

HOME COMPUTING WEEKLY

AN ARGUS SPECIALIST PUBLICATION

March 26-April 1, 1985 No.105 45p

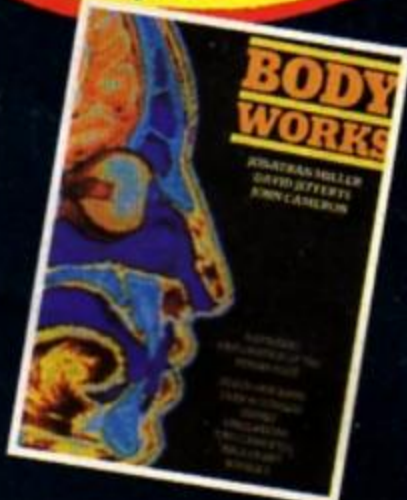


Another fantastic competition!



Win sweatshirts and software! On your bike, grannie — we've games for nine machines

Another exclusive review!



Jonathan Miller's Body Works You read it first in HCW!

Yard man slams hacker's guide

A top Scotland Yard detective has slammed the publication of a controversial guide to hacking, which was published last week. "No good can come of anything in this book," said John Austen, head of Scotland Yard's computer crime unit.

And Austen would like to see legal action taken against the publishers of The Hacker's Handbook, Century Communications.

"I don't believe that it is in the public interest that it should be published and if the public protests I will refer the matter to the Director of Public Prosecutions," he said.

The author of The Hacker's Handbook, who has assumed the pseudonym Hugo Cornwall, is apparently a 40-year-old Highgate resident. He argues that hackers have their own code of responsibility.

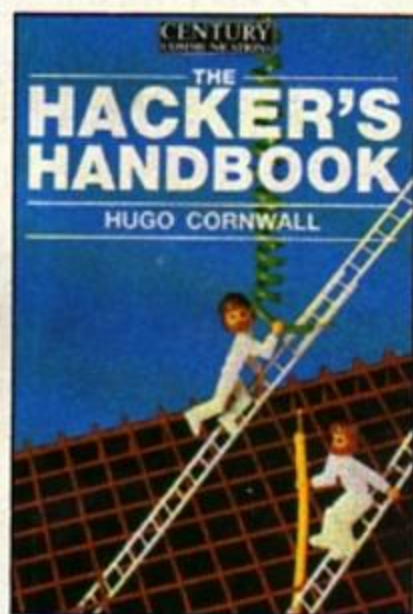
"The sport of hacking itself may involve breach of aspects

of the law, notably theft of electricity, theft of computer time and unlicensed usage of copyright material; every hacker must decide individually each instant as it arises," he writes.

Richard Brockbank of Century Communications supports Cornwall and believes the book has an important contribution to make to the security of information. "We feel perfectly entitled to publish this book," he said. "We hope it will help tighten security and have a positive effect. We aren't trying to encourage criminal acts."

In the eyes of the law hacking is generally illegal, but theft of information is not a criminal offence. Convictions carry relatively small penalties.

An expert hacker, who wanted to keep his identity secret, commented: "This book is excellent but very bannable. It was two or three times as



thick before it was edited down to be publishable."

And a Scotland Yard spokesman stated that Detective Inspector Austen's views were his personal opinion, not that of the police force.

Brain behind the body

You've seen the TV programme, you've read the book — now here's the software.

Body Works is Jonathan Miller's brainchild. Well-known for his TV appearances in The Body in Question, and subsequently for the pop-up book The Human Body, Dr Miller has now directed his attention to the possibilities of home computers as a medium.

Genesis Productions and Five Ways have collaborated to produce this original concept. Body Works is a combination of education and arcade, aimed at older children and adults.

Body Works covers the main bodily functions: digestion, respiration and circulation. Nerves, muscles and cells are also studied, and user participation is vital for one game, Muscle Control, in which the player must use skill and speed to manoeuvre a character.

The program involves the user in a number of simulations. In one section you input information for a character running the marathon. If the stress becomes intolerable, the runner suffers a heart attack, and you can see the effects this has on the human body.



Jonathan Miller, Body Works director

Inside your bolder, brighter, better HCW...

Convert BASIC programs for your machine

The last word in Amstrad programming

Swot spot for bright boffins

Hi-scores, jokes, puzzles, cartoons...

SPRITE MACHINE 64

THE ULTIMATE SPRITE DESIGNER PACKAGE

Featuring

- ★ **DISPLAY MODE** — A big object, for instance a ship in full sail, using all the eight sprites can be designed easily. All the eight sprites can be viewed together to give the full view of the ship. Any of the sprites making up the ship can be edited, scrolled or rotated while the whole ship is in view.
- ★ **OVERLAY MODE** — Up to eight sprites can be overlaid.
- ★ **ANIMATION** — A really useful feature. A horse can be taken through its paces from canter to full gallop.
- ★ **SCROLLED** — In normal or MULTI-COLOUR mode.
- ★ **336** sprites storage.
- ★ Many useful hints, tips and information about the working of the video chip in CBM 64.
- ★ Easy to incorporate the sprites in your own BASIC or machine code programmes.
- ★ A must for a BEGINNER or PROFESSIONAL programmer.
- ★ Ready to use sprites for beginners including a demonstration programme to show all the features of the Sprite Machine.



Cassette version £9.95 Disk version £11.95

ANIROG

HOME COMPUTING WEEKLY

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March 26-April 2, 1985 No. 105

Soapbox

We've seen games based on TV characters, famous personalities and cartoon characters. Now Genesis Productions, in conjunction with Five Ways software house, has come up with a package which combines several selling points — famous name, arcade action and educational value — and so should guarantee widespread publicity and, Genesis hopes, large sales.

Jonathan Miller's game heads the package, and gives credibility to a program which should involve the user to an unprecedented extent. Rather like Trivial Pursuits, you can't fail to assimilate facts while playing.

A full review of the package appears in this week's HCW. The professional co-ordinated approach is commendable, and it would be pleasant to see a combined gift set of colour book and software pack.

Educational software has always lagged behind, but if companies are smart enough to see that education doesn't have to be restricted to school, and produce packages which will interest all the family, like Body Works, then big bucks can be made and ploughed back into developing more sophisticated programs. **Liz**

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COMING SOON...

- Chocky chick on the Amstrad
 - Rabbyste for the Commodore 64
 - Easter adventure for C16 and VIC-20
 - Bad eggs on the BBC
- Don't miss your copy of HCW! Place a regular order with your newsagent now.

Argus Specialist Publications Ltd.
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BASIC LIVING

by Jon Wedge and Jim Barker



The Computer Dictionary by Jon Wedge and Jim Barker is available from A & C Black, price £3.95

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On the ball

Marconi's new graphic input device, the RB2 Trackerball provides precise x-y cursor control by fingertip operation of the central ball.

Trackerballs are available for use with BBC and C64 (£59.50) and MSX (£79.50) computers. It is aimed at serious hobbyists, educational establishments and users of graphics programs.

According to Marconi it is more stable and accurate than a joystick, needs less space than a mouse and can also be hand held. It comes complete with a user guide and sophisticated graphics software, as well as software to facilitate linking the RB2 to your own programs.



**Central Trade Exchange,
Ashton Lodge, Aston Rd,
Dunstable, Beds LU6 1NP**

On the right track

Pure gold

US Gold has announced the launch of the US Gold Club. The membership fee is £9.99 plus 75p postage and packing.

Members will receive a US Gold sweatshirt and badge, a poster, a membership card, discounts on US Gold software, US Gold merchandise and Gold Bulletin, a regular newsletter containing news and views on US Gold games.

**US Gold, Unit 10 The Parkway
Industrial Centre, Heneage St,
Birmingham B7 4LY**

Toil and trouble

Players of Macbeth, from Creative Sparks, need despair no longer. The company has been so inundated with calls that it has prepared a clue-sheet.

Available to anyone sending an s.a.e. the sheet will help those stuck on three of the four adventures. Gordon Reid, Product Manager, claims that 'by the time you reach the fourth, you should be an expert'.

The company hopes the issue of this sheet will give it back the use of its switchboard as well as helping fans of the game.

**Creative Sparks, Thomson
Hse, 296 Farnborough Rd,
Farnborough GU14 7NF**

Bits and bytes

Grampian Television is producing a second series of Bits 'n' Pieces, a computer series for young people between the ages of 10 and 20.

The series will concentrate on software for Spectrum, C64, BBC, Amstrad and Atari. The production team intends that it should be the most innovative and user-friendly computer series on TV.

Bits 'n' Pieces will be presented by DJ Bobby Hain and the series will be screened during the summer.

**Grampian Television, Queen's
Cross, Aberdeen AB9 2XJ**

Eye, eye

Bolle, manufacturer of VDU spectacles, has introduced a new ladies style to its range.

In common with all the spectacles in the Bolle range the new spectacles feature the Irex 90 plus lens, designed to improve the resolution of screen images received by the eye. These glasses are available in sherry/gold colour.

**Bolle, Brunel Cl, Ebblake Ind
Est, Verwood, Wimbourne,
Dorset BH21 6BA**

Make a spectacle of yourself



Software update

Mosaic Publishing was guilty of jumping the gun this week, with the somewhat premature announcement of a game based on the novels of the life and times of Adrian Mole. The game won't be ready until the autumn.

Level 9 is the software house developing the game on behalf of Mosaic, and Adrian Mole's trials and tribulations will be played out on C64, Amstrad CPC464, Spectrum and BBC.

The follow-up to *Chucky Egg*, *Choccy Egg* from A 'n' F, is timed for release at Easter weekend. Meanwhile, Melbourne House has released a new, improved — but pricey — version of *The Hobbit* for the C64. The number of locations are doubled and the graphics are reported to be a considerable improvement on the original Commodore version. The musical soundtrack should set the atmosphere, and inspire you on your quest, according to

Melbourne House. Price: £14.95 on cassette, £17.95 on disc.

Micromega has come up with a new package of three of its best-selling Spectrum games: *Codemane Mat*, *Kentilla* and *Jasper*. This bumper pack, the *Derek Brewster Collection*, can be yours for £9.95.

Palace Software, who modified *The Evil Dead* into a computer game, will shortly be releasing *Cauldron*: a game which incorporates scrolling shoot-'em-up, arcade adventure and platform jumping. Palace claims: "It's one of the largest games so far written for home computers, and uses about 300K of source code." At £7.99, *Cauldron* will be available for the C64 and Spectrum.

One conversion of note this week is *Systems 3's Death Star Interceptor* for the Spectrum. Originally written for C64 this new version has music from the film *Star Wars*, officially licenced and even synthesised speech.

Title	Machine	Price	Publisher
<i>Parky and the Yellow Submarine</i>	C64	£6.95	CheetahSoft
<i>Quasimodo</i>	C64, Atari	£9.95	US Gold
<i>Doughboy</i>	C64	£9.95	US Gold
<i>Battle for Midway</i>	C64	£9.95	PSS
<i>Grand Larceny</i>	C64	£7.95	Melbourne Hse
<i>Chuckie Egg II — Choccy Egg</i>	Spectrum	£6.90	A 'n' F
<i>Jet-boot Jack</i>	Amstrad	£8.95	English
<i>Tower of Evil</i>	C16	£5.95	Creative Sparks
<i>Derek Brewster Collection</i>	Spectrum	£9.95	Micromega
<i>Mystery of the Java Star</i>	Amstrad	£7.95	Shards
<i>Cauldron</i>	C64, Sptm	£7.99	Palace
<i>Frankenstein 2000</i>	BBC	£7.95	Icon
<i>Caveman Capers</i>	BBC	£7.95	Icon
<i>Bug-Eyes</i>	Spectrum	£6.95	Icon
<i>Sir Lancelot</i>	Amstrad	£6.95	Melbourne Hse
<i>Wizard and the Princess</i>	C16	£5.95	Melbourne Hse
<i>Classic Adventure</i>	C16	£5.95	Melbourne Hse
<i>Grand Larceny</i>	C64	£7.95	Melbourne Hse
<i>Star Seeker</i>	Electron	£9.95	Mirrorsoft
<i>Android One</i>	Amstrad	£7.95	Vortex
<i>Rocket Ball</i>	C64	£7.95	IJK
<i>Krazy Kar</i>	C64	£6.95	IJK
<i>Jouste</i>	C64	£6.95	IJK
<i>Boardello</i>	MSX	£7.95	Bubble Bus
<i>Arabian Nights</i>	BBC/Eltron	£6	Interceptor
<i>Death Star</i>	Spectrum	£7.95	System 3

Nibble at your micro

The mice are multiplying. The latest machines to come under attack are the BBC and Commodore 64 which are soon to be nibbled by the SMC species, released from their breeders next month, at £59.95.

Supplied with software on cassette these mice are the first which are meant to operate with coloured icons. Using the software supplied you can design

sprites and other characters, produce 16-colour screen designs (eight on the BBC) and use the mouse input for your own programs.

A further advance is that the mouse can be used as a joystick with most software with joystick option. A versatile creature, with versions due to infest the QL, Amstrad and MSX soon.

SMC Supplies, 11 Western Parade, G1 North Rd, Barnet, Herts EN5 1AD

Spaced out

The new CUB National Schools Computer Challenge has attracted entries from 1300 schools around the country. As part of the first prize the winning team will attend a launch of the space shuttle at the Kennedy space centre, Florida. This is just part of the itinerary of a five-day trip to America.

The competition is sponsored by monitor manufacturer, Microvitec, and is geared to initial post-out rounds with

questions on specific computer application tasks. The competition is open to pupils under the age of 16.

Tony Martinez, Microvitec chairman said: "It provides a tremendous boost to our hopes of using the structure of the competition as a basis of challenge between British and American schools."

CUB National Schools Computer Challenge Competition, c/o Octagon PR, Octagon Hse, 32-36 Little Horton La, Bradford BD5 0AL



Nibble on an AMC mouse



The Haleys — faster than a speeding comet to America

Haleys' holiday

The Haley family of Coventry were winners in the joint Spectrum Group/Commodore Competition.

The Haleys had to list seven features of the C16 in order of

importance and compete a tie-break sentence stating why they would like to go to Disneyland.

The prize includes a 14-day holiday in Florida including trips to the Kennedy Space Centre and Disneyland and £2,500 spending money.

This week we bring you part one of a series in which Peter Green shows how to make BASIC programs run on a variety of machines

ALTERED STATES

Do you ever get frustrated when you're reading HCW? There's a really useful utility, or a program that sounds just the thing to type in and play — and it runs on a BBC Micro, and you've got an Amstrad. Sighing, you reluctantly turn over the page...

It doesn't have to be that way as a little effort on your part can often result in a workable conversion from one machine to another. I know: I've done nearly a dozen jobs like this for a software house. In fact you can sometimes improve on the original by making use of any facilities available on the second machine.

The object of this series is to pass on tips I've picked up so any competent reader can attempt successful conversions. This also includes knowing when to give up!

This week I'll start off with some general comments on the problems involved. Later in the series I'll cover control structures, graphics, sound, subroutines, string handling and input/output. The machines to be covered in detail are the BBC, Amstrad, Spectrum, Commodore 64 and Oric, but the ideas will be equally useful for owners of other computers.

Know your enemy

For a 'standard' language, BASIC has a ridiculous number of dialects. Your first problem is that, ideally, you should be familiar with the BASIC in which the program is written (the source machine) and the BASIC on your computer (the target machine). The best way is if you have both manuals: perhaps you have a friend with the source machine and can borrow his. Failing that, you'll have to rely on the information in this series, which cannot possibly be exhaustive, but will cover the major differences.

Now you can speak the languages, what are you trying to say? The second step is to understand what the program actually does, which may not be easy. Can you read a string of VDU codes and visualize the resulting picture on a BBC Micro? Probably not. Having access to both source and target machines, I was able to run originals and see exactly how they appeared, which is the best system: again, an obliging friend who will let you try the

program on his machine is very useful.

Otherwise, you'll have to work through the listing and make notes on the function of each line. If you're lucky, the program will be written in logical blocks (procedures or subroutines) called from a short main control loop. In my experience many magazine listings are badly written. This is not meant as a slur on you, gentle readers! — it's simply that BASIC makes sloppy programming easy.

BASIC was designed to be as English-like as possible, and in English you can write grammatical sentences which are tricky to understand — "I know a man with a wooden leg called Arthur". "What's his other leg called?" In this example the problem is caused by the order of the words, and in BASIC the order is generally the problem too, which brings us to the infamous GOTO.

Branching out

There is nothing wrong with the inclusion of GOTO in BASIC, despite the ravings of many learned writers. As I'll show later, it can be very useful in stimulating exotic types of control loop. What's wrong is that most people are lazy, and use it to jump about in the program willy-nilly. If your source listing exhibits a bad case of 'spaghetti programming', my advice is to forget it. A well-structured program should be easy, though.

Work through the listing with a ruler and pen, identifying program modules and ruling them off. This is often easiest on the Beeb, each sub-block starting with a DEF PROC. On machines without procedures, look for the RETURN statements that terminate each subroutine. Warning: subroutines may have more than one exit point, so be careful not to sub-divide too far.

Once this is done, it should be a simple task to tackle the subroutines one at a time, deciding what they do and converting them to your target BASIC. Make notes on the variables used, the range of values they can take (if possible), and what the variables are meant to represent: fuel, turn, screen position, number of gnomes killed etc.

Many magazines include

tables of variables and how it works, as well as hints on conversion for listings — these are often sketchy and incomplete, but save you some work.

If you want to tackle a conversion without this sort of analysis, you're a better man than I am, Gunga Din.

You can't get there from here

I've already mentioned one reason to avoid a conversion: impenetrable programming. Here are some more.

Memory size may make a conversion impossible. For example, the three screen modes on the Amstrad are similar to Modes 0, 1 and 2 on the BBC (although numbered the other way!), so a program running on the BBC should transfer to the Amstrad with little difficulty. But these hi-res modes eat a lot of the Beeb's memory, so that the reverse is not always true. A large Amstrad listing simply won't fit into the BBC unless you drastically alter the graphics required (which may not be possible).

Conversions to and from the C64 are generally to be avoided unless the program makes minimal use of sound and hi-res graphics (or you're a masochist). This is because the 64 is a machine code programmer's computer: it's BASIC is positively Stone Age with all the useful facilities accessed by PEEKs and POKEs to obscure memory locations. Something like a noughts and crosses program, where most of the listing is the 'thinking' routines, and you can easily write your own display section, should be OK.

Any BASIC listing that uses CALLs to bits of machine code is generally a no-no. Often the code is a ROM routine that permits a short cut for the programmer: of course the routine may not be at the same address in the target machine, or even exist at all! If the code is self-contained and is nothing to do with the system hardware (a fast search or sort routine, for example), and the two computers use the same processor, and the code is easily relocatable, and you know what you're doing, then you can have a go. In short, forget it.

In the next part, I'll discuss how to put *any* loop structure on any machine, and look at string handling.

Keep your eyes skinned for Super Gran and you could win sweatshirts, and games for nine different machines

ON YOUR BIKE, GRANNIE

This week we are offering you the chance to meet a superstar. There are prizes for 100 readers who will each win the latest release from Tynesoft — Super Gran.

The game is based on the adventures of television's most unlikely star. Accidentally hit by a super-ray machine an ordinary grannie became the septuagenarian superbeing.

The aim of the game is to defeat the Scunner, Super Gran's arch enemy. There are eight different screens in which you must avoid imposters, chase the baddy in the skimmer and rescue the cat.

The game is due for release on April 2. Spectrum, C64, C16 and Amstrad version will be available on that date, followed by five other versions for BBC, Electron, Atari, MSX and Einstein soon afterwards.

The game is only one part of the first prize. The first 10 correct answers out of the hat, — probably the editor's, his head is big enough — will also receive a sweatshirt featuring Super Gran herself.

How to enter

In order to win this game you need to have eagle eyes as sharp as Super Gran's. Study the two photographs taken from the series. There are a number of differences between them. All you have to do is circle the differences on the entry coupon and count how many you've found. Fill in the entry coupon and seal it in an envelope. Write the number of differences clearly on the back of the envelope — this is very important.

Post your entry to: Super Gran Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Entries must arrive by first post on Friday 12th April, 1985.

You may enter as many times as you wish, but each entry must be on an official entry coupon — not a copy — and sealed in a separate envelope.

Important: please follow carefully the guidelines on entering — incomplete coupons and entries with no numbers on the back cannot be considered. If you are a winner, the coupon will be used as a label to send your prize, so clear writing is essential.



Tynesoft Competition
Entry Coupon

Name _____

Address _____

_____ post code _____

Number of differences found _____

Computer used _____ Sweatshirt size — Med/Large _____

Complete clearly and fully — if you are a winner this coupon will act as a label for your prize. Post to Super Gran Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Closing date: first post, Friday 12th April, 1985. Don't forget to follow of your envelope.

The rules

Entries will not be accepted from employees of Argus Specialist Publications, Tynesoft, and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

The How to Enter section forms part of the rules.

TOP 20

Compiled by

Gallup

SOFTWARE

Week Ending March 12, 1985



Up and Coming

Very little change in the chart this week and no new entries in the top 20 at all. Only Bruce Lee has crept back to disturb the status quo.

In the lower reaches there are two new entries. Emerald Isle has made it to 33 and Rocket Ball has stolen into the number 47 slot.

We are fascinated to see Jet Set Willy rating at number seven. It has been in the chart for 23 weeks now and, believe it or not, it isn't the longest serving member.

That accolade is shared by four titles, Football Manager, Flight Path 737, Beach Head and Daley Thompson's Decathlon. All of these games have been in the top 50 for 25 weeks now — quite a record.

The top tens show a little more movement and we are very pleased to see that Soft Aid is heading both C64 and Spectrum charts. Castle Quest

LAST WEEK	MOVIE	THIS WEEK	TITLE	PUBLISHER	SPECTRUM	COM 64	ELECTRON	AMSTRAD	ATARI	OTHERS
2	▲	1	Soft Aid	Quicksilva	●	●				
4	▲	2	Raid over Moscow	US Gold		●	●			
R/E	□	3	Bruce Lee	US Gold	●	●				●
7	▲	4	Ghostbusters	Activision	●	●				●
5	●	5	Alien 8	Ultimate	●					
6	●	6	Everyone's a Wally	Mikro-Gen	●					
30	▲	7	Jet Set Willy	Software Projects	●	●			●	●
3	▼	8	Impossible Mission	CBS			●			
1	▼	9	Football Manager	Addictive Games	●	●	●	●		●
09	▼	10	Booty	Firebird	●	●				
8	▼	11	Pole Position	Atari	●	●	●			●
12	●	12	Daley Thompson's Decathlon	Ocean	●	●	●			●
14	▲	13	Combat Lynx	Durell	●	●	●		●	
15	▲	14	Manic Miner	Software Projects	●	●	●		●	●
17	▲	15	Zaxxon	US Gold	●	●	●			●
46	▲	16	Hunchback II	Ocean	●					●
16	▼	17	Castle Quest	Micro Power	●		●			●
35	▲	18	Sorcery	Virgin	●	●			●	●
22	▲	19	Pyjamarama	Mikro-Gen	●	●			●	
36	▲	20	Starstrike	Realtime	●					

SPECTRUM

BBC

COMMODORE

seems well placed to stay at number one on the BBC but it will be ages before it has been in the charts as long as Elite — currently on 23 weeks.

Top Ten

1	Soft Aid	Various
2	Alien 8	Ultimate
3	Bruce Lee	US Gold
4	Raid over Moscow	US Gold
5	Everyone's A Wally	MikroGen
6	Ghostbusters	Activision
7	Booty	Firebird
8	Starstrike 3D	Realtime
9	Finders Keepers	Mastertronic
10	Skooldaze	Microsphere

Top Ten

1	Castle Quest	Micro Power
2	Elite	Acomsoft
3	Combat Lynx	Durell
4	Frak!	Aardvark
5	Football Manager	Addictive Games
6	Chuckie Egg	A & F
7	Emerald Isle	Level 9
8	The Hacker	Firebird
9	Mini Office	Database
10	Manic Miner	Software Projects

Top Ten

1	Soft Aid	Various
2	Impossible Mission	CBS
3	Pole Position	US Gold
4	Ghostbusters	Activision
5	Buck Rogers	US Gold
6	Raid over Moscow	US Gold
7	Frak!	Statesoft
8	Daley Thompson's Decathlon	Ocean
9	Rocket Ball	Centresoft
10	Zaxxon	US Gold

BLOCKBUSTERS BLOCKBUSTERS

Blockbusters is the ratings-topping, button-popping, mind-stopping quiz game of the decade, and now it's been adapted for your micro computer!

Central TV's popular programme attracts around 12 million fans, and now it's all set to become number one in the personal computer charts as well! Blockbusters is 'edutainment' of the highest level for all the family, providing a perfect introduction to the home computer.

Two players pit their wits against each other and the clock in a game which tests mental agility and general knowledge – it's exciting, educational and intense with an appeal as wide as the micro itself.

If you've got a computer in the family you've got to get Blockbusters. And if you haven't, it's worth getting one just to play Blockbusters! Now available from High Street stockists or direct from Macsen Software –

just fill in the coupon below and try to contain your excitement – we'll deliver within 14 days!

This is what the experts have to say . . .

"A surprisingly addictive family game with considerable educational side-benefits" –
CRASH MICRO MAGAZINE

Macsen Software, GBA Limited, 17 Nott Square, Carmarthen, Dyfed, SA3 1PQ.

Please send me a Blockbusters programme for my

BBC-B ELECTRON **SPECTRUM 48K**

COMMODORE 64 (Tick appropriate box)

Price **£7.95 + 60 pence p&p.**

I enclose Cheque/PO number _____

for **£8.55** made out to Macsen Software or please debit my ACCESS/BARCLAYCARD, number _____

Signature (Mr/Mrs/Miss) _____

Address _____

Postcode _____



THE ULTIMATE CHALLENGE!



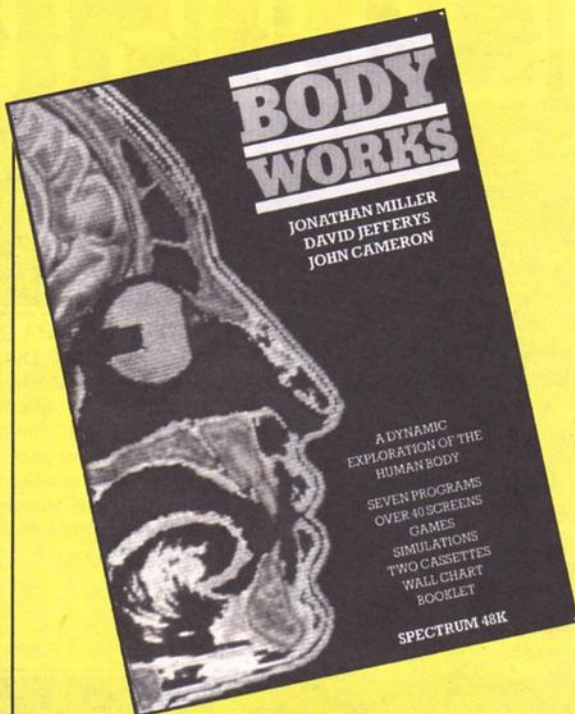
CENTRAL

B

S

C

SOFTWARE



Body Works

Despite the fact that the publishers, Genesis Productions, claim this will not be marketed as an educational package, Body Works is, nonetheless, one of the better educational programs I have come across. The package includes two cassettes (with five programs), an introductory manual and wallchart of the human body.

Topics dealt with include cells, digestion, nerves, and muscles (among others), and these are introduced in the clear and concise manual and then illustrated by the accompanying programs. The chapter on cells, for example, explains the functions and working of different types of cells and the computer program gives graphical representations of these cells, as well as animated sequences showing the passage of chemicals into and out of the cells.



The graphics throughout the programs are nicely designed, and make good use of colour to differentiate between different parts of the body, and this goes a long way to holding the user's attention — in contrast to the rather dull graphics in a lot of educational software.

What's more, instead of simply flashing reams of facts onto the TV screen, Body Works also includes a number of games/simulations which depict bodily process in action and allow the user a degree of interaction with the programs at the same time as soaking in the facts. One of these games, in which you control the muscles of an arm to press a series of buttons, I found challenging and playable.

All in all, Body Works is well produced and programmed, and an indication of what educational software can — and should — be.

C.J.

Price: £14.95

Publisher: Genesis Productions

Address: 30 Gt Portland St, London W1

SPECTRUM



Lode Runner

This disc game is an American import, and was a great hit in the States, so it would be a surprise if it wasn't good. But don't worry, it deserves its high reputation, though it does have a few weaknesses.

It isn't a startlingly original game, but just another variant of the platforms-and-ladders theme. You have to guide your little man around the screen collecting gold bars and digging holes to trap the guards in. The graphics are nothing to write home about and the sound effects are distinctly average. What makes it special is the number of screens you have to play with — a staggering 150 — and the inclusion of a game generator so you can design your own screens as well.

Designing a screen and saving it on disc, is made very easy for you — but designing a playable screen is, of course, much harder. It's really only when you've had a go for yourself that you appreciate the hard work which must have gone into producing all the original screens.

The edit mode which you use to design screens also enables you to select any of the original screens, though you can't register a high score unless you start with the first screen. You can speed up or slow down the game too, and there are cheat keys which give you extra lives or let you skip levels — these also invalidate high scores.

With all these options to play with, it's certainly good value for money.

M.N.

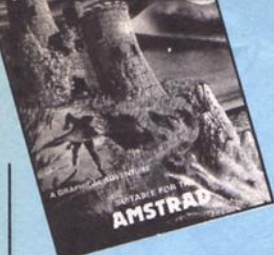
Price: £12.95

Publisher: Ariolasoft

Address: Asphalte Hse, Palace St, London SW1

C64





Heroes of Karn

Converted from another computer, this clonebuggy comes with some very pretty pictures, and the dulllest text layout of all time.

No account has been taken of the Amstrad window commands which would do a great deal to liven up a mainly textual display.

All the text uses the default bright yellow ink; the other 26 colours are completely unused. Like many other recent adventure programs, it is also practically a deaf mute. So much of the valuable RAM has been used by the pictures, the essential dialogue is unsophisticated and outdated.

Monosyllabic communication and an apparently small vocabulary make painfully slow progress inevitable. The sound commands are grossly neglected. The potential here for adventure programs is enormous, since storyline continuity and dramatic content would gain much from the 8912 sound chip.

Doing far more for the imagination than still pictures, the sounds of waves crashing on a storm-swept pebbled beach with gulls squawking overhead are all accessible, and in full stereo too for complete realism.

The usual verb/noun inputs are used in this program and the game can be saved for future use. Your mission is to release from captivity the four heroes of Karn, namely Beren the mighty, Istar the wise, Khadim the dwarf and Haldir the Elf-lord.

After battling with the powers of night, many salubrious hazards await you. Lots of entertainment here, especially for timeworn, weatherbeaten speculators looking for another foray into the unknown.

D.H.

Price: £5

Publisher: Interceptor Micros

Address: Linden House, The Green, Tadley, Hants

AMSTRAD



Buck Rogers

This game is yet another conversion from the arcades. The scenario is sickeningly familiar. On the screen, you have a view of your spaceship which you pilot across the surface of a planet. The feeling of movement is achieved by moving bands of colour which travel towards you.

There are a range of mountains in the distance, but you never seem to reach them. At regular intervals, pairs of pylons approach you. You must fly your ship between the pylons. Contact with either means death.

After you've passed through a number of gates, enemy space ships come at you. You must destroy these ships as well as pass through the gates. The next wave comprises bouncing nasties.

The final phase involves flying through space killing nasties, culminating with the mothership. It's then back to the beginning with things a little nastier. The variation between difficulty levels is small apart from a different colour screen. The ship has limited fuel so to keep going you must gain ships by completing screens or killing nasties — I think.

The graphics are excellent with use of shadow to give a 3-D effect and smooth movement. Sound is minimal and generally uninspired.

Since this was a preview copy, I had no instructions to help me. Hence my vague comments. Overall this is an extremely tedious game which really didn't seem to get anywhere. After three screens, the play was hardly any tougher than at the start.

A.W.

Price: £9.95

Publisher: US Gold

Address: Unit 10, Parkway Ind Centre, Heneage St, Birmingham B7 4LY

C64



Jammin'

From my first sight of the first screen I sat bolt upright — the display being different to any other I have seen.

Moving walkways criss-cross the screen and there are 20 of them to tackle... well there would be if the publishers had put more than minimal effort into their quality control.

At last it seems that someone has been sufficiently creative to program an original idea. The program is a conversion, although new to me, and I have seen most Amstrad games.

Full use has been made of the Amstrad graphic and sound facilities, which are terrific in stereo.

In the style of a Dutch auction the screens are numbered down from 20, so the second one is number 19. Screen 18 is where the publisher's familiarity with the program becomes contemptuous. The first time I got to this stage the game just locked up. Rankin' Rodney was petrified.

I had found a Bug. Another attempt caused black squares to appear on the display, with odd black pixels peeping through the paper colour. Nothing if not tenacious, I tried again, this time a full reset was initiated... ready.

Had the screens run in the more usual way from 1 to 20 I may never have discovered this garbage. It concerns me to think that you would have wasted your money, with frightening repercussions. **D.H.**

Price: £8.90

Publisher: Taskset

Address: 13 High St, Bridlington

AMSTRAD



Flipped



Hooked



Keen



Yawning





Cricket Captain

This overpriced package will be disappointing to most Amstrad users, who have been weaned on a richer diet.

Originally written for another popular micro, this program is a clonebuggy. It has been quickly translated from one machine to another, no advantage has been made of the enhanced graphic and sound capabilities of the Amstrad. Even the text on screen is annoyingly off centre, obviously not written for this particular screen co-ordination.

As its name suggests, you are the Captain of a County Cricket team. All 17 County teams are on offer and you may choose to Captain any one of them.

A flashing 'gamble' feature is incorporated, which represents the spin of a coin so that you either bat or bowl first. The batting and bowling order is of your own choosing. You are playing a one day match that lasts for up to twenty overs, but with only three balls per over!

Changes in the positions of the fielders is offered — but only briefly — here again that clonebuggy rears its ugly head, the Amstrad whips through the delay loop faster than you can think!

Though not having any instructions on the cassette inlay, these are adequately provided on the screen. What is missing from the visual image though, is the second inactive batsman. This makes the all important run out unprovided for, also the one batsman that is visible tends to jump about a bit. Altogether most disconcerting.

The idea is good, the implementation is obsolete. **D.H.**

Price: £6.50

Publisher: Allanson Computing
Address: 77 Chorley Road,
Adlington, Chorley, Lancs



AMSTRAD



Kissin' Kousins

Well, y'all expectin' some good ol' fashion Southern Comfort from this one? You might at least expect some sense of humour. But alas this is somewhat lacking.

The cassette inlay gives you some idea of what to expect. There is a background which scrolls across when you've completed your journey from left to right and the essential information concerning lives and score.

You have to jump over clashing dustbins, letter boxes and various other obstacles rather like Hunchback but against a more modest background. Instead of the castle you have a street scene which includes a zoo and a two Bit Micro shop. As you make progress the obstacles become more animated and to get past them you need to use your gun. There are caterpillars, kangaroos, bats and many more all trying to prevent you from your purpose in life which is to rescue your loved one.

Your score is affected by the time taken to get across the screen. A further difficulty is added by a gradually descending bomber, just to complicate matters.

Unfortunately this multi-screen game doesn't quite live up to expectations and is not original enough to be interesting or ingenious enough to be addictive.

A musical background is provided with the option of switching it off. There is also an option to use the First Byte Joystick Interface for the Electron user, otherwise the keyboard controls are perfectly adequate.

It is quite a difficult game to master and split second timing is required. If you enjoy jumping and shooting to avoid danger then you may like this especially as the price seems very reasonable.

Price: £4.95

Publisher: English Software
Address: Box 43, Manchester
M6D 3AD

ELECTRON

BBC



Help

Dear BBC User, HELP is nigh, throw your User Guide away. Gone are the hours of searching through well thumbed, tatty pages looking for forgotten syntax and operating system commands. On second thoughts, you'd better rescue it from the bonfire because there is a limit to the amount of information one can squash on to an 8K eprom. However, the writers of this chip, using sophisticated compression techniques, have managed to cram a remarkable 13,000 characters of information into it.

HELP gives instant information on most of the topics to be found in the User Guide and by giving the user a mainframe style on-screen help facility, program development time can be reduced.

HELP covers the following topics:

BASIC keywords	sound colour	teletext
VDU commands	FX calls	GCOL
memory usage	PAGE/HIMEM	screen modes

One omission is information about the ENVELOPE command, but this is deliberate because any worthwhile information about this complex topic would have used up most of the available space.

The utility can be entered at any time during the development of a program by typing *H<topic> <RETURN>, after which 'LIST' will return the user to the program.

Interrogation of HELP can be by subject which gives all the information relating to that topic or the information can be made more specific by calling for a sub-topic, using *H<topic> <sub-topic> <RETURN>.

Another facility included in this ROM is a string search which can be used when the exact command is not known.

This facility is enabled by the command *H @<string> <RETURN> which displays specific occurrences of the string.

For example, to find out all the information relating to PRINT, the command *H@PRINT <RETURN> would be given and all sub-topics which have any reference to PRINT would be listed. However occurrences of PRINTER or PRINTED would be ignored.

In order to make the string search more general the command *H<string>.<RETURN> is given, the difference being the full stop after the string. For example, *H @PRINT.<RETURN> will list all sub-topics with occurrences of the words PRINT, PRINTER, PRINTED. However, *H @TEXT. will not find TELETXT.

HELP not only gives direct information about a particular topic but also lists all the related information. For example, if *H DATA is entered, information on RESTORE and READ will be listed as well as information about DATA itself.

HELP can be entered in any mode but Mode 7 gives the best screen display. The information is colour coded; topics in yellow and all other text in cyan.

The package comes attractively boxed and includes an operating manual with full fitting instructions. **J.D.**

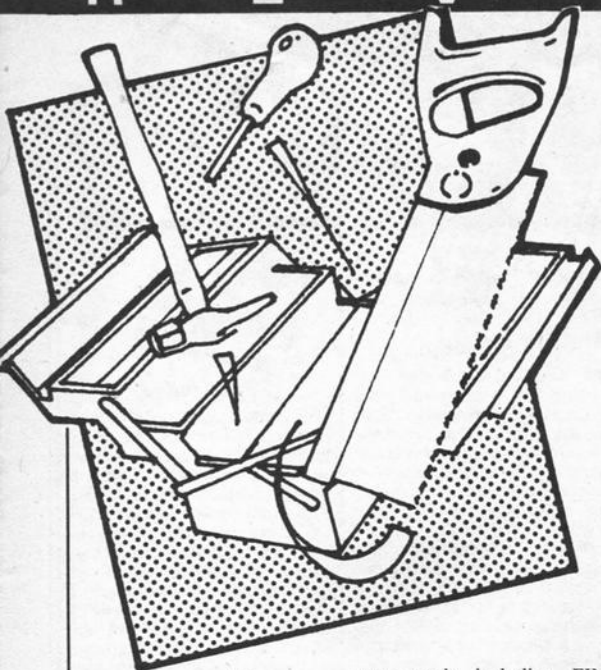
Price: £25

Publisher: Beebsoft

Address: PO Box 50, St Albans, Herts

BBC





Arrow Plus

With the 64's slow loading and saving to cassette, we have seen the development of a variety of fast or Turbo loading systems. These are handy if you buy games to play but are of no practical value to people who want to develop large programs with only a cassette drive. Enter Arrow Plus. This program, amongst many other things, enables you to save and load programs at 1541 speed as easily as normal SAVE and LOAD.

The cartridge is inserted into the user port and is active when you switch on. All commands are single letters prefixed by '***'. Four fundamental commands are supplied for the SAVEing, LOADING, VERIFYing and APPENDING of BASIC programs at 3600 baud (about seven times faster than normal). There are also commands for the SAVEing, LOADING and VERIFYing of blocks of machine code. The commands perform in the same manner as their BASIC counterparts except you are given the size of the code handled. To complete the suite of commands there are options for tape positioning and extra long headers.

I performed a simple bench mark test to check the system out. Arrow Plus takes 43 seconds to load a 16K program compared to 45 seconds using a 1541 and five minutes 30 seconds using BASIC.

In addition to the speed facilities, there are a number of other useful facilities. First there are some toolkit

commands including FIND, AUTO, RENUMBER, DELETE and number conversion. For machine code users there are a monitor and memory move and compare commands.

The final section is a two pass assembler. This performs exactly as expected allowing the use of labels and the normal pseudo op-codes. Assembly is to memory which, when combined with the speed save, will enable the assembly of large slices of source code with a cassette.

An additional item in the package is a cassette based reverse-assembler. Whilst a disassembler simply allows you to examine code, a reverse assembler creates a source code complete with labels from any object code. You can then modify the source code and reassemble it. This is an extremely powerful tool which will be invaluable to serious users.

In spite of the fairly high cost, this is a highly useful and powerful package which will be a life saver to those who cannot afford a 1541. **A.W.**

Price: £44

Publisher: Stack Computer Services

Address: Freeport, Bootle, Merseyside L20 0AB

C64



Pavlov 48K Spectrum

Foolproof Software, Battersea London

Pavlov may be viewed as a game or as a utility. It is named after the Russian psychologist Pavlov, who was famous for his animal experiments. The cassette inlay explains the principles: "Use the Power of ultrasonics to bring your pets under software control!" it cries.

The program uses the Spectrum's beeper to generate piercing tones, barks and squeaks audible only to animals. By modulating the signal, using principles discovered by Pavlov, it is possible to give commands to pets and pests at a range of up to 30 metres.

The cassette inlay suggests a number of uses for the program. These included pacifying fierce dogs, stunning fleas and clearing a lawn of moles. A complete sub-menu for the remote control of bats is included. Complex actions, such as worming, may be performed by combining groups of simpler commands.

The program is said to be compatible with cats, dogs, unexpanded mice and standard moles. We tested it on a range of moles and the neighbour's cat. The principle seemed effective, in that we were able to propel the animals away from the computer at various speeds, but we had trouble persuading them to return using the "attract mode".

We found a few bugs while testing the package, but managed to drive them away using the "dispel ravenous monster" option on the main menu.

Pavlov should bring lots of enjoyment to HCW readers when it becomes available, on 1st April. **K.9.**

Price: £9.99½

Publisher: Foolproof Software

Address: Battersea, London

SPECTRUM



Go

Any chess lover looking for something new with the challenge of chess should try Go; a game with its origin in the far east, which follows the traditional eastern emphasis on strategy with a military flavour.

Go is a computerised development of an original game played with stones on a 13 x 13 grid, based upon occupying territory and capturing enemy stones. It is a powerful program for either one or two players, plus an option where the computer plays against itself. The program will only accept legal moves so beginners can experiment and let the program teach them how to play.

Players start with a blank grid and take it in turns to place markers at the points where the grid lines intersect; the main aim is to occupy as much territory as possible and then to capture enemy markers, or groups, by surrounding them.

Markers of the same colour joined together along the lines of the grid are a group and can be captured when an opposing marker is placed on the group's last liberty point. Liberties are the adjacent intersections to a single or group of markers. Markers cannot be joined across diagonals to form groups.

This is a fascinating and difficult game with many more intricacies than I have been able to mention but it occasionally "hung up" when I was losing. I don't know if this is a bug in the program or just that the game refused to play with such an idiot. **J.H.D.**

Price: £9.95 disc

Publisher: Acornsoft

Address: Betjeman Hse, 104 Hills Rd, Cambridge CB2 1LQ

BBC





Front Line

Here is yet another variant on the scrolling map, wargame scenario. You control a tank and are set the task of recovering supply dumps from the enemy. The action takes place on a group of islands, and you view the proceedings from above. The map of the islands is much larger than the screen and it scrolls in any of the four cardinal directions as required.

The supply dumps are depicted by small grey rectangles and they are recovered by driving your tank over them. All sounds pretty simple, eh? Well, the main fly in the ointment is the sundry enemy units. These range from tanks and line mines to aircraft and helicopters which fire homing missiles. There are even homing fireballs which emerge from holes in the ground and pursue you. Contact with any of the aforesaid nasties results in reduction of your armour. This protection can, however, be recovered with each supply dump you rescue. When all armour is lost, you loose your one life.

The graphics are clear and colourful and are generally adequate. The map shows all the usual features of roads, buildings bridges, rivers and trees. The use of sound is excellent with a nicely arranged piece of war movie music droning along in the background. The most irritating aspect of the game is that it's appallingly addictive.

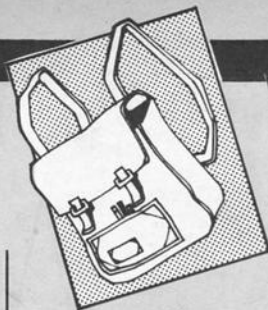
This really is a case of — just one more go. My four year old son flipped over it. Overall, great value and great fun. **M.W.**

Price: £7

Publisher: Interceptor Micros

Address: Linden Hse, The Green, Tadley, Hants

C64



Starwatcher

The two parts of this program are supplied on separate cassettes, or alternatively on disc.

Each is used independently: one as a course of instruction, the other a full applications program.

Newcomers to astronomy will do well to access the instruction course before delving into the complexities inherent within the main program.

Only one part of the learning process requires using the software. This concentrates on the student's ability to recognise the principal constellations.

Requiring considerable concentration, the time-proven method of instruction and practice followed by testing and revision is used throughout.

Contained within the 50-page instruction manual are further tutorials covering sky coordinates, constellation positions and star recognition. These do not require use of the software.

Though beneficial, it is not obligatory to tackle the learning course prior to using the main application program.

This part of the software is essentially a menu-driven program. All the appropriate options are either on screen or may be scrolled through a window at the bottom of the screen display.

Occupying about two-thirds of the screen area is the star window. Through this, views of the star formations for any part of the sky, as seen from any earthy position are available.

Provision is made for a series of views and a variety of magnitudes. Vital statistics relevant to the 300 brightest stars are listed within the instruction manual.

The relevant information surrounding the star window leaves you in no doubt about just where in the heavens you are looking.

Pricey, but pounds cheaper than a telescope. **D.H.**

Price: 19.95

Publisher: Amsoft

Address: 169, Kings Rd, Brentwood, Essex

AMSTRAD



The Snowman

The beautiful book by Raymond Briggs is now a computer game. However they share little in common except for the central ideal of creating a snowman. The game owes much to the current trend for running up and down ladders and avoiding nasties.

If you can accept that, this game is a good version with one or two things to make it stand out from the crowd. Firstly it is well drawn using this computer's colours fully as well as its sprite capability. Unfortunately it doesn't vary much beyond the first screen as the layout remains the same whilst different baddies are added and the game becomes more difficult.

Animation is quite good with a very nice phase as the little boy drops into a bed wheeled on by an angel. I did have difficulty in controlling the character. Using either joystick or cursor keys you have to take great care on ladders as dropping off puts you to sleep.

The game involves running around to pick up snow avoiding the flames which will of course melt it. Taking the snow you have to drop it in place and see the snowman being built up. Later screens add scarf, eyes, mouth and so on. There are sleep monsters which must be avoided and presents to collect.

Some nice Christmas tunes add considerable charm to the game. I was quite addicted and in spite of the difficulties managed the third screen before being sent to bed by my wife. This is a game that will melt your heart and endear itself to you. **M.P.**

Price: £7.95

Publisher: Quicksilva

Address: Carlton Lodge, 16 Carlton Cres, Southampton, Hants SO1 2EJ

MSX



Pastfinder

This game proves to be a bit of a puzzle. The cassette inlay burbles on about you being an explorer of unknown lands in the past whilst the game is more of a shoot-em-up scenario.

The screen gives a view from behind your ship — a leeper — whilst the landscape moves towards you. The feeling of motion is given by coloured bands which move down the screen. The landscape is littered with weird walls which you must negotiate.

The idea is to explore the many sectors of an area of terrain collecting artifacts. These must be delivered to bases and stations. Most of the areas have some degree of radioactivity and your ship will only tolerate a certain amount of exposure. The level of radiation can be reduced by shooting hovering crystals or by using some of your ship's protection systems. To make life a little more interesting alien ships appear occasionally and endeavour to destroy you.

Graphically this is a tour de force with smooth scrolling and marvellous animation. Shadows are used extensively to enhance the effect and everything oozes class. Sound on the other hand is passable, not outstanding.

Notwithstanding the quality graphics, the game seemed to lack that special gripping element. It was fun to play but not enthralling. Another drawback was the lack of turbo load. I'm surprised that Activision doesn't use one on all its games. At the price, rather too expensive and only a little better than average. **A.W.**

Price: £9.99

Publisher: Activision

Address: 15 Harley Hse, Marylebone Rd, Regent Park, London NW1 5HE

C64





Angelique: A Grief Encounter

Gnarled soldiers of fortune speculating on their next escapade will find the precocious Angelique does much to their egos.

A continuous rapport with the adventurer, full of delightful witticism, makes this text-only adventure a joy to play. The unblushing feminist viewpoint makes the going decidedly original.

Female intuition and the capacity to understand the overtly female thought process are a distinct advantage.

Distraught at having been parted in a plane crash from her darling Arnold Blackwood, our heroine has to extricate herself from the interior of an extinct volcano.

After surmounting this initial hurdle the projected journey causes Angelique to squelch through swamps, cling to a mountain pass, trudge across a desert and creep cautiously through a ghost town.

A heterogeneous assortment of articles needs to be collected en route to Cairo, where the final romantic scene is portrayed.

Communication with Angelique is through six screen windows. The clarity of the standard character set, presented in mode 1, makes for easy reading. The very descriptive dialogue intensifies the imaginative scenario.

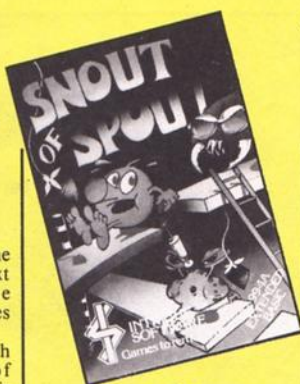
Adventuresome ladies will see it all through Angelique's eyes, having a marginal advantage on butch male chauvinists.

The spirited challenge of this adventure generates lots of laughter throughout the hazardous journey, making it a festival of entertainment.

Asking for assistance by pressing the Help key often provided a response more humorous than helpful, all adding to the enjoyment.

Although the game can be saved to tape, annoyingly at present a bug prevents re-loading.

Price: £6.50
Publisher: Nemesis
Address: 10, Carlow Rd, Ringstead, Kettering, Northants



Snout of Spout

I racked my brains for hours trying to think where I had seen the central character of this scenario, and I'm fairly sure that he first appeared in one of the Beatles' films. Either way, Snout of Spout is well named, possessing as he does the kind of hooter of which fog horns are made.

All you have to do is guide him safely through an Oggi orchard — Oggi sound as though they are more at home at a Max Boyce concert — ensuring that Snout is not caught by the Weavils, which could well be more painful that it sounds.

Under your guidance he can climb ladders or slide down poles, and once he has collected all the Oggi in any one orchard before the timer runs out he can pass into the Drabes caverns. Here you must help him to survive against increasing odds, avoiding pouncing spiders and Drabes' bombs. If he is caught by the Weavils, he loses a life and must be reborn by a painful injection of serum — it says here.

There are two skill levels, relating to the number of creatures to be encountered, and there is the generally pointless but often seen Hall of Fame for those scoring greater than 999 points. Despite the fact that keyboard scans are not debounced, leading all too easily to falling through menus, this is actually quite an interesting game, if you like this kind of thing.

This needs Extended BASIC and has a joystick option. P.B.

Price: £7.95
Publisher: Intrigue Software
Address: Cranbrook Rd, Ten-terden, Kent TN30 6UJ



Poker

After playing the excellent Strip Poker, I never believed that another Poker program would interest me. How wrong I was. This game doesn't have slick hi-resolution graphics but wins in other ways. You play a hand with six characters from the wild west era, each with 1000 dollars. The game is simple draw Poker with no wild cards. Each player takes it in turn to deal.

After the preliminary rounds of betting, you can exchange up to three cards before the final betting. For beginners, help on each hand is available. First, you can ask the barmaid, Moll, for her advice. Second, the machine will sort your hand into the most promising sequence, if you wish. During the betting phases, you can select a number of speed options. Whilst this helps move things along, you must select the speed each hand.

The use of graphics is simple but effective. The cards are displayed using the basic Commodore characters but look quite acceptable. As the players bid, their comments are displayed on screen. Most are amusing and certainly are displayed on screen. Most are amusing and certainly add to the flavour. Probably the main fault is the sluggish behaviour during the dealing process, after a time it becomes rather irritating.

The game plays a good standard of poker and the opponents are pretty formidable. They bluff effectively and it's difficult to decide what they're holding. If you play this game, however, I suggest you reserve an entire evening. Overall, great fun and more enjoyable than space invaders.

Price: £5.95
Publisher: Duckworth
Address: The Piano Factory, 43 Gloucester Crescent, London NW1 7DY

Booga-Boo (The Flea)

This game makes a refreshing change from the usual running up and down ladders.

You are a flea who falls to the bottom of some sort of pit. The undergrowth is lush and colourful but contains dangerous elements. Jumping to the left and the right you have to climb back up to the top and find a concealed exit to return to the plant surface. Your jumps are controlled by holding down a key and watching a bar increase across the bottom of the screen. This is a strength gauge and can help you if you need to do repeated jumps.

Careless jumping can land you in the grips of a flea-eating plant — amazing how it chews you up — a treat for the more blood-thirsty player! There is also a flying dragon which can stop your progress. One touch and it carries you off.

The whole scene, including the animated characters, is drawn in fantastic detail. The lurid colours of the ledges and vegetation of the undergrowth lend it a surreal quality which gives a horrific touch of realism.

But there are drawbacks. Firstly it is a difficult game to master. The annoying thing is that as you get killed you restart by hopping about at the top and fall down automatically. This sequence is too long when you simply want to get on with the game.

Secondly, the screen does tend to jump about as you hop up or fall down. The whole view just scrolls around you. This very soon gave me and my family of players a headache.

A challenging game which seemed to me quite a new idea. I couldn't reach the top and can't comment on what happens next. Marvellous graphics and, if you're willing to persevere through the scrolling screens, good value for money. M.P.
Price: £7.95

Publisher: Quicksilva
Address: Carlton Lodge, 16 Carlton Cres, Southampton, Hants SO1 2EJ

MSX



AMSTRAD



TI99



G64



PERIPHERAL



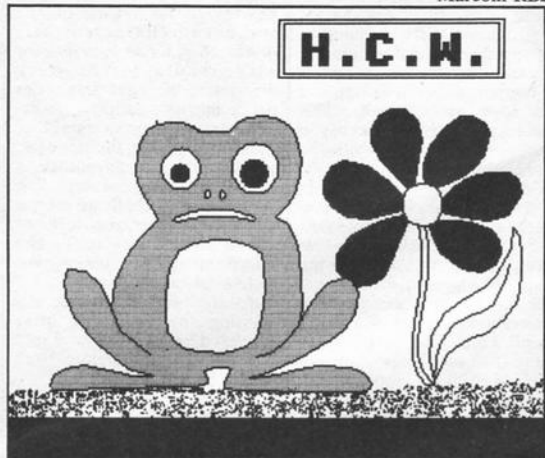
Marconi RB2

RB2 Tracker Ball

For business and home computers alike, optomechanical devices such as mice are in vogue at the moment. Tracker Ball from Marconi is one such device which has been produced for the BBC computer. It isn't a mouse in the true sense. Imagine a mouse laid on it's back with you manipulating the ball to achieve cursor controls — that's a tracker ball.

This tracker ball is a very solid construction which will probably outlive your Beeb. The only connection necessary is via the BBC's user port, and you can fit the ball in a matter of seconds.

As is always the case with such devices, the software provided is of paramount importance, and fortunately, the software which accompanies the tracker ball can be used in several ways: to substitute the cursor keys in programs such as Wordwise or as a joystick replacement for some arcade games. Finally Marconi has provided a utility which allows

**Work of art achieved with the Tracker Ball...**

you to include ball control in your own programs.

Included in the software are an artistic program and a user defined character generator. The artistic program can produce pictures in two

different ways. Firstly, there are screen pictures which can be *LOADed into your own programs. The second type of pictures are stored as data in picture files. This type of storage permits you to squash,

stretch, or enlarge your designs to produce unusual effects.

All of the BBC's graphics modes are supported, each one having its normal restrictions regarding the number of colours available. The drawing commands provided are standard: circles, squares, triangles, lines, fill shapes, etc. The only fancy routines are the airbrush method of applying colour, which is very good, and Tails, which involves writing text to screen. The text appears to trail off into the background, giving a 3D effect.

The character definer is somewhat less impressive. One notable bug was the failure of the program to flush the keyboard buffer. By holding down the 'I' key for a few seconds — 'I' being the command to invert the present

character — the computer spent the next five minutes drawing and re-drawing the character in different ways. A minor fault but irritating. There were other such niggles associated with the art program.

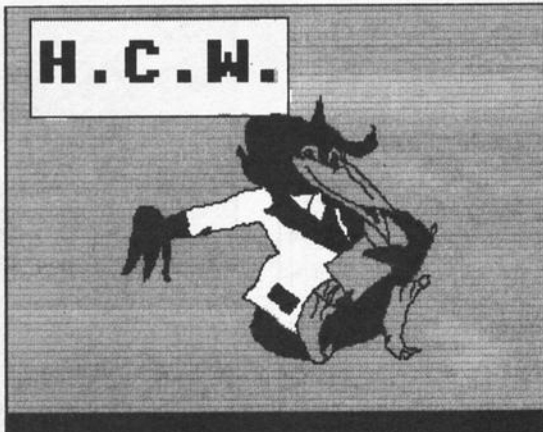
The Tracker Ball is a very sturdy device and with a little more polish on the software side would be a worthwhile purchase. **J.R.**

Price: £57.50

Manufacturer: Marconi Electronic Devices

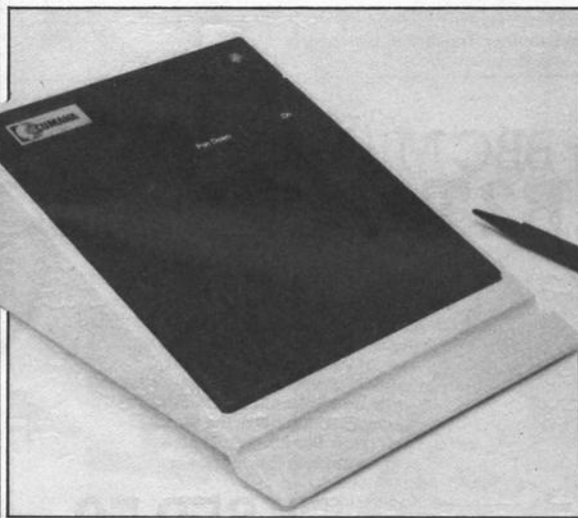
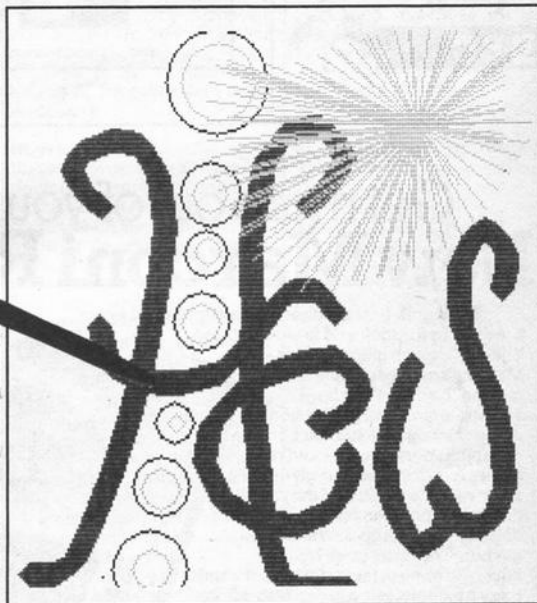
Address: Carholme Rd, Lincoln LN1 1SG

BBC



...and more Tracker Ball achievements

Touch Pad handiwork...



Lumana Touch Pad

Touch Pad

Cumana is well known as a producer of high quality disc drives. I was therefore interested to find out whether this first venture into the world of graphic input devices would reflect its pedigree.

The Cumana Touch Pad, decked out in BBC cream, resembles a 13 x 17 cm wedge of cheese. Installation of the device couldn't be easier: one lead into the RS423 socket, a second on to the Beeb's power supply socket for the disc

drives. Before disc drive owners complain, Cumana has used a plug incorporating a second socket, allowing both touch pad and drives to be connected simultaneously.

Cumana describes the touch pad as a graphic input device which may also be used as a flexible numeric keypad, however software has only been provided for the former utility. The software is provided on cassette and consists of three programs. HELP is a file which describes the different drawing

modes. PAD is the program which allows the touch pad to be used as a design tool. Finally we have PRINT: this program will load previously stored designs and produce a shaded dump on any Epson-compatible printer.

The design program PAD uses MODE1, giving a high resolution display and the use of four colours. Ten drawing modes are available: these are displayed down the left hand side of the screen.

To select a drawing mode you

gently run the stylus down the left hand side of the touch pad. Each option in turn will be highlighted in yellow as the stylus moves down the pad, when the required option is highlighted the user presses a key on the pad and the drawing mode will be selected. Colours are displayed down the right hand side of the screen and are selected in the same way.

Drawing modes include all the usual options, e.g. dots, lines, rubber banding, rectangles, circles, and brush

strokes. Shape filling is the first of the software's limitations. Only rectangles and circles can be filled, and there is no facility to fill any irregular shapes. Secondly, brush strokes may only be of one thickness, and can't be varied.

The accompanying manual describes the format of the information required and transmitted by the pad. This is most useful should you intend programming the pad yourself.

The Cumana touch pad is a very compact and professional piece of equipment, but at a price tag of £70 I would take a look at the AMX mouse before parting with your money. J.R.

Price: £69.95

Manufacturer: Cumana

Address: Pines Trading Est,
Broad St, Guildford, Surrey
GU3 3BH

BBC



...and another Touch Pad masterpiece

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Marconi's new Tracker Ball is superior to either a mouse or joystick and is easier to use.

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**This week
Spectrum games
come under the
microscope.
Our expert
gives his
informed opinion**

1984 HI-SCORE

1984 was the year that the pundits said would see the demise of the Spectrum! It was also the year when Uncle Clive denied he was bringing out a Spectrum with a decent keyboard (perhaps he was telling the truth after all, have your Spectrum+ keys fallen out yet?).

The most remarkable thing has been the volume of software released. Even companies with much loftier thoughts than the humble Spectrum, have reached into their cupboards for the conversion kit in an attempt to jump on the Spectral Bandwagon and print some money. Sadly, most of them did more for out of work Z80 programmers than for Spectrum fans.

None the less, all those money saving hardware dodges built into the machine to keep the price down, which were complained about in the serious mags two years ago, have fallen by the wayside in the face of some stunning work by really clever programmers dedicated to the machine.

Worst Taste

Starting in perverse order with the worst taste award, the strongest contender must be 'The Quest for the Holy Grail from Dream Software, featuring as it did a preponderance of slimy green nasal substances, and lunatics wielding VIC-20s in anger.

Most Original

The most original award goes to Deus Ex Machina from Automania; thought provoking, and trail blazing, with its accompanying audio track, proving as it does that games aren't all about zapping, and that a Casio keyboard might lead to a great symphony (one day). Eat your heart out Vangelis, Mel Croucher rules!

Best Utility

Oasis Software is nominated twice, first for the Best Utility award with White Lightning, the amazingly complete, but complex, graphic games writing suite. Second for the Most Amazingly Complex Program award. (Did anyone write a whole game using it yet?)

Special Award

A special award from the Guild of Joystick and Keyboard Manufacturers goes to Daley Thompson's Decathlon for

services rendered. In return, Daley is reported as making a substantial contribution to medical research in the field of joystick wrist!

Platforms and Levels

A controversial winner in the best platforms and levels section is Frank N Stein from PSS, one of the most neglected games of the year, good graphically, you need thought to play it. See it, if you haven't already.

Best Graphics

A controversial winner in the best graphics is a crowded category. Hill-Macgibbon must feature strongly with Rally Driver, Yacht Race, and Run for Gold written by Fiveways, scoring just ahead of Pyjamarama from Mikro-Gen, which lacks originality of concept. Hill Macgibbon also deserves great credit for giving all Spectrum owners the opportunity to save their excellent games to Microdrive, instead of struggling with back-up copiers.

Biggest Hype

Biggest Hype of the Year is similarly strongly contested. A.T.R.A.M. (Advanced Tactical Reconnaissance and Attack Mission) comes in the biggest package of the year, with the best colour sleeve, though Spectrums and their owners have been known to fall asleep playing it, such is its inherent excitement. Numbers of unsuspecting parents have been feeling a distinct pain in the wallet from its £19.95 price tag too! Meanwhile, over at Activision, specialists in crummy conversations from the CBM 64, Pitfall II, Beamrider, and Ghostbusters take the biscuit.

Space Game

To be fair to Activision, the recent Space Shuttle simulator is excellent, beaten only by Braxx Bluff from Micromega as the space game of the year. Braxx features excellent sound, storyline and graphics, with enough to do to keep you hooked for a very long time.

Worst Program

The dubious distinction of being worst program goes emphatically to Webco's Words and Letters, an educational offering. Not only does it crash with Microdrives connected, but features spelling and grammatical errors, in the areas

it purports to teach youngsters how to cope with. It was, however, challenged strongly by Thriller! (now where have I heard that title before?) from Amazing Games, amazing only in the respect that it's an adventure that won't let you go North, South, East or West, and Havoc from Dynavision, which flickers, crashes, and crawls across your screen; an all time low in aircraft/missile games.

Best Adventure

1984 also saw the release of multitudes of adventure games. Not being a masochist makes it difficult to pronounce. Certainly, the most enjoyed was Blade the Warrior from Cable, by the look of it, written with the Quill. The prize for the best graphics should go to the Questprobe series featuring The Hulk, and Spiderman. At least it gives you something good to look at whilst failing miserably!

Best Game

Best game of the year is a real toughie, but finally comes down to a choice of two, each of which deserve an award in the graphics department, but are also distinguished by their sophistication. Helicopters are in at the moment, witness all those technical Lego kits bought for Christmas. For me, the pick of the bunch is Cyclone from Vortex, featuring superb shadow graphics, good sound, compelling plot, and tricky handling. It's a game I return to time after time. Narrowly beating it is Match Day from Ocean. I know there have been other soccer games for the Spectrum, but the quality of the Match Day graphics, and the sophistication of the player controls leave others standing. Mind you, a lot a practice is needed to become really adept.

Reviewer's Special Award

Finally, the reviewer's special award goes to a program released in 1983, but which is destined to be discovered by a whole host of new Microdrive owners after Christmas. Tasword Two: The Word Processor opens up a whole new world on the Spectrum, and without which, I for one would be lost.

A good year for Spectrum software, but I guess that the best is yet to come!
D.M.

THE LAST WORD

Here's the last part of David Ellis' series on RSX words for the Amstrad. Now you should be totally fluent

Having created the new words RIGHT, LEFT, UP, and DOWN on the AMSTRAD, here are three more words to add to the power of your graphics.

BOX (listing 15)
BOX will draw squares or rectangles in whatever PEN colour is required. The syntax of BOX is:

IBOX (Pen number), width of box, height of box

As with the line drawing words, the Pen number (or colour) is optional and can be omitted if no change of colour is required. The height of the box is drawn on the assumption of a vertical resolution of 400 pixels, although the actual resolution is 200. To draw a red square of 100 pixels, although the actual resolution is 200. To draw a red square of 100 pixels size in Mode 0 would need the command:

IBOX , 3 , 100 , 100

The bottom left hand corner of the box will be at the current cursor position, which will not alter once the box has been drawn. Rectangles of any width and height can be created accordingly — especially useful for bar charts. The following program will draw a series of ever diminishing rectangles in each of the 16 colours of mode 0:

```
10 MODE 0 : HEIGHT = 390
   : COL = 0
20 WIDE = 630 : WHILE
   WIDE < 0
30 IBOX,COL,WIDE,
   HEIGHT
40 COL = COL + 1 :
50 WIDE = WIDE - 8 :
   HEIGHT = HEIGHT - 4
60 MOVER 4,2 : WEND
```

There is little point in dwelling on the numerous uses of BOX, so let's have a look at the word SOLID.

SOLID (listing 16)
Unlike BOX which draws the outline of rectangles, SOLID, as its name implies, draws solid rectangles in the specified PEN colour. Its syntax is:

ISOLID (,PEN Number), width of rectangle , height of rectangle

The parameters take the same form as for BOX. The main difference lies with the cursor position. The other words are drawn from the current graphics cursor. SOLID must be drawn from the current ORIGIN position, so if you have used any other drawing commands then remember to set the ORIGIN to the position where the SOLID is to be drawn. Once the SOLID has been drawn, the current ORIGIN will be one line above the top left hand corner of the solid drawn. Further solids could then be drawn from this position without the need for resetting the ORIGIN. For example:

MODE 0 : ORIGIN 200,0 :
ISOLID,9,200,100

This will draw a 200 by 100 yellow solid. Now try:

ISOLID,13,100,50

This will draw a 100 by 50 green solid from the top left position of the yellow solid. Finally try:

ISOLID,14,10,100

This will draw a flashing blue/yellow 'pole' on top of the green solid. Good use can be made by this ORIGIN movement to draw different shapes.

A triangle could easily be drawn with:

```
10 MODE 2 : ORIGIN 300,0
20 FOR X = 200 TO 1 STEP
   -1
30 ISOLID,1,X,1 : NEXT
```

The PEN has been set to 1 (bright yellow in mode 2), as the current plotting colour (if you ran the previous program) is set to 0. Why? The last PEN used in mode 0 was 14. Mode 2 can only have two Pens — 0 and 1. The current PEN is masked to bring it within range for the present mode — hence 14 is masked and becomes 0, which is the background colour. Anything drawn in background colour is 'invisible', so if the

PEN value in line 30 had been omitted you wouldn't see the triangle even though it had been drawn.

Specifying the Pen number 200 times in the loop is not good practice, so the new word COLOR has been made (listing 17). The syntax of COLOR is:

ICOLOR , PEN Number

This could be used to create a slightly different version of the last program!

```
10 MODE 2 : ORIGIN 300,0 :
   ICOLOR,1
20 FOR X = 1 TO 100
30 ISOLID,X,1 : NEXT
```

The colour is set in line 10 once only, resulting in a slight increase of speed (it all helps!).

One problem with SOLID is that the user ORIGIN is difficult to determine. Unfortunately, Amstrad's BASIC does not have a command to return the value of ORIGIN — only XPOS and YPOS which return the graphics cursor position. The user ORIGIN can be obtained from machine code by CALLING &BBCC in the jumpblock, which returns with the X co-ordinate in the DE register, and the Y co-ordinate in the HL register. However, for a change I shall use a BASIC routine to get at these values.

The X co-ordinate is held in memory at 45864/45865, and the Y co-ordinate at 45866/45867. Two FUNCTIONS can be DEFINED to return these values:

```
10 DEF FN XORG = PEEK
   (45865)*256 + PEEK
   (45864)
20 DEF FN YORG = PEEK
   (45867)*256 + PEEK
   (45866)
```

Note that unlike most BASICs the functions do not require an argument in brackets after the name — in this case they are not required anyhow. The X and Y ORIGINS are then returned by FN XORG and FN YORG. These can be used just like any variable — for example:

```
30 MODE 2 : ORIGIN 200,0 :
   ICOLOR,1
```



```
40 FOR X = 200 TO 1 STEP
-1
50 ISOLID,X,1
60 ORIGIN FN XORG + 1,
FN YORG
70 NEXT
```

In effect, line 50 draws a single line. The ORIGIN is then moved one place right in line 60 by the FN XORG + 1 part — the end result is a pyramid. Add these five lines to lines 10 and 20 and try it for yourself. Changing the height of the solid from 1 to 2, in line 50, will produce a taller pyramid. Alter lines 40 to 60 to:

```
40 FOR X = 1 TO 100
50 IRIGHT,200
60 ORIGIN FN XORG + 1,
FN YORG + 1
```

and you get a parallelogram. Or try:

```
30 MODE 0 : ORIGIN 0,0
40 FOR X = 1 TO 50 : IBOX,
X,300,60
50 ORIGIN FN XORG + X
MOD 20, FN YORG + 6
60 NEXT
```

This draws a pattern of boxes in

the sixteen colours of Mode 0. MOD, by the way (which is not mentioned in Amstrad's manual), gives the remainder of a division. Thus:

```
7 MOD 4 = 3 (7/4 = 1
remainder 3)
34 MOD 6 = 4 (34/6 = 5
remainder 4)
```

It can only be used on integers but can come in very useful.

By using trig functions to set the ORIGIN offsets and combining the six new graphics words (+ COLOR), virtually any shape can be created with a little imagination. Also, remember that negative values can be used with all of these words — apart from SOLID which does not like them.

IRIGHT,-100 would therefore draw a line to the left, and ILEFT,-100 would draw a line to the right. When used in loops, with different ORIGIN values, this can be very useful. What happens with a negative value for BOX though?

Experiment and see for yourself — the permutations are endless.

Listing 16. Machine routine for SOLID

Address	Mnemonic	Op Codes	Comment
&83D8	CP 2	FE 2	are there two parameters?
&83DA	JR Z &83E5	28 9	if so, miss colour subroutine
&83DC	CP 3	FE 3	are there three parameters
&83DE	RET NZ	C0	return if not
&83DF	LD A,(IX+4)	DD 7E 4	PEN colour to accumulator
&83E2	CALL &BBDECD	DE BB	subroutine to set colour
&83E8	CALL &8295	CD 95 82	get two parameters
&83E9	LD B,H	44	transfer HL
&83EA	LD C,L	4D	to BC register
&83EB	LD A,B	78	check if
&83EC	OR C	B1	BC is zero
&83ED	RET Z	C8	if so, then finished — RETURN
&83EE	PUSH BC	C5	save BC count
&83F1	LD HL,0	21 0 0	Y offset = 0
&83F2	PUSH DE	D5	save DE (no. of pixels)
&83F5	CALL &BBF9	CD F9 BB	draw line relative
&83F8	CALL &BBCCD	CC BB	get ORIGIN
&83F9	INC HL	23	next line up
&83FC	POP DE	C9 BB	set the ORIGIN
&83FD	POP DE	D1	restore DE (no. of pixels)
&83FE	POP BC	C1	restore count
&83FF	DEC BC	0B	decrement count
&83FF	JR &83EA	18 E9	jump back and repeat

Listing 17. Machine routine for COLOR

Address	Mnemonic	Op Codes	Comment
&8401	CP 1	FE 1	is there one parameter?
&8403	RET NZ	C0	return if not
&8404	LD A,(IX+00)	DD 7E 0	PEN number to accumulator
&8407	CALL &BBDECD	DE BB	subroutine to set graphic PEN
&840A	RET	C9	done

Listing 15. Machine routine for BOX

Address	Mnemonic	Op Codes	Comment
&8398	CP 2	FE 2	are there two parameters?
&839A	JR Z &83A5	28 9	if so, miss colour subroutine
&839C	CP 3	FE 3	are there three parameters
&839E	RET NZ	C0	return if not
&839F	LD A,(IX + 4)	DD 7E 4	Pen colour to accumulator
&83A2	CALL &BBDECD	DE BB	subroutine to set colour
&83A5	CALL &8295	CD 95 82	get two parameters
&83A8	LD HL,0	21 0 0	HL = zero Y offset
&83AB	CALL &BBF9	CD F9 BB	draw line relative (RIGHT)
&83AE	CALL &8295	CD 95 82	restore parameters
&83B1	LD DE,0	11 0 0	DE = zero X offset
&83B4	CALL &BBF9	CD F9 BB	draw line relative (UP)
&83B7	CALL &8295	CD 95 82	calculate negative offset required
&83BA	LD HL,0	21 0 0	HL = zero Y offset
&83BD	SBC HL,DE	ED 52	offset required
&83BF	LD D,H	54	transfer HL
&83C0	LD E,L	5D	to DE register
&83C1	LD HL,0	21 0 0	HL = zero Y offset
&83C4	CALL &BBF9	CD F9 BB	draw line relative (LEFT)
&83C7	CALL &8295	CD 95 82	restore parameters
&83CA	LD B,H	44	transfer HL
&83CB	LD C,L	4D	to BC register
&83CC	LD HL,0	21 0 0	HL = zero Y offset
&83CF	SBC HL,BC	ED 42	calculate negative offset
&83D1	LD DE,0	11 0 0	DE = zero X offset
&83D4	CALL &BBF9	CD F9 BB	draw line relative (DOWN)
&83D7	RET	C9	done

Summary of RSX words and syntax

Wordname	Syntax (if any)	Comment
PARAMETER	—	used only from machine code
KEYWAIT	—	waits for keypress
CURSOR	—	turns cursor off in program
INVERSE	—	swaps PEN and PAPER inks
GRAPHIC	—	resets graphics parameters
CLEAR	—	sets screen memory to zero
CASON	—	turns cassette motor ON
CASOF	—	waits number * 1/100 secs
WAIT	—	returns lower ROM value to ROM%
LROM	, number	returns upper
UROM	, address, @ROM%	scroll screen down by 8 pixels
DROLL	, address, @ROM%	scroll screen up by 8 pixels
UROLL	—	zero given number of bytes
ZERO	—	—
MOVE	, number of bytes, start address	—
OFFSET	, number of bytes, destination, source, OFFSET%	—
SETOFFSET	, offset value	move bytes from... to return screen offset to OFFSET%
RIGHT	—	sets screen offset
UP	, number of pixels (,colour)	draw line up
DOWN	, number of pixels (,colour)	draw line down
LEFT	, number of pixels (,colour)	draw line left
BOX	(,colour), width, height	draw rectangle
SOLID	(,colour), width, height	draw solid rectangle
COLOR	, PEN number	set graphics plotting colour

COLOUR AND SOUND ON THE SPECTRUM

In the third part of our Spectrum series Colin Wilton-Davies looks at some more aspects of Spectrum BASIC



At the end of the second part of this series, I suggested that we should next look at colour and sound on the Spectrum, so let's start with some colour.

Switch on the Spectrum, press the B key, and the keyword BORDER will appear on the screen. Now press 2 and ENTER (in future, let's save words by saying 'Enter 2'), and the edge or border of the screen will turn red. The BORDER 1 command will turn it red. If you look at the top row of keys on a Spectrum, you will see the names of their associated colours above them, at any rate above keys 0 to 7. The numbering system is beautifully logical. Colour on your television is made by varying the proportions of red, green and blue, which are numbered 1, 2 and 4 respectively. If you want to mix these primary colours, add their numbers together (yes, I do mean add. We're dealing with lights adding together, not with paints which subtract light). Mix Red and Blue; the sum of the numbers is three, the number below Magenta. The command BORDER 3 gives a magenta border. Red plus green plus blue gives the answer seven, which is white, and if you don't have any light, the answer is zero for black, as you would expect. Let's do a short program:

```
100 FOR c=0 to 7
110 BORDER c
130 NEXT c
```

RUN this, and you may see why line 120 is missing! It all happens much too fast to follow, so we must slow it down. One way of doing this is to insert

```
120 PAUSE 50
```

and the colours will cycle at one-second intervals. I'm not going to tell you where to find keywords on the keyboard any more, as it takes up space from more interesting things. The number after PAUSE is the number of mains cycles that the computer PAUSES for. In the UK, each cycle is 1/50th second.

As well as being able to change the colour of the BORDER, Spectrum BASIC will control the colour of the background or PAPER and the foreground or INK. This isn't quite so straightforward. If you EDIT line 110 to read

```
110 PAPER c
```

nothing happens on the screen when you RUN. PAPER and INK colours will only change when they are used for something. Insert

```
115 PRINT "Hullo"
```

and you will see the PAPER colour changing over limited areas. The top line will be hard to read, as it is written with black INK on black PAPER! If you want to change PAPER over all the screen, try

```
115 CLS
```

instead. CLS is short for CLEAR Screen, and you can see why. Change two lines again:

```
110 INK c
115 PRINT "Hullo"
```

You will see the effect of changing INK. You may think you only have seven lines of output, but the eighth is white INK on white PAPER. This is

what you'll be left with when your program finishes, which makes it hard to see the listing. Put in another line (you'll be able to read it while you key it in, until you ENTER):

```
9998 PAPER 7:INK 0:CLS
```

RUN, and this time you will be able to see the listing when all is done. This is a useful line to have at the end of any program which alters colours. If your text disappears, the command GOTO 9998 is a quick way to get it back. By the way, notice that program lines can have more than one command as long as they are separated by colons.

I just said "at the end of your program", but you can actually have one line after it. These two lines are very useful at the end:

```
9998 PAPER 7: INK 0: CLS:
STOP
9999 INPUT "SAVE as file ";
FS: SAVE FS: PRINT
"Rewind and Replay"
: VERIFY FS
```

SAVE just these two lines under some such name as "toolkit" to save typing them out again. Before you start writing a new program, LOAD "toolkit"; if you are editing an existing program, the lines will be SAVED with it. That last line makes it easy for you to avoid the classical programming tragedy of losing a morning's work when switching on the Hoover corrupts the computer's memory.

GO TO 9999 every 15 minutes or so. Use a short filename which includes a number, and increment that number every time. That way, you can only lose 15 minutes worth of work, and you can see from the filenames which is your latest version. If you're lucky enough to have a Micro-drive, the last line should be



```
9999 INPUT "SAVE as file ";
f$:SAVE * "m";1;f$:
VERIFY * "m";1;f$
```

Notice that the first 'SAVE' has to be typed letter by letter, but the second is a keyword. Don't forget to disconnect the EAR lead and set to RECORD when SAVEing, and reconnect and set to PLAY when VERIFYing with cassettes.

Now for a little sound. Change line 120 in the program to:

```
120 BEEP 1,c
```

As well as slowing the program to the same extent as PAUSE 50, this produces a series of rising notes. The unaided Spectrum is not very loud, and if you want a serious level of sound out of it, I recommend an add-on such as the Currah micro-speech or plugging suitable earphones into the MIC or EAR socket. BEEP has to have two numbers after it. The

first gives duration in seconds, the second gives pitch. Delete lines 100 to 130 of the program, or NEW then LOAD "toolkit", and try the following. Use EDIT a lot to save retyping; just change line numbers where possible after line 110:

```
100 REM play a tune
110 BEEP .25,10
120 BEEP .25,10
130 BEEP .25,10
140 BEEP .25,7
150 BEEP .25,5
160 BEEP .25,7
170 BEEP .25,3
180 BEEP .5,2
190 BEEP .25,10
9998 PAPER 7: .....
9999 INPUT .....
```

Don't think you can get away with the rows of dots in the last few lines! The result is quite pleasant, at least to a musical moron like me, but even using the EDIT key, you can see that putting in a longer tune is going

to be tedious. Luckily, this is a suitable case for the READ and DATA statements, which can make a semi-repetitive process much more elegant. GO TO 9999 if you like, then get rid of lines 110 to 190, and enter:

```
110 FOR c=1 TO 9
120 READ duration, pitch
130 BEEP duration, pitch
140 NEXT c
200 DATA .25,10,.25,10,.25,10,
.25,7,.25,5,.25,7,.25,3
210 DATA .5,2,.25,10
9998 and 9999 as before.
```

The commas are to separate the numbers for the Spectrum, and you can add spaces to make it easier for you to read if you like. If you haven't typed in enough numbers, you'll get an "Out of DATA, 120:1" error message, so you can see the snag of this approach. You have to know in advance how many pairs of numbers there are going to be, and put this number into line 110. Let's try

something a little different. Erase line 110 by Entering 100, and Enter the following:—

```
125 IF duration=999 THEN
STOP
140 GO TO 120
990 DATA 999,999
The result is still the same, but now you can extend the tune by putting in as many DATA statements, before line 990, as you like, and you won't have to count the number pairs. Try it for yourselves.
```

Line 125 is what is called a conditional statement, it is a very simple example of a very useful property of computers, the power to make logical decisions. If the condition "duration=999" is true, then the computer obeys the STOP statement. If it is not true, then it skips to the next line to find another instruction instead.

You may be sure we'll see more conditionals, but we'll start the next session with more colour and some graphics.

IT'S
NEW!





Commodore 64 Basics

This book is subtitled 'a self teaching guide' — it isn't quite a programmed learning course, but it has questions to test yourself on at frequent intervals with the answers given underneath. I would have preferred the answers to be further away, or at the very least to be printed upside down, to reduce the temptation to cheat, but if you have sufficient self control to cover them up and work the problems out for yourself no doubt the system would work well.

It's an American book, which explains but does not excuse the exorbitant price, and it contains a few irritating Americanisms, such as 'math' instead of 'maths', a few inaccuracies — the advice to tune your television to channel 3 or 4 for instance — and a few misprints.

BASIC programming is fairly well covered, with chapters on flowcharts, binary maths and programming style as well as the inevitable sections on graphics and sound. Each topic is illustrated with lots of short routines and programs. There is a useful chapter on datafiles, and there are all the usual appendices, mainly duplicating information given in the manual. This book does not cover assembly language or machine code.

If you work conscientiously through all 400-pages, you should learn enough to enable you to write short programs for yourself. It's a slow, gentle way of learning, which will no doubt suit many people who have been frightened off by the hectic pace of Commodore's own manuals. Pity about the price, though.

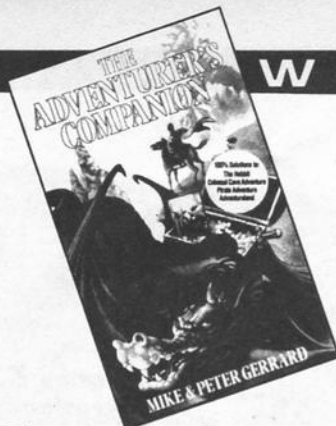
M.N.

Price: £16.75

Publisher: Wiley Press

Address: Baffins Ln, Chichester, West Sussex PO19 1UD

C64



The Adventurer's Companion Mike and Peter Gerrard

The Spectrum Adventurer Mike Gerrard

There's no doubting the popularity of adventure games. Although, with the exception of the Hobbit, they don't seem to make the charts regularly, they obviously have a large following; witness the growing number of magazine articles dedicated to them.

Adventuring is clearly an obsessive thing. Once caught, it grows on you, a bit like athlete's foot! But catching the bug is tied up with getting off the ground, and that's quite difficult if you're new to it. Similarly, once you're stuck in the middle of an adventure, it's very frustrating to reach an apparent insoluble problem, and have no-one to turn to save the magazines. And odds on, they won't be dealing with the one you're stuck with!

These offerings from Mike and Peter Gerrard are more than welcome therefore. The Spectrum Adventurer deals with Snowball, Twin Kingdom Valley, Urban Upstart, and various implementations of The Hobbit, Colossal Cave Adventure — also known as Classic Adventure or Adventure 1 on the Spectrum — Adventureland, and Pirate Adventure, notably on the Commodore, Spectrum, and BBC.

Mike and Peter are obviously fans of the genre, and as a result, although they claim to have given 100 per cent solutions to each game, the books are written in a way which doesn't spoil the fun! A full map of each game is given at the back of the books if you really want the whole thing given away.

The main entry for each game, however, is in the form of an alphabetical list of problems. Given this structure, it means that you can play the game yourself, then when you get stuck you can refer to the particular problem and see its solution without spoiling the remainder of the game. If, of course, you wish to bash through the whole thing, then all you need do is follow the map, looking up each problem as it arises, though this really isn't cricket chaps!

One of the best things about these volumes, apart from the excellence of the information, is the style in which they are written. The authors' love of this type of game comes through time and time again, as, with a liberal helping of wry humour, they point you gently in the right direction. Indeed, the authors of the adventures themselves come in for a quick dedication as Mike and Peter write: '...without their imagination and efforts we would both have been free to spend a lot more time down the pub.'

You may argue that to use such volumes is cheating, but, given their structure, this is no more a valid argument than saying that talking to a friend or reading a magazine is cheating. Mike and Peter not only reveal the secrets but aid your appreciation and understanding of what makes a good adventure tick. A welcome addition to the bookshelf at a very reasonable price.

D.M.

Price: £3.95

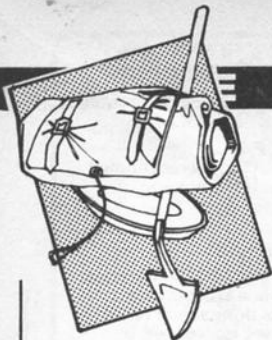
Publisher: Duckworth

Address: The Old Piano Factory, 43 Gloucester Crescent, London NW1

SPECTRUM



BOOKS BOOKS



**Exploring
Adventures on the
Amstrad CPC464**
Peter Gerrard

Peter Gerrard, the author, starts out by defining adventures and how they started, then delves into the background of the original Crowther and Woods' Colossal Cave, and Scott Adams, the self crowned king of the genre. Further details follow about the settings of various types of adventure, then on to the business of writing them yourself using Locomotive BASIC.

This well-written section appears to assume no prior knowledge, but explains carefully how to program the various input checking routines, the string slicing, and the setting up of the data statements which will hold the meat of the setting. At the same time, the development of your adventure concept is discussed, and the idea of design using a map is introduced, together with some nifty info on constructing mazes — no wonder I'm hopeless at finding my way!

Following this are the listings and maps for three adventures using the structure taught, together with a blow by blow account of how they work. Finally, the listings are shown complete if you want to bash them in all in one go.

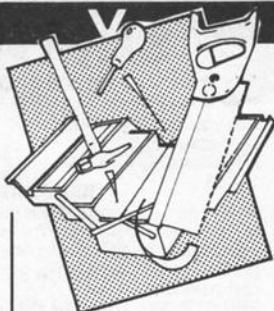
These are the three adventures on the tape which is available separately from the publishers... and they ain't easy, even if you can have a sneaky look at the map! Peter has some interesting things to say about graphics in adventures, and I tend to agree with him. Text is best... provided that it's well written. Perhaps the most impressive thing about the tape is the speed of Locomotive BASIC; it really does go like a train! **D.M.**

Price: £6.95 (book) £7.95 (tape)

Publisher: Duckworth

Address: The Old Piano Factory, 43 Gloucester Crescent, London NW1

AMSTRAD



**Machine Code
Extensions for
Spectrum BASIC**
Rob Banks

This little gem gives you the equivalent of BBC BASIC and more, in about 4K, with or without Interface 1, and a complete explanation as to how it's done. This isn't a beginners' guide, but if you buy the book and have a bit of patience, you can finish up with a real insight, and a very extended BASIC.

For your money you get PROC-DEFPROC-ENDPROC REPEAT-UNTIL, WHILE-WEND, IF-THEN-ELSE, DEL RENUM, FREE, REMKILL, together with a whole host of scrolling, colouring, underlining, user graphics, caps checking and sound commands; about 40 new keywords in all. There's also a clever way of speeding up the Spectrum's response to these new commands.

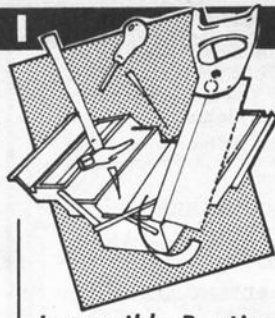
Using an assembler, or the hex loader program provided, you bash in the code, which can then either be saved to tape or Microdrive. The net result is a very structured BASIC of the sort that the critics rave about, which will allow you all the joys of structured 'top down' programming without the need to resort to a new machine. The only snag I can foresee is that the code sits in the area of RAM which is generally used by Centronics type printer interfaces, and toolkit programs. You must choose which is the more important.

All the programs and machine code routines from the book are available on the accompanying cassette from the publisher, and the two together cost less and do more than many so called extended BASICS. Magic! **D.M.**

Price: £6.95 (book) £3.95 (cassette)

Publisher: Hewson Consultants
Address: 56b Milton Trading Est, Milton, Oxon OX14 4RX

SPECTRUM



**Impossible Routines
for the
Commodore 64**

This book will probably be of use to those familiar with machine code. For that reason I was rather disappointed with the contents.

Most of the routines in the book are variations on previously published routines, in some cases going back to the days of the early BK Pet. For example I remember getting excited about the merge routine on the first Pets because there was no software around. Nowadays with plenty of cheap utilities available, it looks decidedly dated.

The book starts by giving a listing of the classical machine code monitor, Supermon, as a BASIC program with a brief explanation of it's commands. Chapter five is basically a reference guide to the kernel routines and there are over 50 pages of appendices giving memory maps, ASCII codes, etc as found in most reference guides. The more interesting stuff lies in the other chapters.

Chapter two discusses program protection. Although there is little new here the odd paragraph may answer your unsolved problem. Chapter three is a hotch potch of well known utility routines. Chapter four is the one I went straight to as it's about using an FX-80 with the 64.

Unfortunately all it contained was just over one page of text and a standard program to download the Commodore character set. No mention of interfaces, which port to use, hi-res screen dumps, etc.

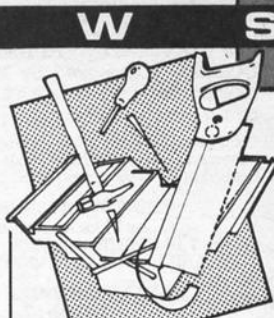
This book is not for the advanced user but the novice who hasn't been reading magazines for the last two years. **L.C.**

Price: £6.95

Publisher: Duckworth

Address: The Old Piano Factory, 43 Gloucester Crescent, London NW1 7DY

C64



**The Anatomy of the
1541 Disc Drive**

This is a comprehensive book on the 1541 disc drive aimed at the advanced user. A few months ago it was being sold at over £14, at the new price of £8.95 it's very good value. There are over 150 pages listing the disc ROM. If you're after this sort of information there is no other easily obtainable source.

Despite the price of the book there is no index. This would normally condemn it in my eyes, if a book has no index I put it back on the shelf. However, this book does contain unique information. The amazing omission in my view is that it doesn't tell you or discuss what sort of disc you need to purchase. This might be important because the latest gossip is that double density discs are inferior to single density on a single density drive. Most shops sell double density.

The book explains the disc commands and goes into more detail than most books. I would have preferred more importance attached to the 64 wedge program. This simplifies the disc handling so much that there is little need to use the longer commands.

It was nice to see a section explaining the use of the program supplied on the TEST/ DEMO disc. There were comprehensive sections on direct utility programs. I picked up a lot of useful information from this book, my favourite being how to protect a file on the disc so it can't be scratched even though there is no write protect tab in place.

Buy the book to find out. It's the best book on 1541 discs so far. **L.C.**

Price: £8.95

Publisher: First Publishing
Address: Horseshoe Trading Est, Pangbourne, Berks

C64



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LIGHT CYCLES

You're racing against another motorcyclist: you're trying to trap him in the trail you leave behind. If you meet head-on you always lose, so take heed.
By Kenny Moriarty

This program is a two-player game based on the 'light cycles' in the film Tron. It runs on the unexpanded Commodore VIC-20 and requires no additional hardware.

The first program sets up the DATA for the high resolution graphics, while the second program sets up all variables

How it works
 2-11 display title and instructions
 13-15 set up variables, clear screen, set VIC to hi-res mode
 15-43 set up screen by POKEing hi-res characters on to screen locations
 50 prints score at top of screen
 90 check for Ron crash
 70-100 set up screen movement
 100-110 set up keyboard entry and movement
 118 check for CP crash
 1000-2000 check CP score, add points
 2000-2010 check Ron score, add points
 2340-2820 decide and print winner, prompt for new game
 2820 if no new game required, computer is NEWed and reset

Variables
 M,T screen memory map (max, min)
 I screen character codes
 CO colour codes memory map
 TS Ron score
 MS CP score
 B checks for keyboard entry

Hints on conversion
 These are the main locations:
 7680-8164 screen memory map
 36878 volume control
 36877 white noise
 PEEK (197) checks which key is pressed
 38400-38884 colour memory map
 SYS 64802 resets VIC

Conversion should be straightforward enough. POKEing on to the screen could be replaced by PRINT AT or TAB statements.

and uses up 2,808 bytes.

The two players are Ron, the blue grid bike, and the CP, the red grid bike. The idea is to travel round the grid trying to trap your opponent inside the trail you leave behind you,

while avoiding it's trail and the sides of the screen. If the red and blue bike meet head to head the red bike (CP) always wins.

The winner is the first to win 10 rounds.

Listing 1

```

35 PRINTCHR$(142)CHR$(8)
40 POKE52,28:POKE56,28:FORI=28TO57:FORJ=0TO7:READN:POKE7168+8*I+J,N:NEXT:NEXT
45 POKE198,10:POKE631,131:END
50 DATA198,230,246,222,206,198,198,198
55 DATA126,126,16,16,24,24,24,24,248,200,200,248,240,216,216,216
60 DATA252,252,204,204,204,204,252,252,0,0,0,0,0,0,0,0
65 DATA0,24,24,0,0,24,24,0,198,238,254,214,198,198,198,198
70 DATA254,254,198,192,192,198,254,254,252,252,204,204,252,192,192,192
75 DATA12,12,12,12,255,255,12,12,24,36,66,90,219,219,66,126
80 DATA126,66,90,90,90,219,195,36,24,12,252,138,185,185,130,252,12
85 DATA12,63,65,157,157,65,63,12,4,4,168,168,169,169,40,40
90 DATA40,40,42,42,106,106,4,4,4,4,42,42,106,106,40,40
95 DATA40,40,168,168,169,169,4,4,4,4,170,170,170,170,4,4,40,40,105,105,40,
48
100 DATA126,126,102,102,102,102,126,126,56,56,24,24,24,24,60,60
105 DATA126,126,6,126,126,96,126,126,6,126,126,6,126,126,6,126,126
110 DATA96,96,108,108,126,126,12,12,126,126,96,126,126,6,126,126
115 DATA126,126,96,126,126,102,126,126,126,126,126,12,24,48,48,48
120 DATA126,126,102,126,126,102,126,126,126,126,102,126,126,6,126,126
    
```

Listing 2

```

0 REM*****
1 REM* K.MORIARTY *
2 POKE36869,240:POKE36879,29:PRINT"*****":PRINT"*****INSTRUCTIONS"
3 PRINT"YOU MUST TRAP YOUR OPPONENT IN THE TRAIL THAT YOU LEAVE BEHIND."
4 PRINT"***** KEYS " :PRINT"***** RON USES THE SHIFT & COMMODORE KEYS TO MOVE"
5 PRINT"THE CP USES THE CURSOR KEYS"
6 PRINT"THE KEYS MOVE YOU CLOCKWISE & ANTICLOCK-WISE." :PRINT"***** PRESS ANY KEY"
7 GETA$:IF A$=""THEN?
8 PRINT"THE FIRST PLAYER TO REACH 10 WINS THE GAME"
9 PRINT"GOOD LUCK AND MAY THE BEST MAN WIN!"
10 PRINT"***** PRESS ANY KEY"
11 GETB$:IF B$=""THEN?
13 POKE36878,10:POKE36869,255:CLR:PRINTCHR$(147)CHR$(8)
14 POKE36879,24:POKE36865,200:CO=30720:M=7904:T=7970:T1=1:M1=1:PRINT"*****"
15 FORI=7724TO8163:POKEI,37:POKEI+CO,0:NEXT
20 POKE7702,44:POKE7702+CO,12:POKE7723,42:POKE7723+CO,12:POKE8164,43:POKE8164+CO,
12
25 POKE8185,45:POKE8185+CO,12
30 FORI=7703TO7722:POKEI,46:POKEI+CO,12:POKEI+462,46:POKEI+462+CO,12:NEXT
35 FORI=7724TO8142STEP2:POKEI,47:POKEI+CO,12:POKEI+21,47:POKEI+21+CO,12:NEXT
40 POKEM-1,46:POKEM-1+CO,10:POKEM,40:POKEM+CO,0:POKET-1,46
43 POKET-1+CO,14:POKET,40:POKET+CO,0
    
```



```

45 POKE198,0:PRINT"#####"+CHR$(34)+"##!"
50 POKE36865,38:PRINT"TAB(7)TSTAB(17)MS
70 POKE36876,255:A=PEEK(653)
80 IFA=2THEN2=-22*(T1=-1)+1*(T1=-22)+22*(T1=1)-1*(T1=22):GOTO90
85 IFA=1THEN2=-22*(T1=1)-1*(T1=-22)+22*(T1=-1)+1*(T1=22):GOTO90
88 T2=T1
90 IFPEEK(T+T2)C37THEN1000
95 GOSUB500:POKE36876,0:T1=T2
100 B=PEEK(197)
105 IFA=31THENM2=-22*(M1=-1)+1*(M1=-22)+22*(M1=1)-1*(M1=22):GOTO118
110 IFA=23THENM2=-22*(M1=1)-1*(M1=-22)+22*(M1=-1)+1*(M1=22):GOTO118
116 M2=M1
118 IFPEEK(M+M2)C37THEN2000
125 GOSUB600:M1=M2:GOTO70
500 RESTORE
505 READA,B,P,CH
510 IFT1=ANDIT2=BTHENPOKET,P:POKET+CO,14:T=T+B:POKET,CH:POKET+CO,0:RETURN
520 GOTO505
530 DATA1,1,46,40,-1,-1,46,41,22,22,47,39,-22,-22,47,38
535 DATA1,-22,45,38,1,22,42,39,-1,-22,43,38,-1,22,44,39
540 DATA22,-1,45,41,22,1,43,40,-22,-1,42,41,-22,1,44,40
600 RESTORE
610 READA,B,P,CH
620 IFM1=ANDM2=BTHENPOKEM,P:POKEM+CO,10:M=M+B:POKEM,CH:POKEM+CO,0:RETURN
630 GOTO610
1000 POKET+CO,2:POKE36874,200:FORI=1TO4000:NEXT:POKE36874,0:POKE36876,0:MS=MS+1
1001 IFMS=10THEN2500
1010 GOTO14
2000 POKEM+CO,2:POKE36874,200:FORI=1TO4000:NEXT:POKE36874,0:TS=TS+1:IFTS=10THEN2
500
2010 GOTO14
2340 IFMS>TSTHENPRINT"THE "CHR$(34)"##"
2350 IFTS>MSTHENPRINT"]+~\
2360 GOTO2800
2500 PRINT"
2510 PRINT"
2525 PRINT"
2530 PRINT"
2540 IFMS>TSTHENPRINT"CHR$(34)"##"
2560 IFTS>MSTHENPRINT"]+~\
2800 PRINT"
2810 GETA$:IFA$="Y"THENRUN
2820 IFA$="N"THEN2810
2900 SYS64802
    
```



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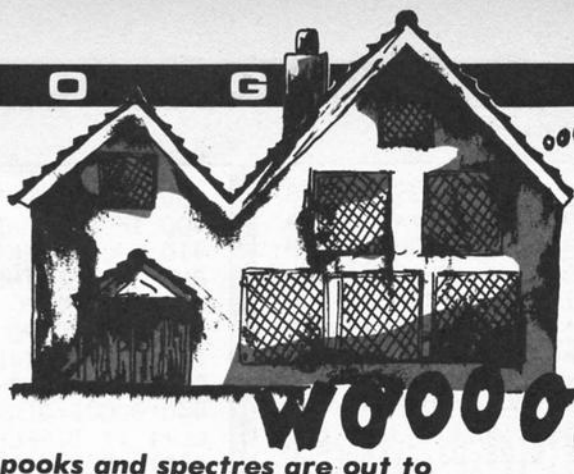
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NEMESIS (HCW), 10 Carlow Rd, Ringstead, Kettering,
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Spooks and spectres are out to scare you to death in Daryl Coates's program. You're locked in with phantoms of the night

In this game you must get the key from the top right hand corner and open the green door in the bottom left corner. This means you can move on to the next screen.

But it's not as easy as it sounds — ghosts will try to scare you out of your wits, and if you're frightened three times you're a goner. On each screen — there are 15 in all — the ghosts move faster. And don't forget that they can move through walls, while you can't.

Move on to each floor level by standing underneath a rope and moving up or down. Use the arrow keys for movement.

The game includes an unusual feature, in line 410. It's the address of the GPL register or sprite information byte. If this value is ANDED with 32 equals 32, then there is a coincidence. This is much faster and more reliable than CALL COINC (ALL,CH)::IF CH THEN 4400 — try it and see.

Variables

X1,Y1 position of sprite number 1
A general loops or variables
SKILL level
LIVES number of scares

How it works

20-110 define chars, call instructions, print scores, lives etc
120-220 set up screen
230-250 define ghosts, man
260-430 main game loop
440-490 next screen
5000-5500 move left
560-610 move right
620-650 move up
660-690 move down
700-750 loss of life, end of game
760-910 procedure for instructions: replace this with GOSUB or PROC

Note: Wherever the words HAUNTED HOUSE appear, type in, while holding the CTRL key, ABCDEFG and AHC-IF. All will be revealed when you run the program.

```

10 REM HAUNTED HOUSE
   (c) D.M. COATES
   23/5/84
20 CALL CLEAR :: CALL SCREEN(2):
 : CALL MAGNIFY(3)
30 FOR A=1 TO 14 :: CALL COLOR(A
,16,1):: NEXT A
40 CALL CHAR(40,"007F7F7FOOF7F7F
7"):: CALL COLOR(2,7,11)
50 CALL CHAR(59,"0305050B0817171
7171329010302020ECC0A0A0D010E8E8E
8E8C89480C0404070")
60 CALL CHAR(129,"44447C447C4444
441028447C447C44444444444444C5464
3A44645444C645444C44")
70 CALL CHAR(133,"7C282828282828
287C50505C50505C507C704854644C5468
70384C54644C546438")
80 CALL CHAR(137,"384C4838142464
38"):: CALL COLOR(13,16,7,14,16,
7):: CALL CHAR(58,"0000000000003
030")
90 CALL INSTRUCTIONS
100 CALL CHAR(34,"38444438101C10
1C"):: CALL CHAR(112,"FFFFFFFFF
FFFFFF"):: CALL COLOR(11,13,1)
110 DISPLAY AT(1,1):"YOUR SCORE~
  0": "HIGH SCORE~  0"
:: DISPLAY AT(1,21):"LEVEL~ 1" :
 : DISPLAY AT(2,21):"SCARE~ 0"
120 CALL HCHAR(3,1,40,32):: CALL
VCHAR(1,1,40,24):: CALL VCHAR(1
,32,40,24):: CALL HCHAR(24,1,40,
32)
130 CALL HCHAR(23,1,40,32):: CAL
L VCHAR(21,1,112,2):: CALL HCHAR
(6,31,34)
140 DISPLAY AT(23,8)SIZE(13):"HA
UNTED(HOUSE"
150 CALL VCHAR(3,13,40,5):: CALL
VCHAR(3,14,40,5):: CALL VCHAR(7
,20,40,5):: CALL VCHAR(7,21,40,5

```

THERE'S A GHOST IN MY HOUSE



```

)
160 CALL VCHAR(15,15,40,8):: CAL
L VCHAR(15,16,40,8)
170 CALL VCHAR(19,22,40,4):: CAL
L VCHAR(19,23,40,4)
180 CALL CHAR(33,"18181818181818
18"):: CALL VCHAR(4,3,33,7):: CA
LL VCHAR(4,11,33,19):: CALL VCHA
R(4,16,33,7):: CALL VCHAR(4,25,3
3,7)
190 CALL VCHAR(8,28,33,7):: CALL
VCHAR(12,19,33,11):: CALL VCHAR
(16,3,33,7):: CALL VCHAR(16,27,3
3,7)
200 FOR A=1 TO 13 :: READ X,Y,Z
:: CALL HCHAR(X,Y,40,2):: NEXT A
210 DATA 7,5,5,7,18,6,7,27,5,11,
2,8,11,13,14,11,30,2,15,2,8,15,1
3,5,15,21,11
220 DATA 19,5,5,19,13,5,19,21,5,
19,29,3
230 CALL CHAR(96,"000101037F3F63
030707030101000000F028ECFCF8FOC0
C0C0E0E0C0C0E07000")
240 CALL CHAR(100,"0F14373F1F0F0
3030307070303070E00008080C0FEFCC
6C0E0E0C080800000000")
250 CALL CHAR(104,"0305050B08171
717171329010302020E0A0A0D010E8E
8E8E8C89480C0404070")
260 REM *****THE GAME*****
270 SCORE=-100 :: LIVES=0 :: DIS
PLAY AT(2,27):USING "##":LIVES
280 SKILL=0 :: GOTO 440
290 CALL SPRITE(#2,100,16,28,9,0
,.6*(SKILL+2),#3,96,16,60,233,0,
-.7*(SKILL+2))
300 CALL SPRITE(#1,104,13,161,22
9)
310 CALL SPRITE(#4,100,16,92,9,0
,.5*(SKILL+2),#5,96,16,125,233,0
,-.6*(SKILL+2),#6,100,16,157,9,0
,.8*(SKILL+2))
320 HISCORE=MAX(SCORE,HISCORE)::
DISPLAY AT(1,12)SIZE(8):USING "
#####":SCORE :: DISPLAY AT(2,
12)SIZE(8):USING "#####":HISC
ORE
330 CALL PEEK(-31877,A)
340 CALL POSITION(#1,X,Y):: X1=(
X+15)/8 :: Y1=(Y+11)/8
350 CALL GCHAR(X1,Y1,CH)
360 CALL KEY(1,K,S):: IF S=0 THE
N 410
370 IF K=2 THEN 500
380 IF K=3 THEN 560

```

```

390 IF K=0 AND CH=33 THEN 660
400 IF K=5 AND CH=33 THEN 620
410 CALL PEEK(-31877,A):: IF (A
AND 32)=32 THEN 700
420 GOTO 340
430 REM SUBROUTINES FOR
MOVEMENT,LOSS OF
LIFE AND NEXT SCREEN
440 SCORE=SCORE+100 :: SKILL=SKI
LL+1 :: DISPLAY AT(1,27):USING "
##":SKILL :: IF SKILL=16 THEN 45
0 ELSE 290
450 FOR A=0 TO 30 STEP 2 :: CALL
SOUND(-99,262,A,330,A,392,A)::
CALL SOUND(-99,262,A,392,A,523,A
)
460 CALL SOUND(-99,523,A,659,A,7
84,A):: NEXT A
470 DISPLAY AT(23,1):" WELL DO
NE YOU HAVE JUST COMPLETED AL
L 15 SCREENS " :: FOR A=1 TO 800
:: NEXT A
480 DISPLAY AT(23,1):" BUT YOU H
AVE BEEN SENTENCED TO DO THEM
ALL AGAIN " :: FOR A=1 TO 80
0 :: NEXT A :: CALL HCHAR(23,1,4
0,64)
490 DISPLAY AT(23,8)SIZE(13):"HA
UNTED(HOUSE" :: GOTO 280
500 CALL GCHAR(X1,Y1-1,CH):: IF
CH=40 THEN 410
510 SCORE=SCORE+10
520 IF CH=112 AND FLAG THEN 530
ELSE IF CH=112 THEN 410 ELSE 540
530 FOR A=440 TO 880 STEP 10 ::
CALL SOUND(-99,A,0):: NEXT A ::
GOTO 440
540 CALL MOTION(#1,0,-50)
550 CALL MOTION(#1,0,0):: CALL L
DCATE(#1,X,Y-8):: GOTO 410
560 CALL GCHAR(X1,Y1+1,CH):: IF
CH=40 THEN 410
570 SCORE=SCORE+10
580 IF CH=34 THEN FLAG=-1 ELSE 6
00
590 FOR A=0 TO 30 STEP 10 :: CAL
L SOUND(-99,880,A):: NEXT A
600 CALL MOTION(#1,0,50)
610 CALL MOTION(#1,0,0):: CALL L
DCATE(#1,X,Y+8):: GOTO 410
620 CALL GCHAR(X1-3,Y1,CH):: IF
CH=40 THEN 410
630 SCORE=SCORE+10
640 CALL MOTION(#1,-100,0)
650 CALL MOTION(#1,0,0):: CALL L
DCATE(#1,X-32,Y):: GOTO 410

```

```

660 G=ASC(CHAR(X*1+1,Y*10)) IF
CH>39 THEN 410
670 SCORE=SCORE+10
680 CALL MOTION(#1,100,0)
690 CALL MOTION(#1,0,0):: CALL L
DCATE(#1,X+32,Y):: GOTO 410
700 CALL COLOR(#1,16):: LIVES=L
IVES+1 :: FLAG=0 :: CALL SOUND(40
0,2000,0):: FOR A=1 TO 100 :: NE
XT A
710 DISPLAY AT(2,27):USING "##":
LIVES #: IF LIVES=3 THEN 720 ELS
E 290
720 HISCORE=MAX(SCORE,HISCORE)::
DISPLAY AT(1,12)SIZE(8):USING "
#####":SCORE :: DISPLAY AT(2,
12)SIZE(8):USING "#####":HISC
ORE
730 FOR A=0 TO 30 :: CALL SOUND(
-99,131,A):: CALL SOUND(-99,110
,A):: NEXT A :: DISPLAY AT(23,8)S
IZE(13):"<<GAME OVER<<"
740 DISPLAY AT(24,9)SIZE(11):"PR
ESS(A KEY"
750 CALL KEY(0,K,S):: IF S=0 THE
N 750 ELSE CALL HCHAR(23,1,40,64
):: GOTO 270
760 SUB INSTRUCTIONS
770 CALL SCREEN(5)
780 CALL CLEAR :: DISPLAY AT(2,7
):"HAUNTED(HOUSE" :: DISPLAY AT(
3,7):"((((((((((((((((" :: DISPLAY
AT(5,1):"MEET FRED ;="
790 DISPLAY AT(6,1):"THE FROG
<>" :: DISPLAY AT(8,1):"FRED D
ECIDED TO STAY IN A QUAINIT LIT
TLE MANSION OVER NIGHT:"
    
```

```

800 DISPLAY AT(11,1):"BUT THIS W
AS NO ORDINARY HOME BUT THE H
AUNTED HOUSE [GASP!]:NOW FRED
IS RELYING ON YOU TO FREE HIM:"
810 DISPLAY AT(15,1):"BUT DON'T
LET HIM TOUCH ANY GHOSTS OR ELSE
YOU WILL SCARE FRED AND 3 S
CARES MEANS FRED WILL GO MAD
:"
820 CALL HCHAR(1,1,40,32):: CALL
VCHAR(1,1,40,21):: CALL VCHAR(1
,32,40,21):: CALL HCHAR(21,1,40,
32)
830 INPUT "PRESS ENTER":A$
840 DISPLAY AT(2,1)ERASE ALL:"TH
ERE ARE 15 SCREENS EACH TIME T
HE GHOSTS GETTING FASTER:"
850 DISPLAY AT(5,1):"TO GET FROM
ONE SCREEN TO ANOTHER YOU MUS
T GET A KEY [TOP RIGHT HAND COR
NER]"
860 DISPLAY AT(8,1):"AND OPEN TH
E GREEN DOOR [BOTTOM LEFT CO
RNER]:THIS IS ALL DONE BY TOUCHIN
G THE KEY AND DOOR:"
870 DISPLAY AT(12,1):"YOU MOVE F
RED BY THE ARROW KEYS [E S D X]
:"
GOOD LUCK
"
880 CALL HCHAR(1,1,40,32):: CALL
VCHAR(1,1,40,17):: CALL VCHAR(1
,32,40,17):: CALL HCHAR(17,1,40,
32)
890 INPUT "PRESS ENTER":A$
900 CALL CLEAR :: CALL SCREEN(2)
910 SUBEND
    
```



DOWN ON THE FARM

In Shingo Sugiura's game for the BBC you play the part of Farmer Jo, who is having problems with his cows

As Farmer Jo, you are fed up with the way your cows are misbehaving so you decide to take action. Unfortunately, there are two animal-loving monsters called Bo and Flo who wish to stop you. Bo is a chaser and very intelligent, while Flo is a dancer and rather stupid. You must avoid both of them.

As you move round filling in the plots make sure you take the shortest route as Jo tires easily. The game ends when you are caught by the monsters or your energy runs out.

First type in listing 1 and SAVE it under "FARMER". Then type listing 2 and SAVE it under "MAIN". On cassettes SAVE listing 2 immediately after listing 1. Chain in listing 1. If your system is cassette based, instructions will follow and listing 2 will be CHAINED in — for disc based systems you must press the space bar. When the second program has LOADED, characters and controls will be displayed. Press the space bar to begin the game in earnest.

N.B. This program is fully compatible with the disc system. The second program is LOADED by the first and automatically downLOADED to &E00 and run, so you are in tape mode. If you wish to edit the second program after encountering a bug, it's probably best to do a hard BREAK and LOAD the second program from disc.

Some toolkit ROMs (such as Addcomm by Vine Micros) take up workspace below page and interfere with the movedown routine, so switch off the ROM before you LOAD the program. This precaution does not apply to ROMs such as Toolkit by Beebugsoft which takes up workspace in some hideously low address where it does no harm to user's programs.

How it works

The game consists of two programs. The first defines characters, initialises music data, prints instructions and CHAINS in the second program taking into account the present filing system.

Listing 1

```
10-40 REM statements
50 select MODE7 and switches off cursor
60 calls procedure to assembled machine code routine to find present filing system, routine to down LOAD and RUN second program
70 calls procedure to define characters and envelopes used in second program, POKes music data out of harm's way
80 calls procedure to print instructions
90 finds the present filing system, if cassette, CHAINS in second program immediately
100 filing system is disc, LOADs second program, downLOADs it, RUNs it
110 END statement — NOT optional, if omitted, downLOADing routine doesn't work
130 print instructions
290 defines function key 0 to LOAD program 2, calls machine code routine, downLOADs it, RUNs it
350 called from instruction
```

procedure if filing system tape
740-980 character definition

Listing 2

```
10-40 DIMs
60 calls procedure, defines 2x2 characters, initialises hall of fame
70 selects MODE1, switches off cursor
80 calls procedure, prints characters and controls
90-140 main-loop, game procedure, hall of fame procedure called in an infinite loop
160 main procedure, procedure handles actual game
280 movement of printing, score, energy, etc
410 called when Jo moves away from plot not filled
470 movement of Bo
570-620 movement of Flo
730 sets up screen before game
860 plays music
930-1060 called at beginning of game, initialises variables
1070-1170 procedure called when die
1190 clear screen procedure.
1300-1380 plays intro music
1450-1470 general delay procedure
1480 hall of fame
1610 called from above procedure
1760 called at beginning of program
1870-2030 print instructions, wait for space bar to be pressed
```

```
10REM Farmer 'Jo'
20REM By Shingo Sugiura
30REM August 1984
40
50MODE7:VDU23;8202;0;0;0:
60PROcAssemble
70PROcdefine
80PROcinst
90IF FNfile=1 CHAIN"MAIN"
100*FX138,0,128
110END
120
130DEFFPROcinst
140PRINTCHR#129CHR#157TAB(12)CHR#141CHR#130"FARMER 'J
0 "
150PRINTCHR#129CHR#157TAB(12)CHR#141CHR#130"FARMER 'J
0 "
160PRINT TAB(10)CHR#131"By Shingo Sugiura"
170PRINT " 'JO' the farmer is fed up with his"
180PRINT"ravenous cows."
190PRINT" Your task is to fence up the plots"
200PRINT"which are being devoured at full"
210PRINT"speed by the cows!"
220PRINT" To stop your desperate efforts, two"
230PRINT"gruesome monsters, curiously named 'Bo'"
240PRINT"and 'Flo' are out to get you."
250IF FNfile=4 PROcdisc ELSE PROctape
260ENDPROc
270
280DEFFPROcdisc
290K.0LD."MAIN"IMCA.&7B00IM
300PRINTTAB(0,23)CHR#134CHR#136"Press the SPACE BAR t
0 continue.":
310REPEAT UNTIL GET=32
320VDU28,5,21,5,21
330ENDPROc
340
350DEFFPROctape
```




```
360PRINTTAB(0,23)CHR:134CHR:136"Please leave cassette
running."
```

```
370VDU28,5,21,35,19
380ENDPROC
390DEFFNfile
400CALLcode
410=?*70
420DEFFPROCassemble
430DIM code 15
440PX=code
450IOPT 0
460LDA#0:LDY#0:LDX#70
470JSR &FFDA:STA &70
480RTS:]
490FORpass=0 TO 2 STEP2:PX=?*700
500IOPT pass
510LDA#140:LDX#0:LDY#0:JSR &FFF4
520LDA#0:STA &70:LDA#18:STA#71
530LDA#0:STA#72:LDA#5E:STA#73
540 loop
550LDA(&70),Y:STA(&72),Y
560INC &70:BNE no_carry
570INC &71:no_carry
580INC &72:BNE no_carry2
590INC &73:no_carry2
600LDA#13:CHP#71:BNE loop
610LDA#12:CHP#70:BNE loop
620LDA#E:STA#18
630LDA#158:LDX#0
640LDY#ASC"0":JSR &FFF4
650LDY#ASC"1":JSR &FFF4
660LDY#&D:JSR &FFF4
670LDY#ASC"R":JSR &FFF4
680LDY#ASC"U":JSR &FFF4
690LDY#ASC"N":JSR &FFF4
700LDY#&D:JMP &FFF4
710]
720NEXT
730ENDPROC
```



```
110MODE1:VDU23;8202;0;0;0;
120PROCgame
130MODE7:PROCTable
140UNTILFALSE
150
160DEFFPROCgame
170REPEAT
180PROCinit
190PROCscreen
200REPEAT
210PROCman
220PROCmonster
230PROCbaddie
240UNTIL dead OR filled=240
250IF dead PROCdead ELSE PROCnew_screen
260UNTILdead
270ENDPROC
280DEFFPROCman
290px=?*xcx+py=?*ycx
300xc=?*xcx+(INKEY-98 AND xc?)-(INKEY-67 AND xc?)
310yc=?*ycx+(INKEY-73 AND yc?)-(INKEY-105 AND yc?)
```

```
320IF px=?*xcx AND py=?*ycx ENDPROC
330energy=?*energy-1
340IF energy=?*0 dead=TRUE
350PRINTTAB(7,28);energy%; " "
360IF maze?(px,py)=0 PROCscore
370PRINTTAB(px*2,py*2)pad#
380PRINTTAB(xc*2,yc*2)man#
390PROCmusic
400ENDPROC
410DEFFPROCscore
420score=?*score+10
430filled=filled+1
440COLOURS:PRINTTAB(6,26);score%
450maze?(px,py)=1
460ENDPROC
```



```
470DEFFPROCmonster
480prob=?*RND(15)
490px=?*monx(0,0);py=?*mony(0,1)
500IF prob<dir? ENDPROC
510IF ABS(monx(0,0)-xc?)>ABS(monx(0,1)-yc?) PROClater
al ELSE PROCvertical
520PRINTTAB(px*2,py*2);
530IF maze?(px,py)=0 PRINTgrid# ELSE PRINTpad#
540PRINTTAB(monx(0,0)*2,mony(0,1)*2);mon#
550IF monx(0,0)=xc? AND monx(0,1)=yc? dead=TRUE
560ENDPROC
570DEFFPROCvertical
580monx(0,0)=monx(0,0)+SGN(xc?-monx(0,0))
590ENDPROC
600DEFFPROCvertical
610mony(0,1)=mony(0,1)+SGN(yc?-mony(0,1))
620ENDPROC
630DEFFPROCbaddie
640dir=?*RND(4)
650px=?*monx(1,0);py=?*mony(1,1)
660monx(1,0)=monx(1,0)+(dir?1 AND px?)-(dir?2 AND
px?)(1,1)=mony(1,1)+(dir?3 AND py?)-(dir?4 AND
py?)(1,1)
```

```
680PRINTTAB(px*2,py*2);
690IF maze?(px,py)=0 PRINTgrid# ELSE PRINTpad#
700PRINTTAB(monx(1,0)*2,mony(1,1)*2);bad#
710IF monx(1,0)=xc? AND monx(1,1)=yc? dead=TRUE
720ENDPROC
730DEFFPROCscreen
740VDU12,19,3,0;0;
750FOR loop=?*1 TO 12
760PRINTSTRING(20,grid#+CHR#11)
770NEXT
780VDU19,3,6;0;
790PRINTTAB(xc*2,yc*2)man#
800PRINTTAB(monx(0,0)*2,mony(0,1)*2)mon#
810PRINTTAB(monx(1,0)*2,mony(1,1)*2)bad#
820PRINTTAB(0,26)"SCORE ";score%;TAB(25,26)"WAVE ";:C
OLOURS:PRINT;wave#
830PRINTTAB(0,28)"ENERGY ";energy%;TAB(25,28)"HI";:sc
x(0)
840PROCintro
850ENDPROC
860DEFFPROCmusic
870IF ADVAL(-6)<2 ENDPROC
880?70=?*70+1
890offset=?*70 MOD 47
900pitch=offset?70:period=offset?70:BCF
910SOUND1,2,pitch,period:SOUND2,2,pitch-48,period
920ENDPROC
930DEFFPROCinit
940dead=FALSE:filled=0:energy=?*300
950FOR outer=?*0 TO 19
960FOR inner=?*0 TO 11
970maze?(outer,inner)=0
980NEXT,
990wave=?*wave+1
1000?70=255
1010dir=?*15-wave#
```

```
740DEFFPROCdefine
750VDU23,128,&03,&07,&0D,&09,&09,&1D,&1F,&3F
760VDU23,129,&C0,&E0,&B0,&90,&90,&90,&B8,&F8,&FC
770VDU23,130,&37,&74,&F4,&F0,&F2,&FA,&7F,&3F
780VDU23,131,&EC,&2E,&2F,&0F,&4F,&5F,&FE,&FC
790VDU23,132,&03,&07,&07,&0F,&7B,&F9,&FD,&FF
800VDU23,133,&C0,&E0,&E0,&F0,&DE,&9F,&BF,&FF
810VDU23,134,&7E,&3C,&39,&7F,&7F,&7E,&7C,&39
820VDU23,135,&7E,&3C,&9C,&9C,&FE,&FE,&7E,&3E,&1C
830VDU23,136,&01,&0F,&05,&07,&01,&3F,&75,&6D
840VDU23,137,&00,&F0,&A0,&E0,&80,&30,&30,&80
850VDU23,138,&6D,&6D,&2B,&0F,&0C,&0C,&0C,&1E
860VDU23,139,&B6,&B6,&14,&F0,&70,&30,&30,&80
870VDU23,140,&FF,&80,&80,&80,&80,&80,&80,&80
880VDU23,141,&FF,&80,&80,&80,&80,&80,&80,&80
890VDU23,142,&80,&80,&80,&80,&80,&80,&80,&FF
900VDU23,143,&80,&80,&80,&80,&80,&80,&80,&80
910VDU23,144,&7F,&FF,&FF,&FF,&FF,&FF,&FF,&FC
920VDU23,145,&FE,&FD,&FD,&FD,&FD,&FD,&7D,&3D
930VDU23,146,&FC,&FE,&FF,&FF,&FF,&FF,&FF,&7F
940VDU23,147,&3D,&7D,&FD,&FD,&FD,&FD,&FD,&FE
950VDU23,148,&80,&80,&80,&80,&80,&80,&80,&80
960VDU23,149,&80,&80,&80,&80,&80,&80,&80,&80
970VDU23,150,&80,&80,&80,&80,&80,&80,&80,&80
980VDU23,151,&80,&80,&80,&80,&80,&80,&80,&80
990ENVELOPE1,0,0,0,0,0,126,-1,0,-5,126,0
1000ENVELOPE2,1,0,0,0,1,1,126,-4,-1,-4,126,0
1010ENVELOPE3,2,126,0,0,206,0,0,126,0,0,-126,126,126
1020RESTORE
1030FOR music=?*0 TO 46
1040READ A,B
1050music=?*BA0=A:music=?*BCF=B
1060NEXT
1070ENDPROC
1080REM Data for Music
1090DATA 125,3,129,3,129,3,129,3,125,3,129,3,129,3,129,3,129
1100DATA 125,3,129,3,129,3,129,3,125,3,129,3,129,3,129,3,129
1110DATA 117,6,109,3,117,6,109,3,117,3,109,3,117,13,10
9,13
1120DATA 113,3,117,3,117,3,117,3,113,3,117,3,117,3,117,3,117
1130DATA 113,3,117,3,117,3,117,3,113,3,117,3,117,3,117,3,117
1140DATA 117,6,109,3,117,6,109,3,117,3,109,3,129,25
```

```
10REM Farmer 'Jo'
20REM By Shingo Sugiura
30REM August 1984
40
50DIM maze?(19,11),monx(1,1),scx(8),names 150
60PROCdefine
70MODE1:VDU23;8202;0;0;0;
80PROCinit
90REPEAT
100score=?*0:wave=?*0
```



```

1020IF difX<0 difX=0
1030xc%=9:yc%=5
1040monX(0,0)=0:monX(0,1)=0
1050monX(1,0)=19:monX(1,1)=11
1060ENDPROC
1070DEFPROCdead
1080SOUND&11,0,0,0:SOUND&12,0,0,0
1090SOUND1,3,100,10
1100PROCdelay(7000)
1110RESTORE1100
1120FOR music=1 TO 7
1130READ A,B
1140SOUND1,1,A,B:SOUND2,1,A-48,B
1150NEXT
1160PROCdelay(10000)
1170ENDPROC
1180DATAB1,7,69,3,53,5,81,5,89,5,49,5,53,5
1190DEFPROCnew_screen
1200SOUND&11,0,0,0:SOUND&12,0,0,0
1210PROCdelay(1000)
1220FOR loop%=0 TO 3
1230VDU19,2,3;0;
1240PROCdelay(2000)
1250VDU19,2,7;0;
1260PROCdelay(2000)
1270NEXT
1280PROCdelay(5000)
1290ENDPROC
1300DEFPROCintro
1310IF waveX>1 PROCdelay(5000):ENDPROC
1320RESTORE1390
1330FOR music=1 TO 34
1340READ A,B
1350SOUND1,2,A,B:SOUND2,2,A-48,B
1360NEXT
1370PROCdelay(10000)
1380ENDPROC
1390DATA 165,3,169,3,169,3,169,3,117,3,121,3,121,3,121
,3
1400DATA 69,3,73,3,73,3,73,7
1410DATA 157,3,161,3,165,3,169,6,157,6,169,3,157,6
1420DATA 169,3,177,3,157,3,157,3,157,5
1430DATA 149,3,141,6,149,6,129,6,149,3,129,6
1440DATA 149,7,153,3,153,3,153,3
1450DEFPROCdelay(time%)
1460FOR delay%=1 TO time%:NEXT
1470ENDPROC
1480DEFPROCtable
1490PROCammend:CLS
1500PRINTCHR#129CHR#157CHR#130CHR#141TAB(10)"GRIDMAN H
ALL OF FAME"
1510PRINTCHR#129CHR#157CHR#130CHR#141TAB(10)"GRIDMAN H
ALL OF FAME"
1520PRINTTAB(10)CHR#134CHR#141"Today's Greatest"
1530PRINTTAB(10)CHR#134CHR#141"Today's Greatest"
1540FOR I=0 TO 7
1550VDUI+49,46:PRINTTAB(6);scX(I):TAB(12) "... ";$(na
mes+I*15)

```



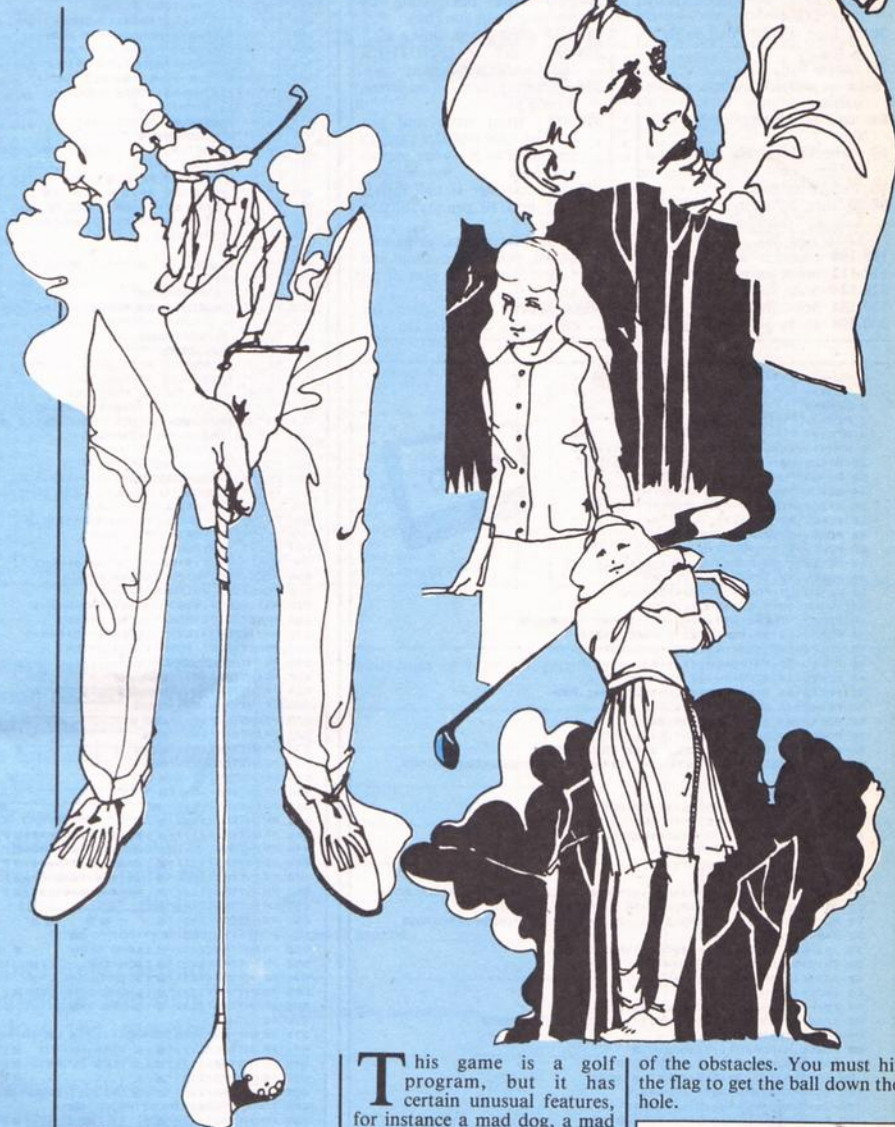
```

1560NEXT
1570PRINTTAB(2,23)CHR#134CHR#136"Press the SPACE BAR t
o replay."
1580REPEAT
1590UNTIL INKEY=99
1600ENDPROC
1610DEFPROCammend
1620IF scoreX<=scX(7) ENDPROC
1630FOR I=7 TO 0 STEP-1
1640IF scoreX>scX(I) scX(I+1)=scX(I):$(names+(I+1)*15)
=$(names+I*15):fix=I
1650NEXT
1660scX(fix)=scoreX
1670PRINTTAB(6,2)CHR#134CHR#141"Congratulations!!"
1680PRINTTAB(6,3)CHR#134CHR#141"Congratulations!!"
1690PRINTTAB(6,8)CHR#129"Your score of "scoreX
1700PRINTTAB(0,10)CHR#129"qualifies for the Hall of Fa
me."
1710PRINTTAB(4,13)CHR#131"Please enter your name."
1720VDU31,5,15,134,157,129,31,26,15,156,31,9,15:FX15
1730:&900=names+fix*15:7&902=14:7&903=32:7&904=127
1740X%=0:YX=&9:AX=0:CALL&FFF1
1750ENDPROC
-1760DEFPROCdefine
1770monX=CHR#17+CHR#1+CHR#128+CHR#129+CHR#10+CHR#8+CHR
#8+CHR#130+CHR#131
1780badX=CHR#17+CHR#1+CHR#132+CHR#133+CHR#10+CHR#8+CHR
#8+CHR#134+CHR#135
1790manX=CHR#17+CHR#2+CHR#136+CHR#137+CHR#10+CHR#8+CHR
#8+CHR#138+CHR#139
1800gridX=CHR#17+CHR#3+CHR#140+CHR#141+CHR#10+CHR#8+CH
R#8+CHR#142+CHR#143
1810padX=CHR#17+CHR#2+CHR#144+CHR#145+CHR#10+CHR#8+CHR
#8+CHR#146+CHR#147
1820FOR loop%=0 TO 7
1830$(names+loop*15)="SHINGOSOFT"
1840scX(loop%)=1000-100*loop%
1850NEXT
1860ENDPROC
1870DEFPROCinst
1880PRINTTAB(14)"FARMER 'JO'"
1890COLOUR2:PRINT TAB(10)"By Shingo Sugiura"
1900COLOUR3:PRINTTAB(15)"C A S T"
1910PRINTTAB(5)monX:COLOUR2
1920PRINTTAB(12,VPOS-1) "... Bo the Chaser"
1930PRINTTAB(5)badX:COLOUR2
1940PRINTTAB(12,VPOS-1) "... Flo the Dancer"
1950PRINTTAB(5)manX:COLOUR3
1960PRINTTAB(12,VPOS-1) "... Farmer Jo"
1970PRINTTAB(15)VCONTROL6:"
1980PRINTTAB(19)"*"TAB(19)CHR#148
1990PRINTTAB(15)"Z "CHR#149TAB(21,VPOS)CHR#151" X"
2000PRINTTAB(19)CHR#150"TAB(19)"?"
2010COLOUR2:PRINT TAB(6)"PRESS THE SPACE BAR TO PLAY"
;
2020REPEATUNTIL GET=32
2030ENDPROC

```



ON THE GREEN



This C64 program by Andrew Clarke gives you the chance to try your hand at golf, and you don't need anyone to caddy for you

This game is a golf program, but it has certain unusual features, for instance a mad dog, a mad golfer, a bunker, lake and trees.

After the titles you need to input how many holes you wish to play. The maximum is 20, but this can be altered with some minor changes to the listing.

There is a flag fixed in the top right hand corner of the screen. This is your target.

Pressing 'fire' causes the golfer to take a swing and set the ball rolling. You must use a joystick in port two to keep the ball away from the dog and out

of the obstacles. You must hit the flag to get the ball down the hole.

How it works

- 10-12 GOSUB title screen, read in sprite data
- 14 GOSUB rest of titles, zero variables
- 20-54 set up all eight sprites
- 56-58 press fire to start, GOSUB first part swing routine
- 60 sets variables
- 62 moves ball, makes golfer continue swing
- 63 GOSUBs sound for club hitting ball
- 64-69 joystick input, move ball accordingly
- 70 check for ball hitting



obstacles
 72 when ball reaches far X position POKES V + 16 with correct value
 74 POKES in X,Y values, turns off sound, continues loop by a GOTO24
 76-90 loop to move ball on right X pos
 76 moves ball
 78-83 joystick input, move ball accordingly
 84 collision detect for hit with flag
 85 checks for hit with mad golfer
 86 checks for miss
 88-90 turn off sound, POKE in values, continue loop by GOTOing 76
 100-108 sound initialization
 110-112 noise for obstacle hit
 120-124 noise for hit with flag
 130-134 noise for miss
 200-204 make golfer bring club

back to start swing
 250-259 move dog, make it home in on ball, stop when ball passes far X position
 270-274 move mad golfer
 300-310 work out rating by dividing holes into hits
 312-324 print score, rating etc
 326-332 ask if 'ANOTHER GO?' and act on input
 350-356 print score etc on screen during play
 370-388 print score and hits for last hole and if necessary get player to press fire to play next hole
 400-406 message if ball misses flag, add 10 penalty hits to score
 800-898 title screen, print billboard, print game name and author, get fire to play or hit key
 30000-30149 sprite data for characters, obstacles etc

```

257 POKE2043,236
259 RETURN
270 Y3=PEEK(V+9)
271 Y3=Y3+1:IF Y3=1000R0Y1000R3Y5STHENS=-6
272 IFPEEK(2044)=234THENPOKE2044,235:GOTO274
273 POKE2044,234
274 POKEV+9,Y3:RETURN
300 PAR=INT(SC/NU):IFPAR=1THENS="TONY JACKLINI"
302 IFPAR=2ORPAR=3THENS="NOT BAD!!"
304 IFPAR=4ORPAR=5THENS="OH DEAR!!"
306 IFPAR=6ORPAR=7THENS="TERRIBLE!"
308 IFPAR=8ORPAR=9THENS="ROTTEN!!!"
310 IFPAR=10THENS="TRES AWFUL!"
312 POKEV+2,0:PRINT"Q"
314 PRINT"RESULTS"
316 PRINT" "
318 PRINT"*****AFTER *NU* HOLES YOU HAVE SCORED*"
320 PRINT"*****SC** HITS."
322 PRINT"*****THAT'S ABOUT**PAR** PER HOLE.*"
324 PRINT"*****YOUR RATING...**"
326 PRINT"*****ANOTHER GO (FIRE OR N)?"
328 GETK:IFPEEK(56320)=111THENGOSUB800:FOR T=1TO1000:NEXTIRUN14
330 IFK<>"N"THENS28
332 SYS64738
350 PRINT"*****HITS TOTAL *HOLE*"
352 PRINT"*****HIT"
354 PRINT"*****ISC"
356 PRINT"*****NEXT PENALTY HITS AWARDED**HIT*HIT*10"
370 SC=SC+HIT:GOSUB120:POKEV+2,0
372 PRINT"*****SCORE*"
374 PRINT"*****"
376 PRINT"*****YOU WENT DOWN IN *HIT"
378 PRINT"*****HOLES SO FAR *HO"
380 PRINT"*****TOTAL SO FAR *ISC"
382 IFHO=NU:THENFORT=1TO1000:NEXTIGOTO32
384 PRINT"*****FOR NEXT HOLE PRESS *FIRE*"
386 IFPEEK(56320)=111THENS86
388 PRINT"Q":GOTO20
400 GOSUB130:POKEV+2,0:PRINT"Q"
402 PRINT"*****MISSED!!!!!!!!*****"
404 PRINT"*****NEXT PENALTY HITS AWARDED**HIT*HIT*10"
406 FORT=1TO1000:NEXTIGOTO370
800 PRINT"Q":POKE53280,0:POKE53281,0
802 LF=54278:IFH=1889TO1938
804 POKEV+1,0:POKEV+LF,6
806 POKEV+4,0:POKEV+LF+4,6:NEXT
808 POKE1869,79:POKE1869+LF,6
810 POKE1898,80:POKE1898+LF,6
812 A=1:FOR T=1566TO1836:STEP4:IA=A-1
814 POKEV+A,70:POKEV+LF+A,6:NEXT
816 IA=A-1:FOR T=1571TO1856:STEP4:IA=A+1
818 POKEV+A,77:POKEV+LF+A,6:NEXT
820 PRINT"*****"
822 PRINTTAB(10);"*****"
824 PRINTTAB(10);"*****"
826 PRINTTAB(10);"*****"
828 PRINTTAB(10);"*****"
830 PRINTTAB(10);"*****"
832 PRINTTAB(10);"*****"
834 PRINTTAB(10);"*****"
836 PRINTTAB(10);"*****"
838 PRINTTAB(10);"*****"
840 PRINTTAB(10);"*****"
842 PRINTTAB(11);"*****"
844 PRINTTAB(11);"*****"
846 PRINTTAB(11);"*****"
848 PRINTTAB(11);"*****"
850 PRINTTAB(11);"*****"
852 PRINTTAB(11);"*****"
854 PRINTTAB(11);"*****"
856 PRINTTAB(11);"*****"
858 FORT=1TO1000:NEXT:PRINT"*****"
860 PRINTTAB(11);"*****"
862 PRINTTAB(11);"*****"
864 PRINTTAB(11);"*****"
866 PRINTTAB(11);"*****"
868 PRINTTAB(11);"*****"
870 RETURN
872 PRINT"*****:PRINTTAB(11);"*****"
874 PRINTTAB(11);"*****"
876 PRINTTAB(11);"*****"
878 PRINTTAB(11);"*****"
880 PRINTTAB(11);"*****"
882 FORT=1TO2000:NEXT:PRINT"*****"
884 PRINTTAB(11);"*****"
886 PRINTTAB(11);"*****"
888 PRINTTAB(11);"*****"
890 PRINTTAB(11);"*****"
892 PRINTTAB(11);"*****"
893 PRINT"*****:HIT A KEY TO GO *A*"
894 GETM:IFPEEK(56320)=111THENS86
895 IFM="N"THENS84
896 INPUT"*****HOW MANY HOLES (1-20)?:NU
897 IFNU<1ORNU>20THENS86
898 RETURN
2998 REM SPRITE DATA STORED FROM HERE
30000 REM** GOLFER ARM UP LEFT
30001 DATA,16,0,0,64,0,64
30002 DATA0,0,64,152,0,64,48
30003 DATA0,90,160,0,19,171,0
30004 DATA3,175,0,4,180,0,17
30005 DATA246,0,160,0,160,0,160
30006 DATA0,160,0,160,0,136,0
30007 DATA,136,0,0,136,0,0
30008 DATA136,0,136,0,0,136
    
```

```

0 REM*****
1 REM** COMMODORE 64 GOLF BY *****
2 REM***
3 REM*** ANDREW CLARKE (C) 1985 ***
4 REM*** FOR HCW *****
5 REM*****
10 GOSUB800:IFORS=223TO237:FOR T=0TO62
12 READA:POKES=64+T,A:NEXTINEXT
14 GOSUB872:PRINT"*****"
20 V=53240:POKEV+23,224:POKEV+29,224
22 POKEV,30:POKEV+1,140:POKEV+16,4
24 POKEV+2,30:POKEV+3,148
26 POKEV+4,55:POKEV+5,60
28 POKEV+8,35:POKEV+9,255:POKEV+10,185
30 POKEV+12,155:POKEV+14,285
32 PRINT"Q":FORT=V+4:FORV=15STEP2
34 Y=INT((210-50)/ARD*(1))>50
36 POKET,Y:NEXT:HIT=0:HO=0+1:IFHO=NU:THEN300
38 POKEV+20,26:POKEV+33,5:POKEV+32,6
40 POKEV+39,1:POKEV+40,0:POKEV+37,7
42 POKEV+38,10:POKEV+41,1:POKEV+42,0
44 POKEV+43,0:POKEV+44,0:POKEV+45,6
46 POKEV+46,8:POKE2040,229:POKE2041,225
48 POKE2042,230:POKE2043,236
50 POKE2044,234:POKE2045,232
52 POKE2046,233:POKE2047,231:GOSUB350
54 POKEV+21,255:V=5:POKEV+5,50:GOSUB100
56 IFPEEK(56320)=111:THENHIT=HIT+1:GOSUB350:GOSUB200:GOTO200
58 GOTO56
60 X=X+4:IFX<28:THENB=0+1:POKE2041,8
62 IFB=25:THENPOKEV,15:POKEHF,10:GOSUB100
64 JS=PEEK(56320):GOSUB250:GOSUB270
66 IFJS=125:ANDY<28:THENY=Y+4
68 IFJS=126:ANDY>58:THENY=Y-4
69 IFJS=119:THENK=K+2
70 IFX=50:AND(PEEK(V+30)AND1)=1:THENHIT=HIT+1:GOSUB110:GOSUB350
72 IFX=255:THENK=X-255:POKEV+16,5:POKEV,X:GOTO70
74 POKEV,X:POKEV+1,Y:POKEV+6,X2:POKEV+7,Y2:POKEV+6,0:GOTO62
76 X=X+4:POKEV,X:MB=1
78 JS=PEEK(56320):GOSUB270:GOSUB250
80 IFJS=125:ANDY<28:THENY=Y+4
82 IFJS=126:ANDY>58:THENY=Y-4
83 IFJS=119:THENK=X+2
84 CO=PEEK(V+30):IF(COAND5)=5:THEN370
85 IF(COAND17)=17:THENHIT=HIT+1:GOSUB110:GOSUB350
86 IFX=80:THEN400
88 POKEV,X:POKEV+1,Y:POKEV,0
90 POKEV+6,X2:POKEV+7,Y2:GOTO70
100 FORC=54272TO54296:POKEC,0:NEXT
102 VO=54296:IFV=54273:IA=54278
104 SU=54278:IFV=54273:LF=54272
106 POKET,32:POKEV,255:POKEV+1,129
107 POKET+7,32:POKESU+7,255:POKEV+17,33
108 RETURN
110 POKELA,33:POKEVD,15
112 POKEHF,20:RETURN
120 POKEVO,15:POKELA,65:POKELF+3,0
122 FORT=1TO100:POKEHF,T:NEXT:GOSUB100
124 RETURN
130 POKEVO,15:POKELA,65:POKELF+3,0
132 FORT=100TO1STEP-1:POKEHF,T:NEXT:GOSUB100
134 RETURN
200 POKE2041,224:FOR T=1TO100:NEXT
202 POKE2041,223:FOR T=1TO100:NEXT
204 B=223:RETURN
250 X2=PEEK(V+6):Y2=PEEK(V+7)
251 IFX2<X:THENX=X2+4
252 IFY2>Y:THENY=Y2-4
253 IFY2<Y:THENY=Y2+4
254 IFM=1:THENX=X2+4
255 IFX2=255:THENX=X2+255
256 IFPEEK(2043)=236:THENPOKE2043,237:GOTO259
    
```

```

30003 DATA0,0,136,0,2,136,0
30010 REM*** GOLFER ARM DOWN LEFT
30011 DATA0,16,0,0,84,0,0
30012 DATA84,0,0,152,0,0,48
30013 DATA0,6,168,0,3,171,0
30014 DATA0,171,0,15,175,0,12
30015 DATA172,0,12,240,0,7,168
30016 DATA0,4,168,0,20,136,0
30017 DATA16,136,0,00,136,0,64
30018 DATA136,0,64,136,0,64,136
30019 DATA0,0,136,0,2,136,0
30020 REM*** GOLFER PUTTING
30021 DATA0,16,0,0,84,0,0
30022 DATA84,0,0,152,0,0,48
30023 DATA0,0,168,0,3,171,0
30024 DATA0,171,0,3,239,0,0
30025 DATA236,0,0,252,0,0,184
30026 DATA0,0,184,0,0,152,0
30027 DATA0,152,0,0,152,0,0
30028 DATA152,0,0,152,0,0,152
30029 DATA0,0,152,0,2,154,0
30030 REM*** GOLFER ARM DOWN RIGHT
30031 DATA0,16,0,0,84,0,0
30032 DATA84,0,0,152,0,0,48
30033 DATA0,0,168,0,3,171,0
30034 DATA0,171,0,3,235,192,0
30035 DATA232,192,0,0,188,192,0,171
30036 DATA64,0,168,64,0,136,00
30037 DATA0,136,20,0,136,0,0
30038 DATA136,1,0,136,0,0,136
30039 DATA0,0,136,0,2,136,0
30040 REM*** GOLFER ARM UP RIGHT
30041 DATA0,16,0,0,84,0,0
30042 DATA84,0,0,152,0,0,48
30043 DATA1,0,168,1,3,171,5
30044 DATA0,235,212,0,240,00,0
30045 DATA181,64,0,168,0,0,168
30046 DATA0,0,168,0,0,136,0
30047 DATA0,136,0,0,136,0,0
30048 DATA136,0,0,136,0,0,136
30049 DATA0,0,136,0,2,136,0
30050 REM*** GOLFER LOOKING RIGHT
30051 DATA16,85,0,20,92,0,5
30052 DATA175,0,1,188,0,0,208
30053 DATA0,0,252,0,3,239,0
30054 DATA0,171,0,0,168,0,0
30055 DATA168,0,0,168,0,0,168
    
```

```

30056 DATA0,0,168,0,0,136,0
30057 DATA0,136,0,0,136,0,0
30058 DATA136,0,0,136,0,0,136
30059 DATA0,0,136,0,2,136,0
30060 REM*** BALL
30061 DATA0,0,0,0,0,0,0
30062 DATA0,0,0,0,0,0,0
30063 DATA0,0,0,0,0,0,0
30064 DATA0,0,0,0,0,0,0
30065 DATA0,0,0,0,0,0,0
30066 DATA0,0,0,0,0,0,0
30067 DATA0,0,0,0,0,0,0
30068 DATA0,0,48,0,0,48,0
30069 REM*** FLAG
30071 DATA0,64,0,17,168,0,42
30072 DATA168,0,196,168,0,128,160
30073 DATA0,128,160,0,145,160,0
30074 DATA176,160,0,196,160,0,0
30075 DATA168,0,0,168,0,0,168
30076 DATA0,0,168,0,0,168,0
30077 DATA0,168,0,0,168,0,0
30078 DATA168,0,1,16,0,14,14
30079 DATA0,40,120,127,255,192
30080 REM*** TREES
30081 DATA0,16,0,0,56,28,0
30082 DATA124,62,0,254,127,16,16
30083 DATA8,56,16,136,124,1,192
30084 DATA254,3,224,16,71,240,16
30085 DATA224,128,1,240,128,3,248
30086 DATA16,0,64,56,16,64,124
30087 DATA56,0,254,124,28,16,254
30088 DATA2,16,16,127,0,16,0
30089 DATA0,0,0,0,0,0,0
30090 REM*** BUNKER
30091 DATA0,60,0,0,66,0,15
30092 DATA128,240,16,0,6,32,0
30093 DATA4,0,4,224,0,4
30094 DATA168,0,0,178,234,118,202
30095 DATA172,116,178,178,68,174,168
30096 DATA116,224,0,0,0,0,4
30097 DATA32,0,4,32,0,4,16
30098 DATA0,0,0,0,16,7,128
30099 DATA224,0,66,0,0,66,0
30100 REM*** THE DRINK
30101 DATA0,247,0,1,255,224,0
30102 DATA255,252,0,127,252,0,123
    
```



```

30103 DATA254,0,0,126,7,60,60
30104 DATA31,255,0,127,255,192,255
30105 DATA255,192,255,255,192,63,255
30106 DATA0,15,252,0,0,248,0
30107 DATA0,0,0,0,0,0,0
30108 DATA1,224,0,7,248,0,15
30109 DATA254,0,3,255,0,0,254
30110 REM*** MAD GOLFER #1
30111 DATA64,0,0,64,0,0,64
30112 DATA10,128,16,10,128,16,10
30113 DATA128,16,10,128,4,3,0
30114 DATA4,2,0,3,282,143,0
30115 DATA256,188,0,58,176,0,10
30116 DATA128,0,18,128,0,18,128
30117 DATA0,0,128,0,48,128,0
30118 DATA32,128,0,32,128,0,32
30119 DATA128,0,0,128,0,0,128
30120 REM*** MAD GOLFER #2
30121 DATA0,64,0,0,64,0,0
30122 DATA74,128,0,74,128,0,74
30123 DATA128,0,74,128,0,67,0
30124 DATA0,194,0,0,282,128,0
30125 DATA256,176,0,58,188,0,10
30126 DATA143,0,18,128,0,18,128
30127 DATA0,0,128,0,8,168,0
30128 DATA0,32,0,0,32,0,0
30129 DATA32,0,0,0,0,0,0
30130 REM*** MAD DOG #1
30131 DATA0,0,0,0,0,0,0
30132 DATA0,0,0,0,0,0,0
30133 DATA0,64,16,1,0,80
30134 DATA0,0,84,5,85,85,21
30135 DATA85,84,21,85,84,88,0
30136 DATA80,64,28,0,0,0
30137 DATA128,0,48,168,0,168,42
30138 DATA178,178,2,178,168,0,0
30139 DATA168,0,6,32,0,0,0
30140 REM*** MAD DOG #2
30141 DATA0,0,0,0,0,0,0
30142 DATA0,0,0,0,0,0,0
30143 DATA0,64,0,16,16,0,80
30144 DATA0,0,84,5,85,85,5
30145 DATA85,84,15,85,84,1,65
30146 DATA64,0,68,0,0,0,0
30147 DATA2,138,0,10,2,128,10
30148 DATA178,178,2,178,168,0,0
30149 DATA168,0,0,32,0,0,0
    
```

Programs are always supplied on cassette and are accompanied by full details of the program variables, how the program works and any hints on conversion you can offer. Please type these details double spaced. Listings are helpful but not essential. What is vital is that the programs should be completely error free, so please double check.

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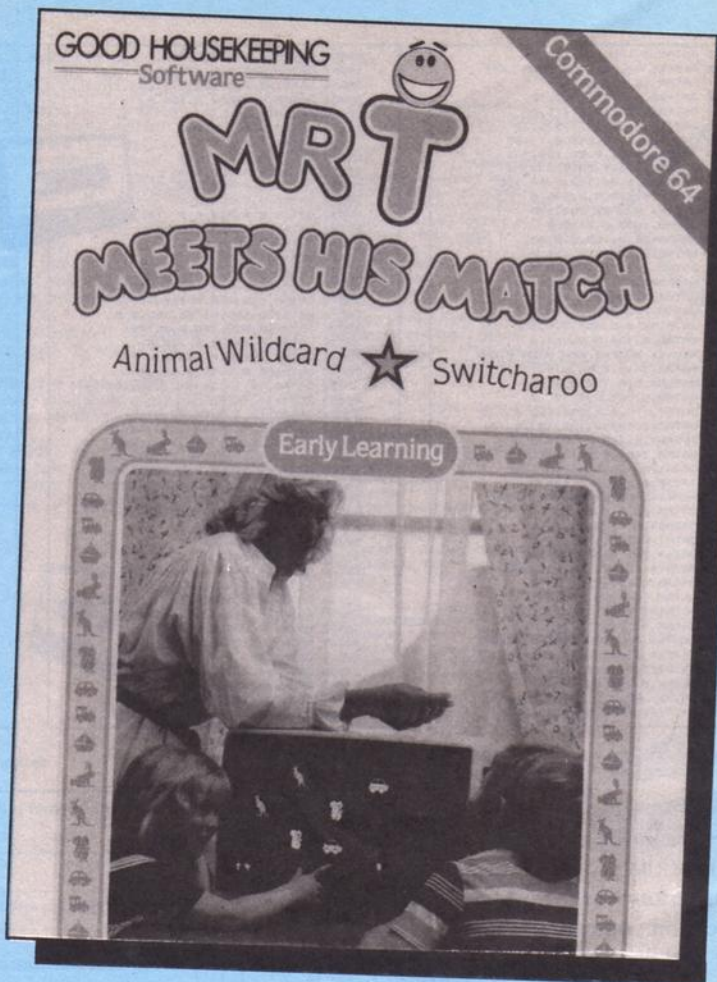
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Program submission



SWOT SPOT



Margaret Webb looks at educational programs for young and old in our regular feature

Learning is not something we do only during school or higher education days. We can learn something new every day and for those with the inclination who have access to a home computer, the doors to knowledge have been opened wide.

This month I have been looking at both ends of the spectrum — programs for the pre-school child and packages for adult learners. Pre-school education begins upon the first speak to our children and continues until the child enters the infant class. How well equipped he is for that first day at school depends upon the stimulus he has received at home in his first five years.

Good Housekeeping magazine, through its software house Ebury Software, has

produced a range of programs to be used with the three to eight year age range — see educational software article HCW Dec 11-17 1984 — which encourages the mother and child to work together. Two new titles have now been added to the range. These deal with logical thought patterns and early reading respectively.

The first, Mr T Meets His Match, is a variation on the card game Pelmanism. In this version you and your child play against Mr T. The game has four levels of play; the first two have nursery pictures, the third and third and fourth have mosaic patterns. Differing sizes, colours, etc give added difficulty and can lead to some interesting conversations with the child.

On the reverse of the cassette

is another game, Switcharoo. The screen is set out with a row of cards. At its simplest level there are three; two pictures and a blank. The object of the game is to fill the empty square with something that fits the theme, but is different in some way from the other two pictures. If the two outer pictures are a blue rabbit and a red kangaroo, the third picture can be either a blue kangaroo or a red rabbit.

At higher levels extra empty boxes are added, but always with the same rule — there should be one difference between each animal in the line. All in all this is a good package which will help your child in many ways as well as keeping him entertained.

The other new game in this series is Mr T's Jungle Stories. This consists of two reading

games for the four to eight year olds. The first, River Raft, is a beautifully animated story which deals with animals trying to hitch a lift on a raft floating through the jungle. The child helps by choosing the verb to make the animal move. This can lead to a lot of discussion about what the words mean and much hilarity in sentences like 'the elephant slithered' or 'the snake galloped'

The other game on the cassette deals further with the concept of story building. In Jungle Challenge, using a multiple choice system, the child can build up a story using a choice of animals, the size of those animals, their location and the sounds they make. As with the first game the results can be hilarious and can give hours of fun. There is also a facility to replay the story, thus giving scope to improve reading skills and memory.

These Mr T packages are available for both C64 and 48K Spectrum, and at £9.95 are good value.

Collins, another of the major publishing houses, has had a range of educational software on the market for quite a while. This has been aimed at the pre-school and primary age group. Now Collins has brought out a range of products aimed at the adult market. The BrainPower catalogue contains various titles aimed at helping the home computer owner get the best from himself and his machine. *EntrePreneur*, *Decision Maker*,

Project Planner and Forecaster are probably of most interest to anyone thinking about starting a new business venture. *Star Watcher* and *Numbers at Work* will have a wider appeal.

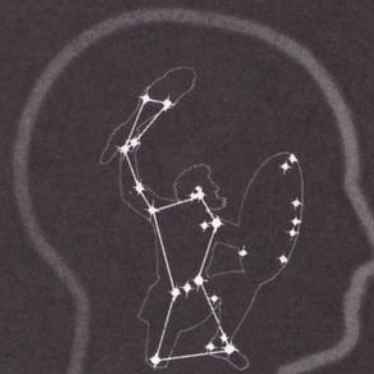
All the packages have a similar basis. They consist of two tapes and a manual. The cassettes contain a teaching program and an applications program. The manual is a well thought out textbook which can be used on it's own before using the programs or in conjunction with the appropriate part of the teaching program.

Star Watcher is a package aimed at anyone interested in star-gazing whether they be novice or expert. The teaching program can be used at a speed suited to the user. The beginner could use it as a teaching facility the more advanced user may just want to use it to revise and test his proficiency. The second cassette is the applications program. Through it's medium the night sky can be shown from any point on the earth so that you can use knowledge assimilated in the teaching program.

Numbers at Work follows the same format as the other packages in the range. The teaching program in conjunction with the manual will gently lead the user through working with fractions, decimals, percentages, growth rates and ratio. Each section is worked through on the screen and, as well as worked examples, there are problems to use as tests. The

STAR WATCHER

An observer's guide to the stars



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applications program is designed to help the user work out specific problems whether they are to do with PAYE, VAT, brokerage, interest or depreciation. In all this is a very useful package either as a mind jogger or to help you over sticky problems.

The BrainPower series is available for a number of home computers, but not all titles are available for all machines. *Star*

Watcher is only for the Spectrum (£14.95). *Numbers at Work* is for either the C64 — tape £19.95, disc £24.95 — or the Spectrum — £14.95.

Mr T Software, National Magazine Hse, 72 Broadwick Street, London W1V 2BP

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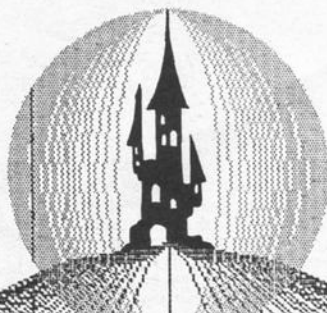
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Peter Sweasey looks at Wrath of Magra, Pitfall II and Drive In. He's also got some tips for Spiderman

VENTURES

Time to go venturing into the unknown once again, as HCW's weekly Ventures column looks at what's going on in the world of adventures and arcventures (arcade adventures, for new readers — where have you been?). This week I will be looking at the long awaited (according to the packaging) Wrath Of Magra, Pitfall II from Activision and Drive In from Fantasy, plus help with Spiderman and part two of our wonderful Technician Ted Map. So read on...

Reviews

First up, after last week's exciting backpacking visit to the caves of exile with super-hero Ziggy, another game from Fantasy. This time starring Dezy. Dezy is, unusually for computer games, female. Zooming through the universe to help her friend Ziggy defeat the infinitely evil Scarthax, she hits an asteroid storm. Her ship needs repairs, and what does she see ahead — The Drive In.

She enters, but it's a trap, set by the Dark Lord (the universe is full of nasty people!). Now she must find the parts of her spaceship which have been scattered over 189 rooms. There are 29 types of aliens out to stop her. She certainly needs the various objects lying about, but can only carry four at once. In some rooms are practical machines like banks, swap shops and time machines; in others, just huge, mysterious effigies of frogs, fish and the like. The rooms are interlinked in true maze-like style, and some doors need keys.

This arcventure is similar in

style to the previous Fantasy game, The Pyramid, but has much more content. The task of shooting aliens is not particularly difficult, although the computer doesn't always recognise when you have hit them. Much harder is trying to work out what the various objects and machines are for. This will take a long time, as will making a map, which is necessary. Graphics are very smooth and well animated, sound reasonable. The program has a very professional feel to it.

I like The Drive In a lot. However, I showed it to some people who weren't so keen. Some will find it too difficult. However, I give it a Ventures rating of ****. Worth buying if you liked The Pyramid or other Fantasy games, otherwise see it first. It costs a mere £5.50, for the Spectrum 48K.

Carnell was one of the first adventure companies to appear, with Volcanic Dungeon for the ZX81. Carnell made it's reputation on a true turkey, Black Crystal, which sold well. The third in the series, The Wrath of Magra, was announced before Christmas 1983. The program was delayed, Carnell went bust, and Mastertronic's expensive division Mastervision took over the rights. It has finally been released, in attractive packaging, with a free, beautifully illustrated novel.

The program takes far too long to load, so I set about reading The Book of Shadows. After a lengthy, Tokeinesque story, there are some descriptions of monsters you will meet, and some spells. The descriptions are pretty gruesome, but the spells are positively lethal. To kill an enemy with the Gorgon's stare, I must be carrying one part mummy dust with one part viper's tongue amongst other insalutary ingredients. Useful stuff, though probably not available from your local supermarket.

Your task is to destroy the evil witch, Magra. This is yet another game full of silly names. There are three separate programs, in the first, buy and trade food and ingredients; next

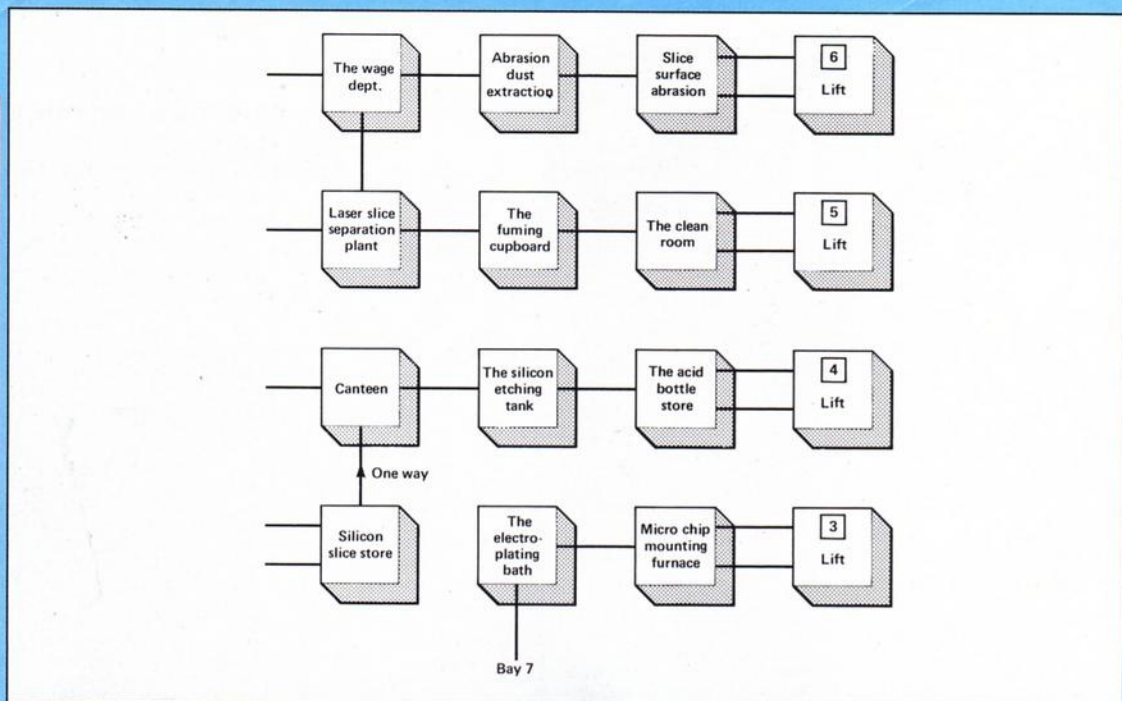
use these in spells to defeat the many marauding monsters below the Black mountains; finally defeat Magra herself, in her secret fortress.

You start, standing by a symbolic cross, in an unnamed village centre at a time close to midnight. Nearby is a stone circle, to the north is a stone forge, whilst to the south is a wizard's tomb.

There is a graphic representation of every location, in part one certainly. However, many are repeated (the forge, store and apothecary all look the same, as do sandy plains and grassy plains. Strange place!) and although some are excellent, a few are terrible and most are average. Almost all take ages to build up. Vocabulary is restricted, and there are few responses: "You can't" appears all too often. Some of the response times are deathly slow. You could be forgiven for thinking the computer had crashed when you type in ENTER SARCO-PHAGUS, for example. The program has a large chunk of BASIC as a core, and although it is not always bad, the computer doesn't accept abbreviations, so the interpreter must be very badly written.

All this is a real shame, because there is enormous potential. It is so complex, with many spells relying on time of day, or even the phase of the moon. The game could be fun, almost with the same attraction as Dungeons and Dragons. But BASIC is the wrong language, and there is an air of amateurism. Thus, unfortunately, a Ventures rating of ** — poor. It costs £12.95, for the 48K Spectrum.

Finally, Pitfall II: Lost Caverns, by Ghostbusting, chartopping Activision. As Pitfall Harry, you must enter the legendary lost caverns in Peru, rescue your niece, her dog, and collect a diamond. There are some gold bars lying about, and a rat to bring back for the museum. The caverns are eight screens across, and three times as deep. They consist of shafts, ladders, chasms, underground rivers, balloons and waterfalls, infested with eels, frogs, bats



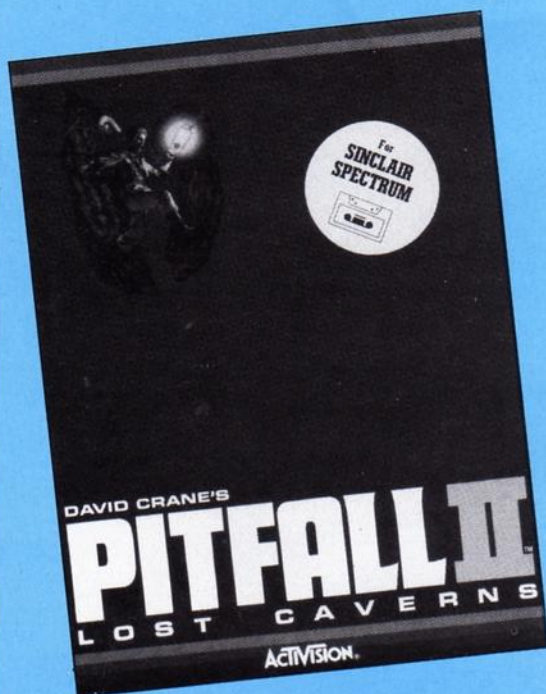
and scorpions.

This is, basically, a platform game, but potentially a very playable and original one. However, once again, I reviewed a poorly implemented version. The game is probably great on the CBM or MSX, but I reviewed the Spectrum version. I suggest Activision changes it's conversion company at once. The basic fault is the graphics; they are flickery, pathetically animated and unattractive. Another gripe is the death routine: when you touch a hazzard, you don't die, you walk back to the last ancient healing cross you touched. This often involves watching Pitfall Harry passing over nearly every screen, and taking some time to do it. This only adds to the frustration, as does the tuneless background 'music', and the incoherent instructions.

If you own a CBM 64 or MSX, this might be worth a look. However, Spectrum owners be warned, my Ventures rating is * — absolute rubbish. Lost Caverns is vastly overpriced at £7.95 for the above mentioned computers.

Helpline

Firstly, for all you arachnid superheroes, here are some Spiderman hints. There is a gem in the aquarium, but you need



to take a temperature in the penthouse — push up to climb the lift shaft. Mysterio is waiting OUTSIDE the second floor. If Sandman is being a pain in the foot, just do as the spiders do — jump up onto the roof, and hunt through the crib. Now, those hints are far too generous!

If you need a push in the right direction with Drive In, read on. The bank has purple sides with symbols on them, and a light blue slit in between. Depositing goods in these will increase your perceptage, but some objects may be needed elsewhere, so don't put everything in them. Dropping the alarm clock shared objects into the machine with the flashing bottom, if you will pardon the expression, recharges your energy, but also reduces your score and perceptage. The rugby ball shaped objects, when dropped in between the two green creatures, will also recharge.

Finally, the second part of our great Technician Ted map is below. It deals with the majority of the left hand side of the factory.

Back next week with Macbeth, The Prince, Son of Blander, hints on Dangerous In Black Forest Gateau and more. Happy venturing!

Ghost freak

I own a Spectrum and I love it! Right then, now I've got that over I can get on!

I'm writing about software piracy. I don't see what all the fuss is about. Why is it against the law? We copy records on to tapes all the time and programs off the TV and no-one seems to mind that.

I must admit that I copy the odd game or two and I could name 50 other people that do the same.

I want to thank a couple of people. Firstly Mastertronic for bringing out the £1.99 games range. Secondly, I would like to thank British Telecom for the Firebird range. When I go into software retailers I look for any good cheap games. I picked up Booty by Firebird and when I ran through it on my computer — wow! the graphics! the sound effects! It's not every day you find games like this, especially at £2.50.

Finally I would like to thank Activision for releasing Ghostbusters. After reading the book, playing the record, watching the film, reading the book again, and then buying the game I am really a Ghostbusters addict. But please could someone tell me why the price is not right. It is very wrong. Why, why does it have to be priced at £9.99?

Kevin Ringrose, Brixworth

At present there is a bill going through parliament which hopefully will clarify the legal position of software piracy. Surely the reason why software piracy should be illegal is because people spend months writing and producing programs, so it's only fair to pay them for all their hard work.

Joystick option

I'm writing to help any TI-99/4A owners who would like to play Hunchback Havoc by Lantern software, but can't because they don't own joysticks. Typing in the following lines will convert the program for use with the arrow keys.

```
1060 CALL KEY(),K,S)
1090 IF K=101 THEN 1140
1100 IF K=120 THEN 1530
1110 IF K=100 THEN 1360
1120 IF K=115 THEN 1720
```

Now the game can be played with the arrow keys, but make sure the alpha-lock is in the up position.

Also, if anyone is having trouble getting through the sheets on Hunchback Havoc, type in the following line:

```
1070 T=T-1
```

Now, the longer it takes you to put out the fires, the more time you will have to collect the jewels and go on to the next sheet.

Jon Paul McCalmont, Brecon

Make it better

With reference to the ZX81 program, Full Screen Editor, in HCW 97, may I point out a possible error. Perhaps it's just that it's slightly blurred in my copy, but line 230 has "Let cursor+Dfile +L+33 +C+1" when there should be a * instead of the + before 33.

May I also suggest an enhancement to enable the cursor to go automatically to the start of the next line when it reaches the end of the line above:

```
375 IF C = D32 THEN LET L = L + 1
```

Finally, many thanks for continuing to support the ZX81.

L W Oliver, Perth

Mine's best

I am an 11-year-old owner of a TI-99/4A which I have had for two years.

At my school nearly all my mates own a computer. Five own Spectrums, one owns a C64, one an Amstrad, one a C16, three have BBCs, Electrons, TIs and VIC-20s.

My best mate boasts that because the Spectrum has the most games it is the best computer. But who cares when the TI has games like Buck Rogers, Indoor Soccer and many more? Maybe the Spectrum and C64 are best sellers, but three TI owners out of one class isn't bad considering the popularity of the 64.

While I'm writing I'd like to thank HCW staff for producing a magazine that covers all these machines at low cost compared to many others.

Mark Taylor, Leigh

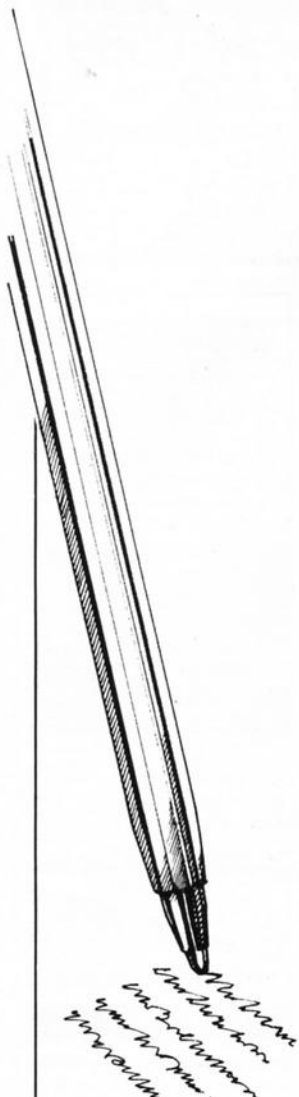
Easy to program

I have just obtained a C16 and am very pleased with its performance and the ease with which I can program it. For the past three weeks I have bought HCW which I find interesting and very useful as it contains a few advertisements for software for the C16.

However, I would like to see a few C16 programs in HCW's curriculum. As, on the whole I enjoy HCW very much, please could you try and include programs for the growing number of C16 owners in the country.

Kevin O'Connor, Airdrie

Thanks for your praise, Kevin. In HCW 101 we featured our first C16 program and hope to continue supporting this machine. However, we rely on readers' submissions for programs, so we need C16 owners to send their programs to us.



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User Groups

TI-99/4A Nationwide User Group
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Linda wins willy nilly

Solution to last week's puzzle

Chips and grater belong on the other side.

In one bag each word contains within it a part of the body: a**l**ARM clock; to**m**ATOES; HE**A**R**T**hug; c**H**AIR. c**H**IPs belong with these.

In the other bag each word contains a creature: s**k**EW**E**r; s**P**IG**o**t; ball**B**E**A**R**i**ng; p**E**E**L**E**r**; g**R**A**T**e**r** fits the bill.

Readers' jokes

What did Esmerelda say to Quasimodo?
Your face rings a bell

Elliot Mason, Hove

Trendy teenager: I would like to purchase a computer
Assistant: Dragon?
Trendy teenager: No — this is the way I normally dress

Eric Waters, Solihull

What do a computer and a piranha have in common?
They both have plenty of bytes

Alun Davies, Cardiff

Readers' hi-score table

Name	Game	Machine	Score
Oliver Brown	The Attack	TI	154,900
	Crazy Caver	TI	334,070
Linda Mulcahy	Jet Set Willy	Spectrum	35,221
Alan Dando	Pyjamarama	C64	95%
	Daley Thompson's Decathlon	C64	260,977
Robert Baker	TI Invaders	TI	14,148
Vincent Whitfield	Parsec	TI	2,734,200
J Murray,			
A Boardman	Munchman	TI	190,900
Jon Chatten	Attack of the Mutant Camels	C64	92,345

Send in your hi-scores to HCW. If you enclose a photo, we'll try to feature that, too.

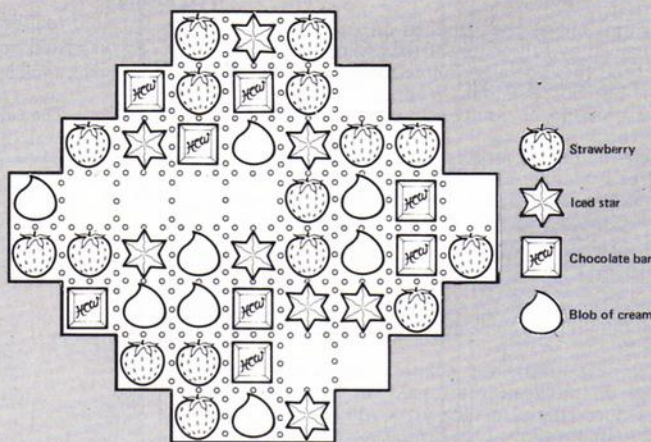
Strawberry shares

Dividing a cake between two argumentative children is quite easy — let one cut the cake and give the other first choice of pieces!

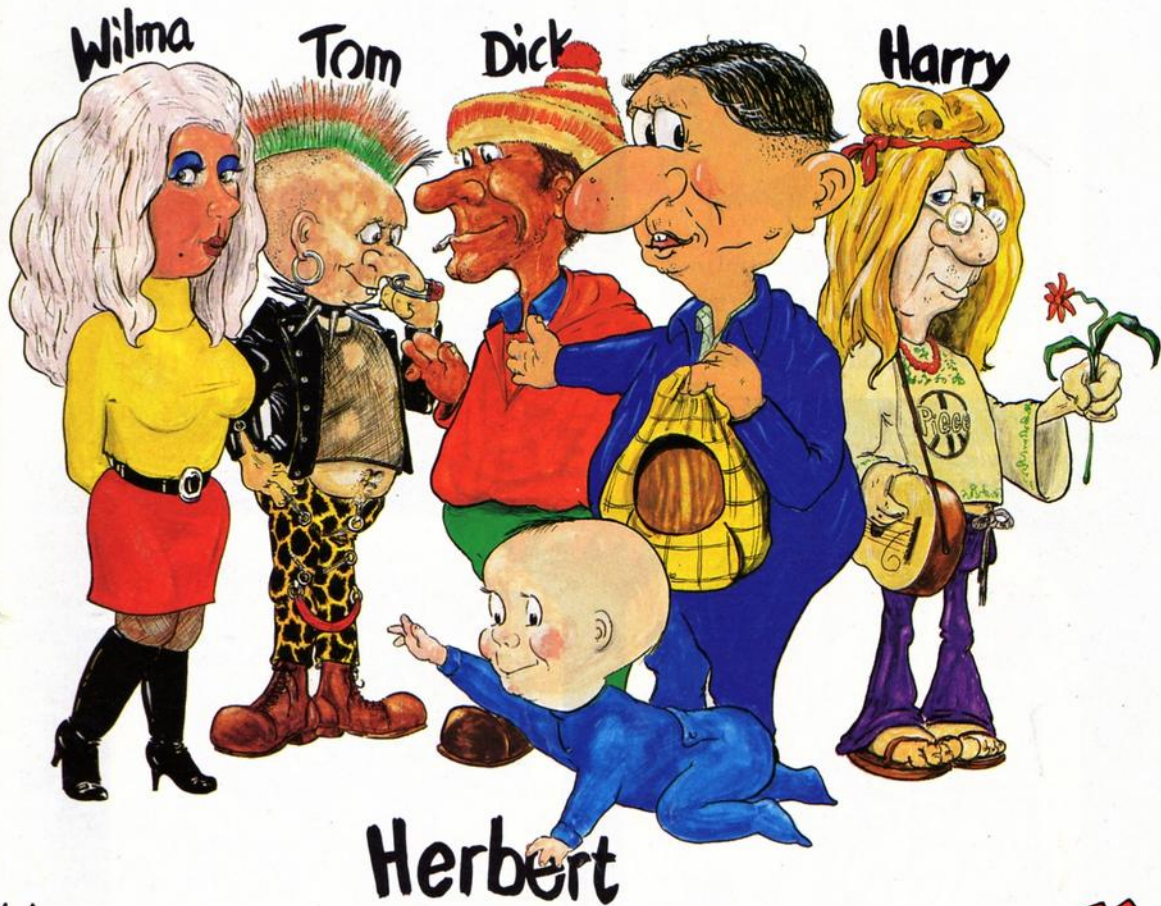
But this party slab is more difficult. It is to be cut into eight pieces — each the same size as the others — and each

piece must have one star, one bar, one blob of cream and two strawberries.

Fortunately, it can be done by straight cuts following the dotted lines of "hundreds and thousands". Can you mark out where the cuts should be made to produce the eight equal shares?



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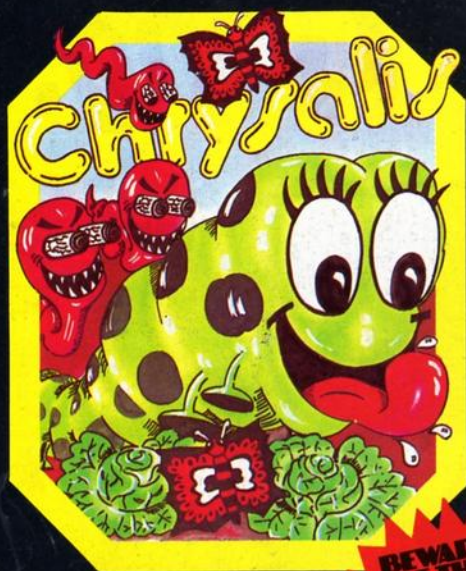
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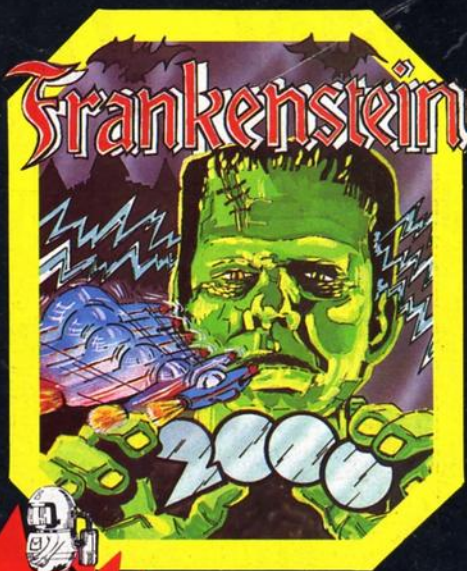
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CHRYSLIS...

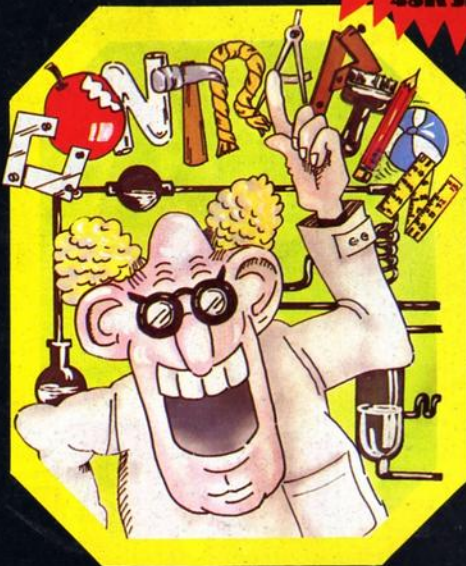
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MSX...£6.95 Spectrum...£5.95



FRANKENSTEIN 2000...

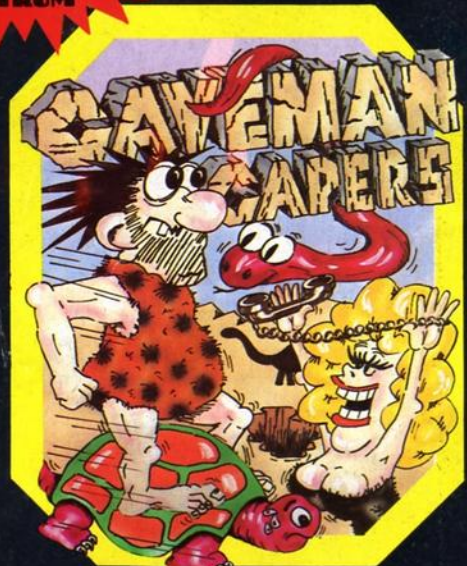
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