

Why HCW is the weekly to buy

- The best for software, news and reviews. We're regularly ahead of all the opposition.
- Bigger and better competitions. We've given away software and hardware in easy to enter competitions.
- More to read - we give you more editorial space than any other weekly in our field. That means greater in-depth news, features, columns, programs, comments and readers' letters.
- The only weekly to publish the Gallup chart with up to date comment on which games are doing best.
- The only weekly with a regular book review section.

Five good reasons why you should place a regular order for HCW - the weekly that leads the home computer field.

Watch this space!



US Gold signs Mickey Mouse

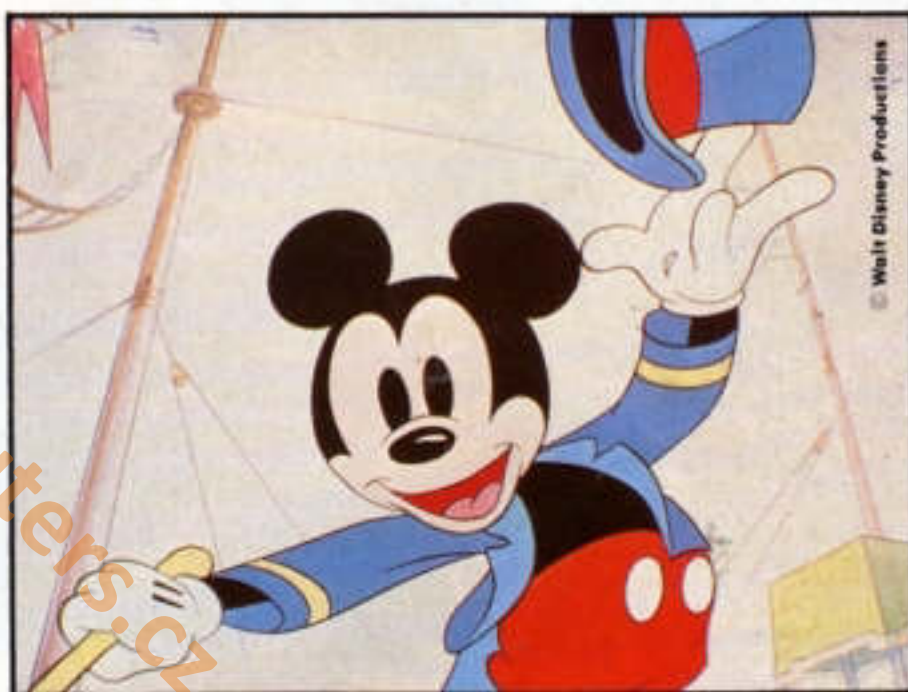
Mickey Mouse, Donald Duck, Winnie the Pooh and many other Disney favourites are to star in US Gold games. The first in the series will be launched this autumn.

US Gold won the licence from Walt Disney Productions after four months of negotiations; however, the financial side of the deal has not been revealed. The licence allows US Gold to base software on the Jungle Book and on two forthcoming Disney films. It also includes the rights to all Disney-based software now available in the USA and exclusive rights to all Disney characters.

The two new films are Return to Oz and The Black Cauldron. Both are being backed with massive advertising campaigns. Return to Oz is due for release in August and the game will follow in the autumn. The Black Cauldron is scheduled for October but no release date has been set for the game.

Three programs now available in America on the Sierra On-line label will be released in the UK by Christmas 1985. These "edutainment" products are Mickey's Space Adventure, Winnie the Pooh in the Hundred Acre Wood and Donald Duck's playground. All will be on disc initially although US Gold is considering converting them to cassette.

US Gold has also signed a contract with Muppet Productions and will be launching two initial titles based on Muppet characters: Kermit's Electronic Story Maker and The Great Gonzo in Word Rider. Both will appear on US Gold's Kids! label.



What are words worth? A BBC

A worker on Vauxhall's production line on Merseyside is the winner of our Akhter competition.

Mr A L Boddington of Ellesmere Port will receive a BBC computer, a colour monitor and stand which will replace the Electron that he currently uses. Over 20 entrants managed to make more than 1400 words from Akhter Computer Group. The final judging was based upon the tie-breaker - "I want to own a BBC because . . .". Mr Boddington completed the tie-breaker modestly: In BASIC terms I will

explain I really need a better brain.

Second prize, a colour monitor and stand, goes to Amstrad owner Michael Yates of Peterborough. He suggested that, educationally speaking, the BBC's in a class of its own.

BBC B means Britain's Best Computer Buy was the slogan of our third prize-winner, Chris Hawthorne of Abbots Bromley who receives a green screen monitor for his BBC.

The prizes will be presented to the winners by Akhter in the near future.

More for
your money!
See inside
for...

Spectrum disc
drive - make
tracks for p.22

Robot
maths

BASIC facts
and figures -
on-going
series

Push-button
programming
on the
BBC





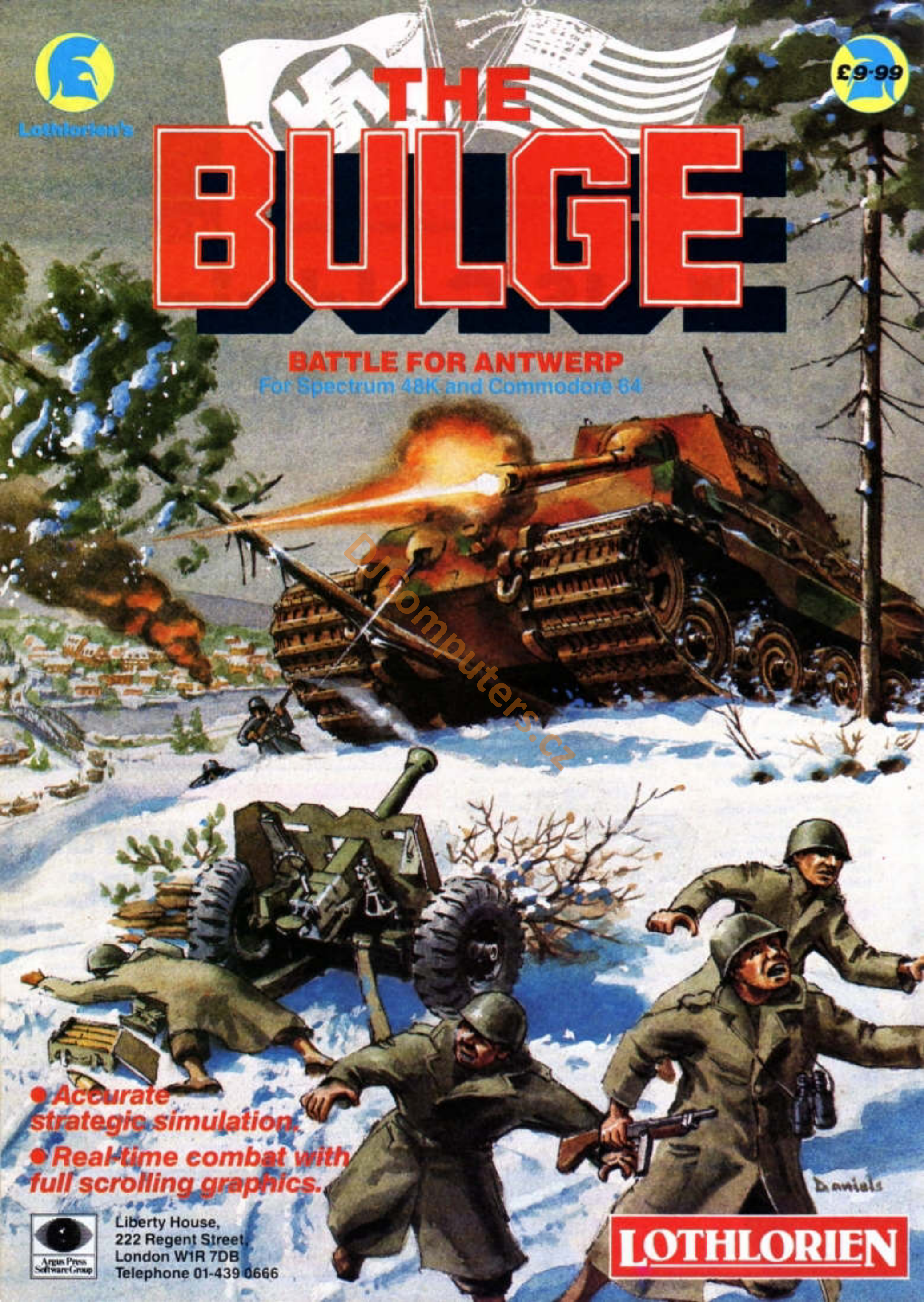
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May 14-May 20, 1985

No. 112

Soapbox

It looks like Mickey Mouse will be appearing on our computer screens very soon. I wonder if the program will be worth buying?

Don't get me wrong, I haven't seen the program and it may be one of the best that we see this year for all that I know. But recently there has been a spate of games linked to famous television series, films, books and even cartoons.

I have seen a number of the programs with such names and I cannot help but suspect that there is a large amount of this material which would not have been released if there wasn't a name attached.

There was a time when those who owned such names used to check the product before they would allow the name to be used. This seems to have gone by the board now that big business has taken over. The motto appears to be: take the money and let them get on with it.

For the buyer, I would suggest you see all the software that you fancy before you buy it or read a review in HCW. There are some very good games with famous names and some excellent ones without.

Don't accept that a famous name means a good program. Decide for yourself! **Dave**



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BASIC LIVING

by Jon Wedge and Jim Barker





Prices slashed

Acornsoft is cutting the prices of nearly all its cassette titles for the Electron. Titles which were £9.20 will now cost £6.99.

There are 56 titles in all, including all games on cassette except Elite and Countdown to Doom.

Acornsoft, Betjeman Hse, 104 Hills Rd, Cambridge CB2 1LQ

On the move

For those who feel the need to move their micros around, Raceamble has come up with a handy carrying cast to make life easier.

Designed for the BBC, the case can also be used for a variety of other machines, according to the makers.

It's made from tough hardwearing plastic and is strong enough to support a monitor. Two versions are available at £60 and £80 in a variety of colours.

Raceamble Ltd, 44 Fore St, Ilfracombe, N Devon



He's a winner

Duncan Slarke of Huddersfield has won the Home Computer Championship 1985. He was presented with his prize at the hotel Metropol, London by Peter Holmes of Quicksilver.

Duncan receives his prize.



Static solution

AKG Acoustics has come up with a solution to the problem of static electricity which can damage software.

The AKG static eliminator mat will discharge potentially dangerous static, thus preventing loss of data and ensure that no other charges accumulate, according to AKG.

You simply place your mat under your equipment and connect the snap-on earthing wire to a convenient earthing point, such as a service pipe or trunking.

Available from W H Smith, the mat costs £11.99.

AKG Acoustics, Catteshall Wharf, Catteshall Lane, Godalming, Surrey GU7 1JG

AKG mat



View to kill

Domark, the software house which brought you Eureka! is to launch its latest title on the Enterprise.

The new Domark game is called A View to Kill and features screen star James Bond. Domark is predicting that the game will be the "biggest launch of the year".

Dominic Wheatley of Domark said of the Enterprise: "It's a first-class machine whose graphics and sound are the best around. It lends itself perfectly to the fast action and music of A View to Kill."

Mike Shirley, commercial director of Enterprise said: "A View to Kill looks like being a cracking good game. Domark looks set for another big success — we're looking forward to sharing in it."

Domark's View to Kill — not supplied with firearms



Music and micros

Acornsoft has just published a book which combines music and micros.

Creative Sound contains over 30 programs and is accompanied by a cassette or disc. It gives step-by-step instructions on how to exploit the BBC's sound potential. According to Acornsoft it turns the keyboard into an instrument and emulates studio techniques.

You pay £17.95 for the package containing a cassette and £19.95 for disc version. The book is available separately for £9.95.

Acornsoft, Betjeman Hse, 104 Hills Rd, Cambridge CB2 1LQ

Rat problems

It seems like a rodent superstar could have caused difficulties with our recent Ocean competition.

We can only believe that Roland has stolen the winners' coupons and added them to his fan club membership list. What a cheek!

Even if this isn't the correct explanation, it appears that the winners' names and addresses have gone astray and so we need to hear from you if you were one of them, so that your prize can be sent to you.

Please drop us a line at the following freepost address and we will ensure that your prize is despatched as soon as possible.

Please note that letters to this address do not need a stamp and that the address should be used only for queries about the Ocean competition. All other letters and queries should be addressed to us at No.1 Golden Square.

Please write to:
Accolade Public Relations
FREEPOST
Altrincham
WA15 0BR

Network goes live

The Times Network for schools went live on April 30 by signing up its fifth major sponsor and receiving the first satellite message from Operation Raleigh in the Caribbean.

Polytechnics are taking advantage of the network to publish course vacancies as part of the August-September clearing operation. This is scheduled for 1986.

The Times Network is also negotiating with the University Central Council for Admissions.

Gordon Jones of the Times Network



S

W

E

N

Code cracked

Congratulations to our clearly capable Chuckie Egg code crackers who correctly and clearly completed their coupon causing cascades of chockie eggs to be carried out of our creepy clutches.

The winning sentence was of course **Go crack a chuckie egg** and, despite the mistake in the original listing, most of the entrants had the correct answer.

The first 50 out of the editor's hat were: Steve Ferrett, Sheffield; Robert Newton, Dalton; Ki Cheoung, Winsford; Dean Pinder, Norwich; Kevin Betteridge, Warley; Lee Harris, Stanley; Gregor Anderson, Edinburgh; Chris Pickard, Wallington; D M Chatterton, Hull; Alan Cave, Leicester; Steve Jarman, Newtown; Ian Sleight, Doncaster; J Boardman, Leigh; Martin Simmons, Maldon; F A Beale, Blandford Forum; Robert Anderson, Hebburn; A P Lochrie, Luton; Christopher Worthington, Bolton; Donald Morrison, Isle of Lewis; Stephen Cayzer, Seer Green; S Mountford, Keyingham; David Kelly, Shrewsbury; M B Mawson, Slough; Clive Evans, Basingstoke; Nigel Cummings, West Bromwich; B Mawson, Slough; Peter Halloran, Weymouth; Douglas Fowler, Roslin; J Jessop, Harrow; David Hambly, Hainault; Mary Pratt, Mansfield; Paul Kaylor, Manchester; Richard Kalton, Stockport; Richard Jupp, Walsall; G C Smith, Rainham; Gavin Dawson, Braunstone; Edward Bray, Plymouth; Paul & Glenn Gibney, Woodburn; Michael Hayes, Basford; David Porter, Rochford; P S Birch, Northfield; P King, Stoke; Martin Atkinson, Newport; Geoff Fisher, Goldthorpe; G Morgan, Langney; Alan Huck, Plymouth; D P Pether, Yatton; Colin Neal, Reading; Gary MacDonald, BFPO 39; A V Corser, Radford.

Show must go on

The third official Acorn User exhibition is to take place at the Barbican Centre, London from 25-28 July 1985.

The show will be divided into five sections: home, business, education, telecommunications and robotics.

Admission is £3 for adults and £2 for under 16s on the door, but it's £1 cheaper if you get your tickets in advance.

Software update

A quick glance at this week's release list will convince you of the caterpillars, kangaroos, that Firebird is coming back to life. This software house has released more titles this week than all the other companies combined.

A number of Firebird releases are conversions, but 10 are completely new games, some of which we reviewed last week. The most notable has to be Don't Buy This, which, according to Firebird's James Leavey, wasn't released — it just escaped!

Kissin' Kousins on the Atari is the first game to feature software speech. It's hard to imagine the noises and speech of the caterpillars, kangaroos, bats, rubber frogs, toadstools, gogglers and pogopoppers that populate the game.

For release later this month is Anirog's Jump Jet. Written by a pilot of these amazing aircraft it features full landing and take-off procedures within the four skill levels. For those with less derring-do there is always the practice level. It features a speech facility, generated using the Voicemaster system, soon to be reviewed by HCW.

Title	Machine	Price	Publisher
Herberts Dummy Run	Spectrum/C64	£9.95	Mikro-Gen
Kissin' Kousins	Atari	£6.95	English
Komplex	Spectrum	£9.95	Legend
Bounty Bob Strikes Back	C64	£9.95	US Gold
BC II Grog's Revenge	C64	£9.95	US Gold
Desk	BBC		
	+ mouse	£24.95	AMS
AMX Utilities	BBC		
	+ mouse	£14.95	AMS
Knightlore	BBC/Amstrad	£9.95	Ultimate
Hampstead	BBC/Electron	£9.95	Melbourne Hse
Classic Adventure	MSX	£6.95	Melbourne Hse
Boulderdash	MSX	£6.95	Orpheus
Jump Jet	C64(Ams/BBC/C16/VIC/Spec)	£9.95	Anirog
Confuzion	C64/Ams/BBC/Spec/Electron	£6.95	Incentive
Don't Panic	Spectrum	£2.50	Firebird Silver
Microcosm	BBC	£2.50	Firebird Silver
Subsunk	Spectrum (Ams/C64)	£2.50	Firebird Silver
Fahrenheit 3000	Spectrum	£2.50	Firebird Silver
The Helm	Spectrum/C64	£2.50	Firebird Silver
Circus Circus	C64	£2.50	Firebird Silver
Helicopter	Spectrum	£2.50	Firebird Silver
Chickin Chase	C64	£2.50	Firebird Silver
Short's Fuse	Spectrum/Amstrad	£2.50	Firebird Silver
Don't Buy This	Spectrum	£2.50	Firebird Silver
The Hacker	Electron	£2.50	Firebird Silver
Bird Strike	Electron	£2.50	Firebird Silver
Mr Freeze	Amstrad	£2.50	Firebird Silver
The Wild Bunch	Amstrad	£2.50	Firebird Silver
Estra	C64	£2.50	Firebird Silver
Jet Boot Jack	Amstrad	£8.95	Amsoft
Cave Fighter	VIC-20	£5.95	Bubble Bus
Hustler	C16	£7.95	Bubble Bus

Machine names shown in brackets indicate that those versions are due for a later release.

Anyone can enter
our Virgin Games
competition.
You could win a
coveted
Virgin watch!

Virgin

TIMEFLIES

You could soon have plenty of time on your hands if you enter this week's Virgin competition. There are 15 Virgin Atlantic wrist watches for the top winners in this easy to enter contest.

Virgin Games has recently released Falcon Patrol II on the Spectrum. This follow-up to the original, winner of a Chicago CES award, has you piloting your Falcon fighter in a desperate desert war. The enemy are throwing squadrons of helicopter attack aircraft into the battle which carry missiles, flak batteries and radar jammers.

You have to destroy as many of these battle machines as you can using your air-to-ground and air-to-air missiles. The screens are incredibly detailed, so much so that, according to Virgin you can see each part of your city fall apart as it is hit by the enemy.

For the C64, there is the surrealistic Gates of Dawn. Based around a dream, you find

yourself in a maze of intersecting corridors peopled with dangerous creatures of strange types and habits. Only by correctly identifying and then manipulating objects, can you hope to escape from the dreams and wake up at the Gates of Dawn.

The first 15 correct answers picked out of the HCW competition bucket will receive one of the Virgin Atlantic watches, each valued at £20. The next 35 coupons selected will win one of the Virgin titles described above — Falcon Patrol II for Spectrum owners and Gates of Dawn for C64 users.

For your chance to win this week's prize, spot the differences between the cartoons. Only your eyes stand between you and a new watch. Keep them peeled!

How to enter

Study the two cartoons very carefully. There are a number of differences between them.

Circle all the differences that you can find on the entry coupon cartoon and count them.

Fill in the entry coupon carefully and seal it in an envelope. Write the number of differences on the back of your envelope.

Post your entry to Virgin Games Competition, Home Computing Weekly, No.1

Golden Square, London W1R 3AB to reach us by first post on Friday May 31, 1985.

The rules

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

The How to Enter section forms part of the rules.

The editor's decision is final and no correspondence can be entered into.

Virgin Competition

Entry Coupon

Name _____

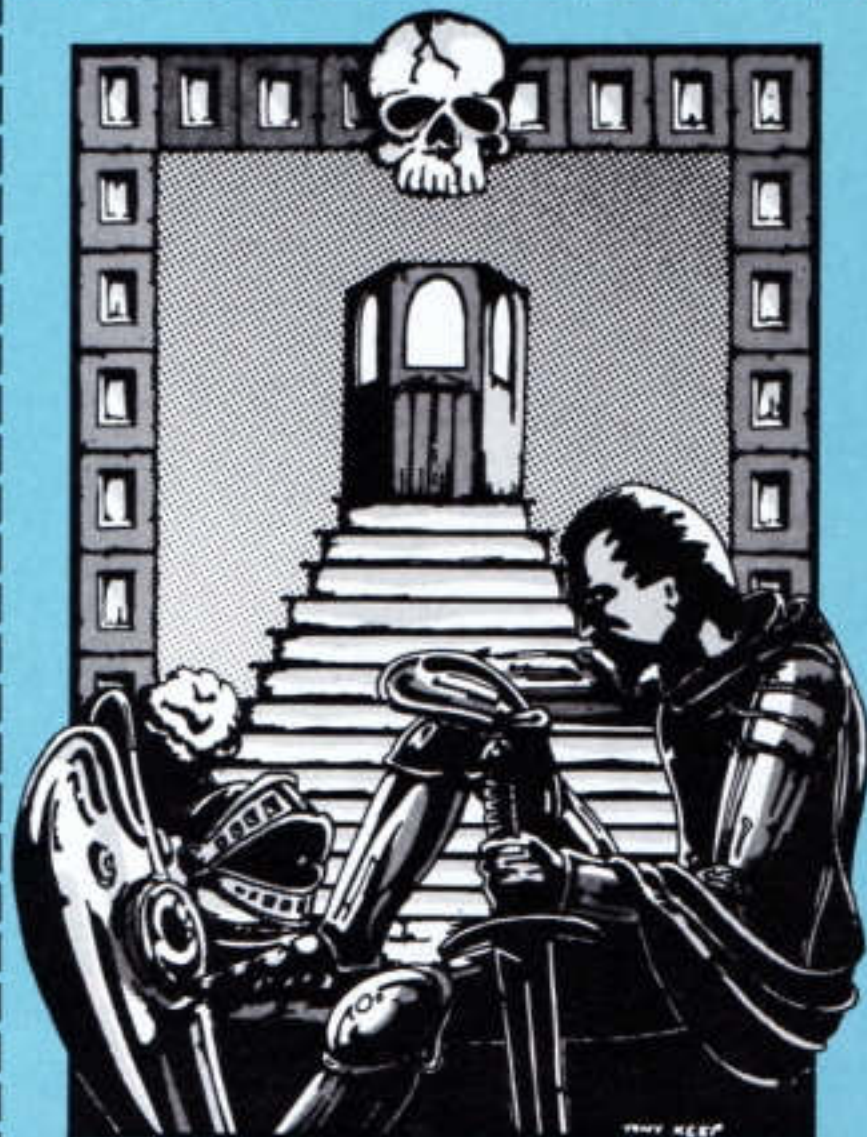
Address _____

_____ post code _____

Number of differences found _____

Computer: C64 / Spectrum (cross one out)

Complete clearly and fully — if you are a winner this will act as a label for your prize. Post to Virgin Games Competition, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. Closing date first post, Friday 31st May 1985. Don't forget to follow the steps given in the How to enter section, including writing the number of differences on the back of the envelope.



SOFTWARE



Tex-Bounce

I believe this is the first program I have reviewed which originates from down under. It is rather an odd sort of entertainment, perhaps best described as belonging to the "life" genre; you specify a structure, and then the computer manipulates that structure according to a set of well-defined rules.

The skill derives from the structure's longevity — the more skilful the design, the greater the longevity. In this instance, your task is to place a dozen bats or flippers on what amounts to a kind of pinball board. Once these are in place, the computer launches a series of pucks from one of four launchers, causing the puck to ricochet off the walls and bats until it expires.

Points are scored for each bat hit — which causes the bat to rotate 90 degrees — and for hitting an opponent's launcher, or for landing in the bonus cup. Points are deducted for merely hitting the walls or for landing in your own launcher, and there are other gains and losses.

A plethora of options must be selected before play commences, so it is important to read the comprehensive instruction pamphlet first. It is possible to relocate specific bats during the course of a game in order to alter the layout. One player may challenge either another player or the computer. Players who begin to register a scoring advantage are handicapped to make life more difficult for them.

All in all an absorbing game which doesn't rely on annihilation for its entertainment.

P.B.

Price: £8

Publisher: Funnelweb Farm, distributed by Stainless Software

Address: 10 Alstone Rd, Stockport, Cheshire SK4 5AH

TI99



Bug Eyes

The Xxabaneans or Bug Eyes are out to destroy the planet earth. They want the universe all to themselves, the greedy things. A nice title page appears as the game loads.

Your mission, as a star agent is to penetrate their starship which is disguised as a meteorite. There are 10 levels through which you have to travel in order to reach their power generator. The brief blurb is quite good but be warned: here comes another one of those games which mean you have to move around working out how to avoid obstacles and move along platforms to reach your objective. In this version there are moving pistons, aliens, sliding platforms and flashing rays.

I was able to get through two screens which required timing and fast reactions but then it became boring. The demonstration routine allowed you to see all 10 screens — I'm not sure whether that's such a good idea as there are no surprises left — and some of them looked very difficult, if not impossible.

As is the fashion now with these multiscreen platform games, each one has a title. Some of them are simply descriptive like Stampy Stompers; others are an attempt at being humorous, Wot No Aliens; and some are private jokes, John's Chin. I think you get the picture.

For your money you get a playable but unexciting game. The graphics are good but they don't hold any surprises.

M.P.

Price: £7.95

Publisher: Icon

Address: 65 High St, Gosforth, Tyne and Wear

BBC



Drain Mania

Down the mines, up in space and now you can go down the drains into the sewers and try to find your way out.

When the first part of the program is loaded, you get the opportunity to switch the music off. But it's worth at least one listen through and much better than I've heard in a long time. A lot of care has also been taken with the instructions which smoothly scroll up the screen like the credits at the cinema — a little too quickly for my junior readers, I'm afraid, with no opportunity to slow down. Then you are given the option to define your own action keys in a straightforward manner.

Once you've got through all this the game proper is loaded.

You become Theodore. Starting at the top of the screen you can move around and leap about avoiding Inky, Dinky and Pinky. There are ways of killing them off — by headbutting the platform underneath them then kicking them! Sounds vicious? Well, it doesn't quite look that bad but it may appeal to some football fans.

Points are gained for obliterating the creatures and collecting the coins that people invariably drop down the drains. It's tempting at this point to suggest that you might be throwing your's down there if you bought this game — but I'll resist it.

It's colourful, the animation is good and the screens are well presented. Some appeal to the arcade freak but for a short time only I'm afraid. Don't sink to this one!

M.P.

Price: £7.95

Publisher: Icon

Address: 65 High St, Gosforth, Tyne and Wear

BBC





Flight Path 737

Now I must confess I'm a sucker for a good flight simulation and when I occasionally see one of the real simulators with the sort of control and graphic capability they have I simply itch to put on my Biggles helmet. On a more down-to-earth level you have to live with the reality of a 64K machine that can only do so much. Perhaps with the interactive laser discs, who knows?

I have to stress that this is a simulation and not a game because so many people, including my children, are used to instant success in varying degrees. And this one is no exception. It's subtitled: Advanced Pilot Trainer. The trouble with a flight simulator is that if it's going to be at all realistic then success takes a lot of working at. This program does, however, offer six levels.

The layout of the controls was clear and occupied the lower two-thirds of the screen. The graphic display was a narrow strip across the top of the screen showing the essential features in full colour. Most realistic was the sound which increased in volume as you increased speed and added to the atmosphere.

After a couple of hours I was able to taxi, take off and clear the mountains. I needed to work on my approach speed on descent. Not impossible and highly motivating. On each crash you are told what went wrong, which helps in your next attempt.

This is a responsive simulator that requires practice and gives scope for the experienced. No joystick option but perfectly adequate with keyboard controls.

M.P.

Price: £8.95

Publisher: Anirog

Address: Unit 10, Victoria Trading Est, Victoria Rd, Dartford, Kent

MSX



Spy Hunter

If you'd like the role of James Bond on a fast-moving, action-packed car chase, then Spy Hunter might come close to meeting your aspirations. The action is fast and furious, requiring skill and quick reactions.

In Spy Hunter you take control of the Spy Car, a fast sports car. The aim appears to be to travel as far as possible, destroying enemy vehicles along the way, until you eventually run out of time and cars.

Comprehensive instructions tell you all about the various enemy cars you are likely to encounter. At the start of the game, you get a novice/expert selection, although there is little to choose.

The game starts with your van appearing at the bottom of the screen. Your car rolls off, and using the keyboard or joysticks — a wide variety of interfaces can be used — you control the car through a twisting route, avoiding disaster at the edge of

the road, or enemies on the road. The action is fast, so quick reactions are necessary.

Every time your car is destroyed, your van reappears to bring you another, until time runs out. You also return to your van when you require additional weapons, such as rockets to deal with an enemy helicopter.

The speed of graphics is impressive: at top speed, the winding road swiftly passes a variety of terrains. According to the instructions, the chase can transfer to water, as your car is amphibious, but I never got that far!

D.N.

Price: £7.95

Publisher: Sega

Address: US Gold, Unit 10, Parkway Ind Centre, Birmingham B7 4LY

SPECTRUM



Flipped



Hooked



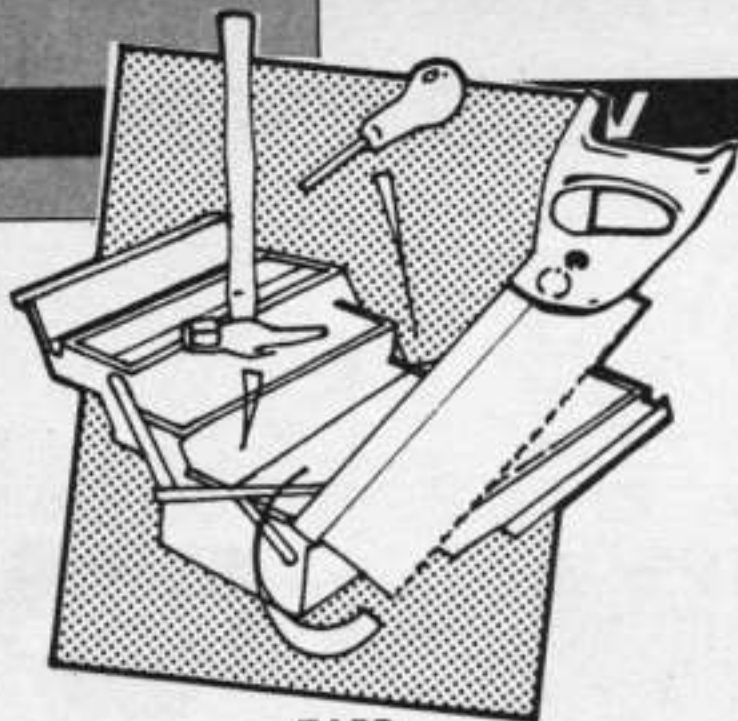
Keen



Yawning



Comatose



ZAPP

ZAPP, or Z80 Assembly Programming Package, is a RAM-based assembler, editor and monitor for the Amstrad which is loaded from cassette. No command for changing filing systems is included, but disc users can return to BASIC and execute IDISC. Listing the one-line BASIC loader gives you the address to CALL to re-enter ZAPP (not given in the manual). While you're at it, put a ! in the LOAD "" instruction and re-save the loader at the start of the tape: as supplied, you have to "Press any key" to load both the loader and the program, which is silly.

The source text editor is rather unusual. It auto-renumbers lines, from one in steps of one, as you add, delete or insert lines. So the numbers are effectively useless: if they change as you develop the program you can't use them to find your way around. You can use the cursor keys to move through the source listing by line or screenful, or by using the search facility to locate a known label or op code.

Each line is checked on entry and rejected (for re-editing) if it contains an error. Editing is similar to Locomotive BASIC but I disliked the fact that pressing CLR erases the whole line instead of one character: easy to do if you're used to BASIC.

Another oddity is that most assemblers insist on spaces between labels, mnemonics and comments: ZAPP rejects the line if you enter it with a space between label and mnemonic. The formatting of the listing is not as elegant as the manual would have you believe, either. And you can only use Mode 1.

Source may be assembled when complete, or line-by-line as you enter it: this is possible because ZAPP is a one-pass assembler. Forward references to labels are dealt with by building them into a linked list: their actual values, once found, can then be inserted into the object code directly, rather than making an entire second pass.

This makes assembly fast, blindingly so if the listing is turned off, but means that forward references can't be used as part of an address expression. However, it saves you hours when assembling a linked set of files from cassette. Error reporting is extensive and by means of hex error numbers. ZAPP won't save object code in an auto-run form, though — you must note down the start, end and entry addresses, return to BASIC and do it by hand.

Disassembly of object code may be made to screen or printer (ZAPP won't disassemble itself, though!). Memory may be displayed as hex and ASCII dumps, and edited directly from the keyboard.

The monitor gives some excellent debugging options: single-stepping, up to four breakpoints, automatic CALL-and-break to skip through known debugged routines quickly, and warnings if your code leaves the stack unbalanced on exit. All flags, registers and the top of stack, plus the current address and op code, are displayed as the "front panel", and all registers and flags may be preset with values before continuing with program execution.

Like its rivals, ZAPP has good points and bad. You pay your money... P.N.G.

Price: £14.95

Publisher: Hewson

Address: 56b Milton Trading Est, Milton, Abingdon, Oxon OX14 4RX

AMSTRAD



Hunchback II — Quasimodo's Revenge

This is a follow up to the very successful Hunchback. I liked this game, from the minute I saw the title screen. Graphics are excellent, and the sound entertaining. It is basically a platform and ropes game, where you have to make your way through the five stages of a bell-tower, avoiding bats, arrows, fire-balls and bouncing cannon balls. There are five stages, each progressively harder, until you finally reach the bells at the top of the tower.

The first screen, for example, is split into five levels, and, with only three lives, you must collect all the bells on each level before you can climb, using a rope, to the next level. The game is played with joystick or keyboard, and it is relatively easy to control Quasimodo using left, right and fire — or jump — on the joystick.

The game contains a keyboard option, allowing you to redefine the keys to suit yourself. You need a joystick to get the most out of this game. Successful completion of each screen generates a handsome bonus and extra lives. If your score is high enough there is, of course, a hall of fame to record your achievement!

An excellent game, involving an increasing degree of challenge, that should provide you with hours of fun. Well worth the cost. A.W.

Price: £8.95

Publisher: Ocean

Address: Ocean Hse, 6 Central St, Manchester

AMSTRAD



Daley Thompson's Decathlon

I was really looking forward to the release of such a best-seller for the Amstrad: if so many people like it, then it must be good. And technically, it is. The sound and graphics are excellent, and the title page, featuring the theme from Chariots of Fire, sets the scene perfectly. The 10 events are split into five on each side of the tape.

You begin with three lives, and every time you fail to qualify in an event you lose a life. As the qualifying times and distances are difficult to achieve, be ready for many initial failures. You make Daley run by continuously moving the joystick left and right, and, as it is important to gain speed, this requires considerable effort on behalf of the player. The throwing events are also difficult, requiring swift movement of the joystick and a careful co-ordination of use of the fire button. Daley Thompson's reactions to failure are amusing, and the crowd's reactions add greatly to the atmosphere.

Instructions are clear, and I liked the scoreboard above the action — very realistic and just like athletics on the telly! Unfortunately frantically waggling a joystick from side to side doesn't appeal to me; in fact it made me feel rather silly. Still, a challenging game if you are that way inclined, very well produced, almost as gruelling as the real thing!

Price: £8.95

Publisher: Ocean

Address: Ocean Hse, 6 Central St, Manchester 2

AMSTRAD



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Kong Strikes Back

This is another excellent program from Ocean. This time set in a fairground. You have to guide your man up the fairground track to rescue a young lady held captive by Kong at the top. He regularly releases cars down the roller coaster. You can avoid the cars by climbing out of the way, or you can destroy them by using your bombs, but destroyed cars are quickly replaced!

If one of the cars hits you then you are knocked off the track and lose one of your four lives. There are four screens, and in later screens you have to avoid waltzers, hobby horses, etc. On each successive screen the track becomes more complex and the care more difficult to avoid.

Scoring depends upon the number of cars destroyed, and the time taken. There is a complex system of bonuses to add to the interest. A neat display below the screen lets you know exactly how you are doing. The game can be played either using keyboard or joystick, but is much more fun with a joystick.

Graphics and sound are very well done, although an option to play without sound might be a good idea: however good it may be, the same tune becomes repetitive after a while.

A very playable and enjoyable game, which kept me interested for hours. One small criticism, however, why not a man being rescued by a woman? Good value for money.

Price: £8.95

Publisher: Ocean

Address: Ocean Hse, 6 Central St, Manchester

AMSTRAD



Fistful of Fun

OK Alligata, I'm flipped — this is overkill — five first-class games for under £10. They aren't all new, but even if you've got one or two already it's still value for money.

The tape starts with one of my all-time favourites, Loco. Guide the train across the points to the right track to pick up fuel whilst issuing puffs of lethal smoke at the aeroplanes and airships, not forgetting to watch the radar screen for oncoming explosive handcars — compulsive with brilliant graphics, and still on sale at £7.95 in its own right.

Then there's Son of Blagger, Alligata's platforms and keys game. There's superb smooth scrolling, though judging by the slow-motion graceful jumps, it's under moon gravity. I'm afraid I'm not a fan of the "Defender" style arcade games, but if you are, Guardian will satisfy all your requirements.

Next comes Aztec Tomb Revisited, an adventure with an interesting variation on presentation, separate panels for where you are, description of what you see, your commands, inventory, the graphics, etc. Then last on the tape, and last in my rating of the five, is Haunted House. It's all about moving your ghost sprite to touch intruders. There are only two stages.

My only complaint is that you need to know exactly where each game starts on the tape. If you start loading in the middle of the previous game, it resets the computer. Something to do with the fast load feature I guess. Still, I've got to say it — *Fistful of Fun* is a knockout!

B.J.

Price: £9.95

Publisher: Alligata

Address: 1 Orange Stree, Sheffield

C64



Cascade 50

How many people reading this review key in programs from magazines? If too frequently, due to a combination of mistyping — more often than you think — and errors in the listing — less often than you blame — it doesn't work properly, if at all. Well, perhaps here is what you have been looking for.

This tape has 50 games, yes 50, all different types, all the sort of thing that your hours of keying from magazines might yield. And although I didn't try every single one, they all seem to work. But it's definitely quantity not quantity that you get.

The vast majority are solely in BASIC, although a few have machine code routines, and that's probably the best reason for buying it. To pull the games apart, see how they work, perhaps alter and improve them — but not actually play them. The second best reason is because you've just bought a 64 and are short of cash for software. It will give you hours of fun, and make you even more appreciative of the top class games when you can afford them.

It's interesting to note that others I've talked to about the tape reckon that it's mostly rubbish, but there are one or two worth playing. The trouble is, no one can agree on which the one or two good ones are. £9.95 for one or two games is hardly good value for money, but think of the hours you can spend deciding which you think are the worthwhile ones. **B.J.**

Price: £9.95

Publisher: Cascade

Address: Suite 4, 1-3 Haywra Crescent, Harrowgate, N Yorks HG1 5BG

C64



Intermediate Astrology

If you're a beginner without a clue this is not for you. Unlike most of Sci-Soft's work, the manual is very thin, and although it explains how to make the programs work it does nothing to help you understand the concepts involved or their importance. You will need a book from the library and some serious study to get going.

Four progs are included on the tape, giving seven different facilities. Constellations is a database of statistical data together with the ability to draw the constellations quickly, and selected galaxies can also be drawn prettily but very slowly. Moonphases, as it suggests, draws the moon in its different phases, and Doubles lists, draws and gives statistical information about double stars.

Planets fulfills a similar function as per title, whilst Saturn Draw does just that, but from any specified angle. The manual doesn't say what a Messier object is, but the program lists 102 of them in another section, and finally, Ephemeris calculates the juxtaposition of the planets at any data you care to input.

I am not qualified to comment on the accuracy or completeness of all the statistical data. I have to accept that they are accurate. I can say however, that with the exception of the galaxy plot mentioned above, the graphics are uninspired, and are nowhere near the standard of current games; the linked menu structure is also cumbersome and returns to strange places after a choice. Disappointing, given Sci-Soft's record. **D.M.**

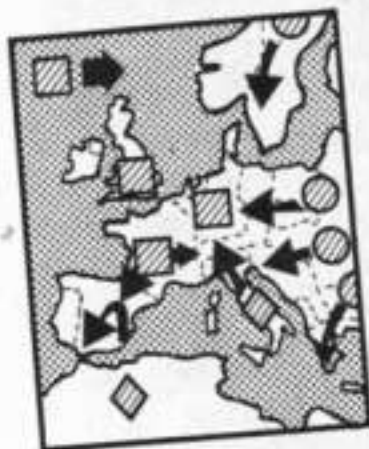
Price: £6.95

Publisher: Sci-Soft

Address: 5 Minster Gdns, Newthorpe, Eastwood, Notts

SPECTRUM





Arnhem

Instead of zapping in a fantasy world, the scenario of a famous battle is created, and you are given the same forces as were used in the real thing. The battlefield is represented as a map on your screen, whilst the armed units are shown as symbols. Your task is to move and deploy your forces to attack the enemy, who tries to outwit and outgun you. Because of the complexity and sophistication of the game, it can last for many hours, so a save option is a must. Similarly, instead of playing against the computer, you may also care to play with a friend as the enemy.

Arnhem has these facilities, together with choice of viewing colours to aid b/w users. The build up to Arnhem and the battle itself are depicted in five separate parts which are shown on-screen, and all the various troops and machinery are shown as symbols. You may choose to bombard or travel following detailed reports, but you must follow the rather complex rules given in the detailed manual.

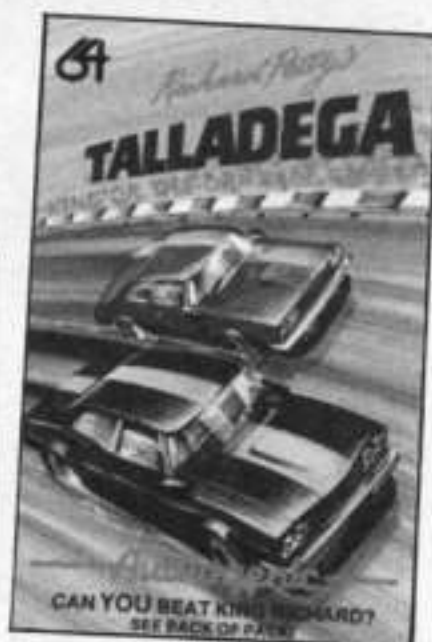
It's a slow game, as are all wargames, and the manual doesn't seem to cover all the symbols shown, or explain all the on-screen happenings, though perhaps I rushed it. The graphic symbols are not always easy to distinguish, and the choice of colours unwise in places. In summary, not for arcade freaks, or even first-time wargamers in view of the confusions, but for addicts another useful addition. **D.M.**

Price: £8.95

Publisher: CCS

Address: 14 Langton Way, London SE3 7TL

SPECTRUM



Talladega

This is a stock car race game with a difference. You have to take part in a qualifying heat to be allowed to enter the race proper, completing the lap within a certain time. As this is an American game, where stock cars go fast, you need to maintain a speed close to 250 mph.

It might seem you have no hope at that speed but unlike other car race games the other cars on the track tend to steer round you. This means you don't crash the moment you are bumper to bumper with another car. Neither do you crash off the course too readily, so at least you do stand a chance.

Your joystick controls are left and right, fire to accelerate and pull back to slow down. However the car is a bit like Knight Rider in that it automatically slows down if there are obstacles. Assuming you qualify you are then entered into the 30 lap race, your starting position depending upon your performance in the qualifying round.

During the race proper you need to keep an eye on the fuel level and tyre wear, coming into the pits as necessary. If your car gives engine trouble, — you can recognise this from its performance — you can come into the pits and have an engine check.

I've decided I much prefer stock car driving to normal car racing and I'm gradually improving my performance. A good game with average graphics. **L.C.**

Price: £8.95

Publisher: Audiogenic

Address: PO Box 88, Reading, Berks

C64



Entombed

Usually when Ultimate releases a new game its an instant rave. I have no doubt that Entombed will follow this trend, but I feel this will only be because Ultimate has a good name.

The story is that Sir Arthur Pendragon has discovered the Eye of Osiris, an Egyptian magical relic. However whilst discovering this, Sir Arthur has become trapped in the Temple. The idea is to explore the temple and escape. To aid you there are two objects to be found; a magical whip (shades of Indian Jones) and a torch.

The whip can be used to bump off the mummies, cats, bees and flies which assail you constantly in the corridors. The torch is used to illuminate rooms which are in darkness. A rather nice feature of the torch is that the beam must be directed about the room in order to see anything.

The game also features crows which restore life energy depleted by the mummies etc. It took a knowledge of Egyptian mythology to work this out because Osiris was part crow, however later the crows gave the game away by carting Ankh symbols around.

After wandering around with the mummies and flies for a bit you usually find a doorway leading into a special chamber, the first has three walkways with rolling balls on them. If you survive this you will obtain the magical whip and the second room contains the torch.

The graphics are very good with lots of very pretty Hieroglyphics on the walls and well animated monsters. Sound is well implemented with especially good whip sound.

However, having said all this I found the game very boring and in the early stages (before whip) very difficult. Such nice graphics shamed about the game. **J.G.D.**

Price: £9.95

Publisher: Ultimate

Address: The Green, Ashby de la Zouch, Leicestershire

C64



Flipped



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Keen



Yawning



Comatose

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Forecasting is a two part package. Part 1 teaches you forecasting techniques and part 2 is an applications program allowing you to use the techniques. There is a 60 page manual accompanying the software.

The manual is a notable feature of this package. It is virtually a course on forecasting techniques. It brings out just the right points and is better than many textbooks on the subject. The instructions for using the programs are clearly explained and I encountered no hitches at all, a refreshing change. I have only one criticism. The smoothing constant in the trend equations should never be as high as 0.6. That apart, all the other statistics seemed sound.

Part 1, the teaching program, is worked through in conjunction with the manual. The style and method of presentation represented one of the best examples of computer aided learning I've seen. The range of forecasting techniques covered set you up to use the quite elaborate applications program.

The applications program is based around several menus and allows sophisticated manipulation of data. The only factor stopping this program becoming a serious commercial package is that you are limited to seven variables with a maximum of 48 readings. Nevertheless this is adequate for many applications.

The data enter option allows you to give names to your variable and is very user friendly. You can save your data to tape or disc and you can reload and edit it as required.

A separate menu allows you to transform your data, e.g. to convert all the readings of a stipulated variable to their log equivalents. There is also a time lag option, particularly relevant in forecasting applications. There are two major analysis options. The time series analysis option allows you to take into account seasonality and trends and use Holt's smoothing method where appropriate. The other major option is multiple regression analysis. You are given a lot of control over how you want the analysis performed.

Finally, when the computer has done the required analysis you can save and print the results and use the equations to forecast. I tried out the program on data concerning crop yields, levels of rainfall and hours of sunshine. The calculated results tallied with my previous calculations although I still can't tell you whether 1985 is going to be scorching.

My only major complaint is that the package makes no provision for non-Commodore printers. Users of serious software are most likely to have non-Commodore printers so this is a strange oversight. Apart from this the package is excellent and I forecast good sales.

L.C.

Price: £24.95 disc

Publisher: Collins Soft

Address: 8 Grafton St, London W1E 7JZ

C64



BULGE



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and Commodore 64

The Bulge

The Battle of the Bulge was a crucial factor in the ending of the Second World War. In the midst of the VE-Day celebrations it is fitting that a simulation of this battle should be made available.

The advantage of computerised wargaming is that all the calculation and record keeping is done automatically, leaving the player free to concentrate on decision making. The disadvantage is that the computer is the opponent and makes cold, calculated decisions unlike a flesh and blood opponent. Let's face it — even Napoleon had his off days. In recognition of this, The Bulge has a two-player option, relegating the computer to its role as referee.

The action takes place in Belgium and the action may be followed on either the single-screen global map or the more detailed multi-screen battle map. The global map merely gives a general picture of the battleground, displaying the battle units as blocks of colour. The colours are set at the commencement of the game so players with monochrome monitors can select a suitable display. The battle map shows greater detail and the warring factions are shown as armoured divisions, mechanised infantry, artillery or infantry. Further detail can be obtained by highlighting a unit or a town with the cursor. Unit strength and name or town name and status is displayed in writing in this way.

Each unit moves at a speed according to type. Direction of movement is controlled by cursor selection of the unit and moving the cursor sets the unit off in the chosen direction. These movements take place in real time and the units continue to move even whilst the cursor is being repositioned or one of

the many weather or intelligence reports is scrolling across the top of the screen. Part of the skill being to anticipate an interception point to meet with the enemy.

The decision to engage the enemy and the ability to give German forces artillery support are all at your command and the program even allows for the type of terrain upon which the battle takes place. It wasn't long before I saw the value of the pause facility which gives added thinking time. With reports of defeated units constantly appearing on the screen and so great an area to defend, battle fatigue becomes a real possibility.

Almost every angle facing the opposing sides is covered by this immensely powerful simulation, even to the degree that river crossings are more rapid if attempted in a town where more bridges would be available. The computer game is hard to beat and a demo mode can be created by selecting the computer as player one and two. By far the most satisfying game is that for two players and thankfully the game can be interrupted and saved at any point so battle can be rejoined another day.

I can safely say that this is one of the best wargames I have ever tried and that the topicality of the event has heightened my appreciation of the VE-Day celebrations.

E.D.

Price: £9.99

Publisher: Argus Press Software

Address: Liberty Hse, Regent St, London.

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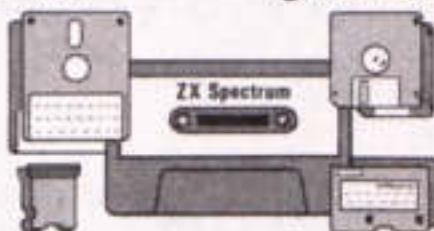
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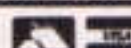
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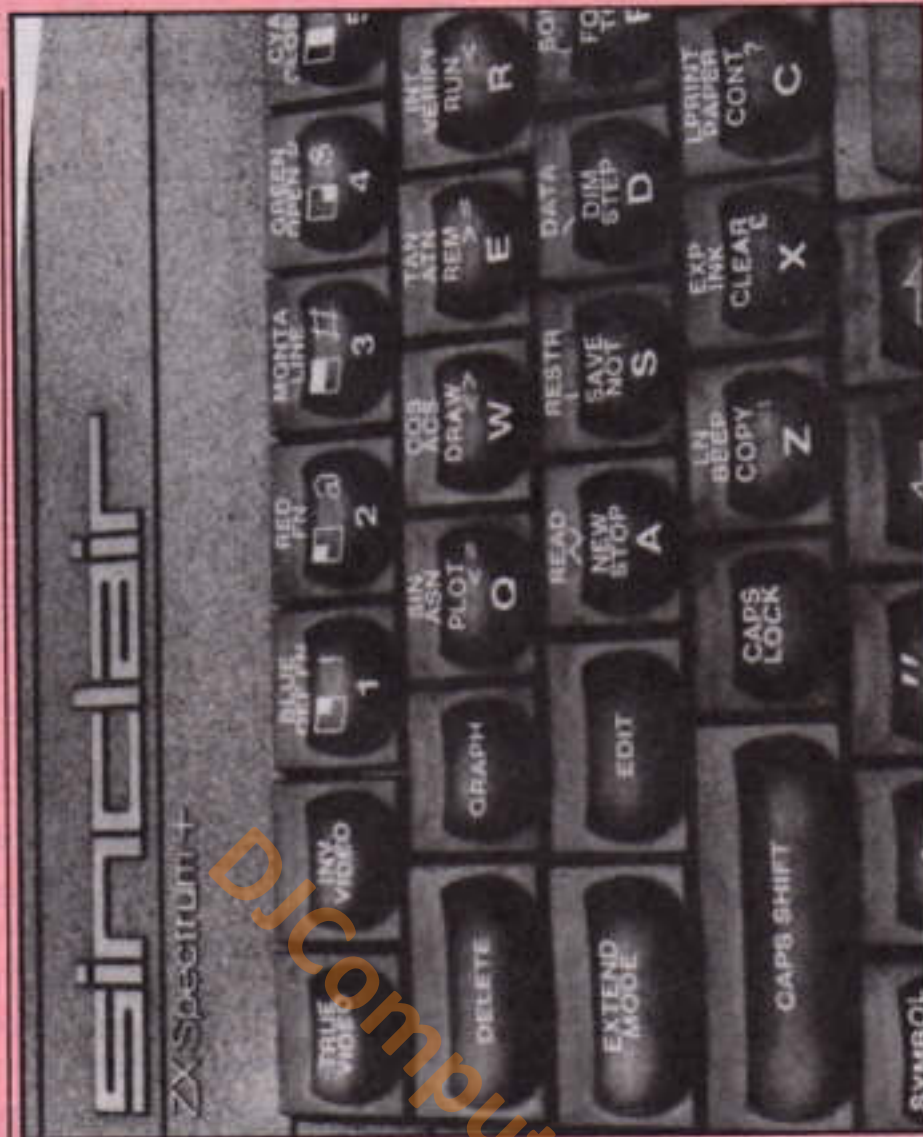
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BACK TO BASICS



This week Colin Wilton-Davies RND function with text and graphics

Most of my last feature was occupied with the RND function, which was used to make random numbers, like in gambling games. We'll carry on with the RND function this week, but this time with text and graphics. Remember that to simulate the throw of a die, we used the expression $\text{INT}(\text{RND} * 6) + 1$, because this produces whole numbers from one to six just like a die.

Now what about producing random letters? Suppose we want to make a five-letter "word" of random letters: how would we go about it? We can't just substitute letters for the numbers in the expression above, because the Spectrum uses letters as variable names, and if we hadn't assigned a value to variables a and z, the expression $\text{INT}(\text{RND} * z) + a$ would just produce an error message when it was used.

Even if we had assigned values, it wouldn't give us letters! The letters of the alphabet (as well as numbers and punctuation marks) are termed *characters*, and may be represented as numbers showing their position in a

standard list of characters. The standard list used by the Spectrum — in common with most computers — is called the ASCII code, and in this the capital letters of the alphabet are in positions 65 to 90. They may be selected using the CHR\$ function; A is CHR\$(65) for example. So the short program:

```
10 REM Random word
   generator
20 FOR c=1 TO 5
30 LET n=RND * 25 + 65
40 PRINT CHR$(n);
50 NEXT c
```

will do the job for us.

You should notice a couple of things about line 30 before we move on. First, I haven't used the INT function; the Spectrum is clever enough to know that there is no such thing as a position 68.3 in a list, and that we must mean 68. Second, I haven't used brackets, because the Spectrum happens to work out this expression in the right order (function, multiply then add). If you use this program to choose names for your future children, I won't be answerable for the consequences!

The ASCII/Spectrum charac-

ter set is listed in Appendix A of the Spectrum manual. If you look this up (just use the two left-hand columns for the time being), you will see that the possible code numbers range from zero to 255. Numbers 0 to 31 are non-printing characters; they don't make a symbol appear on the screen, and numbers 165 to 255 are used to represent the Spectrum keywords to save memory space when programs are stored (most other computers don't do that).

Let's look at the ones from 128 to 143. We can do this by changing line 30 in our program above to:

```
30 LET n=RND * 15 + 128
```

and when this is RUN, you will see various chunky shapes appear instead of the letters we had before. These chunky shapes are the Spectrum's fixed set of "graphics characters" which you can see on the keyboard from 1 to 8.

You can also print them in "graphic mode" using these keys with and without the CAPS SHIFT key. If you are very painstaking, you can use them as building blocks for fairly complex structures like city skylines and castles. I'll leave you to try that for yourselves, as I'm feeling lazy, but try this one:

```
10 REM Random pattern
   generator
20 FOR c=1 TO 704
30 INK RND * 8
40 PAPER RND * 8
50 PRINT CHR$(RND * 15 +
   128);
60 NEXT c
70 STOP
```

The last line, of course, is to stop you running on to lines 9998 and 9999 which you *always* have now. Eh?

The Tate Gallery has spent a lot of money on things which look a lot worse than the screens you can produce in this way. Don't tell them I sent you, though. If you really have generated something of a masterpiece, and forgot to connect the printer before starting, don't be tempted to plug it in now. You may damage the printer and/or Spectrum. The Spectrum provides an easy way to save your screen pictures for future occasions. Executing the command:

SAVE "monalisa" SCREENS

will allow you to save the picture onto tape, and:

LOAD "monalisa" SCREENS

will let you get it back again after you have switched off the machine and connected the printer so that you can COPY it on to paper.

The graphics we have just been using are "built-in" to the Spectrum. A more swept-up expression is that they reside in the Spectrum ROM, but it means the same thing. ROM, by the way, is the acronym for Read-Only Memory; as you might expect, it is a part of the Spectrum's memory to which you can't write, but from which you may read. The ROM also contains the operating system and the BASIC interpreter, which translates the BASIC instructions we can understand into the machine code instruc-

tions that the Spectrum understands. There really ought to be a WOM (Write-Only Memory), and although we all know some programs that ought to be in this, my attempts to make a fortune by selling WOM chips a few years ago failed to attract the financial backing they deserved.

Anyway, the next logical step should be to start looking at the sort of graphic symbols we want to use, but aren't in ROM and therefore have to be made up. These are called User-Defined Graphics (UDGs for short), and the Spectrum provides excellent facilities for making them.

However, there are a couple of other concepts we must master before we start on our own UDGs. The first of these is the byte, and how it may be PEEKed and POKEd. When we try to convey an idea or instruction in English, the sentences we use are constructed from words. In the same way, the Spectrum uses bytes.

Our words are built up using

26 letters, but the Spectrum uses bytes.

Our words are built up using 26 letters, but the Spectrum only uses two; this is a convenience based on the physical units of the computer circuitry. Each part of the circuit may be either ON or OFF, and there is nothing in between. The state of each part may be represented by the numbers 1 and 0, and these are the "letters" of the computer alphabet, which are called bits (the smallest units of information).

Different computers use different numbers of bits to make a word — the Spectrum uses eight, and an eight-bit word is called a byte. The circuits of the Spectrum are built to operate on words of this length. Unlike a human vocabulary, words of different lengths are not used by the Spectrum. As only two "letters" are used, the Spectrum's vocabulary is restricted to 256 words — naturally, complex instructions

have to use several words, just as in English.

The Spectrum's memory (Random Access Memory, RAM as well as ROM) is organised to handle these eight-bit words, and each byte may be held in one address or location, which may be thought of as a box. If we want to see what number is in a box, we PEEK into it, and PRINT what is there. The address of the box is a number. If we want to see what it is in address 23609, the command PRINT PEEK 23609 will give the answer. If the Spectrum has just been switched on, the answer will be zero. Unlike ROM, the numbers in RAM may be changed by POKing a new number into an address. Try POKE 23609,20. You will notice two things — PRINT PEEK 23609 will now give the answer 20, and you will hear a more noticeable BEEP when you press any of the keys. You have altered a system variable and may be proud of yourself.

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MISSING TEAMS

**Find the missing
elevens in this
soccer game
by R N Butcher**

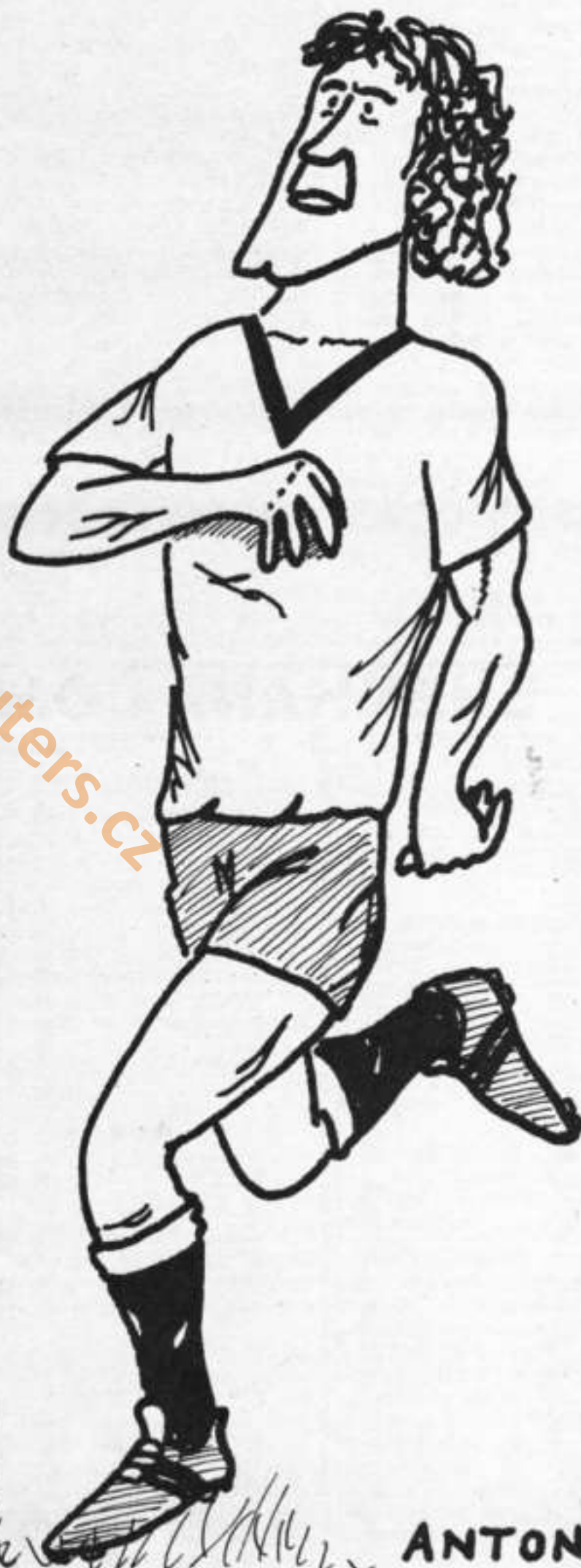
The soccer season may have drawn to an end, but the fun goes on. In this game there are 15 pairs of soccer teams hidden in a 10 x 3 grid. Each player takes it in turns to uncover every position using the cursor keys and 0. There are two versions — number one in which one point is scored for each correct pair, and version two in which points scored depend on which division they are in (Spurs scores four points, and Rochdale scores one point).

You can customise the program by leaving out or changing the title screen, and by changing lines 300-303 and the data in line 8160. You may choose to play the game for any subject. This means that you can alter the game so that it refers to countries, names, capital cities, codes (001101011) numbers, graphic symbols, UDGs etc.

To get the correct scoring in version two, the DATA in line 8160 must consist of nine characters (i.e. make up the nine characters using spaces, as in "PLYMOUTH" and "BRIGHTON").

The titles page is displayed while the computer is sorting the teams, and the players will be prompted when completed.

The grid positions are different for each game. When a pair is found these positions are blanked out and must not be used again.



ANTONY

Variables

game1 games won by player 1
 game2 games won by player 2
 a vertical position of cursor
 b horizontal position of cursor
 e\$ holds both teams chosen
 e, v keeps track of players' turns
 sc1 score for player 1
 sc2 score for player 2
 r() holds vertical position of teams chosen
 t() holds horizontal position of teams chosen
 pl which player's turn
 1=a/b 1=b+(a/2-2)
 ver version chosen (1 or 2)
 lev level chosen
 a\$ first player's name
 b\$ second player's name
 w\$,f\$ holds team names
 a(),z,j,c variables for sort



How it works

10 variables
 13-18 checks for key press
 50-81 checks cursor position, works out which team is at that position, prints that team
 90 holds position for first teams, blanks out team according to level
 92 checks if two teams are the same
 93-96 sets up for second team
 97 checks if version two is picked
 98-99 updates score
 100-101 blanks out grid positions
 110-114 checks for end of game
 200-207 end game
 300-381 version two scoring
 5000-5150 game screen
 7000-7110 title screen
 8000-8120 sort: produces 30 numbers (1-30) in a random order
 8130-8160 picks teams at random
 9000-9110 instructions

```

1 RANDOMIZE 0: GO SUB 7000: GO SUB 8000: GO SUB 9000: GO SUB 5000: LET game1=
0: LET game2=0: GO TO 10
2 GO SUB 7000: GO SUB 8000: GO SUB 5000
9 REM *****GAME*****
10 LET a=2: LET b=2: DIM e$(2,9): LET e=1: LET sc1=0: LET sc2=0: DIM r(2): DIM
t(2): LET u=1: LET pl=1
11 PRINT PAPER 7: INK 0: AT a,b: "0"
12 PRINT PAPER 7: INK 0: AT 0,2: "*"
13 PAUSE 0: PRINT AT a,b: "■"
14 IF INKEY$="5" THEN LET b=b-10: IF b<2 THEN LET b=2: GO TO 20
15 IF INKEY$="6" THEN LET a=a+2: IF a>20 THEN LET a=20: GO TO 20
16 IF INKEY$="7" THEN LET a=a-2: IF a<2 THEN LET a=2: GO TO 20
17 IF INKEY$="8" THEN LET b=b+10: IF b>22 THEN LET b=22: GO TO 20
18 IF INKEY$="0" THEN BEEP .05,1: GO TO 50
20 PRINT PAPER 7: INK 0: AT a,b: "0"
21 GO TO 13
50 IF b=2 THEN GO TO 60
51 IF b=12 THEN GO TO 70
52 IF b=22 THEN GO TO 80
60 LET 1=a/b
61 PRINT AT a,b:w$(1): LET e$(e)=w$(1)
62 GO TO 90
70 LET 1=b+(a/2-2)
71 PRINT AT a,b:w$(1): LET e$(e)=w$(1)
72 GO TO 90
80 LET 1=b+(a/2-2)
81 PRINT AT a,b:w$(1): LET e$(e)=w$(1)
82 GO TO 90
90 LET r(u)=a: LET t(u)=b: PAUSE 50*lev: PRINT AT a,b: "■": PRINT P
APE
R 7: INK 0: AT a,b: "0": LET e=e+1: LET u=u+1
91 IF e<3 THEN GO TO 13
92 IF e$(1)=e$(2) THEN GO TO 97
93 IF e=3 THEN LET e=1: IF u=3 THEN LET u=1: LET pl=pl+1: IF pl=3 THEN LET
pl=1
94 IF pl=1 THEN PRINT INVERSE 1: AT 0,2: "*": PRINT INK 6: AT 0,17: "■": GO TO
96
95 IF pl=2 THEN PRINT INVERSE 1: AT 0,17: "*": PRINT INK 4: AT 0,2: "■"
96 GO TO 13
97 IF ver=2 THEN GO TO 300
98 IF pl=1 THEN LET sc1=sc1+1: PRINT AT 0,13;sc1: GO TO 100
99 IF pl=2 THEN LET sc2=sc2+1: PRINT AT 0,28;sc2
100 PRINT PAPER 7: INK 5: AT r(1),t(1): "■": AT r(2),t(2): "■"

```



```

101 PRINT PAPER 7; INK 0; AT a,b; "0"
110 LET e=1: LET u=1
111 IF ver=2 THEN GO TO 114
112 IF sc1+sc2=15 THEN GO TO 200
113 GO TO 13
114 IF sc1+sc2=31 THEN GO TO 200
120 GO TO 13
199 REM ***END GAME***
200 IF sc1>sc2 THEN LET game1=game1+1: GO TO 202
201 IF sc2>sc1 THEN LET game2=game2+1
202 PRINT #0; " ***Another game (y/n) ?***"
203 PAUSE 0
204 IF INKEY$<>"y" AND INKEY$<>"n" THEN GO TO 203
205 IF INKEY$="y" THEN CLS : GO TO 2
206 PAPER 6: CLS : PAPER 6: INK 0: PRINT AT 5,11; "Games won"
207 PRINT AT 10,3; a$; TAB (12); game1; AT 10,18; b$; TAB (27); game2: PAUSE 0
299 REM ***VERSION 2***
300 IF e$(1)="TOTTENHAM" OR e$(1)="LIVERPOOL" THEN GO TO 350
301 IF e$(1)="BRIGHTON " OR e$(1)="BLACKBURN" OR e$(1)="NOTTS.CO " THEN GO TO
360
302 IF e$(1)="DONCASTER" OR e$(1)="MILLWALL " OR e$(1)="PLYMOUTH " OR e$(1)="CA
MBRIDGE" THEN GO TO 370
303 IF e$(1)="PETERBORD" OR e$(1)="ALDERSHOT" OR e$(1)="MANSFIELD" OR e$(1)="BL
ACKPOOL" OR e$(1)="ROCHDALE " OR e$(1)="STOCKPORT" THEN GO TO 380
350 IF p1=1 THEN LET sc1=sc1+4: PRINT AT 0,13; sc1: GO TO 100
351 IF p1=2 THEN LET sc2=sc2+4: PRINT AT 0,28; sc2: GO TO 100
360 IF p1=1 THEN LET sc1=sc1+3: PRINT AT 0,13; sc1: GO TO 100
361 IF p1=2 THEN LET sc2=sc2+3: PRINT AT 0,28; sc2: GO TO 100
370 IF p1=1 THEN LET sc1=sc1+2: PRINT AT 0,13; sc1: GO TO 100
371 IF p1=2 THEN LET sc2=sc2+2: PRINT AT 0,28; sc2: GO TO 100
380 IF p1=1 THEN LET sc1=sc1+1: PRINT AT 0,13; sc1: GO TO 100
381 IF p1=2 THEN LET sc2=sc2+1: PRINT AT 0,28; sc2: GO TO 100
4999 REM *****SCREEN SET UP*****
5000 PAPER 0: BORDER 0: CLS : PAPER 0: BRIGHT 1: INK 0
5010 PRINT INK 4; AT 0,1; " " : PRINT INK 6; AT 0,16; " "
"
5015 PRINT PAPER 4; AT 0,4; a$: PRINT PAPER 6; AT 0,19; b$
5020 INK 7
5030 FOR x=11 TO 251 STEP 80
5040 PLOT x,164
5050 DRAW 0,-160
5060 NEXT x
5070 FOR y=164 TO 4 STEP -16
5080 PLOT 12,y
5090 DRAW 238,0
5100 NEXT y
5110 FOR o=2 TO 22 STEP 10
5120 FOR z=2 TO 20 STEP 2
5130 PRINT AT z,o; " "
5140 NEXT z
5150 NEXT o
5170 RETURN
7000 BORDER 0: INK 0: PAPER 4: CLS : BRIGHT 1
7010 FOR b=0 TO 21 STEP 21: FOR a=0 TO 31: PRINT AT b,a; " " : NEXT a: NEXT b
7020 FOR a=0 TO 21: FOR b=0 TO 31 STEP 31: PRINT AT a,b; " " : NEXT b: NEXT a
7029 PAPER 6
7030 LET a=5: LET b=6: FOR f=1 TO 6: PRINT AT a,b; "1 Division": LET a=a+1: LET b
=b-1: NEXT f
7040 LET a=5: LET b=16: FOR f=1 TO 6: PRINT AT a,b; "Division 2": LET a=a+1: LET
b=b+1: NEXT f
7050 LET a=11: LET b=1: FOR f=1 TO 6: PRINT AT a,b; "3 Division": LET a=a+1: LET
b=b+1: NEXT f

```



DISC DRIVE

Cliff Joseph takes a close look at Triton's Quick Disc Drive. Read on to see what he thinks

"But, but," I spluttered as a large brown box thudded on to my desk. "I can't review that, it's a disc drive, it's far too technical for me."

"That's OK" said the Editor, "it's intended for the first-time user, so push off and get on with it."

At this point I have to confess that I am indeed a complete novice when it comes to this sort of hardware, having admired a number of disc drives from afar, but never having actually used one, or even having the slightest idea what all the jargon about formatting and sectors and operating systems meant. This review therefore, is not a full benchtest, but rather the impressions of a first-time user. I am however, pleased to say that, after a couple of hours of using the Triton, I may not have mastered all its capabilities, but I had become sufficiently confident to begin converting some games and the Tasword wordprocessor for use on disc.

My first impressions of the unit were quite a relief — it's not a hulking, intimidating black box, but a rather neat, white unit that looks more like a

compact disc player than a conventional disc drive. The discs themselves are pretty compact, being 2.8inch rather than the standard 3.5.

Each disc holds 20 sectors of 2558 bytes, giving a total capacity of some 100K on both sides of the disc. A quick look at some of the examples made it clear how the use of these work — that was one bit of jargon out of the way. The operating system is in the firmware, so there was no extra software to confuse things. So far so good.

Setting up was no problem. An interface unit plugs into the Spectrum's expansion port, and the unit is connected to the drive by a short lead. Here were the first (minor) problems. The interface unit isn't quite on a level with the Spectrum's port (being just a little lower), and though the strain that this put on the edge connector didn't seem too great, I did feel happier when I propped the interface up by jamming a bit of cardboard under it.

Next, the manual warned me to keep the drive at least half a metre from the TV to prevent the risk of data errors. Fair enough, except that the cable linking the drive and the interface isn't that long, which means that you must either move the whole setup away from the TV or risk having the drive near to it. I plumped for the latter and had no problems at all.

The manual seemed a bit cheap and nasty — I assume it was a pre-release version. It had better be — as it stands it's not good enough. The tape-to-disc conversion program in there didn't seem to work despite my

checking for bugs but the operation of the drive proved so simple that the manual soon got put aside.

LOADING and SAVING from disc was no problem. To LOAD any file from disc you simply use;

```
LOAD *1;"filename"
```

and that's it. SAVING is a little more complicated with three possible commands available;

```
SAVE *1;d;"filename; number of DATA items"
SAVE *1;b;"filename"
SAVE *1;m;"filename";start address;end address
```

where d,b, and m indicate that data (ie an array), a BASIC program or machine code bytes are being SAVED. Other commands available include FORMAT, CAT(alogue), COPY and ERASE.

The loading speeds were very impressive. From tape, Jet Set Willy and Tasword 2 took, respectively, 170 and 120 seconds to LOAD. From disc these times were cut to seven and 13 seconds. I lost a few seconds on Tasword 2, as it contains a large chunk of BASIC and I haven't yet figured how to get a BASIC program to autorun from disc (ie the disc equivalent of SAVE "prog" LINE 1) so the 13 seconds included the time it took me to type in a command to RUN the BASIC from a particular line.

All in all, I'm very impressed by the Quick Drive. Not only is it very quick, and both smaller and neater than other drives, but it's easy to use as well. The manual needs smartening up and the conversion program needs sorting out (anyone can hack JSW, even me, but how much recent software could be so easily converted?) and there are a couple of fairly minor design flaws. Apart from those details the Quick Drive performed faultlessly. It's easy to use, and at around £130, is probably the best buy for the first-time user, comparing favourably (in terms of price) with the Wafadrive or Expansion kit, and performing faster.

C.J.

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ONE-KEY ENTRY

HCW regular contributor, Shingo Sugiura, reveals how to get one-key entry on your BBC



BBC owners are lucky to have been gifted with a reasonable keyboard, unlike our Spectrum and ZX81 friends, but doesn't it make you jealous to see them get a word like PRINT with one swift stroke of the rubber key? Some people pride themselves on being able to type at 60 words a minute and would shiver at the thought of one-key entry but since even our close relative, the ELK has a one-key entry facility, I decided to write one for my trusty Beeb.

Firstly, reset page to &1B00 by typing PAGE=&1B00 XRETURNX (if your machine is tape based, type PAGE=&1000 instead and change line 60 to "code=&E00"). Then type in the whole program carefully. It may seem dauntingly long for what it does but the object code is in fact just under two pages long (that's &200 bytes or 0.5 K).

Don't bother to type in the comments (which are preceded by an oblique stroke) if you are unlikely to come back to it to see how it works. Now save the source code before you actually run it because any typing mistakes could (and probably will) have drastic effects such as "Bad program"!

After saving the source code, run it. If all goes well, you should be able to use the one-key entry facility after pressing BREAK. A keyword is called by pressing CTRL-K (i.e., pressing CTRL and K simultaneously) followed by a letter of the alphabet to get a specific keyword, listed in Fig.1. If you press CTRL-K twice in succession and then press a key, you will get another set of keywords, which are listed in Fig.2. Therefore, you have 52 keywords at the touch of a key (near enough anyway!).

After a while, you should be able to find your way around the keyboard quickly. Of course, once you run this utility, the source code is no longer necessary and may be disposed by a quick NEW. The machine code is assembled at the usual value of page (that's &E00 for tape users and &1900 for disc users) and is incremented to &1B00 (or &1000) automatically by the routine when you press BREAK or

CTRL-BREAK, so that your BASIC programs do not overwrite the machine code routine. This effectively means that the one-key entry facility is self-contained and you don't have to worry about resetting the vector (which handles this routine) and PAGE everytime you press BREAK.

When you run the source code, the program should print instructions for you to save the object code. By saving the machine code as instructed, you may then load it in before a hacking session rather than loading in the long source code. This may be done by typing *RUN "OBJECT". The routine is initialised by pressing BREAK — but don't forget that you lose two pages of memory.

N.B. If you want to claim the memory taken up by this routine, type *FX247 XRETURNX and then press BREAK.

A	AND	A	ADVAL
B	BGET	B	BPUT
C	CALL	C	CHR\$
D	DATA	D	DEF
E	ENDPROC	E	ENVELOPE
F	FALSE	F	FOR
G	GOTO	G	GOSUB
H	HIMEM	H	TRUE
I	INKEY	I	INPUT
J	RIGHT\$	J	LEFT\$
K	COLOUR	K	CHAIN
L	LIST	L	LOCAL
M	MODE	M	MOVE
N	NEXT	N	NOT
O	OPENIN	O	OPENOUT
P	PRINT	P	PROC
Q	STEP	Q	POINT
R	RENUMBER	R	REPEAT
S	SOUND	S	STRING\$
T	TAB(T	THEN
U	UNTIL	U	USR
V	VDU	V	VAL
W	WIDTH	W	VPOS
X	RESTORE	X	RETURN
Y	TIME	Y	PI
Z	END	Z	STOP

Fig. 1

Fig. 2

How it works

This routine works by intercepting the OSWRCH vector, WRCHV &20E,F (a vector is a word in memory containing the address of service routine). It is made to point to my routine which checks whether the character to be printed is CTRL-K ie CHR\$11. If it isn't, control is passed over the normal operating system routines. Otherwise the appropriate keyword is inserted into the keyboard buffer by calling OSBYTE with the accumulator set to &8A.

Of course, the vector is reset everytime you press BREAK or CTRL-BREAK and the routine would not work. This problem may be overcome by writing a JMP instruction at &287. On finding a JMP instruction at

&287, the operating system jumps to the routine pointed to by the next two bytes. In this case, the routine sets PAGE to the appropriate value so that the machine code routine does not get corrupted and also resets the OSWRCH vector.

10-40 REM statements

50 select MODE7

60 address at which machine code is to be assembled. For tape users, this line must be changed to code = &E00.

70 check whether source code is going to be overwritten by the object code

80 call procedure which assembles the machine code

90-150 print instructions

160 call routine to connect new one-key entry facility

180 procedure which assembles machine code routine

190-200 define constants

230 routine called each time BREAK or CTRL-BREAK is pressed

240-320 reset OSWRCH vector to point to new routine

330-360 reset page so that machine code doesn't get corrupted by BASIC program

400-420 store contents of registers temporarily

430-440 check whether CTRL-K has been pressed

470 scan keyboard

480-490 check whether CTRL-K has been pressed again

500-530 otherwise check whether key pressed is within range

540 calculate offset for appropriate keyword

550-670 insert appropriate keyword into keyboard buffer character by character

680-870 same routine for second set of keywords

920-970 restore contents of registers and go to normal service routine

980-1020 routine to calculate offset for keyword

1040-1070 routine which inserts a character into keyboard buffer

1080-1150 routine is called once when routine is first initialised. It writes a JMP instruction, &4C at &287 so that BREAK is intercepted

1170-1270 recognised keywords

1280-1330 poke in offsets for these keywords

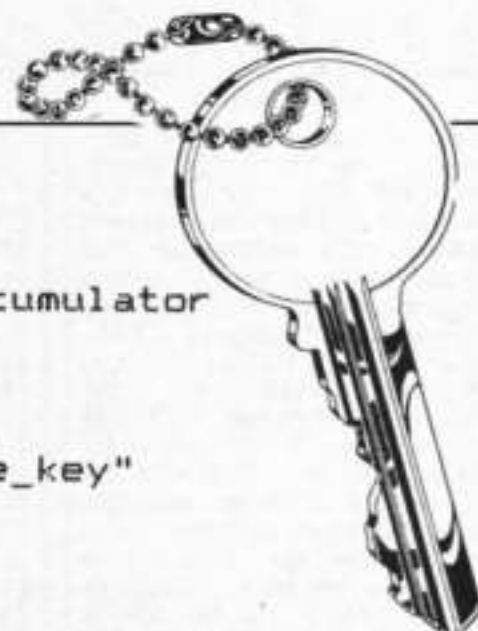
1390-1430 offset table

```

10REM Onekey entry utility
20REM By Shingo Sugura
30REM (C) November 1984
40
50MODE7
60code=&1900
70IF PAGE<code+&200 PRINT"Move source code":END
80PROCassemble
90PRINT"Press BREAK to initialise.""
100PRINT"CTRL-K followed by key gives keyword"
110PRINT"CTRL-K followed by CTRL-K then a letter"
120PRINT"gives another set of keywords."
130PRINT'"PAGE will be ";~code+&200;" from now on."
140PRINT'"To save object code, type:"
150PRINT'"*SAVE""OBJECT""";~code;" ";~P%;" ";~connect
160CALLconnect
170END
180DEFPROCassemble
190oswrch=&FFEE:osbyte=&FFF4:osrdch=&FFE0:osasci=&FFE3
200vector=&230:temp_a=&70:temp_x=&71:temp_y=&72
210FOR pass=0 TO 2 STEP2:P%=code
220OPT pass
230.break
240    BCC first           \Carry set?
250    LDA &20E             \Save the contents of oswrch
260    STA vector          \vector and redirect it
270    LDA &20F             \to the onekey routine
280    STA vector+1
290    LDA&FN1o(check)
300    STA &20E
310    LDA&FNhi(check)
320    STA &20F
330    LD&FNhi(code+&200) \Set PAGE so that machine code
340    LD&F0              \routine does not get corrupted
350    LDA&180            \by Basic
360    JSR osbyte
370.first
    
```



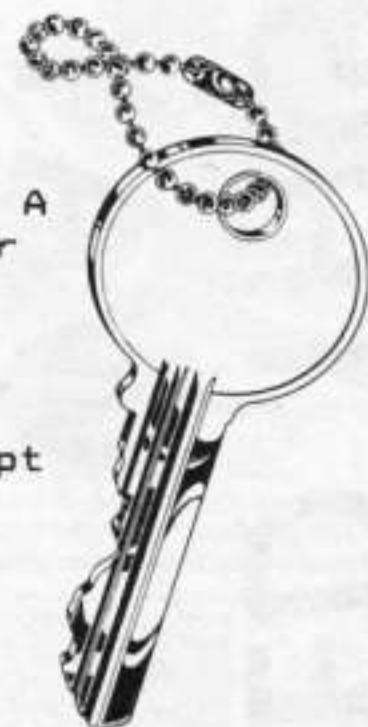
380	RTS	\Exit
390	.check	
400	STAtemp_a	\Store content of accumulator
410	STX temp_x	
420	STY temp_y	
430	CMPE11	\Is it CTRL-K?
440	BEQ one_key	\Yes, so jump to "one_key"
450	BNE out	\Exit
460	.one_key	
470	JSR osrdch	\Scan keyboard
480	CMPE11	\Is it CTRL-K?
490	BEQ set_two	\Yes, so get second set of keywords
500	CMPEASC"A"	\Is key pressed within range?
510	BCC out	\ie, is it within A - Z?
520	CMPEASC"Z"+1	\If not, exit this routine
530	BCS out	
540	JSR cal_offset	\Calculate offset for keyword
550	LDA offset1,Y	
560	TAY	
570	.loop	
580	TYA	\Push Y onto stack
590	PHA	
600	LDA data1,Y	\Get keyword letter by letter
610	CMPEASC"@"	\End of keyword?
620	BEQ end	\If it's @, it's the end of keyword
630	JSR insert	
640	PLA	\Restore Y and go back for more.
650	TAY	
660	INY	
670	BNE loop	
680	.set_two	
690	JSR osrdch	\Scan keyboard
700	CMPEASC"A"	\Is it within range?
710	BCC out	
720	CMPEASC"Z"+1	
730	BCS out	
740	JSR cal_offset	\Calculate offset for keyword
750	LDA offset1+26,Y	
760	TAY	
770	.loop2	
780	TYA	\Push Y onto stack
790	PHA	
800	LDA data2,Y	\Get keyword letter by letter
810	CMPEASC"@"	\End of keyword?
820	BEQ end	\If it's @, it's the end of keyword
830	JSR insert	
840	PLA	\Restore Y
850	TAY	
860	INY	\Increment and go back for more
870	BNE loop2	
880	.end	
890	PLA	\Restore stack and exit
900	LDAEO	

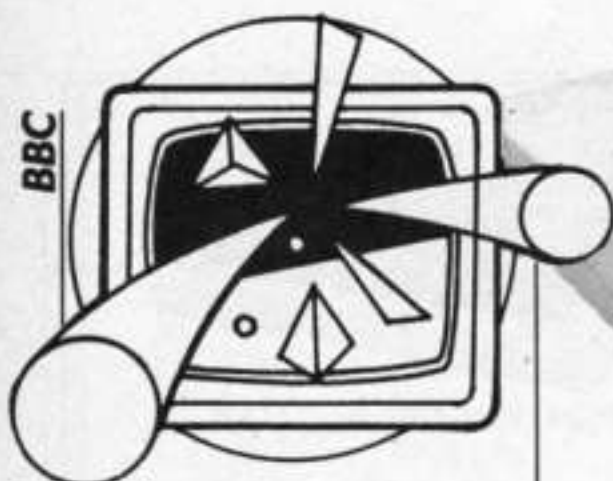



```

910      BEQ exit
920.out
930      LDA temp_a          \Restore A
940.exit
950      LDY temp_y          \Restore Y
960      LDX temp_x          \Restore X
970      JMP(vector)         \Goto normal OSWRCH routine
980.cal_offset
990      SEC                  \Set carry
1000     SBC£ASC"A"
1010     TAY
1020     RTS
1030.insert
1040     TAY                  \Insert character in A
1050     LDA£&8A             \into keyboard buffer
1060     LDX£0
1070     JMP osbyte
1080.connect
1090     LDA£&4C              \Opcode for JMP
1100     STA &287             \Write BREAK intercept
1110     LDA£FNlo(code)
1120     STA &288
1130     LDA£FNhi(code)
1140     STA &289
1150     RTS                  \Exit to Basic
1160.data1
1170OPT FNequs("AND@BGET@CALL@DATA@")
1180OPT FNequs("ENDPROC@FALSE@GOTO@HIMEM@")
1190OPT FNequs("INKEY@RIGHT$(@COLOUR@LIST@MODE@")
1200OPT FNequs("NEXT@OPENIN@PRINT@STEP@RENUMBER@")
1210OPT FNequs("SOUND@TAB(@UNTIL@VDU@WIDTH@RESTORE@TIME@END@")
1220.data2
1230OPT FNequs("ADVAL@BPUT@CHR$@DEF@ENVELOPE@FOR@")
1240OPT FNequs("GOSUB@TRUE@INPUT@LEFT$@CHAIN@")
1250OPT FNequs("LOCAL@MOVE@NOT@OPENOUT@PROC@")
1260OPT FNequs("POINT@REPEAT@STRING$(@THEN@USR@")
1270OPT FNequs("VAL@VPOS@RETURN@PI@STOP@")
1280.offset1
1290]NEXT
1300FOR loop=0 TO 51
1310READ A:loop?offset1=A:P%=P%+1
1320NEXT
1330ENDPROC
1340DEFFNlo(number)=number MOD 256
1350DEFFNhi(number)=number DIV 256
1360DEFFNequs(string$)
1370$P%=string$:P%=P%+LEN(string$)
1380=0
1390REM Offset table
1400DATA0,4,9,14,19,27,33,38,44,50,58,65,70,75,80,87,93,98
1410DATA107,113,118,124,128,134,142,147
1420DATA0,6,11,16,20,29,33,39,44,50,56,62,68,73,77,85
1430DATA90,96,103,112,117,121,125,130,137,140

```





PROCEED THIS WAY

This week Shingo Sugiura continues his series on user defined characters with an introduction to various procedures

In my last article, I listed the first few lines of the program we're going to run. I hope you didn't have too many problems understanding that part! Anyway, this week, we go on to some of the procedures: PROCedures "screen", "options", "window" and "set".

Procedure "screen" is called when the program is first run and as you would expect, sets up the screen for editing. Line 180 calls PROCedure "set" which prints the characters 224 to 255. This is constantly displayed at the bottom of the screen and is updated as necessary so you can easily decide which character to edit next or refer back to an old character. Lines 190 to 220 print the enlarged grid on which you design your character. Line 230

calls another procedure which prints the main options.

PROCedure "options" prints the main options available when you're designing a character. They are: clear grid, invert (erases the filled pixel and fills in the empty pixels), rotate left and right by 90 degrees, upturn (which as you would expect, turns the current character upside down) and mirror which reflects the current character under development across a vertical line along the middle of the character. Then you're reminded that the space bar is used to fill in a pixel, TAB to erase a pixel and RETURN when you're satisfied with the character.

In the enlarged grid, there will be a flashing cursor. This may be moved about within the boundaries via the cursor keys.

The cursor keys may also be used in conjunction with the Shift key in order to jump to the four corners of the grid. In this way, you can quickly move from pixel to pixel and design a character by filling in the appropriate dots when you press the space bar. When you fill in a dot by mistake, you can easily edit it out by pressing the TAB key.

There are various options available when you're editing a character. These have been mentioned already but will be explained in detail as they come.

The next procedure "window" defines a text window just below the enlarged grid. By windowing a section of the screen, you can get left-justified (aligned on the left-hand side) text anywhere on the screen without using TAB statements.

The last procedure simply prints the characters 224 to 255. As I explained in a previous article, more characters may be defined but because I developed this program on a disc system, I ran out of memory! However, all that needs to be done is to extend the PROCedure "set" to print the whole of the character set and also to raise PAGE before the program is run. I will leave this as an exercise for you.

That's it for this week, a bit more of the program in the next article.

```

170DEFPROCscreen
180PROCset
190PRINTTAB(0,1) "#####"TAB(0,10) "#####"
200FOR loop%=2 TO 9
210PRINTTAB(0,loop%) "#.....#"
220NEXT
230PROCoptions
240ENDPROC
250DEFPROCoptions
260VDU28,21,30,39,1
270PRINT"Options:"
280PRINT"f0 - Clear Grid""f1 - Invert""f2 - Rotate left"
290PRINT"f3 - Rotate right""f4 - Upturn""f5 - Mirror"
300PRINT"Space - fill""TAB - Erase""Return - Finish"
310ENDPROC
320DEFPROCwindow
330VDU28,0,17,20,12,12
340ENDPROC
350DEFPROCset
360PRINTTAB(0,30)set$set$
370FOR AX=224 TO 255
380VDUAx
390NEXT
400ENDPROC

```


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WELCOME TO BASIC

Brian Jones shows
you how to use
GET statements

64

64

64

Well, the problems I'm leaving you with are getting steadily more involved — how did you manage last time? The first was to generate 100 random digits and display the results.

```
10 DIM DT(9)
20 FOR I=1 TO 100
30 R=INT(RND(1)*10)
40 DT(R)=DT(R)+1
50 NEXT I
60 PRINT "ONE HUNDRED RANDOM DIGITS"
70 PRINT:PRINT
80 FOR I=0 TO 9
90 PRINT I;TAB(5);
100 FOR J=1 TO DT(I)
110 PRINT "■";:REM CHARACTER FROM + KEY
120 NEXT J
130 PRINT TAB(25);DT(I)
140 NEXT I
```

Your solution could have been a lot longer but still correct. Notice that we can use the natural numbering of an array, including position zero. So line 40 simply adds one to the appropriate score. By the way, if you miss out line 10 the program would still work exactly the same! If the computer finds an array which hasn't been declared with a DIM statement, it does it for you, but it sets the numbering of positions available as 0 to 10, whether you like it or not.

DT(1) and RUN the program. Now line 10 causes an error. Remove 5 and add a line 150 PRINT DT(10). The program will RUN until it gets to 150, when you get a "BAD SUBSCRIPT" error.

Line 60 onwards produces the bar chart. The two prints on line 70 just leave space under the heading. Then notice the loop within a loop from lines 80 to 140. Be sure to get the punctuation right and don't mix up the I and 1 characters and you should get something like the

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```
10 DIM MN(12)
20 FOR I=0 TO 12
30 READ MN(I)
40 NEXT I
50 PRINT "DAYS TO CHRISTMAS CALCULATION"
60 INPUT "TODAY'S DATE - YEAR" Y
70 INPUT "MONTH NUMBER" M
80 INPUT "DAY NUMBER" D
90 IF M<12 THEN 130
100 IF D=25 THEN PRINT "IT'S TODAY" GOTO 210
110 IF D<25 THEN PRINT "ONLY" (25-D) "DAYS TO GO" GOTO 210
120 M=M-Y*1
130 DC=MN(M)-D
140 IF M<3 AND Y/4=INT(Y/4) THEN DC=DC+1:REM LEAP YEAR
150 IF M=11 THEN 190
160 FOR I=M+1 TO 11
170 DC=DC+MN(I)
180 NEXT I
190 DC=DC+25
200 PRINT "THER ARE" DC "DAYS TO GO"
210 END
500 DATA 31,31,29,31,30,31,30,31,31,30,31,30,31
```

photo. Actually, I suppose I should admit it, there's a bug in this program! But I bet you'd never notice it.

Try generating 20 random digits — change the 100 in line 20 to a 20. You may have to run it a few times before the bug appears and even then you might miss it. You get one block in the bar chart, even for a score of zero. It's the same problem that has to be overcome in the second program — how many days to Christmas?

The problem is that a FOR loop in many versions of BASIC, including BBC and Commodore, goes through once before it checks if the loop needs doing at all. When M=11 the FOR loop at line 160 would be from 12 to 11! Impossible, so it shouldn't be done at all, but it will be.

You may wonder why I needed to give month nought a value. It is to cope with the impatient people who in the last few days of December want to know how many until next Christmas. It was either make month nought the same as December, or make the leap year check very complicated. Anyway, let's get on to new things.

In most games listings for Commodore micros in this, and other magazines, you will find a GET statement. It sounds somewhat short and abrupt and I suppose in a way that's appropriate. It allows the program to be getting on with calculations and/or output, and at the same time to check if the user has any

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instructions to be dealt with.
Try this:

```
10 GET A$
20 IF A$="B" THEN PRINT"■";
30 IF A$="W" THEN PRINT"≡";
40 IF A$="R" THEN PRINT"≡";
50 IF A$="S" THEN STOP
60 PRINT"●";:REM SYMBOL ON Q KEY"
70 GOTO 10
```

The three weird characters are produced by holding down the CTRL key and pressing 1, 2 and 3 respectively. RUN this program and try pressing B, W, R or S. The program happily goes on churning out blobs all the time, but the colour changes to black, white or red according to which key you press. S stops the program of course.

A GET statement is essential for action programs such as flight simulators. Imagine a flight simulator using INPUT. Since INPUT stops the program and waits for the instructions you could spend ages deciding

whether to bank, climb or dive. I suppose I'd be more likely to land on the runway but it would lose all its appeal.

Try this program which test your keyboard skill

```
10 DIM AL$(26):TT=0
20 FOR I=1 TO 26
30 READ AL$(I)
40 NEXT I
50 FOR J=1 TO 10
60 FOR K=1 TO 100:NEXT K
70 R=INT(RND(1)*26+1):PRINT
80 PRINT"PRESS THE LETTER ";AL$(R)
90 T=TI
100 GET A$:IF A$=AL$(R) THEN 100
110 X=(TI-T)/60
120 PRINT"THAT TOOK";X;"SECONDS"
130 TT=TT+X
140 NEXT I
150 AV=INT(TT*10+.5)/100
160 PRINT"YOUR AVERAGE SPEED WAS";PRINT AV;"SECONDS"
200 DATA Q,W,E,R,T,Y,U,I,O,P,A,S,D,F,G,H,J,K,L,Z,X,C,V,B,N,M
```

Since the letters are chosen at random, the order in the array AL\$ doesn't matter. Look at line 60; what does it do? Nothing! Absolutely nothing, but it takes about a second to do it and gives you a slight breather in the process. Delete line 60 if you like and see the difference.

Now, how's the timing done? I've made use of one of Commodore's special variables, TI. It counts in 60ths of a second during the whole time

the computer is switched on. It's called the jiffy clock. One minute = 60 seconds, one second = 60 jiffies. Its value is placed in variable T at line 90, then line 100 zips round and round itself until the right key is pressed. The difference between T and the value of TI at line 110 is roughly the number of jiffies you took.

It's time-to-go-time for me. Do you think you could write a program to add up a pocketful of loose change, say just 1p, 2p, 5p and 10p coins, such that you tap the function keys, f1 for every 1p, f3 for 2p, f5 for 5p and f7 for 10p, in any order. Then, when T is pressed the program gives the total. You'll need statements very similar to lines 20 to 50 of my first example of the use of GET except after the quotes press the appropriate function keys. Now that's something the manual doesn't explain about, and it's not too difficult.

A solution next time. Bye.

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

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ESCAPE FROM AIRIA

Find your way out of this hell-hole or you'll die! By Steve Lucas



I have lived on Airia all my life, but now I must leave. For many months now, the temperature has been rising and all the other inhabitants have left the planet to find safety in other galaxies. Unless I escape soon, I am likely to die! Please help me in my task, by giving me instructions in the form of one- or two-word sentences such as get food, go in etc.

Here is a list of some of the words I recognise:

talk, say, ask, swim, look, n, s, e, w, go, get, take, grab, drop, leave, score, inventory, eat, drink, rub, unlock, insert, in, left, out, fill, jump, climb, up, repair, fix, mend, help, fire, start, wait, land, press, push, pull, paddle, wade.

Notes

- 1 The computer will only understand instructions given in lower case letters.
- 2 The program uses the upper/lower case mode, which is selected using the command in line 40. You should press

<Control> <Commodore> key before typing the program in to select this mode.

Hints

These should only be read when you have reached the point where you are tearing your hair out!

- 1 At the airduct, you should crawl in.
- 2 You can't get past the muddy field without the boots.
- 3 To escape, you'll need to fix the spaceship, refuel it, find the keys and collect the space helmet.
- 4 At the edge, try jumping, but you'll need to climb up again.
- 5 Find the can before you can get the fuel.
- 6 Before you go into the jet room, make sure that you've pressed the switch.
- 7 Pull the lever before proceeding.
- 8 Go into the shop before you get into the ship.
- 9 You'll need to unlock the library before you can go in.

How it works

10-40 titles
50-90 READ the DATA into the arrays
100-500 DATA for the game
510 set variables
520-1040 main control loop
530-550 traps
560 describe location
560-660 describe directions
670-720 describe objects
730 input action
740 find substrings
750-1030 call appropriate routine
1060-1070 win game
1080-2000 subroutines

Variables

X,Y,D,E% general variables
PP%,e,an,ab,ac,ad,ae,af,ag,ak flags
s%(x,y) holds map
p% current location
q\$(x) description of location
g\$(x) objects descriptions
n\$(x) words understood
N%(x) pointer to words
b%(x) location of objects
v\$(x) inventory
m% moves

Hints on conversion

- 1 The main control loop is a DO LOOP UNTIL loop, which can be replaced by a REPEAT UNTIL loop or simply a conditional GOTO.
- 2 SCNCLR clears the screen
- 3 The symbols used in print statements are the standard Commodore symbols to represent the colour and can be replaced with the appropriate command for your machine.

```
10 REM "FLIGHT FROM AIRIA"
20 REM "AN ADVENTURE GAME FOR THE C16/PLUS 4"
30 REM "S.W.LUCAS 1985"
40 PRINTCHR$(14);CHR$(8);"          -LIGHT FROM AIRIA"
50 DIM N%(30),N$(30),B%(18),V$(4),Q$(28),S%(28,4),G$(18)
60 FOR X=1 TO 28:READ Q$(X):FOR Y=1 TO 4:READ S%(X,Y):NEXT Y,X
70 FOR X=1 TO 18:READ G$(X),B%(X):NEXT X
80 FOR X=1 TO 27:READ N$(X),N%(X):NEXT
```




```

90 P%=1:SCNCLR
100 DATA"IN A WIDE CORRIDOR. IHERE'S A SMALL SHOP TO THE LEFT." ,0,0,2,0
110 DATA"IN A NARROW CORRIDOR. TINY AIRVENT LEADS /ORTH." ,0,5,0,1
120 DATA"IN A SMALL AIRLOCK FULL OF ARTIFACTS. AN AIRVENT LEADS SOUTH." ,0,0,4,0
130 DATA"IN AN EMPTY STOREROOM." ,0,0,0,3
140 DATA"IN THE ENTRANCE TO A JET BLACK ROOM." ,2,0,6,0
150 DATA"IN THE JET BLACK ROOM. \ CAN'T SEE A THING." ,0,7,0,5
160 DATA"BY A LARGE STATUE. IHERE'S A LEVER ON THE WALL." ,6,0,0,0
170 DATA"ON A LARGE UNDULATING WALKWAY" ,7,0,9,10
180 DATA"ON THE EDGE OF A MUDDY FIELD. \ WOULD NEED \UCCA BOOTS TO GO /ORTH."
190 DATA 0,0,0,8,"OUTSIDE THE \IROL LIBRARY. \T IS LOCKED" ,0,11,8,0
200 DATA"BY A \OLINIA \URITA \OUNTAIN." ,10,12,13,0
210 DATA"IN A SMALL HARBOUR. IHERE IS A SMALL ISLAND NOT FAR AWAY."
220 DATA 11,17,14,0
230 DATA"OUTSIDE THE \OLINIA \ANK. IHERE'S A CASHMACHINE HERE." ,0,14,0,11
240 DATA"OUTSIDE THE \DLTEX SOUVENIR SHOP. \T'S LOCKED!" ,13,0,15,12
250 DATA"ON A SMALL BRIDGE OVER THE RIVER \ILPA." ,0,16,0,14
260 DATA"ON THE BANKS OF THE RIVER. \ SEE A SMALL ISLAND IN THE RIVER." ,15,0,0,0
270 DATA"IN THE SPACEPORT. IHE SPACESHIP \L/ ISHERE. \T'S BROKEN." ,12,0,0,0
280 DATA"ON A SMALL ISLAND. IHERE'S A STAND WHICH HOLDS THE KEYS." ,0,0,0,0
290 DATA"ON AN ISLAND. IHERE'S A LOGOR PLANT HERE" ,0,20,0,0
300 DATA"BY A SCRAPYARD FULL OF RUSTY SPACORS." ,19,0,0,0
310 DATA"IN THE COCKPIT OF THE SPACESHIP." ,0,0,0,0
320 DATA"FLYING ABOVE THE CLOUDS. IHE DIAL SHOWS RED." ,0,0,0,0
330 DATA"IN OUTER SPACE. IHE PLANET HAS JUST EXPLODED!" ,0,0,0,0
340 DATA"IN THE LIBRARY. \T'S FULL OF HOLOGRAMS AND FEW BOOKS CAN BE SEEN."
350 DATA 0,10,0,0,"ON A NARROW LEDGE" ,0,9,0,0
360 DATA"IN A FUEL STATION. \ ROPE HANGS FROM ABOVE." ,0,0,0,0
370 DATA"IN A LARGE SUPPLY SHOP." ,0,0,0,0
380 DATA"IN THE SPACESTATION ' \ILINIVICA'" ,0,0,0,0
390 DATA"A SPACE HELMET",4,"A POLVAR EXTRACTOR",3,"A PILE OF DUST",2
400 DATA"A PRESSURE PAD",5,"A GOLDEN RING",6,"A TINY SPIDER",7
410 DATA"A POOR BEGGAR",8,"A PLANK",9,"A KEYHOLE",10
420 DATA"A TOFFEE PAPER",11,"A SAILBOARD",12,"A PURSE FULL OF COINS",13
430 DATA"A BUNCH OF KEYS",18,"SOME FLOWERS",19,"A PETROL CAN",20
440 DATA"A REPAIR MANUAL",24,"A PAIR OF MUCCA BOOTS",27
450 DATA "A COIN OPERATED ROCKET FUEL PUMP",26
460 DATA"HELMET",1,"POLVAR",2,"EXTRACTOR",2,"DUST",3,"PRESSURE",4,"PAD",4
470 DATA"GOLD",5,"RING",5,"SPIDER",6,"BEGGAR",7,"PLANK",8
480 DATA"HOLE",9,"TOFFEE",10,"PAPER",10,"SAILBOARD",11,"PURSE",12,"COINS",12
490 DATA"KEYS",13,"FLOWERS",14,"PETROL",15,"CAN",15,"REPAIR",16,"MANUAL",16
500 DATA"MUCCA",17,"BOOTS",17,"FUEL",18,"PUMP",18
510 P%=1:M%=0:SCNCLR
520 DO
530 IF AF=1 THEN S%(9,1)=25: ELSE S%(9,1)=0
540 IF C$="SWI" THEN GOSUB 1470
550 IF P%=6 AND AK<>1 THEN PRINT"\ TRIP AND FALL IN THE DARK!":GOSUB 1430
560 PRINT"AM :-":PRINT$(P%); "A$="
570 IF S%(P%,1)>0 THEN A$="/ORTH"
580 IF S%(P%,2)>0 AND LEN(A$)>0 THEN A$=A$+", \OUTH"
590 IF S%(P%,2)>0 AND LEN(A$)=0 THEN A$=" \OUTH"
600 IF S%(P%,3)>0 AND LEN(A$)>0 THEN A$=A$+", \AST"
610 IF S%(P%,3)>0 AND LEN(A$)=0 THEN A$=" \AST"
620 IF S%(P%,4)>0 AND LEN(A$)>0 THEN A$=A$+", \EST"
630 IF S%(P%,4)>0 AND LEN(A$)=0 THEN A$=" \EST"
640 IF P%=27 THEN A$="OUT"
650 IF A$="" THEN A$="\ DON'T KNOW WHERE!"
660 PRINT"CAN GO :-":PRINTA$
670 E=0:FOR X=1 TO 18:PP%=0:IF B%(X)=P% THEN PP%=1
680 IF PP%=1 THEN 700
690 NEXT:GOTO730
700 PRINT" "
710 IF E=0 THEN PRINT"CAN SEE :-"
720 PRINT$(X):E=E+1:GOTO 690

```




```

730 PRINT "WHAT SHOULD I DO NOW "; INPUT Z$
740 SCNCLR:PRINTCHR$(7)
750 B$=LEFT$(Z$,2):C$=LEFT$(Z$,3):D$=LEFT$(Z$,4)
760 IF C$="TAL" OR C$="SAY" OR C$="ASK" THEN PRINT "I'M NOT TALKING TO MYSELF!"
770 IF C$="LOO" THEN PRINT "I DON'T SEE ANYTHING SPECIAL!"
780 IF B$="N" AND S%(P%,1) THEN P%=S%(P%,1)
790 IF B$="S" AND S%(P%,2) THEN P%=S%(P%,2)
800 IF B$="E" AND S%(P%,3) THEN P%=S%(P%,3)
810 IF B$="W" AND S%(P%,4) THEN P%=S%(P%,4)
820 IF C$="GET" OR C$="TAK" OR C$="GRA" THEN GOSUB 1080
830 IF C$="DRO" OR C$="LEA" THEN GOSUB 1300
840 IF C$="INV" THEN GOSUB 1390
850 IF C$="EAT" THEN PRINT "DON'T FEEL HUNGRY!"
860 IF C$="ORI" THEN PRINT "I'M NOT THIRSTY!"
870 IF C$="RUB" THEN PRINT "DON'T BE ABSURD!"
880 IF C$="SCO" THEN PRINT "THIS ISN'T A GAME YOU KNOW!"
890 IF C$="UNL" OR C$="INS" THEN GOSUB 1550
900 IF C$="IN" OR D$="GO I" OR D$="GO L" THEN GOSUB 1610
910 IF C$="OUT" OR D$="GO O" THEN GOSUB 1640
920 IF C$="FIL" THEN GOSUB 1680
930 IF C$="JUM" THEN GOSUB 1710
940 IF C$="CLI" OR C$="UP" THEN GOSUB 1730
950 IF C$="REP" OR C$="FIX" OR C$="MEN" THEN GOSUB 1750
960 IF C$="HEL" THEN GOSUB 1780
970 IF C$="STA" OR C$="FIR" THEN GOSUB 1830
980 IF C$="WAI" THEN GOSUB 1890
990 IF C$="LAN" THEN GOSUB 1910
1000 IF C$="PRE" OR C$="PUS" THEN GOSUB 1930
1010 IF C$="CRA" OR D$="GO V" THEN GOSUB 1960
1020 IF C$="PUL" THEN GOSUB 1990
1030 IF C$="PAD" OR C$="WAD" THEN GOSUB 1510
1040 LOOP UNTIL P%=28 OR P%=100
1050 SCNCLR:IF M%>99 THEN PRINT "YOU RAN OUT OF TIME!":GOTO 1430
1060 PRINT "30 E L L - O N E !"
1070 PRINT "YOU HAVE SOLVED THIS ADVENTURE AND ESCAPED FROM THE PLANET!":END
1080 GOSUB 1250:IF LX<>1 THEN RETURN
1090 EX=0:FOR X=1 TO 18:IF B%(X)=P% AND N%(R)=X THEN EX=1
1100 NEXT:IF EX=0 THEN PRINT "I DON'T SEE IT HERE!":RETURN
1110 IF R=2 OR R=3 THEN PRINT "BREAK MY BACK WITH THE STRAIN!":GOSUB 1430
1120 IF R=1 THEN AJ=1:ELSE IF R=4 THEN PRINT "THE DUST BLOWS INTO MY FACE!":GOTO 1430
1130 IF R=5 OR R=6 THEN PRINT "DON'T BE SILLY!":RETURN
1140 IF R=9 THEN PRINT "AGGHH IT BIT ME. THE POISON SURGES IN MY VEINS!":GOTO 1430
1150 IF R=10 OR R=12 THEN PRINT "BE SENSIBLE!":RETURN
1160 IF R=16 OR R=17 THEN AB=1:ELSE IF R=18 THEN AC=1
1170 IF R=20 OR R=21 THEN AD=1:ELSE IF R=22 OR R=23 THEN AE=1
1180 IF R=25 OR R=26 THEN AF=1
1190 IF R=27 THEN PRINT "CAN'T CARRY A FUEL PUMP!":RETURN
1200 IF R=26 AND AD<>1 THEN PRINT "NEED SOMETHING TO PUT IT IN!":RETURN
1210 IF R=26 AND AD=1 THEN PRINT "FILL THE CAN WITH FUEL!":AG=1
1220 EX=0:FOR D=1 TO 3:IF V$(D)="" THEN V$(D)=G$(N%(R)):EX=1:D=5
1230 NEXT:IF EX=0 THEN PRINT "YOUR HANDS ARE FULL!":RETURN
1240 B%(N%(R))=0:RETURN
1250 L$="":FOR H=1 TO LEN(Z$)
1260 IF MID$(Z$,H,1)="" THEN L$=RIGHT$(Z$, (LEN(Z$)-H)):H=H+40
1270 NEXT:R=0:LX=0:IF LEN(L$)<2 THEN RETURN
1280 FOR H=1 TO 27:IF LEFT$(N$(H),LEN(L$))=L$ THEN LX=1:R=H
1290 NEXT H:RETURN
1300 GOSUB 1250:IF LX=0 THEN PRINT "CAN'T SEE A ";L$:RETURN
1310 EX=0:FOR X=1 TO 3:IF V$(X)=G$(N%(R)) THEN V$(X)="":EX=1
1320 NEXT:IF EX=0 THEN PRINT "DON'T HAVE IT!":RETURN
1330 B%(N%(R))=P%
1340 IF R=1 THEN AJ=0:ELSE IF R=16 OR R=17 THEN AB=0
1350 IF R=18 THEN AC=0:ELSE IF R=20 OR R=21 THEN AD=0

```



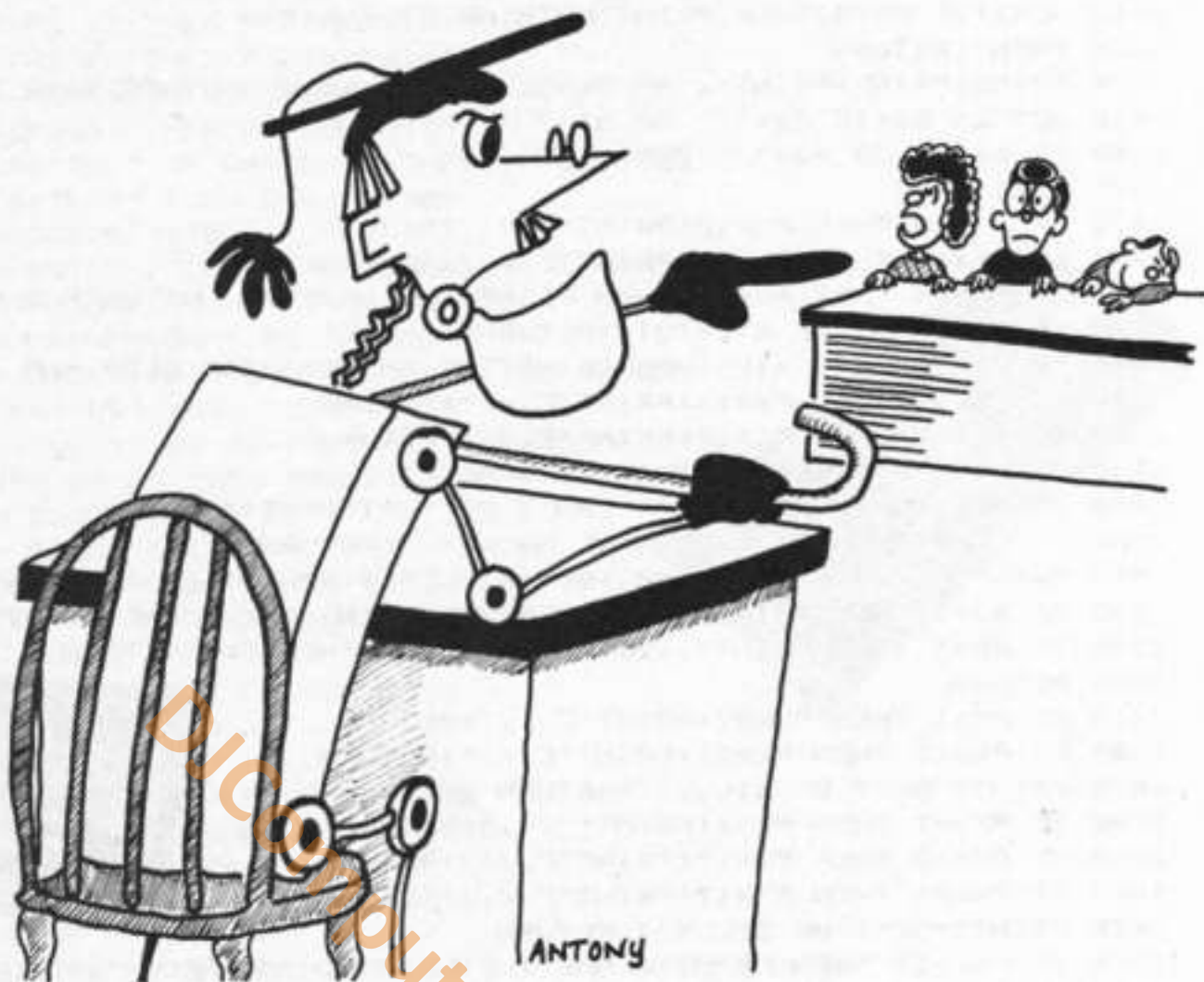

```

1360 IF R=22 OR R=23 THEN AE=0:ELSE IF R=24 OR R=25 THEN AF=0
1370 IF AG=1 AND (R=20 OR R=21) THEN AG=0:PRINT"THE FUEL SPILLS TO THE FLOOR!"
1380 RETURN
1390 E%=0:PRINT"AM CARRYING :-:"
1400 FOR X=1 TO 3:IF V$(X)<>" THEN PRINTV$(X):E%=1
1410 NEXT:IF E%=0 THEN PRINT"NOTHING AT ALL!"
1420 PRINT:RETURN
1430 PRINT:PRINT:PRINT"AM DEAD. -O YOU WANT ANOTHER GAME ?"
1440 GETKEY A$:IF A$="Y" OR A$="I" THEN RUN
1450 IF A$="N"OR A$="/" THEN END
1460 GOTO 1440
1470 IF P%=18 THEN P%=12:PRINT".".":RETURN
1480 IF P%=12 THEN P%=18:PRINT".".":RETURN
1490 IF P%=16 OR P%=19 THEN PRINT"THE WATER'S NOT DEEP ENOUGH!":RETURN
1500 PRINT"-ON'T BE STUPID!":RETURN
1510 IF P%=12 OR P%=18 THEN PRINT"THE WATER'S TOO DEEP AND \ DROWN!":GOTO 1430
1520 IF P%=16 THEN P%=19:PRINT".".":RETURN
1530 IF P%=19 THEN P%=16:PRINT".".":RETURN
1540 PRINT"-ON'T BE STUPID!":RETURN
1550 IF P%<>10 THEN PRINT"CAN'T DO THAT HERE!":RETURN
1560 IF AK=0 THEN PRINT"HAVE NO KEY!":RETURN
1570 PRINT".".":S$(10,1)=24:Q$(10)=LEFT$(Q$(10),25):RETURN
1580 IF AJ=1 THEN PRINT"IM ALREADY WEARING THE HELMET!":RETURN
1590 IF AF=1 THEN PRINT"IVE ALREADY PUT THEM ON!":RETURN
1600 RETURN
1610 IF P%=1 THEN P%=27:PRINT".".":RETURN
1620 IF P%=17 THEN P%=21:PRINT".".":RETURN
1630 PRINT"-ON'T BE SILLY!":RETURN
1640 IF P%=27 THEN P%=1:PRINT".".":RETURN
1650 IF P%=18 THEN P%=17:PRINT".".":RETURN
1660 IF P%=21 THEN P%=17:PRINT".".":RETURN
1670 PRINT"-ON'T BE SILLY!":RETURN
1680 IF P%<>17 THEN PRINT"CAN'T FILL ANYTHING HERE!":RETURN
1690 IF AG=0 THEN PRINT"HAVE NO FUEL!":RETURN
1700 PRINT" FILL THE FUEL TANKS!":AH=1:RETURN
1710 IF P%<>25 THEN PRINT"NOT HERE!":RETURN
1720 P%=26:PRINT".".":RETURN
1730 IF P%<>26 THEN PRINT"-ON'T BE ABSURD!":RETURN
1740 PRINT".".":P%=25:RETURN
1750 IF P%<>17 THENPRINT"CAN'T SEE ANYTHING IN NEED OF REPAIR!":RETURN
1760 IF AE<>1 THEN PRINT"NEED THE REPAIR MANUAL!":RETURN
1770 PRINT".". \ REPAIR THE SPACESHIP!":Q$(17)=LEFT$(Q$(17),46):A1=1:RETURN
1780 IF P%=17 THEN PRINT"OHY NOT REPAIR IT?":RETURN
1790 IF P%=21 THEN PRINT"OHY NOT START THE ENGINE?":RETURN
1800 IF P%=22 THEN PRINT"ALL YOU CAN DO IS WAIT!":RETURN
1810 IF P%=23 THEN PRINT"OHY NOT LAND ON THAT PLANET \ SEE OVER THERE?":RETURN
1820 PRINT"IM SORRY \ HAVEN'T A CLUE!":RETURN
1830 IF P%<>21 THEN PRINT"CAN'T DO THAT HERE!":RETURN
1840 IF A1=0 THEN PRINT"THE SHIP'S BROKEN!":RETURN
1850 IF AH=0 THEN PRINT"OUT OF FUEL!":RETURN
1860 IF AC=0 THEN PRINT"/O KEYS!":RETURN
1870 IF AJ=0 THEN PRINT"/O SPACE HELMET!":RETURN
1880 P%=22:PRINT"THE ENGINE FIRES!":RETURN
1890 PRINT".".":FOR X=1 TO 2000:NEXT X:IF P%=22 THEN P%=23
1900 RETURN
1910 IF P%<>23 THEN PRINT"-ON'T BE RIDICULOUS!":RETURN
1920 PRINT" LAND THE SHIP SAFELY!":P%=28:RETURN
1930 IF P%=7 THEN S$(7,2)=8:PRINT"OMETHING HAPPENED!":RETURN
1940 IF P%=5 THEN PRINT"OMETHING HAPPENED!":AK=1:Q$(6)=LEFT$(Q$(6),22):RETURN
1950 PRINT"-ON'T BE SILLY!":RETURN
1960 IF P%=2 THEN P%=3:PRINT".".":RETURN
1970 IF P%=3 THEN P%=2:PRINT".".":RETURN
1980 PRINT"-ON'T BE DAFT!":RETURN
1990 IF P%<>7 THEN PRINT"/OT HERE!":RETURN
2000 S$(7,2)=8:PRINT".".":RETURN

```



ROBOT MATHS



**Friendly robots
make learning more
fun in this program
by Phil Tayler**

I have three young children who love to use the computer. I have loads of programs on the BBC which they can use, but nothing much for the Amstrad, so I've decided to write my own. Early number experience should be fun, so I have used a friendly little robot figure to give the concrete experience on screen, so that the child may count before entering the answer.

The robots are all identical, although they are randomly coloured. If the answer given is correct, then there is a modest reward. If the answer isn't write, however, then there are "help screens" so that eventual success is assured.

I have deliberately used meaningful names for my variables, and I have used copious REM statements, which might all take a few more minutes to type, but which surely save far more in the time spent debugging!

How it works

80-160 main game loop which calls the five main subroutines
200-760 decides actual questions to be asked. There are two main parts, covering + and -, and there might be a quick trip to the "help pages"
780-1050 this routine allows the child/parent to decide whether addition or subtraction questions are to be asked, and the maximum numbers to be encountered
1070-1210 produces title screen
1230-1330 designs robot shape and also a blank the same size
1340-1460 end of game routines, displaying score and inviting another game
1480-1730 mistakes made in addition
1740-1850 or subtraction

Variables

choice takes value 1 for addition, or 2 for subtraction
first%, **second%** values of the two numbers in the sum
biggest% maximum number allowed (set by child/parent)
score child's score
wrong if 0 then this is first attempt, so a right answer results in an increase in score
wanted\$ hold response from keyboard
1%, **letter** set up title screen
a, **b** screen co-ordinates when printing robots or blanks
attempts hold number of attempts in addition, as there are two help screens
delay, **n** general counters

```
10 REM*****
20 REM***** ROBOT MATHS *****
30 REM*****
40 REM***** Phil Tayler *****
50 REM*****
60 REM***** Amstrad CPC464 *****
70 REM*****
80 REM+++++
90 REM++++ Main Game Loop Begins +++++
100 REM+++++
110 GOSUB 1220:REM designing the robots
120 GOSUB 1060:REM title, instructions etc.
```



```

130 GOSUB 770:REM decide number limits, operator etc.
140 GOSUB 200:REM the actual questions
150 GOSUB 1340:REM end of game routines
160 REM+++++ Main Game Loop Ends +++++
170 REM+++++ Main Game Loop Ends +++++
180 REM+++++ Main Game Loop Ends +++++
190 END
200 REM * * * * *
210 REM *   THE ACTUAL QUESTIONS   *
220 REM * * * * *
230 MODE 0:PAPER 0:CLS
240 IF choice=1 THEN 260 ELSE 520
250 REM*****
260 REM***** addition *****
270 REM*****
280 wrong=0
290 FOR question=1 TO 10
300 MODE 0:PAPER 0:CLS:PEN 1:PRINT:PRINT:PRINT:PRINT"I'm thinking....."
310 a=2:b=1
320 first%=RND*100:second%=RND*100:IF first%+second%>biggest% THEN 320 ELSE sum
%=first%+second%
330 PAPER 0:CLS
340 attempts=1
350 FOR n=1 TO first%
360 r=INT(RND*10):IF r=0 THEN 360
370 GOSUB 1320:PRINT robot$;:IF a<17 THEN a=a+3 ELSE b=b+3:a=2
380 NEXT n
390 FOR n=1 TO second%
400 r=INT(RND*10):IF r=0 THEN 400
410 GOSUB 1320:PRINT robot$;:IF a<17 THEN a=a+3 ELSE b=b+3:a=2
420 NEXT n
430 PEN 1
440 LOCATE 3,25:PRINT first%;"+";second%;"=";:INPUT answer%
450 IF answer%<>sum% THEN 1470
460 IF wrong=0 THEN score=score+1:PAPER 5:PEN 8:LOCATE 4,24:PRINT"Well Done!";:F
OR n=1 TO 10:SOUND 1,200-15*n,5:NEXT n ELSE PAPER 5:
PEN 8:LOCATE 4,24:PRINT"Well Done!";:FOR n=1 TO 10:SOUND 1,200-15*n,5:NEXT n:PAP
ER 0
470 wrong=0
480 FOR delay=1 TO 1000:NEXT delay
490 NEXT question
500 RETURN
510 REM*****
520 REM***** subtraction *****
530 REM*****
540 wrong=0
550 FOR question=1 TO 10
560 MODE 0:PAPER 0:CLS:PEN 1:PRINT:PRINT:PRINT:PRINT"I'm thinking....."
570 a=2:b=1
580 first%=RND*50:IF first%>biggest% OR first%=0 THEN 580
590 second%=RND*50:IF second%>first% OR second%=0 THEN 590 ELSE sum%=first%-seco
nd%
600 PAPER 0:CLS
610 FOR n=1 TO first%
620 r=INT(RND*10):IF r=0 THEN 620
630 GOSUB 1320:PRINT robot$;:IF a<17 THEN a=a+3 ELSE:b=b+3:a=2
640 NEXT n
650 PEN 1
660 LOCATE 2,25:PRINT first%;"-" ;second%;"=";:INPUT answer%
670 IF answer%<>sum% THEN 1740
680 wrong=0
690 a=2:b=1
700 FOR n=1 TO second%
710 GOSUB 1310:SOUND 1,119,5:PRINT blank$;:IF a<17 THEN a=a+3 ELSE:b=b+3:a=2
720 FOR delay=1 TO 100:NEXT delay
730 NEXT n

```




```

740 FOR delay=1 TO 1000:NEXT delay
750 NEXT question
760 RETURN
770 REM * * * * *
780 REM *   DECIDE NUMBER LIMITS   *
790 REM * * * * *
800 MODE 1:PAPER 0:PEN 1:CLS
810 PRINT" You can decide the difficulty of the "
820 PRINT:PRINT"questions by entering the answers to"
830 PRINT:PRINT"these questions....."
840 PRINT:PRINT "Do you wish to have questions in ....."
850 PRINT:PRINT:PRINT "a) Addition"
860 PRINT:PRINT:PRINT "s) Subtraction"
870 WHILE INKEY$<>"":WEND
880 PRINT:PRINT:INPUT "Press a (addition) or s (subtraction)",wanted$
890 IF INSTR("AaSs",wanted$)=0 THEN 880
900 IF INSTR("Aa",wanted$)<>0 THEN choice=1
910 IF INSTR("Ss",wanted$)<>0 THEN choice=2
920 FOR delay=1 TO 500:NEXT delay
930 PAPER 2:CLS
940 PEN 0:PRINT:PRINT"Which is the largest number you wish"
950 PRINT:PRINT"to have in the questions....?"
960 PRINT:PRINT"a) 10"
970 PRINT:PRINT"b) 25"
980 PRINT:PRINT"c) 48"
990 WHILE INKEY$<>"":WEND
1000 PRINT:INPUT "Press a,b pr c.",wanted$
1010 IF INSTR("AaBbCc",wanted$)=0 THEN 1000
1020 IF INSTR("Aa",wanted$)<>0 THEN biggest%=10
1030 IF INSTR("Bb",wanted$)<>0 THEN biggest%=25
1040 IF INSTR("Cc",wanted$)<>0 THEN biggest%=48
1050 RETURN
1060 REM* * * * *
1070 REM*   TITLE + INSTRUCTIONS   *
1080 REM* * * * *
1090 MODE 0 :PAPER 0:CLS
1100 DIM l$(11)
1110 x=4:y=1:col=1
1120 FOR letter=1 TO 11
1130 READ l$(letter)
1140 LOCATE x,y*2:PEN col:PRINT l$(letter)
1150 SOUND 1,600-50*letter,10,6
1160 x=x+1:y=y+1:col=col+1
1170 FOR delay=1 TO 100:NEXT delay
1180 NEXT letter
1190 DATA R,O,B,O,T, ,M,A,T,H,S
1200 FOR delay=1 TO 2000:NEXT delay
1210 RETURN
1220 REM* * * * *
1230 REM*   DESIGNING THE ROBOTS   *
1240 REM* * * * *
1250 SYMBOL 250,0,&F,&9,&F,&6,&3,&1,&F
1260 SYMBOL 251,0,&F0,&90,&F0,&60,&C0,&80,&F0
1270 SYMBOL 252,&1F,&2F,&47,&83,&81,&F,&C,&1C
1280 SYMBOL 253,&F8,&F4,&E2,&C1,&81,&F0,&30,&38
1290 SYMBOL 254,0,0,6,0,0,0,0,0
1300 SYMBOL 255,0,0,&60,0,0,0,0,0
1310 blank$=CHR$(31)+CHR$(a)+CHR$(b)+CHR$(15)+CHR$(0)+CHR$(143)+CHR$(143)+CHR$(8)
+CHR$(8)+CHR$(10)+CHR$(143)+CHR$(143)+CHR$(11)
1320 robot$=CHR$(31)+CHR$(a)+CHR$(b)+CHR$(15)+CHR$(r)+CHR$(22)+CHR$(1)+CHR$(250)
+CHR$(251)+CHR$(8)+CHR$(8)+CHR$(10)+CHR$(252)+CHR$(2
53)+CHR$(8)+CHR$(8)+CHR$(11)+CHR$(15)+CHR$(14)+CHR$(254)+CHR$(255)+CHR$(10)+CHR$

```

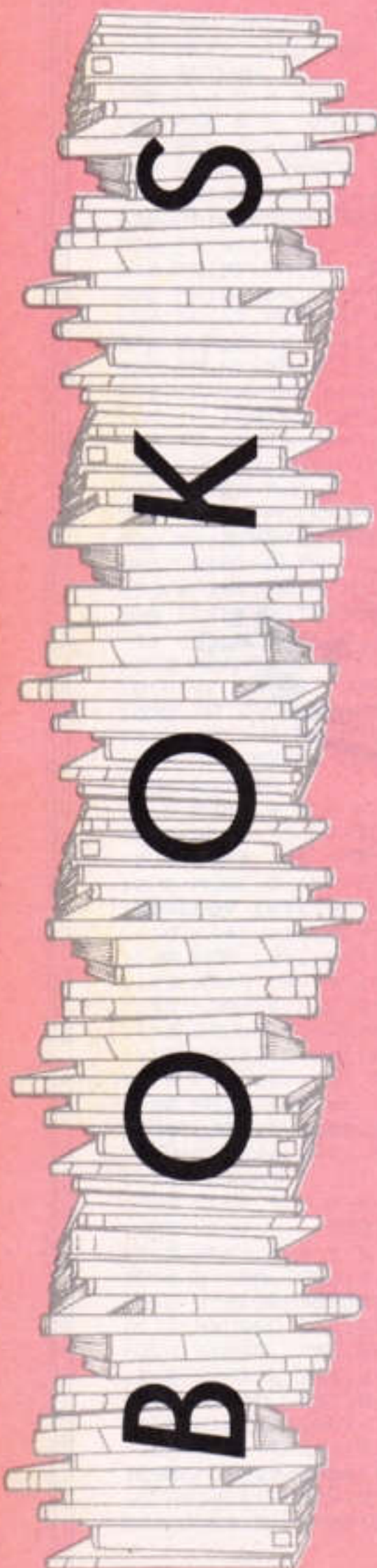



```

(10)+CHR$(22)+CHR$(0)
1330 RETURN
1340 REM* * * * *
1350 REM*   END OF GAME ROUTINES   *
1360 REM* * * * *
1370 MODE 1:PAPER 2:CLS:PEN 0
1380 FOR n=1 TO 12
1390 PRINT:PRINT" Well done! You scored ";PEN 3:PRINT score;PEN 0:PRINT" out
of 10."
1400 NEXT n
1410 FOR delay=1 TO 1500:NEXT delay
1420 CLS:PEN 0:INPUT "Do you wish to play again?",reply$
1430 IF INSTR("YyNn",reply$)=0 THEN 1430
1440 IF INSTR("Yy",reply$)<>0 THEN 130
1450 END
1460 RETURN
1470 REM*****
1480 REM***** wrong answer for + *****
1490 REM*****
1500 wrong=1
1510 LOCATE 3,25:PAPER 11:PEN 13:PRINT" Watch carefully. ";PAPER 0:PEN 3
1520 IF attempts>1 THEN 1670
1530 a=1:b=3
1540 FOR n=1 TO first%
1550 LOCATE a,b:PRINT n
1560 IF a<16 THEN a=a+3 ELSE:b=b+3:a=1
1570 FOR delay=1 TO 100:NEXT delay
1580 NEXT n
1590 FOR n=1 TO second%
1600 LOCATE a,b:PRINT n
1610 IF a<16 THEN a=a+3 ELSE:b=b+3:a=1
1620 FOR delay=1 TO 100:NEXT delay
1630 NEXT n
1640 FOR delay=1 TO 3000:NEXT delay
1650 attempts=attempts+1
1660 LOCATE 3,25:PAPER 13:PEN 11:PRINT" Now try again. ";FOR delay=1 TO 3000:
NEXT delay:PAPER 0:PEN 3:LOCATE 3,25:PAPER 0:PEN 1:P
RINT SPACE$(18);GOTO 440
1670 a=1:b=3
1680 FOR n=1 TO first%+second%
1690 LOCATE a,b:PRINT n
1700 IF a<16 THEN a=a+3 ELSE:b=b+3:a=1
1710 FOR delay=1 TO 100:NEXT delay
1720 NEXT n
1730 LOCATE 3,25:PAPER 13:PEN 11:PRINT" Now try again. ";FOR delay=1 TO 3000:
NEXT delay:PAPER 0:PEN 3:LOCATE 3,25:PAPER 0:PEN 1:P
RINT SPACE$(18);GOTO 440
1740 REM*****
1750 REM***** wrong answer for - *****
1760 REM*****
1770 wrong=1
1780 LOCATE 3,25:PAPER 11:PEN 13:PRINT" Watch carefully. ";PAPER 0:PEN 3
1790 a=2:b=1
1800 FOR n=1 TO second%
1810 GOSUB 1310:PRINT blank$:IF a<16 THEN a=a+3 ELSE:b=b+3:a=2
1820 FOR delay=1 TO 100:NEXT delay
1830 NEXT n
1840 FOR delay=1 TO 3000:NEXT delay
1850 LOCATE 3,25:PAPER 13:PEN 11:PRINT" Now try again. ";FOR delay=1 TO 3000:
NEXT delay:PAPER 0:PEN 3:LOCATE 3,25:PAPER 0:PEN 1:P
RINT SPACE$(18);a=2:b=1:GOTO 600

```





Creative Sound and Graphics on your Commodore 64

Whilst being unbelievably powerful, the graphics and sound capabilities of the 64 are extremely difficult to use. It is not surprising therefore that a number of books have appeared dealing with these subjects.

This book, rather than attempting to be a comprehensive treatise on the subject, combines some games listings with a smattering of theory. The entire area of graphics is considered starting with simple poking of characters to the screen and moving through sprites, user defined characters and bit mapping. This ensures that the book will appeal to complete beginners.

On the whole I feel that the section on graphics doesn't have sufficient depth. The sole section on bit maps, for example, comprises of two pages. No mention is made of multicolour bit maps and the concept of banks and where to put the bit map is omitted.

The section on sound is similarly brief with no attempt to discuss the theory of sound and how various sounds can be created.

The development of theory is illustrated throughout the book with games listings. The functions of the different sections of the programs are discussed offering useful advice to the beginner.

This book seems to make the mistake of trying to fulfil the two roles of the games book and the theory book and doesn't really succeed at either. Beginners to the 64 will find it a useful first step in the subject but for the more advanced aspects, they will have to look elsewhere. **R.W.**

Price: £6.95

Publisher: Addison Wesley

Address: 53 Bedford Sq,
London WC1B 3DZ

C64



Introducing MSX BASIC

It's true I haven't seen all manuals for all MSC computers — and there are quite a few around — but I have seen some pretty awful ones. All the more need for a really good book that will get you on the road to understanding the machine you've paid out around £200 for. Sony's Fido manual (with its little cartoon dog) was irritatingly simplistic and Toshiba's manual seems well regimented even though there is a separate booklet dealing with programming details. Yes, you will need to buy another book.

This one offers a thorough grounding in all the essential aspects of programming whether it's for games or utilities. It does this by offering three sections, each one needing quite a bit of effort in terms of practice and application to master the elements of writing your own programs. Just like playing an instrument you will get good results if you put in the effort.

The first part deals with all the features of BASIC, from using the computer as a calculator to the design and control of sprites. It's divided into two chapters, the first dealing with the mathematical functions, screen layout, drawing and sound. The next chapter introduces the idea of programming with loops and branches, arrays and subroutines. Quite a lot condensed in a short section but if you persevere it is dealt with in a more leisurely fashion in part two.

The second part uses "programming projects" to highlight the various aspects of BASIC you will have already been introduced to. These are: Blackjack, Ballistics, Graph Plotter, Address Book and

Lunar Lander. Not stunningly original but effective. Each of these is well explained but need careful study. At the end of each project there are suggestions for developing the programs further.

Section three is a Quick Reference Guide which gives you a brief explanation of all BASIC commands, the ASCII code table, screen layout grids and a few more bits and pieces. This particular part is usually well covered in the manuals provided by the computer manufacturers so that you only gain the convenience of having it all in one book.

The very first part of the book also contains, in my opinion, a largely redundant section on how to connect your computer to monitor and cassette recorder — P this would also be dealt with by the original manual.

The book stresses the hands-on method which, quite simply, means plenty of typing and experimenting for you to do. Not a book to read at bedtime but one for your elbow as you attempt to master the particular MSX machine you have. It contains enough for both the complete beginner and intermediate dabbler. Machine code is not included. **M.P.**

Price: £6.95

Publisher: Microbooks

Address: 443 Millbrook Rd,
Southampton SO1 0HX

MSX



TOP 20

Compiled by

Gallup

SOFTWARE

Fortnight Ending April 16, 1985

Up and coming

There appears to be plenty of movement in the chart this week with three completely new entries and one re-entry in the top 20.

What doesn't appear to be too clear is the type of software that is selling well. The new entries include games of all kinds: a game simulation, an arcade game and an adventure all moving this week.

There are also two games which have been in the chart for 30 weeks, both of which are game simulations, Daley Thompson's Decathlon and Football Manager.

Under the top 20 there is only one new entry, Cauldron from Palace. This game should do much better in the next few weeks, it was awarded a flipped review by our discerning reviewers.

LAST WEEK	MOVE	THIS WEEK	TITLE	PUBLISHER	SPECTRUM	CBM 64	BBC	ELECTRON	AMSTRAD	ATARI	OTHERS
1	●	1	Soft Aid	Quicksilver	●	●					
2	●	2	World Series Baseball	Imagine	●	●					
5	▲	3	Spy Hunter	US Gold	●	●					
3	▼	4	Ghostbusters	Activision	●	●				●	●
9	▲	5	Daley Thompson's Decathlon	Ocean	●	●				●	
6	●	6	Gremlins	Adventure Int.	●	●	●	●			●
10	▲	7	Bruce Lee	US Gold	●	●				●	
13	▲	8	Moon Cresta	Incentive	●	●					
NE	□	9	International Basketball	Commodore		●					
12	▲	10	Combat Lynx	Durell	●	●	●	●		●	
8	▼	11	Football Manager	Addictive Games	●	●	●	●			●
21	▲	12	Pitstop 2	CBS		●					
NE	□	13	Shadowfire	Beyond	●	●					
40	▲	14	Starion	Melbourne Hse	●						
20	▲	15	Raid over Moscow	US Gold	●	●					
NE	□	16	Gyron	Firebird	●						
11	▼	17	Air Wolf	Elite	●	●					
37	▲	18	Everyone's a Wally	Mikro-Gen	●	●					
RE	□	19	BMX Racers	Mastertronic	●	●					●
7	▼	20	Impossible Mission	CBS		●					

SPECTRUM

BBC

COMMODORE



Top Ten

- 1 Spy Hunter US Gold
- 2 World Series Baseball Imagine
- 3 Soft Aid Various
- 4 Shadowfire Beyond
- 5 Starion Melbourne Hse
- 6 Gyron Firebird
- 7 Bruce Lee US Gold
- 8 Everyone's a Wally Mikro-Gen
- 9 Moon Cresta Incentive
- 10 Chuckie Egg 2 A 'N' F

Top Ten

- 1 Castle Quest Micro Power
- 2 Elite Acornsoft
- 3 Brian Jacks' Superstar Challenge Martech
- 4 Combat Lynx Durell
- 5 Wizardore Imagine
- 6 Blockbusters Madsen
- 7 Manic Miner Software Projects
- 8 Football Manager Addictive Games
- 9 Mini Office Aardvark
- 10 Colossal Adventure Level 9

Top Ten

- 1 Soft Aid Various
- 2 International Basketball Commodore
- 3 Pitstop 2 CBS
- 4 World Series Basketball Imagine
- 5 Impossible Mission CBS
- 6 Air Wolf Realtime
- 7 Moon Cresta Incentive
- 8 Cauldron Palace
- 9 Spyhunter US Gold
- 10 Gremlins Adventure International

PERIPHERAL

Ray Elder reviews Cumana's Beta Disc Driver Interface. Read on for details

This new interface marketed by Cumana will be recognised by old hands as the well tried and tested unit manufactured by Technology Research. As such it has been around for several months and early teething problems have been sorted out.

The unit is a large ABS plastic box which lies flat

drive as well and this must have a power supply fitted. These cost from around £150 to £500+ depending on the type and capacity. Cumana sells a wide range of suitable drives, and up to four can be connected.

So what's it like to use?

Because there is no accepted standard at the moment, there being four or five alternatives, there is no commercial software available. If you want to use one of these interfaces then you'll need to have a working familiarity with BASIC, or at least know someone who has, in order to convert tape-based software.



behind the Spectrum and connects to the user port. It is compatible with Sinclair's Interface II and the Microdrives and it will also operate with most other peripherals either fitted in front of it or added on to the full through port at the back. The only incompatibility I found was with the VTX5000 modem; this is because both the modem and the interface initialise and take control on power up and this confuses the Spectrum! Any other equipment which also switches in on power up will probably not work with it.

On the right of the interface is the connection to the disc. This is a standard Shugart type, the type fitted on BBC micros, and on the left is an alternative power socket. If the interface is connected directly to the user port then it obstructs the power supply socket on the Spectrum. If it is not the first item fitted then you have a choice of socket to use.

When purchasing this interface it's worth remembering that you will have to buy a disc

As soon as the machine is switched on the Beta puts its own message on the screen and asks for a disc password. This system is the only one I know which allows user security of files in this way. Each disc can be given its own password and unless this is entered before attempting to use it, it won't let you access the files.

Once the password has been entered then the screen shows the Disc Operating System (DOS) prompt, this is A> and while in this mode all the DOS commands can be used. Getting in and out of the DOS is very easy. To get to the normal Spectrum operating mode from the DOS you type RETURN <enter> and to get into the DOS RANDOMIZE USR 15360 <enter>.

All the standard cassette-based commands — LOAD, MERGE, SAVE, SAVE "name" LINE no — are provided except for VERIFY. This worried me at first but I can honestly say that I have never had a failed save on this system. An extra bonus is that adding a

third number when saving machine code provides it with an auto run address as does LINE for BASIC.

The built-in Spectrum commands CAT, which gives a list of the files, ERASE to delete a file, and MOVE to compact the files to make efficient use of the disc storage, make house-keeping easy.

One omission is the sequential file capability which the microdrive supports by OPEN # and CLOSE#. This is a big disappointment to producers of databasetype programs; however all is not lost as the PEEK and POKE function allows access to specific blocks (sectors) on the disc. Although this is rather advanced programming it's a very powerful feature.

A utility disc is supplied. All discs have to be formatted before use, and a program to do this as well as programs to backup and copy files are included.

The manual booklet is very well written and I found it easy to understand. Plenty of information is given in a simple and straightforward manner, including how to use the DOS from machine code.

Transferring programs is a task which varies greatly depending on the type and how many anti-piracy devices have been used. The great majority of programs could be transferred as the interface only uses 128 bytes of Spectrum memory. Tasword II and most serious programs, however, will transfer fairly easily and, as this is likely to be the kind of program a disc buyer will intend using, it is simply a case of loading it, breaking it and changing all the LOAD/SAVE lines to DOS commands as the manual instructs you.

I have been using this interface for about six months and can recommend it as being reliable and very fast — 20 seconds for an average 48K program. **R.E.**

Price: £99.95; with disc drive £219.95

Manufacturer: Cumana

Address: Pines Trading Est, Broad St, Guildford, Surrey





Tape problem

With reference to Mark Bayley's troubles with Virgin's Sorcery (HCW 108), I have had exactly the same problem with this tape. However, I blamed the recorder I was using (an el cheapo) so I went and bought another recorder for £20. After all, any cassette will work with a computer — mine is an MSX JVC HC7 — but it wouldn't load.

After trying various other cheapish cassettes I had had enough. I went into my local (Japanese, sigh) electrical shop and bought a Sanyo DR202, went home, plugged it in and loaded Sorcery sides one and two on a volume setting of seven — no problem.

Before this incident I would not have advised anybody to waste their money on an expensive dedicated recorder, but I have learned my lesson the hard way. And for all those who can afford a good dedicated recorder (I couldn't afford the JVC 105 unfortunately) I would say: buy one.

I went to have a look at the CPC464 before buying my JVC and didn't buy it because it looked and felt, to me anyway, a bit on the cheap side, so I would advise Amstrad to fit a decent cassette deck to the CPC464 especially with the rise in flash and turbo load tapes beginning to come out, or I fear this will not be the last time this problem occurs.

D Pattenden, London

If at first you don't succeed

I bought Softaid for my C64 (apart from the charitable reason) because I particularly wanted Gumshoe by A 'n' F, which I had heard was an excellent game.

The first Softaid tape I purchased by mail order. All games loaded except Gumshoe. I wrote back, got it exchanged — still Gumshoe wouldn't load. I didn't give up easily, I tried over and again to load it — using headcleaner and removing TV connection plug, leaving the cassette recorder to go it along. No joy. (I couldn't return this tape because foolishly I'd written on the inlay card the appropriate numbers for game loadings.

That's it, I'll go and buy the original Gumshoe for £7.95. (I'll have no trouble then, thought I). Bought it home — it wouldn't load. Was my computer at fault? I took it back to the shop and asked the woman to try it on their computer. Up came the dreaded and by now familiar words "Loading error, please switch off and try again".

The woman offered to try a further Gumshoe tape, in fact she tried another five copies and not one of them loaded. So, unfortunately, I chose to accept (after paying a little extra cash) Pitfall II as an exchange. I say unfortunately because after playing it, I didn't like it. Any-reader care to swop a loading Gumshoe for Pitfall II?

A week later I saw Gumshoe reduced in a sale in another computer shop. Lucky me! I asked the man in the shop to test it (I'm no fool). Guess what? Yes, loading error... He had another two copies of the game which he tested. Wait for it — none of these worked either.

I'll buy a new Softaid tape and give my other copy away (hang the expense), I thought. This I did. The record shop from which I bought the tape didn't sell hardware, so there were no testing facilities. I took it home — it wouldn't load. Took it back, got another tape — it wouldn't load.

I'm on my way back to the shop today for yet another copy. I'll get Gumshoe if it kills me!

By the way, my name isn't Jonah. I'll keep you up to date with my Gumshoe trail. Is this a record breaker?

Karen Rolph, Heaton

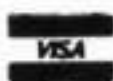
Mike Fitzgerald of A 'n' F replies: "I'm very surprised Karen has had so much trouble. She's been very unlucky. We generally don't have very many problems with loading."

"I suspect the problem may be in the head alignment of the cassette recorder and its compatibility with the recorder used in duplication. When we do get returned tapes, 98% of the time we can load them here, and first time, so the fault's not actually in the tape, but in the variety of cassette recorders."

"This is a very difficult area. If Karen would like to get in touch with us, we'll do everything we can to help her, including copying the software directly to a Commodore 64 deck, so that she gets a master tape. We'll have a look at her tape, even though she's written on the inlay card, and we'll even go so far as to bring her over here and make her own copy, if she wants. She's obviously gone to a lot of trouble to get hold of Gumshoe, so we'll do our best to make sure she gets a working copy."

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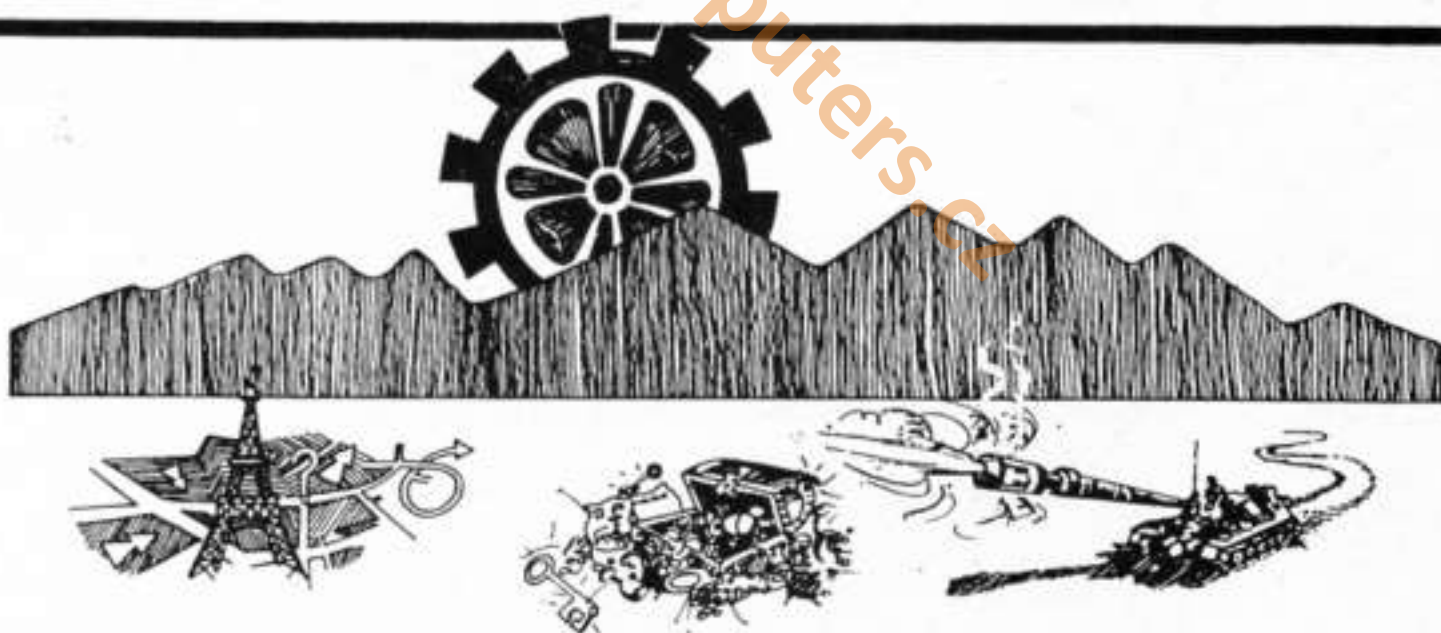
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Piracy . . . by software houses?

I find it somewhat amusing to hear software houses pleading about piracy when they are sometimes the biggest pirates around.

Apart from "official arcade games" and the more original software, a good deal of computer games are basically clones of arcade games or another company's original idea.

Several companies do little else but produce endless Kong, Space Invader, Pac-Man, Galaxian, and Centipede variations. Admittedly all computer games have arcade roots, but it is possible to improvise on a basic idea rather than simply copy it.

The most major area, though, of copyright being ignored by the software houses is the use of music within games. Rather than buy the rights to the music they prefer to ignore the publishers and composers

and rip off the music note for note (or throw in the odd bum note for camouflage).

Alligata has a new game for my computer, the C64, called Bigger Goes to Hollywood. As a game it's highly original, but I've since heard that it uses several theme tunes from Star Wars, Superman, Jaws and I think ET.

But are these licenced? Perhaps Alligata will be able to answer that honestly.

All games use music — the more enterprising software houses use original tunes. But it is nice to hear a familiar tune in a game, but it has to be understood that they are infringing copyright as much as the people who make copies of their games. So let them practise what they preach!

Andy Clarke, Baddesley Ensor

Alligata was unavailable for comment.

The price is wrong

I am a 14-year-old Texas owner and have had my computer since Christmas 1982. I have 14 commercial games which cost a total of £200, not forgetting Extended BASIC and two non-game cartridges at about £80.

It is prices like this that killed the TI. Companies like Parco and Arcade who give great support are certainly not helping by charging £20 a game.

Arcade is charging £25 for a dead game like Frogger. Parco is also charging £25 for a rip-off version of Pole Position. I'm not blaming Parco and Arcade as much as it seems, as I know they have to make a profit, after buying the games from the makers.

It seems the blame rests on the people who manufacture the cartridges. Let's take for example Atari, who sells Atari HCS/VCS cartridges at £10, Spectrum games at £8 but Texas cartridges at £20.

If I had a Spectrum, I could obtain hundreds of games for the price of a blank tape by copying friends' games. Cartridges can't be copied between friends — each one must be bought individually. Many TI owners share my view.

I would like to get in touch with other TI owners in my area so that we can get together and organise cartridge swaps.

Mark McGurn, 26 Sandiford Rd, Holmes Chapel, Cheshire CW4 7BU

Challenge on Match Day

I'd just like to say that if R Wibberley thought that Neil MacLennan did well on Match Day, then I've done even better, because I've beaten it 10-0 on amateur and 11-0 on both professional and international. So what I'd like to say to Neil MacLennan is: beat that!

Jason Hayward, Heckmond-wike

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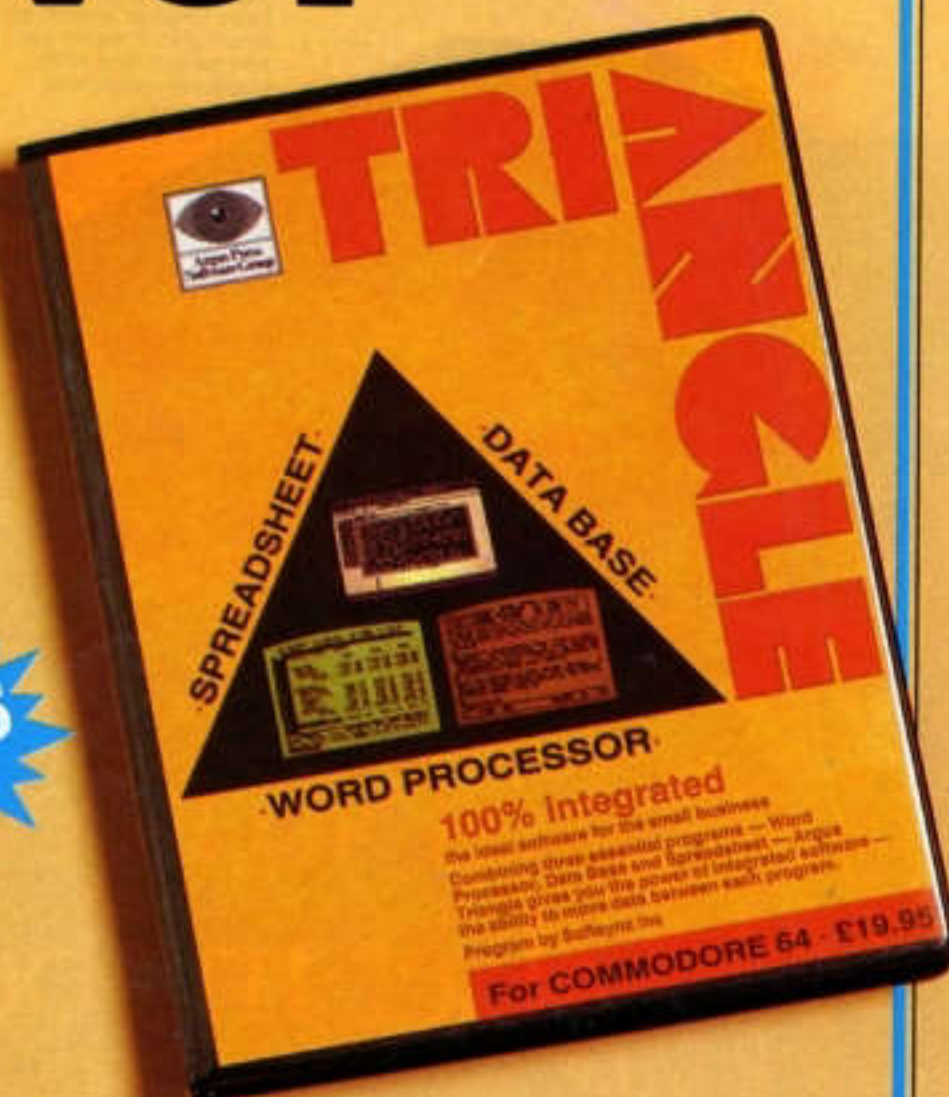
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high speeds is a feature, as is a full on screen memory editing facility which allows inputs in either hexadecimal, ASCII characters or assembler mnemonics.

***MON**, Serves the same function as *HEX, but the display is in disassembled opcodes, rather than *HEX. The editing and scrolling facilities are the same as for *HEX. An additional feature of *MON is the ability to directly follow JSR's, branch's etc.

***DEBUG**, A full featured program debugging aid, allowing the programmer to see the most intimate details of the program under examination. Features, variable speed, single stepping, breakpoints, continuously updated disassembler, selective HEX dumps (up to 6) plus current stack, all continuously displayed on screen, plus many other features.

***DISCED**, A comprehensive disc sector editor enabling any sector of a disc to be read, inspected, edited and written back. It will work with any 40, 80 or dual formatted single density disc.

***DGET**, Searches a disc for all occurrences of a string or group of bytes.

***REL**, Enables machine code to be easily moved around in memory, automatically adjusting JSR's, JMP's etc.

***SLOW**, This command causes the entire computer to slow down to any variable speed between 1 and 255. This can allow the in depth study of graphic's methods etc.

***EDIT**, A dynamic basic screen editor, cursor controlled with full forward/reverse scrolling of listing, incorporating insert/delete lines, insert/overwrite characters, enter line from any position after editing.

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***REF**, Produces a cross-reference listing of the current basic program. All variable names are listed (WITHOUT HAVING TO RUN THE PROGRAM!) in alphabetical order followed by the line numbers on which they are referenced. Numeric items can also be crossed referenced if desired.

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*EDIT, *EDKEY.

**MACHINE CODE
COMMAND LIST:**
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*CROM, *SLOW, *GET,
*PHEX, *GO, *MON,
*HEX, *SPACE, *DGET,
*DISCED, *DIS, *DEBUG,
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