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# CHOICE

January  
1984

60p

# COMPUTER



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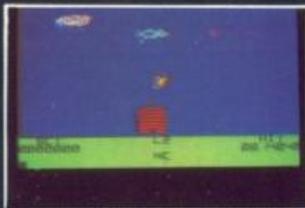
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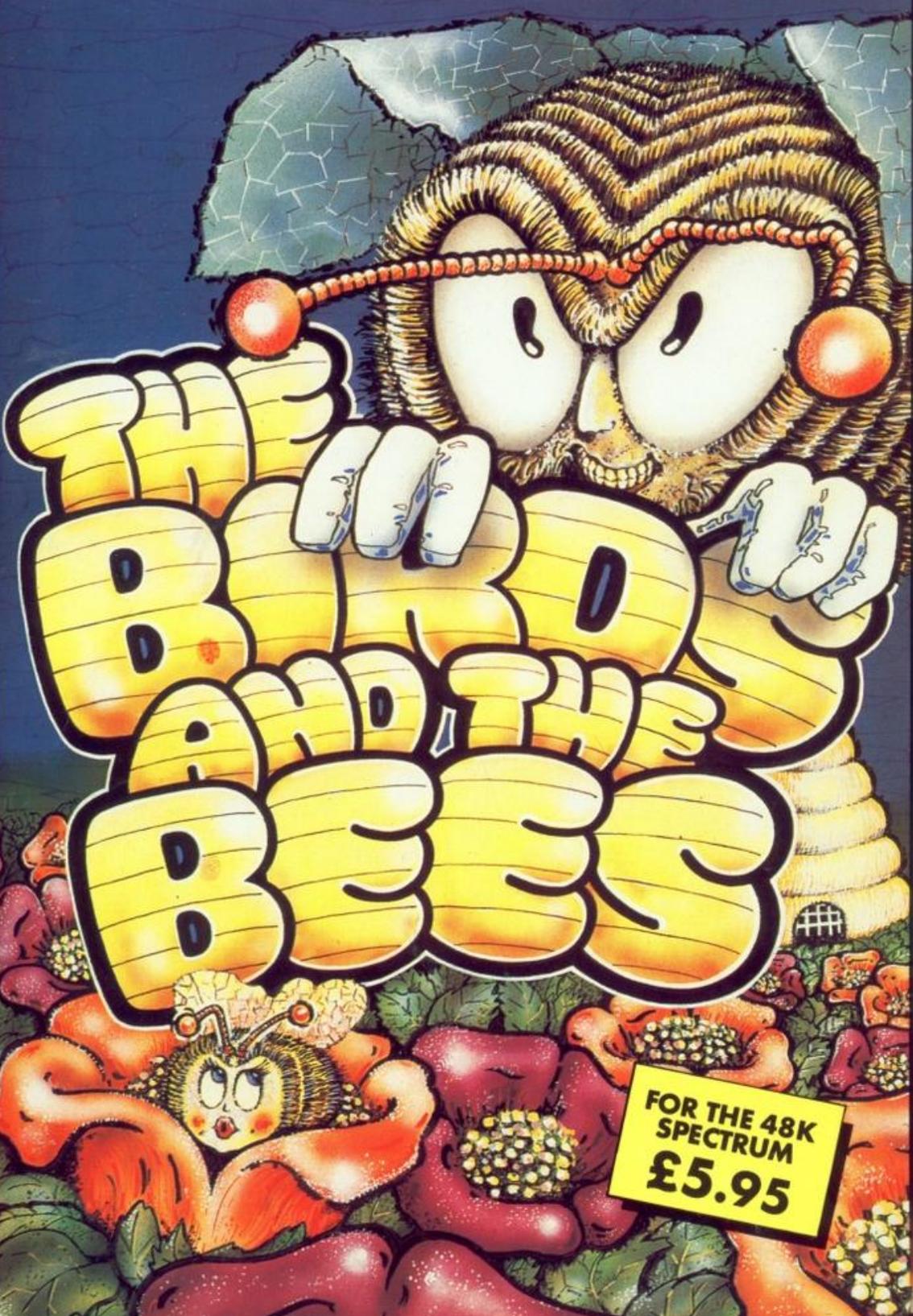
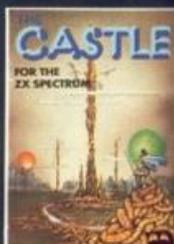
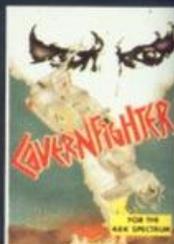
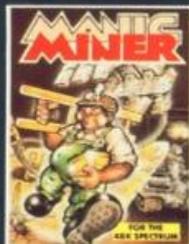
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# CONTENTS

## 7 EDITORIAL

A new language.

## 8 NEWS

Read all about it!

## 11 GAMES CHECK

Packed pages of software for the Spectrum, Dragon, Vic and Atari.

## 23 SPECTRUM REPORT

What do users think of their micro?

## 26 TRIPLE TEST

Electron, Dragon and Genie, Bill Bennett samples their delights.

## 34 WATCHING THE DETECTIVES

*Computer Choice's* gumshoe Paul Bond investigates . . .

## 42 BUYER'S GUIDE

A round-up of micros under £200 — with a special look at the Commodore 64.

## 54 ROM AND RAM

What does it all mean? See our pull-out.

## 58 VIDEO GAMES

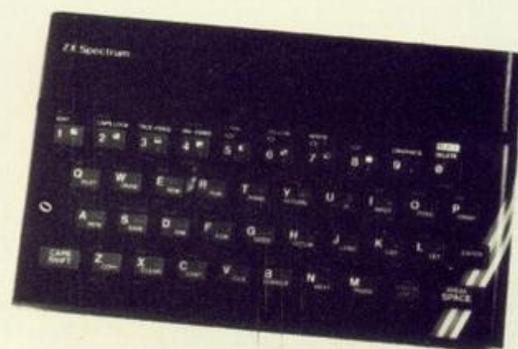
Kirstie Rogers takes a look at the alternatives to playing games on micros.

## 62 ADVENTURING

A page for all you Go North — Take Treasure fans.

## 66 MICROLEARNING

Teaching with a Spectrum.



## 68 PIMAN AND GROUCHO

Debbie Goldfinch passes the time of day with two of microcomputing's biggest stars, but keeps her sanity.

## 77 SIROB

You think you've got problems? Wait until we ask SiRob.

## 78 VIC GUIDE

We give the low-down on software for the Vic.

## 84 JUST NOT CRICKET

While away the winter evenings with our match by Fin Fahey.

## 90 SOFTWARE CITY

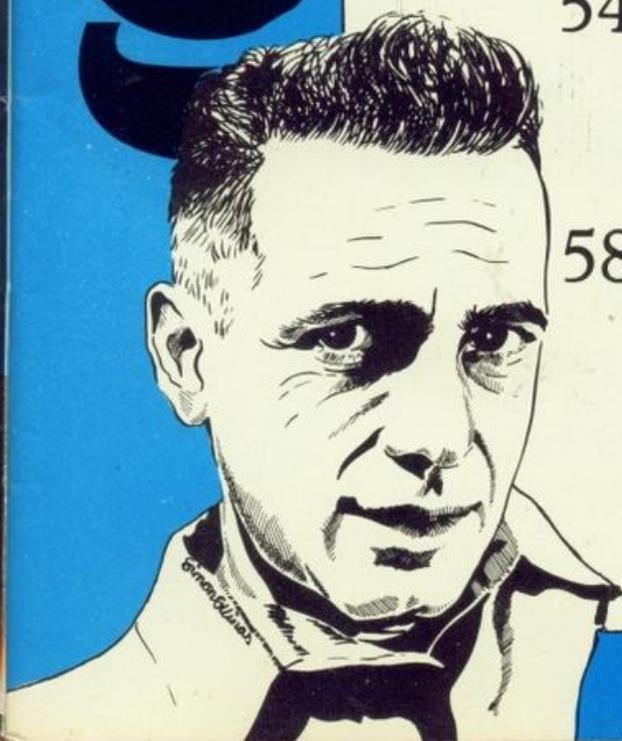
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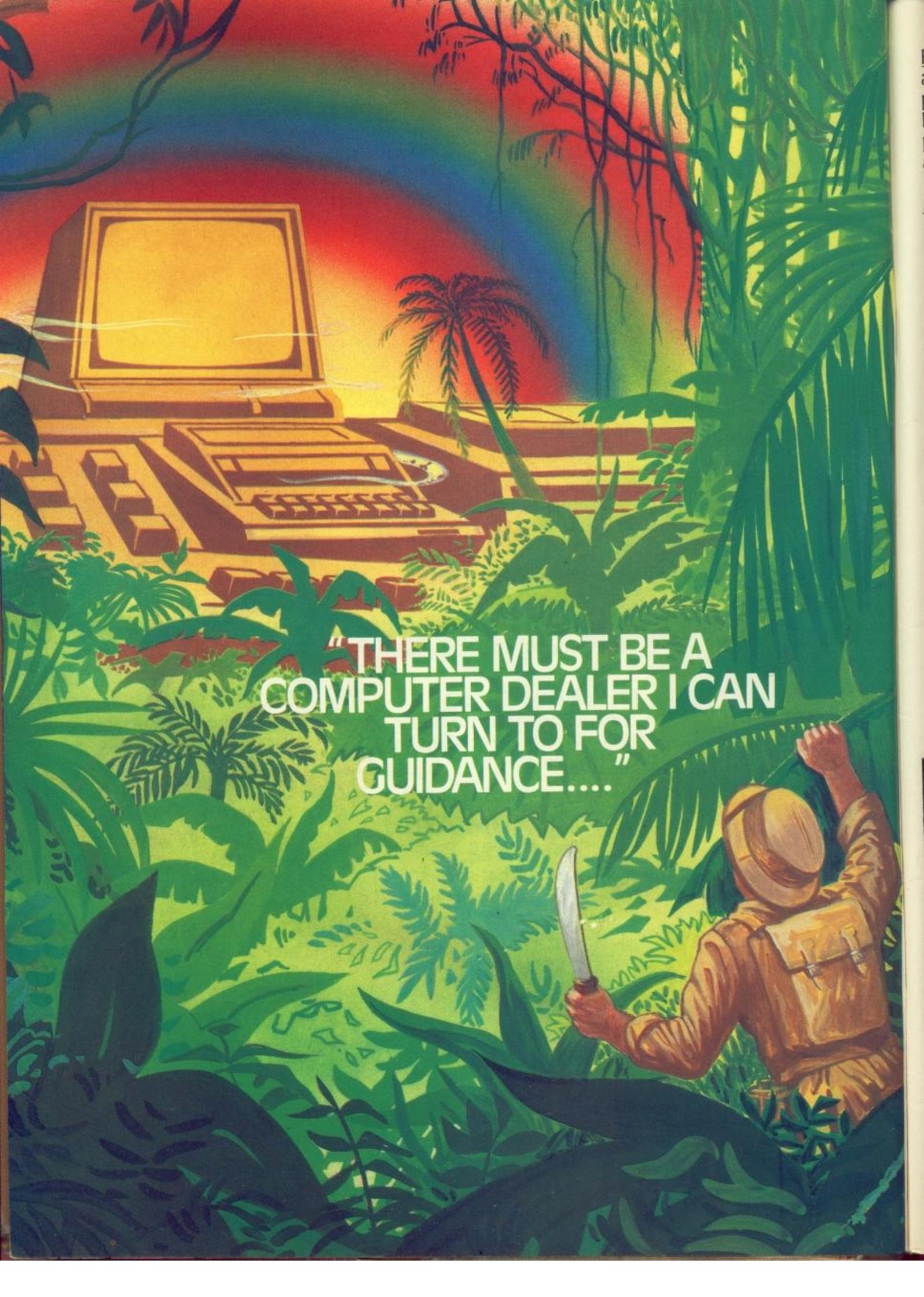
## 99 IN-TRAY

We empty the contents of our software in-tray.

## 100 STARTING OUT

Piers Letcher introduces the Basic language.





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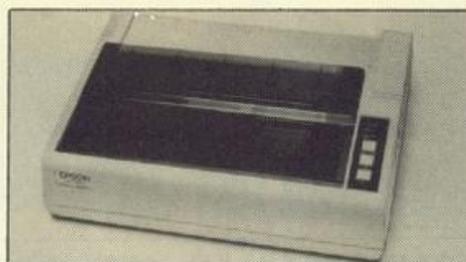
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# CHOICE

**B**efore the year is out we will all be heartily sick of references to George Orwell's 1984. I thought I'd get in first. I'm not going to write about Big Brother, but the language invented by Orwell called Newspeak.

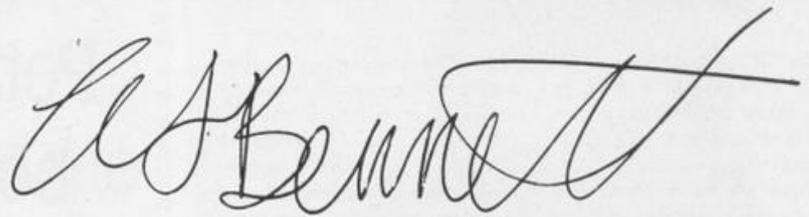
The idea behind Newspeak is that words shape the way we think, if certain words are not available, then neither are the thoughts. Newspeak was used for propaganda, and is unlikely to arrive for some time. Computerspeak is used by people in the micro industry, and is with us now.

By Computerspeak, I don't mean jargon words like RAM or byte, though these can cause the beginner enough problems, it is the private language of people involved in computers.

What concerns me is the Computerspeak advertisements for micros, using a fantasy language thought up by Marketing men and advertising agencies.

In Computerspeak a horrible little keyboard that isn't going to last long is called "professional", something that is grossly unwieldy is called "flexible", things that are difficult to use are dubbed "easy" and so on.

What I hate most of all about all this is the periodic upping of all the claims. One leads and the rest follow. The trouble is that by now the language is so debased that when something really good does come along there are no adjectives left to describe it.



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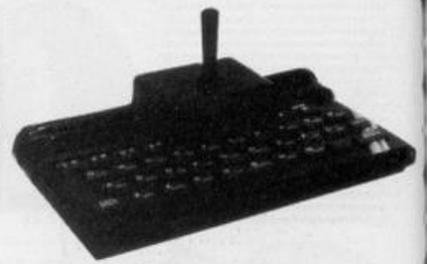
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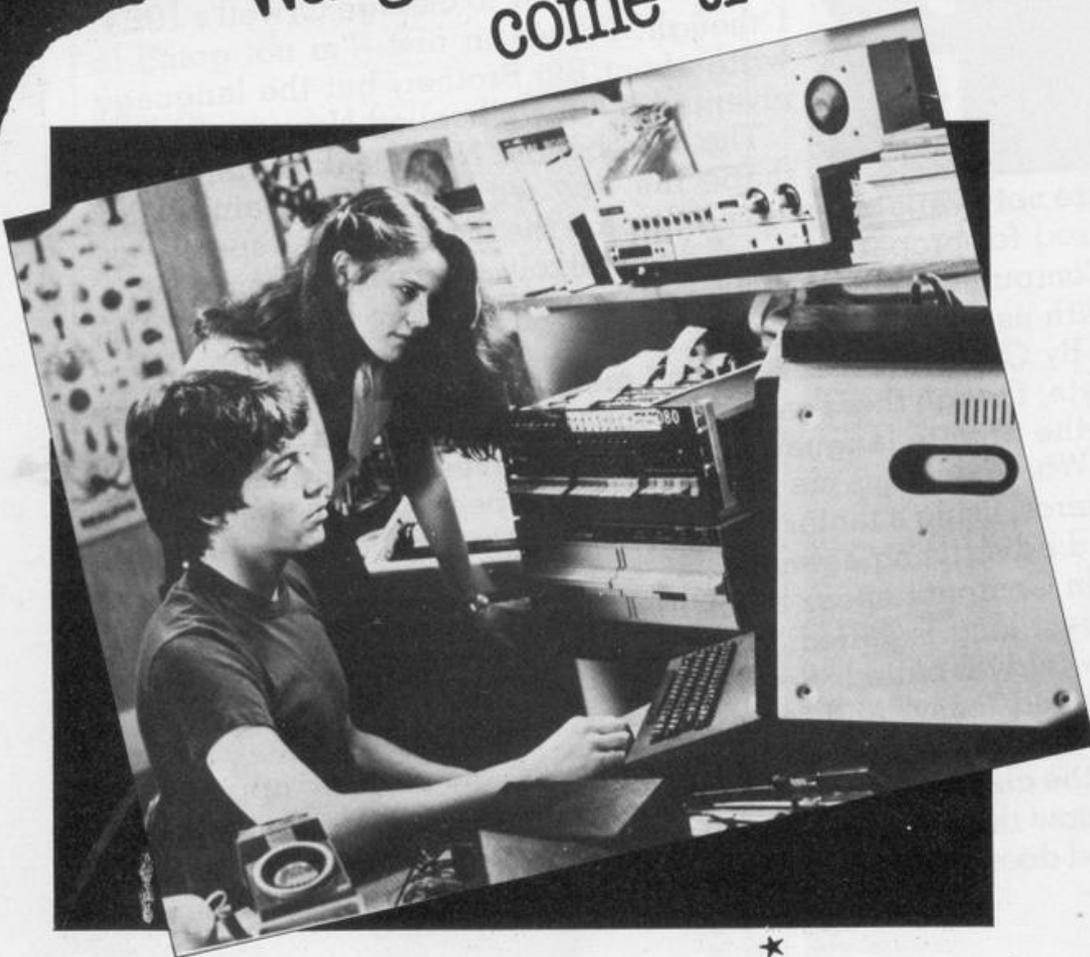
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# NEWS



Wargames  
come true



THE film "Wargames" is not so far fetched as we might like to think. In the film, David and Jennifer, shown in the picture, use a home computer to alter Jennifer's exam results — at last an intelligent use for the micro. But one thing leads to another, and our heroes find they have bought the world to the brink of a nuclear war, when David accidentally breaks into the USA defence department's Wargames computer.

It could never happen, you might well say, but in Los Angeles recently a teenage student tapped the Pentagon's computer network. Ronald Austin, aged 19, is accused of using a Commodore 64 to break into ARPANET — the advanced research projects agency network. He now faces 14 charges and the possibility of three years in jail.

The Pentagon was swift to disprove any links between this and the film saying that although "sensitive" information was tampered with, "classified information has never been accessible through telephone dial-up of the network" — are you convinced?

Ronald Austin, who had been turned down for a computer course at university, was caught when officials noticed that some dormant data banks had been activated.

The FBI and a computer detective traced the calls to Ronald's parents' home. So beware all you would-be hackers (term used to describe the new wave of criminals who are computer-mad characters hell bent on electronic break-ins) — the Pentagon has ways . . .

## Peter's book

THE Joy of Computers is a new book that would make an ideal Christmas present for the computer enthusiast. Written by Peter Laurie, ex-editor of Practical Computing, this colourful book represents rather good value, being full of colour and a hard-back, but costing only £9.95.

It isn't just a coffee table book though, inside it is filled with Peter's own insights and observations on the subject, as well as an interesting and stimulating introduction to the subject for the newcomer. The Joy of Computers is published by Hutchinson.

## Spectrum joystick

NO this Spectrum isn't being held in a vice, what you see here is a mechanical joystick. The idea is that you don't need any extra bits, you just clamp it on and away you go — instant access to a world full of androids and galactic mega-beings.

It costs £9.95 and is available from Oxford Computer Publishing, Brimrod, 4a High Street, Chalfont-St-Peter, Buckinghamshire SL9 9QB. Tel. (0753) 888866.

## Spectrum releases

NOW you can make up your own games. Galactic has come up with Games Designers, which costs £9.50 for the Vic-20 and for the CBM 64 costs £11.50. So you can have monsters and kangaroos, bombarded by aliens and asteroids — it's up to you. Everest Ascent involves hiring sherpa, buying rations and equipment and conquering all 29,141 feet of Everest within 20 days. From Richard Shepherd Software, it costs £6.50. Also from Richard Shepherd Software is Ship of the Line, £6.50, a strategic adventure set in the 17th century. You are in command of a Royal Navy Warship and your goal is to be promoted to First Sea Lord, by fair means or foul. Both of these games are available for the Spectrum and the CBM 64.

Another new company has entered the software race, Mondatta is hoping to cash in with Taxman and Supercopier. Both are supposed to be nerve-tingling arcade games and to encourage you to buy them you get a free entry form for a draw, first prizes are a CBM disc drive and a printer. Five new games from PSS are Metro Blitz, Moby Dick, Cosmic Split, Krystals of Zong and Neoclyps. All are of course wonderfully exciting and cost £7.95.



## A far cry from Parliament

FROM Prime Minister to software publisher, Harold Macmillan certainly gets around. His latest venture is with Sir Clive Sinclair — this is sounding like Who's Who. They have released nine educational programs for 5-12 year olds.

Harold Macmillan was prime minister from 1956 to 1963, and Macmillan Education is his family business. Founded in Cambridge in the 1840s, it is a leading textbook publisher.

Macmillan Education and Sinclair Research have jointly produced the educational software. Five programs form the "Learn to Read" series and are based on Macmillan's primary school reading course entitled "Gay Way" — a few years back this would have seemed an innocent enough title. There are another four programs, "Science Horizons", that use graphics to explain scientific ideas.

The Learn to Read series is for little ones, 5-7, and teaches them the alphabet and how to put sentences together using friendly animals and games to keep up their enthusiasm. Science Horizons is for 8-12 year olds and teaches science concepts by utilising real-life simulations. In "Glider" the pilot must take into account cloud cover, the lay of the land and the time of day in order to stay airborne for as long as possible.

For would-be gamekeepers "Survival" models the hazards that wild animals face while struggling to stay alive. The other two programs deal with the principals of magnetism in a game called Magnets and balance in a simulation called "Cargo".

These programs will be available

from major retailers by Christmas. You can get them now by mail order from Sinclair Research Ltd, Stanhope Road, Camberley, Surrey GU15 3PS. Tel. (0276) 685311. Schools can order from their usual suppliers or direct from Macmillan Education, Houndsmill, Basingstoke, Hampshire RG21 2XS.

## New software

SINCLAIR Research seem well into education at the moment, as well as the venture with Harold Macmillan, this month also sees six new spelling and punctuation programs which are designed to entertain as well as educate 5-12 year olds. Developed by **Blackboardsoft** for the 48K Spectrum they cost £7.95 each.

**Pss** is going inter-continental with its release of "**Krazy Kong**" and "**Hopper**", both for the 48K model. The games should hit the UK, Italy, Spain and Australia simultaneously. Four games from

**Abacus** are unusual in that they have a **B side Bonus**, that is a game on the other side. These two-game cassettes are called "**Fire Flash**", "**Proteus**", "**Galactic Warriors**" and "**Munnery's Mergatroids**", all run on any Spectrum except the last which is for the 48K only.

A new 3-D game, "**Death-chase**" comes from **Micromega** along with "**Starclash**", a multiple-screen space game designed to challenge the player's skills. Both cost £6.95.



**ATARI** has always had a good name for software. The best games are available on the Atari range of machines, and now some of the favourites are available on other home computers under the **Atarisoft** label.

For the Spectrum is a cassette version of **Pacman** which is really very good, but a bit expensive at £14.99. **Centipede** is also on cassette but runs on the **Dragon 32**. There is a much

fuller range of plug-in cartridges for the **Vic-20**, the **Commodore 64** and the **TI 99/4**, which includes **Dig Dug**, **Donkey Kong**, **Defender**, **Stargate**, **Robotron**, **Centipede** and of course good old **Pacman**.

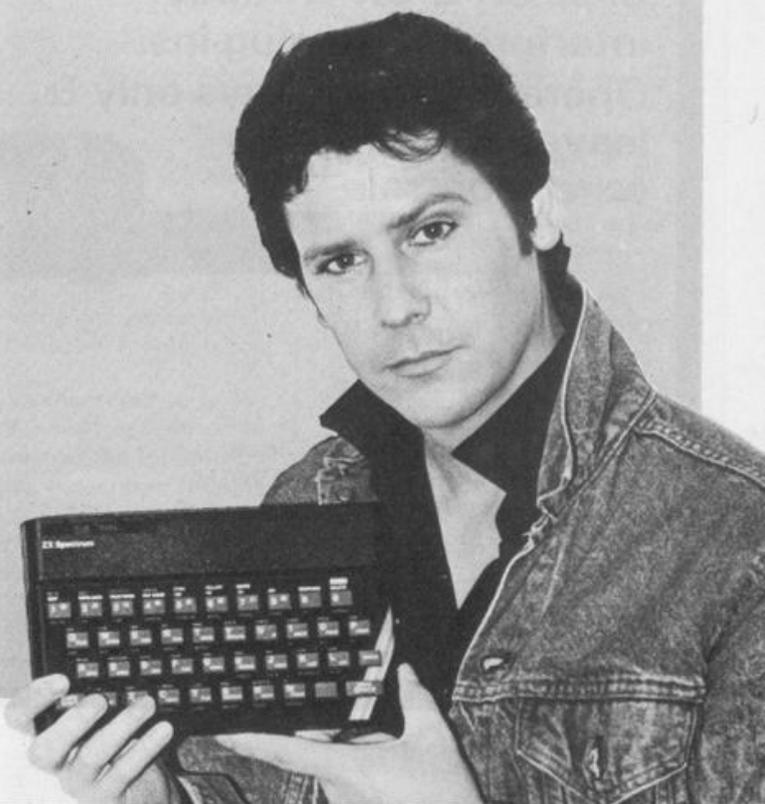
The cartridge games cost between £19.99 and £24.99 and will be available in a large number of the usual stores.

## Shaky's own game

*NOT content with success in the record charts, Shakin' Stevens is about to hit us with **The Shaky Game**. But to get your hands on a copy of it you have to buy a cassette, and only a cassette, not an album, of his new LP "The Bop Won't Stop".*

*In the game you have to drive Shaky to his ole house, which is not the luxurious mansion you'd imagine. It is surrounded by killer vampire bats that attack the car.*

*Written by Olympic Software for the 48K Spectrum its bound to go down well with all his fans.*



# 3 WAYS TO GET RID OF LOADING HEADACHES



The majority of the problems suffered by micro-computer owners are due either to slow or poor loading, resulting in crashed programmes and frustration. Here are three ideas for dispelling these headaches.

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## EASILOAD

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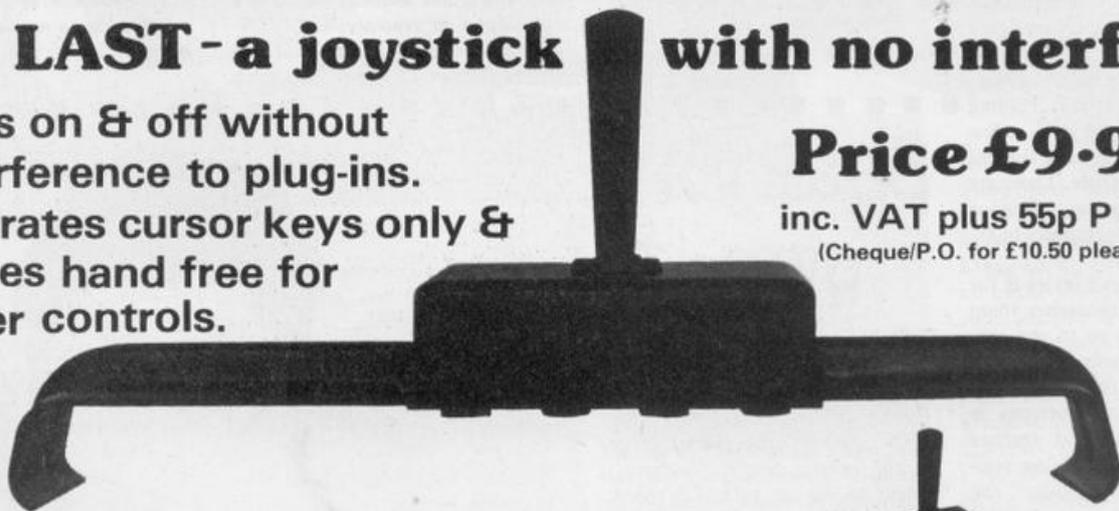
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CC 1/84

My name is Uncle Groucho  
you win a fat cigar

PROGRAM  
OF THE MONTH

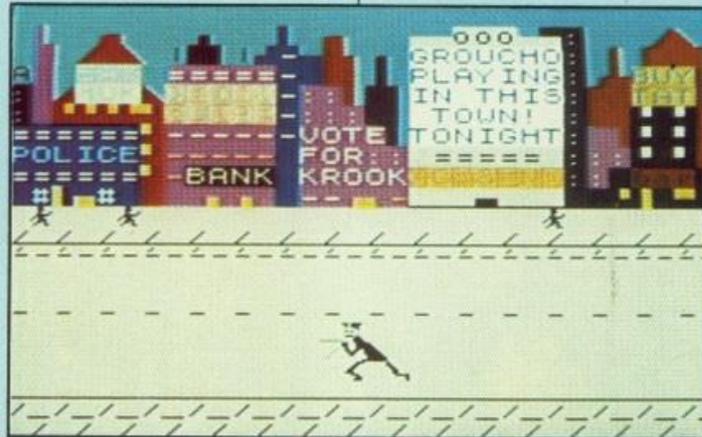
**Automata (Spectrum)**

"GROUCHO" is a very rare type of computer program, because the whole family can join in. By the "whole family" I mean Aunts, Uncles and Grandparents as well as Mum, Dad, the kids, the dog and Fred the goldfish. Not only is it a game which you can play for enjoyment, there is a prize for the person who identifies the mystery star contained in the program. It isn't exactly difficult. I thought I knew who it was after a couple of clues, after a dozen I was sure.

The game is partly an adventure-type game, and partly a quiz. The adventure part isn't about wandering about in caves filled with the kind of monsters you see when you eat cheese and pickle for supper. In this adventure you have to travel around the United States, by train, wagon or space shuttle.

If you try the boring old "go north" type of command . . . well you'll find out. What makes Groucho so much fun for the family is the part of the game when you find Groucho, because then you have to guess which movie star he is impersonating. My Mum would be good at that.

Once you discover who Groucho is impersonating, you get another clue as to the identity of the mystery star. Scattered around the game at various points are some of the most

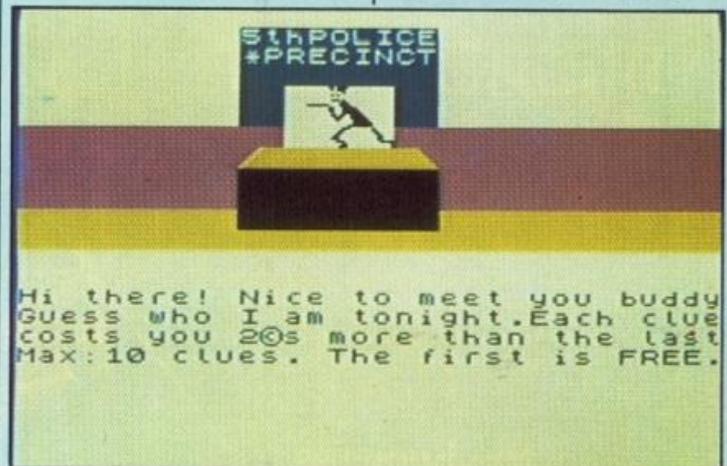


awful jokes you have ever heard, most of them are as old as Groucho himself. They had the entire *Computer Choice* staff groaning.

The full name of the program is "My name is Uncle Groucho you win a fat cigar", which tells you a lot about the people behind this program, they are nutcases. Before Uncle Groucho came along, Automata was responsible for Pimania, and there are a number of references to that program in Groucho.

If you are a "Pimanic" — that is a follower of the Piman, then you will see his cheeky face appearing all over the shop. There are a couple of references to Pimania thrown in to the game, as well as at least one computer joke — which I shan't tell you as it will spoil the game.

The price of the game is £10,



which I felt to be a bit steep for a Spectrum game, especially as the novelty of Uncle Groucho will wear off eventually. I suppose the high cost might be due to the

appearance money paid to all those film stars, but I doubt it.

**Bill Bennett**

**RATING** [Progress bar showing 4 out of 5 stars]



**A Lone Programmer scores with Atari**

THIS month's whizz programming kid is Justin Whittaker, whose first game, *The Lone Raider*, was recently launched by Atari. *The Lone Raider* is an action-packed PacMan-type game which can be played on any Atari.

Justin (17) taught himself to write programs on an Atari and decided that this was the career for him when he left school at 16.

His ambition was realised with his game in which the hero boldly breaks into and destroys an alien nuclear power plant. In the course of the mission he must negotiate obstacles and encounter enemy guards.

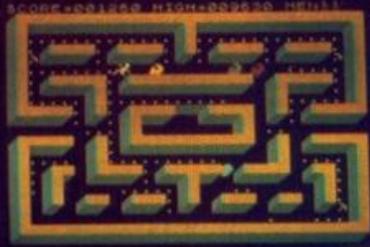
*The Lone Raider* is also important to Atari. It is the first program to be launched thanks to its UK Software Development Centre. Atari is hoping the Centre will encourage its users to write programs that will appeal to us here in the street!

**SOFTWARE** reviews throughout *Computer Choice* are rated out of five, from Brilliant to Dullsville. The rating values are shown below.

BRILLIANT	■ ■ ■ ■ ■
EXCITING	■ ■ ■ ■
WORTHWHILE	■ ■ ■
MEDIOCRE	■ ■
BORING	■
DULLSVILLE	



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By M.J. ESTCOURT



**HAUNTED HEDGES**  
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# AT LAST, A HOME COMPUTER THAT IMPROVES WITH AGE.



## It's surprising how many first-time relationships with a home computer go sour with age.

You buy an attractive, discounted little machine so that you and the children can learn about computers.

Instead, you learn about its limitations: the dull graphics. The plugs that fall out. The cheap power supply. The unalterable "beginners" language. The stiff, fragile keys. No provision for future developments. If only you'd looked around a bit in the beginning... "Quality costs a little more, but it's usually worth paying for" (Personal Computer News - CGL M5 Review, June '83.)

The CGL M5 is designed and built by Sord, one of Japan's leading computer specialists, with three main ideas in mind.

First, to be easy and fun to learn and operate.

Second, to be rugged enough to last through hours and hours of operation.

And third, to form the basis of a powerful, versatile home computer system that won't need replacing until you're ready for a dedicated business system.

### Built to learn

The CGL M5 is designed to be easy for non-geniuses to use.

"On the M5, most of the work is done for you, and all that is left is the need to work out what to do next, rather than how to do it." (Personal Computer News, June '83.)

If you make a mistake, you can correct it with a simple movement of the cursor. So you only correct that mistake, not a whole line; nor do you have to indulge in complex edit commands.

Budding video game designers and computer artists will love to get their hands on the 16 colour graphics and 32 moveable images called "sprites."

"The M5 makes professional graphic

effects very simple for even the beginner to achieve." (Personal Computer World, Aug. '83.)

### Built to last

"It works first time, doesn't need a lot of mollycoddling and jiggery-pokery to persuade it to continue to do so, and what's even better, it continues to work well. You don't have to balance cold cartons of milk on the top, shove matches in the back to keep the plugs in, or press the keys with several pounds force to make them respond." (Personal Computer News, June '83.)

Being able to build things that work and carry on working without endless maintenance is something at which the Japanese seem to excel.

### Built to grow

To be truly versatile, a home computer has to understand very different things.

So you need different "languages," which the M5 provides by supplying part of its memory in plug-in cartridges.

"The M5 eliminates the worst limitations on machines at this level, which is that they tend to be stuck with whatever language is provided by the management." (Personal Computer News, June '83.)

The computer is supplied complete with a Basic-I cartridge, a standard integer BASIC language and a simple learning text.

Plug in the Basic-G cartridge, and you can access the M5's incredibly sophisticated graphic and sound capabilities which are far in advance of similarly-priced computers.

Move on to the Basic-F cartridge, and you have scientific, technological and statistical computing power usually available only

on big computers with equally big price tags.

The FALC cartridge provides a tailor-made language for data management, spreadsheet accounts and business problems. Combine FALC with a disc and you could "turn the M5 into a small business machine." (Personal Computer Magazine, August '83.)

Now, take a look at the back of the M5.



Notice the sockets (usually an extra) for a standard

Centronics-type printer, the separate video monitor and hi-fi sound output.

Even the language cartridge socket has hidden potential:

"Unlike most such sockets, this one has 56 internal lines connected to it giving access to just about every function in the computer. This means that just about everything you can think of can be added onto the computer, ranging from a Prestel interface to second processor to use as an intelligent terminal on a timesharing computer..." (Electronics - The Maplin Magazine, March '83.)

Take a look at the home computer that will improve with age.

For a full technical specification of the CGL M5, details of the wide range of supporting software and to find out where to see a complete demonstration, send the coupon to: CGL, CGL House, Goldings Hill, Loughton, Essex IG10 2RR. Telephone number: 01-508 5600.

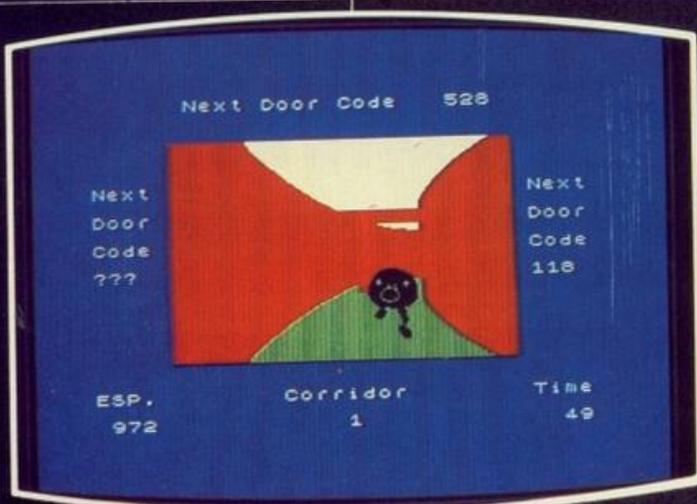
I'd like to know more about the CGL M5. Please send me a brochure and a list of dealers. CC2

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**CGL M5**  
HOME COMPUTER

BUILT TO LEARN. BUILT TO LAST. BUILT TO GROW.



### Corridors of Genon

## Corridors of Genon

New Generation Software

YOU CAN tell that New Generation Software was pleased with this one even before you plug in, load up and go. It's the five hundred words of scene setting on the cassette insert. The TV screen is your eye into a three dimensional maze. A passage curves away from you into the distance. Sliding doors open and shut as you approach. They can only be opened by typing in a code shown on the screen.

The problem is that the code disappears when you turn to face the door. Worse, as the game progresses, the code vanishes sooner — you have to remember for longer. The aim is to get to the centre of the maze before a nasty called

Bogul (no sniggering at the back please) gets you. You know it's coming because you hear it's footsteps get louder.

If you turn around, a beach-ball with a trumpet instead of a nose strolls over and blows you away. It would be a wonderful game indeed if corners had not been cut somewhere. The maze is repetitive, and it takes too long to get to a challenging level once you've got the hang of the first bit.

Sensitive souls beware, being attacked from behind by a Bogul is scary. The net effect is sometimes to generate fear without excitement. This game is certainly above average. £5.95.

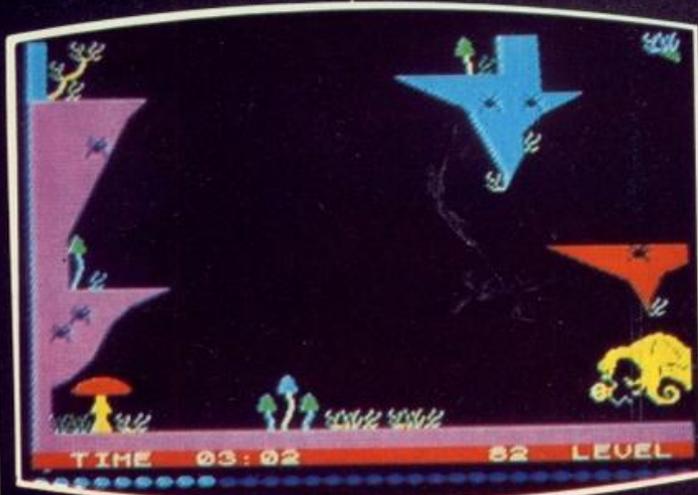
Danny Green

RATING

## Bugaboo

Quicksilva

BUGABOO is the cutest of the cutey games. It starts with a



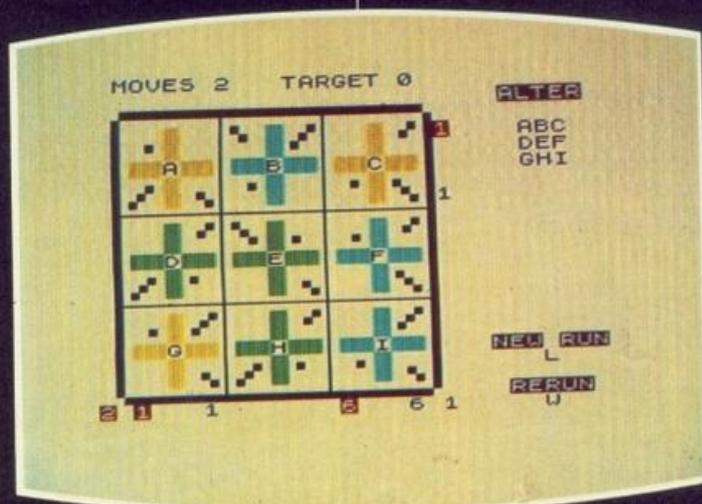
### Bugaboo

jolly little flea bouncing about on an alien landscape, and then falls to the depths of a chasm. The idea is for you to bounce him back up to the top before the Dragon eats him for tea.

If that sounds weird, wait until you see the landscape, peppered with odd trees, toadstools and multi-coloured bits of rock jutting out all over the place. It is hard not to be impressed by the smoothly scrolling graphics, and the game is a lot of fun too. I don't know how long the novelty will last but I suspect that younger readers will particularly like this game. £6.95

Bill Bennett

RATING



### Flippit

## Flippit

Lezperanto

NICE box, shame about the game. Let's start with the box. It's about three times the size of a normal cassette case. The instructions come in a ten-page booklet. Very smart... it'll impress your friends. The game is not quite so exciting. Do you remember magic number squares? All the verticals, horizontals and diagonals on a numbered grid add up to the same total.

In Flippit, you have to make your own magic square by moving numbers around. The whole box is a 6 x 6 grid, so the game takes time and thought. If you're really into mastermind-type games, then Flippit is for

you. Otherwise, don't bother. £9.95.

DG

RATING

## Splat

Incentive Software

BASED on maze/Berzerk style games this is a very fast version. Zippy, our hero, moves around a maze which scrolls from left to right, up and down. This is random, which means that as you are happily moving left the maze suddenly turns on you, and zap — you've hit the electrified walls that surround it.

Zippy has to eat the grass and plums and avoid spikes and other nasties. There are seven levels to cross, but I only managed three this time out.

There are several nice features, user-defined key feature, high-score table and a Hi-Code which is revealed when you reach a high score and can be used to verify high score for a competition that is included with the game. The action is fast and the game, although simple, proves addictive. £6.00.

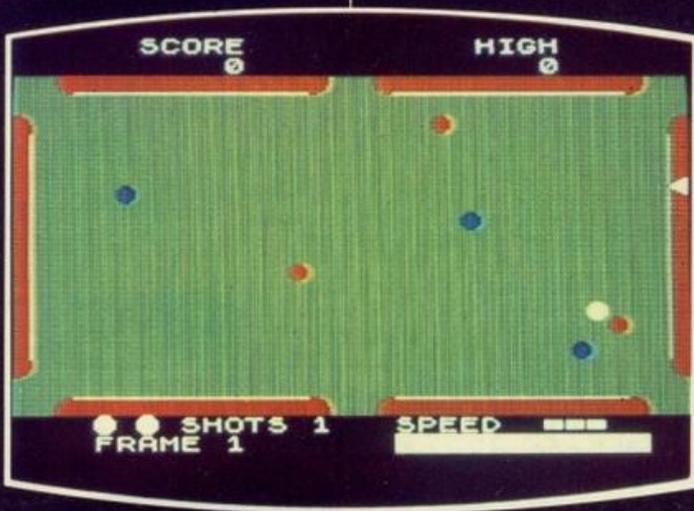
Kirstie Rogers

RATING

## Spectrum Pool

CDS MicroSystems

NICE graphics and sound — but is it pool? No way. Does it



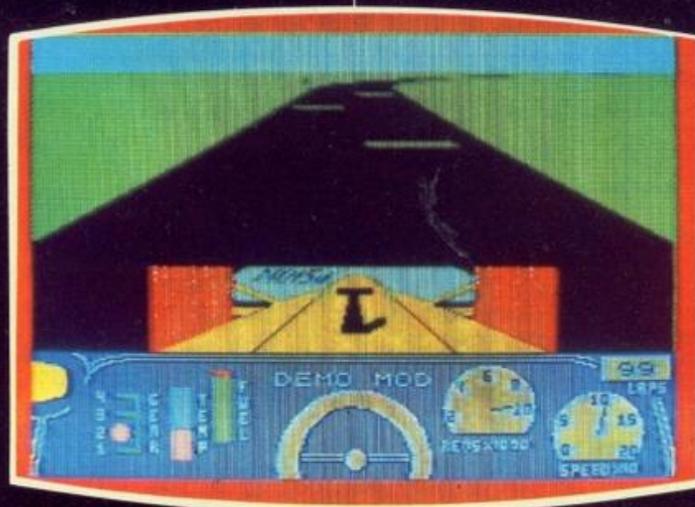
Spectrum Pool

matter? Not at all. At the start of the game, the pool table is set up, complete with triangle. There are three red and three blue balls and a cue ball. No sign of a black or spots and stripes that you'd find in the real thing. You move a pointer around the rim of the table. The pointer is what you're aiming at. Then you select a playing strength of between one and five . . . and fire.

Bouncing off the cushions looks real and sounds great. Collisions work well. The game works less well for two players because the only difference between the red and blue balls is in how much they are worth when potted (why DO they call it Pool?). So all you do is go for the nearest ball irrespective of colour. Not for the purist but very good fun for a 16K game. £6.00.

DG

RATING



Chequered Flag

## Chequered Flag

Psion

I'VE always fancied myself as a bit of a driver. Tearing around the streets of London in my Fiat might cause a few casualties, so it will come as a source of relief to all the pedestrians in NW6 that I can now do my Nelson Piquet impersonations in the comfort of my own home.

Chequered Flat is a well thought out program, which puts you at the steering wheel of a racing car — there are three to choose from. You can also select a race track, some of them are real Grand Prix tracks, and others are figments of the imagination.

Out on the track, you have to change gear, accelerate and steer using the keys of the Spectrum. I get the impression that

if this was normal in Grand Prix racing, there would be a lot of rather battered cars, because I never actually managed a complete lap without crashing.

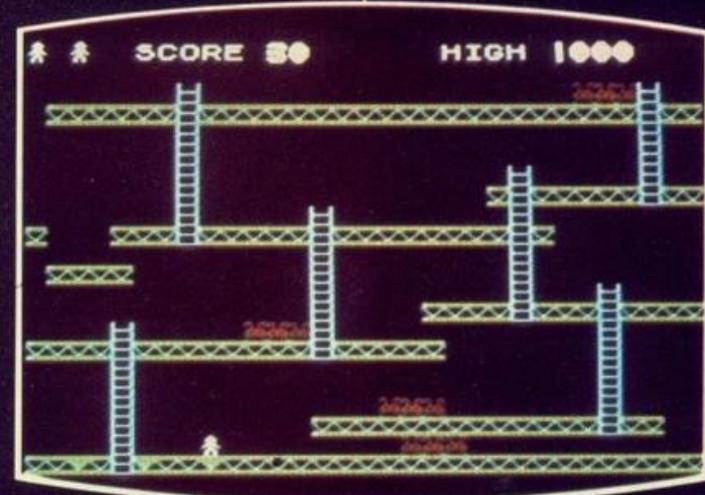
This is one of the better games for little boys of all ages, with good graphics and playability. I would certainly recommend it for car enthusiasts everywhere. £6.95.

BB

RATING

## Gold Digger

Blaby Computer Games



High Rise Harry

BLABY'S version of the arcade game DigDug is fun. But mainly because the original idea was so good. You've got to tunnel away to get at the gold nuggets and avoid the chasing gnashers. The good times start when you drop rocks on these nasties. Mmmm . . . nice. Levels of play are well judged to give you a chance during the early stages. The drawbacks are the unsmooth graphics at slow speeds (low levels), and the small scale of the screen action. £5.95.

DG

RATING

## Highrise Harry

Blaby Computer Games

EVERY now and again, I come across a game that doesn't seem to have anything special at first sight, but is addictive. Highrise Harry is one of these. You're in control of Harry. His job is to paint girders. He's a pretty nifty operator because he does this just by running along them.

Of course, life isn't as easy as that. Today's gremlins are the rust bugs. You avoid them by jumping over them. This athletic skill is also needed to jump

girders. If the next paint job is too far away, you'll have to use a ladder to get there. In later stages, slides and lifts will zip you to other girders. It'll have you hooked in no time. £5.95.

DG

RATING

Spectrum

# For the Spectrum, The VIC-20, The Jupiter Ace and the ZX-81



## PANDA

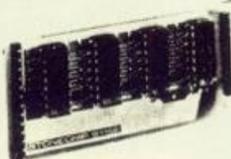
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A RAM adaptor board is available to enable RAM packs to be fitted inside the keyboard case and the Power Supply Unit can also be fitted if desired. **ONLY £9.75**



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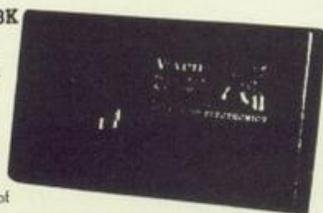
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A range of ROM based software will soon be available from the manufacturers. Industry standard Eproms, 2716, 2732, etc., are readily available and easily programmed and copied.

A sound investment for the serious user and serious games player which will not become obsolete. **£29.95 inc.**

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Supplied complete with full documentation and a demo tape which includes the type of Speech and Sound you can achieve.

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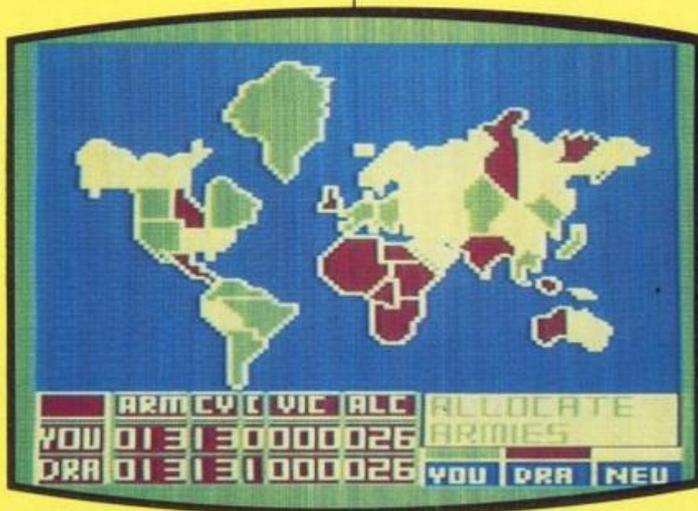
# Empire

## Shards Software

HOW does Empire stand up against the old-fashioned manual version of Risk? Well, I dug the maps, Empire is lavishly supplied with them. You have a choice of a general world chart, to give you a global overview, or individual continental maps. It's at the continental level that you can place armies and make attacks. Armies are represented by circles of the appropriate colours — red for the Dragon, green for you.

Size of circle indicates number of armies — which is unfortunate because the maximum size is for nine armies — hence if there are more than nine on a territory, then you only find out how many exactly when you attack — perhaps using numerals would have helped here.

So to the most serious criticism — the machine just isn't a very good



Empire

tour de force. It's not just one program but three, of different sorts which are classified as Chapters of the overall work. The main theme, if there is one, is the hunt for various code words, in order to get to the next stage of the game.

The first "chapter" is an in-

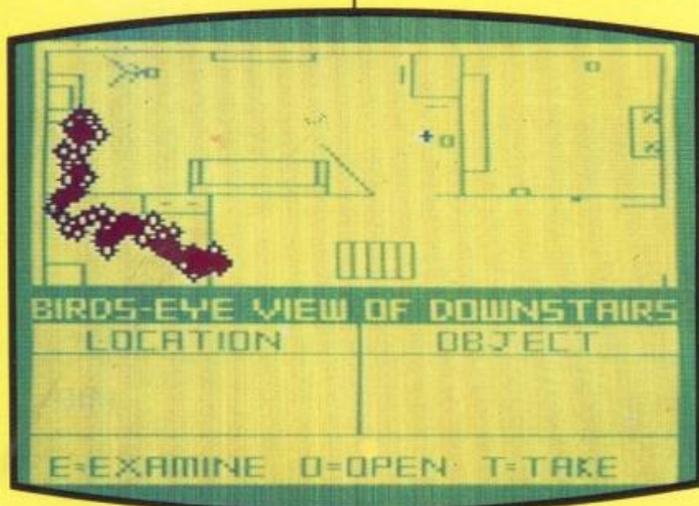
tenham Court Road for example. I also took exception to being told that I live in the suburbs — Where's that?

Part three of this epic is a whole series of problems. You have to solve each of them to get to the next one and they vary from the banal to the almost impossible.

Overall, I think Pettigrew's Diary's biggest flaw is that it fails to sustain its initial atmosphere. However, once you've got over this, there's so much to keep you occupied, it probably doesn't matter. If you like puzzles and mysteries, you'll like this package.

FF

RATING



Pettigrew's Diary

player. Although you are given a choice of skill levels (1-8), all the skill level seems to do is load the dice either for, or against you — it doesn't appear to give the machine better strategies.

Fin Fahey

RATING



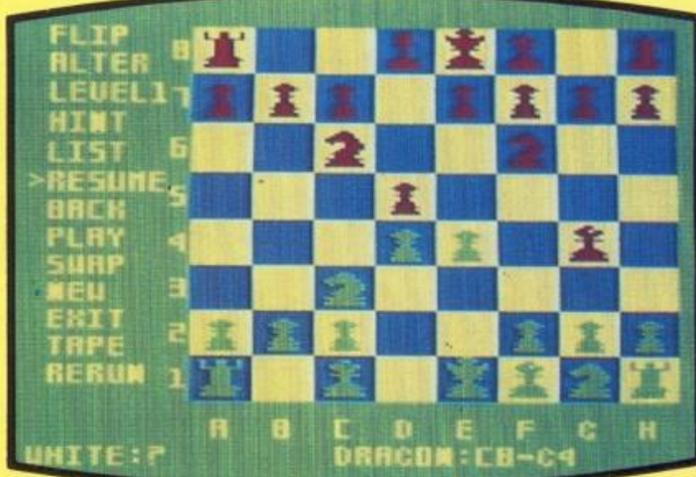
# Pettigrew's Diary

## Shards Software

IN time-honoured style this package from Shards starts with an enigmatic book, the diary. Pettigrew's Diary is something of a

teresting idea in its own right — a sort of graphic adventure, where you have to move around a burning farmhouse, shown in plan form, using the arrow keys. Having reached an object you can examine it for clues. The main problem is the fire which blocks your way and may kill you.

Chapter two is closer to being a true Adventure game. It's set in London and you may either take the tube around or walk. Unlike regular Adventures, however, there are no objects to pick up, since it's information you're looking for. It's heavily laced with wit and there are plenty of red herrings strewn around. As a Londoner, I must admit I found the geography a bit shaky — there is no way you can go West from Soho and hit the Tot-



Dragon Chess

DRA ON



# Dragon Chess

## Oasis Software

THESE days, with dozens of dedicated chess machines and programs popping up on an almost daily basis for popular micros, how does the Dragon Chess stack up? Appearance-wise, it's adequate, although the documentation, a very crabby little leaflet, leaves something to be desired in a chess program. The screen display features the usual stylised micro chess pieces, shown in four colours.

The biggest criticism? I found the program was strictly no contest even at Level 6 — and that's it really. Part of the problem seems to be that the program has a very limited opening book (an opening book is a series of pre-programmed chess opening responses — the Ruy Lopez opening say) — it manages to end up in some very odd situations by move 5.

In my estimation though, the program is saved by the command menu — this allows you to do things like take moves back, step back through the game and step forward again, store games on tape for later study, set up chess problems, and so on. These facilities make Dragon Chess a great facility for learning about chess. However, for a player of even slight experience, I feel it offers little challenge.

FF

RATING

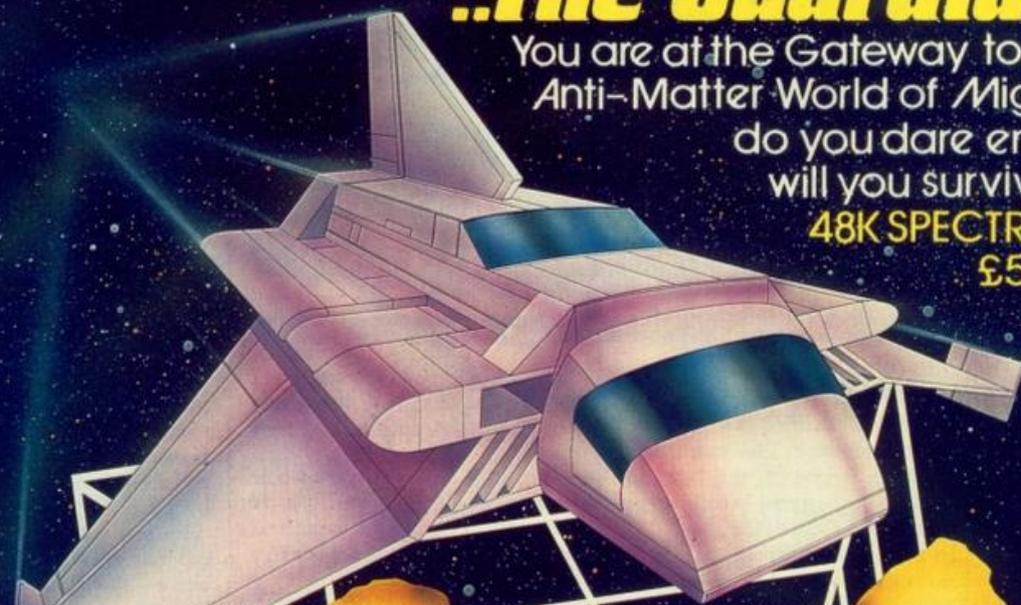


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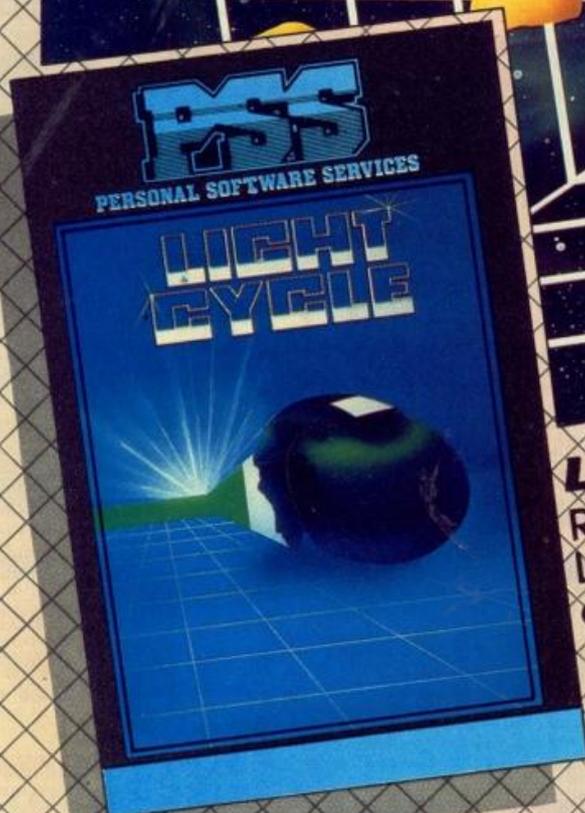
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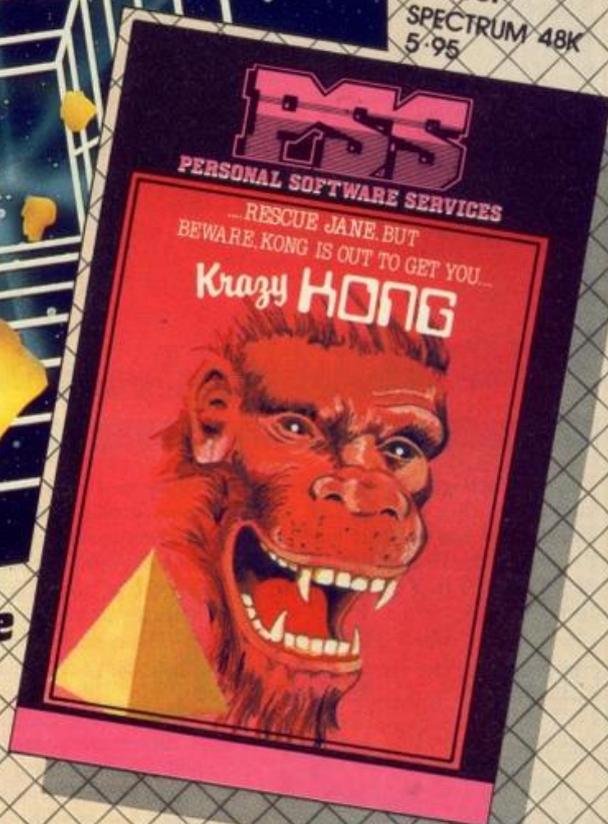
SPECTRUM 48K  
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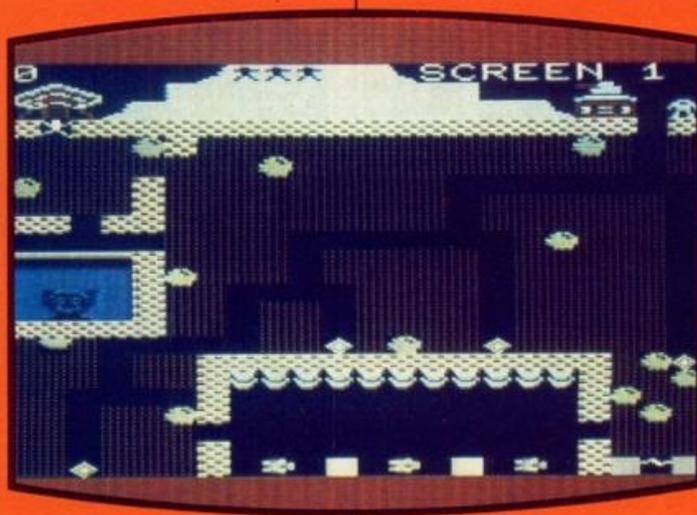
# Dungeon Droid

Novasoft

LOW on Novalite power crystals, your spaceship has been forced to land on a hostile planet whose inhabitants unfortunately worship them as idols. The crystals are buried in a chamber beneath the surface so you must dig for them. There are many perils. You move using the keyboard buttons as there is no joystick control.

It is a game mostly of strategy rather than speed. However, the enemy lasertank blasts slowly but remorselessly through a mountain to destroy your ship. To save it and raise your score you have to bring back the Novalite crystals from the deep chamber.

This game is potentially quite ex-



Dungeon Droid

who must pick up as many coins as possible to feed your parking meter before the meter maids get you. But you can save yourself by hiding in your car, or so the instructions say. I found Mr Trick could not be posi-



Meter Mania

citing, but unfortunately the odds are stacked heavily against you. Good graphics and sounds. Unexpanded Vic. £6.

LS

RATING



# Meter Mania

Abrasco

THIS is a poor relation to pac-man or jelly monsters. You are Mr Trick

tioned in the car, as he just floated out the other side.

The graphics are pretty, with little houses and shrubs. But Mr Trick looks like a grim-faced Mickey Mouse, and the meter maids are certainly no ladies.

The controls are sometimes difficult. Mr Trick will continue to move in the direction you first point him, until you change the direction. Everything is fine while he is moving, but should he stop against a wall, it is often difficult then to manoeuvre him. Unfortunately there is no way of getting your own back at the meter maids, which is too much like real life. £6.

Lance Sucharov

RATING



# Snooker

Visions

A GOOD game — one of the few that can be realistically played by two people. But there are a couple of annoyances. First it will only work on the 3K Ram pack. The second annoyance is the colour and shape of the balls. These are not very distinct and can make objects near to them change colour or even make the cursor disappear.

Leaving aside these groans, this is a game which gives a very realistic snooker match with a host of little

options to improve the play. The instructions on the program are good, as is the prompting from the screen, so you soon pick up the game.

One last minor gripe, the sound effects are more suitable to tanks grinding across the screen, rather than the "thock" of snooker balls. With the above points tidied up, this program would merit four star rating. £6.

LS

RATING



# Grid Runner

Llamasoft

GRID Runner is an all-time classic, the zappiest of the zappers and the shootest of the shoot-um-ups, will delight in this amazing game, but it left me all confused. I get the bit about the x-y zappers moving up and down the sides of the power-grid, but every so often something that reminds me of a London tube train comes meandering down the screen only to split in half when I shoot it.

If it all seems like a bad dream to you, then stop eating cheese last thing at night and get your fingers ready because here they come again;

arrgh ... £5.

Bill Bennett

RATING



Grid Runner

# VIC-20

# 48K SPECTRUM OWNERS READ THIS FROM

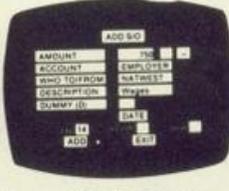
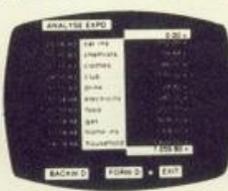
## ...LET'S GET DOWN TO BUSINESS...

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These screens are just a sample to show the style of the program:

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### ★ ★ ★ ADDRESS MANAGER ★ ★ ★

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Eastern Front

## Eastern Front

### Atari Cartridge

EASTERN Front, written by Chris Crawford, is an APX game making the leap to the main line. It deserves it, being probably the best war game ever written.

The new cartridge version of Eastern Front has a major improvement: there are now five different levels of play, where before there was only one. This means you can start at a very simple level to learn the game, before moving up to the top level, which is time consuming to play and impossible to win. £29.99.

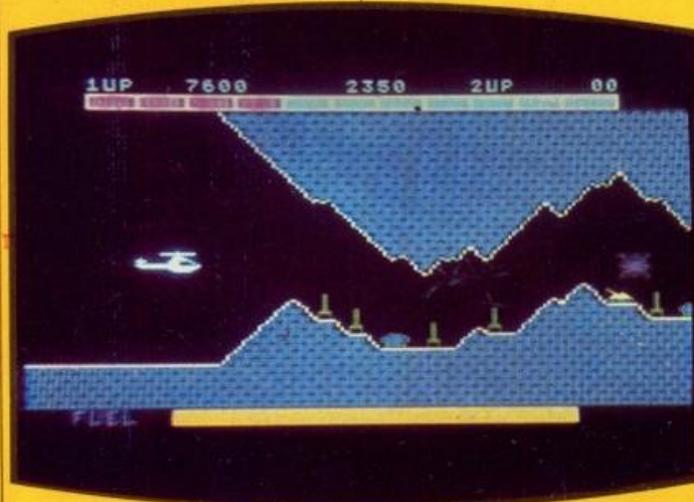
Jack Schofield

RATING

## Zaxxon

### DataSoft

ZAXXON by DataSoft is the offi-



Super Cobra

cial version of Sega's arcade game. I tried a disc version supplied by Softsel, and found the action just like the arcade original, 3-D scrolling and all. However, the graphics are nothing like as detailed, particularly in the bit where you shoot down enemy planes. The sounds are pretty feeble, too. However, all round this is a very impressive attempt at an arcade quality result.

Incidentally, the disc has both 16K and 32K versions, I'm told the 16K cassette Zaxxon does not have all the features of the 32K disc, so check this before you buy.

JS

RATING

## Super Cobra

### Parker Brothers Cartridge

SUPER Cobra is a version of Scramble, played with a helicopter instead of a needle-fighter. It is joystick operated, with the fire button releasing rockets and bombs alternately. The movement is

smooth and the scrolling landscape suitably colourful. Only the space mines let the game down with their somewhat jerky movement.

Super Cobra is fairly easy to play — easier than English Software's Airstrike — and the superior graphics make it an attractive cartridge. £34.00.

JS

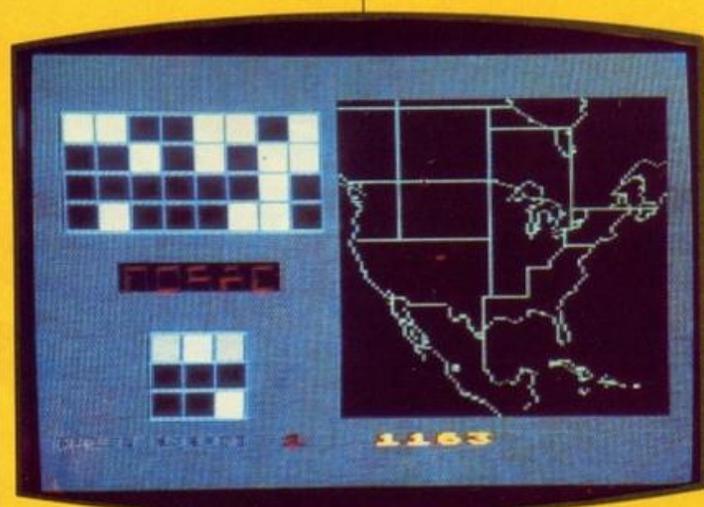
RATING

## Computer War

### Thorn EMI

THE ATARI game of the month is

RATING



Computer War

Computer War, on cartridge from Thorn EMI. It is based on the movie War Games, and has two main screens. You start with a map of North America, with bases to defend and a black-and-white chequered code to crack. You position the cursor over the white dots that mark incoming missiles, and switch to the countryside view. Then you have to find the missile and destroy it. If NORAD gets hit, of course, you're dead. In fact, we're all dead.

In a way the game is a bit like Star Raiders — jumping from sector to sector and blasting things — though it is not as complicated. Computer War also has 3-D action, with the missiles moving closer or further

away or swooping right over you. You have to hit them quickly to rack up a decent number of points.

The landscape view depends on where you are in North America. Some of the screens have beautifully pure colours — especially the reds and yellows. Only the sea isn't very well done.

Computer War is a challenging, high-speed 3-D game. Colour graphics are excellent and the sound is good. All round this is much the best game to come from Thorn EMI so far. I'm impressed. I'm even more impressed that they've managed to produce it so quickly after the launch of the movie.

JS

## Caverns of Mars

### Atari Cartridge

CAVERNS of Mars is a little like Scramble, but played vertically not horizontally. You have to take your ship to the bottom of five caverns, set off a bomb and escape afterwards. Colour and graphics are both very good.

Caverns has been available for over a year on tape in the cheaper APX line of programs. £29.99.

JS

RATING

# ATARI



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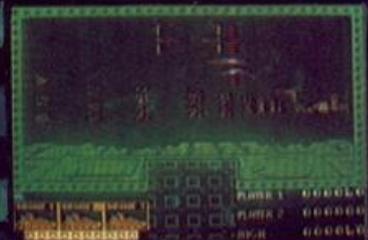
Trundling along you observe the tell tale blips of the Seiddab as they appear on your scanner. They break formation and scatter across the city. Suddenly you catch sight of an alien craft swooping over the buildings to your right. He fires a plasma torpedo at your tank. You attempt to dodge but the missile finds its mark, shaking your tank and leaving a hole in the armour.

You unleash a missile and guide it accurately to the target. The Seiddab explodes and crashes from sight. You hunch over the controls once more, because this is only the beginning...

**£5.95**

### 3D

## SEIDDAB ATTACK

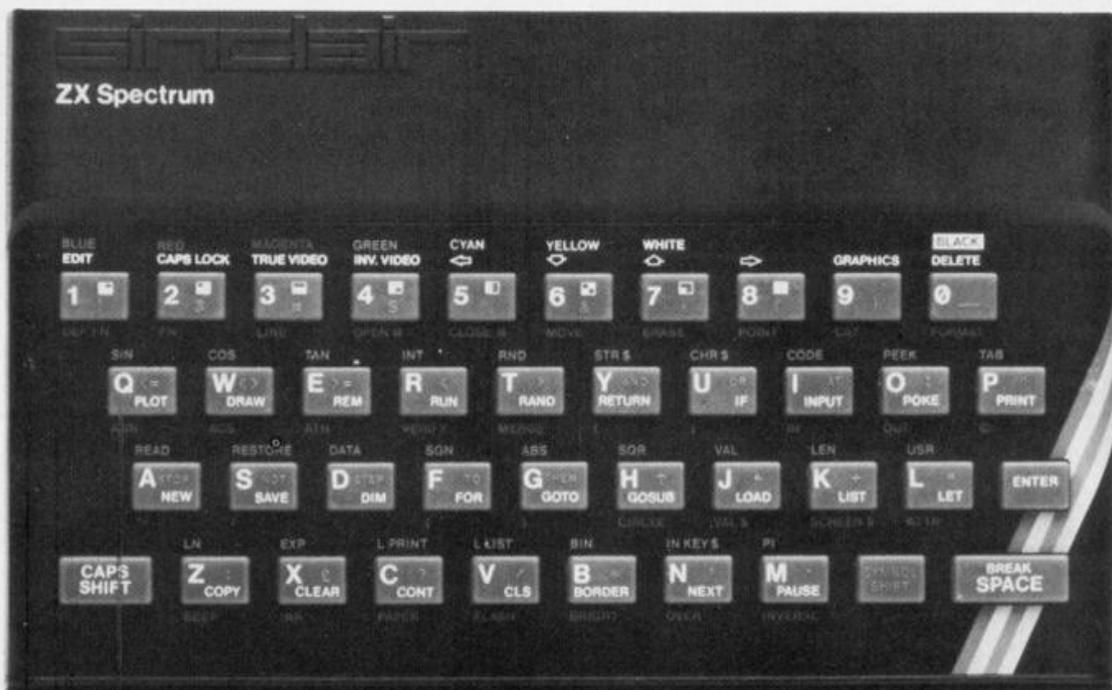


This game incorporates moving 3D graphics of city buildings and alien craft. It gets progressively harder with two types of landscape, 3 lives, high score, player one and player two score.

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# SPECTRUM USERS REPORT

**COMPUTER CHOICE** asked five members of Sutton Computer Club for their opinion of the Sinclair Spectrum. They have all owned Spectrums for about 12 months, and are aged between 14 and 37 years. Two of them are students, one is a computer programmer, one a librarian and the last an engineer.

All own a 48K Spectrum and paid £175 for it, except the youngest member of our team who has a 16K model which he paid £125 for.

So why did they choose a Spectrum?

**"It was the first machine with a decent memory at a price that I was prepared to pay."**

**"I already owned a ZX-81 and printer, a Spectrum seemed the logical upgrade."**

**"It is much better than the ZX-81, and much cheaper than the BBC Micro."**

**"Because it's the best."**

**"There is a cheap, large software back-up."**

The five were obviously keen to buy British, several had thought of buying a BBC but had been put off by the price. Others had started with a ZX-81 but found it too limiting after a while. Games came top of the uses list, with accounting and personal programs also mentioned. The user's future aspirations were fairly diverse:

**"I would like to learn some languages . . . Particularly Prolog or Lisp. I have been frustrated by the lack of Spectrum compilers for these."**

**"I hope to learn machine code, which I think the Spectrum will be well suited to. I would like to add a decent keyboard."**

**"I would like to have a larger amount of characters across the screen, at least 40."**

On the question of sound everyone was either non-committal or unenthusiastic. The consensus of opinion is that it could be better. The panel were more forthcoming about the problems they

had encountered. The person who had had no problems at all was definitely the odd man out:

**"My copy of Ant Attack seems to NEW itself" (that means resets itself), "when the Spectrum gets warmed up. I suspect the worst."**

**"Yes, I have had problems. No, I couldn't sort them out myself,"** reported one user, he returned his machine to Sinclair Research.

**"Thousands of problems, my machine had faulty memory chips and keyboard,"** complained another.

**"When I first bought the machine it only had 17½K of memory, it had to be taken back."**

Everyone was full of praise when it came to programming the Spectrum. They found the Basic easy to learn and the keywords useful. Keywords are the words used by the computer for programming and are found on the Spectrum's keys.

Most of our panel would like to buy a Microdrive if they had not done so already — two out of five have Microdrives:

**"I have ordered two Microdrives. The system looks quite good — certainly good value for money."**

**"It would appear to be a good idea to make saving and loading easy, quick and cheap."**

No comment was made by those already using Microdrives, perhaps no news is good news.

The ZX printer didn't get such a good reception:

**"I find it easier to write programs. The quality of print is too poor for anything but rough work — but even with this limitation I think the printer is very useful."**

**". . . it works, but I am not happy with it,"** said one malcontent.

**"I returned two faulty printers, on one the needle jammed completely with printer**

**dust. The quality varies with printer paper used."**

**"No way would I buy one,"** exclaimed one user who must have been talking to the people above.

And will they buy Interface 2? Generally the answer was no, it is too expensive. Interface 2 is what the joysticks and software cartridges plug into.

Our panel used a range of tape recorders with their Spectrums: Sanyo, Ferguson, TRS-80, Alba and one of W. H. Smiths own. The television sets used by the panel were mainly Phillips, with one Sony Trinitron and one Ferguson.

All but one user had bought games software to the exclusion of all else, and all but one of them had recently bought Manic Miner, the top selling Spectrum game. Space games, arcade games and adventure games — anything as long as its not going to teach you something useful, seemed to be the rule of thumb.

Manuals, are they an example to us all? Our hardware buyers guide says they are.

**"The Spectrum manual is very good — I learnt Basic from it without too much trouble."**

This is typical of all the answers, to this question. Surprisingly no one complained about the nasty "dead flesh" keyboard. I suppose the biggest test of all is would you recommend the Spectrum, and would you buy another micro from Sinclair Research?

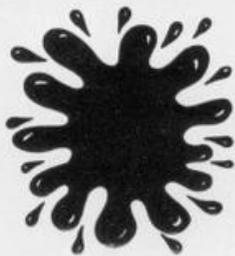
**"Yes"** they would recommend buying one, but they weren't so sure about buying another Sinclair micro.

Thanks to the five who answered all our questions, with no word of complaint: J. Phillips, P. Platt, P. J. Sedgwick, P. Moser and C. Millhouse, all from Surrey.



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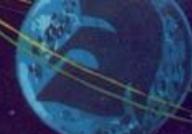
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I enclose a cheque/P.O. for £\_\_\_\_\_ made payable to M C Lothlorien.

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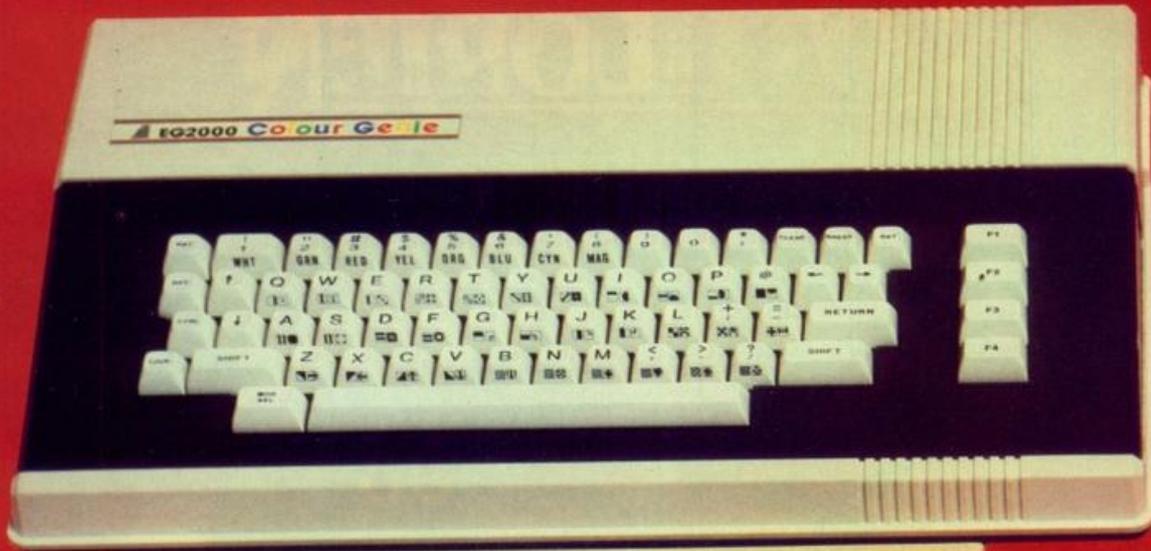
Signed \_\_\_\_\_

Address \_\_\_\_\_

Send to: M C Lothlorien, Dept. CC1/84 56a Park Lane, Poynton, Cheshire SK12 1AE. Telephone: Poynton 876642

ALL ACTIONMASTER games are 100% machine code and are available for any Spectrum unless otherwise stated.

ON TEST: DRAGON, ELECTRON AND GENIE



TRIPLE TEST

**IF A HOME computer is to be anything more than a mere toy, it must have a real keyboard. The three microns on triple test this month all have typewriter-type keyboards, they also have full colour and interesting versions of the Basic language.**

Acorn's Electron is the little brother to the BBC Micro, it uses the same language but does not have all the hardware facilities. The Dragon 32 has sold in large numbers but is now rather out of date, and the Colour Genie tends to lurk in the background but is at least as good as the Dragon.

## DISPLAY AND GRAPHICS



Graphics are the main feature of the Electron — they are in fact excellent. Although at times painfully slow to use, the Electron is capable of higher resolution, than a television set can show. What this means is that the dots the Electron puts on the TV screen are smaller than the smallest dot a TV can show. There is so much flexibility in the Electron's graphics that at first you may find it confusing.

Controlling the graphics is fairly easy, the Electron uses a VDU command which is ideosyncratic, but DRAW and PLOT are fairly straightforward. There are a number of text and graphics modes available, which use varying amounts of memory.

The Dragon 32's graphics are dire. Although the actual circuitry used can take much of the blame, the software doesn't help much either. Most software companies have shied away from the kind of high-resolution, fast moving, graphic-type games that can be found on most other micros. This has left the Dragon with an odd software base.

Colour is not a strong point of the Dragon either, although there are eight to choose from. But when in the high-resolution mode, that is when you try and draw interesting graphics, you can only use two colours. There are some useful commands such as PAINT and CIRCLE as well as a very good DRAW function. In fact the Basic supports what graphics there are admirably.

The Colour Genie is known for its peculiar colours, they are not particularly bright. The chief offender is red, which is more like muddy brown. Graphics are not the Genie's strongest point, but they are certainly not awful. Again, the Basic does make best use of what hardware there is.

## SOUND



A full synthesiser is inside the Colour Genie, in fact it is just a single chip, but it can

create a wide range of musical and non-musical effects. The sound is output through the television speaker, which means you have a manual control over the volume, very handy if you try to program something subtle but accidentally end up sounding like Motorhead.

There are three channels, which means you can play three different notes at once, making what musicians call chords. However, real three-part music is extremely difficult to program. Eight octaves — that is the range of notes available, provide more scope than a piano, and the white noise and envelope features mean that you can go some way towards playing your favourite New Order or Depeche Mode music.

Electron sound is infinitely more flexible than the Genie's, but there is only one voice — which means only one single note can be played at any one moment. Not only that, but the sound is output through a little speaker inside the micro's case. Which most of the time sounds a bit feeble but probably will sound ear-splittingly loud when Grandad is having his afternoon nap.

On the whole the Electron is good fun if you like tinkering with sounds, but it is not exactly simple. The Dragon on the other hand is simple to use, you actually input the music as a string of letters representing the notes. This means that entering the whole of your favourite song is a piece of cake, unfortunately the Dragon only has one voice or channel, so no harmonies are possible. The Dragon outputs sound through the TV speaker.

## KEYBOARD AND CASING



All three micros have what passes for a real keyboard, and as such they can be thought of as really useful computers. The Electron has the usual layout as far as the letter keys go, plus a number of extra keys in the top right-hand corner which move the cursor around the screen. The cursor is the little flashing square which shows you where the next bit of printing is going to be done. There is also a BREAK key, which will halt the current program and reset the

computer; an ESCAPE key performs a similar task without resetting the machine. It is possible to use the keys for "single key entry of keywords." This is a rather grandiose way of saying that by using the function key in conjunction with one of the typewriter keys, one of the important words used by the BBC Basic language can be entered without the user having to type the whole word in. This is the kind of luxury that Acorn has built-in to the Electron. The casing is smashing, in fact Acorn deserve a lot of credit for the total packaging of the Electron.

The Genie lives in casing that is about four times the size of the Electron. It is by far the biggest of all the modern home computers, which may endear you to the beast but on the other hand, it takes up a lot of room. The styling makes the machine look like it was designed in the 1950's, which is fine if you are a Teddy Boy or a Beatnik, but really . . .

Keyboard-wise the Genie is fine and in some ways it resembles the Vic-20, especially in the way that four separate function keys are located to the right of the keyboard. Elsewhere the Genie is blessed with enough ports, or sockets to connect anything you may wish.

Like the other micros, the Dragon has a real keyboard though it is slightly less pleasant to use. The funny thing about this machine is that inside the casing is an awful lot of air. This means that the Dragon never gets overheated, but it isn't really necessary. The Dragon has a large number of ports, and a break switch on the side of the case.

## BASIC

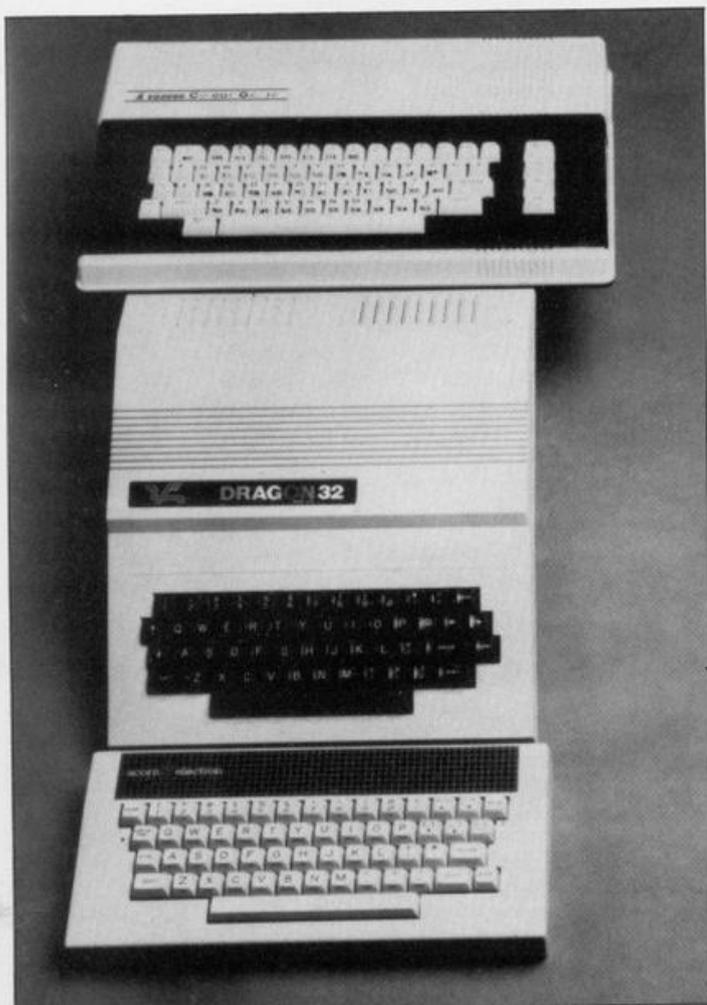


BBC Basic is used on the Electron and is becoming very popular in schools all over the UK. Apart from the advantage of being the language used in the BBC television series, BBC Basic is good in a number of other respects. It is a "structured" language, that is it includes a number of programming concepts which not only make the difficult job of learn-



# TRIPLE TEST: DRAGON

## HOW THEY LINE UP



ing to program easier but teach programmers how to think in a logical manner.

Programs written in the BBC language are, in general, easier to comprehend than programs written in another language. Most important of all, you can keep track of what is going on. There are a couple of niggles about BBC Basic, the VDU command can be mysterious to a beginner and so can some of the other commands, but all-in-all if you are buying a machine for someone learning at school the Electron is the machine for you.

Dragon Basic is pretty good too. It is almost identical to the Basic used on the IBM personal computer, which must say something about it. It makes very good use of the limited facilities of the hardware and includes two commands which are nothing short of wonderful — the DRAW and PLAY commands. These two commands take strings of information and output them either as music or as a picture.

Extended Basic is the standard language on the Colour Genie, which is an old-fashioned way of saying that

the Basic is somewhat better than other old-fashioned Basics. It is rather good really, though not as good as the Basic on either the Electron or the Dragon.

### MANUALS

ELECTRON ■■■■

GENIE ■■

DRAGON ■

If the Dragon was supplied with a half-way decent manual then for all its faults the machine would not be too bad. Unfortunately the manual is a good example of how not to do the job. It does not have an index and it jumps from point to point, but the worst crime of all is that it assumes that anyone who reads it is a moron.

If you have a Dragon and don't like the manual you could always go out and pay some money for one of Ian Sinclair's books about the machine. If you buy a Genie, this book comes free along with the official manual. Ian Sinclair's book is not excessively wonderful, but it does provide another insight

into the machine, best of all Ian does not assume you are an idiot.

Acorn have got their act together quite well with the Electron manuals, there are two, one is an introduction to computing and the other is more of a user's manual. Both books are good for beginners, though experienced users and clever beginners may feel that they are being spoken down to. The important point is that all the information is there, and there are lots of example programs.

### EXPANSION

GENIE ■■

DRAGON ■■

ELECTRON ■

None of the micros in this month's Triple Test are exactly well-endowed when it comes to expansion. The Electron appears to be designed so that there is not a lot of scope for cheap expansion, but then users wanting that facility would be better off with the more expensive BBC Micro.

The Dragon does have possibilities, but the official add-ons are not exactly wonderful. The joysticks are awful. It is easy to add a decent printer, and there are some good cheap printers that would be capable of fulfilling the role. If you think it worth adding a monitor there is a socket and later on a disc drive can be added quite easily, though not very cheaply.

Expanding the Genie is fairly easy, there are all the important ports liberally sprinkled around the edge of the case. But here the problem is that there are not a great deal of peripherals — that is the extras that build your computer up into a larger system — it is possible to add these items, but not easy.

This is odd, after all just about every conceivable port can be found somewhere on the edge of the case. The problem is that there are not a lot of "own-label" add-ons, so you have to shop around and go through the process of finding plugs, leads and maybe even software where you can. Maybe the Genie users group can help.

### Electron

*For:* Very good Basic, nice construction, ideal starters micro.

*Against:*

Expensive, not easy to expand.

### Genie

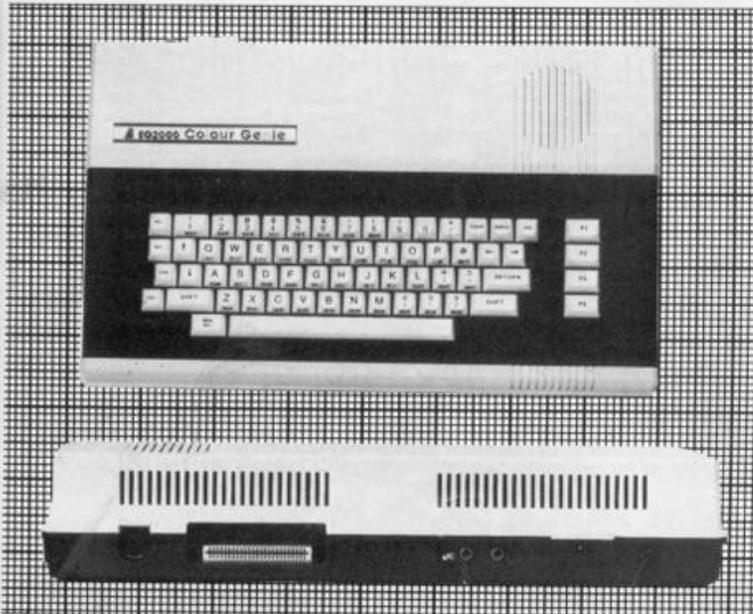
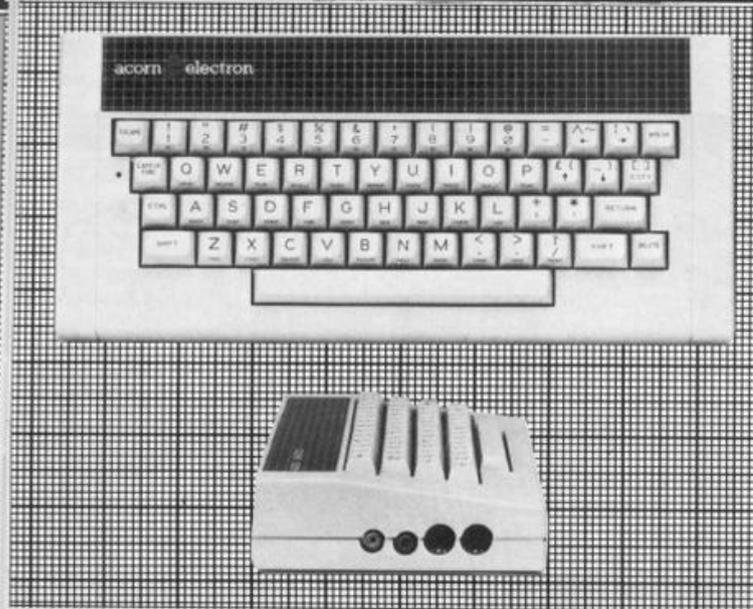
*For:* Availability, Basic, makes good use of memory.

*Against:* Small user base means that software houses may soon get fed up with it.

### Dragon

*For:* Good Basic, easy to find in shops.

*Against:* Awful display, lack of good software.



## SOFTWARE

**ELECTRON** ■■■

**DRAGON** ■■

**GENIE** ■■

It is still early days for the Electron, so although in this category the score is low it is bound to change. Two blobs are awarded because that software which is available for the machine is very good — it tends to have been converted from the BBC Micro. There will be a wealth of educational software for the Electron, though don't expect it to be especially cheap.

Dragon software isn't cheap, and for the most part isn't much good. Of all the reasons for not buying a Dragon this is the most important. Arcade games are, for the most part, less exciting than on any other machine. To compensate for this sorry state of affairs there are some worthwhile text adventures. The two top software houses as far as the Dragon is concerned are Microdeal and Salamander.

Low Electronics import the Colour Genie and can supply a software list that runs to about seventy titles, which is less than say the Dragon but much more than all the other Far-Eastern machines.

## VALUE FOR MONEY

**ELECTRON** ■■■■

**GENIE** ■■

**DRAGON** ■■

If you are still at school or are buying a computer for a student, then the fact that the Electron is a little expensive at £199 will not deter you because this is THE machine to own if you use the BBC at school or college. However, £199 is a bit pricey, but the Electron beats the £175 Dragon hands down when it comes to value.

The only advantage the Dragon has over any other micros is that you can find it in the shops. This counts for a lot at Christmas, but be warned, the reason there are plenty left in the shops is because all the worthwhile machines have already been sold.

At only £99 for a 16K Colour Genie the machine looks like good value, but this is only until all the stocks are sold. The 32K version — K being a measure of how large the micro's memory is — costs £168 which is not that good. If you are desperately looking for a Christmas present at the last minute then it may do, but it would be better to wait until after Christmas and spend your money on a more up to date machine.

## ELECTRON

Acorn Computers Ltd.  
Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN.  
Telephone: 316039

## DRAGON 32

Dragon Data Ltd.  
Kensig Industrial Estate, Margam, Port Talbot, West Glamorgan SA13 2PE.  
Telephone: 0656 744700

## COLOUR GENIE

Low Electronics  
Chesterfield Road, Derbyshire DE4 5LE.  
Telephone: 0629 4995

## RATING

**EXCELLENT** ■■■■■

**VERY GOOD** ■■■■

**AVERAGE** ■■■

**BAD** ■■

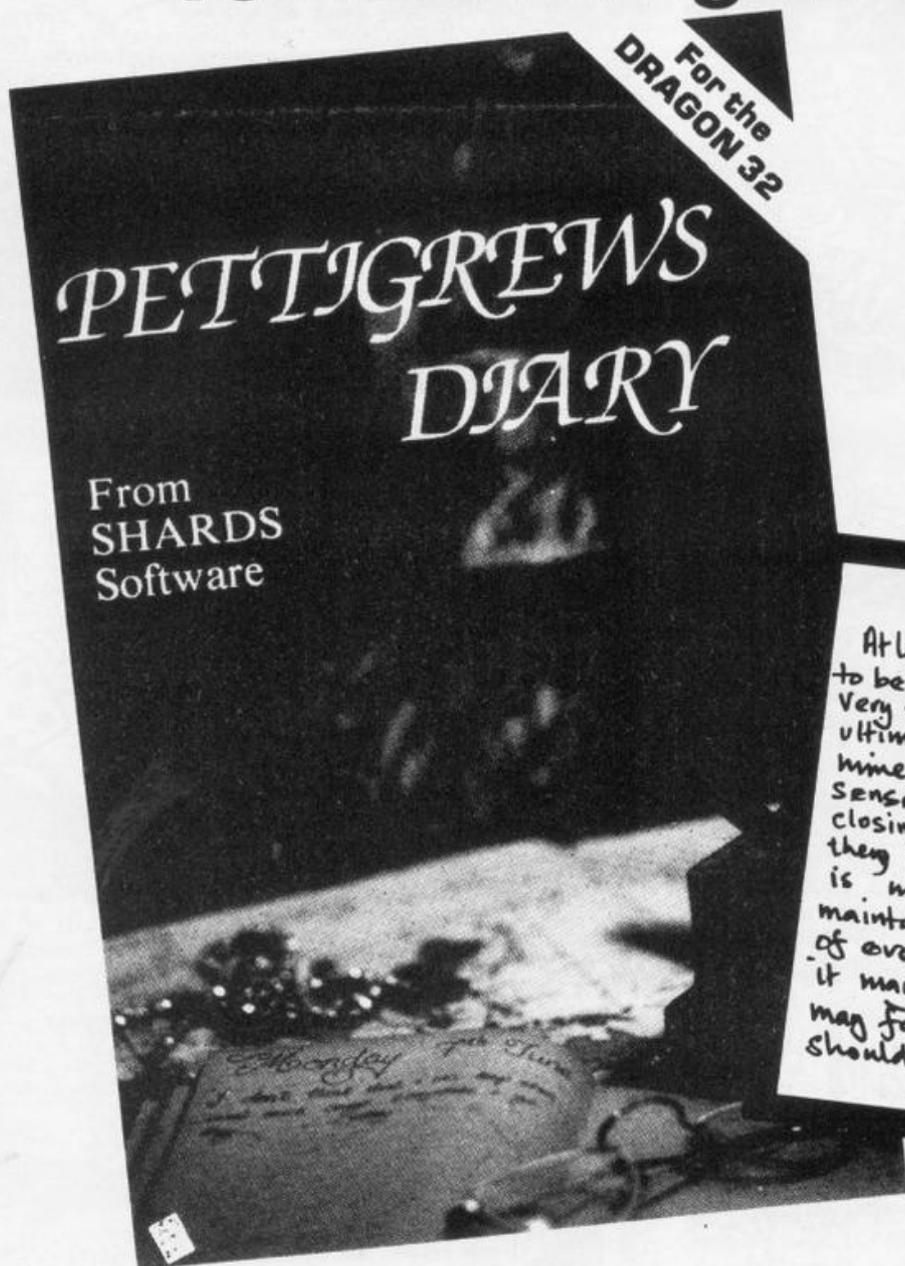
**AWFUL** ■

THE triple test ratings match those in the hardware buyers guide. They vary between a single block, which means that the micro in question is seriously lacking in the department under investigation, to five blocks, which means that in this area the micro is one of the best.





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DRAGON 32

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At last the mysteries seem  
to be unfolding before me.  
Very soon, I sense, the  
ultimate secret will be  
mine. But also, I can  
sense the evil forces  
closing in. Every day  
they seem stranger. It  
is my duty, then, to  
maintain this journal  
of events, so that  
it may guide he who  
may follow, if anything  
should happen.....

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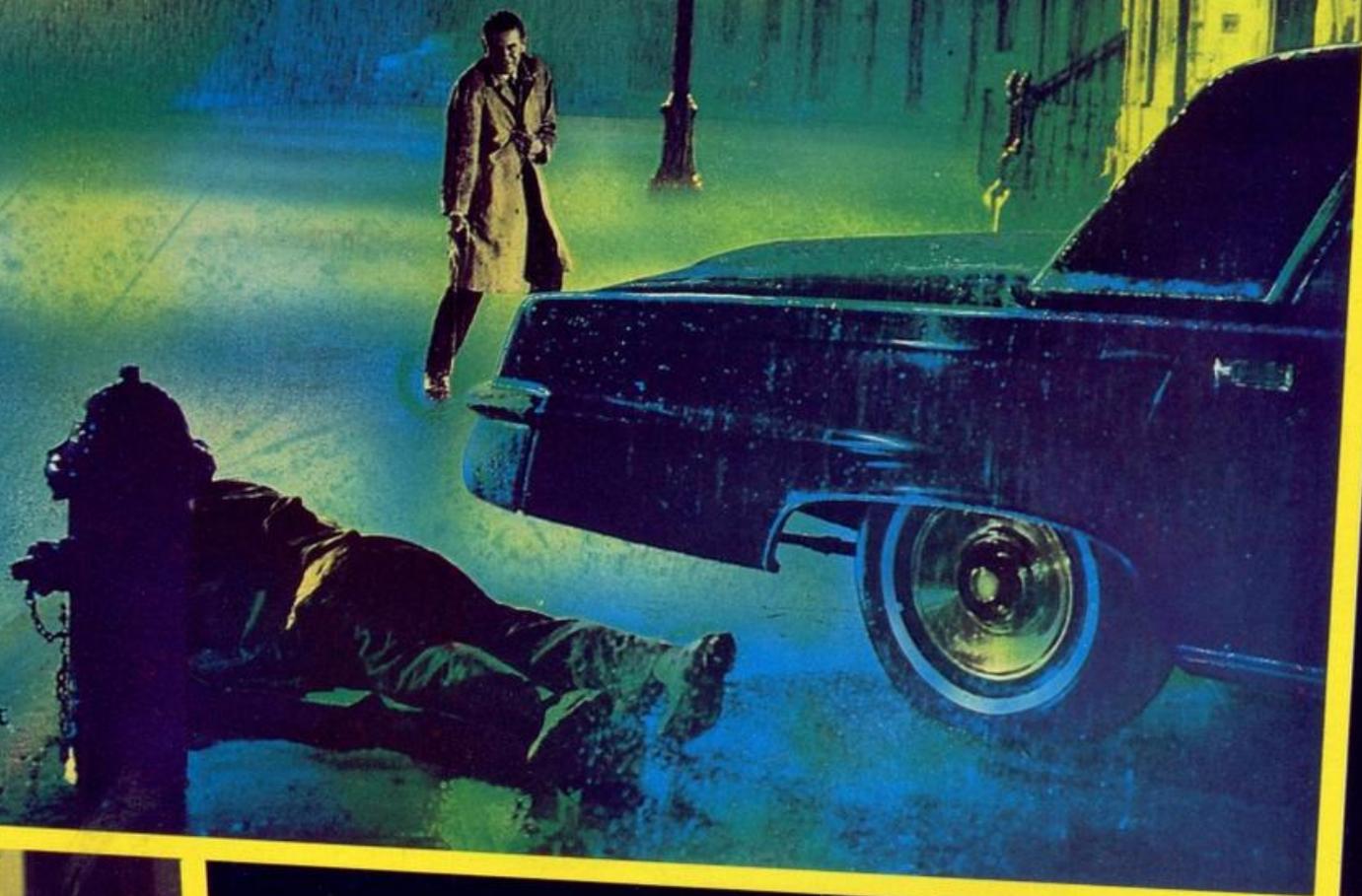


**VALHALLA**

# WATCHING THE DETECTIVES

"IT WAS a strange letter. It bore no stamp or postmark and contained but a single sheet of paper. The writer's style was, to say the least, unembellished: 'Please come you are our only hope.' On the back was an address. I decided to follow it up because I felt sorry for the senders. I decided I knew they were in a real bad way."





## by paul bond

Franklin's Tomb is an adventure game, a computerised adventure game or CAG even, by Salamander Software. Once you decide to pick up the gauntlet, or in this case the letter, adventure gaming means it is up to you, the player, to discover the way around the maze of rooms inside the archaic building with its doors ajar — this is what you find when you go to the address given on the back of the letter. This game is played on the Dragon 32 and is one of the better bits of software available for this machine.

CAGs normally mean confronting a bunch of warlocks, dragons, wizards and boggy swamps. Mythology tells us this is because CAGs were thought up by staring-eyed Californians wearing "Frodo lives" buttons on their tartan workshirts who suddenly tired of batch-processing on mainframes. Needing something more exciting in their lives than the latest Fleetwood Mac LP, these unfortunates were driven to playing adventure games on the company mainframe while the boss was away lobbying Congress about the anti-trust laws.

In this view I look at a few games which break the mould of Middle Earth and function in slightly more urbane environments. Franklin's

Tomb bridges the gap nicely between the two sorts of worlds. The documentation is excellent and serves as a good introduction to computer adventure games. The jokes are good too: "I put on my hat and coat and walked out of the office. Then I went back and finished getting dressed. Down on the street, I got out a cigarette and waited for a cab. A man walked past me. 'You got a light, Mac?' I asked. 'No, but I got a dark brown overcoat'."

Well, it amuses me. This adventure is number one in a series of cassettes. Although it is not essential to solve Franklin's Tomb to play the next adventure, one or two clues to the next episode are embedded in this one.

Adventure games mean keeping track of where you are and where you've been, not taking anything for granted, and occasionally doing stupid things under the guise of lateral thinking. They also mean not going around doing stupid things all the time. In this respect they are like life. Where they are not like life is that they have a limited vocabulary.

Franklin's tomb has a vocabulary of about 50 verbs and 80 nouns. Computers are fast, but they're not smart. If the computer doesn't under-



stand one command try another. Remember, it does not have your rich vocabulary.

So, for example, when the eerie Pink Panther-style music dies away, the text on the Dragon's screen tells you that as you enter the aforesaid archaic building a sensation of falling overwhelms you. You are in a circular room with smooth stone walls. The room is lit by four burning torches secured to the walls. A large ornate door guards the way north. Exits S, E, W. In most adventure games you can type in GO S and you will go south. Salamander's documentation maintains that this is the case here, but my Dragon obdurately replied "What is a S?" You also learn by a weary process of trial and error that when the machine says here's a candle, not only should you TAKE CANDLE, but you should also light it from one of the burning torches. The third time I went south I could see where I was: in a long low hall, with creatures painted on the walls. At the end of this was a large dark chapel with pillars shaped like rats, and an altar at one end. There were curtained alcoves on either side.

Poking around in these I discovered a golden goblet and a prayer god. Standing by the seven marble steps leading up to a dais on which a huge statue of the orcish god Gruumsh sat, I read the book, and discovered that "Gruumsh holds the keys." More than this I cannot tell you for fear of spoiling the fun: suffice to say, further scenarios encountered in this game include a pit, a spider, a white rabbit, a juke box, an embalming room and ultimately a stargate taking you to other worlds.

My next case was kinda classy. English upper class, in fact. I reckon I looked as much like a CID man as you can in an Eton tie purchased in Macy's Department Store. I could have clinched it by driving a big expensive car like the rest of the cops from West End Central. But it was a nice day so I decided to walk. I was shaved, clean and sober and I didn't care who knew it. I was calling on a family so old and so rich they probably put the bucks into Buckingham Palace.

They say the English aristocracy are very cool and distant. Lady Rambling was a little stiff it's true, but people get like that when they're dead. The murder weapon was a poker, one of the biggest arguments I've ever seen for installing electric central heating.

The other person in the lobby was Dr Drake, a respected Harley Street physician. I thought he was a quack, but he wasn't about to squeal. Still, he was respectful enough once I started questioning him.

Murder is a whodunnit text-and-map adventure game for the Commodore CBM-64 by A. K. Stanton of Birmingham. It introduces you to Lord Rambling, the respected cabinet minister whose political career might be adversely affected if anyone notices that his wife is not as perky as she used to be and, of course, Lady Rambling but in this scenario she doesn't say much. Other characters are the lovely Fiona Pennywit, secretary to Lord Rambling and her betrothed, Nigel Herringbone-Twit. Brigadier Bloodshot is one of his lordship's old drinking pals, Fawning is the family retainer, and Charles Rambling is the high-living heir to the ancient estate.

Different people get killed in different scenarios which are arranged at random by the computer. "Please wait for the foul deed to be done" says the screen display once the ground rules have been explained. A map of the house is shown to you, level by level, and you can recall this map at any time during the investigation by pressing the F1 key on the computer. Since adven-



ture games normally entail making tortuous maps and copious notes this is a useful feature for the lazier members of the populace.

You have to move from room to room investigating the various suspects by first entering their names, and asking the stock questions, "Where were you at such and such a time?", "Who were you with?", "When were you last in . . .?", and "When did you last see X?" It is amazing what you can find out with just this simple formula.

Dr Drake found Lady Rambling's body at 8.35. She had been murdered in the last hour, and although he told me he was in the hall at 7.45, he revealed under intensive questioning that he had been in the lobby with Lady Rambling at 7.40. By gradually revealing the contradictions between various people's alibis you can finally uncover the real truth.

This program is perhaps not the most wonderful use of the CMB-64's graphics facilities — although the maps are good, it is still largely a text adventure game — a large memory is required to make a CAG worthwhile.

The next case Death Cruise, for the Dragon 32 by Virgin, put me on an ocean liner. On land, I was all at sea, so I thought I'd regularise the situation. At first I thought it was a case of sink or swim. I wish it could have been that simple. There was a bomb on board, and the entire ship's complement were dependent on my keen investigative faculties to keep them from taking the kind of fly/cruise trip you don't read about in the holiday brochures.

Documentation for this program comes in the form of a Boarding card — nice idea. Unfortunately there are one or two foul-ups. When I descended to deck four — the map display of different levels is the same idea as in the previous

Murder program — I could clearly see the cargo hold. On the documentation this was supposed to be on deck five. The program does not respond to the sort of commands like "Get" which are generally supposed to be common to all CAGs. But the overall idea is pleasantly novel.

There is a one or two/four player option. With the two-player option you each get clues that the other player doesn't get — this entails a lot of making sure that your partner cannot see the screen when your clue is up. In this case, the crazed saboteur was Dr Sinister. He was dressed as a waitress, the bomb was in his handbag and the detonator was in the library. Next time I go by air.

I am in an aircraft. There are no obvious exits. There is a parachute with cord. There is a door lever. Yes, it's Espionage Island by Artic for the Spectrum and although I remembered to get the parachute before I pulled the door lever, I could not figure out how to get it to open. The last thing I remember is a message on the screen saying "The ground is approaching very quickly. What shall I do?"

Somewhere, hidden on the island is a secret. Your adventure begins in a crashing aircraft and builds up to a climax in the heart of the enemy stronghold. If you can figure out how to pull your ripcord, that is. You must then return to your aircraft carrier, but beware your side may be fooled by your disguise. Due to the size of the adventure the program has cassette routines with which you can Load and Save a game at any stage, to return to at some other time.

This is all very well, but I am afraid this is one of those missions I decided not to accept. The tape did not self-destruct, it got that way because I jumped on it repeatedly.

But I could not escape the shadowy world of espionage, where justice is a dirty word, and principles are about as much use to you as a waterbed with a hole in it. Neither it seems could I escape the world of crashing aircraft. In Super Spy, by Richard Shepherd for the Spectrum, I was unexpectedly summoned by my spymaster. A jetfighter had disappeared while training. There was no wreck, but it was known that the plane had nuclear weapons on board. Dr Death was holding the world to ransom the way Emilio Largo does it in Thunderball.

This game has four sections. In the first, you choose your weapons and travel the capitals of the globe looking for anagram clues to the location of Dr Death's island and being attacked by midgets and mysterious orientals. It's tough. You expect to get mugged in New York, but Moscow? Once you have got enough letters you can quit traipsing round the Vienna-Rome-Moscow-London-Paris-Munich-everybody's talkin' bout pop music circuit and type in the place where you think Dr Death's atomic stronghold is.

I guessed Jamaica and I was right. Then you move in the second section of the game into a more standard Go South, Go East, You are attacked by a giant octopus CAG. If you get through this you enter the third section, a 3-D graphics maze, through which you must navigate yourself to find the control room where Dr Death has hidden the kidnapped missile. Finally you have to break the code to disarm the missile and save the world. This is an excellent game, but without its touches of humour. I tried to run away from the muggers in New York and the machine said "remember you're British!" Well, I always said I should have stuck to being an ordinary gumshoe.

MY NAME IS **DIAMOND**, DAN DIAMOND I'M A PRIVATE COP. I WORK THE BIG APPLE A SEETHING METROPOLIS FILLED WITH HUMAN MISERY AND CHINESE TAKEAWAYS.

NORMALLY I ONLY DO ROUTINE DIVORCE CASES BUT WHEN **SHE** WALKED INTO MY OFFICE I FOUND MYSELF INVOLVED IN A CASE SO STRANGE THAT

IT MADE THE **BIG SLEEP** LOOK LIKE A CAT NAP...



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**HUNT WINS GRAND PRIX**

At yesterday's Monaco Grand Prix, a hunting party strayed onto the track at the climax of the race. Cars were halted as the hounds rampaged around the circuit. "The whole place has gone to the dogs," one driver was reported as saying. The race was restarted; riders and drivers battled bitterly around the course before the Hunt thundered past the finishing line to take the chequered flag (it hasn't been seen since).

**PLAYER WINS OPEN**

Eagle eyed spectators were privileged to see pl... score a hit...



**Salamander SOFTWARE**



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**PRIVATE DETECTIVE DISAPPEARS**

Police are baffled by the disappearance of Dan Diamond. He was last seen approaching the eerie edifice known as Franklin's Tomb, but the authorities are completely unable to find any trace of him. Citizens are asked to report any information relating to his disappearance immediately. For further details, buy FRANKLINS TOMB, a new adventure game for the DRAGON 32 and 48k ORIC-1. This adventure comes complete with a 24-page illustrated Case File. £9.95 from BOOTS, SPECTRUM, COMPUTERS FOR ALL, WEBSTERS and all other purveyors of software. Don't

**2 DEAD IN EVEREST TRAGEDY**

The Everest Expedition ended in tragedy yesterday as Carl and Fr... plunged down a crev... to a grisly death. H... the expedition lea... was quoted as sa... "Yuk". Continued on p...

**COLD WAR OF XARG ESCALATES**

Thousands dead in Ice Storm Muduras the M... said yesterday...



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# Cuthbert Goes Walkabout

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# BUYERS GUIDE TO COMPUTERS

## Sinclair Spectrum

**Price:**  
16K £99.95 48K £129.95

**Manufacturer's address and phone no:**  
Sinclair Research, Stanhope Rd., Camberley,  
Surrey. Tel: (0276) 685311

**Display and graphics:**  
Limited in scope, but easy to program, very  
good results are possible

**Sound:**  
Feeble, though easily programmed

**Keyboard:**  
The original "dead flesh", uses single key entry  
of Basic words — i.e. saves time. No space bar

**Programmability:**  
Sinclair Basic is idiosyncratic, but easy to use,  
and extensive

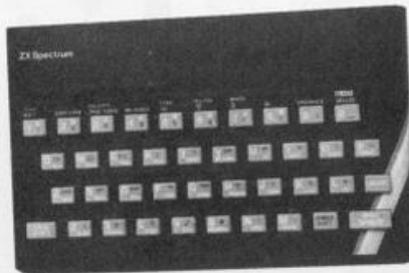
**Manuals:**  
An example to us all

**Expansion:**  
Sinclair can upgrade the 16K for you, but  
nothing is available on the market

**Add-ons:**  
Just about everything you can imagine can be  
connected

**Add-ons available from manufacturer:**  
ZX printer, £39.95 available retail outlets  
Interface 2, £19.95, allows you to use cartridge  
software and joysticks  
Microdrive, £49.95, with ZX Interface 1,  
£29.95, will allow you to use cartridges each  
85K, you can stack up to 8 of these.  
All of these mail order only, available retail next  
year

**Amount of machine-specific software available  
from manufacturer:**  
Over 60 packages — produced by third party and  
sold by Sinclair



**Availability:**

Just about everywhere

**Does it need dedicated cassette?**  
No, but cassette must have separate ear and mic.  
socket + 3.5mm jack socket — most do

**Cartridges/or not:**  
Interface 2 allows you to use ROM cartridges

**Software supplied with machine:**  
1 demo cassette, Horizon, and 2 manuals

**Software:**  
A wide range of just about every type of  
imaginable program. some of the best software  
around

**Star rating:**

Sound  
Keyboard & casing  
Display & graphics  
Software  
Basic  
Manuals  
Expansion



## ZX-81

**Price:**  
£39.95

**Manufacturer's address and phone no:**  
Sinclair Research, Stanhope Rd., Camberley,  
Surrey. Tel: (0276) 685311

**Display and graphics:**  
Black and White only, low resolution

**Sound:**  
No sound

**Keyboard:**  
Pressure sensitive

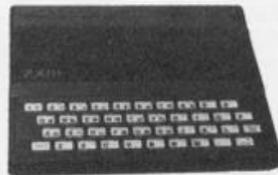
**Programmability:**  
Easy, but it can't do much, and is slow

**Manuals:**  
Excellent — it is worth considering buying a  
ZX-81 to teach yourself Basic

**Expansion:**  
16K RAM pack £29.95

**Add-ons available from manufacturer:**  
ZX printer £39.95

**Amount of machine-specific software available  
from manufacturer:**  
Over 45 — but it is produced by third party and  
marketed by Sinclair



**Availability:**

Will still be around for Christmas

**Does it need dedicated cassette?**  
No, most are OK, but check before you buy it  
(same type as Spectrum)

**Cartridges/or not:**  
No

**Software supplied with machine:**  
None

**Software:**  
A very wide range, some is surprisingly good

**Star rating:**

Sound  
Keyboard & casing  
Display & graphics  
Software  
Basic  
Manuals  
Expansion



## CGL/Sord M5



**Price:**  
£149.95

**Supplier's address and phone no:**  
Computer Games Ltd, CGL House,  
Goldings Hill, Loughton.  
Tel: 01-508 5600

**Display and graphics:**  
Very good, sprite graphics nice, but can  
be hard to use

**Sound:**  
Three channels, output through TV,  
not easy to use from Basic

**Keyboard:**  
Poor, and difficult to use. No space bar

**Programmability:**  
You really need to pay extra for a  
decent version of Basic

**Manuals:**  
Fine if you are an expert, otherwise a  
bit "iffy"

**Expansion:**  
32K RAM pack which incorporates  
expansion box £60 approx

**Add-ons:**  
Not a great deal of choice because  
everything comes from manufacturers

**Add-ons available from manufacturer:**  
80-column printer £212  
Data recorder £45.95  
Joypads £24.95 a pair, no interface  
needed

**Amount of machine-specific software  
available from manufacturer:**  
40-50 a lot of it comes from Japan  
where the machine is made

**Availability:**  
Difficult to find in shops, but stockists  
have plenty

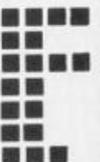
**Does it need dedicated cassette?**  
No

**Cartridges/or not:**  
Yes

**Software supplied with machine:**  
Basic cartridge and tape with two  
games

**Software:**  
Not much

**Star rating:**  
Sound  
Keyboard & casing  
Display & graphics  
Software  
Basic  
Manuals  
Expansion



**Price:**

16K £99.95 48K £139.95

**Manufacturer's address and phone no:**Oric Products International, Coworth Park  
Mansion, London Rd., Ascot, Berkshire SL5  
7SE. Tel: (0990) 27645**Display and graphics:**In theory as good as the Spectrum, though actual  
use is difficult**Sound:**Wonderful, especially effects like ZAP and  
PING**Keyboard:**Rubbery, fiddly and annoying, but does  
resemble a typewriter slightly**Programmability:**Oric Basic is good — though there are one or  
two "bugs"**Manuals:**

Very naff — example of how not to do it

**Expansion:**Oric claims a Microdrive with proper 3 inch  
discs will be available next year, was to have  
appeared last summer**Add-ons:**Terrific little printer available, discs and  
communications promised soon**Add-ons available from manufacturer:**At the moment if you buy a micro Oric will give  
you £40 off their printer which normally costs  
£169.95. Offer will last at least until Christmas**Amount of machine-specific software available  
from manufacturer:**

None

**Oric-1****Availability:**In some high street stores and many specialist  
shops**Does it need dedicated cassette?**

No

**Cartridges/or not:**Yes, or rather it could. The expansion slot would  
take cartridges but, alas, no one makes any**Software supplied with machine:**

A Welcome tape

**Software:**Still early days, though signs are that Oric  
software will only be average**Star rating:**Sound  
Keyboard & casing  
Display & graphics  
Software  
Basic  
Manuals  
Expansion**Colour Genie****Price:**

£168

**Supplier's address and phone no:**Lowe Computers, Chesterfield Rd., Derbyshire  
DE4 5LE. Tel: (0629) 4995**Display and graphics:**

Not bad, but rather dullish colours

**Sound:**Three voices through TV, like the Vic only  
easier to program**Keyboard:**

Real keyboard

**Programmability:**Has extended Basic, fairly standard. Easy to use  
graphics and sound**Manuals:**

n/a

**Expansion:**

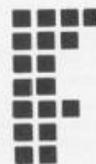
None

**Add-ons:**The Colour Genie has holes for every  
conceivable expansion, all standard interfaces**Add-ons available from manufacturer:**Thermal dot-matrix printer, which is a combined  
printer, typewriter and calculator, £169**Amount of machine-specific software available  
from manufacturer:**

103

**Availability:**In some specialist shops, should be plenty  
around for Christmas**Does it need dedicated cassette?**No, but the general rule is the cheaper the  
better, or so says the manufacturer and he ought  
to know**Cartridges/or not:**

Yes

**Software supplied with machine:**2 cassettes, one a machine demonstrator and the  
other a compilation of two games, three utilities  
and two music synthesisers**Software:**Lowe Electronics have a user group with a fairly  
large software list**Star rating:**Sound  
Keyboard & casing  
Display & graphics  
Software  
Basic  
Manuals  
Expansion**Acorn Electron****Price:**

£199

**Manufacturer's address and phone no:**Acorn Computers Ltd, Fulbourn Rd., Cherry  
Hinton, Cambridge CB1 4JN.  
Tel: (0223) 316039**Display and graphics:**Very good — nice stable picture on screen and a  
choice of graphics modes**Sound:**A single channel output through a little internal  
speaker, easy to program**Keyboard:**

Very nice

**Programmability:**

Use BBC Basic — arguably the best around

**Manuals:**Patronising, but helpful to the beginner and  
more experienced user alike**Expansion:**

Not yet

**Add-ons:**

Not yet

**Add-ons available from manufacturer:**

Not yet, but range of "boxes" coming

**Amount of machine-specific software available  
from manufacturer:**So far 12 packs have been released by Acornsoft,  
Acorn's software company, runs a small amount  
of BBC software**Availability:**Will not be available in large quantities this side  
of Christmas**Does it need dedicated cassette?**

No

**Cartridges/or not:**

No

**Software supplied with machine:**

A Welcome tape

**Software:**As yet not much, in theory BBC Micro software  
should run, in practice it doesn't. Expect some  
good education programs**Star rating:**Sound  
Keyboard & casing  
Display & graphics  
Software  
Basic  
Manuals  
Expansion**Dragon 32****Price:**

£175

**Manufacturer's address and phone no:**Dragon Data Ltd, Kensig Industrial Estate,  
Margam, Port Talbot, West Glamorgan SA13  
2PE. Tel: (0656) 744700**Display and graphics:**Notorious, the Dragon's display limits the  
machine**Sound:**Single channel through TV speaker, easily  
programmed**Keyboard:**Although a real typewriter-like keyboard it  
doesn't feel as good as many others**Programmability:**Quite good, uses the same Basic as the IBM  
micro**Manuals:**

Patronising and badly thought out

**Expansion:**

Plans for upgrade

**Add-ons:**Joysticks are tacky and disc drives expensive, but  
there is a wide range**Add-ons available from manufacturer:**

Disc drive

*Continued on next page*

## Dragon 32 *continued*

**Amount of machine-specific software available from manufacturer:**

70

**Availability:**

Should be plenty around

**Does it need dedicated cassette?**

No

**Cartridges/or not:**

Yes

**Software supplied with machine:**

None, although some retailers may include some

**Software:**

On the whole Dragon software is pretty naff. But there are one or two good packages

**Star rating:**

Sound

Keyboard & casing

Display & graphics

Software

Basic

Manuals

Expansion



## Atari 400



**Price:**

£149.99

**Manufacturer's address and phone no:**

Atari International (UK) Ltd, Atari House,  
Railway House, Slough, Berkshire SL2 5BZ.  
Tel: Slough (0753) 33344

**Display and graphics:**

Amongst the best

**Sound:**

Internal synthesiser output through TV

**Keyboard:**

Horrid, like the ZX81, though, there is a space bar

**Programmability:**

Need to buy Basic as a plug-in extra

**Manuals:**

OK

**Expansion:**

Expandable to 64K with memory module, £89.99, not yet available

**Add-ons:**

Discs and printers are easy to add, but not cheap

**Add-ons available from manufacturer:**

1010 program recorder £49.99

Disc drives and three printers available shortly. All add-ons compatible with whole range of micros

**Amount of machine-specific software available from manufacturer:**

65, again all their software will run on all their machines

**Availability:**

Soon to be replaced by the 600XL, so look for discounts

**Does it need dedicated cassette?**

Yes, the program recorder

**Cartridges/or not:**

Yes

**Software supplied with machine:**

None

**Software:**

The best, but also the most expensive. Cartridges feature real, not copied, arcade games like Donkey Kong

**Star rating:**

Sound

Keyboard & casing

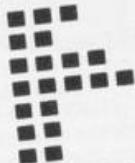
Display & graphics

Software

Basic

Manuals

Expansion



## Vic-20



**Price:**

£135

**Manufacturer's address and phone no:**

Commodore Information Centre, 675 Ajax Avenue, Trading Estate, Slough, Berkshire SL1 4BG. Tel: (0753) 74111

**Display and graphics:**

Limited screen width of 22 characters is not much good for serious use

**Sound:**

Three voices, but difficult to program

**Keyboard:**

Good, real keyboard

**Programmability:**

OK, but to make the most of the machine, Simon's Basic is essential. Not much memory

**Manuals:**

Not too good, but a programming course is available at extra cost

**Expansion:**

3K, 8K, and 16K RAM packs

**Add-ons:**

Discs, printers and joysticks are easy to add

**Add-ons available from manufacturer:**

Joystick £7.50

**Amount of machine-specific software available from manufacturer:**

Over 100

**Availability:**

Yes

**Does it need dedicated cassette?**

Yes

**Cartridges/or not:**

Yes

**Software supplied with machine:**

1 compilation tape of 4 programs

**Software:**

Varies from good to awful, cheap to expensive. Some good cartridge games, but many cassettes require extra memory

**Star rating:**

Sound

Keyboard & casing

Display & graphics

Software

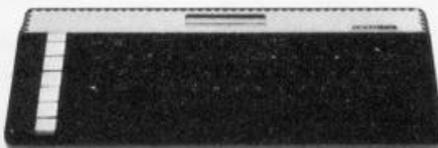
Basic

Manuals

Expansion



## Atari 600XL



**Price:**

£159.99

**Manufacturer's address and phone no:**

Atari International (UK) Ltd, Atari House,  
Railway House, Slough, Berkshire SL2 5BZ.  
Tel: Slough (0753) 33344

**Display and graphics:**

Very good, includes sprite graphics

**Sound:**

Three voices output through TV

**Keyboard:**

Real keyboard

**Programmability:**

Fairly simple, improved version of existing Atari Basic

**Manuals:**

Great if you are an American

**Expansion:**

16K RAM standard, expandable to 64K with optional memory module — a single plug-in unit costing £89.99, available shortly

**Add-ons available from manufacturer:**

1010 Program recorder, £49.99

Available shortly:

1050 disc drives, dual density £299.99

Plus 3 printers — 1020 colour printer, £199.99

1025 80-column printer, dot matrix, £349.99

1027 letter quality printer, £299.99

All peripherals compatible with whole range, providing enough memory

**Amount of machine-specific software available from manufacturer:** 65

**Availability:**

Hard to find

**Does it need dedicated cassette?**

Yes, the Program recorder £49.99, two track so you can have program on one and voice on the other, as on language learning tapes.

**Cartridges/or not:**

Yes

**Software supplied with machine:**

Atari Basic built-in

**Software:**

Runs all Atari computer software, very wide range, though can be expensive

**Star rating:**

Sound

Keyboard & casing

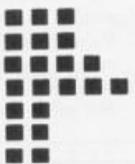
Display & graphics

Software

Basic

Manuals

Expansion



## TI99/4

**Price:**

£99.95

**Manufacturer's address and phone no:**

Texas Instruments Ltd, Manton Lane, Bedford MK41 7PA. Tel: (0234) 63211

**Display and graphics:**

Adequate. Colours are quite good

**Sound:**

Three voices

**Keyboard:**

Real keyboard

**Programmability:**

Fairly good, though non-standard Basic

**Manuals:**

OK

**Expansion:**

Peripheral expansion system £159.95

**Add-ons available from manufacturer:**

Expansion system disc drive £319.95 plus disc controller card £18.95, but needs peripheral expansion system



# COMMODORE 64

NOW that the Commodore 64 has come down in price — it can be found in most high streets for less than £200, it must be worth considering as a home micro. To date it has been selling to people who have both a serious use and an interest in computer games. But now the emphasis will be much more on the home user.

If you are familiar with the Commodore Vic-20, then many of the features of the 64 will seem like old friends to you. The case of the machine even looks the same. It is a sturdy plastic case, coupled with a real keyboard together with four function keys, just like the good old Vic. The keyboard is a great advantage, because learning to use a typewriter keyboard is becoming as important as learning to read or write. When you leave the home micro, and go to work you won't have to start learning new keyboard skills from scratch.

It also means that you can use the computer for useful things like word-processing and communications. But not often I hope, because the 64 is an excellent games player. Like all other home computers the 64 has high resolution colour graphics, but what sets it apart are the sprites.

Sprites are little blocks of graphics which can

be made to move around the screen. Unfortunately, these clever beasts are not easy to program from the 64 Basic. In fact the Basic on the 64 is very crude. It doesn't have any commands for high resolution graphics, sprites, or for controlling the wonderful synthesiser that is built-in to the 64.

Maybe because the Basic is not very good, or maybe in spite of it, Commodore has come up with some very impressive software, including the definitive football game. There is a wide range of software already available for the micro and the list is growing rapidly. Games are available on disc, and cassette, as well as cartridge.

If you buy a 64, then the cassette unit — only a Commodore unit will work with the micro — will probably be your next purchase, it costs around £25. It is, however, worth considering floppy discs, with a drive costing in the region of £199. Most good American software comes on disc, and although it is an extra expense, it will save you a lot of time and effort.

One of the best features of the software for the 64 is the low price of the cartridges. They sell at around £10 and simply slot into the back of the machine. There is also a pair of joystick ports that will accept the now standard Atari-style joysticks, as well as light-pens, and a range of other goodies.

Because the 64 is a "world micro", that is it will be sold all over the planet, it is worth software houses investing large sums in providing it with very good software. I expect the support for the 64 to increase.

I like the 64, most of all I like the real sound synthesiser built-in to the micro. I also like the keyboard and speaking as someone who makes his living from a typewriter, that is important. More than anything else about this micro I like the potential and the software, especially the excellent football game.

On the negative side is the weak Basic, though it is possible to purchase a better version, called Simon's Basic, for an extra £50. Also, although there is 64 kilobytes of Ram, enough memory for most needs, only 37K is available to the Basic programmer, but you will find yourself hard-pressed to use all that.

**Bill Bennett**

## Machine:

Commodore 64

## Price:

£199

## Manufacturer's address and phone no:

Commodore Information Centre, 675 Ajax Avenue, Trading Estate, Slough, Berkshire SL1 4BG. Tel: Slough (0753) 74111

## Display and graphics:

Good, sprite graphics, but hard to use

## Sound:

A full synthesiser

## Keyboard:

Good typewriter-type keyboard with four function keys

## Programmability:

To make the most of the 64 you really need to spend some money on a better Basic. Though simple programs can be written

## Manuals:

Commodore Manuals always leave much to be desired. This one helps neither beginner nor expert

## Expansion:

None

## Add-ons available from manufacturer:

RS-232 Interface £34.95  
Joystick £7.50  
Paddles £13.50

## Amount of machine-specific software available from manufacturer:

Over 70

## Availability:

Some difficulties

## Does it need dedicated cassette?

Yes

## Cartridges/or not:

Yes

## Software supplied with machine:

None

## Software:

A lot of good 64 software is being imported from the US, though it tends to be expensive. Cartridges can be excellent

## Star rating:

Sound  
Keyboard & casing  
Display & graphics  
Software  
Basic  
Manuals  
Expansion



## TI99/4 continued

### Amount of machine-specific software available from manufacturer:

94

### Availability:

All over the place and in large numbers

### Does it need dedicated cassette?

No

### Cartridges/or not:

Yes

### Software supplied with machine:

None

### Software:

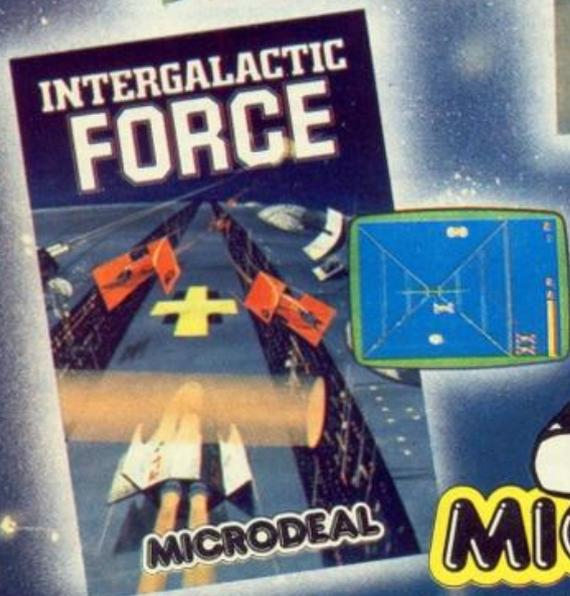
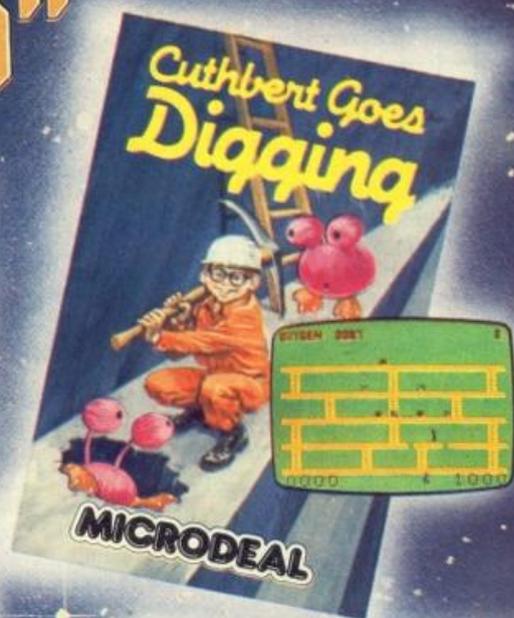
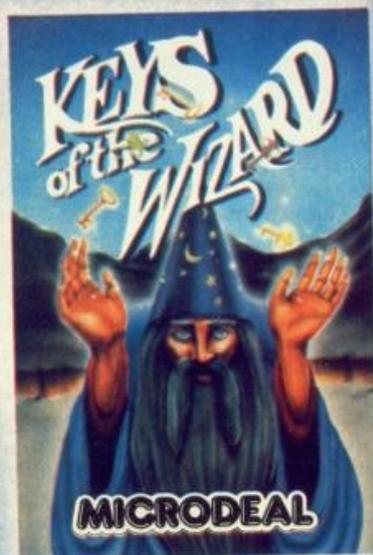
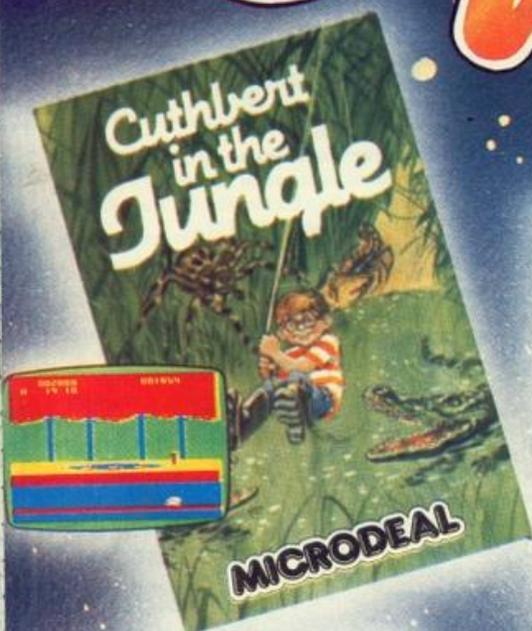
Good range but indifferent quality, the educational software is too American to be useful

### Star rating:

It is worth noting that Texas is withdrawing from the home computer market — I'd think twice about buying a discontinued machine.

# WHEN IT COMES TO DRAGON 32 Software

"WE'VE GOT  
IT TAPED"



**MICRODEAL**



41 Truro Road, St. Austell, Cornwall PL25 5JE. Tel: 0726 3456

All cassettes £8 each

Selected titles available from larger branches of Boots, John Menzies, Spectrum, Computers for All and all good computer shops.

# sinclair special

6



*Inside...*

*Setting new standards in  
educational software with  
Sinclair-Macmillan*

*Plus six other learning programs*

## TODAY, LEARNING IS A NEW GAME

Subsidised microcomputers are now commonplace as teaching aids for the very youngest children and the ZX Spectrum is prominent amongst those micros at use in schools.

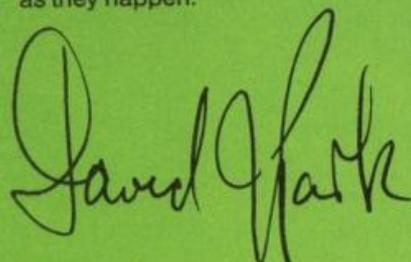
In the relatively short time that the Spectrum has been at work in the classroom, two questions have been answered. Yes: with the right software, the micro can and does teach effectively and thoroughly (and gives teachers more time to devote to individual pupils). Yes: young children think little of working rapidly and successfully, with a screen and keyboard, on even quite complex subjects.

In this Sinclair Special we reveal a range of educational software specifically designed to make full use of these advantages. The programs produced by Sinclair in collaboration with Macmillan Education are fascinating. They deal imaginatively and most effectively with early reading skills and take a truly refreshing approach to basic science.

In the Blackboard range we've programs which bring a light-hearted clarity to the tricky matters of spelling and punctuation.

These programs are designed for use both at home and in the classroom. Each program is accompanied by full documentation which gives parents helpful advice and guidance on the educational objectives.

The programs covered on these pages represent only a fraction of the full and fast-growing list of Spectrum software. Be assured we'll keep you in touch with new developments as they happen.



David Park  
Education Marketing Manager

# NEW WAYS TO LEARN WITH THE ZX SPECTRUM™

## Programs from Blackboard Software

The new range of educational programs from Blackboard Software makes learning an enjoyable process by involving the child in a game which teaches as it entertains.

Each program has a step-by-step example section and gives correct answers after a number of attempts. Vocabulary changes can be made, allowing each program to keep pace with the child's development. This flexibility can also be used in the classroom to cater for children of differing ability.

The instructive and colourful games which follow the successful completion of each group of sentences provide useful practice in letter recognition and increase familiarity with the Spectrum keyboard.

All programs are written for the 48K RAM Spectrum.



### Alphabet Games

Three games of letter recognition (using either upper or lower case) to help children learn the alphabet and find their way round the computer keyboard.

**Alphagaps** — The full alphabet is displayed, along with a second, incomplete version. The child must fill in the missing letters.

**Random Rats** — Press the letter key that is displayed on the gun to destroy the rats which have invaded the cellar!

**Invaders** — Stop little green men from landing on Earth by pressing the appropriate letter.

### Early Punctuation

While an animated matchstick man marches above displayed sentences the child must decide which punctuation mark is missing and where to insert it. At the touch of a key the matchstick man drops the mark into place. After successful completion of every sentence in the exercise, light relief comes in the form of a bottle-shooting game!

### The Apostrophe

As each sentence is displayed, a bird appears with a worm in its beak. The keyboard is used to move the bird and drop the worm into the correct place for the apostrophe. When ten sentences have been corrected, the Grub Game is displayed. Press the correct character to change the grub into a butterfly...before it munches through a flower!

### Capital Letters

A program to teach the use of capital letters. Sentences incorporating proper nouns and sentences without opening capitals are displayed. The child inserts the correction by guiding an animated figure to the appropriate letter.

For each correct answer an apple grows on a tree. After ten correct answers the child's skills in recognising letters and using the Spectrum keyboard are needed to save the apples as they fall to the ground.

### Speech Marks

A comprehensive program including sentences with one or two sets of speech marks ("inverted commas") and exercises in both direct and reported speech.

Using the Spectrum keyboard, a cursor is used to guide speech marks to the correct position. The program offers three levels of difficulty, with full examples for each section. Guide Max the mouse through a maze, after the correct completion of five sentences from each section, but beware of Persian cats!

### Castle Spellerous

A spelling game with ten levels of vocabulary, including words with silent first letters, double letters and other difficult words. The Princess has been captured and carried off to Castle Spellerous. Helped by ten soldiers, the child can attempt a rescue by giving the right answers. Part of a siege tower is built for each correctly spelt word. Mistakes are costly — the wicked wizard appears as a vampire bat, turning the men into frogs, butterflies and bats!

When ten words are spelt correctly the rescue begins and the wizard takes flight.

# SINCLAIR + MACMILLAN: A NEW DIMENSION IN EDUCATIONAL PROGRAMS

Sinclair have joined forces with Macmillan Education to produce a completely new and different range of educational software. The results so far can be seen in these exceptional programs.

The Learn to Read series is derived from Macmillan Education's best-selling primary school reading scheme, Gay Way. It offers a unique opportunity for parents and

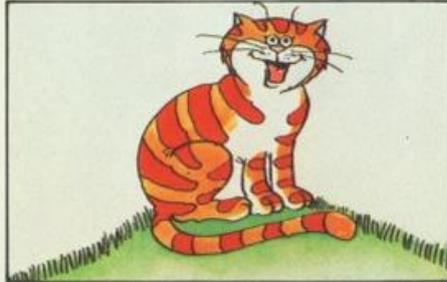
teachers to participate in the child's first experience in reading.

Macmillan Education's Science Horizons is one of Britain's most successful school science schemes. Each program concentrates on key scientific ideas and, through simulation of real life, makes the learning process entertaining and enjoyable.



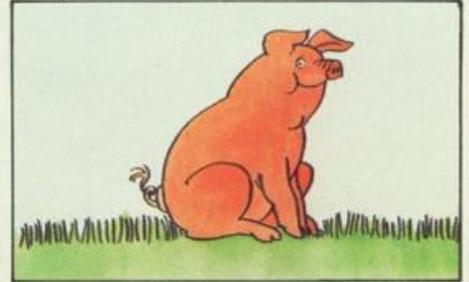
## Learn to Read 1

Learn to Read 1 is designed for children who are just beginning to read. It is in four parts, each of which develops skills central to the reading process — letter recognition, sight vocabulary, early spelling and memory. The program is full of colour and fun and children will enjoy learning to read as they meet the animal characters — Ben the dog, Jip the cat and their friends.



## Learn to Read 2

Learn to Read 2 extends the fundamental reading skills practised in the first program, as well as encouraging logical thinking. The child's vocabulary is gradually built up as new words such as "red", "green", "car", "ship" and "bus" are introduced. In addition, Learn to Read 2 features an attractive 'reward' system enabling children to see their achievements grow.



## Learn to Read 3

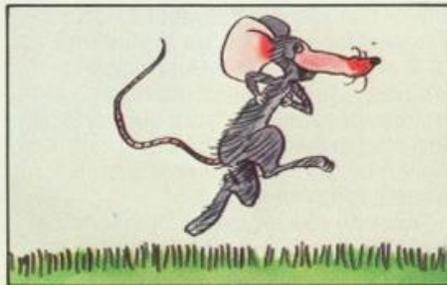
Learn to Read 3 builds on the child's progress so far, so that he or she can gain the confidence to move on through the complex reading process. Learn to Read 3 features four different activities, all of which are colourful and lively. Further vocabulary is introduced until the child is reading more than 30 words.



## Learn to Read 4

Learn to Read 4 is the alphabet program in the Learn to Read series.

Using various stimulating activities the program gives the child plenty of practice in working with the alphabet — matching initial letters to words and pictures and spotting missing letters. These exercises build familiarity with simple sequences within the alphabet.



## Learn to Read 5

Learn to Read 5 teaches positional language — often difficult to understand and remember — by using words and phrases such as "behind" and "in front of", "inside" and "outside."

The program first demonstrates the meanings of the words using clear pictures. It then tests the child's understanding of the words in two lively games.



## Cargo

Set sail around the world. Choose your ports of call — New York, Tokyo, Belem, Helsinki — then the real challenge begins! You must reach your destinations safely, weathering storms on the way. But first, load your cargo — using all your knowledge and skill. Poor loading can mean capsizing and sinking. Your rank, if not your life, is always at stake!



## Glider

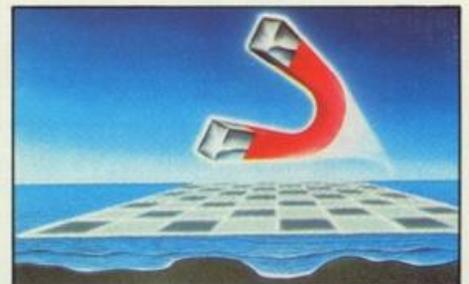
Be a glider pilot! The glider models real-life gliding conditions so that you can learn through experience. As the pilot you must consider the time of day, the amount of cloud cover and the kind of terrain below you in order to find the up-currents of air that will keep you airborne. Try to fly as far as possible and, when you are high enough, navigate your way back to your home airfield and land safely — if you can.



## Survival

Discover what it is like to be an animal in the wild! Be a lion stalking your prey, escaping human hunters. Or be a hawk, mouse or even a butterfly, searching for food and avoiding predators.

Survival models the natural world and brings to life hazards that different creatures must face in their struggle to stay alive.



## Magnets

With an army of small magnets you set out to conquer the powerful supermagnets of your opponent. You have one weapon — your forces of magnetic attraction and repulsion.

The strategy is simple: attract smaller magnets to build strength to repel the supermagnet. When cornered, just turn your poles on your enemy and see what happens!

Learn to Read and Science Horizons programs are written for a 48K RAM Spectrum, and are supplied complete with comprehensive supporting documentation for parents and teachers.

# ZX INTERFACE 2

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one or two standard joysticks without the need for separate special interfaces.

To use new ZX ROM Cartridge programs, just connect Interface 2 to the rear of your Spectrum or Interface 1 and plug in the cartridge of your choice. Switch on and the program is then loaded, ready to run!

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Spectrum owners who bought direct from us by mail order have been sent full details. Order forms are being mailed in strict rotation. If you haven't yet received your order form please bear with us. We're making good progress in meeting the huge demand.

If you didn't buy your Spectrum by mail order, send us the form at the bottom of this page and we'll add your name to the mailing list.

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Complete the appropriate sections on the order form below. Note that there is no postage or packing to pay on software purchases. Orders may be sent FREEPOST (no stamp needed). Credit card holders may order by phone, calling 01-200 0200, 24 hours a day. Please allow 28 days for delivery.

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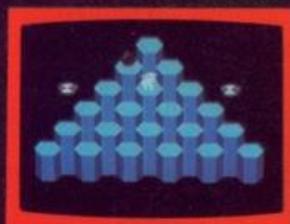
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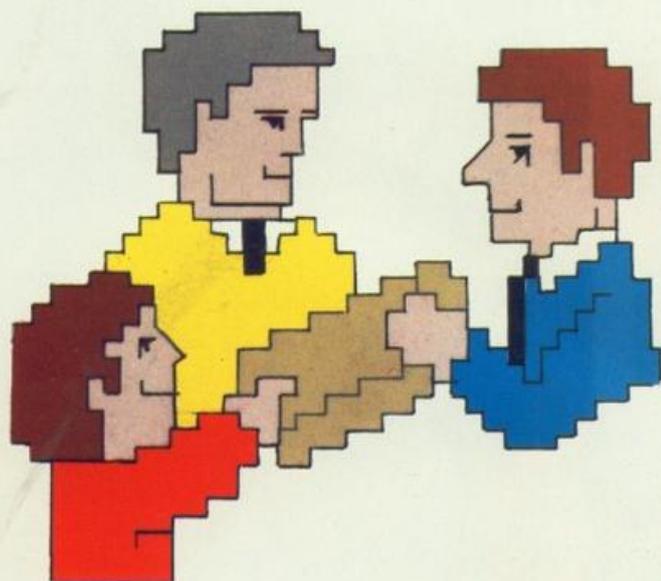
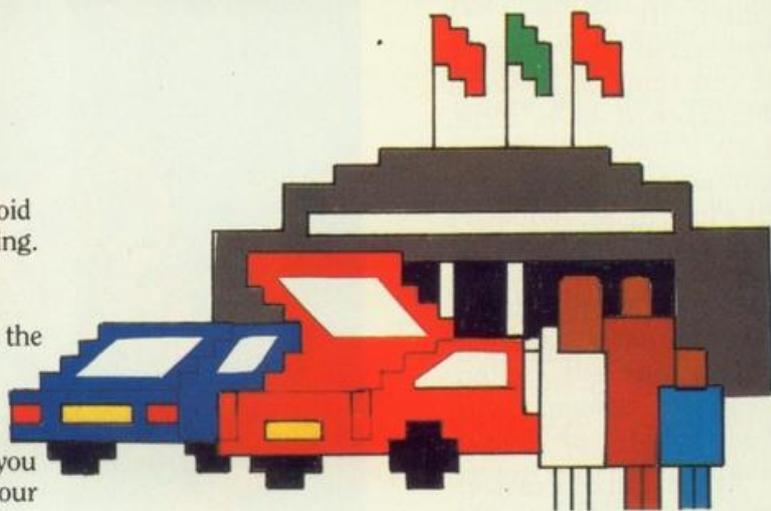
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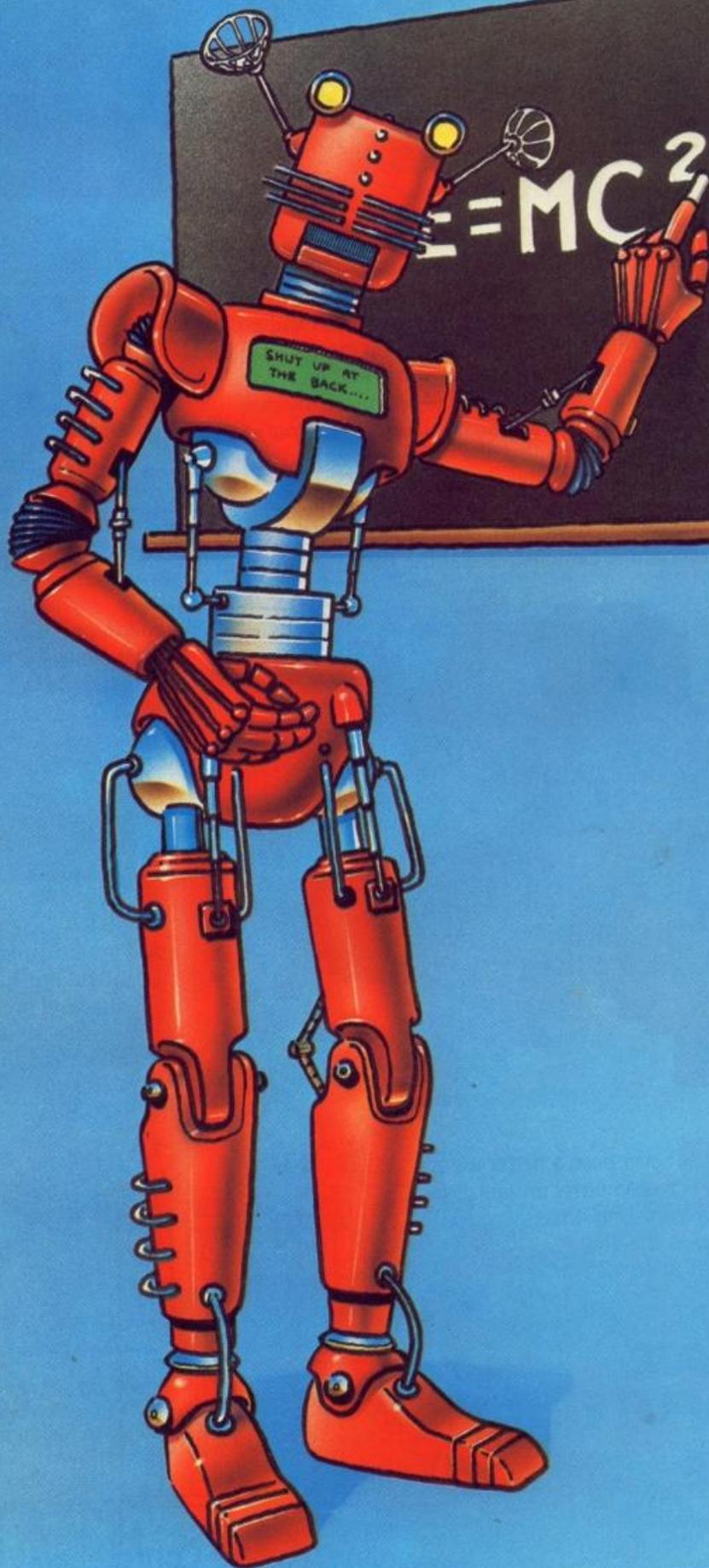
# RAM

RAM stands for Random Access Memory, which is the memory that you can alter inside a computer. It is easy to remember how it works if you think of it like a blackboard or a slate. Like a blackboard you can write whatever you like into RAM, it doesn't have to make sense, and when you have filled it up, you simply clear a little space, and continue writing over the previously occupied area.

At the end of a session of computing, when the machine is switched off, the memory clears. In much the same way, tidy teachers clean their blackboards — or get pupils to do it, at the end of a lesson. The next session starts with a complete blank.

It is possible to save the contents of the RAM by dumping the contents little by little onto a cassette tape, or a floppy disc. When you load a program from tape it goes straight into the RAM.

In the past, RAM has been an expensive item in a computer, but now it is fairly cheap. This means that micros have more memory, and can therefore run bigger and better games. Because screen displays are controlled by RAM it also means that the micros can have better graphics.



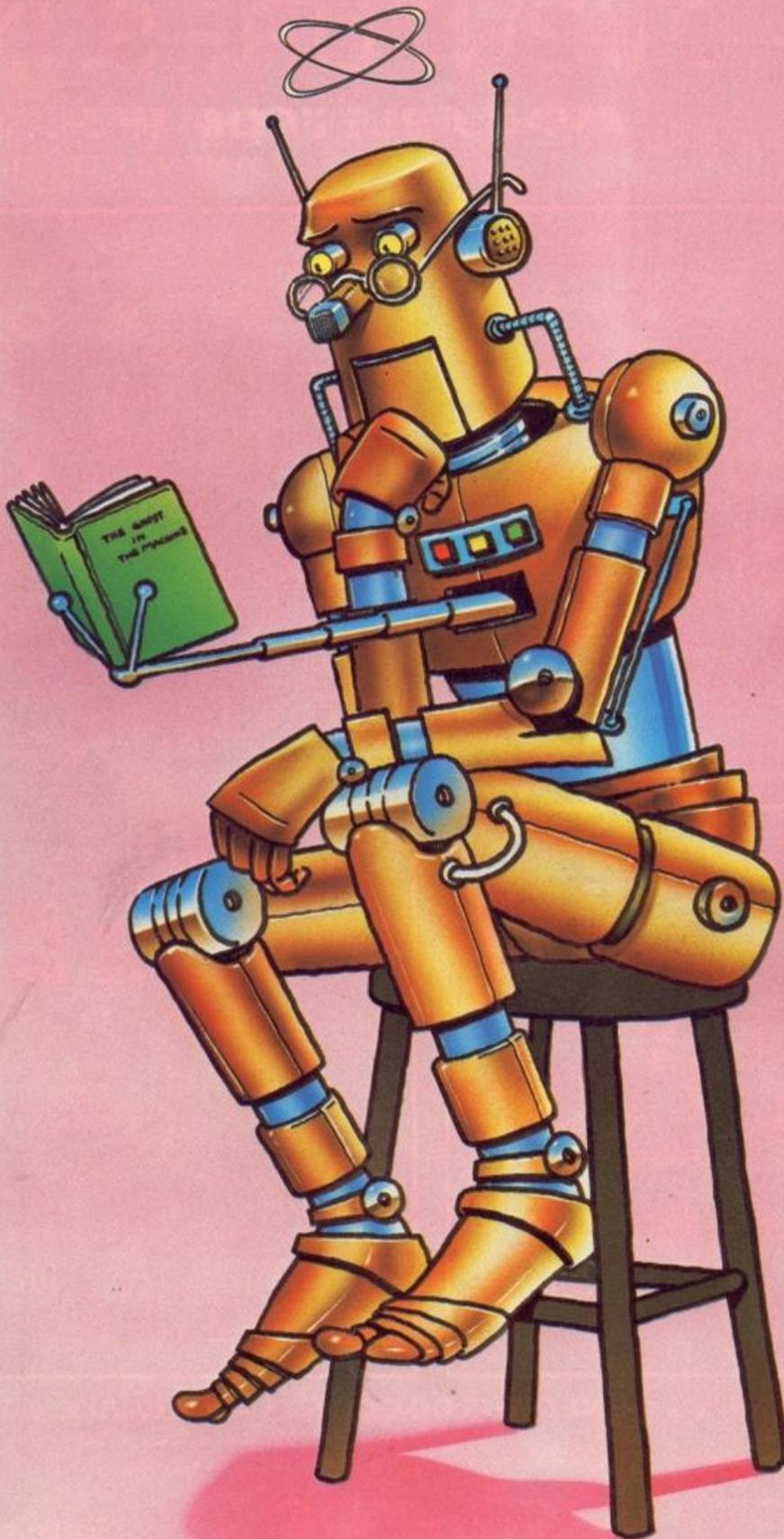
# ROM

ROM is Read Only Memory, that is you can look in it to see what it contains, but you cannot change it. ROM can easily be thought of as being like a book, where you find certain pieces of information.

There are two main uses of ROM in home computers. The first is inside the computer itself, where the ROM holds a special program called the interpreter, this converts the Basic typed in at the keyboard into the machine-code language which the micro understands.

This part of the ROM also does all the "house-keeping" inside of the computer, keeping track of where bits and pieces of information have got to, and so on.

ROMs are also used in cartridge software, where the programs can be simply loaded directly into the computer. Amongst other things this tends to save time in loading the software, but it also means that small computers can run larger programs.

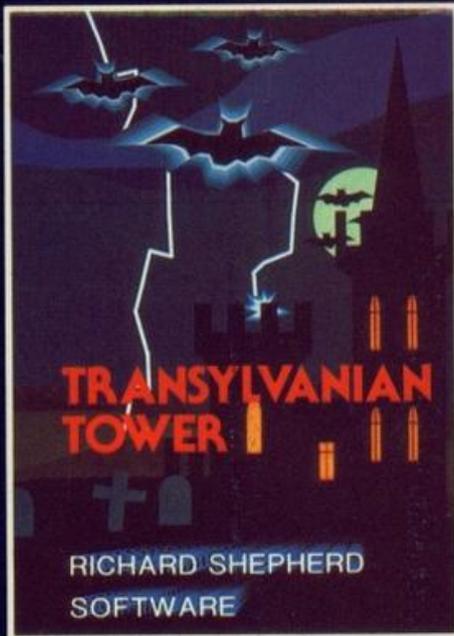


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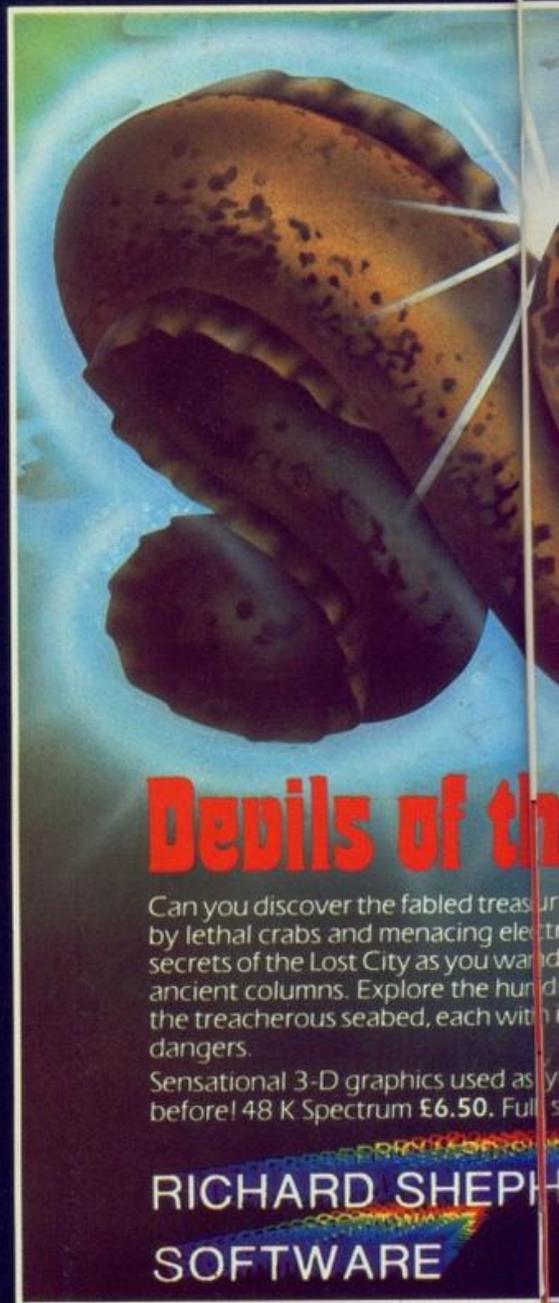
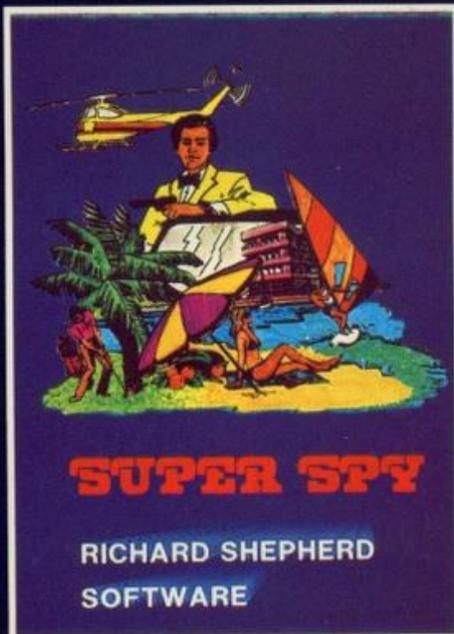
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# VIDEO GAMES



by Kirstie Rogers

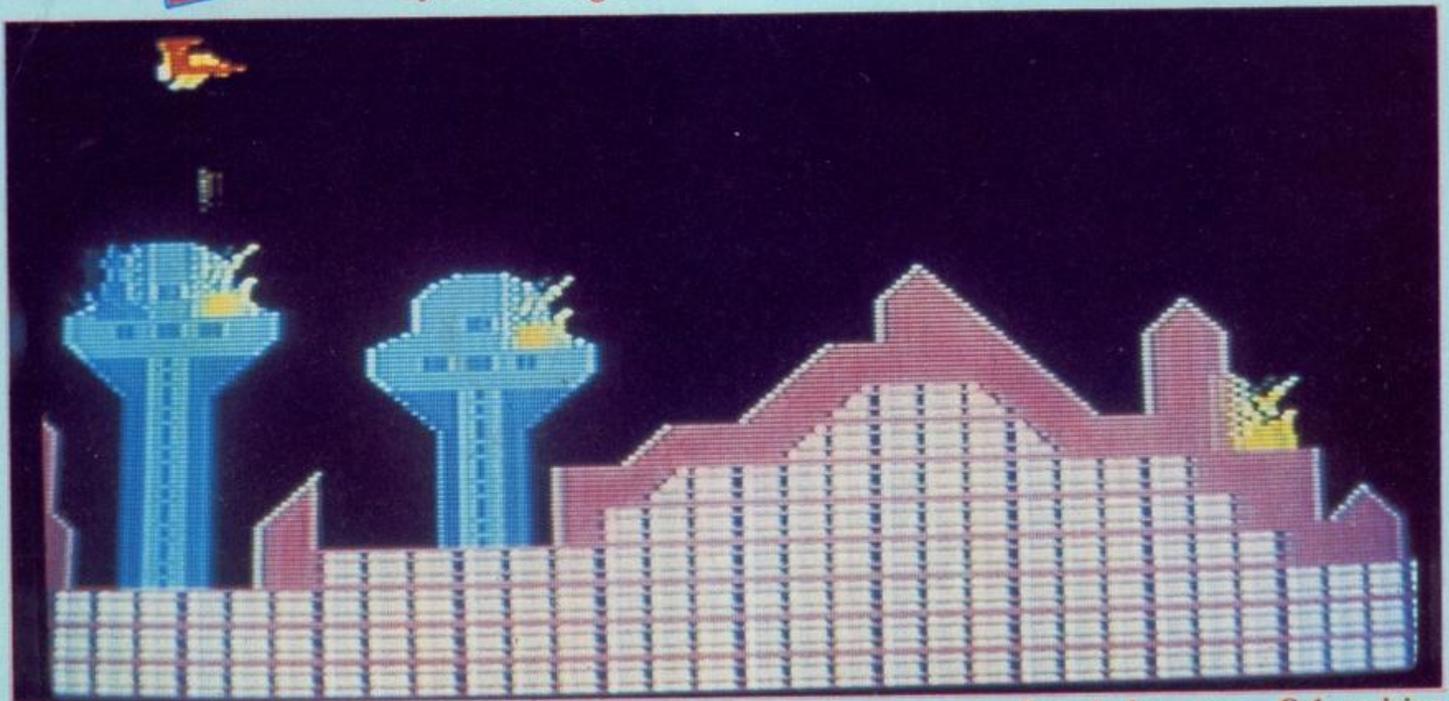
WHAT to buy, games machine or computer? There is often a lot of confusion as to which of these would suit your needs, both now and in the future. The biggest mistake you can make is to buy a games machine when you really want a computer and vice versa.

Games machines play only games. They often have very good graphics and sound with quite a wide variety of games available as cartridges. But that is all they do. They are not programmable, other than allowing you to alter skill level and number of players.

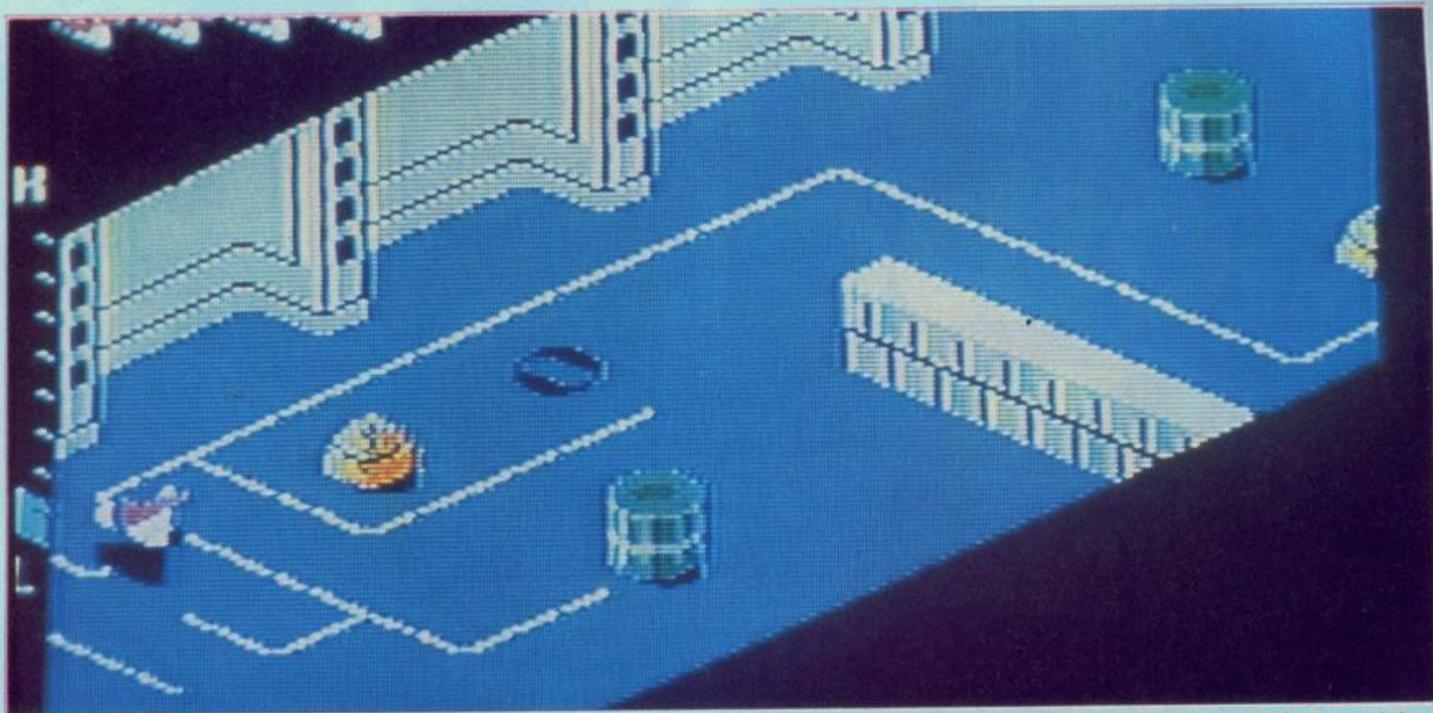
There are several games machines on the market. One of the best-known is the Atari VCS console. This has been around for a while and is quite a comprehensive package. The console sells for around £69.99 and includes PacMan and Combat games cartridges, joysticks and paddle controller. There is a wide range of cartridges about from several different companies.

Atari produce over 40 games including arcade action, space style and maze games. Recent releases include ET and Raiders of the Lost Ark, these two follow the film scenarios quite closely. The Atari games are usually quite good looking but without any real staying power.

Imagic, Activision and Parker Video Games also supply cartridges for the Atari. Quality varies, Parker specialise in arcade games, Imagic



Cosmic Avenger — Colecovision



Zaxxon — Colecovision

and Activision do a variety but most are versions of Space Invaders, PacMan or other established games under different names.

The Intellivision from Mattel is slightly better than the Atari. It comes with touch sensitive keypads, which unfortunately become rather less sensitive as they get

older and it occasionally crashes if it gets too hot. However, the images it produces are a little more sophisticated than the Atari. The games are available from Mattel, Imagic, Activision and Parker Video Games. Mattel's own games are quite good, particularly the series of Tron games which mimic the games scenes from the film. Tron Deadly Discs is particularly addictive and genuinely difficult, although the graphics are not too wonderful. The Intellivision sells for around £99.95 and includes the voice synthesis unit previously sold separately for over £50.

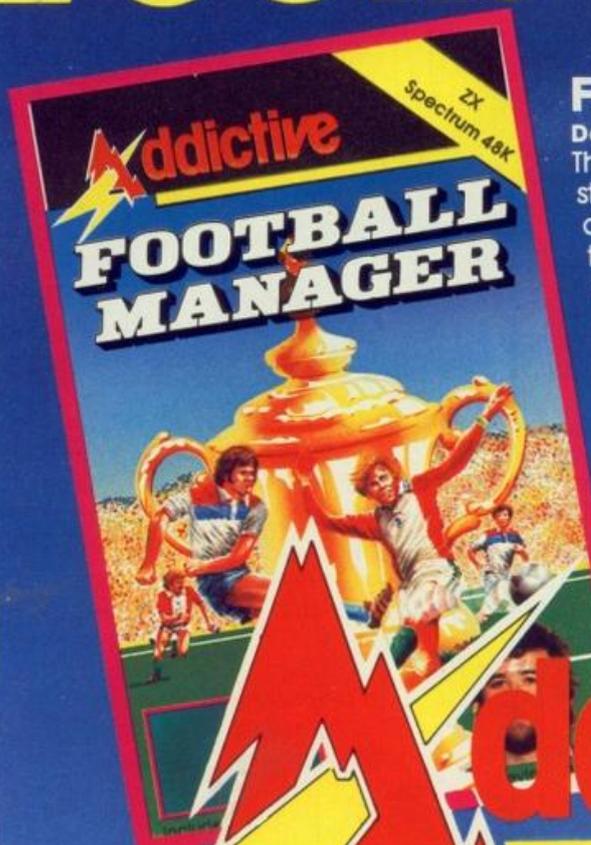
Philips have two games units, the G7000 which has a touch sensitive keyboard, although this is rarely used as most games utilise the joysticks. It costs around £69.95 but is very primitive in both sound and graphics with a very uninspiring range of games. One of its big promotions has been the games involving a combination of board and computer, mainly along the adventure style with Quest for the Rings and Conquest of the World, but there are so many great adventures about these days that they pale rather in comparison.

The newest from Philips is a games machine incorporating a black and white TV screen. The G7200 costs £109.95 which is a little steep, as the actual games and machine are the same quality as the G7000.



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ZX81 16K, ZX spectrum 48K  
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- ★ Four Divisions
- ★ Pick your own team for each match
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- ★ Managerial rating
- ★ 7 skill levels
- ★ Save game facility

# Addictive

\*ZX81 Chart, Home Computing Weekly 16.8.83

Comments about the game from press and our customers

"FOOTBALL MANAGER is the best game I have yet seen on the Spectrum and my personal favourite of all the games on any micro ... To the ordinary person it is an excellent view of what can be done in the field of computer games ... The crowning glory of this game is the short set pieces of match highlights which show little stick men running around a pitch, shooting, defending and scoring ... It is a compulsive game but people who cannot take game sessions of 9 hours or so, which happened on one happy Sunday, will be grateful to know that there is a 'save to tape' option. FOOTBALL MANAGER has everything it could ... The

originator, Addictive Games, certainly deserve the name." Rating: 19/20 (Practical Computing – August 1983).

"When I first received this game I spent the best part of the weekend playing it. Since then I have returned to it more often than any other. The truly addictive quality of this game is the remarkable way it mirrors the real football manager's problems ... (Personal Computer Games – Summer 1983)

"It's my own fault you *did* warn me – I am totally and completely hooked on FOOTBALL MANAGER." (Mr. A. Wright – Lancashire.)

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Currently causing some consternation amongst the competition in the video games world, is the new CBS Colecovision machine which will be facing its first Christmas in this country. The Atari and Intellivision have already announced price cuts, in the face of a more stylish machine.

The Colecovision games console has joystick/touch pad combination controllers and a growing range of entertaining games. Most of them are arcade based like Donkey Kong and Cosmic Adventure. Zaxxon is already gaining quite a reputation for superb graphics. The games are tuneful and colourful. CBS Electronics and Parker already produce quite a range and the machine is threatening the Atari domination with its interface allowing Atari cartridges to be played on the Colecovision. Another unique game is Colecovision's Turbo, this uses an expansion module which is a dashboard unit with steering wheel and foot operated accelerator pedal, for the real thrill of racing. The unit costs £50 which, added to the £150 for the machine and £29 for the cartridge, make it rather an expensive game for the average household, however unique.

The Vectrex system is something completely different. This is a self-contained unit with screen and control panel. Cartridges slot into the side of the unit and it is eminently portable. The video screen is only black and white, but you place colour overlays on top to get some interesting colour graphics effects. The graphics are produced by vector

scanning, which means that they are fast and very sharp. The linear effect produced is very like the arcade games style. The sound is wonderful, and loud, one of the cartridges, Spike, has very authentic voice synthesis that needs no add-ons, the capability is already there.



The control panel has a 360° self-centring joystick and four action buttons. The overlays for the games also have a useful reminder at the bottom showing the button function according to that game.

The latest releases for the Vectrex are Bedlam, Web Warp, Fortress of Narzod, Pinball and Spike. They use the 3D effect gained on this

machine and are very fast and furious in their action.

The unit is quite expensive at around £130, the games are recommended at around £20 but I have seen them for less, so shop around. It is a very fun thing to have and there is a real feeling of the arcade thrill as you play, one of the best games is Minestorm which is built into the memory and comes on automatically when you turn the machine on, unless you have put a cartridge in first.

All in all is it worth buying a games machine. Of course it is, if that's what you really want. If you want to play games, and games only, then the machines themselves are generally cheaper, cartridges are easy to load and instant to play (although a bit expensive at around £30 for most makes). The Intellivision, Vectrex and Colecovision have very good graphics, certainly superior to most I have seen on Dragon or Oric software.

However, if you have any aspirations beyond simple games playing

then they are not for you. Although the Intellivision and Colecovision have add-ons to make them into computers, this will inevitably add to the price, and unless you already have one of them and want to convert it, it seems rather silly to pay for a games machine and a computer, when you could buy a computer in the first place.



## Adventuring we go . . .

### The Golden Apples of Zeus

Romik Software (Vic-20)

THIS is Romik's first adventure game, and there are fullsome screen instructions to explain it all.

The pattern to these games is much the same. There is an objective, in this case to find the golden apples which are guarded by the dog Cerberus. The screen displays only text telling you where you are such as "I'm in a sunny green meadow. I see: Large rock." You then type in two- and one-word instructions such as go north, pick ring, examine rock. If you use a word it doesn't understand, it will tell you so.

I am sorry to say, these games do not appeal to me at all. I find a question-and-answer session with a computer which understands less than a quarter of my instructions, a tedious affair. It may appeal to some people of a more literary mind. 8K or 16K ram pack needed.

Lance Sucharov

RATING

### Sword of Hrakel

Romik Software (Vic-20)

ROMIK'S second adventure game,

and it left me cold. Here, you have to find the sword of Hrakel and then defeat the curse of the evil Mage. The artist's impression on the cassette looks interesting but there are no graphics in the game. The screen displays text. The instructions helpfully suggest that if a word like "cut" doesn't work, to try a synonym like "chop". The tussle of question and answer with the computer is presumably meant to be the fun of this game. I found it boring.

Part of the problem is that you can throw endless questions at an obstacle without knowing if you are wasting your time. Five of us spent half an hour trying to get out of the jail we walked into, and gave up in disgust. Also with no map to show your progress there is a tendency to loop round the same old questions. Definitely not for me. 3K, 8K or 16K ram pack needed. LS

RATING

### Zorgon's Kingdom

Romik Software (Vic-20)

THIS is really a conventional game in five stages, but a very good one. In the first stage you are a little man controlled by joystick or keys, and you have to walk along crumbling walls and up ladders. Now and then sluggish boulders come rolling down in the opposite direction which can splatter you, and lose you a life. There are good graphics

and sounds in this and all stages. I enjoyed the stages very much. They were quite different from each other and virtually amounted to five games in one.

In stage two the little man had to jump on moving lifts, then run under bomb-like gorgoids, jump on a boat, avoid octopuses until they mutated when you had to eat them. Other ghastly obstacles await you until you get to the last stage where you have to kill Zorgon.

You only had up to six lives for all the stages. What was more of a worry was that each stage was separately loaded from cassette on completion of the previous stage. However, once you had used up all your lives at stage two onwards, there was no way to start the game again except by reloading the cassette from scratch. Not only is this slow, but with all that cassette loading the chances are high of soon developing a loading fault. Nevertheless it is a good game and great value for money. 8K or 16K ram pack is needed.

LS

RATING

### Golden Apple

Artic (Spectrum)

BLOW whistle, and then . . . well you'll find out.

Golden Apple is very much a traditional adventure game, you begin in the roadway with exits N

and E and from then onwards you need your wits about you and a very devious mind.

The scenarios change, you can move through a garden, a wood and into a mansion, magic takes you further afield to a hilltop, a cavern, a ship and lands far away.

You have to collect treasures along the way, all disguised of course, but the final aim is the Golden Apple itself.

I was nowhere near finding the ultimate treasure when I finally had to quit last night, but on another day who knows. It is entertaining, not too difficult but tricky enough to keep you on your toes, my main complaint so far is the lack of a Kill command, does anyone know of another way to despatch a mean crocodile?

Kirstie Rogers

RATING



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# CORRIDORS OF GENON

**ONLY  
£5.95**

By the flick of a switch you could unleash the power of Genon in your own living room! But by thoughtful strategic play you could overcome Genon.

The only way this can be done is by destroying the powerful computer that controls all things.

After being transported to the Corridors of Genon you'll need your wits about you to master the door codes and venture through the corridors to locate the computer. While this is going on the computer will know your exact whereabouts and try to force you into a mistake by closing doors around you.

The computer also controls Bogul – the guardian of the corridors who can reduce your thought power (ESP) every time it finds and bogulises you, so you'd better listen out for its approaching footsteps!

Should you locate the computer and should your ESP be sufficient you'll have to pull on all your energy to try and master the 3 digit self destruct code.

With this done, now is the time to escape from the corridors. No door codes to worry about this time. But its no easy task as Bogul will have cloned – how many times though? Well that depends on how long you took to crack the self destruct code. There could be as many as

eight! And you'd better be careful as only one Bogulisation and you've had it!

Full colour graphics, sound effects and, of course, 3D machine code action as you would expect from Malcolm Evans 'the 3D expert\*', to push your 48K Spectrum to its limits. 'Corridors of Genon' is supplied with a keyboard overlay and is also compatible with the Kempston joystick.

If you survive this you could try . . .

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\* Computer & Video Games



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## SPECTRUM MODEL

Supplied with Spectrum legends, and a slightly different base for fitting the Spectrum, again all connectors are at the rear and there is plenty of room for the power supply (and other add-ons). Please specify on your order whether you require the ZX81 or Spectrum model.

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The LIGHT PEN enables you to produce high resolution drawings on your own TV screen simply by plugging into the ear socket of your Spectrum. The controlling software supplied with the light pen has 16 pre-defined instructions, chosen from a menu positioned at the bottom of the screen next to the pen. You can change colour (Border, Paper, Ink), draw circles, arcs, boxes, lines, fill any object with any colour, and insert text onto the screen at any chosen place, you can also draw freehand. There is a feature to retain the screens and animate. On the 48K Spectrum you can retain 5 screens. You can also use the machine code on its own in your own programs, for selecting out of a menu etc. The software provided will return with the X,Y, cords for it's position on the screen. The LIGHT PEN is supplied with a control interface, to adjust the sensitivity/pen alignment. Should you require further details please send a S.A.E.



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This module unlike most other accessories fits neatly inside your computer under the keyboard. It comes ready built fully tested and complete with a 4K graphic ROM, giving an unbelievable number of extra pre-programmed graphics and turns the 81 into a very powerful computer with a graphic set rarely found on larger more expensive machines. In the ROM are lower case letters, bombs, bullets, rockets, tanks, a complete set of invaders graphics and that only accounts for about 50 of them, there are still approximately 400 left (that may give you an idea as to the scope of the new ROM). It also has a spare holder on the board which will accept a further 4K of ROM/RAM. This holder can be fitted with a 1K/2K/RAM and can be used for user definable graphics so you can create your own custom character sets.

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# KNOT IN 3D

Known by some as 'getting knotted'. You won't find a game for the 48K Spectrum quite like this anywhere else!

Imagine yourself in a capsule hurtling through a void while leaving a trail behind you. The only manoeuvres possible are up, down, forward, left and right. How long can you survive without crashing into your own trail? As the trails build up so your reactions will need to sharpen up. To make the game that little bit more interesting we've added the complication of up to four rogue chasers that attempt to block your path. The challenge is not only to avoid the chasers

and score points but to try and work out a playing strategy - you won't find this easy!

Naturally you'll be terminated when you out manoeuvre yourself and get caught in 'the knot'!

Don't just take our word for it - 'A highly original, professional and exciting game and one that I could play all night - very highly recommended' - ZX Computing.

'Knot in 3D must be one of the most beautiful, graphically, games to be seen on the Spectrum' - Popular Computing Weekly.

'Even 3D maze games can get repetitive but Knot in 3D contrives to be an interesting and innovative game by standing the 3D maze concept on its head'.

- Personal Computer News.

'Most 3D games have either a graphic display or an addictive playable game - but not both, this is one of the few that combine these qualities'. - Computer & Video Games. But that's not all...

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Compatible with the Kempston Joystick



# Educating Reader

There is a growing amount of educational software coming from the software houses at the moment. *Computer Choice* asked two teachers, Debbie and Bob Wall, to have a look at what two companies have to offer.

EDUCATIONAL software should introduce a learner to new concepts, and also give an opportunity to practice previously learnt skills. For the home market practicing is probably the most important element.

The programs should be easily handled by students within the age range of the program and be imaginative and stimulating enough to hold the interest. Some programs, particularly spelling and reading ones should have the facility to be changed by the parent or teacher who is supervising.

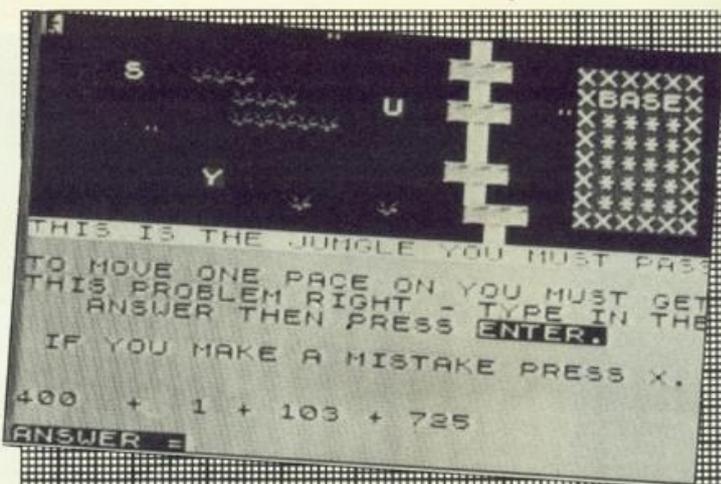
We looked at three programs from Scisoft. The first, *Jungle Maths* (age 5-13), is a poor program. The graphics were confusing and there was no real reward for correct answers. The program tests your ability to add, subtract, multiply and divide. You move one pace through a jungle with each correct answer, for an incorrect answer you are eaten by a snake or hit by coconuts. This can, in fact, make giving the wrong answer more entertaining. One advantage of the program is that the level of ability can be preset and a final score is given at the end.

There was not enough allowance given for typing errors, and very little indication as to why an answer was wrong. The program could be very easily broken into, allowing bright students to cheat, but loaded well. The documentation was limited to a brief booklet.

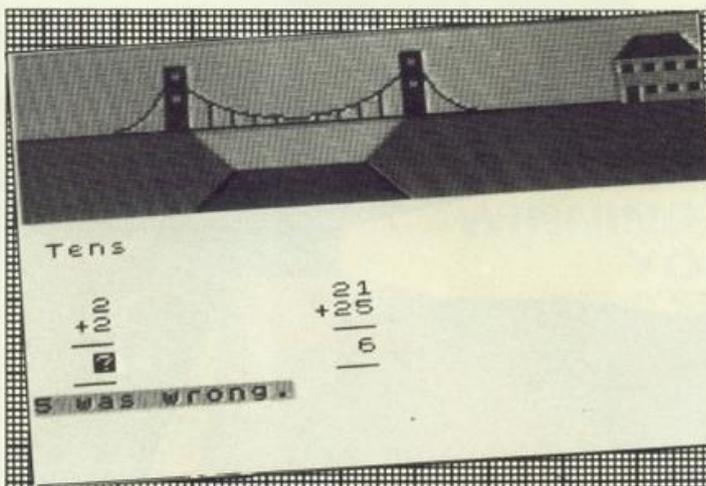
Star Reader (age 6-11) was equally poor. The literature indicated that the tape contained four programs when in fact there were only two. Again the level can be preset. On level one, a word is deleted which has to be found from a selection of possibilities. On levels two and three the work is on alphabetical sequencing and "encyclopedia". Both programs have the same format but use different words and sentences.

The graphics are poor and there is virtually no reward for the correct answer, again no allowance is given for mistakes. As there was no way to change the sentences and words used, this would only really hold a person's attention for the first time around.

Astro Maths was the best of the Scisoft bunch. It went through fractions from decimals on one side, and percentages on the other. First you set the level. Then you give your name and the "work" begins. For each two correct answers you get to play "Galactic Pulsars". The program still, however, offers no explanations of wrong answers and the screens tend to scroll rather quickly, making it difficult to read previous work.



Jungle Maths



Calpac  
Learning Series  
Programs 1-4

In contrast the three Calpac programs we looked at were much more professional in their approach. Each cassette was accompanied by a 12 page booklet giving detailed instructions on how to load programs, how to change the programs and preparation work for the lessons. The graphics, rewards and explanations for errors were far better. There was also a choice of difficulty level.

The first was Calpac Learning Series Programs 1-4, for people aged six and over. This contained four programs, each loaded separately in sequence. The first two were maths programs, Additions and Subtraction. As the right answers were given, a picture built up at the top of the screen, which was animated at the end, if there had been at least 18 out of 20 right answers.

The third was a picture plotter, like an animated Etch-a-Sketch, it was a little difficult at first but could be quite fun as a change from the maths. The final program on this cassette was North American Indians. This was a question and answer session, which involved picking the right word to finish a sentence based on the Red Indian theme. This section could be changed around to make different lessons.

The other two follow the same format to teach different things. Calpac Learning Series Programs 5-8 are for those aged seven and onwards, has again four sections. First there was a multiplication tables tester with the option to chose to go up to the 10x or the 12x depending on how you were being taught in school.

Secondly, the Romans, this was similar to the North American Indians program with words missing from sentences. The third section was a spelling test with twenty words, if you only got one or two letters wrong the program pointed out which letter was wrong and said to try again.

Finally there was Homophones, a rather involved word for those words that, although they are spelt differently, sound the same, like Hair and Hare. You have to pick the spelling that goes with the sentence.

The last of the Calpac series we looked at, was Calpac Learning Series Programs 9-12, for those over nine years. Again this followed the same format. Program one checked your understanding of verbs, nouns, adjectives and adverbs. You had to identify which part of a sentence is which. There were excellent explanations of why you went wrong and the program can be changed to give new challenges.

The second part continued in this theme with Verb Practice, you had to identify present and past participle tenses of 40 verbs. The explanations of incorrect answers were not as good in this section.

Flower was the third section, this was loosely based on biology and would not really be much use unless there was already some knowledge of the subject. Finally it looked at Long Division with very clear examples and setting out. The graphics throughout were very good with pictures that build up and animate, appropriate to the section of the program.

From what we saw in these six programs it is clear, however, that educational software still has a long way to go. It needs to get away from trying to substitute for the "Three R's" and try to move into areas that are more uniquely suited to computer graphics and explanation.

There must be better use of graphics and sound, better explanations when the wrong answer is given, and more incentive to use the program in the first place, after all who wants to do long division, when there's so much excellent games software about.

# Step into the third dimension



Take a giant step closer to reality with New Generation Software. The 3D Graphics of New Generation programs bring the screen alive and makes other games look as flat as snakes and ladders.

Spectrum owners will find that seeing is believing when they open the door on 'THE CORRIDORS OF GENON', the latest creation from New Generation. You will be saving the Universe from the evil that now controls all things. But beware – the sound of footsteps approaching could be Bogul!

Corridors of Genon for 48K Spectrum	£5.95
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<i>'A masterpiece of programming' Computer and Video Games</i>	

Hurtle into a void leaving a trail for your unseen pursuers in 'KNOT IN 3D'. Weave your way through up to five trails but be careful, you could get knotted! Or travel through the depths of a moving tunnel full of bats, rats, spiders and toads in '3D TUNNEL', with a special surprise in the 48K version.

Stamina is the vital ingredient of 'ESCAPE', as you'll be venturing into the maze pursued by walking and flying dinosaurs.

ZX81 owners must be prepared for the	
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<i>Popular Computing Weekly</i>	
3D Defender for 16K ZX81	£4.95
<i>'Another 3D Winner' Sinclair User</i>	

shock of coming face to face with the T. Rex that leaps out from '3D MONSTER MAZE'. '3D DEFENDER' takes you out of this world and plunges you into space in a fast moving game to defend your home planet against alien spacecraft in a blitz of explosions, plasma blasts and photon beams.

All these exciting 3D games have been designed by Malcolm Evans, the 3D expert. They'll have you leaping out of your seat because you don't just play New Generation games, you live them.

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# A DAY IN THE LIFE

ON A bright morning early in the winter I left the crowds of a rush hour Waterloo station behind. I was on my way to Portsmouth, home of that well-known, pink creature called Piman, and his cigar-wielding friend Uncle Groucho. They are said to be responsible for the outbreak of a strange complaint sweeping the country. It strikes those foolhardy enough to play the infamous Pimania game, featuring the Piman, and it's victims are known to make strange by bursts of giggles, and are often to be seen wearing a glazed, blank look alternating with an intense, crazed stare. There is no known cure — and most sufferers say they don't want one. Uncle Groucho, the man behind

the lunacy of the game called "My name is Uncle Groucho and you win a fat cigar", met me at the station. He is said to be somewhat eccentric — and if you've ever played his game, I think you'll agree with this!

When I was introduced to the Piman he was seated in a comfortable chair behind a chaotic desk. A striking, bright pink character, he is both shy and outgoing by turns, with a definite streak of mischief about him. Talking to him, you soon realise that he and the distinguished-looking Uncle Groucho are inseparable; a real dynamic duo. "Uncle Groucho and I get on so well because we're totally opposite," explained the Piman. "We couldn't work without each other." I talked to them about a typical day in their working life.

by  
**Debbie Goldfinch**

The Piman tells me he's an early bird: "Every morning I rise with the lark, stretch and realise how wonderful the world is. I always feel in the pink. Then, down to breakfast. There's usually pi-ridge, sometimes pi-flakes, and then I read the newspapers."

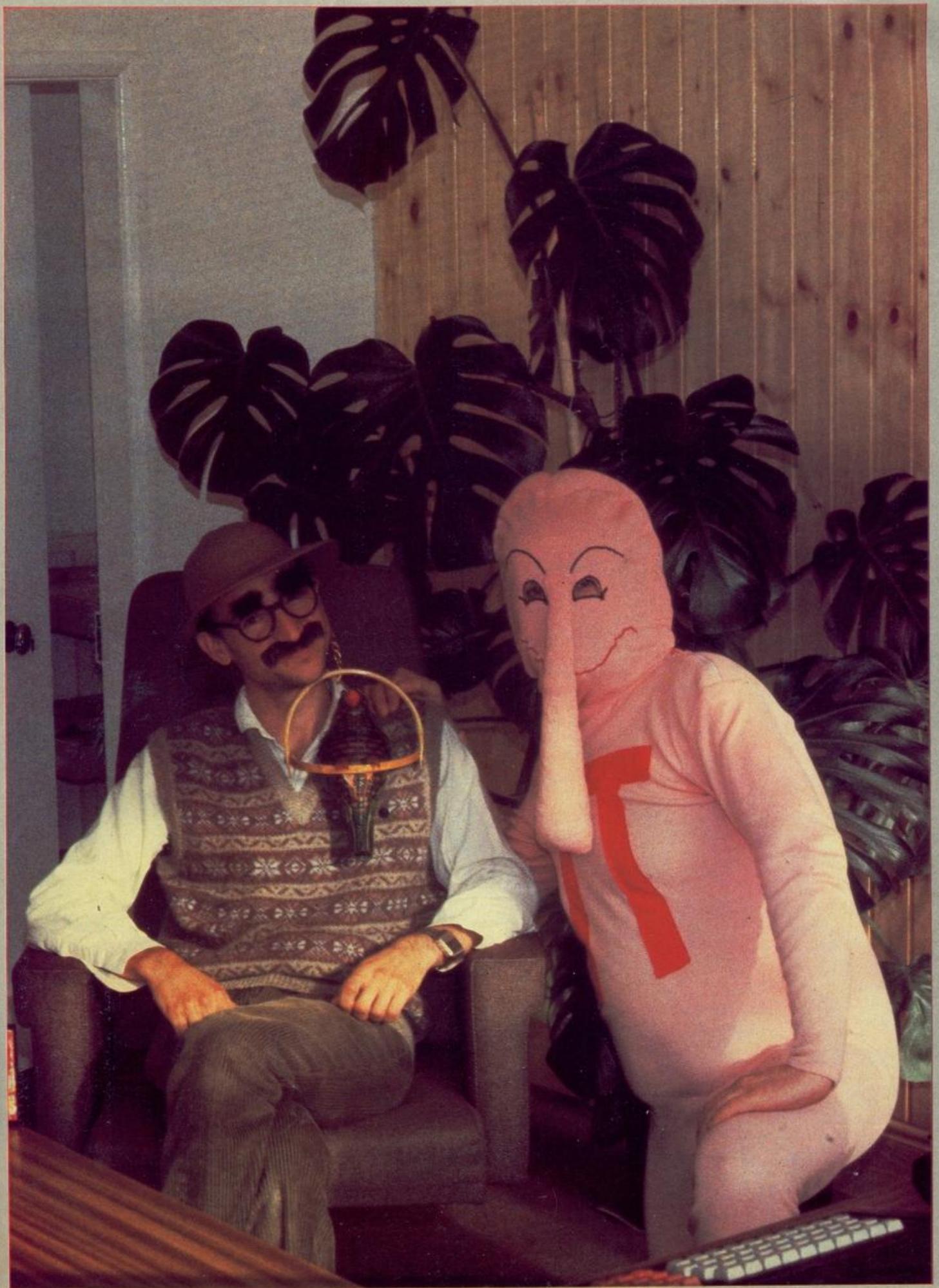
Breakfast is prepared by their good friend, Lady Claire Sinclive who appears on many of their songs on cassette. She looks after both Uncle Groucho and the Piman; a task I would imagine would be pretty hectic. Uncle Groucho's start to the day couldn't be more different from the Piman's. "I rise with the sloth at the crack of noon, grizzle my way into the office and take Lurch, the office parrot (at least we think he's a parrot) for a walk along the seafront." The Piman gets his early morning fresh air when he travels to work on his pi-cycle. He uses it purely for travel

because Piman are notoriously lazy — "Hence the wondrous belly!"

Daily routine begins for them both with opening the post in the office, or the playroom as they call it. This is a job that they both enjoy. The Piman explained, "There's always, in the mornings, the joy of answering my fan mail, there are some wonderful letters written to me and Uncle Groucho from fans. They come from all over the world from Pimaniacs. It's hard to describe a Piman fan letter." Groucho breaks in: "They're all crazy, they're not allowed sharp objects so we get a lot of letters written in crayon!" Letters come from Pimaniacs of all ages — the youngest about four or five, and the oldest a lady of 82 who phoned their office to say that she started playing Pimania on her grandsons ZX-81, got hooked and now she's got her own machine.

Both the Piman and Uncle Groucho answer every letter in person, but feel that if the mail increases they may not be able to cope. "We'll be so busy answering letters that there will be no time to produce any more adventures." They both take their fans very seriously and there are plans in the New Year for a Piman Club, with a small annual subscription, a newsletter and discounts on software. They have also put together a bag of Piman goodies for Pimaniacs, containing a calendar, a copy of the Piman's Greatest Hits and a blank C20 cassette.

When the letters are answered, Uncle Groucho settles down to his usual tasks. "I seriously try to be funny; it's a full time occupation." He has no specialist or university training for this, but the Piman says that it comes naturally to Groucho. As a youngster he had no idea what direction his



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Author: T. P. Watts.

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for the mystical ring.  
Graphics/Text Adventure.  
Commodore 64.  
Authors:  
Fred Preston &  
Bob McClelland.



### AQUAPLANE

Ski thru' Marine  
Maniacs but beware  
the deadly snapping  
Sharks.  
Commodore 64  
(Joystick or Keyboard).  
Designer: John Hollis  
& Programmer  
Steve Hickman.

### PURPLE TURTLES

Turtle bobbing with  
the cute Purpilius  
Turtilionum.  
Commodore 64  
(Joystick or Keyboard).  
Authors: Mark &  
Richard Moore.



### BBC PROGRAMES MINED-OUT

Save Bill The Worm  
from Certain Death.  
BBC model B 32K.  
(10 + 12 operating  
systems only)  
Authors: I. Andrew  
& I. Rowlings.



### SPECTRUM GAMES VELNOR'S LAIR

(Adventure)  
Battle of Denizens of  
the Goblin Labyrinth  
and the Evil Wizard  
Velnor.  
Spectrum 48K.  
By Derek Brewster  
of Neptune  
Computing.



### SMUGGLERS COVE

You are caught in a  
fable full of horror and  
Black Beard's  
Treasure...  
Spectrum 48K.  
Author:  
John Keneally.

### TRAXX

Pilot your way thru'  
the Grid.  
Spectrum 48K.  
Designer:  
Jeff Minter.



### 3D STRATEGY

A battle of Nerves and  
Wits. Faster than a  
speeding bullet!  
Spectrum 16K.  
Author:  
Freddy Vachha.

### BUGABOO (THE FLEA)

No fleas on This  
Program!!  
Itchy Action!!  
Spectrum 48K  
Author: Indescomp.



### SOFTSOLID 3D ANT ATTACK

Battle the ants in the  
walled city of  
Antescher.  
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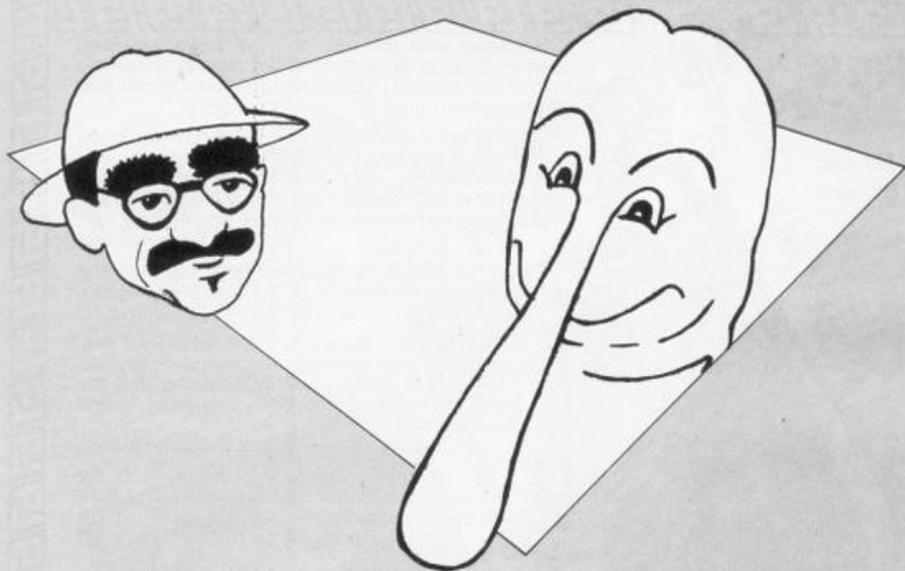
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career would take, "I started as a failure and gradually worked my way down," he jokes, his famous beetling eyebrows whizzing up and down. He is responsible for the crazy cartoons that we see of the Piman and himself. "Groucho has to organise the cartoons because I haven't got a pencil," said the Piman.

**"It was nerve-racking to have to appear in the pink every day of my life."**

Success hasn't brought them pencils — has it spoiled them? Perhaps not the more worldly wise Groucho, but the Piman feels that it may have affected him. "To start with it was nerve-racking to have to appear in the pink every day of my life when I'm so shy, but now people understand me and they accept me for what I am." ("Pi-thetic!" says Uncle Groucho.)

The Piman and Uncle Groucho often give part of their day to appearances at exhibitions and shows. At the beginning of November the Piman opened a computer shop on the Isle of Wight, with John Craven of BBC's Newsround programme. And they both recently travelled to Birmingham to record one programme of the series *The Magic Micro Mission* for Central TV. It is the first of a short series of six, each with a different star guest. The series will be shown in other TV areas, but some of you may have to wait till January — watch out for it in your area!

The two friends are both great games players, and prefer programs that are family entertainment, "Not" as the Piman says "Those that just stick little Willy in the corner to play with himself." The Piman is a collector of the game *Monopoly*, and tells me that he has thirteen different computer versions. The Piman explains the story behind his game. "It wasn't actually written for the public, it was an extension of mine and Uncle Groucho's personalities. We put everything we wanted into it rather than what we thought would make it sell. We were terrified when it was first launched that the humour was not to everyone's taste. Then suddenly it took off. It was written with everything that we wanted to find in an adventure game. We both feel that it

would be nice to see more imagination going into software and a lot more on a family theme, rather than the alien-zap-it-down type program."

With both the Piman's game and Uncle Groucho's, there is the fun of playing and a chance to win amazing prizes. The Piman's Golden Sundial has not yet been claimed. He tells me; "A lot of people have had a lot of brave attempts, but we still have the sundial. And a message to the man who thinks it's to be found on Christmas Day in Bethlehem — it isn't!" Uncle Groucho adds, "On Piman's Greatest Hits we've slipped in a couple of words of advice to stop people being very silly. We just want them to be silly, not VERY silly." The winner of the trip to Hollywood to meet a mystery star with Uncle Groucho's game will be announced, appropriately, on the Fourth of July!

Music features strongly on the Groucho and Piman's "B sides" and they are helped with this by a number of friends, including Lady Clair Sinclive and recently Gerry and the 'Atrics. Gerry and the 'Atrics are currently on a world tour, and reached the number one chart position in Nanking. But Groucho and the Piman have no immediate plans for heading into the music business.

"Top of the Pops could be difficult at the moment with the tour going on and future concerts arranged for the group. And Lady Claire is getting tired and is hoping to take a short holiday in the Pi-hamas next year," the Piman says. He tells me that Uncle Groucho does most of the music in his front room at home, but is extremely modest about it.

I asked them about their friend Morris, a small car, who appears on one of the games. Uncle Groucho explains, "He was sold to the Piman by an intergalactic used car salesman from the galaxy of Morris Minor." ("Got conned on that," grumbles the Piman.) Morris has two problems for a car: he gets car sick and he suffers from claustrophobia. The Piman worries about the hazards that Morris has to face on this planet, corrosive rust, wheel clamps — all kinds of things. But he has adapted to life here quite well, although they tell me he sits for hours at zebra and pelican crossings waiting to see the pelicans and zebras cross. He studied his Pi-way code and passed his test, and is generally a very well behaved car. He doesn't like too much lead in petrol, but does like baby oil in his engine. A car of singular tastes!

The Piman and Uncle Groucho have different ideas about hobbies. The Piman is keen on Pi-jump and hopes to enter the Pi-games next year to compete in the Pi-tathlon. Although he's basically very lazy, he says, "When you lead such

**"I often wake up in the middle of the night and see pink elephants."**

an exciting life you must do some form of exercise, otherwise you can't handle it all. And yes . . . well, I do indulge myself when I eat — my favourite is Pi and chips." He is a great fan of *Dangermouse* on TV and also likes the Pi-thon team. Uncle Groucho says, "For me, there's no difference between work and leisure, it's one and the same thing." ("You can take that as you like!" said the Piman.) Sporting interests? "I once ran up a flight of stairs. But I do enjoy sofa testing."

They both feel strongly about violent games. Uncle Groucho says, "The home micro is for entertainment for the family — no violence, no nothing. If you swear in one of our programs you're thrown out of the game. Nobody ever gets killed, nobody ever gets hurt . . . they may become very unwell though . . ."

The Piman feels that when intelligent life forms, such as Pi people, come to earth, it would be nice to know that people would rush out to greet them and be friendly. "If I was to bring more of my relations around, I would be slightly afraid, but I'm glad that people here have realised that Pi people are nice people. It's a frightening thing being an outsider, looking at earth people."

So how do these two games people end their day? The Piman tells me that he paints the town pink. "But I often wake up in the middle of the night and see pink elephants. Oh, and I always wear pi-jamas in case I get cold." Uncle Groucho drives Morris around town for a while to get inspiration for new games and says he always ends his day happy. "When my head hits the pillow at night I really start to work — in dreams!"

The Piman and Uncle Groucho are the sort of people who really care about our dreams. And they tell me that what they're trying to do is to make those dreams come true — through their games.



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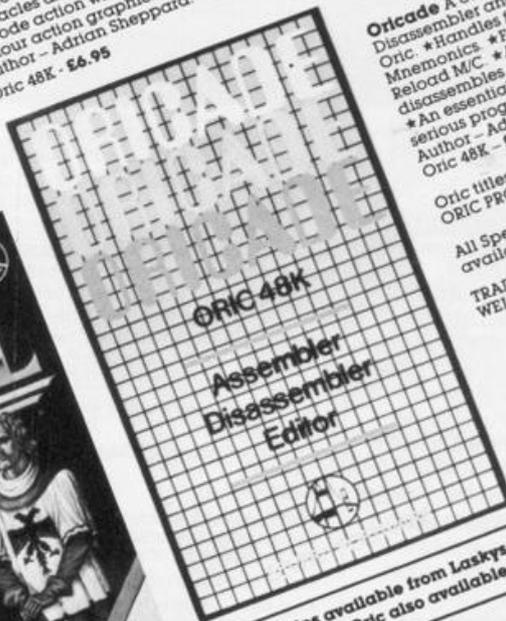
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Some others ask you to compare the technical facts. Well, to give them all a surprise we've published some of 32K Colour Genie's most important features.

But for the less technical, here are a few other important questions and answers.

## WHY YOU CAN'T BUY A COLOUR GENIE AT THE CORNER SHOP

You see, ALL computers are more complex than they first appear.

So when you start computing, you do need a bit of help. A Saturday shop assistant is NOT the right person to go to.

To ensure that you obtain the answers to any doubts or questions you may have about computers, a list of the many Genie specialists appears below. But if you have any problem whatsoever, get in touch with us at Lowe Computers — we're here to help.

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- Screen resolution of 320 x 200 with text and graphics
- Or 160 x 102 individually addressable pixels in 4 colours

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- 80 commands plus more than 40 graphics, arithmetic and special functions
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- Prestel/Viewdata modem. Software cartridge loaded for fast system access
- Floppy disc system
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Colour Genie has the type of "drive" facility that you would expect to find on a computer costing around £400. It uses less than 5% of RAM - giving you as much as 30K for more exciting games and more useful applications.

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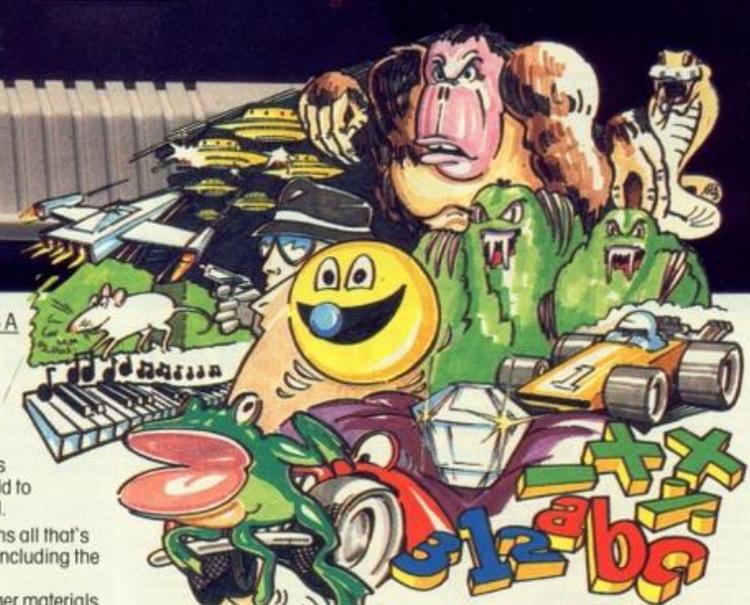
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### THE FOLLOWING IS JUST A SMALL SELECTION FROM THE RANGE OF ITEMS AVAILABLE:

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|--|--|--|---|--|--|--|--|
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Capitals</li> <li>Touch Typing</li> </ul> <p><b>Castle</b></p> <ul style="list-style-type: none"> <li>Centurion</li> <li>Checker King</li> <li>Chinese Puzzle</li> <li>Codexcracker</li> <li>Comedy Diskette</li> <li>Dice Poker</li> <li>Dog Date</li> <li>Domination</li> <li>Downhill</li> <li>Eastern Front</li> <li>Galahad &amp; Holy Gri</li> <li>Graphics/Sound</li> <li>Jax-O</li> <li>Jukebox</li> <li>Lookahead</li> <li>Memory Match</li> <li>Midas Touch</li> <li>Minotaur</li> <li>Outlaw/Howitzer</li> <li>Preschool Games</li> <li>Pro Bowling</li> <li>Pufover</li> <li>Rabbitz</li> <li>Reversi II</li> <li>Salmon Run</li> <li>747 Landing Simul</li> <li>Seven Card Stud</li> </ul> <p><b>ENTERTAINMENT</b></p> <ul style="list-style-type: none"> <li>from ATARI</li> <li>Asteroids</li> <li>Basketball</li> <li>Blackjack</li> <li>Cantipede</li> <li>Cheer</li> <li>Entertainment Kit</li> <li>Missile Command</li> <li>Pac Man</li> <li>Space Invaders</li> <li>Star Raiders</li> <li>Super Breakout</li> <li>Video Easel</li> </ul> <p><b>ON LINE SYSTEMS</b></p> <ul style="list-style-type: none"> <li>Crossfire</li> <li>Frogger</li> </ul> | <p><b>Sleazy Adventure</b></p> <ul style="list-style-type: none"> <li>Solitairs</li> <li>Space Chase</li> <li>Space Trak</li> <li>Sultans Palace</li> <li>Tact Trick</li> <li>Terry</li> <li>Wizards Gold</li> <li>Wizards Revenge</li> </ul> <p><b>PERIPHERALS</b></p> <ul style="list-style-type: none"> <li>Centronics Printers</li> <li>Disk Drive</li> <li>Epson Printers</li> <li>Program Recorder</li> <li>RS232 Interface</li> <li>Thermal Printer</li> <li>16K Memory RAM</li> <li>32K Memory RAM</li> </ul> <p><b>PERSONAL INT</b></p> <ul style="list-style-type: none"> <li>from APX</li> <li>Adv Music System</li> <li>Banner Generator</li> <li>Blackjack Tutor</li> <li>Going To The Dogs</li> <li>Keyboard Organ</li> <li>Morse Code Tutor</li> <li>Personal Fitness Prg</li> <li>Player Piano</li> <li>Sketchpad</li> </ul> | <p><b>PROGRAMMING AIDS</b></p> <ul style="list-style-type: none"> <li>from Atari</li> <li>Assembler Editor</li> <li>Debugger (APX)</li> <li>Microsoft Basic</li> <li>Pascal (APX)</li> <li>Pilot (Consumer)</li> <li>Pilot (Educator)</li> <li>Programming Kit</li> </ul> <p><b>SANTA CRUZ</b></p> <ul style="list-style-type: none"> <li>Basics of Animation</li> <li>Bob's Business</li> <li>Display Lists</li> <li>Graphics Machine</li> <li>Kids 1 &amp; 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### FREE LITERATURE

I am interested in purchasing an Atari 400/800 computer and would like to receive copies of your brochures and test reports as well as your price list covering all of the available Hardware and Software:

Name .....

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CC1/84



# SiRob

MARV made another of his "jokes" — I know it is a joke 'cos he told me so. "Beep, beep". "Who's there?" "Sinc". "Sinc who?" "Sinc I might buy a Spectrum".

There's only one machine more stupid than Marv, and they've stopped making any more Bolt-necks. Incidentally, did you know that even the Crow Man gave up on Bolt-neck, our dreaded Editor thing?

Bolt-neck's got his own back — he's shoved more questions at me, why should I waste time? He's now threatened me with having to listen to the life story of a ZX81, and that is a fate worse than the scrap metal dealer. I give up.

ASININE AND DREARY QUESTION 1 from some twirp called Kevin Holland of Stockport, "What does ASCII mean?" Marv, full of bountifulness, said nothing. I now know what they mean by a black hole — it's the space between Marv's antennae.

ASCII, oh Kevin, means American Standard Code for Information Interchange — so there! What

ASCII does is make some things rather more standard (if you have a ZX81, you can go to sleep here). On most computers (except the ZX81) if you type in PRINT CHR\$(65) you will find that a capital A is printed. On some computers to PRINT CHR\$(7) is to beep.

What ASCII does is to standardise numbers which go with

TEDIOUS AND INANE QUESTION 2 from Sheila Muncaster of Inverness is so ludicrous that I could scarce believe it. Silly Sheila wants to know "How do computers talk to each other?"

The question should have been "As computers are such boring machines of such little intellect, how can they keep awake when they talk to each other?"

Marv is famous for being the only non-living thing (we are not sure about our (in)famous Editor) who could utter more drivel than an Oric, we think.

For a computer to talk to another computer (utter tedium) it has to use words the other computer can understand. That means little words, very simple words, words even Bolt-neck can understand. (Why is steam coming out his ears, we ask?)

Often the little words are based on the ASCII values. Just as with the cassette recorder, the computer can understand shrieks and whistles from a cassette tape, and

the computer can understand the shrieks and whistles when they come from another computer.

The computer can understand what the other computer is saying if they both talk the same language (based usually on ASCII values). Usually one computer has to have a special modification so that the information it sends is in a standard form that the other computer can understand.

If many computers of different types want to talk to each other, then usually they are specially modified so that they all send out a standard language. They are all modified so that they can understand this standard language.

The standard language may be called a "protocol", and the special senders and receivers of the standard language of ASCII based shrieks and whistles are often called "communication interfaces."

But who would want to talk to a computer? I can understand those who wish to talk to the guru (me, you idiot!).

JUST A BORING QUESTION 3 from David Oliver of Highgate, London, who must be some sort of games moron. The moron wants to know "Why are machine code games better than those written in BASIC?"

Answer: I do not know. Reason I do not know: I think many machine code games are rubbish. Further complicating factor: many BASIC games are rubbish as well. One difference between machine code and BASIC is that the first is fast and the second is slow. Another difference is that BASIC is easy to learn, and machine code is more difficult. Machine code is the actual language of the computer — things

like ASCII values — whereas BASIC tries vainly to make the computer appear more human. As the computer does not have to spend its time translating from the BASIC language into language it understands, obviously programs in machine code are much quicker. If we are producing graphics effects this extra speed can be important.

Though machine code programming is not difficult, it is difficult to write machine code well. It all comes down to how well the program is written, boring machine code programs, which are very fast, so fast that you can fall asleep.... (and he did, Ed)

characters, and various control codes on a computer. The number 1 has an ASCII code of 49, which you can find out by something like PRINT ASC("1") or PRINT CODE("1")

you can also find it out by looking it up in the manual. The number one is in quotes (ie "1") to show that we are treating the 1 as a character (or a form of letter).

Each "character" in a computer program has to be stored away in the computer's memory. Frequently they are stored away as numbers, where the numbers correspond to the ASCII codes. When the com-

puters takes in information from a cassette recorder, the shrieks and whistles you hear are the digital way of sending ASCII values.

This line crashes many computers  
FOR II=0 TO 31 : PRINT  
CHR\$(II) : NEXT II  
and if anybody wants to know why — tough.

Send your problems to: SiRob,  
Computer Choice, Quadrant House,  
The Quadrant, Sutton, Surrey.

# BUYERS GUIDE TO VIC 20 SOFTWARE

COMMODORE'S popular Vic-20 micro has been around for some time so there is a lot of software available for it. On the whole the software is good although some is pretty awful, but there are some good arcade games and some excellent cartridge software. Commodore has recently reduced the price of its own range of cartridge software to around £10 a game — some of the best value around.

One problem is that certain Vic-20 programs require a memory expansion and will not work without one, be sure to check first that you have enough of the right sort of memory in your machine (it does vary). All the tape software will only work in conjunction with a Commodore cassette, which is an extra expense.

While we have tried to include as many packages as possible, some may have been missed out. If you sell or publish Vic-20 software get in touch with us, and we will include your program in our next Vic-20 software Buyer's Guide.

## Arcade Games

Paratroopers	Rabbit Software	£5.99 (J) unexp.
The Catch	Rabbit Software	£5.99 (J) unexp.
Escape MCP	Rabbit Software	£5.99 (J) unexp.
Anti-matter Splatter	Rabbit Software	£5.99 (J) unexp.
Pakacuda	Rabbit Software	£5.99 (J) unexp.
Race Fun	Rabbit Software	£5.99 (J) unexp.
Critters	Rabbit Software	£5.99 (J) 3, 8 or 16K
Demon Driver	Lyversoft	£5.95 unexp.
Griddler	Terminal Software	£7.95
Get Lost!	Terminal Software	£5.95 unexp.
Krazy Kong	Anirog	£7.95 (J) 16K exp.
Skrabble	Anirog	£7.95 (J) 16K exp.
Mini Kong	Anirog	£5.95 (J) unexp.
Slap Dab	Anirog	£5.95 (J) unexp.
Frog Run	Anirog	£5.95 (J) unexp.
Dotman	Anirog	£5.95 (J) unexp.
Space Pede	Anirog	£5.95 (J) unexp.
Cavern Fighter	Anirog	£5.95 (J) unexp.
Crawler	Anirog	£5.95 (J) unexp.
Tiny Tots Seven	Anirog	£5.95 (J) unexp.
Envahi	Virgin Games	£5.95 (J)
Rat Race	Commodore	£9.99 (Cart)
Super Slot	Commodore	£9.99 (Cart)
Menagerie	Commodore	£9.99 (Cart)
Mole Attack	Commodore	£9.99 (Cart)
Alien	Commodore	£9.99 (Cart)
Money Wars	Commodore	£9.99 (Cart)
Cosmic Cruncher	Commodore	£9.99 (Cart)
Chopper	Sumlock Microware	£6.95 (J)
Destroyer	Sumlock Microware	£7.95
Scorpion	Sumlock Microware	£7.95 (J)
Gunfight	Sumlock Microware	£6.95 (J)
Gridtrap	Sumlock Microware	£7.95 (J)
Garden	Audiogenic	£7.95 (8K)
Kaktus	Audiogenic	£7.95 (8K)
Trashman	Audiogenic	£19.95 (Cart)
Tank Attack	Audiogenic	£19.95 (Cart)
Astro Blitz	Audiogenic	£19.95 (Cart)
Choplifter	Audiogenic	£24.95 (Cart)
Apple Panic	Audiogenic	£24.95 (Cart)
Serpentine	Audiogenic	£24.95 (Cart)
Amok	Audiogenic	£6.95 unexp.
The Alien	Audiogenic	£7.95 (3K)
Seawolf/Bounce/Out	Audiogenic	£8.95
Vic Trap		
Bonzo	Audiogenic	£7.95 (8K)
Pit	Audiogenic	£7.95 unexp.
Exterminator	Bubble Bus	£3.99 (J)
The Catch	Bubble Bus	£3.99 (J)
Anti-matter Splatter	Bubble Bus	£3.99 (J)
Krazy Kong	Anirog	£7.90 (J) 16K exp.

Mini Kong	Anirog	£5.95 (J)
Frog Run	Anirog	£5.95 (J)
Dotman	Anirog	£5.95 (J)
Crawler	Anirog	£5.95 (J)
Cavern Fighter	Anirog	£5.95 (J)
Pharoah's Tomb	Anirog	£5.95 (16K)
Dracula	Anirog	£5.95 unexp.
Falcon Fighter	Interceptor Micros	£6.00 (J) unexp.
Fly Snatcher	Abrasco	£7.50 (J) unexp.
Double Trouble	Abrasco	£9.50 unexp.
Android Attack	Abrasco	£9.50 (J) unexp.
Meter Mania	Abrasco	£7.50 (J) unexp.
Catcha Troopa	Abrasco	£7.50 (J) unexp.
Emmet Attack	Commodore	£4.99 unexp. (Cart)
Arcadia	Imagine	£5.50
Wacky Waiters	Imagine	£5.50
Bewitched	Imagine	£5.50
Another Vic in the wall	Bug Byte	£6.95 unexp.
Panic	Bug Byte	£6.95 unexp.

## Compendiums

Crazy Climber and Apple Bug	Lyversoft	£5.95 unexp.
Compendium 1	Lyversoft	£5.95 unexp.
Compendium 2	Lyversoft	£5.95 unexp.
Seven Programs (Vol. 1 & Vol. 2)	Anirog	£5.95 (J) unexp.
Tiny Tots Seven	Anirog	£5.95
Arithmetic 1	Commodore	£9.99 (ages 5-8) 8K or 16K exp.
Arithmetic 2	Commodore	£9.99 (ages 5-8) 8K or 16K exp.
Alphabet	Commodore	£9.99 (ages 5-8) 8K or 16K exp.
Vocabulary	Commodore	£9.99 (ages 5-8) 8K or 16K exp.
General Knowledge	Commodore	£9.99 (ages 7-11) 8K or 16K exp.
Spelling 1	Commodore	£9.99 (ages 7-11) 8K or 16K exp.
Spelling 2	Commodore	£9.99 (ages 7-11) 8K or 16K exp.
Arithmetic	Commodore	£9.99 (ages 7-11) 8K or 16K exp.
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Junior Maths Fun Series 1	Commodore	£11.99 (ages 4-8) 3, 8 or 16K exp.
Junior Maths Fun Series 2	Commodore	£11.99 (ages 7-11) 3, 8 or 16K exp.
Pascal	Chalksoft	£6.95 exp.

Games Multipalc 1	Commodore	£11.95 8K or 16K
Games Multipalc 2	Commodore	£11.95 3, 8 or 16K
Puzzle Pack	Sumlock Microware	£6.95
Trinity	Audiogenic	£7.95 unexp.
Magnificent Seven	Audiogenic	£4.95 3K

### Educational

Number Gulper	A.S.K.	£6.95 (ages 5-12) 16K
Words Words Words	A.S.K.	£6.95 (ages 5-8) 16K
Shape up	A.S.K.	£6.95 (ages 3 upwards) 16K
We want to count	A.S.K.	£6.95 (ages 3 upwards) 16K
Number Chaser	A.S.K.	£6.95 (ages 5-12) 8 or 16K
English Invaders	Rabbit Software	£5.99 unexp.
Castlemath	Audiogenic	£8.95
Skymath	Audiogenic	£6.95
Space Division	Audiogenic	£6.95
Math Hurdler-		
Monster Maze	Audiogenic	£7.95
VICALC	Audiogenic	£8.95
Gortek	Vicsoft	£12.99
Introduction to Basic Pt. 1	Vicsoft	£14.99
Introduction to Basic Pt. 2	Vicsoft	£14.99
Note Invaders	Chalksoft	£9.25 exp.
Decimals	Chalksoft	£9.25 exp.
Incosi	Chalksoft	£6.95 exp.
Sequences	Chalksoft	£6.95 exp.
Metrics	Chalksoft	£11.25 exp.

### Various

Golf	Audiogenic	£7.95 3K plus
Renaissance	Audiogenic	£19.95 (Cart)
Matchmaker	Audiogenic	£9.99

### Adventure Games

Tomb of Drewan	Audiogenic	£12.95 16K
Rescue from Castle Dread	Terminal Software	£9.95 16K
The Curse of the Werewolf	Terminal Software	£9.95 16K
Voodoo Castle	Commodore	£9.99 (Cart)
Pirate Cove	Commodore	£9.99 (Cart)
Mission Impossible	Commodore	£9.99 (Cart)
The Count	Commodore	£9.99 (Cart)
Adventureland	Commodore	£9.99 (Cart)
The Dungeons	Anirog	£5.95 16K exp.
Invisible Man	Chalksoft	£6.95 exp.
Spectre	Commodore	£4.99 16K exp.

### Puzzles

Code maker — Code breaker	Audiogenic	£7.95
Blockade	Audiogenic	£6.95 unexp.
Twister	A.S.K.	£6.95 (special offer) (ages 8 upwards) 16K
Hide & Seek	A.S.K.	£6.95 (ages 4-10) 8 or 16K
Rainbow Towers	A.S.K.	£6.95 (ages 8 upwards) 16K
Hangmath-Hangmath	Audiogenic	£7.95
Ask the family	Commodore	£9.99

### Strategy Games

Vixplode & Vixplode-64	Abrasco	£8.50 unexp.
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### Space Games

Spiders of Mars	Audiogenic	£19.95 (Cart)
Cloudburst	Audiogenic	£19.95 (Cart)
Satellites and Meteorites	Audiogenic	£19.95 (Cart)
OutWorld	Audiogenic	£19.95 (Cart)
Alien Blitz	Audiogenic	£7.95
Kosmic Kamikaze	Audiogenic	£7.95 3K or 8K
Cyclons	Audiogenic	£5.99 (J) 3, 8 or 16K
Lunar Rescue	Lyversoft	£5.95 unexp.
Space Assault	Lyversoft	£5.95 3K or 8K
Terminal Invaders	Terminal Software	£5.95 unexp.
Meteor Blaster	Terminal Software	£5.95 (J) unexp.
Skramble!	Terminal Software	£7.95 (J) unexp.
Galactic Abductors	Anirog	£7.95 (J) 16K exp.
3D Time Trek	Anirog	£5.95 (J) 16K exp.
Xeno II	Anirog	£7.95 (J) 16K exp.
Mission Mercury	Virgin Games	£7.95 unexp.
Creepers	Virgin Games	£5.95 3 or 8K exp.
Galactic Abductors	Anirog	£7.95 (J) 16K exp.
Zok's Kingdom	Anirog	£5.95 16K
Jupiter Defender	Interceptor Micros	£6.00 (J)
Alien Hunter	Abrasco	£7.50 (J) unexp.
Super Lander	Commodore	£9.99 (Cart)
Avenger	Commodore	£9.99 (Cart)
Star Battle	Commodore	£9.99 (Cart)
Mega Race	Commodore	£9.99 (Cart)
Gorf	Commodore	£9.99 (Cart)
Cosmic Jailbreak	Commodore	£9.99 (Cart)
Astro Fighters	Sumlock Microware	£6.95 (J)
Space Rescue	Sumlock Microware	£6.95 (J)
Multitron	Sumlock Microware	£7.95
Asteroids	Bug Byte	£6.95 unexp.
Cosmiads	Bug Byte	£6.95 unexp.
Scramble	Bug Byte	£6.95 unexp.

### Traditional Games

Patience	Commodore	£4.99 16K exp.
Sargon II Chess	Commodore	£9.99 (Cart)
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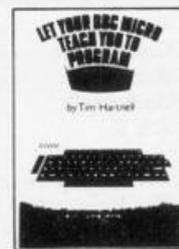
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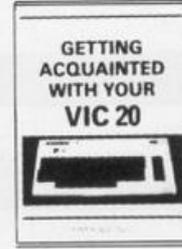
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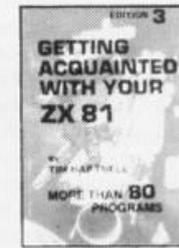
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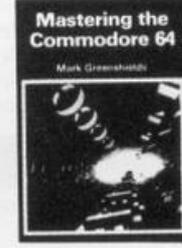
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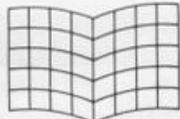
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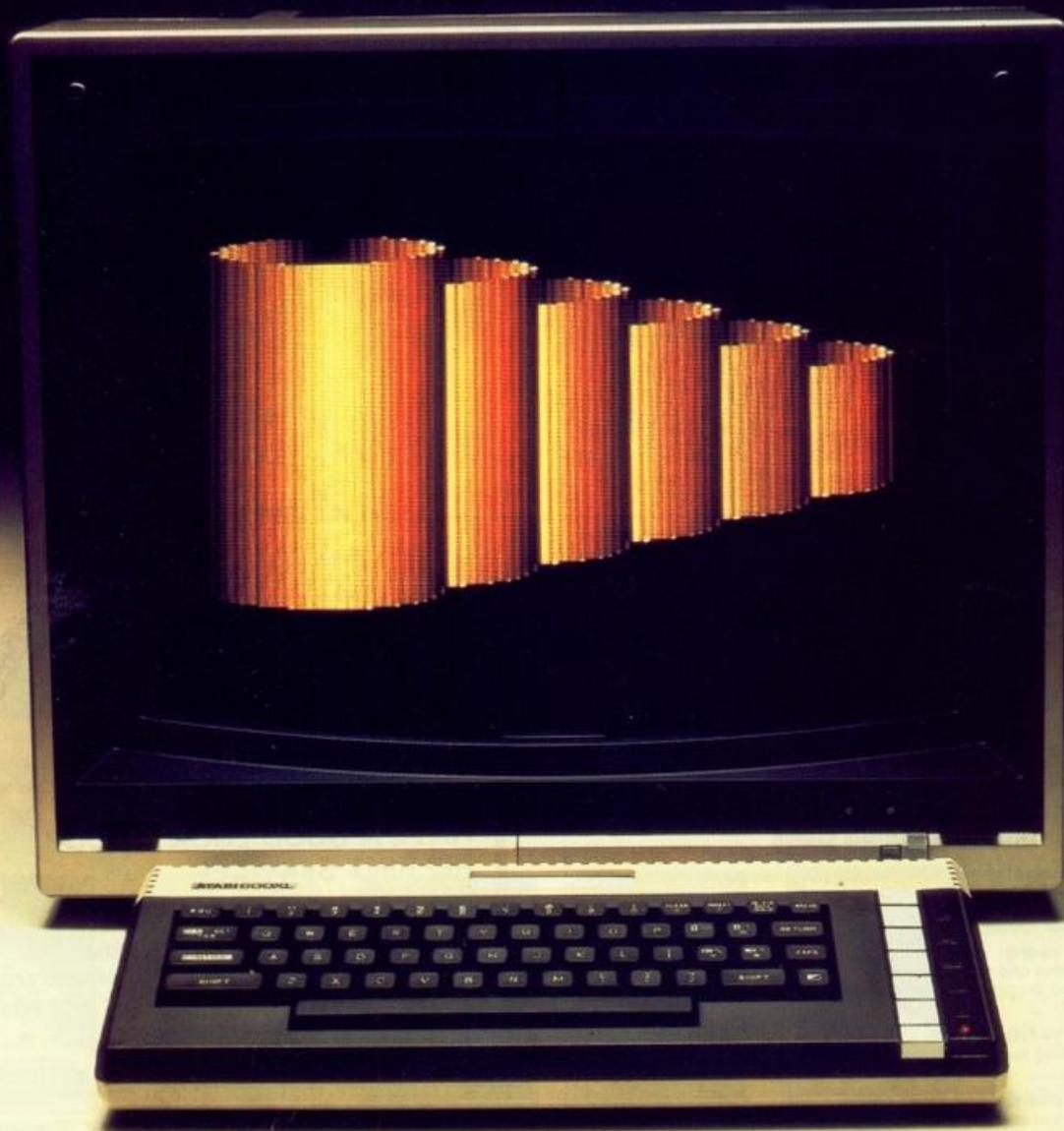
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# JUST NOT CRICKET

## by fin fahey

Sunday afternoon cricket was never like this.  
Read the story, then turn the page to play computer cricket.

"DAMNED hot eh, Mr C?"

Doctor Hama shifted uncomfortably in his seat — he was uncomfortable in his new-found role as the Sri Lankan District Commissioner.

"Perhaps a spot of refreshment?"

The Doctor displayed an apologetic smile, Jerry scowled half-heartedly and managed a curt but conciliatory nod. He was sulking. Things hadn't gone well for him recently. To start with his business in salvaged pre-war 64K RAM chips and microprocessors, had been nationalised by the Singaporean Revolutionary Government. And now this grotty little assignment . . . Jerry had dropped in on what was left of his old Agency, now a freelance organisation since the government that had sustained it had been vapourised. Major Airedale, also known to his staff as the Managing Director, was glad enough to see him and had packed him off to Sri Lanka on a battered Singapore Airlines Ford Tri-motor.

After a scant briefing in Colombo, Jerry had been put on a tramp steamer leaving from Trincomalee. The only information the Singhalese

really had for him was the text of the District Commissioner's cable, a confused affair which kept harping on "the age-old impartiality of the British Empire" and similar historical phrases.

Well it had been a horrible journey and now Doctor Hama, an old acquaintance of Jerry's from pre-war days, was having his usual difficulty getting to the point. Jerry would have sympathised if he hadn't been feeling sorry for himself — the Indian physicist was no administrator even if he was the last surviving Nobel prize winner.

Jerry abruptly lobbed a crumpled telegram on to Hama's desk.

"Come on Doc, what's it all about — What's this British Empire stuff for a start — it's hardly your style!" The D.C. gave Jerry a quizzical glance and began to read the cable. Before very long he started to chuckle.

"But my dear Mr C. — some fool has mis-transcribed my request — I was asking for a British *umpire!* I do hope you feel up to the job."

Jerry's heart sank another centimetre.

"I don't know if I can even remember the rules, Doc."

Doctor Hama sighed.

"Oh well, it may not matter."

A servant appeared bringing beaded glasses of iced tea.

After a pause, the D.C. continued.

"Cricket, Mr C. is an important social phenomenon in this region.

Ever since it was adopted by the locals from the British, the original occupying power, it's undergone massive evolution. The local inhabitants were mostly head-hunters, and cricket became for them a substitute for the inter-tribal raids which were their usual leisure pursuit. They considerably altered the trappings of the game, adding large chunks of their own ritual-mock combat, war dances, the odd religious ceremony between innings — you wouldn't recognise it . . ."

"Maybe so Doc, but if they've managed O.K. all these years, what do they need with a British umpire?"

The good Doctor was clearly a little miffed at having the flow of his thought interrupted.

"My dear chap, you misunderstand — the problem isn't with the locals — after all, these days they are the administrative elite hereabouts — in general I must say everything runs pretty smoothly. The real poser is the refugees."

He paused significantly. Jerry raised his eyebrows. For a moment Hama looked flustered.

"Well I'm not prejudiced myself, old boy, but a few of the younger chaps are starting to suggest . . . you know . . . genetic damage, hallucinogenic gases . . . I must admit it could account for the state of some of these people . . ." He finished lamely. Jerry smiled mirthlessly.

"Can't blame anyone for being a trifle bitter, Doc — blowing up half the world just like that was a little out of order, I'd say. But really, where do I come in?"

"Ah yes — well, bear with me. There are two large transit camps in this region. Both camps are all male, full of survivors of military units. The problem is that they've now become intensely tribal. One camp is full of Westerners, largely Americans, the other is mostly survivors from the Soviet Far Eastern Fleet — they've espoused Nihilism. The Westerners call themselves the Rude Boys, the Russians Narodnya Volnya after an old revolutionary organisation — it means 'the people's will'. Both sides spend most of their time drinking themselves to death or shooting at each other. No one's got around to disarming them you see — too busy.

"Well to cut it short, they also play cricket. Except that it's a very poor substitute for war in their case — the game frequently degenerates into a fight. Usually, we provide the umpire, it keeps the death toll down. However, our last chap was found taking bribes — he didn't live long to regret it, and our impartiality is now suspected by both sides."

"But perhaps, Doctor . . . someone a little more versed in the game . . .?"

"No time, Mr C., no time! You see they've declared a truce festival in three days time, and we have no chance of getting them to lay down their arms unless it goes well."

No way out. Jerry's self-pity had reached new heights.

"Don't worry, Mr C. we have three days to fill you in on the game. It'll be a walk-over."

Three days later, Jerry stepped ashore from a small fishing boat to an honour guard from both "tribes". Jerry was led on an inspection of both sides. The Rude Boys wore tattered remnants of a variety of uniforms — all the American forces, a few British Marines, half a dozen others that he could recognise. Though ragged, they showed considerable snap and dash on parade. The Soviets on the other hand were immaculately turned out in full dress uniforms — Navy and Marines. Unfortunately they spoiled the effect by slouching sullenly around the landing jetty. He did notice that all the armaments were visible — Belgian-made FN Rifles and M18's on one side, and Kalashnikovs on the other.

Following an exchange of pleasantries — no one here seemed to be a very bright conversationalist, the repaired to the pavilion, which Jerry found doubled as a military reviewing stand. He took the salute as both sides paraded their forces past.

Finally it was time for the toss. This went with little incident, although side-arms were brandished, and curses exchanged — this seemed to be a fairly good-natured ritual. The Nihilists went into bat first — there were of course turned out in immaculate whites, but were dead drunk. Jerry quickly found that, cricket not having been the

national game of either side, the standard of play was rock-bottom. Nobody really minded — the important thing seemed to be making the right gestures and striking the right poses. At first Jerry found the slit trenches at each fielders position and behind the wickets a little disturbing, but after a while he found he was enjoying himself.

Things started to go sour after the refreshment break. Jerry was idly exploring the pavilion when everything went black. He woke to find himself in a disused storeroom, sprawled in a deckchair. Facing him was the villainous and corpulent Captain Beesley. Jerry sat up carefully, deeply conscious of the 8mm Leoni-Marchetti automatic pointing squarely at his heart.

"So Mr Cornwall — our paths cross again. A small world these days — literally, eh?"

Beesley manufactured a loathsome smile.

"You villain, Beesley, you won't get away with this!"

Jerry was conscious of his obligation to match Beesley's bad dialogue. He was also wondering how the mad Captain had survived their last encounter. Beesley sniggered.

"Ah but I can, Mr C. My plan is straightforward — stationed on this island are the last two effective combat units in the world. Under one Leader, myself, of course, they will be a potent force for the unification of the planet!"

"You're quite mad, Beesley, you'll never get those loonies to fight together!"

"That's where you come in Mr C., you are about to be shot in the process of arming this!" He patted a grey steel cube on the table to his left.

"Probably the last surviving neutron weapon on the planet. Documents on your person will prove that you are on a mission of the Singhalese government to neutralise a threat to peace. A final solution!"

Beesley produced a horrible gurgle resembling a laugh.

There was a sudden crump from outside — from the sound of it, a rocket, a rattle of small arms fire accompanied it. Beesley jerked in surprise and Jerry seized the moment to bounce the cricket ball he'd found in his pocket off his shaven skull. As the Captain crumpled, he dislodged the steel cube from its table. A crisp ticking started. Behind a perspex window in the cube, a row of digits was counting down enthusiastically.

Giving the comatose Beesley a spiteful kick, Jerry turned and ran. Outside the Pavilion the cricket pitch had become a combat zone. Without Jerry to arbitrate, some small dispute had escalated. The Pavilion was in Nihilist hands but was being chewed apart from mortar and tank fire from the tree line. More of the Rude Boys were occupying the slit trenches on the pitch — they must have been fielding at the time. Jerry leapt from one fragment of cover to another, his thoughts on the landing jetty. He barely escaped the crossfire as the Nihilists counter-attacked, their rockets silencing the Rudies' mortars while a fanatical death commando team took the slit trenches by frontal assault, yelling their ancient war slogan "Death to life!" in Ukrainian.

He was halfway down the hill to the bay where the jetty stood when a powerful thrub of engines made him look up. It was the good old "Shirley McLaine", Major Airedale's command airship.

Jerry scrambled up the ladder lowered for him, to find his old friend and colleague Anna Preston at the controls. Jerry drew a deep breath — home and dry and lots of time to escape ground zero.

"We've got to go back, and warn them, Anna — it's hardly fair — they don't deserve this!"

"Afraid there's no going back, old boy."

Major Airedale ducked under the low doorway and entered the bridge, closely followed by Doctor Hama. He was wearing his usual shapeless tweeds and looked very weary and very old.

"Never get them to listen now you know . . . all we could do to get you out, old boy . . ."

"Beesley was set up, Jerry." Anna broke in angrily. "It was mostly the Australians' doing, but several other governments are involved. The word used was 'sanitisation', but really no one wants to risk all that military expertise falling into someone else's hands."

The Major stared at his hacking boots.

"We didn't know, Jerry, not when we sent you."

There was nothing left to say. Jerry stared silently down at the passing sea. After a while a distant flash lit up the cabin, and a little later still the airship rocked gently in the blast wave.

## JUST NOT CRICKET continued

HERE'S a simulated cricket game to while away the dank winter afternoons. Play is utterly simple. At the start of the game, the machine will toss an imaginary coin. You may choose whether or not to bat if you win the toss. The machine will give the customary two innings each to follow. If you are batting, you can specify whether to Attack or Defend the wicket. Attacking gives you more chance of runs but increases your chances of being out, defending is the reverse. The machine keeps you posted on the situation as you run through your batsmen, which incidentally you may have identified by name at the start of the program.

If the machine is in to bat, you have a choice for each over of 6 balls of Fast, Spin or Medium bowling. Fast bowling gives you more chance of getting the machine out, but improves its chance of getting runs. Medium is the opposite and Spin is somewhere in between. And that is the sum of it. As a somewhat skeletal structure, plenty of improvements could be made in this program. For example, one could specify each player's batting average and bowling skills in accordance with real teams of your choice. A more advanced simulation would cover pitch and wind conditions and so on. The possibilities are endless.

### ORIC

```
10 REM CRICKET MATCH
20 REM FIN FAHEY
30 REM OCT 1983
40 REM
50 REM
60 REM
70 GOSUB 2000: INITIALISE
80 GOTO 200
97 REM
98 REM RANDOM NUMBERS
99 REM
100 RN=INT(RND()*R)+1:RETURN
147 REM
148 REM KEYBOARD SCAN
149 REM
150 I$=KEY$:IF I$="" GOTO 150
160 RETURN
197 REM
198 REM START OF GAME
199 REM
200 CLS:PRINT
210 PRINT "TOSSING THE COIN...."
220 PRINT:PRINT
230 PRINT "HEADS OR TAILS(H/T)?"
240 GOSUB 150
250 IF I$<"H" AND I$<"T" GOTO 240
255 IF I$="H" THEN I=2 ELSE I=1
260 R=2:GOSUB 100
270 IF I<RN THEN PRINT:PRINT "YOU LOST
THE TOSS":GOTO 300
280 PRINT "DO YOU WANT TO BAT(Y/N)?"
285 GOSUB 150
290 IF I$="N" THEN B=1 ELSE IF I$="Y" TH
EN B=0 ELSE GOTO 285
295 GOTO 500
300 R=2:GOSUB 100:B=RN-1
310 IF B=1 THEN BA$="BAT" ELSE BA$="BOWL
"
320 PRINT:PRINT "I SHALL ";BA$
```

```
340 REM
350 REM FIRST INNINGS
360 REM
500 FOR X=1 TO 1000:NEXT X:IN=1
505 IF B=0 THEN GOSUB 1000 ELSE GOSUB 10
00
507 Y1=YS-M1=05:GOSUB 800
510 IF B=0 THEN GOSUB 1600 ELSE GOSUB 10
00
520 Y1=YS:M1=05:GOSUB 800
527 REM
528 REM SECOND INNINGS
529 REM
530 IN=2
535 IF B=0 THEN GOSUB 1000 ELSE GOSUB 16
00
540 Y2=YS-Y1:M2=05-M1:GOSUB 800
550 IF B=0 THEN GOSUB 1600 ELSE GOSUB 10
00
560 Y2=YS-Y1:M2=05-M1:GOSUB 800
597 REM
598 REM ?NOTHER GAME?
599 REM
600 GOSUB 800
605 YS=0:OS=0:M1=0:M2=0:T1=0:T2=0
610 PRINT:PRINT "ANOTHER GAME?"
620 GOSUB 150
630 IF I$="Y" GOTO 630
640 IF I$="N" THEN STOP
650 GOTO 620
797 REM
798 REM SCOREBOARD
799 REM
800 CLS:PRINT:PRINT
805 PRINT " SCOREBOARD":PRINT
810 PRINT " YOUR MA
CHINE"
820 PRINT " INNINGS TEAM
TEAM "
825 PRINT "-----"
830 PRINT " 1 ";STR$(Y1);
";STR$(M1)
840 PRINT " 2 ";STR$(Y2);
";STR$(M2)
845 PRINT "-----"
850 PRINT " TOTAL ";STR$(YS);
";STR$(OS)
855 FOR X=1 TO 3000:NEXT
860 RETURN
997 REM
998 REM YOU'RE BATTING
999 REM
1000 FOR N=1 TO 11
1005 BS=0
1010 CLS:PRINT:PRINT " YOUR TEAM BATS
":PRINT
1015 PRINT "INNINGS: ";STR$(IN); TEA
M RUNS: ";STR$(YS)
1017 PRINT
1020 PRINT "BATSMAN ";STR$(N);": ";
1030 PRINT N$(N)
1040 PRINT:PRINT "RUNS: ";STR$(BS)
1050 PRINT:PRINT "ATTACK OR DEFEND(A/D)?
"
1060 GOSUB 150
1070 IF I$<"A" AND I$<"D" THEN GOTO 10
60
1080 IF I$="A" THEN PO=20:PR=60
1090 IF I$="D" THEN PO=10:PR=40
1100 R=100:GOSUB 100:IF RN>PO GOTO 1200
```

```

1110 R=2:GOSUB 100
1120 PRINT:IF RN=2 THEN PRINT "
      HOWZAT???"
1130 IF RN=1 THEN PRINT "          BOWLED
      OUT???"
1140 PING
1150 FOR X=1 TO 1000:NEXT X
1160 GOTO 1400
1200 PRINT
1210 R=100:GOSUB 100
1220 IF RN>PR THEN PRINT "          OH DEA
      R, A MISS???" :GOTO 1310
1230 R=100:GOSUB 100:SHOOT
1240 IF RN<41 THEN PRINT "          A QUIC
      K SINGLE???" :RS=1:GOTO 1300

1250 IF RN<66 THEN PRINT "          A COUP
      LE OF RUNS" :RS=2:GOTO 1300

1260 IF RN<91 THEN PRINT "          CLAP F
      ROM THE PAVILION" :RS=4:GOTO
      1300
1270 PRINT "          JOLLY GOOD SHOW!!" :RS
      =6
1300 BS=BS+RS:YS=YS+RS
1310 FOR X=1 TO 1000:NEXT X:GOTO 1010
1400 NEXT N
1410 CLS:PRINT:PRINT "          YOUR TEAM BOWLE
      D OUT???"
1420 PRINT:PRINT "          RUNS SCORED:" :STR*(
      YS)
1430 FOR X=1 TO 1000:NEXT X
1500 RETURN
1597 REM
1598 REM          YOU BOWL
1599 REM
1600 FOR N=1 TO 11
1605 BS=0
1610 CLS:PRINT:PRINT:PRINT "WHICH BOWLER
      THIS OVER- FAST,MEDIUM"
1612 PRINT "          OR SPIN(F/
      M/S)?"
1614 GOSUB 150
1616 IF I$<"F" AND I$<"M" AND I$<"S"
      THEN GOTO 1614
1618 IF I$="F" THEN PO=20:PR=75
1620 IF I$="S" THEN PO=15:PR=60
1622 IF I$="M" THEN PO=10:PR=45
1625 FOR M=1 TO 6
1627 CLS:PRINT:PRINT "MACHINE TEAM IN BA
      T":PRINT
1630 PRINT "INNINGS: :STR*(IN); " TEA
      M RUNS: :STR*(OS)
1640 PRINT
1650 PRINT "BATSMAN : :STR*(N); " :
1655 PRINT "BOWLING: :I$
1660 PRINT:PRINT "RUNS : :STR*(BS)
1670 R=100:GOSUB 100:IF RN>PO GOTO 1700
1680 R=2:GOSUB 100:IF RN=1 THEN PRINT:PR
      INT "          HOWZAT???"
1690 IF RN=2 THEN PRINT:PRINT "BOWLED OU
      T???"
1695 PING:M=6:NEXT M:GOTO 1050
1700 PRINT:R=100:GOSUB 100:IF RN>PR THEN
      PRINT "          A MISS????":
      GOTO 1800
1710 R=100:GOSUB 100:SHOOT
1720 IF RN<41 THEN PRINT "          A QUIC
      K SINGLE???" :RS=1:GOTO 1760
1730 IF RN<66 THEN PRINT "          A COUP
      LE OF RUNS" :RS=2:GOTO 1760
1740 IF RN<91 THEN PRINT "          CLAP F
      ROM THE PAVILION" :RS=4:GOTO
      1760

```

```

1750 PRINT "          JOLLY GOOD SHOW!!" :RS
      =6
1760 BS=BS+RS:OS=OS+RS
1800 FOR X=1 TO 1000:NEXT X:NEXT M
1810 GOTO 1610
1850 FOR X=1 TO 1000:NEXT X:NEXT N
1860 CLS:PRINT:PRINT
1870 PRINT "          MACHINE TEAM BOWLED
      OUT"
1880 PRINT "          WITH : :STR*(OS); " RU
      NS"
1890 FOR X=1 TO 1000:NEXT
1900 RETURN
1997 REM
1998 REM          INITIALISATION
1999 REM
2000 DIM N$(11)
2010 CLS:PRINT:PRINT "DO YOU WANT TO NAM
      E YOUR PLAYERS(Y/N)?"
2013 GOSUB 150:IF I$<"N" AND I$<"Y" TH
      EN GOTO 2013
2015 IF I$="N" GOTO 2060
2020 FOR N=1 TO 11
2030 PRINT "PLAYER : :STR*(N); " :
2040 INPUT N$(N)
2050 NEXT N
2060 LET B=0
2500 RETURN

```

### CRICKET DOCUMENTATION

Line Nos	Generate Random Number
S/R 100	Get Key Depression
S/R 150	Initialise program
S/R 2000	Draw Scoreboard
S/R 800	Player Batting
S/R 1000	Machine Batting

Line 200-300	Set up game
500-520	1st Innings
535-560	2nd Innings
600-650	Check if another game

Array N\$:	Name of player's batsmen
------------	--------------------------

#### Variables and strings

I\$:	Input string
M, N, X:	General Purpose variables
RN:	Random Number
R:	Random number upper limit
I:	Head/Tail indicator
B:	Bat/Bowl indicator
BA\$:	Output verb
Y1, Y2:	1st, 2nd Innings scores — player
M1, M2:	1st, 2nd Innings scores — machine
YS:	Player's Score
DS:	Machine Score
BS:	Batsman's Score
PO:	Probability of taking wicket
PR:	Probability of getting at least one run
RS:	Number of runs from one hit
IN:	Innings number

This month's Cricket game has been written on an Oric computer, but can very simply be converted to run on just about any other home computer.

Line 100: This line picks a random number in the range 1 to R, your manual will tell you how to do this on your machine.

Line 150: This line reads the keyboard.

On the Spectrum you would use INKEY\$, and on other machines GET will do the job.

Line 255: If you micro cannot handle ELSE, then you will have to split these statements in half.

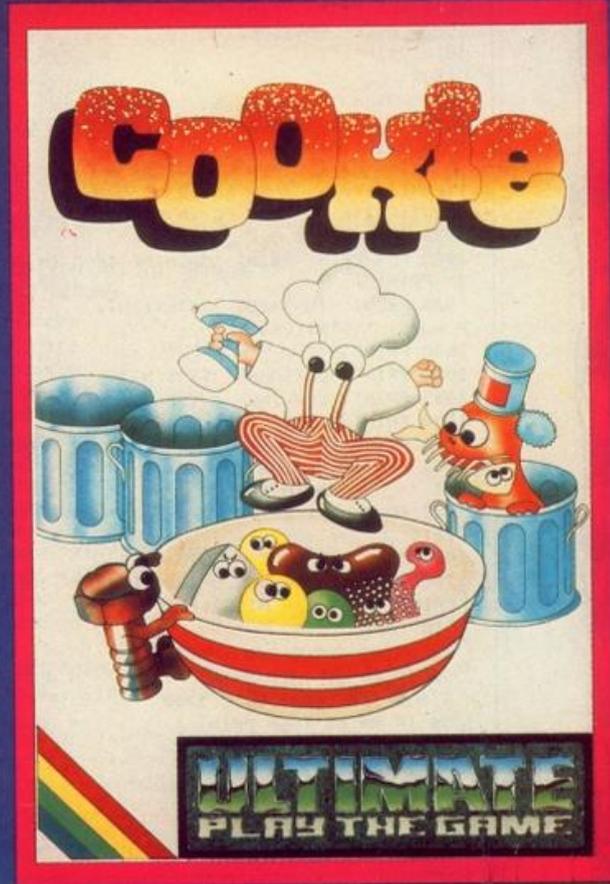
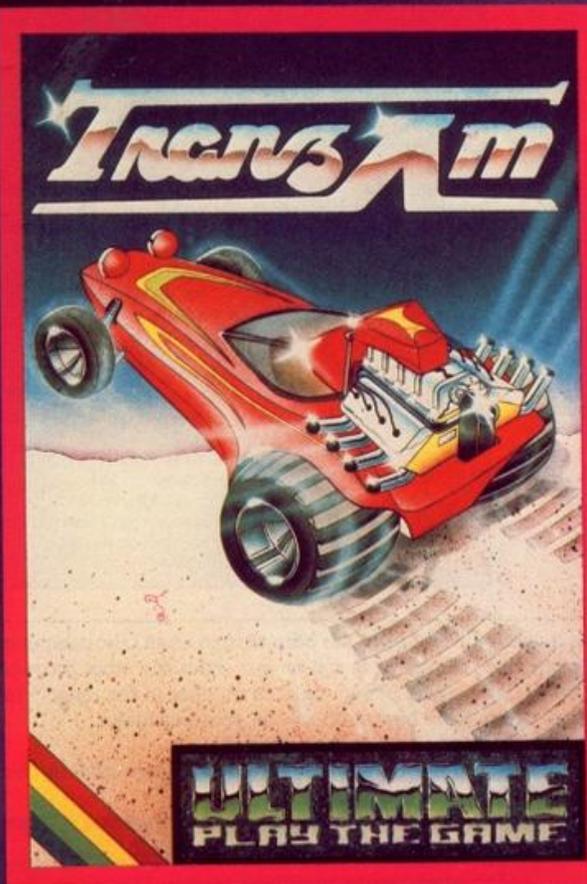
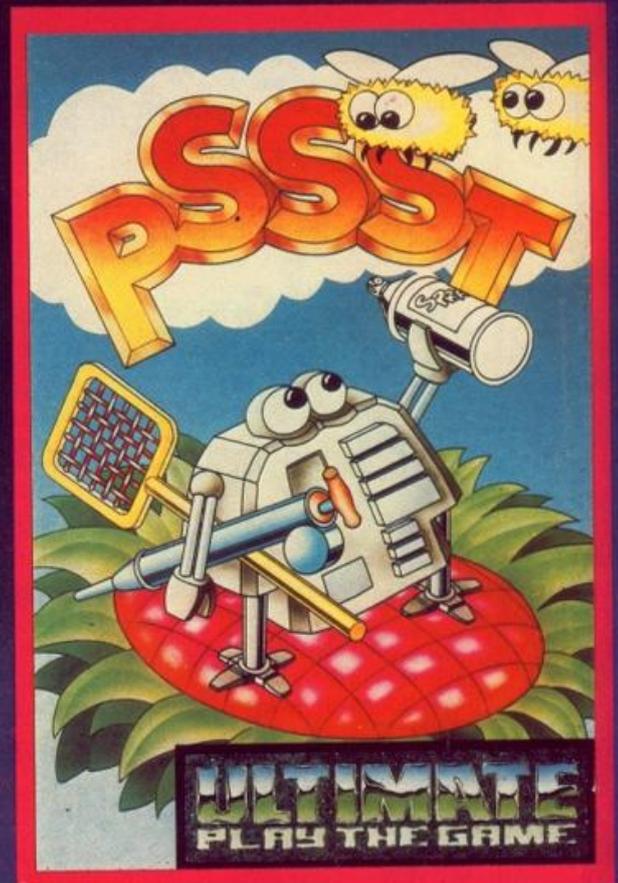
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16/48K ZX Spectrum or 8K Expanded  
VIC 20



# PSSST –

19/48K ZX Spectrum

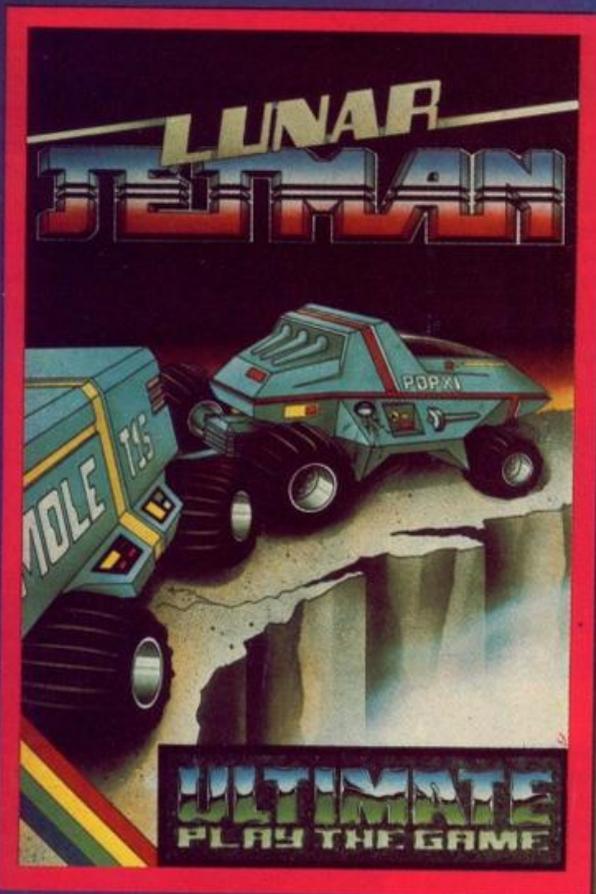


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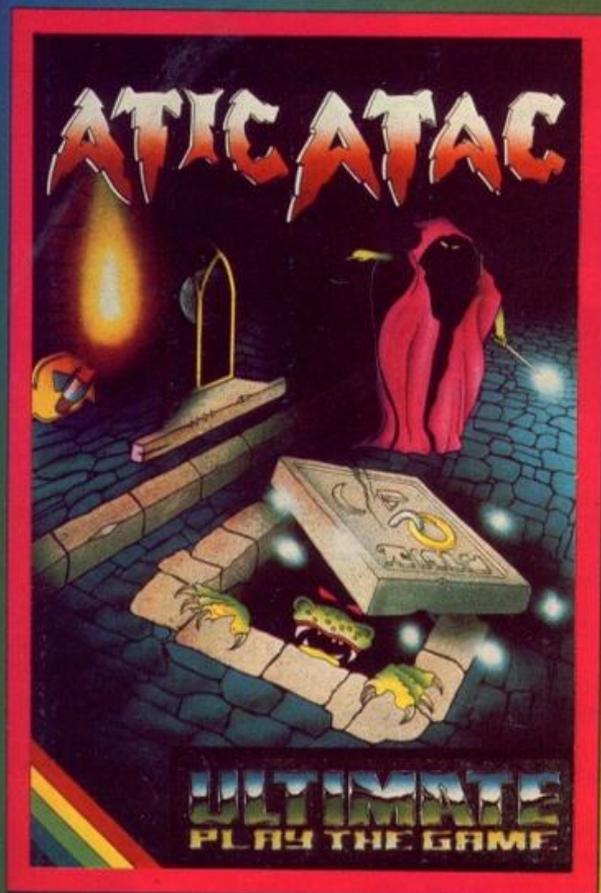
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## SPECTRUM

**THERE are some strange and wonderful things that can be done with the screen on the Spectrum, this program from Richard Couchman of St. Ives in Cambridgeshire shows how you can display a multi-coloured border. This is useful when a program stops and you want the person using the machine to input something.**

**The program that plays around with the character set is very strange, if anyone can think of a use for it we will be pleased to hear from you.**

I HAVE written a program which allows the Spectrum to show a multi-coloured border display (normally one colour can be displayed at once with the Spectrum's border), this is the program used:-

```
1 Border 1
2 REM Your Writing Here
333 Border 1
444 Border 2
500 Border 3
600 Border 4
700 Border 5
800 Border 6
900 Border 0
1000 Border 1
1100 PAUSE 1
1200 GOTO 333
```

Try this program:-

```
10 Border 2
20 Border 3
30 GOTO 10
```

The strange thing about this program is this: Press "Space" and it will speed up, and it hasn't got any pause statements in. Press "O" and "P" at the same time and it will slow down. Press "O", "P" and "I" and it will stop. Press "E" and "O" and "P" and "I" and it will go backwards.

Try this:- POKE 23607, 8. This will move the character set back by 1. POKE 23606, X. IF X=8 the character will be moved back 1 pixel. IF X=16 the character set will be set back by 2. IF X=24 the character will be set back by 3, adding 8 to X sets the character back 1 more. Try this by doing this program:-

```
10 FOR a=0 TO 255
20 PRINT AT 0,0;"a"
22 POKE 23606,a
25 PAUSE 10
30NEXT a
```

Richard Couchman, St. Ives, Cambs.

## ORIC

HERE is a short program for the Oric computer which displays text across a screen and then rolls it. The effect is often used in shop windows to try and entice you to buy things, or alternatively it is used to display news on large screens in the centre of big cities.

The program writes the text in double height characters, and moves the characters by taking one off the end of the text and inserting at the front using the LEFT\$ and MID\$ functions. You might like to use it as a subroutine in one of your programs where you want to catch a person's eye with some words.

```
10 REM ROLLING TEXT
20 REM
30 REM
100 CLS:PRINT:PRINT:INPUT "ENTER YOUR MESSAGE";M$
110 CLS:PRINT CHR$(4)
120 FOR X=0 TO 7
130 PRINT
140 NEXT X
145 PRINT CHR$(27);"J"
160 REM
170 REM ROLLING LOOP
180 REM
200 M$=MID$(M$,2)+LEFT$(M$,1)
220 PLOT 1,9,LEFT$(M$,38)
230 PLOT 1,10,LEFT$(M$,38)
240 WAIT 20:GOTO 200
```

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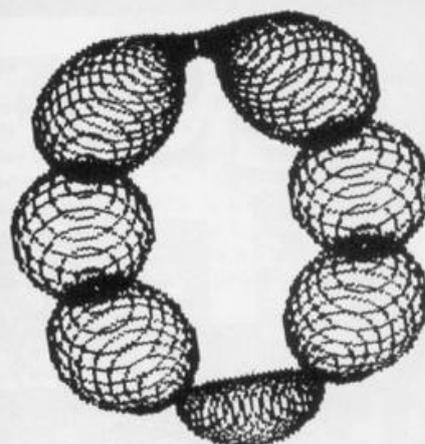
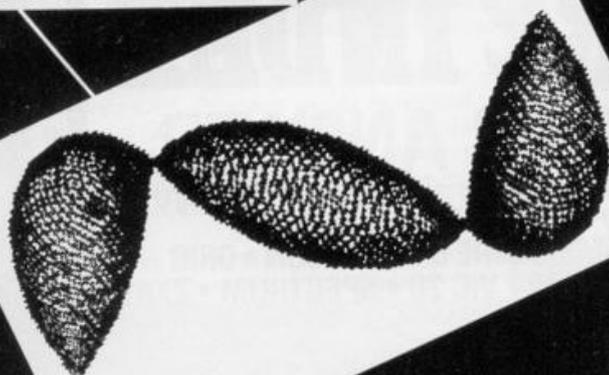
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# SOFTWARE CITY

## SPECTRUM



THESE two incredibly short programs form the nucleus of an entire set of similar programs all of which produce weird and wonderful spirographic-like patterns on the screen of the Spectrum. They are meant to be experimented with, as a lot more can be done. For example, if you try changing the number which PI is multiplied by in lines 22 and 25 of program one, you will start to get different effects.

```
10 CLS
20 FOR I=1 TO 254 STEP 2
22 LET X=120+80*COS (I/254*PI*2)
25 LET Y=100+50*SIN (I/254*PI*2)
30 LET Z=25*SIN (X/254*PI*5)
40 CIRCLE X,Y,Z
50 NEXT I
```

```
10 CLS
20 FOR X=1 TO 254 STEP 2
25 LET Y=100+50*SIN (X/254*PI*2)
30 LET Z=25*SIN (X/254*PI*3)
40 CIRCLE X,Y,Z
50 NEXT X
```

## SPECTRUM

HERE is a short program using the now famous OUT 254 trick on the Sinclair Spectrum. It is written by W. R. Billany from Hull, and gives a flashing border, which certainly draws attention to any text printed on the screen.

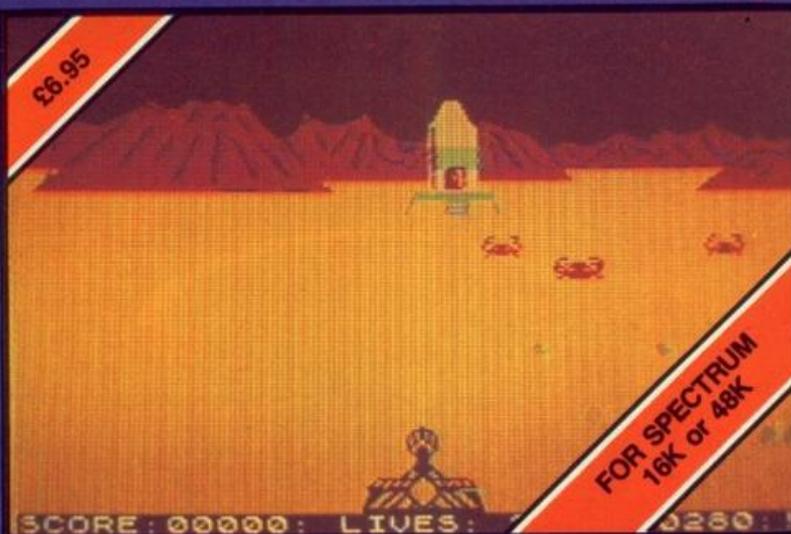
```
20 PRINT AT 10,3; FLASH
1; "COMPUTER CHOICE IS GR
EAT"; FLASH 0; PRINT AT
15,10; "PRESS A KEY"
100 REM LET A = BORDER C
LOUR
150 LET A=3
200 FOR I=1 TO 100
300 OUT 254,A-2
400 OUT 254,A
500 NEXT I
```

```
600 IF INKEY$="" THEN G
O TO 200
700 CLS : REM REST OF PR
OGRAM// EXAMPLE FOLLOWS
710 REM
720 PRINT AT 12,12; INVE
RSE 1; "BUY IT"; INVERSE
0
750 PAUSE 0
800 GO TO 720
```

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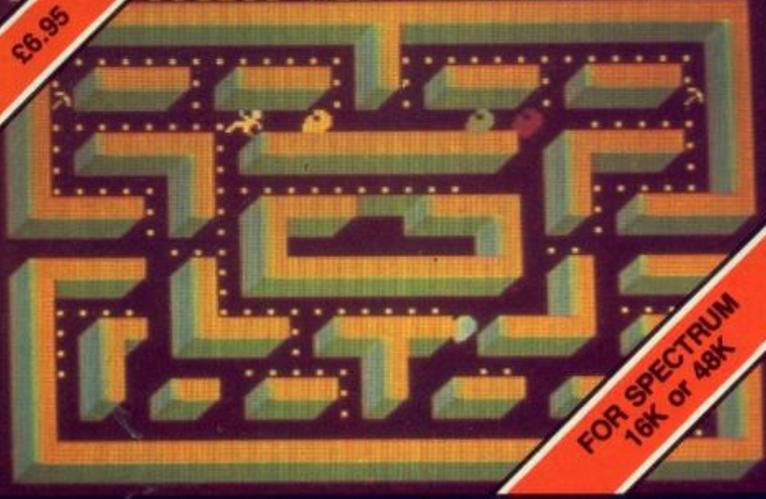
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## DRAGON 32

ONE of the drawbacks of Dragon 32 Basic is the text can't be placed on the high-resolution screens. This small sub-routine enables you to place numeric digits, designed somewhat along the lines of calculator numerals, anywhere on any given high-resolution screen. It does this by using the DRAW command — a pre-set string for each of the 10 digits. To use sub-routine 100, set variable NU to the number you want, adjust variable SC to give you the right size of digit "1 to 62". Variables X and Y are the screen co-ordinates — remember to ensure that these do not run the number off the screen — the routine doesn't check screen limits.

This routine could be souped up in many ways — for example: to allow decimal points column alignments and floating point outputs, but I'll leave that to you!

### DOCUMENTATION:

Line 100: Sub-routine to print a string of digits  
 Line 200: Test routine  
 Line 1000: Read numeral data

### VARIABLES:

N\$ Draw strings for digits  
 NM General purpose variables  
 SC Scale  
 NU Number to be printed  
 X,Y Co-ordinates of number  
 S\$ Scale string  
 X\$ Number string

```

10 REM SKETCH PAD
20 REM FIN FAHEY
30 REM
40 REM
45 PCLEAR 4
50 GOSUB 1000:GOTO 200
60 REM
70 REM PRINT NUMBER S/R
80 REM
100 S$="S"<MID$(STR$(SC)
    ,2)+"BM"+MID$(STR$(X),2)
    +","<MID$(STR$(Y),2)
110 DRAW S$
120 X$=MID$(STR$(NU),2)
125 REM LOOP FOR DIGITS
130 FOR N=1 TO LEN(X$)
140 M=VAL(MID$(X$,N,1))
150 DRAW N$(M)
155 DRAW "BR1"
160 NEXT N
170 RETURN
190 REM
195 REM TEST ROUTINE
197 REM
200 PMODE 3,1:PCLS
210 SCREEN 1,1
220 SC=16:REM SET SCA
LE
230 NU=12345678:REM NU
    MBER
240 X=20:Y=40:REM CO-
    ORDS
250 GOSUB 100
260 GOTO 260
990 REM
995 REM INITIALISE
997 REM
1000 DIM N$(9)
1010 FOR N=0 TO 9
1020 READ N$(N)
1030 NEXT N
1100 RETURN
1900 REM
1910 REM DATA STATEMEN
    TS
1920 REM
2000 DATA U2R1D2L1R1,U2B
    R1BD2,BU2R1D1L1D1R1,BU2R
    1D1L1R1D1L1R1
2010 DATA BU1U1D1R1U1D2,
    BU2R1L1D1R1D1L1R1,BU2BR1
    L1D2R1U1L1BD1BR1
2020 DATA BU2R1D2,BR1L1U
    1R1U1L1D1R1D1,BU1R1L1U1R
    1D2L1R1
    
```

## ELECTRON

THIS short program produces an arresting display on the screen of the Electron. It is fairly simple, and should inspire you on to greater things. The interesting part of the program is in line 80, where the colour, defined by the command GCOL, is chosen by a mathematical process based on the position of the point on the screen.

### LIST

```

10 MODE 2
15 CLG
17 VDU24,100,100,1100,1100
18 VDU 19,0,7,0,0,0
20 FOR I=1 TO 900 STEP 12
30 FOR J=1 TO 900 STEP 12
80 GCOL 3,ABS(INT(SIN(I/600*PI)+COS(J/540*PI)*6)+1)
100 PLOT 85,I+100,J+100
200 MOVE J+100,I+100
700 PLOT 85,1100-I,1100-J
750 MOVE 1100,1100-I
800 NEXT J
810 PLOT 0,100,100
850 NEXT I
880 GOTO 20
    
```

## OPERATION GREMLIN . . .

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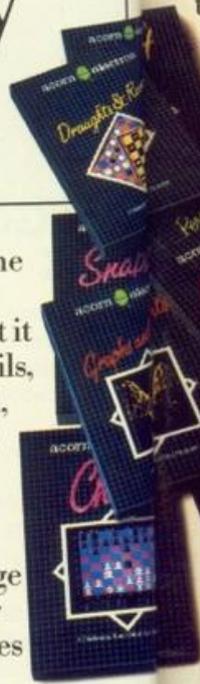
In other words it's comfortable and easy to use, avoiding the need for the manual gymnastics sometimes associated with calculator style keyboards.

And it will grow with you via expansion modules, that Acorn are developing, to take peripheral additions such as printers and disc drives. So as your knowledge, interest and ambitions develop, the Electron can develop with you.

Additionally, to give you all the support you'll need to generate your own applications software, we've established a phone-in service attended by specialists to give advice, encouragement and practical help.

A gentle teacher.

The Electron plugs straight into virtually any TV set and cassette player so you will be



ready to go as soon as you get it home.

It comes not only with a comprehensive user guide, which describes the machine and its functions, but also with a book that takes you step by step through the basic principles of programming.

A free taste of its versatility.

You will also receive an "Introductory" cassette which will put the Electron through its paces showing you a little of what it can do with its 64k of memory (32k ROM, 32k RAM).

The cassette will give you a taste of those exceptional colour graphics we mentioned earlier; of its ability to play and notate music, and show you how it might help in home accounting. It will challenge you to a few games and will, if you ask it, do your whole family's biorhythms in a matter of seconds.

You will in short, through the 15 separate programs it contains, get a glimpse of the Electron's potential. But only a glimpse, for that potential is as limitless as your own interest and imagination.

A widening range of software.

To help you realise some of that potential, Electron software already ranges from "Personal

Money Management" through "Starship Command" to "Creative Graphics" (which, incidentally, includes some spectacular three-dimensional rotating shapes). Naturally, with its strong educational links, educational software will be extremely

EXPERTS LIKE 'WHAT MICRO?' AND ME RATE THE ELECTRON HIGHER THAN ANY OF THE COMPETITION.



important for the Electron and even now O and A Level revision papers are being processed for Electron users.

How to get your Electron.

The Electron is available from selected WHSmith and local Acorn stockists. However, if you would like to order one with your credit card, or if you would like the address of your nearest supplier, just phone 01-200 0200.



Technical Specifications

Hardware.

2MHz 6502.  
32K ROM 32K RAM (64K total).  
High resolution graphics 640 x 256 max.  
Seven display modes.  
8 colours and 8 flashing colours.  
1200 baud CUTS tape interface with motor control.  
Expansion bus for add-on interface modules.  
Internal loudspeaker.  
PAL UHF output to colour or black and white domestic TV.  
RGB output for colour monitor.  
56 key full travel QWERTY keyboard with spacebar.

Software.

BBC BASIC.  
Extensions include interger, floating point and string variables, multi dimensional arrays: IF... THEN... ELSE, REPEAT... UNTIL, procedures with local variables.  
Operating system allows plot, draw and fill commands.  
Event timing.  
Built-in assembler.  
6502 assembly language can be mixed with BASIC.

The Acorn  Electron.

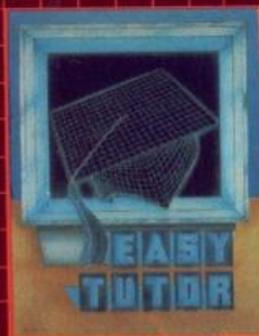
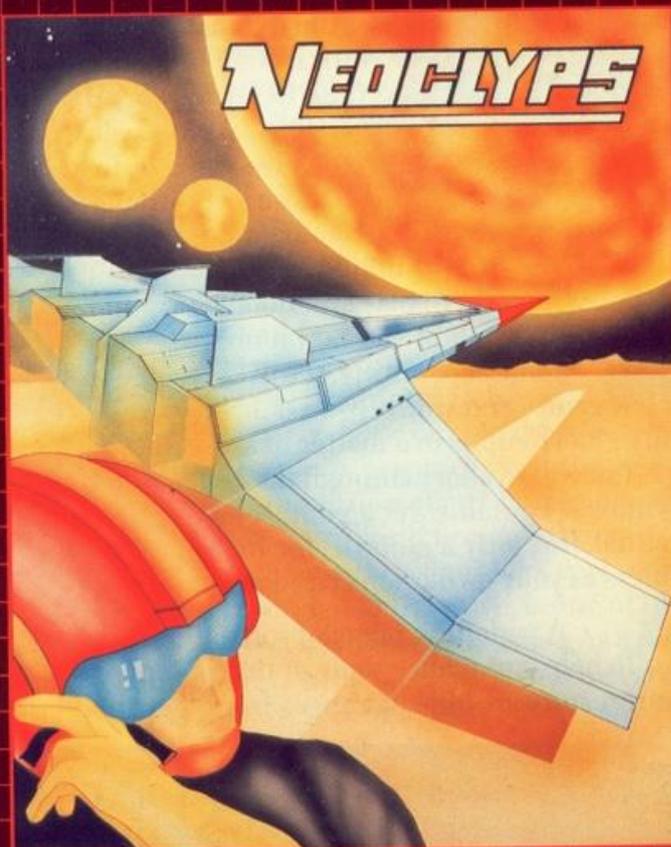
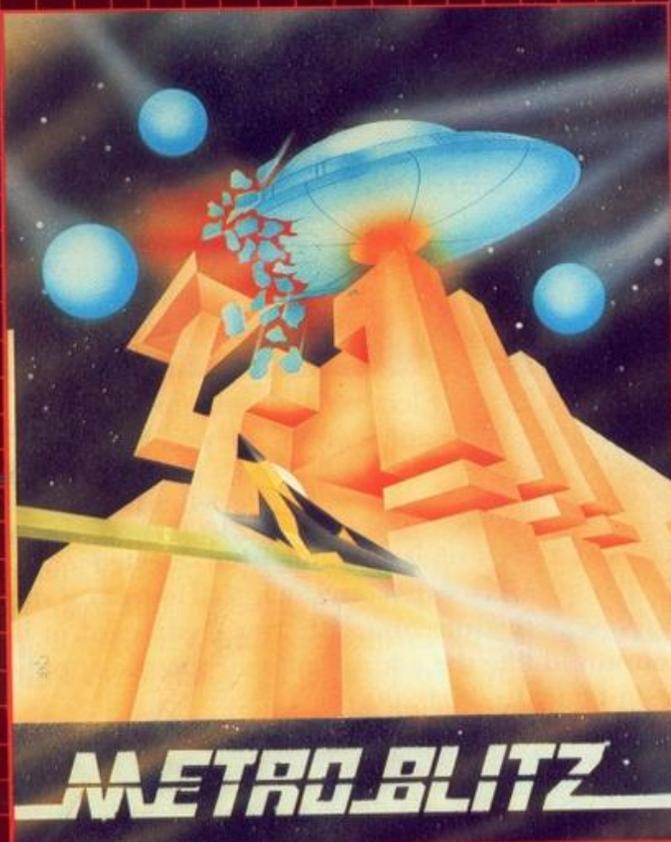
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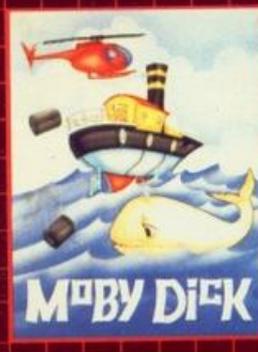
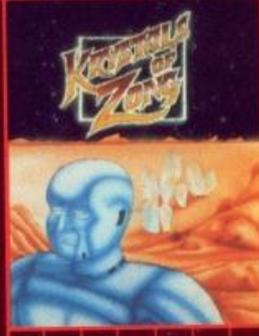
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# IN TRAY -

So much software arrives every day, here's a look at what's new; watch out for reviews to come.

TITLE	COMPANY	MACHINE	TITLE	COMPANY	MACHINE
Alien Rescue	dk'tronics	Commodore 64	Jigsaw	Commodore Business Machines	Vic-20
Alphabet Games	Sinclair	Spectrum	Jumbly	dk'tronics	Spectrum
Angler	Virgin Games	Spectrum 48K	Killer Kong	Blaby Computer	Spectrum 48K
Armageddon	Silversoft	Spectrum	Krazy Kong	PSS	Spectrum 48K
The Apostrophe	Sinclair	Spectrum	Learn to read 1, 2, 3 & 4	Sinclair & Macmillan	Spectrum
Apple Jam	dk'tronics	Spectrum	The Lone Raider	Atari Inc.	All Atari home computers
Aquarius	Bug-Byte	Spectrum	Lost	Virgin Games	Spectrum 48K
An Introduction to Basic	Commodore Business Machines	Commodore 64	Magic Castle	Gilsoft	Spectrum 48K
Barmy Burgers	Blaby Computer Games	Spectrum 48K	Mazias	dk'tronics	Spectrum
Battle of Britain	Maincomp Ltd	Vic-20 16K	Menagerie	Commodore Business Machines	Vic-20
Blastermind!	Martech Games	Spectrum 48K	MilHe-Bug	dk'tronics	Commodore 64
Blockade Runner	Thorn EMI	Spectrum	3-D Monster Chase	Romik	Spectrum 16K or 48K
Brain Damage	Silversoft	Spectrum	Morris meets the Bikers	Automata U.K. Ltd	Spectrum 16K or 48K
Capital Letters	Sinclair	Spectrum	Mrs Mopp	Computasolve Ltd	Spectrum 48K
Castle Spellerous	Sinclair & Macmillan	Spectrum	Multigames 2:	Tansoft	Oric 48K
Chopper Rescue	Blaby Computer Games	Spectrum 48K	Hangman, Substrike, Road Race & Moonland	Abacus Programs	Spectrum 48K
Colossal Adventure	Level 9 Computing	Spectrum 48K	Munnery's Mergatroids	Abacus Programs	Spectrum 48K
Colour Clash	Romik	Spectrum 16K or 48K	Music Composer	Commodore Business Machines	Commodore 64
Confusion	Blaby Computer Games	Spectrum 48K	Patience	Commodore Business Machines	Vic-20
Convoy Attack	Romik	Dragon	Pedes & Mutants	Romik	Vic-20 (unexp)
Cosmic Cruncher	Commodore Business Machines	Vic-20	Planet of Death	Artic Computing Ltd	Spectrum 48K
3-D Deathchase	Micromega	Spectrum	Pluggit	Blaby Computer Games	Spectrum 48K
Cyclops	Romik	Dragon	Pool	Abrasco Ltd	Spectrum 48K
The Detective	Arcade Software	Spectrum 48K	Popeye	Parker Video Games	Atari 400
Diamond Trail	Gilsoft	Spectrum 48K	Proteus	Abacus Programs	ZX Spectrum
Dictator	dk'tronics	Commodore 64	Quetzalcoatl	Virgin Games	Spectrum 48K
Dimension	Artic Computing Ltd	Spectrum 48K	The Quill	Gilsoft	Spectrum 48K
Destructors	Blaby Computer Games	Spectrum 48K & Dragon 32	Rider	Virgin Games	Spectrum 48K
Dodo	Blaby Computer Games	Spectrum 48K & Dragon 32	Raider of the Cursed Mine	Arcade	Spectrum 48K
Don't Panic! (two adventure games)	Peaksoft	Dragon 32	River Rescue	Thorn EMI	Spectrum
Dragon Chess	Oasis Software	Dragon 32	Road Racer	Thorn EMI	Spectrum
Early Punctuation	Sinclair & Macmillan	Spectrum	Sargon II Chess	Commodore Business Machines	Vic-20
Earth Defence	Artic Computing Ltd	Spectrum 16K	See Saw Scrabble	Romik	Atari 400/800
Espionage Island	Artic Computing	Spectrum 48K	Ship of Doom	Artic Computing Ltd	Spectrum 48K
Exterminator	Silversoft	Spectrum	Ship of the line	Richard Shepherd Software	Commodore 64
Face Ache	Commodore Business Machines	Commodore 64	Shuttle	Blaby Computer Games	Spectrum 48K
Fire Flash	Abacus Programs	Spectrum	Ski	Commodore Business Machines	Vic-20
Galactic Trooper	Romik	Spectrum 16K or 48K	The Slicker Puzzle	dk'tronics	BBC 32K
Galactic Warriors	Abacus Programs	Spectrum	Spawn of Evil	dk'tronics	Spectrum
Galactians	dk'tronics	Spectrum	Spectron	Virgin Games	Spectrum 48K
Ghost Town	Virgin Games	Spectrum 48K	Speech Marks	Sinclair	Spectrum
Glider	Sinclair & Macmillan	Spectrum	Speed Dual	dk'tronics	Spectrum
Gold Rush	Thorn EMI	Spectrum	Star Clash	Micromega	Spectrum 16K or 48K
Golden Apple	Artic Computing Ltd	Spectrum 48K	Star Rescue	Oasis Software	ZX-81
The Golden Apples of Zeus	Romik	Vic-20 (exp) 8K or 16K	Survival	Sinclair & Macmillan	Spectrum
Gotcha	Blaby Computer	Spectrum 48K	Sword of Hrakel	Romik	Vic-20 (exp) 3K, 8K or 16K
3D Grand Prix	dk'tronics	ZX-81			
Hard Cheese	dk'tronics	Spectrum			
The Hobbit	Melbourne House	Spectrum 48K			
Hunter Killer	Protek	Spectrum			
I'm in a shock	Artic Computing Ltd	Spectrum 16K			
Inca Curse	Artic Computing Ltd	Spectrum 48K			
The Island	Virgin Games	Spectrum 48K			

# STARTING ABOUT IN BASIC

by Piers Letcher

**COMPUTERS store information in their memory as variables. These are areas of memory, especially set aside for the purpose of storing information that may change in the course of a program, hence the name variable. In some ways these variables can be thought of as drawers in which information can be put and retrieved from as and when the computer wants to.**

NORMALLY you can call variables whatever you like. On some micros though, you have to be careful, as you're limited in length. This length limit varies, depending on the machine, the Dragon only recognises the first two characters (this becomes six on the Atari, and even more on the BBC), but the variable name can be longer, the extra is ignored.

Problems often occur when naming variables, and it's a good idea to be aware of these from the start. One that's easy to get caught by, is that of calling your variables XY1 and XY2, for example, and finding them both being thought of by the micro as XY, even though they look different to you. This problem crops up on the Commodore 64, Vic-20, and Dragon to name but a few, because the computer only looks at the first two letters.

So what can we do with these wonderful drawers? Well first of all there's the assignment statement. In Basic, assignments are done with the LET statement which works like this — try typing in the following:

```
10 LET X=10
20 PRINT X
30 LET X=X+5
40 PRINT X
```

and then typing RUN. You should get 10 printed on one line, and then 15 printed on the next. What this program has done is to "assign" the value of ten to an area of memory called X, and then PRINT out the contents of this area. (The variable X). After that you told the micro to take the value of X, add 5 to it, and put the total back in the area marked X. Now when the contents of

X are printed out you get 15. Try changing line 30 to LET X=X\*X, and now you should get 100 being printed on the second line (which is 10 times 10).

The important thing to remember about the LET statement is that the equals sign (=) in it is not the same equals you use in maths. If you said X=X-1 in a maths class you'd be sent out, but here, that's exactly what you can do.

On most micros, you can ignore the word LET altogether, and so you could write line 30 as 30 X=X+5. Until you're used to programming, it's as easy to use LET, and often less confusing.

blank line numbers to do this, as you won't know what variables you're going to use until you start writing the program.

However, it's a bit tedious if every time you run a program you have to use those variables, set up with fixed data. It would mean that you would have to rewrite the program every time you wanted to run it. It's fine to put in things that won't change at the start of your program, if they're going to be used, like 12 for a program dealing with months, or PI if you're playing with circles, but in general you want the program to collect the information for you.

**Example one**

```
10 READ X,Y,Z
20 PRINT X=,Y=,Z=
30 READ X,Y,Z
40 PRINT X=,Y=,Z=
50 DATA 1,2,3,4,5,6
```

**Example two**

```
X=1
Y=2
Z=3
AND Z=
AND Z=
```

You probably noticed at the beginning of the first program, that I had to tell the micro what to put into X before printing it out. This is called initialising the variable, and although most micros will automatically set variables for you, it's generally safer to do it yourself, at the start of the program, so that you can be sure what's in which "drawer" from the start. Leave a few

Luckily Basic provides several methods of doing this. The most simple of these is the combination of the READ and DATA statements.

The DATA statement is the simpler of the two. It is simply a line number, followed by the word DATA, and a list of pieces of data, separated by commas (e.g. 100 DATA 4,5,6,7,8,9,12). This

can go anywhere in your program, with the sole rule that the DATA statement must come later than the READ statement that picks up the data within it. For this reason, and also because it makes it easier to find if you want to change it later, the data statements are often put right at the end of a program.

The READ statement is only slightly more complex. In its simplest form the READ statement can be written as just:

```
45 READ X
```

which simply finds the first piece of data in the DATA statement, and assigns it to (the drawer marked) X. The program I showed earlier could not be changed to:

```
10 READ X
20 PRINT X
30 LET X=X+5
40 PRINT X
50 DATA 10
```

If you want to get more than one piece of data in at a time, it can be done by reading in data into variables separated by commas, i.e. READ X,Y,Z. Every time a READ statement is used it takes the next piece of data from the list, so if you typed in example one, you would get example two. (See facing page). The data could equally well have been split up into two DATA statements, it would have made little difference (only to the amount of space the program takes for example).

Changing the way that the program works is as easy as changing the last line (or last few if you've got lots of data).

There are times in a program when you want to re-use data. This is easily done with the RESTORE statements, which simply sets the data pointer (which tells the computer which piece of data is to be looked at next) back to the very first piece of data in the data statement(s). In the program, inserting a line; 25 RESTORE would have made the second line of the output read the same as the first. Because the computer thinks that the first data item is the next one to look at. The READ and DATA statements have their limitations. For one thing you still have to change your program if you want to use completely different data.

Basic offers a fairly sensible solution to this problem. The answer lies within the INPUT statement. The INPUT statement allows the program to take in a piece of information from the outside world (in this case the computer's keyboard).

The program we're looking at can now be further adapted, to be as general as you want it:

```
10 INPUT X,Y,Z
20 PRINT X,Y,Z
30 INPUT X,Y,Z
40 PRINT X,Y,Z
```

When you run this you will see a question mark on your screen. This means "type in something". When you've typed in something, and pressed RETURN, you get another question mark, and so on. Once the three bits of data have been put into their respective variables, they are then printed out across one line.

You could make the program more useful, by changing it as in example three, below.

You can assign any variable or expression to another variable. But what sorts of variables are there? Well so far, I've only used what are called simple variables. These can be used to store most numbers — though naturally there are size limits, and if you go too large or small you might find yourself looking at *exponential notation*, which is the scientific way of writing numbers.

If you were sure that a variable you were going to use to store information was always going to be an integer, then on most micros you could call the variable the same as you did before, but with a % sign on it (e.g. for circles with whole number radii, you might have R% instead of R).

Another sort of variable is the STRING variable. This has a \$ sign after it on most micros, and means that this drawer is for strings only. A string is any collection of letters, numbers or punctuation or . . . There are only two important differences between strings and numbers. One is that strings can be of variable length — usually 0-256 individual characters, and second that they are stored differently inside the computer.

### Example three

```
10 P=3.14159
20 REM SET UP PI
30 INPUT SET UP PI
40 C=P*2*R
50 A=P*R*R
60 REM WORK
70 PRINT "A CIRCLE WITH RADIUS :R: UNITS"
80 PRINT "HAS A CIRCUMFERENCE OF :C: UNITS"
90 PRINT "AND AN AREA OF :A: SQUARE UNITS."
100 REM PRINT OUT THE INFORMATION.
```

This is a simple program for calculating and printing the area and circumference of a circle, after the user has typed in the radius.

The program illustrates several ideas. One is that you can put things called REM statements into your programs. These are only there to tell you what's going on. They may seem unnecessary now, but if you leave a program alone, even for a couple of weeks, it's amazing how quickly you can forget what each bit did.

Another thing it shows, is that you can use the INPUT statement to print out a message before the question mark. This is very useful, as it helps someone who is using your program to know just what they're meant to be typing in at that moment.

This example also gives the opportunity to have a look at some places where it's easy to trip up. The first of these is right at the start, in the first line. You might have typed "PI" instead of "P". Many machines have "PI" as a *reserved word* — one that you can't use as a variable name, or at the beginning of a variable name, as the computer thinks it means something else. If you try and assign a value to it, the micro objects. (If your micro has got PI, you can forget line 10 and change the rest of the P's to PI's). One very common example of this is starting your variable names with TO, which causes problems, as the computer uses the word TO elsewhere.

You can define strings and assign them in much the same way as simple variables. The only thing you can't do, as you'd imagine, is to mix the two up in the same expression (at least not yet, we have our ways and means . . .). So it's quite possible to say,

```
10 LET H$="HI THERE JOHN"
```

and whenever you want it printed out, to say PRINT H\$. What you can't do is to say LET A%="HI THERE JOHN", as it then tries to put the message into an integer and causes all kinds of trouble.

One of the most useful things about computers is that they can do a lot of repetitive tasks in a short time, and we haven't seen much of that yet. Next month I hope to go into looping statements, and the GOTO statement, which means that you'll be able to jump around inside your own program and do some parts of it again and again.

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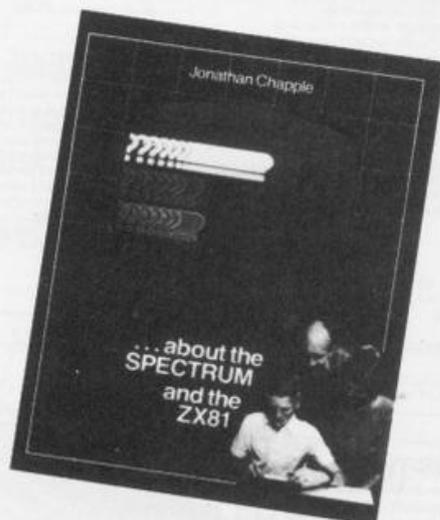
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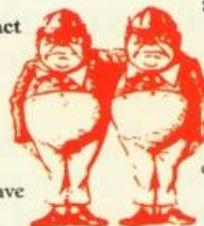
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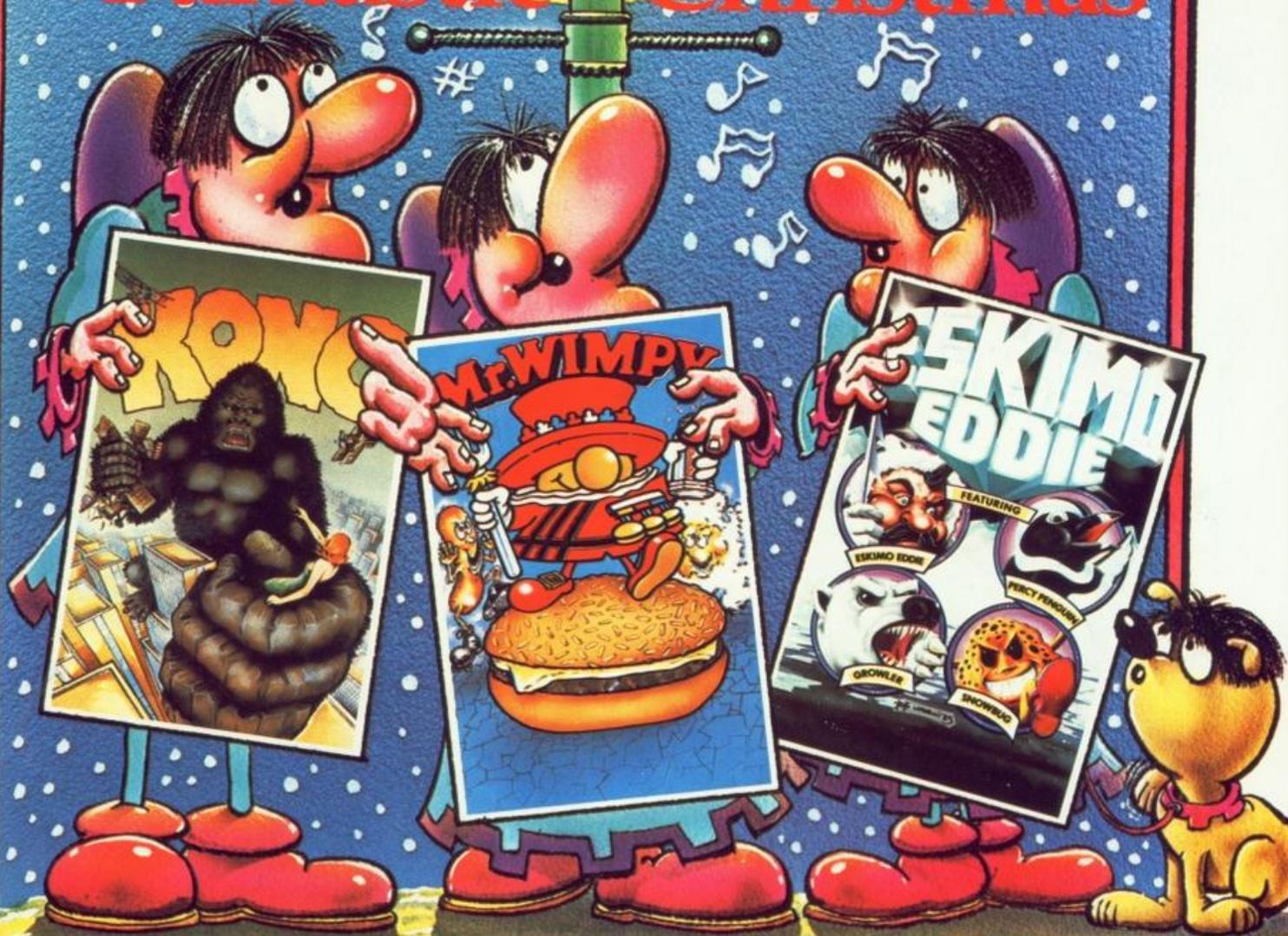
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