (RND*15)+5
205 LET U=INT (RND*25)+2
210 PRINT AT P,U;
225 PRINT AT X,Y;"X"
235 LET P=P+0
240 LET U=PEEK (PEEK 16398+256+
PEEK 16399)
245 IF U=189 THEN GOTO 325
246 IF U=131 THEN GOTO 295
247 IF U=61 THEN GOTO 325
250 IF U=23 THEN GOTO 325
255 PRINT "0";AT P,U;
260 FOR T=1 TO 6
265 NEXT T
270 PRINT " ";AT P,U;
275 IF INKEY#="8" THEN LET U=U+
1
280 IF INKEY#="5" THEN LET U=U-
1
285 IF P>18 THEN GOTO 325
290 GOTO 210
295 LET S=S+1
305 IF S=10 THEN GOTO 400
300 PRINT AT 0,0,S;"SPIDERS CR
305 PRINT AT 18,0;"X"
306 PRINT AT 19,0;"X"
310 GOTO 185
325 LET I=I+1
330 IF I=10 THEN GOTO 350
335 PRINT AT 0,17,I;"SPIDERS O
340 PRINT AT 18,0;"X"
341 PRINT AT 19,0;"X"
345 GOTO 185
355 CLS
356 LET G=0
375 PRINT AT 8,0;"
ON WAS YOUR MISSI
SUCCEFUL UN
HEROS) (YOU DIED)
380 LET G=G+1
385 IF G=50 THEN GOTO 45
390 GOTO 380
400 CLS
401 REM SECOND SCREEN
410 PRINT AT 8,0;"
ART OF YOUR THE FIRST P
BEEN SUCESSFUL MISSION HAS
415 FOR J=0 TO 200
420 NEXT J
425 CLS
430 PRINT AT 0,0;"NOW CROSS FRO
M LEFT TO RIGHT. USE KEYS 6 AN
D 7 TO STEER"
435 PRINT AT 19,8;"(PRESS (5) T
O CONTINUE)"
436 IF INKEY#="S" THEN GOTO 440
437 GOTO 436
440 CLS
445 FAST
450 PRINT AT 1,0;"XXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX"
451 PRINT AT 19,0;"XXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX"
460 LET U=0
461 LET X=0
462 LET Y=2
475 PRINT AT Y,X;"X"
480 LET Y=Y+1
485 IF Y>18 THEN GOTO 500
486 LET U=0
495 GOTO 475
500 LET Z=INT (RND*17)+1
505 LET R=INT (RND*20)+5
510 LET U=U+1
515 PRINT AT Z,R;"X"
520 IF U=70 THEN GOTO 540
525 PRINT AT 10,27;"SD"
530 SLOW
535 GOTO 500
540 LET D=0
545 LET X=10
550 LET Y=1
555 PRINT AT X,Y;
559 LET V=PEEK (PEEK 16398+256+
PEEK 16399)
560 IF V=61 THEN GOTO 600
565 IF V=56 THEN GOTO 620
600 PRINT "0";AT X,Y;
605 PRINT AT X,Y;"
580 IF INKEY#="6" THEN LET X=X+
1
585 IF INKEY#="7" THEN LET X=X-
1
590 LET Y=Y+1
595 GOTO 555
600 LET D=D+1
605 PRINT AT 0,3;" ";D;"SPIDER
610 IF D=10 THEN GOTO 355
615 GOTO 545
620 CLS
621 FOR N=1 TO 20
625 PRINT "CONGRATULATIONS: CHI
EF SPIDER"
626 NEXT N
    
```

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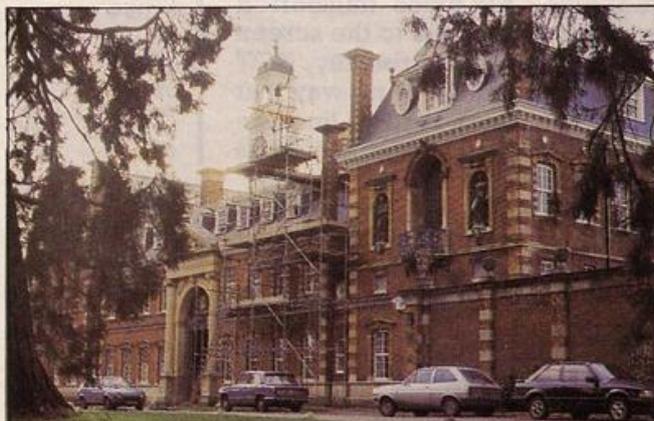
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See you at Wellington College!



# Machine code vertical scroll

**Tony Rickwood continues his series on machine code as he looks again at the procedure for scrolling pictures vertically.**

IN PART one last month, I showed you how to set up a file of addresses to identify which locations in the Spectrum display file referred to Column 0 addresses for each pixel line of the screen display (the left-most character positions). In Part two, you will learn how to use this file to execute the vertical scroll.

First, it is important to understand how the preliminary setting up of a file serves the execution routine we will be developing here. Why is a file of addresses needed when all the information is contained in the Spectrum's own display file? In any case, you might also ask, why can't the problem be dealt with by simply rotating bit patterns vertically instead of horizontally? (Remember how the "RL" and "RR" (Rotate Left/Rotate Right) instructions gave us such a compact solution to the problem of horizontal scrolling?).

Let's take the second question first. Rotation instructions (there are others beside RL and RR, as we shall see) are designed to work only on the bits of a specified byte. All bytes transferred from the display file to the screen are transferred horizontally, NOT vertically, so there is no way that eight pixels on a vertical line can be identified and manipulated as a single byte of data.

As we must work with whole bytes of data, a possible solution might be to work through consecutive bytes of the display file (though not consecutive on the screen) from the second pixel row down, find out which byte of the display file corresponds to

the location immediately above the screen, and copy the byte from one location to the other. This would be slightly long-winded though, mainly because of the way the display file is configured. Fortunately, the Z80 instruction set contains a powerful block handling instruction which allows the m/c programmer to move a block of data from one area of

**Program 2**

```

10 REM Program 2 - Pixel Scrol
1 UP
20 CLEAR 62999: LET s=0: FOR i
=64000 TO 64038: READ n: POKE i,
n: LET s=s+n: NEXT i
30 READ sum: IF s (<) sum THEN
PRINT "error in data entry - re
type line 40": STOP
40 DATA 1,192,0,197,8,62,0,1,2
4,246,8,10,95,3,10,87,3,197,10,1
11,3,10,103,1,32,0,237,176,193,8
,60,254,191,56,231,193,16,221,20
1,3451
50 PRINT "data entry o.k." "no
w running m/c": PAUSE 100
60 LIST : RANDOMIZE USR 64000
: STOP
70 SAVE "upcode" CODE 64000,39
    
```

memory to another. For this application, it enables us to transfer a whole line of data as represented on the screen (32 bytes) to the line above (via the display file) in one go. To use this instruction, we need to know the address of the first byte of the block to be copied (base address) and first byte to be copied to (destination). To move whole lines then, base and destination addresses will be the column 0 addresses in our

pre-computed file.

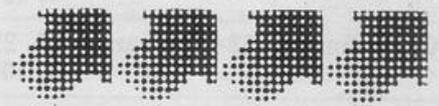
The program to execute an UPWARD SCROLL is listed as Program 2 (Program 1 being that listed in Part 1). As usual, both Basic and Assembler are given. First, try running the Basic, although you must have previously run Program 1 to create the file. The m/c for both programs loads into the same area of memory (starting at location 64000). The important point though is that Program 1 m/c has been executed to create the file at 63000 before it gets overwritten by Program 2 m/c (line 20).

For the Assembler, understanding is made easier by seeing how the whole screen is moved up by a single pixel (lines 50-270). The outer loop (lines 30-40 and 280-290) to repeat the process 192 times for all pixel lines should be self explanatory, provided you have properly understood what I have previously said about DJNZ loops.

The inner loop, which moves the whole screen by a single pixel only, really revolves around the block handling instruction, LDIR, in line 220. This mnemonic is read as Load, Increment, and Repeat" and is a self-contained automatic loop to do the following:

- 1) Load (DE) with (HL)
- 2) Increment DE and HL
- 3) Decrement BC
- 4) Repeat 1-3 until BC is zero.

As you can see, LDIR is a very powerful instruction. Let us now see how it can be harnessed to



Assembler	Code	Comment
	10 ;ASSEMBLER FOR PROGRAM 2- EXECUTES PIXEL SCROLL UP	
	20 ;	
01C000	30 LD BC,192	;EXECUTES SINGLE PIXEL
C5	40 SCREEN PUSH BC	;SCROLL 192 TIMES
08	50 EX AF,AF'	
3E00	60 LD A,0	;INITIALIZE ROW COUNTER
011BF6	70 LD BC,2F618	;START OF COL 0 ADDRESSES
08	80 ROW EX AF,AF'	;START OF LOOP FOR 1 PIXEL SCROLL
0A	90 LD A,(BC)	
5F	100 LD E,A	
03	110 INC BC	
0A	120 LD A,(BC)	
57	130 LD D,A	;DE HOLDS ROW TO BE COPIED TO
03	140 INC BC	
C5	150 PUSH BC	
0A	160 LD A,(BC)	
6F	170 LD L,A	
03	180 INC BC	
0A	190 LD A,(BC)	
67	200 LD H,A	;HL HOLDS ROW TO BE COPIED FROM
012000	210 LD BC,32	;BC HOLDS NO. OF BYTES TO BE COPIED
EDB0	220 LDIR ;COPIES CURRENT ROW TO PRECEDING ROW	
C1	230 POP BC	
08	240 EX AF,AF'	
3C	250 INC A	;INCREMENT ROW COUNTER
FEBF	260 CP 191	;LOOP BACK UNTIL
3BE7	270 JR C,ROW	;192 ROWS SCROLLED ONCE
C1	280 POP BC	
10DD	290 DJNZ SCREEN	;LOOP BACK UNTIL WHOLE SCREEN DONE
C9	300 RET	

our problem. Start by considering the first two pixel lines. The addresses of the first character (column 0) of each is 4000H and 4100H respectively (which are the first two values in our address file). Each line being represented by 32 consecutive bytes of the display file from these addresses, LDIR can be used to copy the second line to the first by setting DE to 4000H and HL to 4100H with BC=32 for the byte count.

One snag with all block handling instructions (there are others as we shall see). They use up all three user register pairs HL, DE and BC. HL and DE are used repeatedly to point to the Spectrum's display file. In addition, we need a register pair to point to our own file, which can be incremented. BC is the only sensible choice, but it is tied up as a pixel count for the outer DJNZ loop. By PUSHing and POPping onto and off of the stack (lines 40 and 280), this leaves BC free for the inner loop. We must now arrange for BC to double up as our file pointer as well as the byte count for



LDIR.

Yet another slight complication. We need an inner loop counter to count each pixel row as it is moved up one pixel. Having released BC from the outer loop for two other jobs, we can hardly tie it up again on an inner DJNZ loop (remember the right and left scroll routines where we used two nested DJNZ loops?). The alternative is to use a jump instruction but we still need a counter. The A register is used in such cases and is free for the job, though again, it must double up because we will be using it as an intermediate register for getting our file addresses into HL and DE (see later).

Though the AF register pair can also be PUSHed and POPped (like BC), I have introduced an alternative device into the program called **Register Exchange**. The Z80 has an alternative register set which gives the m/c programmer a means of holding the



```
10 REM Program 3 - Pixel Scroll
11 DOWN
20 CLEAR 62999: LET s=0: FOR i
=64000 TO 64038: READ n: POKE i,
n: LET s=s+n: NEXT i
30 READ sum: IF s <> sum THEN
PRINT "error in data entry - re
type line 40": STOP
40 DATA 1,192,0,197,8,62,0,1,1
51,247,8,10,87,11,10,95,11,197,1
0,103,11,10,111,1,32,0,237,176,1
93,8,60,254,191,56,231,193,16,22
1,201,3603
50 PRINT "data entry o.k.";"no
w running m/c": PAUSE 100
60 LIST: RANDOMIZE USR 64000
: STOP
70 SAVE "dncode" CODE 64000,39
```

values in one or other of two sets. Line 50 (EX AF,AF') brings in the alternative AF pair (called AF') and line 60 initializes the alternative A register to zero for the inner loop counter.

Line 70 sets up BC to point to the start of our file (63000=F618H) and line 80 is the start of the inner ROW loop. The first step within this loop is to restore the normal AF pair with EX AF,AF' in order not to corrupt our loop counter by copying via the A register. As we have seen, we are unable to fetch two bytes in one go with our file pointer, BC. For example,

there is no such instruction as LD DE,(BC) to get the two bytes pointed to by BC into DE. It must be done one byte at a time via the A register. Thus, line 90 gets the first byte from the file (00H) and puts it in A. Line 100 then transfers this to the E register. Line 110 increments the file pointer so that lines 120 and 130 can put the next byte (40H) into D (again via the A

register). Now we have the display file address of the first line to be copied to in DE (note that E has to be loaded first because of the way we set up our file (low order byte first). Following execution up to and including line 200, the process is repeated for HL, so that DE and HL (for destination and base) contain 4000H and 4100H respectively on the first pass. Note that BC is PUSHed onto the stack in line 150. We need to free BC for the byte count in LDIR (line 210). PUSHing at this point holds our file pointer ready for the next loop.

All this preparation is finally consummated by the LDIR in line 210. BC can now be switched back to file pointer mode in line 230. We can also switch back to row counter mode for A (lines 240-250). The test for completing 192 rows (and jump back if not) is handled by lines 260-270. "CP 191" is read as 'ComPare the contents of the A register with 191'. This is really subtracting 191 from A, though only the flags in the F register are affected by the result. "JR C,ROW" is read as "Jump back Relative to instruction labelled ROW if the (C)arry flag is set". The Carry flag will be set if A contains a number which is less than or equal to 191.

Program 3 lists the SCROLL DOWN routine. The principles are exactly the same as in scrolling up, though now we start with BC pointing to the last location of our address file and work backwards. Note that D is now loaded before E and H before L when loading addresses in reverse.

#### Assembler

```
10 ;ASSEMBLER FOR PROGRAM 3- EXECUTES PIXEL SCROLL DOWN
20 ;
01C000 30 LD BC,192 ;EXECUTES SINGLE PIXEL
C5 40 SCREEN PUSH BC ;SCROLL 192 TIMES
08 50 EX AF,AF'
3E00 60 LD A,0 ;INITIALIZE ROW COUNTER
0197F7 70 LD BC,&F797 ;END OF COL 0 ADDRESSES
08 80 ROW EX AF,AF' ;START OF LOOP FOR 1 PIXEL SCROLL
0A 90 LD A,(BC)
57 100 LD D,A
0B 110 DEC BC
0A 120 LD A,(BC)
5F 130 LD E,A ;DE HOLDS ROW TO BE COPIED TO
0B 140 DEC BC
C5 150 PUSH BC
0A 160 LD A,(BC)
67 170 LD H,A
0B 180 DEC BC
0A 190 LD A,(BC)
6F 200 LD L,A ;HL HOLDS ROW TO BE COPIED FROM
012000 210 LD BC,32 ;BC HOLDS NO. OF BYTES TO BE COPIED
EDB0 220 LDIR ;COPIES CURRENT ROW TO PRECEDING ROW
C1 230 POP BC
0B 240 EX AF,AF'
3C 250 INC A ;DECREMENT ROW COUNTER
FEBF 260 CP 191 ;LOOP BACK UNTIL
3BE7 270 JR C,ROW ;192 ROWS SCROLLED ONCE
C1 280 POP BC
10DD 290 DJNZ SCREEN ;LOOP BACK UNTIL WHOLE SCREEN DONE
C9 300 RET
```

# HAPPY BIRTHDAY SINCLAIR

**SINCLAIR PROGRAMS** is celebrating its third birthday with this issue of the magazine. We began back in the dark ages of home computing, before the launch of the Sinclair Spectrum. The ZX-80 had already started the computing revolution and the ZX-81 had taken us one step further in the march towards everyone owning a personal computer. The Spectrum was launched in June 1982 and the idea of the computer being a hobbyist item was finally eroded.

*Sinclair Programs* was launched by ECC Publications, who sadly are no more, and is now part of the giant EMAP Business and Computer Publications.

We have taken this opportunity to look back with the firms who are over three years old and also to take a look at the new up and coming software houses.

In addition we are having a light-hearted competition involving some of the battle scarred but successful firms who have survived. We hope that all those firms whom we have not included, due to limits of space, will accept our apologies.

**ARTIC** have been in business since the summer of 1980 and claim the notorious distinction of having received national press coverage for one of their games, certain parts of which were slammed for their bad taste. Having weathered this they have also produced their fair share of quality games. Founder of the company, Richard Turner, while still a student produced the very first game, back in 1980 while preparing for his 'A' levels.

**5th year**

**FIREBIRD** was launched by that old bird British Telecom in a major bid to attack the growing software market. Started in October 1984 they have already carved themselves a niche in the market by producing cheep (sorry) games.

**1st year**

**OCEAN** have not been around for as long as us but they have more than made up for this by quickly buying up anything that moves, particularly the **US Gold** series of games and a chunk of **Imagine**. So busy are the staff in their empire building that they were not available for comment. All we can say is that every game they produce is almost guaranteed a spot in the top ten chart.

**2nd year**

**MELBOURNE HOUSE** began in 1978 as a general book and magazine publishing company. Following the success of a ZX-81 book they published they decided to turn their expertise towards computer publishing. Taking the theme of Tolkien's book **The Hobbit**, they launched their first software game, **The Hobbit**, the rest, as they say, is history.

**4th year**

**PRINT 'n' PLOTTER**, launched in 1981, soon realised that a new market was growing with the advent of the ZX-81 and they were able to exploit the limited graphics of this little machine. They produced graph boards which are even now essential additions for any programmer attempting serious computer graphic design on a Sinclair computer.

**4th year**

**MASTERTRONIC** began in April 1984. It was the first company to realize the potential of producing budget software. So far it has produced a tremendous sixty two games. **Finders Keepers** is an example of their games, and at £1.99 they are proving a popular choice with the software-buying public.

**2nd year**

**SILVERSOFT** began in 1981. Although they have been successful in both remaining around so long and producing games that sell well they have not allowed success to go to their heads. It is a long standing tradition in the office that anybody, from the managing director down, may fall victim to the office punishment — the Mickey Mouse hat. While they were unwilling to expand on what offences would be punished by wearing the hat the spokesman's tone of voice implied that perhaps one would not want to know!

**4th year**

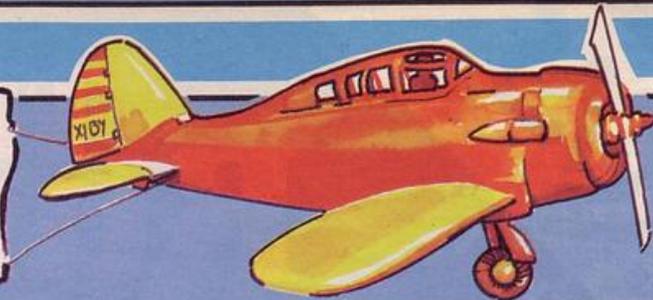
**MIKRO-GEN** began trading in November 1981 through their own shop, and in the early days they also acted as a distribution company. They have enjoyed success with games such as **Witch's Cauldron**, and the continuing series of **Wally** games.

One real life Wally arrived with his computer and peripherals which he duly set up. The tape had been running for a minute when he switched it off, and announced, "See, I told you it wasn't working." An explanation was sought and he replied "Well, I only want to play the first part!"

**4th year**



# R PROGRAMS



**S**OFTWARE FARM were sipped at the post with a start date of August 1982. Julian Chappel and his brother began working on industrial processes at their parent's farm, hence the name of the company. Julian calculated that the demand for ZX-81 software would not decline despite the arrival of the Spectrum. The company started work on the ZX-81 games as everybody else began to switch their resources to the new machine. Software Farm have not only survived as the only company producing games for the ZX-81 but they are very successful. For the future Julian wants to keep the company "Small but beautiful" and will continue with the one man campaign against the bigger machines, so loyal fans of such games as **Fortyniner** and **Rocketman** can expect a bright future.

**3rd year**

**D**IGITAL INTEGRATION are members of the three year oldie club. They are continually amazed by their customers' ingenious interpretations of the company name, examples include Disintegration, Distant Relation, and Digital Investigation. They have produced two smash hit games so far, **Fighter Pilot** and **Night Gunner** and promise two new games.

**3rd year**

**Q**UESTION: What have Margaret Thatcher and **Kempston Micro** got in common? **Answer:** They both began above a grocer's shop. Started three years ago, Kempston immediately began working on Spectrum peripherals. They also produced one game, entitled **Mission Mars**, but it never got off the ground!

**4th year**

**A** CONVERSATION over tea in **Wimpys**, Stratford upon Avon, was the setting for the beginning of **Hewson Consultants**. Andrew Hewson, founder of the company, was travelling from Manchester to Oxford with his boss when they stopped for a cup of tea at the Wimpey Bar. He explains "It was the summer of 1980 and the ZX-80 had just been launched. My boss was very impressed with the machine, while I dismissed it out of hand. However, his words 'Look at its price, its a winner' stayed in my mind." Andrew continued working as a statistician but "pondered the words of wisdom." He eventually ordered a machine and thus finally reached his true destination.

**5th year**



**Z**ANY AUTOMATA have been in business since 1977, although they were not in software publishing at that time. Mel Croucher began his career as an architect and teamed up with fellow director Christian Penfold to work on various projects, one of which was a beer quiz for a radio programme. **Automata UK**, the software publishers, began operating in November 1982. They have been such a successful combination that they are decreasing their number of staff. Don't let this fool you because they achieved pre-tax profits of over £7,000 at their last audit. Their hits include **Deus Ex Machina**, the **Pi-man** series and the advertising campaign which rivals some (not ours, of course!) magazine editorial.

**3rd year**

**T**HE GOOD old **Microfair** was there right at the start with the first show held in September 1981. While public demand for the shows continues the bigger software companies appear to have developed the Howard Hughes syndrome. Mike Johnstone, organiser of the fairs, believes that the Microfair will survive anything. This statement was proved by the show held in February of this year. As the country experienced the worst of a British winter people travelled to the show from all over the country. Over 6,000 visitors were recorded despite fears that the bellowing snow storms would stop people attending.

**4th year**

**N**EW GENERATION are over three years old and their new office, a coachhouse, is even older, 100 years old in fact. When they made their attempt to buy it surveyors were, of course, called to evaluate the building. Upon seeing the state of it they refused to go onto the upper floors. Eventually this was resolved, the building bought and builders bought in to restore it. Business is good and they have continued to keep a roof over their heads.

**4th year**

**C**REATIVE SPARKS is Thorn EMI's contender in the software publishing market. Started in April 1984, they have already produced forty two games. Perhaps they are best known for the **Dangermouse** titles. Generally sparking (oops!) they are going for the two extremes in the market, that of low-priced games and more expensive, high-quality software. Future material will probably be influenced by films and music.

**2nd year**

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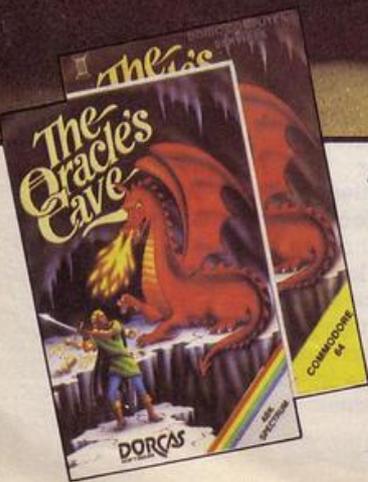
The tiny principality of DORCASIA was a pleasant fertile land until the wizard ZENDOS used his evil powers to cast the country into perpetual darkness until all citizens pledge obedience to him.

It is known that through the SPELL OF DARKNESS Zendos has trapped the spirit of each month into one of 12 GOLDEN TEMPUS RUNES or RUNIC HOUR GLASSES hidden deep within his mysterious and magical castle.

As the land dies in the grip of the black desolation a hero must be found to locate and destroy the 12 hour glasses thus releasing the months and returning Dorcasia to the natural forces of the seasons.

Each glass has a RUNIC inscription around its base which you must read and understand. Only saying these words will lift that part of the spell. To protect the hour glasses Zendos has placed them in 12 separate rooms in his castle, each room linked to a different exterior gateway by a devious route.

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# BIRTHDAY 3RD ISSUE

# COMPETITION

# COMPETITION

Some of the best software and hardware companies have agreed to help you to help us to celebrate our birthday. **Melbourne House, MikroGen, New Generation, Silversoft, Artic, Kempston, Hewson Consultants, Print 'n' Plotter** and **Digital Integration** have all donated some of their oldest products and some of their newest products as prizes in our Third Birthday Competition.

Prizes range from a **Kempston Formula 2 joystick**, to fifty sets of free tickets to the **ZX Microfair** to the earliest games produced by **Artic Computing**. **Hutchinson Publishing Group Ltd** have agreed to help put winners in the right mood by donating 10 copies of **Fred Pipes' book 101 Things to do with a dead computer**.

As you can see, there are some very good prizes to be won, and some very silly prizes to be won. Prizes will be awarded to the first 140 correct entries drawn from the bag.

# 140 PRIZES

**To enter:** Use your skill, judgement and, above all, your good sense, to choose the correct answers to the following ten questions. Write your answers (and number them) on a postcard together with your name, address and name of the computer you own. Send the postcard to us at Birthday Competition, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1 to arrive on or before May 31st, 1985.

**Question 1.** Who wrote **The Hobbit** book?

- A. Tolstoy
- B. Tolkien
- C. What Book

**Question 2.** In **Travel with Trashman** how many countries does trashman visit?

- A. Lots
- B. One
- C. Thirteen

**Question 3.** What does **ULA** mean in computing terms?

- A. United life assurance
- B. Uncommitted Logic Array
- C. Something to do with a television

**Question 4.** What is the maximum amount of memory that can be addressed by the **Z80 CPU**?

- A. Zillions
- B. 64k
- C. 20k

**Question 5.** Name the title of the only game **Kempston Micro Products** produced?

- A. Joystick Johny
- B. Mission Mars
- C. They didn't produce one

**Question 6.** Which one of the following was **Mikro-Gen's** first **Spectrum** program?

- A. Wally Waltz
- B. Dice Champion
- C. Masterchess

**Question 7.** In which of the following towns did the founder of **Hewson Consultants** drink tea in a Wimpy Bar and discover his future?

- A. Luton
- B. Stratford-upon-Avon
- C. New Delhi

**Question 8.** Who organises the **ZX Microfairs**?

- A. Sir Clive Sinclair
- B. Mike Johnstone
- C. Mike Reid

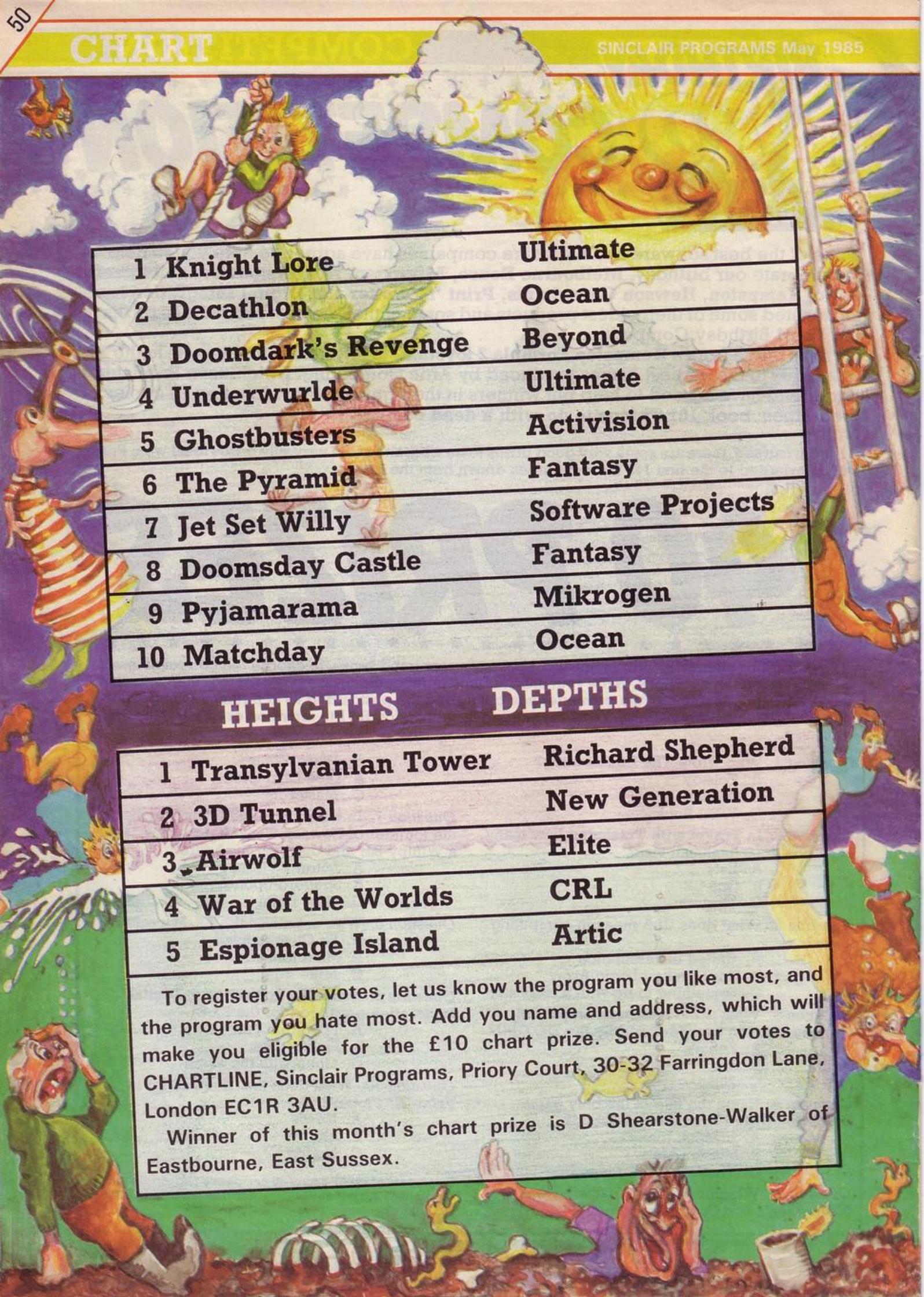
**Question 9.** Name the first program **Digital Integration** produced for the **ZX-81**.

- A. Spectrum Fun
- B. Fighter Pilot
- C. Gone with the Wind

**Question 10.** What does the 'N' stand for in **Print 'N' Plotter**?

- A. Norris
- B. And
- C. Noddy

Employees of EMAP and of all companies participating in the competition are not eligible to enter. The editor's decision in all matters concerning the competition is final.



1 Knight Lore	Ultimate
2 Decathlon	Ocean
3 Doomdark's Revenge	Beyond
4 Underwurlde	Ultimate
5 Ghostbusters	Activision
6 The Pyramid	Fantasy
7 Jet Set Willy	Software Projects
8 Doomsday Castle	Fantasy
9 Pyjamarama	Mikrogen
10 Matchday	Ocean

## HEIGHTS

## DEPTHS

1 Transylvanian Tower	Richard Shepherd
2 3D Tunnel	New Generation
3 Airwolf	Elite
4 War of the Worlds	CRL
5 Espionage Island	Artic

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 D Shearstone-Walker of Eastbourne, East Sussex.

# ARCADE

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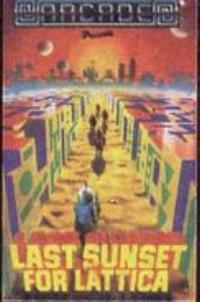
A  I enclose a cheque for £ \_\_\_\_\_ or  
 B  debit my Barclaycard/Access Account★  
 C  Name \_\_\_\_\_  
 D  Address \_\_\_\_\_  
 E  \_\_\_\_\_  
 F  \_\_\_\_\_  
 \_\_\_\_\_★



**A** Fast-furious racing in this Arcade game for the Spectrum. 'Pontoon' on side B free!



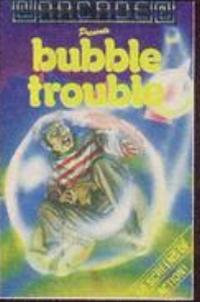
**B** Funny goings-on deep in a mine. Can you escape the evil in its depths? "Original and fun . . . dexterity needed . . . strategy is also involved" — Games Computing.



**C** Defuse a bomb hidden on the complex planet, Lattica, before it blows!! "... action packed game ... addictive" — Sinclair user.



**D** The mobs out to get ya' in this no-holds-barred 25 screen, action-packed game. "Tricky and highly entertaining" — Personal Computing News.



**E** 50 different screens of mayhem. "A fun game for all ages . . . which I thoroughly enjoyed." — Home Computing Weekly.

# HAUNTED BELLTOWER

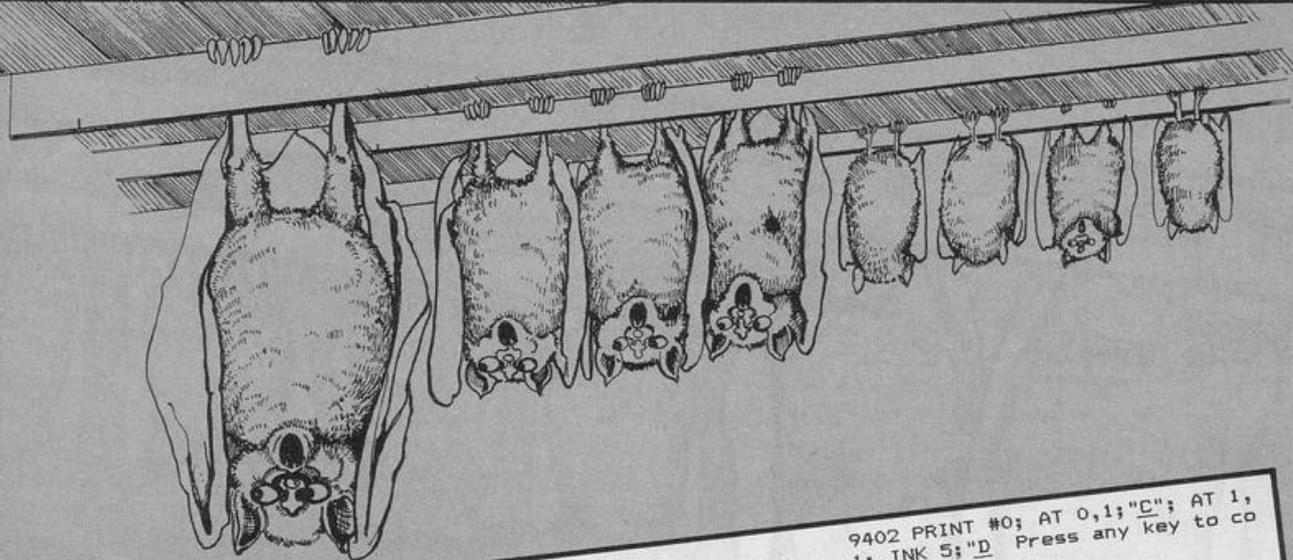
```

15 GO TO 6000
200 IF ATTR (x1,y1) <> 6 THEN
PRINT INK 5; AT x1+1,y1;"L": G
0 SUB 300: LET e=e+1: PRINT INK
6; PAPER 0; FLASH 1; OVER 0; AT
0,e*3;"L"
210 IF x1=1 AND y1=31 AND e=9 T
HEN LET z=z+1: LET s=s+100: GO
TO 8000
299 RETURN
300 LET s=s+45: PRINT #0; OVER
0; AT 0,15- LEN STR$ s; INK 6;
PAPER 1;s
310 FOR j=x1+1 TO 0 STEP -1: PR
INT INK 8; FLASH 8; AT j,y1;"L"
: BEEP .005,40-j*2: PRINT INK B
; FLASH 8; AT j,y1;"L": NEXT j
320 RETURN
2000 FOR k=1 TO 2
2040 LET x1=x+3*(( ATTR (x+2,y)=
7)-( INKEY$ =m$(3) AND ATTR (x-
1,y)=4))
2070 LET y1=y+( INKEY$ =m$(2) AN
D y<31)-( INKEY$ =m$(1) AND y>0)
2080 IF ATTR (x1+1,y1)=6 THEN
GO SUB 200
2090 PRINT AT x,y;a$(k); AT x+1
,y;b$(k)
2095 PRINT AT x1,y1;a$(3-k); AT
x1+1,y1;b$(3-k): LET x=x1: LET
y=y1
2199 IF k=2 THEN GO TO 2262
2200 LET b1=b+(y>b)-(y<b)
2230 LET a1=a+3*((x+1)>a AND AT
TTR (a+1,b)<12)-((x+1)<a AND
TR (a-2,b)<12))
2242 IF y=b1 THEN IF x+1=a1 THE
N GO TO 4000
2245 IF b1=b AND RND >.8 AND b1
<27 THEN LET b1=b1+5
2250 PRINT AT a,b;"K"; AT a1,b1
;"K"
2260 LET a=a1: LET b=b1
2261 GO TO 2361
2300 LET d1=d+(y>d)-(y<d)
2330 LET c1=c+3*((x+1)>c AND A
TTR (c+1,d)<12)-((x+1)<c AND
TTR (c-2,d)<12))
2342 IF y=d1 THEN IF x+1=c1 THE
N GO TO 4000
2345 IF d1=d AND RND >.8 AND d1
>4 THEN LET d1=d1-5
2347 IF d1=b1 AND a1=c1 THEN LE
T d1= INT ( RND *32): LET c1=(3*
(2+( INT ( RND *6))))-1
2350 PRINT AT c,d;"K"; AT c1,d1
;"K"
2360 LET c=c1: LET d=d1
2999 NEXT k: GO TO 2000
4005 PRINT AT a,b;"K": AT c,d;"
K"
4010 FOR j=41 TO 1 STEP -4: PRIN
T AT x,y;a$(3-k); AT x+1,y;b$(3
-k): BEEP .014,j: NEXT j
4030 INK B: PAPER 8: FLASH 8
4040 LET v=1: LET w=1: LET i=x:
LET j=y: PRINT AT i,j;"K"
4041 FOR u=63031 TO 63000 STEP -
1: BEEP .05,( PEEK u)-28
4044 IF i>20 OR i<1 THEN LET v=
-v
4045 IF j>30 OR j<1 THEN LET w=
-w
4046 PRINT AT i,j;"K"
4047 LET i=i+v: LET j=j+w
4048 PRINT AT i,j;"K"
4050 NEXT u
4051 PRINT AT i,j;"K"
4052 INK 7: PAPER 0: FLASH 0
4060 LET l=1-1: IF l<1 THEN GO
TO 4400
4080 FOR i=7 TO 0 STEP -1: BORDE
R i: PAUSE 2: NEXT i
4399 GO TO 8500
4401 LET t=0
4405 PRINT OVER 0; PAPER 2; INK
t; AT 7,4;"
"; AT 8,4;"
"; AT 9,4;"
"; AT 10,4;" PRESS KEY
"; AT 11,4;"
0 TO RESTART "; AT 11,4;"
4410 PRINT #0; AT 0,26; PAPER 1;
"; AT 1,26; PAPER 1;"
4430 LET t=t+1: IF t>7 THEN LET
t=0
4450 IF INKEY$ <> "0" THEN GO
TO 4405
4452 CLS : GO TO 8800
6000 LET p$="HGHI0": LET a$="CA"
: LET b$="DB": LET s=0: LET h=0
6001 RESTORE : PAPER 0: BORDER 0
: INK 7: OVER 0: CLS : DIM q$(5,
15)
6002 IF PEEK 63000 <> 17 THEN
FOR i=USR "a" TO USR "o"+7: RE
AD j: POKe i,j: NEXT i
6003 LET q$(1)="entrance hall":
LET q$(2)="wine cellar": LET q$(
3)="staircase": LET q$(4)="bats'
bedroom": LET q$(5)="haunted be
lfry"
6004 GO SUB 9800: GO SUB 9400: G
O SUB 9200: GO TO 8800
6005 DATA 112,154,159,61,93,117,
124,56,8,62,93,157,21,116,119,7,
14,89,249,188,186,174,62,28,16,1
24,186,185,168,46,238,224
6010 DATA 187,187,187,0,238,238,
238,0,16,8,24,16,8,24,16,8,24,24
,60,126,98,98,98,126
6015 DATA 255,231,255,0,0,0,0,0,
255,0,16,56,124,84,68,108,255,25
5,183,221,107,170,84,0
6020 DATA 129,219,255,126,24,0,0
,0
6025 DATA 0,24,60,126,126,126,25
5,0
6026 DATA 60,126,255,255,255,255
,255,159,255,0,0,0,0,0,0,0
6027 DATA 56,186,186,252,60,30,1
5,3
7700 LET z=1: IF s>h THEN LET h
=s
7710 LET l=3: LET s=0
8005 IF z>5 THEN LET z=1
8006 OVER 0: INK 7: PAPER 0: CLS
8011 PRINT PAPER 4; INK 0; AT 2
1,0;" Room ";z;" .... The ";q$(z
)
8014 FOR i=2 TO 20 STEP 3: PRINT
INK 5; AT i,0;"
"; NEXT i
8015 RESTORE 8000+100*z
8017 PRINT INK 6; AT 1,31;"M";
AT 2,31;"M"

```



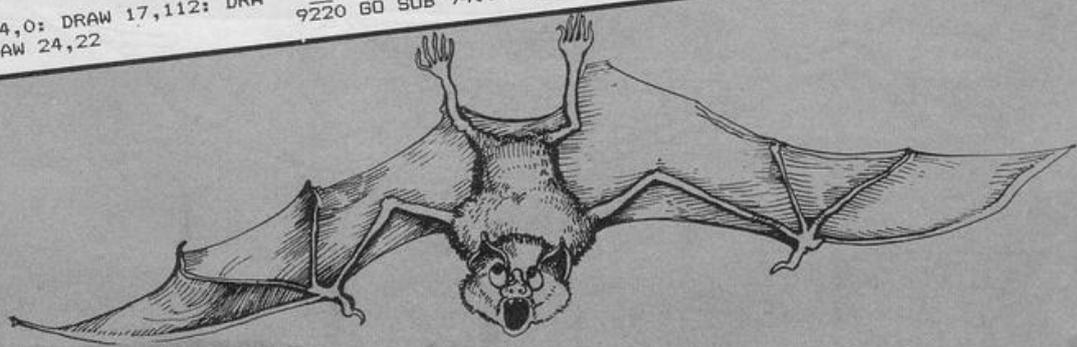




```

)-1: LET d= INT ( RND *32): LET
x=19: LET y=0: LET x1=x: LET y1=
y: LET a=2: LET b= INT ( RND *32
)
8510 PRINT #0; PAPER 1; INK 4; A
T 0,0;"(ig5)
      (g5;ig5)
      (g5)"
8515 PRINT #0; INK 6; PAPER 1; A
T 0,4;"SCORE 00000"; INK 5; AT 1
,1;"HI SCORE 00000"; INK 4; AT 1
,20;"LIVES"
8516 PRINT #0; AT 0,15- LEN STR
$ s; INK 6; PAPER 1; s; AT 1,15-
LEN STR$ h; INK 5; PAPER 1; h
8590 OVER 1: INK 8; PAPER 8
8700 LET i=1: PRINT AT x,y;a$(i
); AT x+1,y;b$(i); AT a,b;"K"; A
T c,d;"K"
8705 PRINT #0; AT 0,25;: FOR j=1
TO 1: PRINT #0; PAPER 1;" A":
NEXT j
8710 PRINT #0; AT 1,25;: FOR j=1
TO 1: PRINT #0; INK 5; PAPER 1;
" B": NEXT j
8715 IF g=1 THEN FOR j=63000 TO
63007: BEEP .1,( PEEK j)-40:
R i=1 TO 20: NEXT i: NEXT j: LET
z=z+1
8716 IF g=1 THEN LET f=f+1: IF
f<5 THEN GO TO 8000
8717 IF f=5 THEN GO TO 8800
8720 FOR i=63000 TO 63063
8721 LET n=( PEEK i)-40
8725 BEEP .11,n
8730 IF INKEY$ =m$(2) THEN GO
TO 2000
8780 NEXT i: GO TO 8720
8800 IF PEEK 63000 <> 17 THEN
RESTORE 9540: FOR i=63000 TO 630
63: READ n: POKE i,n: NEXT i
9000 OVER 0: CLS
9004 INK 5: RESTORE 9520
9010 PRINT AT 1,3;"HE"; AT 2,2;
"HAUNTED"; AT 3,2;"BELLTOWER"
9013 PLOT 11,169: DRAW 27,0: PLD
T 21,168: DRAW 0,-7
9015 PLOT 86,145: DRAW 7,-7: DRA
W 3,0: DRAW 0,3: DRAW -85,0
9090 PLOT 0,0: DRAW 255,0: DRAW
0,175: DRAW -255,0: DRAW 0,-175
9092 PLOT 64,0: DRAW 17,112: DRA
W 2,-24: DRAW 24,22
9100 PLOT 102,0
9110 FOR m=1 TO 5: READ i,j: DRA
W i,j: NEXT m
9130 PLOT 165,44: DRAW 90,-44
9132 FOR m=1 TO 6: READ i,j: PLD
T 64+i,j: DRAW -2,12: DRAW 4,4:
DRAW 4,-8: DRAW 2,-12: DRAW -7,3
: NEXT m
9140 FOR m=1 TO 2: READ i,j: PLD
T i+64,j: DRAW 1,12: DRAW 3,8: D
RAW 3,-4: DRAW -1,-12: DRAW -5,-
4: NEXT m
9144 PRINT INK 2; AT 11,21;"K"
9145 PLOT 164,60: DRAW -35,44,4.
5
9147 LET f=0: LET g=0: INK 7
9148 PRINT #0; AT 1,1; INK 2;"0=
SCREEN DEMO 1=START GAME"
9150 FOR i=63063 TO 63000 STEP -
1: LET n=( PEEK i)-40
9157 BEEP .13,n
9158 IF INKEY$ <> "" THEN GO
TO 9160
9159 NEXT i: GO TO 9150
9160 IF INKEY$ ="0" THEN LET g
=1: GO TO 6005
9170 IF INKEY$ ="1" THEN GO TO
6005
9175 GO TO 9150
9200 CLS : PRINT INK 3; AT 0,0;
"K THE HAUNTED BELLTOWER Q
"
9201 PRINT INK 5; AT 4,0;"The m
ischievous ghosts have
lying all around."
9205 PRINT INK 6;"Help the rab
bit to collect them.Each bell he
picks up will fly to it's prop
er place."
9206 PRINT INK 4;"If he collec
ts them all, he can pass through
the door on the topplatform to
the next room."
9207 PRINT INK 5;"There are 5
different rooms."
9208 GO SUB 9400
9210 PRINT INK 5; AT 4,2;"Dont
let the bats bite him or he wi
ll turn into a bat too !"
9211 PRINT INK 4; AT 11,10;"K
K K"
9220 GO SUB 9400: RETURN
9402 PRINT #0; AT 0,1;"C"; AT 1,
1; INK 5;"D Press any key to co
ntinue"
9440 PAUSE 1: PAUSE 0
9455 IF INKEY$ <> "" THEN GO
TO 9455
9460 CLS : RETURN
9520 DATA 6,138,5,-28,38,-21,2,2
4,18,-112
9521 DATA 51,84,66,76,81,68
9522 DATA 110,20,125,12,140,4
9525 DATA 16,63,29,73
9540 DATA 17,29,41,53,53,41,29,1
7,19,31,43,55,55,43,31,19,22,34,
46,58,58,46,34,22,24,36,48,60
9541 DATA 60,48,36,24,24,60,48,3
6,22,58,46,34,19,55,43,31,17,53
9542 DATA 41,29,53,17,29,41,55,1
9,31,43,58,22,34,46,60,24,36,48
9804 INK 3
9805 RESTORE 9860: READ nk
9807 LET m$="" : CLS
9808 PRINT AT 4,3;"CHOOSE USER
DEFINED KEYS: "
9810 FOR i=1 TO nk
9811 READ d$: PRINT "
d$": NEXT i: INK 6
9815 RESTORE 9860: READ nk
9816 PRINT AT 0,0: PRINT
9818 FOR i=1 TO nk: READ d$
9819 LET m$=m$+ CHR$ 0
9820 PRINT " ";d$;
9822 FOR j=1 TO 12- LEN d$: PRIN
T " ";: NEXT j
9825 PRINT FLASH 1;"?"; CHR$ 8;
9827 PAUSE 1: PAUSE 0
9830 LET k$= INKEY$
9832 FOR j=1 TO LEN m$
9833 IF m$(j)=k$ THEN GO TO 982
7
9834 NEXT j
9840 LET m$(i)=k$: PRINT k$: BEE
P .05,30: NEXT i: INK 7
9858 IF INKEY$ <> "" THEN GO
TO 9858
9859 RETURN
9860 DATA 3,"LEFT","RIGHT","CLIM
B ROPE"

```





# INFERNO

The tallest tower block in London is ablaze, and people are trapped on the seventeenth floor. The sixteenth floor is already alight and, as the game progresses, more and more smoke and flames will

start to break through. You play the role of firefighter, moving around the screen using cursor keys 5 to 8. Collect as many people as possible and then head for the exit. The exit is obscured by smoke, so you will

have to rely on luck and your compass to help you to escape.

Inferno was written for the 16K ZX-81 by Robert Caldecott of south west London.

```

1001 GOSUB 500
1002 LET R3=1
1003 RAND
1004 LET R1=0
1005 LET M$="P ?) /49EHKLN"
1006 LET R2=0
1007 RAND CODE M$(INT (RND*14)+1)
1008
1009 LET TT=300
1010 PRINT "MOVE TO ES"
1011 GOTO INFERNO
1012
1013 FOR I=1 TO 21
1014 PRINT " "
1015
1016 NEXT I
1017 FAST
1018 FOR I=1 TO 30
1019 LET R=INT (RND*100)
1020 LET X=INT (RND*28)+1
1021 LET Y=INT (RND*9)+2+1
1022 LET L=INT (RND*(29-X))+2
1023 FOR J=0 TO L
1024 LET R=INT (RND*100)
1025 LET R$=" "
1026 IF R>95 THEN LET R$=" "
1027 IF R>95 THEN LET R1=R1+1
1028 PRINT AT Y,X+J;R$
1029 NEXT J
1030 LET X=INT (RND*15)+2+1
1031 LET Y=INT (RND*17)+1
1032 LET L=INT (RND*(19-Y))+2
1033 FOR J=0 TO L
1034 LET R=INT (RND*100)
1035 LET R$=" "
1036 IF R>95 THEN LET R$=" "
1037 IF R>95 THEN LET R1=R1+1
1038 PRINT AT Y+J,X;R$
1039
1040 NEXT J
1041 LET T=INT (RND*100)+1
1042 LET T=T+1
1043 PRINT AT 21,0;"RESCUED SO F"
1044 IF TT-T<1 THEN GOTO 450
1045 IF PEEK (P+D)=27 THEN LET R
2=R2+1
1046 IF PEEK (P+D)=8 THEN GOTO 4
00
1047 IF PEEK (P+D)<>128 THEN LET
X=0
1048 IF X=H THEN GOTO 350
1049 LET XD=INT (X/33)
1050
1051 NEXT J
1052 NEXT I
1053 SLOW
1054 PRINT AT 21,0;"PRESS
5 TO CONTINUE"
1055
1056 INPUT A$
1057 LET T=0
1058 LET P=PEEK 16396+256*PEEK 1
6397+1
1059 RAND
1060 LET X=32+INT (RND*608)+1
1061 IF PEEK (P+X)>0 THEN GOTO 1
90
1062 LET H=32+INT (RND*608)+1
1063 IF PEEK (P+H)>0 THEN GOTO 2
00
1064 LET F=32+INT (RND*608)+1
1065 IF PEEK (P+F)>0 OR RND>.4 T
HEN GOTO 318
1066 POKE P+F,8
1067 POKE P+X,52
1068 LET O=X+(INKEY$="8")-(INKEY
$="5")+ (INKEY$="6")*33-(INKEY$="
7")*33
1069 POKE P+X,0
1070 LET T=T+1
1071 PRINT AT 21,0;"RESCUED SO F"
1072 IF TT-T<1 THEN GOTO 450
1073 IF PEEK (P+D)=27 THEN LET R
2=R2+1
1074 IF PEEK (P+D)=8 THEN GOTO 4
00
1075 IF PEEK (P+D)<>128 THEN LET
X=0
1076 IF X=H THEN GOTO 350
1077 LET XD=INT (X/33)
1078
1079 LET XA=X-XD*33
1080 LET HD=INT (H/33)
1081 LET HA=H-HD*33
1082 PRINT AT 0,5;"
1083 IF XD=HD THEN GOTO 310
1084 IF HD<XD THEN PRINT AT 0,5;
" "
1085 IF HD>XD THEN PRINT AT 0,5;
" "
1086 IF XA=HA THEN GOTO 210
1087 IF HA<XA THEN PRINT AT 0,10
;" "
1088 IF HA>XA THEN PRINT AT 0,10
;" "
1089 GOTO 210
1090 PRINT AT 3,0;" YOU FOUND TH
E EXIT IN ";T;" SECS."
1091 IF R2>R3 THEN GOTO 392
1092 GOSUB 600
1093 CLS
1094 GOTO 3
1095 PRINT AT 5,0;"THE MOST SO F
AR "
1096 LET R3=R2
1097 GOTO 370
1098 PRINT AT 3,0;"YOU WERE ENGU
LFED BY FLAMES AND "
1099 PRINT AT 4,0;" HAVE FAILED
IN YOUR RESCUE BID."
1100 GOSUB 600
1101 GOTO 3
1102 PRINT AT 3,0;" YOU FAILED T
O ESCAPE IN TIME "
1103 GOSUB 600
1104 GOTO 3

```



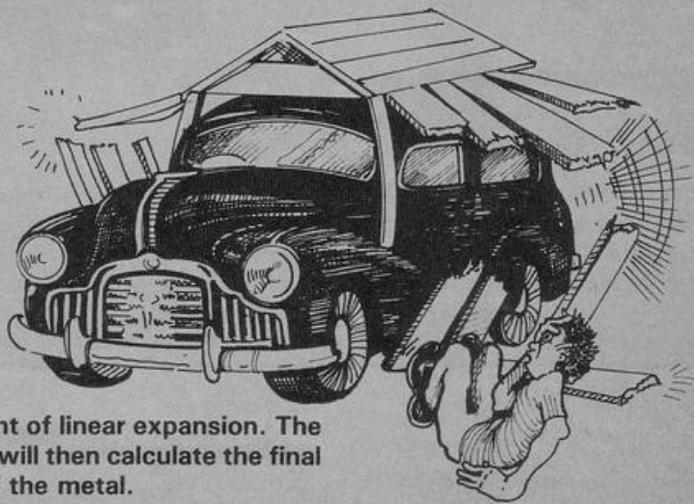
```

500 PRINT "*****INFERNO*****"
510 PRINT "*****"
520 PRINT "YOU ARE A FIREMAN SH
OWN BY . AND YOUR JOB IS TO RESCU
E AS MANY . PEOPLE AS POSSIBLE F
ROM THE 17TH FLOOR OF A TOWER BLO
CK. THE 16TH FLOOR IS ALREADY ABL
AZE AND THE FIRE IS BREAKING THR
OUGH EVERY- WHERE."
530 PRINT "FLAMES ARE SHOWN BY
. PEOPLE BY . YOU MUST AVOID THE F
IRE AND FIND AS MANY PEOPLE AS PO
SSIBLE . BEFORE THE TIME ALLO
CATED . REACHES ZERO WHEN TH
16TH FLOOR . COLLAPSES ENGULFING
EVERYONE ."
534 GOSUB 500
540 PRINT "ONCE YOU HAVE ROUNDE
D UP THOSE . PEOPLE YOU CAN RESCU
E YOU CAN . EXIT, UNFORTUNATELY Y
OU DO NOT . KNOW WHERE IT IS, BUT
YOU ARE . GIVEN DIRECTIONS FRO
M YOUR FLOORPLAN GUIDANCE COMPUT
ER SUCH AS . NORTHWEST WHICH TELL
YOU THAT . TO REACH THE EXIT AN
D . ESCAPE THE FLAMES MOVE NORTHWEST
."
550 PRINT "THOSE PEOPLE YOU RES
CUE AND YOURSELF CAN MOVE ALONG
CORRIDORS . ONLY BY USING KEYS 5
678 TO MOVE WEST SOUTH NORTH AND
EAST ."
555 GOSUB 500
560 PRINT "YOU ARE SHOWN AT ALL
TIMES WHERE YOU ARE, WHERE PEOPLE
TO BE SAVED ARE, WHERE THE FIRES
ARE, THE TIME REMAINING BEFORE THE
FLOOR . COLLAPSES AND THE NU
MBER OF . PEOPLE TO BE RESCUED
."
565 PRINT "YOU HAVE 5 MINUTES (
500 SECS) . TO CARRY OUT THE RES
CUE ."
568 PRINT "TO BE A TOP FIRE HER
O YOU MUST . FIND AND SAVE THE MO
ST PEOPLE . GOOD LUCK HERO."
570 PRINT "
578 PRINT "PLEASE WAIT FOR THE
FLOOR-PLAN . TO BE CONSTRUCTED"
579 GOSUB 500
580 CLS
590 RETURN
600 PRINT AT 21,0; "PRESS
KEY TO CONTINUE"
610 INPUT A$
620 CLS
630 RETURN
  
```

# METAL EXPANSION

Check your physics home work with Metal Expansion, written for the Spectrum or Spectrum Plus by Gary Meakin of Clifton, Nottingham.

A metal expands and contracts at a uniform rate when subjected to changes of temperature, providing its elastic limit is not exceeded. Give the original length and temperature of your metal, together with its final temperature and its



coefficient of linear expansion. The program will then calculate the final length of the metal.

```

100 CLS : BORDER 4: PAPER 4: BR
IGHT 1: CLS : PAPER 4: BRIGHT 1
190 INK 7
200 PRINT "M E T A L   E X P A N
S I D N"
205 PRINT AT 0,0; OVER 1; "-----"
206 INK 0
210 PRINT : PRINT "A metal expa
nds and contracts at a uniform
rate when subjected to changes o
f temperature- PROVIDING IT
S ELASTIC LIMIT IS NOT EXCEEDED
"
225 BEEP .1,10
1010 PRINT AT 7,0;"CALCULATING
LINEAR CHANGES"
1020 PRINT AT 9,0;"Enter Origin
al Metal Length"
1030 INPUT La
1040 PRINT AT 9,0;"La = ";La;
TAB 15;"mm"
1050 BEEP .1,10
1060 PRINT "Enter Initial Temper
ature"
1070 INPUT Ta
1080 PRINT AT 10,0;"Ta = ";Ta
; TAB 15;"degrees c"
1090 BEEP .1,10
1100 PRINT "Enter Final Temperat
ure"
1110 INPUT Tf
1120 PRINT AT 11,0;"Tf = ";Tf
; TAB 15;"degrees c"
1130 BEEP .1,0
1140 PRINT "Enter Coefficient of
Expansion"
1145 INPUT Co
1150 PRINT AT 12,0;"Co = ";Co
;"
1160 BEEP .1,10
1200 LET Exp=(Tf-Ta)*Co*La
1205 INK 7
1210 PRINT AT 16,0;"INCREASE=";
Exp;" mm"
1220 BEEP .1,10
1230 LET Ext=Exp+La
1240 PRINT AT 17,0;"NEW LENGTH="
;Ext
1250 BEEP .1,10
1260 COPY
1265 INK 0
1270 PRINT AT 20,0;"ANOTHER CAL
CULATION Y Yes N No"
1280 IF INKEY#="y" THEN GO TO
100
1290 IF INKEY#="n" THEN CLS :
STOP
1300 GO TO 1280
9000 SAVE "metalex" LINE 100
  
```

# ODD ONE OUT

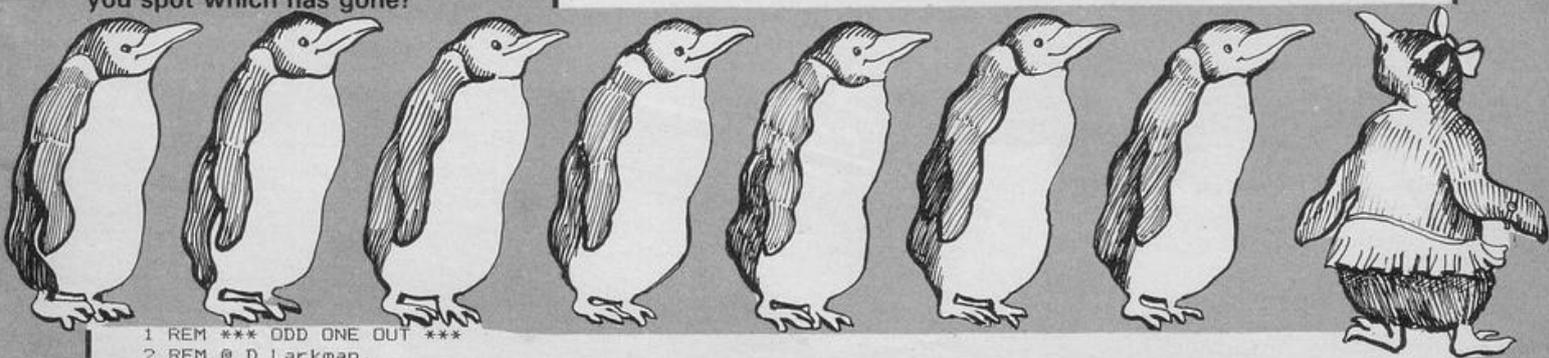
**T**est your powers of observation with Odd One Out, written for the Spectrum or Spectrum Plus.

A number of objects will be displayed on screen. Memorise their positions and then press any key. The objects will be displayed, but one will have been removed. Can you spot which has gone?

```

70 IF a=5 THEN PRINT AT x4,z
4;" "
75 IF a=6 THEN PRINT AT x5,z
5;" "
80 IF a=7 THEN PRINT AT x6,z
6;" "
85 IF a=8 THEN PRINT AT x7,z
7;" "
90 IF a=9 THEN PRINT AT x8,z
8;" "
95 IF a=10 THEN PRINT AT x9,
z9;" "
    
```

the missing object. If you name it correctly you score 1 point": PRINT #1:"Press a key to continue": PAUSE 0: PAUSE 0  
 8020 CLS : PRINT AT 0,6;"The objects"  
 8030 PRINT AT 2,0;"A=crab"; AT 4,0;"B=man"; AT 6,0;"C=ball"; AT 8,0;"D=star"; AT 10,0;"E=shoe"; AT 12,0;"F=face"; AT 14,0;"G=moon"; AT 16,0;"H=car"; AT 18,0;"I=ship"; AT 20,0;"J=ring"



```

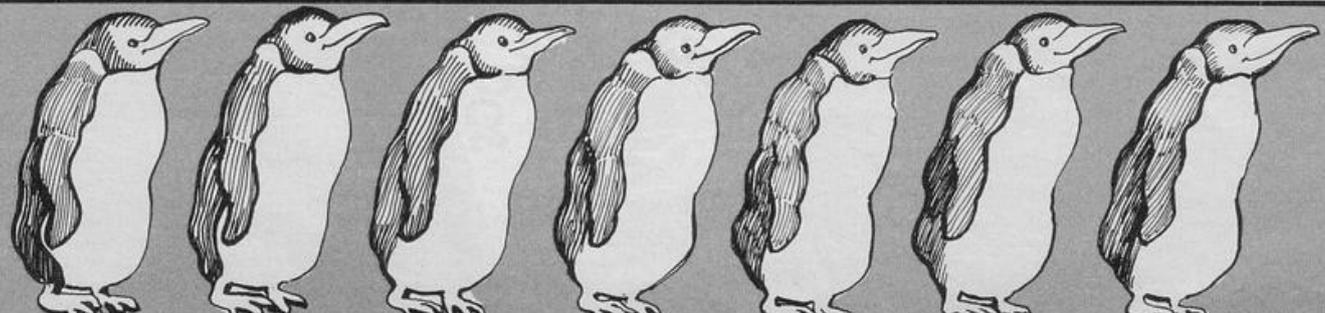
1 REM *** ODD ONE OUT ***
2 REM @ D Larkman.
3 CLS
10 GO SUB 9000
20 GO SUB 8000
25 LET score=0
30 LET a= INT ( RND *10)+1
35 LET z= INT ( RND *31): LET
x= INT ( RND *21): LET z1= INT (
RND *31): LET x1= INT ( RND *21
): LET z2= INT ( RND *31): LET x
2= INT ( RND *21): LET z3= INT (
RND *31): LET x3= INT ( RND *21
): LET z4= INT ( RND *31): LET x
4= INT ( RND *21): LET z5= INT (
RND *31): LET x5= INT ( RND *21
): LET z6= INT ( RND *31): LET x
6= INT ( RND *21): LET z7= INT (
RND *31): LET x7= INT ( RND *21
): LET z8= INT ( RND *31): LET x
8= INT ( RND *21): LET z9= INT (
RND *31): LET x9= INT ( RND *21
)
36 PRINT AT x,z;"A": PRINT A
T x1,z1;"B": PRINT AT x2,z2;"C"
: PRINT AT x3,z3;"D": PRINT AT
x4,z4;"E": PRINT AT x5,z5;"F":
PRINT AT x6,z6;"G": PRINT AT
x7,z7;"H": PRINT AT x8,z8;"I":
PRINT AT x9,z9;"J"
37 PRINT #1:"Press a key": PAU
SE 0: CLS : PAUSE 50
40 PRINT AT x,z;"A": PRINT A
T x1,z1;"B": PRINT AT x2,z2;"C"
: PRINT AT x3,z3;"D": PRINT AT
x4,z4;"E": PRINT AT x5,z5;"F":
PRINT AT x6,z6;"G": PRINT AT
x7,z7;"H": PRINT AT x8,z8;"I":
PRINT AT x9,z9;"J"
50 IF a=1 THEN PRINT AT x,z;
" "
55 IF a=2 THEN PRINT AT x1,z
1;" "
60 IF a=3 THEN PRINT AT x2,z
2;" "
65 IF a=4 THEN PRINT AT x3,z
3;" "
    
```

```

100 INPUT "What's missing ";a#
105 IF a#="crab" AND a=1 THEN
GO TO 200
110 IF a#="man" AND a=2 THEN G
O TO 200
115 IF a#="ball" AND a=3 THEN
GO TO 200
120 IF a#="star" AND a=4 THEN
GO TO 200
125 IF a#="shoe" AND a=5 THEN
GO TO 200
130 IF a#="face" AND a=6 THEN
GO TO 200
140 IF a#="moon" AND a=7 THEN
GO TO 200
150 IF a#="car" AND a=8 THEN G
O TO 200
160 IF a#="key" AND a=9 THEN G
O TO 200
170 IF a#="ring" AND a=10 THEN
GO TO 200
180 GO TO 300
200 CLS : LET score=score+1: PR
INT AT 0,10: FLASH 1;"CORRECT!!
": FLASH 0: PRINT AT 2,2;"You'v
e scored ";score;" up to now": P
RINT #1:"Press a key to continue
": PAUSE 0
210 CLS : GO TO 30
300 CLS : BEEP .2,-10: BEEP .2,
-30
310 PRINT AT 0,10;"WRONG!!"
320 PRINT AT 2,2;"But you got
";score;" points"
330 PRINT AT 21,0;"Play again
(y/n)"
340 PAUSE 0: IF INKEY# ="y" TH
EN CLS : GO TO 25
350 STOP
8000 CLS
8005 PRINT AT 0,6;"ODD ONE OUT"
8010 PRINT AT 2,0;"The object i
s to find the odd one out. You
do this by inputingthe name of
    
```

```

8040 PRINT #1:"Press a key to pl
ay": PAUSE 0: PAUSE 0: CLS : RET
URN
9000 FOR a= USR "a" TO USR "j"+
7
9010 READ b: POKE a,b
9020 NEXT a
9030 DATA BIN 01100110, BIN 010
00010, BIN 01000010, BIN 0011110
0,255, BIN 01111110, BIN 1010010
1, BIN 00100100
9040 DATA BIN 00111100, BIN 001
11100, BIN 00011000,255, BIN 101
11101, BIN 10111101, BIN 0010010
0, BIN 01100110
9050 DATA 0,0, BIN 00111100, BIN
01111110, BIN 01111110, BIN 011
11110, BIN 00111100,0
9060 DATA BIN 00010000, BIN 100
10010, BIN 01010100, BIN 0011100
0, BIN 00111000, BIN 01010100, B
IN 10010010, BIN 00010000
9070 DATA BIN 01110000, BIN 011
10000, BIN 11110000,255,255, BIN
11001111,0,0
9080 DATA 0, BIN 11111110, BIN 1
0010010, BIN 11111110, BIN 1101
110, BIN 11111110, BIN 11000110,
BIN 01111100
9090 DATA 0, BIN 00111000, BIN 0
1111000, BIN 11000000, BIN 11000
000, BIN 11111000, BIN 0111000,0
9100 DATA 0,0, BIN 1111100, BIN
10000100,255,255,255, BIN 011001
10
9110 DATA BIN 00010100, BIN 001
10100, BIN 01110110, BIN 1111011
1, BIN 00001000,255, BIN 0111111
0, BIN 00011000
9120 DATA BIN 00011000, BIN 000
11000, BIN 00111100, BIN 0100001
0, BIN 01000010, BIN 01000010, B
IN 01000010, BIN 00111100
9130 RETURN
    
```





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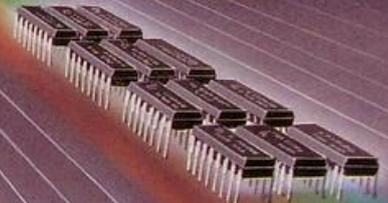
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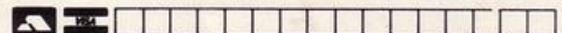
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