

HOME COMPUTING WEEKLY

AN ARGUS SPECIALIST PUBLICATION

May 7-13 1985 No 111 45p

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this!**



**Five of the
worst from
Firebird**

Sceptics slam school report

The government report on maths in schools has provoked an angry backlash from leading educational software houses. The section on the use of microcomputers in schools, which advocates that programming be taught in maths lessons, if it's not taught elsewhere, has caused an uproar.

But with the current cutbacks in the education budget, coupled with the teachers' pay dispute, which is still unresolved, the recommendations are seen as ill-timed.

"It's no good the government buying a BBC computer for a school and expecting them to buy software from their already diminished finances," said Andrew Welham of Penguin Software. "They have to spend the money on books."

Mathematics from 5 to 16, published by the Department of Education and Science, discusses maths teaching methods and acknowledges that calculators and microcomputers are essential resources. It stresses the importance of theory over practice. "Microcomputers are a powerful means of doing mathematics quickly and sometimes in a visually dramatic way."

Mr Welham was sceptical about the practicality of the recommendations proposed: "The only way the report will have any effect is if the government is prepared to put more money into this area," he said.

He went on: "We've had about 20 reviews of our



software in recent months saying how wonderful it is. It must be very frustrating for teachers to see these reviews and have no funds to buy the

programs."

Implementation of the proposals seems unlikely in view of the level of finances available to local educational authorities.

Player of the Year

Duncan Slarke of Huddersfield has become Home Computer Champion of the Year in a competition organised by The Observer and Quicksilva.

Thousands of youngsters entered and the final 16 were invited to a play-off at the London Metropole Hotel. Finalists first had to compete in a Fantastic Voyager tie-breaker

and only the six highest scorers went on to design a game using Quicksilva's Game Designer.

Duncan was judged to be the best of the six. He wins a trip to the Epcot Center in Florida, a Sinclair QL and holds this year's trophy. Sinclair also provided QLs for three runners-up.

Alligata's
Night World
first review

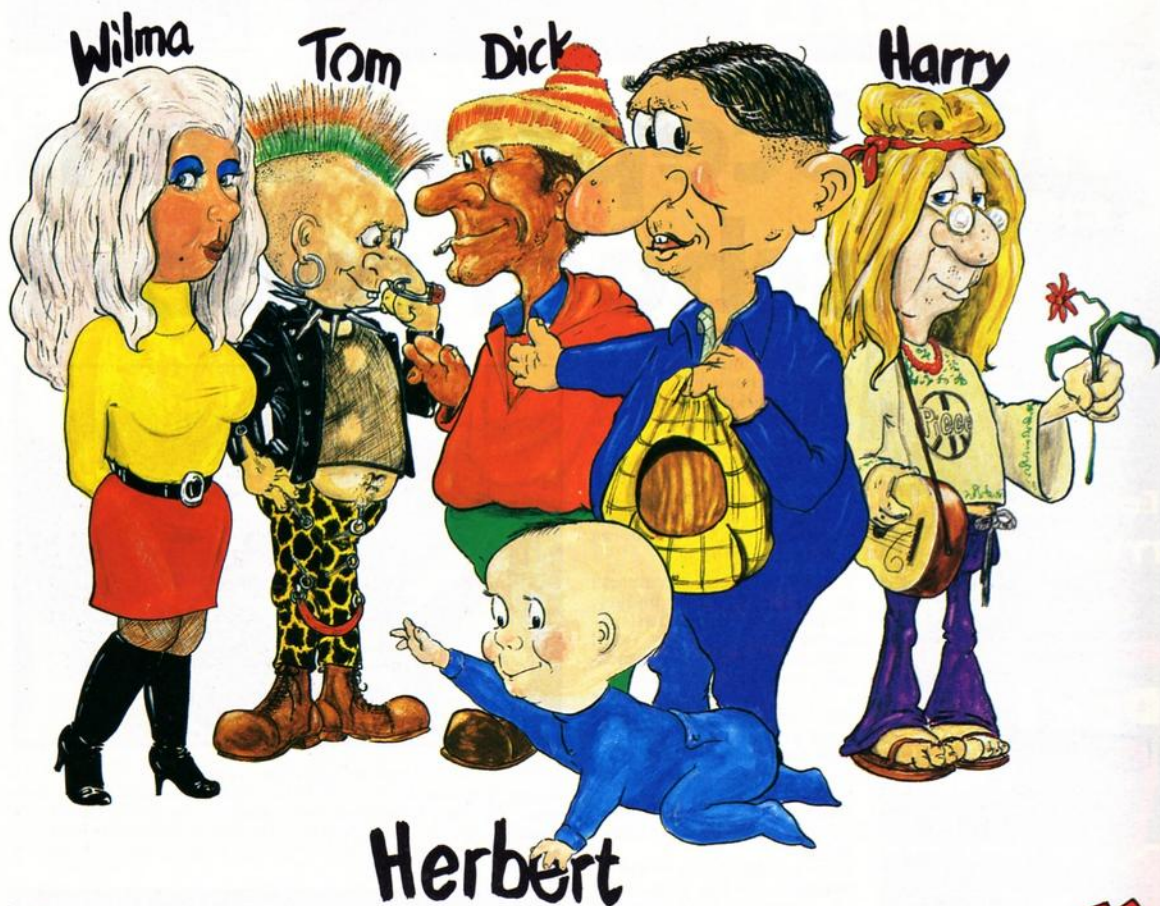
Treats to
type in . . .

. . . squashed frogs,
mutant beach balls
and rippling
muscles

Thumbs up for
Micro Pulse's
ROM Box

We flipped
over A'n'F's
Slave ROM

Meet the Gang!



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Available shortly on Amstrad CPC 464

MIKRO-GEN

44 The Broadway, Bracknell, Berks. 0344 427317

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 Group Editor Wendy Palmer
 Copy Control Kerry Fowler
 Ad Manager Dominic Forlizzi
 Asst Ad Manager Ian Atkinson
 Classified Advertising David Horne
 Publishing Director Peter Welham
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Soapbox

The government's recommendations that computer programming be taught in schools which don't feature computer studies, has caused quite a commotion among software houses. Educational software houses bemoan the fact that there is no profit to be made in this market, and judging by this government's performance, there won't be much hard cash flowing from the treasury coffers.

So where's the money coming from? As Andrew Welham of Penguin pointed out, unless the government is prepared to invest some money, it's a losing business. No company is prepared to invest time and money with no return.

Like the cervical cancer screening project, where local health authorities are required to find the money to computerise their systems from within their own resources, I have the sneaking suspicion that the government won't be handing out special grants. Instead, money which is already allocated for books and other materials, will have to be appropriated for software. It seems highly improbable.

Neither nurses nor teachers are happy with their salary systems. With the current tightening of belts and slashing of resources, it seems hypocritical that this government should make what, on the face of it, seems perfectly reasonable proposals — and then not be prepared to put their money — or rather, our money — where their mouth is.

Liz

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Coming Soon...

- Take a close look at Triton's Quick Disc Drive
- Cumana's Beta Disc Drive interface reviewed
- Keep on trucking on the TI-99/4A

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BASIC LIVING

by Jon Wedge and Jim Barker



S
W
E
N**Wally aid**

Mikro-Gen has come to the aid of frustrated Everyone's a Wally players. Starting on May 1 a Telephone Tranquilliser service has been oating on 0334 56447, issuing relevant clues to Mikro-Gen's games.

For those who can't afford the 10p for a call, here are some clues to help you with Everyone's a Wally.

What should Wilma do when she has read the books? Dick should visit the zoo but make sure he gets the nut first. If he takes the plunger he can fix the Fountain. If Harry makes cement with the sand and bucket of water he can build the wall with his trowel. Harry should use his screwdriver to replace the bad insulator on the top of the pylon, but you'll need to make a phone call first.

Mikro-Gen, 44 The Broadway, Braknell, Berks

Check your spelling

If you have problems with your spelling, you'll need all the help you can get. Now Tasman is introducing a spelling checker program on disc for the Amstrad. Called TasSpell, it will be available in the autumn.

And the current Tasman range for the Amstrad CPC464 will be available on the new CPC664.

Tasman, 17 Hartley Crescent, Leeds LS6 2LL

Printer on the move

Portability is the keyword for the new Epson P-40 printer. "Ideal for both the home computer enthusiast and the executive on the move," claims VSI Electronics.

Costing under £100, the P-40 is available with parallel or serial connections, which means that it's compatible with BBC, C64, Spectrum and Dragon.

And included in the purchase price is a starter pack of adaptor, guide to use and sample programs.

The printer runs on rechargeable batteries and can handle up to 80 characters per line, with a print speed of 45 cps.

Printer on the move — Epson P-40

Helping hand for others

As a follow-up to the recent Soft-Aid project for the Ethiopian Appeal, HCW has made a donation to Oxfam.

No money changed hands however — the donation was in the form of a huge box of old computer cassettes. The cassettes all contained programs from issues of HCW over a year ago and they will be sold, as blanks, through London Oxfam shops in the near future.

Another project which aims to help those in most need is the ASP Guide Dog appeal.

As Europe's leading publisher of consumer computer magazines we receive sacks full of mail each day. The stamps from all these letters are now

being collected and sold in aid of our guide dog.

We need a total of over half a million stamps to sponsor the dog and we would like to invite you, our readers, to help too.

If you receive a large amount of mail or if you are prepared to save the stamps from your personal mail we would be pleased to add them to our collection.

Please cut out the stamps, leaving approximately one-centimetre around each edge, pack them in an envelope and send them to: Guide Dog Stamps, Home Computing Weekly, No.1 Golden Square, London W1R 3AB.

Now you have no excuse not to write to us. You can even be assured that you will be helping charity with each letter you send.

Half price

Aries Computers, manufacturers of ROM boards for the BBC, has halved the cost of its RAM chips. Now the 6264 8K x 8 static RAM chips cost £10 plus VAT.

You can use them to supply either 8 or 16K sideways RAM on a sideways ROM board for the BBC, and you can also use them as a printer buffer.

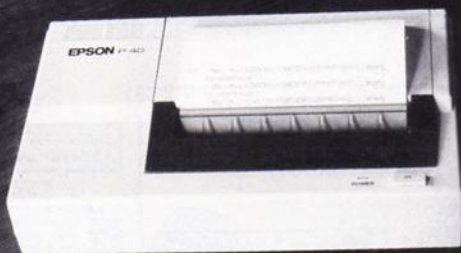
From Commons to Lords

The Copyright (Computer Software) Amendment Bill is continuing its passage through the

British judiciary system. It received an unopposed third reading in the House of Commons on April 19.

Now it will pass on to the House of Lords, where it will receive its first reading this month. Donald MacLean, FAST chairman is optimistic about its chances: "A change in the Copyright Act was one of the main priorities when FAST was established last July. We are now increasingly confident that this major objective will be achieved within 12 months of the federation's campaign."

FAST, Chancery Hse, Chancery La, London WC2A 1QU



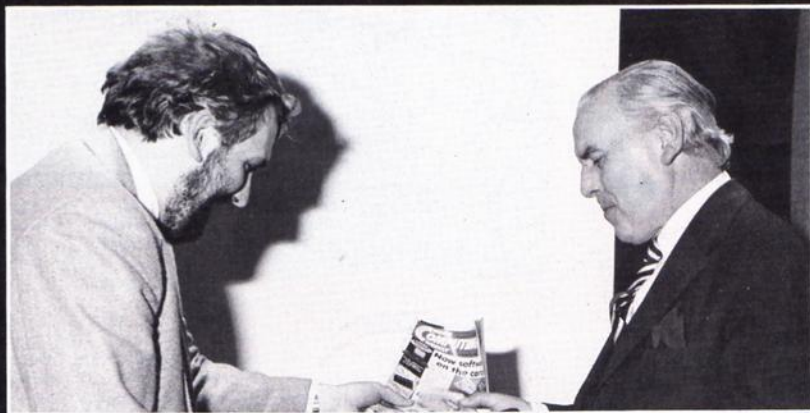
Do you mind?

At the recent launch of Dk'tronic's Minder, George Cole, who stars as Arthur Daley in the popular Thames TV series, collected £1 from everyone present before he would hand over review copies of the game. All the money will be donated to Thames TV's Telethon Appeal.

HCW editor, Dave Carlos presented George with a recent issue of the magazine.

If any reader can think of an apt and witty caption to commemorate this momentous event, send it to us and we'll try and print it on the readers page.

Dk'tronics, Unit 6, Shire Hill Ind Est., Saffron Walden, Essex CB11 3AX



New Atari launched

The Atari 130XE, has recently been launched in the UK, one month ahead of schedule, according to Atari.

It is based upon the 6502C microprocessor and is

compatible with software for the Atari 400, 600, 600XL and 800XL. It has 128 RAM and 24K ROM and features a built-in programming language and an integrated diagnostic self-test. It also includes a I/O serial port, a composite video monitor socket, cartridge slot and two controller/joystick

ports.

Atari claims that the graphics capabilities allow 356 colours to be displayed on the screen at once.

Programming allows simple manipulation of display lists, scrolling, sprites and other facilities all accessible from Atari BASIC or machine code.

The 130XE is compatible with peripherals designed for any Atari computer including disc drives, printers, modems, turtles and robots and costs around £179.

Atari, Atari Hse, Railway Terrace, Slough, Berks SL2 5BZ



The new Atari 130XE

S
W
E
N

Printer prices

Dean Electronics is offering special prices on two printers.

The Alphacom 42, 40 column printer now costs £49.95 and the Alphacom 81, 80 column printer is £74.95.

For mail order you should add £2 postage and packing.

Dean Electronics, Glendale Park, Fernbank Rd, Ascot SL5 8JB

Sanyo freebie

Sanyo is launching a new promotion to increase sales of its MSX computer: bundled

Pirate sunk

Roger Wood of New Generation software recently obtained an illegal copy of New Generation's game Knot in 3-D when he answered a mail order advertisement. He also received Quicksilver's 3-D Ant Attack, a

pirate copy at half the normal retail price.

Anthony Yarnold of Mill Hill, London was fined £200 for applying a false trade description to a cassette and £200 for falsely describing another. He was ordered to pay £190 costs.

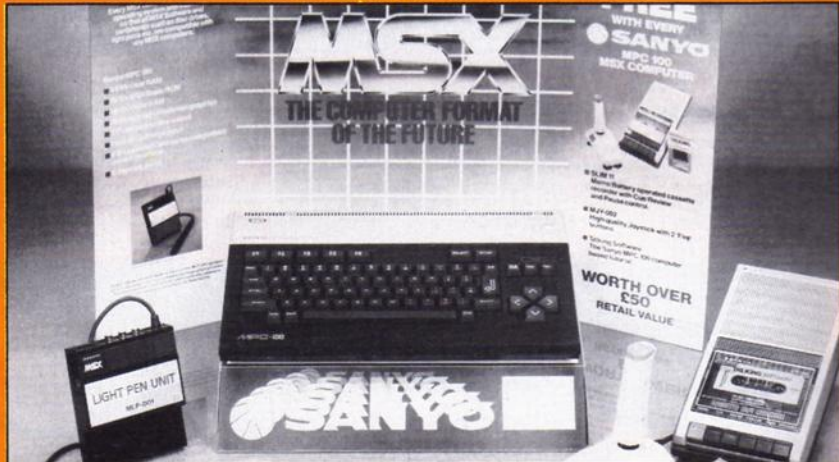
with each machine will be a cassette recorder, joystick control and Talking Software audio/data tape tutorial pack. All in all, the package is worth over £50.

The feature which sets the Sanyo MSX apart from the crowd is the facility to connect a light pen. As well as a standard keyboard, the machine features

10 function keys and full cursor control.

John Rowlands, merchandise controller of W H Smith, said: "Despite a fairly slow start we are convinced that MSX is here to stay. I am certain that this latest offer from Sanyo will prove to be a great success."

The Sanyo MPC100 costs £299.95.



Sanyo MSX plus freebies

Software update

New Generation recently launched its Jonah Barrington Squash at Wembley, on the same day as the squash finals. And the company took the opportunity to announce a new game scheduled for the summer: Amazon Warrior is an arcade game for the C64.

Geoff Sumner is the author, and New Generation is proud of the music he wrote to accompany the game. Mr Sumner attended the Royal Academy of Music and has won the Royal Philharmonic prize for composition.

The 3-D graphics set the scene for your struggle through the jungle. You must watch out for snakes and head hunters, vampire bats and quetzalcoatus. Sounds rather like Indiana Jones . . .

Title	Machine	Price	Publisher
Amazon Warrior	C64	£7.95	New Generation
Ghostbusters	Amstrad	£10.99	Activision
Best Four Languages	BBC/ Electron	£19.95	ASK
Best Four Maths	BBC/ Electron	£19.95	ASK
FIG Forth	Amstrad	£19.95	Kuma
Devpac80	Amstrad	£39.95	Hisoft
Blogger	C16	£6.95	Alligata
Nightworld	BBC/ Electron	£7.95	Alligata
Confusion	Amstrad/ Spectrum	£6.95	Incentive
Kissin' Kousins	Atari	£6.95	English
Confidential	Spectrum	£6.95	Radar
Dark Tower	C16	£5.95	Melbourne Hse
Bounty Bob Strikes Back	C64	£9.95	US Gold
Hi Bouncer!	BBC/C64	£6.95	Mirrorsoft
Star Seeker	C64/ Spectrum	£9.95	Mirrorsoft

FIRMWARE

**Richard Seeley
takes a close look
at A'n'F's
Slave Utility ROM**

Any company releasing a ROM on to the BBC market at this stage in its life either has suicidal tendencies or has a product that is truly incredible.

This ROM has one of the longest command lists of any I have ever seen. It is a combination of a BASIC programmer's utility and a machine code monitor. There have been attempts to combine the two before but as these have been based on the 8K 2764 chip they have always lost more than they have gained.

This is a 16K 27128 chip and this allows enough space for the two concepts to lie side by side very well indeed. The 68-page A5 manual supplied is a comprehensive document and quite well written. The tight rope between too much and too little detail has been walked with skill and flair.

The BASIC utilities and their syntax are detailed in Figure 1.

```
BAD      (char)
EXTEND   (char)
PACK     (byte)
SORT     array (no) (start)
PAGE     (page) (R)
ENVELOPE (no)
FIND     name/kywrđ (no)
REPLACE  name1 name2
XREF     (N)
TRON     (lno)
TROFF    (lno)
CHAR     (first) (last)
EDIT     (lno)
```

Figure 1.

All the vital utilities are included, as well as some I haven't seen anywhere else. One of these is *ENVELOPE which will give a read-out of any envelope currently defined for editing or saving in a program. The enhancement of the trace facility, *TRON and *TROFF, is also very useful and doesn't disrupt the program in the same way as BASIC's TRACE command.

The BASIC line editor is

```
MOVE     first +len/last to
CROM     (no/rsp)
EDKEY    (first) (last)
SLOW     (diy)
GET      string/'hex'
PHEX     first +len/last
GO       addr
MON      (addr)
HEX      (addr)
SPACE    (drv)
DGET     string/'hex'
DISCED   (drv)
DIS      (first) (+len/last) (sw)
DEBUG    (addr)
CRC      fsp first +len/last
REL      first +len/last to
```

Figure 2.

slightly strange at first but has all the facilities you could ever need. You can kill lines, add them and amend them — all without any reference to the COPY key. The screen is arranged in such a way that the beginning of each line is displayed and the rest of the line is off the right hand of the screen. This allows you to find the line you want very quickly, as each program line takes just one screen line and any extra characters are scrolled into position when required.

method.

The disc sector editor and disc searching routines are also well executed. The MODE 3 screen can be difficult to read but at least it gives you the option of aborting the command if this will overwrite parts of a program in memory.

As you can see from the figures, there is a whole range of other commands. This chip can replace at least two and probably three others that you might need to get the same facilities. As such it is excellent value for anyone who doesn't yet own a utility EPROM but I can't see those that do going out in large numbers to buy it. I do feel that this is a very well thought out chip with the user in mind, almost every possible option is given and each drawback has been considered and well thought out.

R.S.

Price: £39.95

Publisher: A'n'F

Address: Unit 8, Canalside Est,
Woodbine Street East,
Rochdale

Figure 2 shows all the machine code and disc users utilities.

It is interesting to see that this chip has a monitor, a hex display, and a debug facility as separate commands. The more usual arrangement is to have all these available from the 'front panel' display. Each of these commands provides a very colourful and informative display and I find them just as easy to use as the more usual

BBC



Micronet modems and fame are on offer if your screen is a winner in our free competition

WIN A MODEM!

Using a modem you can connect your computer to Micronet 800 and its thousands of pages of computer news and views, updated daily. In our free to enter competition you can win a modem for your computer and a year's subscription to the Micronet service.

Micronet is a part of Prestel's viewdata service and offers thousands of pages of information which you can access simply by dialling up the central computer using the phone number supplied.

You can order books, kitchen equipment and even flowers by filling in simple response frames. News about computers is updated on a daily basis and you have a chance to comment on what you read.

Another service that Micronet offers is its technical helpline. Experts are on hand to answer your queries — electronically, of course.

The first prizewinner will receive a modem suitable for his or her computer (choose from C64, Spectrum and BBC) and a year's subscription to both Prestel and Micronet 800, in total worth up to £165.95. The

second prize is a modem and a three-month subscription, worth up to £116.95 and the third prize winner will receive a modem worth up to £99.95.

All you have to do to win these fabulous prizes is design a screen suitable for use on Micronet 800. The viewdata standard is for a screen of 25 lines, each with 40 characters. As you can see from the photographs, these can be designed using block graphics to make attractive pictures, which can then be combined with the text.

In order to make the task more simple we have produced a grid for you to enter your design on. Each cell can be divided into six smaller cells, as shown on the grid, and these blocks are used to make up the graphic designs. If you study the photographs of Micronet screens you will soon get the idea and be designing your entries within seconds.

With such fabulous prizes and the chance to enter the world of computer communication on offer, why don't you get designing right away. You could be our first prize winner!

How to enter

- Study the photographs and decide which type of screen you wish to design. Some are menu screens, meant to entice you to look further, whilst others are meant to give information.
- Draw your Micronet screen design onto the grid, which also acts as your entry coupon. Each entry should be in a separate envelope and on an official entry coupon — not a copy.
- Send your entry to: Micronet 800 Competition, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. Closing date is first post on Friday May 17, 1985.
- Prizes will be despatched by Micronet 800 within 28 days of publication of the issue containing the results of the competition.

The rules

Entries will not be accepted from employees of Argus Specialist Publications, Micronet 800 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.

No correspondence can be entered into and the editor's decision is final.



Name.....

Address.....

.....

.....

.....

.....

Type of computer.....

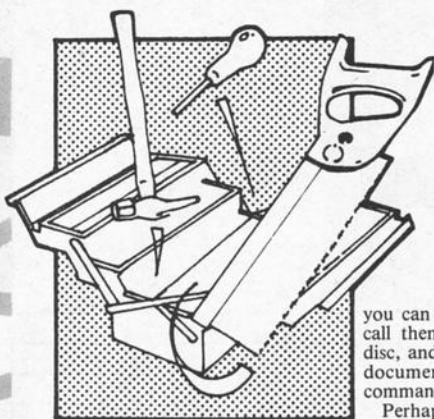
.....

• Send your entry to: Micronet
 800 Competition, Home
 Computing Weekly, No.1
 Golden Square, London W1R
 3AB. Closing date is first post
 on Friday May 17, 1985.



A large grid area for writing an entry, consisting of approximately 24 columns and 39 rows of small squares.

SOFTWARE

**Tasword 464-D**

The cassette versions of Tasword 464/Amsword Word-processor received rave reviews when they were released last September. Now the official disc-only version has arrived, and it's even better!

For the uninitiated, using the screen as your "paper", you type text into your machine. Don't worry about typing errors, just type over the top and they disappear; don't worry about fitting words on to a line, Tasword does it for you, and you can choose either right justified or ragged text just like a typewriter. If you want to alter a sentence then it's there on the screen; make any alterations you want, reshape your paragraph, then away you go again.

Blocks of text can be moved around and copied to another place; you can reset margins, print headings, auto number pages, and print footnotes easily and automatically, then save the lot onto disc. When you want copies printed, your printer obliges, so documents can be stored on disc to be recalled whenever you need them, without having to go through all the pain of having to type them again. And perhaps the nicest thing, Tasword is very kind to lousy typists like me! No having to start all over again when I make a real mess of my typing.

All the above features of the earlier version are in the same place, but now when accessing the menu, another section of program loads from disc. Adopting this approach means that there is almost twice as much room for text, over 20,000 characters. If a really long document is called for, occupying several full text files,

you can command Tasword to call them one at a time from disc, and print them as a single document with no further commands.

Perhaps the most impressive addition is the data-merge facility. You first create a file of names and addresses, labelling each part with a code, up to the maximum file size. You then type one letter, to be sent to your names, and Tasword will print all of them with the appropriate names and addresses in the correct places; a massive saving in time. But there's more! It can do it intelligently, thus you can specify conditions which would lead to letters only being printed to certain customers, and lines of customised text if you want them. Any number of different standard letters can be used this way, and by including other details in your name and address list, you could choose to write to particular areas or customers who bought certain products. You can even print up the address labels for the envelopes.

The whole thing is explained very clearly in the manual, with excellent self-teaching tutorials, and an on-screen help page. Users with two drives are also catered for, and the program will interface with Masterfile 464 through additional software for more complex use.

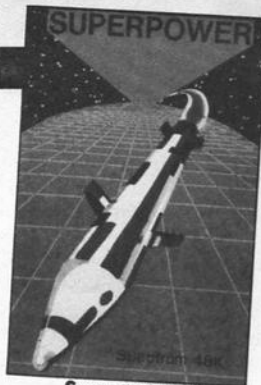
A comprehensive and user friendly package for both home and professional use at a price which makes technology accessible to everyone. Highly recommended. **D.M.**

Price: £24.95

Publisher: Tasman Software

Address: Springfield Hse, Hyde Terrace, Leeds LS2 9LN

AMSTRAD

**Superpower**

Superpower is far from the action packed arcade game suggested by the front page of the cassette insert. It is a slow-moving board game for two players. The game, a sort of 20th century chess, involves some skill and strategy. However, the two players have to be human; there is no option for the single player to play the computer.

Few instructions appear on the cassette insert, apart from the fact that LOAD "" CODE is the command required to load the program. Despite the load bytes command, the game appears to be written entirely in BASIC.

Several pages of instructions are available on the screen once the program has loaded. Fortunately, these are available at any stage through a help option, as the game is quite complex for beginners.

The game itself occupies a board containing plain squares. Each square represents one country. Each country starts with an equal number of resources; money, people, weapons, etc, and each player receives an equal number of countries. The players take it in turn to make decisions over the allocation of resources and the military within the countries under their control.

The aim is to invade and take over countries occupied by your opponent. The winner is the one who takes over the entire world. This can take quite some time, so a save game option is available.

This is a novel board game for those who like that kind of thing, but poor graphics, and no one-player option would limit its appeal. **D.N.**

Price: £4.95

Publisher: Howard Marketing

Address: PO Box 21, Felixstowe Suffolk

SPECTRUM





Grand National

The annual event at Aintree forms the basis of a comprehensive computer game.

The small print on the cassette insert has to be read very carefully to appreciate all the finer points, since it covers a lot of the details of horse racing.

The first part involves you, as a jockey, making a selection of a horse to run in the National from horses trained at your stable. You also have the chance to bet — you start with £1000 — on your horse, and any other you fancy. You make your choices through a simplified form rating, a knowledge of the conditions, and the style of the horse.

Despite the realism of the game, betting is restricted to "on the nose" bets, but 10% betting tax is deducted from the bets you place.

Once you select your horse, the next stage commences; the race itself. This is meant to be of arcade standard. You have control of your horse, moving it left or right, using the whip, and deciding when to jump fences. Despite excellent graphics, movement is very slow, and the arcade enthusiast may fall asleep during this piece of inaction.

On the review copy, the horse failed to respond to the jump keypress, so fell at the first fence on every try! The reviewer makes the generous assumption that such a basic omission can't be present on copies available for sale. But, overall, players will need to be horse race enthusiasts to gain much pleasure from this game. **D.N.**

Price: £6.95

Publisher: Elite Systems

Address: 55 Bradford St, Walsall



Killer Gorilla/ Gauntlet

Two games for £1 more than the price of Amsoft's usual offerings — and certainly up to the standard of many of them — Micropower presents its versions of Donkey Kong and Defender.

Killer Gorilla has your little man trying to ascend girders, ladders and lifts in an attempt to rescue the maiden in distress, collecting her handbag etc en route in the face of barrels and fireballs from above. You have the power to jump gaps and also use a handy hammer for clobbering the nasties. If you succeed on the four screens, you return to the beginning but with more problems to surmount. Nice sound effects and a little music, but no attempt to represent the 3-D graphics of the original.

Gauntlet has your jet flying above a scrolling line-drawn landscape littered with canisters which are the target for swarms of landers. Using either joystick or keyboard your task is to zap the landers and preserve your plane as they go for you. If you can zap a lander carrying a canister and return it to the ground, more points amass. As one wave is defeated, another nastier, faster one takes its place, whilst at the top of the screen, a scanner shows what's coming up. Really fast and furious, and difficult to get a high score without practice, Gauntlet's graphics could only be described as adequate.

Acceptable renditions of good games, accompanied by notably detailed instructions, though by no means state of the art. **D.M.**

Price: £9.95

Publisher: Micro Power

Address: Sheepscar Hse, Sheepscar St South, Leeds LS7 1AD



Digger Barnes

I thought this might be about Dallas, but it isn't. The inlay notes give an involved setting about catching Bludgits, extremely slimy creatures, in a local factory. This involves climbing ladders, digging holes for the creatures to fall into, then burying them. If they touch you then you lose a life, and if you happen to fall off a ladder, then you are rather stunned, and have to be dragged to your feet again. Putting it another way, this is a very conventional ladder, levels and digging game, and the concept has been around for some time.

The very barest of screens tells you the game is loading, and when it's finished the hi-score table is revealed, though no demo mode is available. When the game starts, there are some good sound effects, though no music. Graphically, the game is well executed by last year's standards; Digger himself is a nicely drawn flicker-free multi-coloured sprite, and when he expires as a result of contact with a Bludgit, his spirit complete with halo ascends the screen. In comparison to the graphics displayed in Sorcery, which must now be the Amstrad standard, they are uninspired. There are only four different screens.

The game is certainly a challenge however. Even using a joystick, it's very difficult to amass points.

Overall, something like the standard of the best cheaper games for the Spectrum. If you must have a ladders, levels and digging game, you'll enjoy this, but don't expect the earth. **D.M.**

Publisher: Cable Software

Address: 52 Limbury Rd, Luton, Beds LU3 2PL



Flipped



Hooked



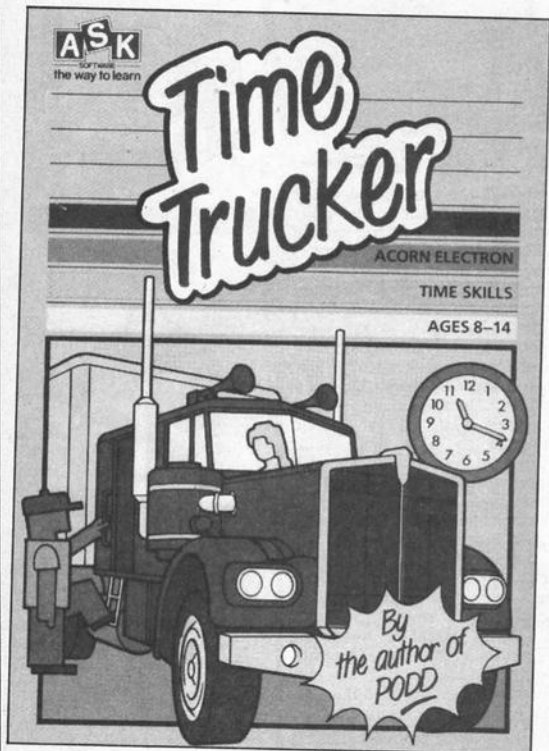
Keen



Yawning



Comatose



Time Trucker

This is a game which allows children to learn the 24-hour clock painlessly. Included in the large cassette box is a manual which provides detailed notes on loading and instructions on how to play the three options: Trainee Trucker, Trucker and Super Trucker Game.

The manual was brief but particularly well laid out giving suggestions for further activities.

As the player, in the simplest option, you see an analogue clock which operates in speeded-up time and allows an eight-hour work period. Your job is to move the truck around a network of roads collecting fruit and vegetables. These need to be deposited at the depot to collect the money. Not quite so easy as you only have a partial view of the roads.

The learning part comes when you have to log your time whenever you come across an item to load. This is done on a digital clock which my sample of children — eight- to 11-year-olds — had a problem with initially. Most young children

will be used to one or the other but they soon learned. And that, I suppose, is the object of the game.

The more complicated options have opening times for the farms which provide different fruit 'n' veg and road repairs which cause you problems, hence advance planning is essential.

There is a high score table and the choice of a female and male trucker means there is no problem about sexual bias. Full marks for a well thought out game that should achieve its educational purpose and keep them entertained in short bursts. **M.P.**

Price: £9.95

Publisher: Applied Systems Knowledge

Address: 68 Upper Richmond Rd, London SW15



The game starts with an illustrated list of 10 characters, such as Elf Priest or Warrior, each with differing strength and craft values. If it's a new game answer "yes" to "are there to be new players?" and you'll be asked how many characters. Each choice of character leads to naming it, selecting computer or own control before proceeding to the next and finally speed of play — laid back, moderate or speedy.

Arrow keys move character left or right and occasionally you'll need to select a location, e.g. north or west. Screen top shows the location and the objects, magic and ordinary, that are there. Middle section has character picture, listing of its strength, craft, lives, gold and spells — when present.

An hourglass at screen right has the sands of time running out as the game proceeds and the bottom section shows details of ordinary objects and any followers. Stop to pick up the objects and a detailed description of events will appear.

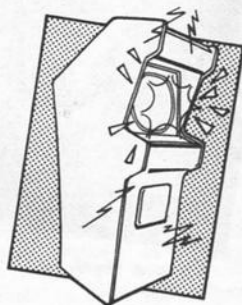
A monster may attack — its strength or craft values will be shown — and you can run or fight to gain the object and follower. Pressing any key adds a random value between one and six to both sides and the one with the greatest total value wins. When the sands run out you'll stay at that location.

Any of the 14 spells acquired may be used in your attempts to find seven ordinary objects, eight magical objects and eight followers to help obtain the talisman. **T.W.**

Price: £7.95

Publisher: Games Workshop

Address: 27/29 Sunbeam Road, London



Grog's Revenge

I was sent a preview copy of this game, without any instructions; all the cassette inlay said was "normal loading", which is not even accurate as, like all the US Gold games I've seen, it uses a fast-load system. Working out how to play it was quite a challenge, and I suspect I may have failed to discover some of the functions.

You have control of what appears to be a stone-age man, riding a unicycle up the side of a mountain. He normally goes quite slowly, but speeds up if you hold the joystick fire button down. There are short wiggly lines on the mountain path, and riding over these scores points. There are also a few holes and boulders, and failing to dodge these loses you one of your five tyres.

Every so often you pass the mouth of a cave; the view inside is of a triangle standing on one of its points, with a number of small blobs, frog-like creatures and fir trees drifting down it. If one of the fir trees hits the point of the triangle you crash and lose a tyre, for reasons I could not even guess at.

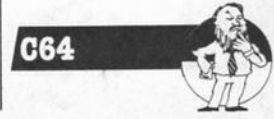
There is a toll-booth blocking the path at one point, with a bridge beside it, and occasionally a strange creature which I presume is a grog appears. I could find no way round either of these obstacles.

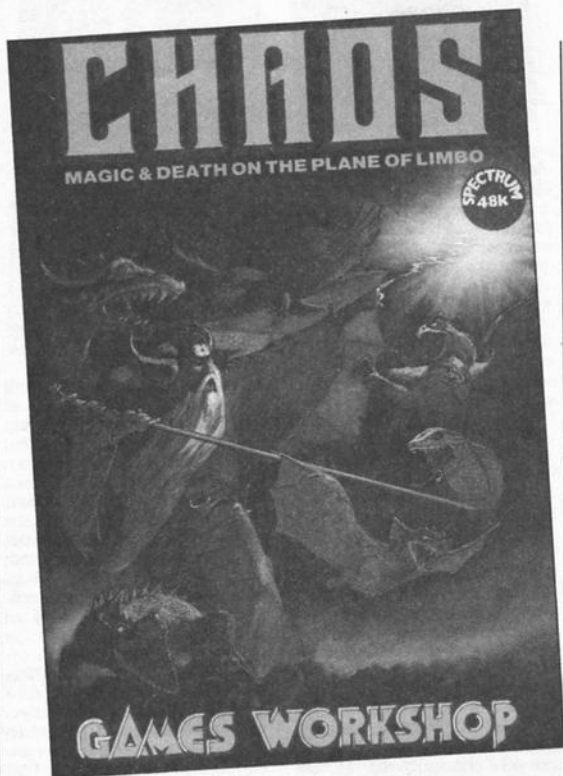
The graphics are excellent, and the game was quite enjoyable, despite the puzzling elements. **M.N.**

Price: £9.95

Publisher: US Gold

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





Chaos

Either the computer moves to another room or I'll give up watching TV, as two visitors playing this game caused noisy chaos to reign supreme.

For games players preferring to use brains and not just zap away, this is ideal. It doesn't contain 100 busy, flashing screens of monsters needing eliminating, but this game of magical combat does become addictive if you have human opponents — preferably more than one, playing from five to 30 minutes.

Combat between the wizards takes place in an arena, with each combatant taking turns to select and cast spells and move summoned creatures. The winner — the Lord of Creation — is the last wizard alive; though there's a limit to the number of game turns in which to achieve victory.

Screen one offers options of two to eight wizards and up to eight levels, while the next screen asks for character's name to be entered, whether computer controlled and which of eight illustrated characters

and which colour. This is repeated for each player and the game starts with a menu offering examining spells, selecting spells, examine board and continue with game.

Each protagonist, in turn, selects a spell — which can produce an animal illusion — then move it and their character around the arena using Q, W, E, D, C, X, Z and A. If the opponent or a familiar is in range you're destroyed — if not, it's your turn.

With many players, you see a colourful screen full of wing-flapping, hoof-stamping monsters.

Try something different for a change — you'll enjoy Chaos, I'm sure. **T.W.**

Price: £7.95

Publisher: Games Workshop

Address: 27/29 Sunbeam Road, London



Cavelon

This is a version of the arcade hit Excalibur and is just as good as the original. The game is of the ladders type and you play the part of a young knight. The objective on each screen is to collect all the parts of the door; each time you walk over one it is added to the jigsaw in a small window on the right of the screen.

Once all the pieces have been assembled the knight can then pass through it to the next screen.

Also available are various medal-like things that give extra points. Opposing you in this quest is the wizard and his demon henchmen. The wizard pops up all over the screen and summons demons who then walk around the screen attempting to bump you off. This happens if they touch you or if they fire one of the purple balls at you.

If you stay alive long enough you get a chance to catch Excalibur, which flies around the screen. Once caught the sword gives you immense power, enough to sprout wings and fly everywhere!

The graphics are very clear and smooth-moving but control of the knight is rather difficult. Sound is a collection of jolly tunes that play during the game and change as different things happen, such as gaining a piece of the door or getting Excalibur.

All in all I found Excalibur very enjoyable — but then I liked the arcade version as well! **J.D.**

Price: £7.90

Publisher: Jetsoft

Address: The Workshop, 23 Church St, Eastwood, Nottingham



Artwork

The sort of results which can be achieved using this utility can be seen from the accompanying screendump drawn by one of the co-authors. Via a series of well thought-out menus, you can select screen mode, ink and paper colours, and draw away to your heart's content.

A moving cursor is steered using the cursor keys, though routines are available to draw lines, circles, boxes and ellipses instantly. Not only that, but the resultant shape can be manoeuvred around the screen, and its size changed. Text can also be included and that too can be shunted about in one piece. The nicest feature of all is a FILL command, which is really swift.

In use, the whole thing is really idiot-proof, with the opportunity to undo what you just did, and instant access to help pages. Via the menus you can change mode, save to disc if available, or to tape, and the screens can be built into your own program. The easy to follow manual also contains details of how to save part screens and access them again later both in BASIC and machine code. The whole package is characterised by user friendliness and ease of use.

In order to reproduce your picture in your own progs you must set the relevant inks and pens before loading the picture, however. An on-screen indicator would have been useful to show current settings, as would a save-to-disc option. Recommended, if a little expensive. **D.M.**

Price: £9.95

Publisher: Kuma

Address: 12 Horseshoe Road, Pangbourne, Berks RG8 7JW

SPECTRUM

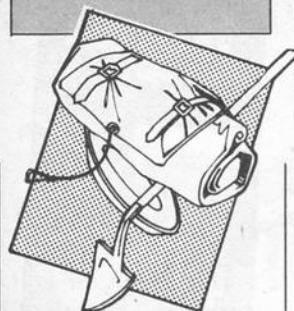


C64



AMSTRAD





Bored of the Rings

Tongue in cheek, is this Bored or Bawd of the Rings? Someone had the rights to Lord of the Rings so Delta 4 has produced a full-scale comedy — or parody — quest based on it. Taking place in Western Middle Earth and the Shire, the home of the disgusting little Boggits.

Fordo Faggins, son of Bogo, is a feeble, fat, cowardly Boggit — a real hero! Fordo leaves a boozey party held on the field in a green tent to visit Fag End, where his Uncle and Gandalk are looking for a "dense lemming" to take the ring and destroy the black land of Dornor.

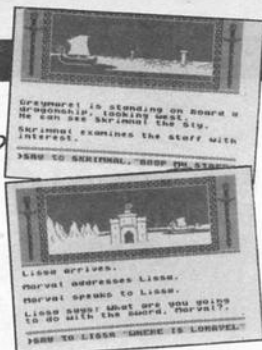
Screen top shows description of location and what is happening in redefined characters, with "What would Fordo do?" below that. Using 45 words in simple sentences you direct Fordo on his mission in this vast game which is in three parts with passwords given at the end of each part. In Bored of the Rings, written using Gilsoft's Quill and Illusinator, the jokes are like those found in college rag mags, with Fordo living in Prickhollow, travelling to the town of Whee, visiting the Wiffy mountains and hiding from a horse and rider who farts (don't let Fordo do that or he makes everyone explode).

Sceptical — part four — is a computer magazine containing weird jokes, reviews on magazines, an on-going story, recipes, adverts, competition, and references to females — who are Judith, Stephanie Stronger and Catherine Erotokiss? answers to reviewer, please. T.W.

Price: £7.95

Publisher: Games Workshop Ltd.

Address: 27/29 Sunbeam Rd, London.



Runestone

This is a role-playing adventure featuring over 2000 locations and Venturescope — a programming technique that combines real-time action, full text interpreter, multiple command input, dozens of independent characters and 8000 different views.

You control Morval the Warrior, Eliador the Elf and Greymarel the Wizard in a search for the magis of Belorn to learn the secrets of Saromunder, or the recovery of the stolen treasures of Belorn, or the defeat of the Orcs and other foul denizens of the Northern Wastes, or the destruction of the fearsome Kordomir the Dark — or merely explore the countryside and meet its 40 inhabitants. As you travel you'll meet allies — some not as friendly as they seem. Events will continue to happen whether you do anything or not — so the forces of Kordomir will join together to destroy your allies.

Screen top shows a panoramic view at that location neatly framed and with a sword at either end, with below a description of the scene complete with characters present in redefined characters, while at screen bottom is printed your instructions.

At any time you can change from character to character, none of which can die though they may become so weak as to be almost helpless. Keying 'E' will cause you to look East only, you must key 'M,E' in order to move east. When alongside a building, keying 'I' puts you inside, and 'O' outside.

A well organised game that will appeal to those who are keen on adventures. T.W.

Price: £7.95

Publisher: Games Workshop Ltd.

Address: 27/29 Sunbeam Rd, London



Sprite Editor

At last a piece of software for Sanyo lightpen owners, though a joystick or keyboard controlled version also features on the other side of the tape. This powerful utility enables as many as 64 sprites to be designed and saved to tape for use later. Coupled with the use of an icon menu, this program makes the art of designing sprites a pleasure rather than a chore.

After the sprites have been designed on the grid, you are able to call them up in any order for further processing and they may be moved from one storage area to another for this purpose. Reversed, or "negative" images can be created automatically; even a mirror image can be made but unfortunately the program does not cater for 90-degree rotations.

One excellent option allows you to select several sprites for animation, when trying to create effects such as a figure walking, running or jumping. To do this the sprites are displayed consecutively at the same point on the screen and the changing display can be moved around to check the total effect.

Once saved, the sprites can be reloaded into the program for further development at a later date, or loaded into your own programs with clear instructions being given on how this may be done.

The lightpen facility has a built-in calibrator at the start of the program which turns on a screen pixel. The lightpen is held against this dot and triggered to achieve the correct synchronisation with the program. The pen can then be used as normal to select the mode or to fill the square on the designer grid. E.D.

Price: £6.95

Publisher: Electric Studio

Address: PO Box 96, Luton LU3 2JP



Night World

I have to admit that I don't really like this game at all. It isn't that it doesn't play very well nor that it is badly written. It just seems so pointless.

There is little doubt that it is a ladder and level clone without the ladders. The aim is to find a path from chamber to chamber by running and jumping from block to block. As such I suppose that there is an audience for such games but I tend to find that they are much of a muckness.

What makes this game different is that you actually control a mutant explorer who changes from one form to another when night turns to day and vice versa. Unfortunately that is all that changes. The game gets no harder nor easier.

There are the usual statutory nasties to make life harder but these don't kill you they simply drain your energy. This means that you can risk touching one if it is to your advantage.

The controls are rather difficult. There are times when Lee Lance, your persona, seems to be hanging in mid air without any possible means of support and others where the path is blocked for no real reason. Another couple of niggles are that the joystick option doesn't appear to work and that the instructions are rather less than helpful. As I said earlier, a playable game but rather pointless. R.S.

Price: £6.95

Publisher: Alligata

Address: 1 Orange St, Sheffield S1 4DW

SPECTRUM



SPECTRUM

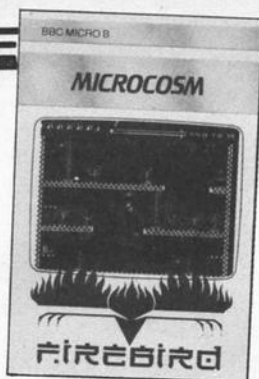


MSX



BBC





Microcosm

This is another in Firebird's range of budget games, a Silver release. The Microcosm of the title is actually an interstellar freighter with a number of plant species being transported to a new galaxy.

The problems are twofold. Firstly, the maintenance ladders have been damaged and your job is to transport new sections of ladder to the required position. Secondly, there are a number of rather evil looking insect mutants wandering about trying to give you the kiss of death.

The game is without a doubt a jet pac type and your controls are left/right, thrust and fire. The graphics are good, certainly as good as most full price BBC games and the movement routines are very smooth indeed.

I had very little difficulty controlling the character although a joystick option might have been a real advantage.

I have underestimated the baddies a little. There are also drops of acid constantly raining down upon you as you move about and on later levels a number of very nasty looking spiders and beetles. A final difficulty is the plant's need for refreshment.

Whenever the plants are running low on Phloem (look it up in the biology book) you have to drop your power pack and pick up the watering can. You then move around shooting the plants with the food that they desperately require.

The difference between this budget game and many full price ones is so little that this has to be great value for money. R.S.

Price: £2.50

Publisher: Firebird

Address: Wellington Hse, Upper St Martin's Lane, London WC2H 9DL



Don't Buy This

Very seldom do I receive a game that I truly think is excellent and would gladly recommend for purchase.

Don't Buy This is not one of these games. In fact it's not five of these games since it's a compilation tape.

The first of the gruesome games is Race Ace, a racing simulation that is to Pole Position what a Ferrari and consists mainly of block graphic cars crawling around a right angled track.

The second cretinous creation is Fido. Fido is the sort of program which would undoubtedly damage your computer if you load it. You must prevent moles digging holes in the garden. Fido achieves this by bashing them with his tail. For no apparent reason he is being attacked by low flying birds which he can duck by standing up!

The third dastardly derivation is Weasel. Most of the fun in Weasel is to be had in the key definition stage and if you manage to define the keys my advice would be to immediately unplug the computer and quit whilst ahead.

The fourth pathetic program is Fido 2, the long awaited sequel to Fido and so completely devoid of any features whatsoever is it, that I'm not going to mention it any further.

The last lethargic listing is Fruit Machine which appears to be a simulation of the inside of a ping pong ball, it certainly has as much interest as one.

So to sum up this is the worst waste of a good tape I have ever had the misfortune to review, a new Dave award has been specially created for this and it richly deserves it — DEAD. J.G.D.

Price: £2.50

Publisher: Firebird

Address: Wellington Hse, Upper St Martins Lane, London WC2H 9DL



Don't Panic

It's ironic that one of the most enjoyable games I've seen in weeks should be written for the 16K Spectrum, but it proves that you don't need buckets of memory or state of the art graphics to produce a good game — just a good idea.

You control a little 'droid who must load a spaceship with cargo scattered around the four levels of a cargo bay. The levels are connected by lifts, and populated by killer loads. The bay is several screen widths across, and scrolls smoothly as the 'droid moves across the screen.

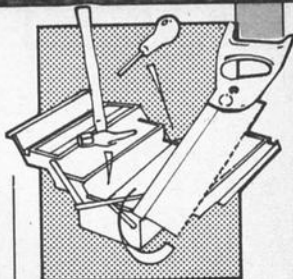
This might sound like just another platform/collect the object game, but it has a couple of neat twists. First, the cargo itself is deadly until de-toxified, and then must be gently nudged onto the ship. Also, there is a cuddly, mini version of the monster from Alien lurking in the cargo bay. This alien moves faster than your 'droid, and you can often find yourself face to face with him and having to frantically race to the nearest lift, wondering whether or not you'll make it.

In 16K it has to be a simple game, but it's not less enjoyable because of that. The graphics are colourful and have character, and trying to avoid the alien whilst manoeuvring the cargo into place combines strategy and arcade thrills in a way that many more complicated, and expensive, games fail to do, even with an extra 32K of memory. F.J.

Price: £2.50

Publisher: Firebird

Address: Wellington Hse, Upper St Martin's Lane, London WC2



Ledger Program

Recently I have had reason to acquaint myself with the murky — and deathly boring — world of accountancy, so when I received a ledger utility to review I thought I might be able to practice some of my newly-acquired expertise and learn something into the bargain. Alas, I have to admit failure.

This utility is most definitely for those who are already well-endowed with expertise in accountancy. The documentation can't be expected to teach the uninitiated, but even with my small advantage I found the whole thing heavy going. Double-entry bookkeeping has always seemed to me to apply to an artificial environment, and the method handed to me by my own accountant seems suspiciously simple by comparison.

While it is obviously a useful utility in the right hands, I am unsure to whom it might appeal. The requirement of a disc system and printer entails no mean financial outlay and I suspect that owners of such systems would not perform their own accounting. The program, while supplied on cassette, is intended to be customised by you and then SAVED to disc, for which purpose it is supplied unprotected.

Full details are supplied with the documentation, together with a timely warning about the effect of disabling QUIT, which the program does to prevent accidental use of FCTN=, and the myriad of rewritten TI Operating Systems which abound in the models of this computer.

Bearing in mind the subjective nature of such a review it's not much use to me. Other owners might judge it differently. P.B.

Price: £10

Publisher: Stainless

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

BBC



SPECTRUM



SPECTRUM



TI99



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Sensing and Control Projects for the BBC

Most BBC owners only use their machines for games and, except for plugging in joysticks, are reluctant to play with all the strange looking pins and plugs at the rear and underside, or to delve into innermost workings of their machines, yet it is at this level that the greatest enjoyment and sense of achievement can be obtained. It is also at this level that the computer starts to demonstrate its real power and purpose.

All projects in the book use the analogue to digital converter or user port and the author assumes the reader has no previous knowledge of electronics or of the commands needed to control the two ports. Each stage in the project is explained in simple, easily understood steps using very clear drawings and text.

None of the projects require any sophisticated equipment and all the components can be bought in total for less than £20. Most of the projects use the computer as a power source but the switching projects using the user port require a battery or small power supply.

All the project circuits are built up on breadboard, or use a simple home made interface, so only two computer connections are needed and components can be re-used or easily changed.

Projects range from simple light intensity using light dependent resistors, to the control of motorised vehicles. All programs are fully explained and component lists, with suppliers, are given at the back of the book.

Price: £5.95

Publisher: Micro Books

Address: 443 Millbrook Rd, Southampton SO1 0HX

BBC



The Computer Dictionary

One of the major hurdles facing any newcomer to computing is jargon. To the person in the street a conversation between two computer buffs might as well be in a foreign language. The Computer Dictionary by Jon Wedge breaks down this barrier in an informative and light-hearted manner.

To produce a computer dictionary which will sell in sufficient numbers to make it profitable must be quite a daunting task. For one had never considered such a purchase. Yet Jon Wedge has hit on a formula which has managed to convert what could have been a very heavy going textbook into a very entertaining, and sometimes hilarious, book.

Not wanting to give the wrong impression about the book I must stress that all words do actually have serious explanations. One example of computerese tackled by Mr Wedge will prove entertaining for those among you who are advocates of structured programming.

The word GOTO is defined thus: "The instruction GOTO results in a sudden leap from one part of the program to another. This is like travelling in hyperspace, in that you go from one place to another without being anywhere in between. If you have ever wondered why GOTOs are supposed to be incompatible with structured programming, just draw a flowchart of a program based on hyperspace journeys."

The humorous text is liberally sprinkled with equally funny cartoons drawn by HCW's cartoonist Jim Barker.

Not to be missed. This could be the first dictionary I will read from cover to cover. **J.R.**

Price: £3.95

Publisher: A & C Black

Author: Jon Wedge



The Working Amstrad

This is the latest of David Lawrence's "working" series. Together with Simon Lane, he now turns his attention to the CPC 464 applying the same teaching philosophy: write the sort of applications programs that serious users will want in a highly structured form; use all the particular features of the machine; explain in great detail not only how the programs work, but also how the user can pinch bits for use in his own programs! It's a good formula through which you can learn a great deal, and finishes with a suite of excellent applications to boot.

Applications covered are various time programs using interrupts and timers; graphics with graphs, pie charts and 3-D graphs in colour; character set definition; a hi-res graphic page designer, and a two part music prog. In a more serious vein, the final chapters are dedicated to a user definable data-base/filing system — the ubiquitous Unifile —, a simple text editor for word processing, a test question generator, and banking and accounts packages. If you have the patience and time to type them in it's great value for money!

Perhaps the most impressive thing is the standard of documentation. Everything is split up into modules, that's why it's easy to use sections in your own work, and every module has a line by line commentary which really does explain clearly. It isn't always like falling off a log, but with a little dedication you will certainly pick up a lot of information and some good programming practice. **D.M.**

Price: £5.95

Publisher: Sunshine Books

Address: 12-13 Little Newport St, London WC2H 7PP

AMSTRAD





Compute!'s TI Collection, Volume 1

Compute! is an American magazine for computer buffs. This book is a compilation of some of the articles that originally appeared in the magazine, adapted where necessary, specifically for the TI-99/4A. The articles are organised into seven chapters covering elementary features, applications, recreation, sound and graphics, utilities and sprites.

I think the book will mainly be of interest to the beginner who already has some programming knowledge, but wants to explore more fully the features of the TI. However, the experienced user wishing to make better use of an expanded system should also find the book worthwhile.

Each article is self-contained with routines and/or programs where appropriate. Every topic is introduced in detail and complemented by a program listing, outline and main variables column. I found Financial Interests particularly fascinating as it begins by discussing differences between loans and mortgages, and gives formulae used in calculating savings, annuities and payments. Other applications include electronic spreadsheet and word processor programs, and statistics for non-statisticians.

If you are more interested in games, there are seven of these included plus an article on writing your own. This provides invaluable advice on what considerations should be taken into account when using TI BASIC as opposed to Extended BASIC, and how to speed up running of the programs on the standard machine.

Overall, a particularly interesting collection of ideas, but really only worth the money if you have Extended BASIC — at the very least.

J.W.

Price: £10.95

Publisher: Compute! Publications c/o Holt Saunders

Address: 1 St Anne's Rd, Eastbourne, East Sussex BN21 3UN


TI99


1001 Things to do with your Commodore 64

The usual excuse many of use give for buying a computer is that it will have lots of uses other than playing games. The trouble is, you never can list many when pressed. This book solves this problem since it is dedicated to giving ideas for putting your 64 to work. Whilst listings are given, it doesn't try to teach you anything about programming.

Even to someone like myself who has used micros for several years in different roles, the variety of ideas is quite amazing. There is something for everyone ranging from games through to routines for calculating how much wall paper you need.

I won't attempt to describe the book in detail but the main chapter headlines are business and financial applications, maths and statistics, general applications, technical and scientific, education, hobbies, control and peripherals, artificial intelligence and utilities. The most valuable aspect of the book is that theoretical basis for each application is discussed rather than just a listing. The actual depth of treatment reflects well on the authors — they aren't just dabblers. For soldering iron freaks; one chapter gives some circuits for control applications. For hackers, there is a useful section giving details of a large number of networks in the states.

This is an excellent book which is not only a source of useful programs but is also a good read and an education in itself. At the price, good value and of use both to the computer owner and the prospective owner.

M.W.

Price: £9.95

Publisher: TAB Books

Address: Blue Rides Summit, PR 17214 USR


C64


Compute!'s Third Book of VIC

Most of you enlightened owners of CBM or Atari machines may well have come across that excellent magazine Compute! In spite of its exorbitant price, there simply isn't anything in this country to compare with it. This book is the third compilation of VIC articles previously published in COMPUTE!

The book covers six areas: applications, utilities, games, graphics, sound and useful wheezes. The games section is probably the weakest but the rest is 100 per cent top quality. The most obvious feature is the consistent high standard. There is, for example, a listing for a machine code word processor which has an unbelievably high specification. This item on its own is worth the cost of the book.

Other notable items are a suite of machine code tools (OLD, RENUMBER, FIND and CHANGE), interrupt driven sound, mailing lists and fast sorts. Most of you will know the problems of faultlessly typing in listings. To help with this problem two aids are supplied by the book, namely a proof reader and a machine code editor.

All listings can be entered with either aid, and believe me, they're idiot proof. Overall, the blend is good and there is something for users of all abilities and interests.


Commodore may have forgotten VIC owners, but this book demonstrates that there are people who want to support the VIC and supply good quality material. At the price, this book is great value for money.

M.W.

Price: £10.95

Publisher: Holt Saunders

Address: 1 St Anne's Rd, Eastbourne, East Sussex BN21 3UN


VIC-20

Flipped

Hooked

Keen

Yawning

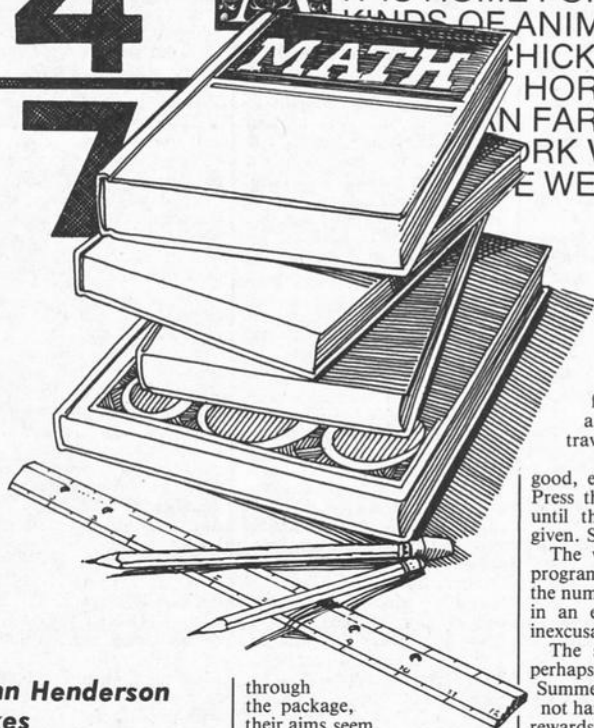
Comatose

3 A a B b C c

+ 4
7

A

FARM IS A VERY INTERESTING PLACE TO VISIT. IT IS HOME FOR ALL KINDS OF ANIMALS. CHICKENS, HORSES, AND A FARMER WHO WORKS VERY HARD TO GROW THE WE EAT.



John Henderson takes a close look at Summerfield software

Summerfield Software is one of the newest entrants into the field of software development, yet in many ways it is unique. Unique, because Summerfield is an independent school for children with impaired hearing. Founded in 1952, it caters for children from nursery age up to CSE/O level. Clearly the staff show a caring attitude, spending a great deal of time assisting their pupils. They also adapt their own learning resources, which is where the computer comes into the story.

The school computer centre has five computers at present, with another two on the way. It was staff's idea to produce their own software and looking

through the package, their aims seem to be reasonable enough. Summerfield provides software that is "as good as most that is available and a lot better than some". A genuine attempt has been made to fulfil this aim but

The suite consists of four programs, available separately or on one disc at an all-in price of £26 — quite a price for a single disc. This is only one of the disappointing features of this package.

Return from Paris is an adventure game with a difference, but let me keep the secret for a while longer. You follow the trail of spy 003.5 — Son of Bond — as he tries to get the secret documents back from Paris to HQ. Your choice of transport is critical as both time and money depreciate during the journey. Hitch-hiking takes a long time, but is cheap.

The program is meant to involve children in decision making, but the really bright ones will use their skills to cheat. At any time your journey

can be changed at will — so fear not, if you are given a slow train on which to travel and time is running out, do what every good, educated spy would do. Press the break key, and wait until the fast train option is given. Simple, isn't it!

The whole structure of this program is disappointing, and the number of spelling mistakes in an educational program is inexcusable.

The sound levels are loud, perhaps they need to be in Summerfield but all users are not hard of hearing. Even the rewards are poor — if you manage to get back to HQ you may be decorated for your services, or your may be sent to a firing squad for bringing home the wrong papers. A less drastic punishment meted out to spies who nearly made it is to take up the post of honourable sewer cleaner. All that effort down the drain!

Treasure Hunt is nothing to do with helicopters and blond, female, out-of-breath runners, but a "find the missing object" trail. Mode 7 graphics are used throughout and the program is dull and unexciting. Too many symbols on a small map, together with the choices of colour combine to make this a real yawn.

Poor clues as to where to go next reinforce the lack of incentive to explore further. Although symbols are explained in the introductory sequence, there are no help facilities and no copy of the map.

The idea is to find two keys and some treasure, but the longer it takes you to find them

EDUCATION

the less valuable the keys become. The program is designed to accept six-figure map references or compass point references. However it will allow the input of letters or more than six numbers at any one time. An error message is all the help that users are given.

Many other errors are not trapped at all, so careless keyboard skills can hang up the program entirely. The starting point for this adventure is somewhere near the Public House — perhaps the best plan would be to stay there.

Tank Tracks is a program designed to encourage logical thought and instruct children in the art of early programming. Schools familiar with the MicroPrimer package that came with every computer will remember the program Crash.

This is a hybrid of the same program and suffers from the same inaccuracies as its predecessor. The background colours make the screen very difficult to read and the minefield is poorly defined.

Only three keys are required to enter instructions into the program yet it is possible to enter other letters from the keyboard. The idea is to think ahead and drive the tank through the minefield without hitting a mine on the way. To achieve this children have to plan the number of squares they have to move forward and how many turns are required. Come back, Bigtrak, all is forgiven.

A successful run results in a horrifying burst of "Congratulations" designed to send you wacky. Better to lose than be given this reward. Written in 1983, this program is a classical example of early school software that now belongs in the dustbin.

Equation of Lines is the final program and allows the drawing of algebraic equations from unknown variables. Users have to input values for X and Y to see the resulting pattern. Its use is limited and depends on how individuals see the way maths should be taught.

Whilst the principles may be

fine, why use the powerful micro in such a boring way. Again there has not been sufficient error trapping as switching CAPS LOCK off seems to throw the whole program.

There are some valuable lessons to be learnt. Good, caring teachers will take an interest in all modern developments to assist children in learning. This does not mean, however, that they are best qualified to write computer programs for children. This is a skilled job requiring a great deal of time.

Yes, Summerfield Software is as good as most educational software on the market — but this just proves how poor and educationally damaging it is for children. I applaud Summerfield's policy on copying; no protection here, just a belief that users will not abuse the rights of the authors. I also admire their offer to help any user finding problems with a program. What cannot be understood is the "if you can't

beat 'em, join 'em" attitude.

The price — £26 — for programs of this standard is extremely expensive. There are so many spelling mistakes in both documentation and programs that a caring attitude has not been shown towards other computer users. Schools and parents should not be fooled by large adverts in magazines and buy software without seeing it first, even if it has been trialled in a school.

Price: Return from Paris — £11.95

Treasure Hunt — £14

Tank Tracks — £11.95

Equation — £9

All four on one disc — £26

Publisher: Summerfield

Address: Summerfield School, 141 Worcester Rd, Malvern, Worcs WR14 1ET

BBC

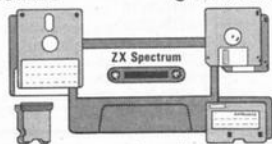


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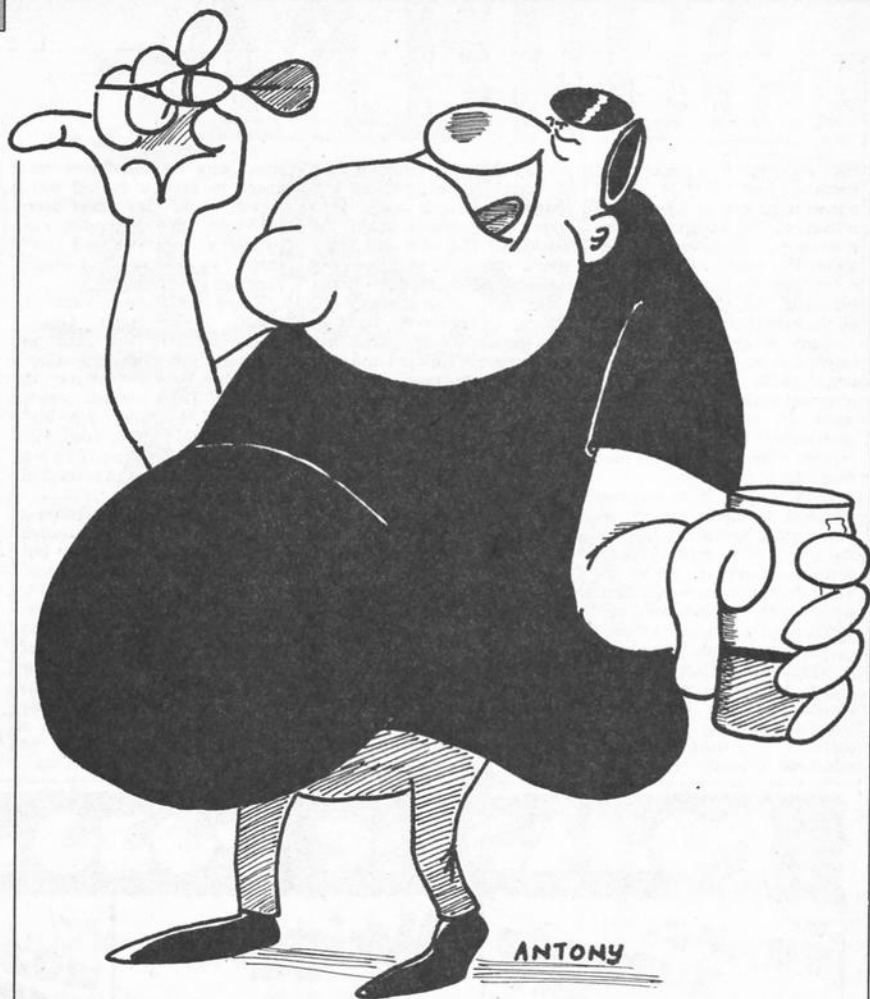
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AMSTRAD GAME

BULLSEYE



Here's an old favourite for Amstrad users — a darts program from Stephen Anderson

Variables	
S1	player 1 score
S2	player 2 score
CO	computer player
x,y	darts co-ordinates
flag	player to throw
V	angle of throw
Z	distance from bull

How it works	
10-270	start screen
280-1000	draw graphics
1010-1110	variables
1120-1280	make computer throw
1260-1330	main loop
1390-1540	change co-ordinates
1550-1940	check board
1950-2140	subroutines for finish

If you like playing darts then this program will give you the chance to get in some practice. You play against a friend or against the computer and the rules are the same as in the original game.

A dart board is drawn on the screen and two pointers appear — one at the top and one at the left hand side of the screen. These can be moved around using the cursor keys or joystick and indicate where your dart will land.

The scoreboard tells you which player has thrown, the total for the current throw and overall total.

```

1#0 *****
20 *DARTS BY S.ANDERSON*
30 *-----*
40 *****
50 REM *** START SCREEN
60 INK 2,6: INK 3,18: INK 0,0: INK 1,26
70 PEN 1
80 BORDER 0:PAPER 0:CLS
90 MODE 1
100 CLS
110 LOCATE 10,1:PRINT"^^^DARTS^^^"
120 LOCATE 10,2:PRINT"-----"
130 LOCATE 10,4:PRINT"BY S.ANDERSON"
140 PEN 3
150 LOCATE 1,10:PRINT"Q=UP,A=DOWN,O=LEFT,P=RIGHT,@
=THROW DART"
160 LOCATE 5,12:PRINT"YOU CAN ALSO USE CURSOR KEYS"
170 LOCATE 5,14:PRINT"OR A JOYSTICK IF YOU HAVE ON
E"
180 LOCATE 1,25
    
```



```

190 PEN 2
200 INPUT "501,301,101";S1
210 IF S1=101 THEN 250
220 IF S1=301 THEN 250
230 S1=501:GOTO 250
240 GOTO 180
250 S2=S1
260 PEN 3
270 CLS:LOCATE 5,10:PRINT"GOT A FRIEND TO PLAY":LO
CATE 5,11:PRINT"OR DO YOU WANT TO TAKE ON CERI"
280 LOCATE 1,25:INPUT"HUMAN PLAYER Y/N";co#
290 IF co#="Y" OR co#="Y" THEN co=0 ELSE co=1
300 PEN 1
310 REM *** USER GRAPHICS
320 SYMBOL AFTER 240
330 SYMBOL 240,56,56,56,56,56,56,16,16
340 SYMBOL 241,0,0,240,255,240,0,0,0
350 SYMBOL 242,192,192,224,224,224,224,224,224
360 SYMBOL 243,192,192,192,192,192,192,192,192
370 SYMBOL 244,28,52,28,8,152,92,56,24
380 SYMBOL 245,24,26,8,8,8,8,8,24
390 REM *** DRAW BOARD
400 MODE 1
410 ORIGIN 240,196
420 DEG
430 PLOT 170,0,1
440 FOR f=1 TO 370 STEP 16
450 DRAW 170*COS(F),170*SIN(F)
460 NEXT
470 PLOT 180,0
480 FOR f=1 TO 370 STEP 16
490 DRAW 180*COS(F),180*SIN(F)
500 NEXT
510 PLOT 110,0
520 FOR f=1 TO 370 STEP 16
530 DRAW 110*COS(F),110*SIN(F)
540 NEXT
550 PLOT 100,0
560 FOR f=1 TO 370 STEP 16
570 DRAW 100*COS(F),100*SIN(F)
580 NEXT
590 FOR f=9 TO 180 STEP 18
600 MOVE 180*-COS(f),180*-SIN(f)
610 DRAW 180*COS(f),180*SIN(f)
620 NEXT
630 PLOT 20,0
640 FOR f=1 TO 370 STEP 10
650 PLOT 0,0,3
660 DRAW 20*COS(F),20*SIN(F)
670 NEXT
680 PLOT 10,0
690 FOR f=1 TO 360 STEP 10
700 PLOT 0,0,2
710 DRAW 10*COS(F),10*SIN(F)
720 NEXT
730 PLOT 20,0,0
740 FOR f=1 TO 370 STEP 20
750 DRAW 20*COS(F),20*SIN(F)
760 NEXT
770 TAG
780 PLOT -10,194,1:PRINT "20";
790 PLOT 45,190,1:PRINT "1";
800 PLOT 100,164,1:PRINT "18";
810 PLOT 155,126,1:PRINT "4";
820 PLOT 180,80,1:PRINT "13";
830 PLOT 190,8,1:PRINT "6";
840 PLOT 180,-46,1:PRINT "10";
850 PLOT 155,-110,1:PRINT "15";
860 PLOT 110,-150,1:PRINT "2";
870 PLOT 50,-176,1:PRINT "17";
880 PLOT -4,-186,1:PRINT "3";
890 PLOT -84,-180,1:PRINT"19";
900 PLOT -120,-150,1:PRINT"7";
910 PLOT -180,-100,1:PRINT"16";
920 PLOT -200,-50,1:PRINT"8";
930 PLOT -216,0,1:PRINT"11";
940 PLOT -216,60,1:PRINT"14";
950 PLOT -176,120,1:PRINT"9";
960 PLOT -150,160,1:PRINT"12";
970 PLOT -68,190,1:PRINT"5";
980 MOVE 217,200:DRAWR 0,-400
990 MOVE 217,0:DRAWR 200,0
1000 REM *** VARIABLES
1010 X=1:Y=1
1020 FLAG=1
1030 DIM DX(3)
1040 DX(1)=0

```

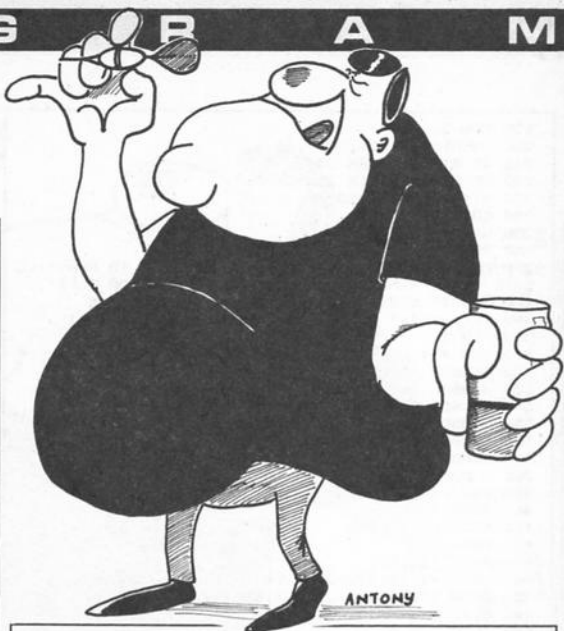
```

1050 DX(2)=0
1060 DX(3)=0
1070 DIM DY(3)
1080 DY(1)=0
1090 DY(2)=0
1100 DY(3)=0
1110 REM *** COMPUTER OPTION
1120 IF CO=1 THEN PLOT 218,-100,3:PRINT CHR$(242);
:PLOT 218,-116:PRINT CHR$(243);
1130 IF CO=1 THEN PLOT 270,-100,1:PRINT CHR$(244);
:PLOT 270,-116:PRINT CHR$(245);
1140 IF CO=1 THEN MOVE 270,-1:PRINT"CERI";
1150 MOVE 220,200:PRINT"PLAYER=";1;
1160 MOVE 262,180:PRINT 0;
1170 GOTO 1240
1180 PLOT 220,160,1:PRINT S1;S2;
1190 IF CO=1 AND S2>101 THEN S2=S2-100
1200 IF CO=1 THEN GOSUB 2050
1210 IF CO=1 AND S2=50 THEN S2=S2-50:GOTO 1940
1220 IF CO=1 AND S2=101 THEN S2=S2-51
1230 IF CO=1 THEN FLAG=1
1240 PLOT 220,160,1:PRINT S1;S2;
1250 REM *** MAIN LOOP
1260 FOR F=1 TO 3:IF F=1 THEN MOVE 262,180:PRINT"
0 ";
1270 PLOT X,210,1:PRINT CHR$(240);
1280 PLOT -240,Y,1:PRINT CHR$(241);
1290 IF co=1 AND flag=2 THEN 1180
1300 X=X-(INKEY(27)=0 OR INKEY(75)=0 OR INKEY(1)=0
)*4+(INKEY(54)=0 OR INKEY(74)=0 OR INKEY(8)=0)*6
1310 Y=Y-(INKEY(67)=0 OR INKEY(72)=0 OR INKEY(0)=0
)*6+(INKEY(69)=0 OR INKEY(73)=0 OR INKEY(2)=0)*4
1320 IF y>-1 AND y<1 THEN y=1
1330 IF INKEY(26)=0 OR INKEY(77)=0 OR INKEY(9)=0 T
HEN SOUND 1,200,2,7,0,0,5:GOSUB 1390:GOTO 1350
1340 GOTO 1270
1350 PLOT 220,160,1:PRINT S1;S2;
1360 IF F=3 THEN 1260
1370 NEXT
1380 REM *** CHANGE X,Y TO POLAR V,Z
1390 Z=X*X+Y*Y
1400 Z=SQR(Z)
1410 DX(F)=X:DY(F)=Y
1420 PLOT X-2,Y:DRAWR 4,0
1430 PLOT X,Y+2:DRAWR 0,-4
1440 RAD
1450 MOVE 0,0
1460 IF y=0 THEN y=1
1470 C=(X)/Y
1480 IF X=0 AND Y>=0 THEN V=(PI+ATN(-C)):GOTO 155
0
1490 IF X<0 AND Y=0 THEN V=(PI+ATN(-C)):GOTO 1550
1500 IF Y<0 THEN Y=+Y:C=(X)/Y
1510 V=(PI+ATN(-C))
1520 V=(PI+ATN(-C))
1530 GOTO 1680
1540 REM *** CHECK TOP OF BOARD AND BULL, OUTER BUL
L
1550 IF V>=9*PI/20 AND V<11*PI/20 THEN SD=6
1560 IF V>=11*PI/20 AND V<13*PI/20 THEN SD=13
1570 IF V>=13*PI/20 AND V<15*PI/20 THEN SD=4
1580 IF V>=15*PI/20 AND V<17*PI/20 THEN SD=18
1590 IF V>=17*PI/20 AND V<19*PI/20 THEN SD=1
1600 IF V>=19*PI/20 AND V<21*PI/20 THEN SD=20
1610 IF V>=21*PI/20 AND V<23*PI/20 THEN SD=5
1620 IF V>=23*PI/20 AND V<25*PI/20 THEN SD=12
1630 IF V>=25*PI/20 AND V<27*PI/20 THEN SD=9
1640 IF V>=27*PI/20 AND V<29*PI/20 THEN SD=14
1650 IF V>=29*PI/20 AND V<31*PI/20 THEN SD=11
1660 GOTO 1790
1670 REM *** CHECK LOWER HALF OF SCREEN
1680 IF V>=9*PI/20 AND V<11*PI/20 THEN SD=11
1690 IF V>=11*PI/20 AND V<13*PI/20 THEN SD=8
1700 IF V>=13*PI/20 AND V<15*PI/20 THEN SD=16
1710 IF V>=15*PI/20 AND V<17*PI/20 THEN SD=7
1720 IF V>=17*PI/20 AND V<19*PI/20 THEN SD=19
1730 IF V>=19*PI/20 AND V<21*PI/20 THEN SD=3
1740 IF V>=21*PI/20 AND V<23*PI/20 THEN SD=17
1750 IF V>=23*PI/20 AND V<25*PI/20 THEN SD=2
1760 IF V>=25*PI/20 AND V<27*PI/20 THEN SD=15
1770 IF V>=27*PI/20 AND V<29*PI/20 THEN SD=10
1780 IF V>=29*PI/20 AND V<31*PI/20 THEN SD=6
1790 IF Z<20 THEN SD=25
1800 IF Z<10 THEN SD=50:ENT 1,10,-10,20:SOUND 2,40
0,200,4,0,1:IF S1-(S+SD)=0 OR S2-(S+SD)=0 THEN 194
0
1810 IF Z>180 THEN SD=0

```

```

1820 IF Z<110 AND Z>100 THEN SD=SD*3:IF S+SD=180 T
HEN FOR U=500 TO 100 STEP -5:SOUND 2,U,2,4:NEXT
1830 IF Z<180 AND Z>170 THEN SD=SD*2:IF S1-(S+SD)=
0 OR S2-(S+SD)=0 THEN 1940
1840 MOVE 262,180:PRINT S+SD; " ";
1850 IF S+SD+1>S1 AND FLAG=1 THEN S=0:F=3:FLAG=2:
FOR U=1 TO 3:PLOT DX(U)-2,DY(U),0:DRAWR 4,0:PLOT D
X(U),DY(U)+2:DRAWR 0,-4:PLOT DX(U),DY(U),1:NEXT:G
OTO 1890
1860 IF S+SD+1>S2 AND FLAG=2 THEN S=0:F=3:FLAG=1:
FOR U=1 TO 3:PLOT DX(U)-2,DY(U),0:DRAWR 4,0:PLOT D
X(U),DY(U)+2:DRAWR 0,-4:PLOT DX(U),DY(U),1:NEXT:G
OTO 1890
1870 IF FLAG=1 THEN S=S+SD:IF F=3 AND FLAG=1 THEN
FLAG=2:S1=S1-S:FOR U=1 TO 3:PLOT DX(U)-2,DY(U),0:
DRAWR 4,0:PLOT DX(U),DY(U)+2:DRAWR 0,-4:PLOT DX(U),
DY(U),1:NEXT:S=0:GOTO 1890
1880 IF FLAG=2 THEN S=S+SD:IF F=3 AND FLAG=2 THEN
FLAG=1:S2=S2-S:FOR U=1 TO 3:PLOT DX(U)-2,DY(U),0:
DRAWR 4,0:PLOT DX(U),DY(U)+2:DRAWR 0,-4:PLOT DX(U),
DY(U),1:NEXT:S=0
1890 MOVE 220,200:PRINT"PLAYER=";FLAG;
1900 MOVE X,210:PRINT " ";
1910 MOVE -240,Y:PRINT " ";
1920 X=X+20+20*RND:Y=Y+20+20*RND
1930 RETURN
1940 REM *** END OF GAME. PRINT WHO WON
1950 CLG:TAGOFF
1960 PEN 3
1970 LOCATE 5,5:PRINT"RESULT"
1980 LOCATE 5,6:PRINT"-----"
1990 IF FLAG=1 THEN LOCATE 5,10:PRINT"PLAYER 1 WIN
"
2000 IF FLAG=2 THEN LOCATE 5,10:PRINT"PLAYER 2 WIN
"
2010 LOCATE 5,20:PRINT"PRESS [ENTER] TO PLAY"
2020 PEN 0:LOCATE 1,25:INPUT QWE#
2030 RUN
2040 REM *** MAKE CERI THROW
    
```



```

2050 FOR F=1 TO 3:DART=270:WHILE DART>226
2060 PLOT DART,-108,1
2070 PLOT DART+2,-108,0
2080 DART=DART-2
2090 WEND
2100 SOUND 1,200,2,7,0,0,5
2110 NEXT
2120 PLOT DART+2,-108,0
2130 RETURN
    
```

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WELCOME TO BASIC

How did you get on with the program I left you to write last time? Here are possible solutions.

The first was to produce a sum of five random integers between 0 and 9 and check your answer against the correct answer.

```
10 PRINT "ADDITION TEST"
20 S=0
30 FOR I=1 TO 5
40 X=INT(RND(1)*10)
50 PRINT TAB(10);X
60 S=S+X
70 NEXT I
80 INPUT "WHAT'S THE TOTAL";T
90 IF S=T THEN PRINT "CORRECT - WELL DONE" GOTO 110
100 PRINT "NO, THE ANSWER IS";S
110 END
```

The 10 multiplication sums where you select the largest number to be used could be:

```
10 PRINT "MULTIPLICATION TEST"
20 INPUT "MAXIMUM VALUE TO BE USED";M
30 C=0
40 FOR I=1 TO 10
50 X=INT(RND(1)*M+1);Y=INT(RND(1)*M+1)
60 PRINT "WHAT IS "X;"*";Y
70 INPUT ANS
80 IF ANS=X*Y THEN PRINT "CORRECT";C=C+1;GOTO 100
90 PRINT "NO, THE ANSWER IS";X*Y
100 NEXT I
110 PRINT "YOU SCORED";C;" OUT OF TEN"
```

Now one of the most useful facilities in BASIC is the array. It takes some practice before you get to grips with it but it's worth it. The array is used when, instead of just an assortment of variables, we want to manipulate lists or tables of values. We can allocate a group name and define the formulae to be used by referring to that.

Those with an insight into modern maths will certainly have come across matrices — and this is very similar. Individual values within the array, or elements of the array as we call them, are specified by their numerical position in the list or table. This is achieved by giving the array name, which must follow the same rules as ordinary variable names, followed by the position in brackets. So A(5) is the element in position 5 of an array called A. BS(N) is the Nth element in a string array called BS and C(X,Y) is the element in the Xth row and Yth column of a number array called C. That last example is called a two-dimensional array, the others are one-dimensional. You can have more than two dimen-

almost never. Why are they so useful? Look at this:

```
10 PRINT "FISHING CONTEST SCORES"
20 INPUT "HOW MANY COMPETITORS";T
30 DIM SC(T)
40 PRINT "READY TO RECEIVE SCORES"
50 INPUT "WHICH COMPETITOR, 0=END";N
60 IF N=0 THEN 110
70 INPUT "SCORE TO BE ADDED";WT
80 SC(N)=SC(N)+WT
90 PRINT "TOTAL FOR";N;SC(N)
100 GOTO 40
110 PRINT "COMP", "SCORE"
120 FOR I=1 TO T
130 PRINT I,SC(I)
140 NEXT I
```



64



```

90 FOR I=1 TO 5
100 IF N#NA$(I) THEN PRINT BD$(I);F=1
110 NEXT I
120 IF F=0 THEN PRINT"NOT ON FILE"
130 GOTO 60
140 DATA ADAM,10TH JAN,BRENDA,12TH FEB,CLIVE,22ND MARCH
150 DATA DAVID,3RD APRIL,ELIZABETH,21ST MAY
    
```

Firstly, let me explain line 30. This defines an array called SC. It is one-dimensional and its size equals the value given to T at line 20. Now line 80 is an important one. By nominating the position in the list as a variable, the weight of the catch, WT, can be added to the score of whichever competitor landed the fish.

Without the array we'd probably have differently named variables for each competitor's score: S1, S2, S3, perhaps. Then we'd need a long list of: IF N=1 THEN S1=S1+WT, IF N=2 THEN S2=S2+WT, and so on. With the array, one assignment statement and no IFs are all that is needed. Here's another example of an array in use —

```

10 PRINT" NAMES AND BIRTHDAYS"
20 DIM NA$(5),BD$(5)
30 FOR I=1 TO 5
40 READ NA$(I),BD$(I)
50 NEXT I
60 INPUT"NAME TO CHECK":N#
70 IF N#=""END" THEN END
80 F=0
    
```

You might add your own and others of your family and friends to the DATA list, perhaps putting their full names in case you have two people with the same name. You will need to adjust the 5 on lines 20, 30 and 90 to the new numbers of names.

By the way, previously I've used the instruction STOP to end a program; why did I use END this time? Well, STOP gives a BREAK AT LINE 50 — or whatever. Whilst it can be useful to know which line your program stopped at if you have several STOPS, this message could be a bit off-putting if you didn't realise. You might think you had broken the program! END just finishes the RUN without any fuss.

Now I doubt that this program will cause a drop in the sales of birthday books, but if you did spend time adding all the birthdays you know in as DATA, you'd hardly want to

waste the effort and key it all in again if you ever wanted to use the program another day. So you may want to SAVE the program. I haven't mentioned anything about this before as it's something most people manage to pick up from the manual. So I'll quickly check through it with you.

Entering the command SAVE" BIRTHDAYS" would cause the response PRESS RECORD & PLAY ON TAPE. Obeying that results in the message SAVING BIRTHDAYS. Since the screen blanks, you have to wait until it is finished before you can see it. In fact it doesn't start saving straight away, it winds the tape on for five seconds or so first. This is to prevent it from trying to record on the plastic non-recording leader tape that all music cassettes have at each end, and to put a reasonable gap between programs when more than one is put on one

side of a tape.

To load the program back in at a later date the tape is rewound to the right place and the command LOAD entered. You can load it by name as when you save it, but it's easier to find the right place on the tape than remember exactly the right name. LOAD on its own loads the first program it finds. You can use the method most commercial programs on tape give for loading, which is to hold down the shift and press the RUN/STOP key. As well as loading this also runs the program.

So on to this week's homework:

- 1 Write a program to generate 100 random digits between 0 and 9 inclusive and print a sideways bar chart of the number of ones, twos, threes, etc.
- 2 Store the number of days in each month in an array and use it so that on any date, you can calculate the number of days to Christmas.

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Playability 100%
Graphics 100%
Value for money 100%

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C64 UTILITY

How to dump the contents of your screen to your printer.
By Iain Murray

AUTO SCREEN DUMPER

```

1) USING DISK P :
**** COMMODORE 64 BASIC V2 ****
64K RAM SYSTEM 38911 BASIC BYTES FREE
READY.
LOAD 'AUTO SCREEN DUMP'
PRESS PLAY ON TAPE
OK
SEARCHING FOR AUTO SCREEN DUMP
FOUND AUTO SCREEN DUMP
LOADING
READY.
LIST-30

10 REM *** AUTO SCREEN DUMPER ***
20 REM *** (C) IAIN MURRAY 1985 ***
30 REM *** FOR HOME COMPUTING WEEKLY ***

READY.
RUN
    
```

This program enables you to dump the contents of your TV screen to a dot-matrix printer. It runs independently of BASIC once loaded, allowing you to load up another program and dump screens from it. The program listing is of a BASIC loader which loads and initialises the machine code routine.

Once 40 characters have been printed, a carriage return is output and the routine continues until the whole screen has been output. The routine then places itself back into the interrupt queue. While printing the screen, execution of the current program will be postponed, and this will be resumed when the routine has finished its task.

machine code program but the program will stop running while the routine is printing. On completion, the user program will continue. However, please note the following restrictions on the use of the routine:

1. The routine sits in the middle of the block of free RAM (4K) above the normal BASIC memory, beginning at \$CC00, and this area should not be used by any programs loaded subsequently. \$C000-\$CBFF is free for use.
2. Any program which alters the interrupt vector will cause the routine to become unusable. Pressing RUN/STOP and RESTORE will also stop it from working. Type SYS 52506 to restart the routine.
3. The routine passes ASCII character values to the printer for output, so normal characters will appear on the printer, even if user-defined characters are shown on the screen.
4. Pressing one of the routine's control codes without a printer attached is not fatal, but your screen display will be lost.

How it works

BASIC program

- 10-60 titles
- 100-140 read, store and check machine code data
- 150 activate routine
- 160-200 print remainder of instructions
- 210 clear BASIC loader (remember to SAVE before running)
- 1000-1350 machine code data

Machine code

On initialising, the routine enters itself into the interrupt queue of the 64 and is hence entered once every 60th of a second. A check is made for any of the routine control keys on the keyboard being pressed, and if found, the routine removes itself from the interrupt queue and dumps the screen contents. A character is read from the screen and converted to an ASCII value to be passed to the printer.

Instructions for use

Type in and SAVE the BASIC loader. Now RUN, and if no errors occur, the control codes for use will be printed, and the program will clear from memory. To use the routine, simply hold down the CTRL key and press the desired letter for whichever output you want. These are as follows:

CTRL P This outputs in the normal printing mode and would be used for printing a screenful of text.

CTRL W This outputs with no spaces between lines of text, and would be used for printing graphics screens.

CTRL D As for CTRL P except that the text is printed in double width mode.

CTRL B As for CTRL W except that the text is printed both double width and without line spacing.

The routine can be used at any time while running a BASIC or

Hints on conversion

Due to machine-specific addresses, the program would be difficult to convert to another computer. The program outputs to device number four, and the machine code would have to be re-written if another output device were required.

3) USING `CTRL D` :

```
████████████████████████████████████████████████████████████████████████████████
```

PLEASE WAIT WHILE I LOAD IN THE DATA

SCREEN DUMPER NOW ACTIVATED

`CTRL P` - NORMAL PRINTING

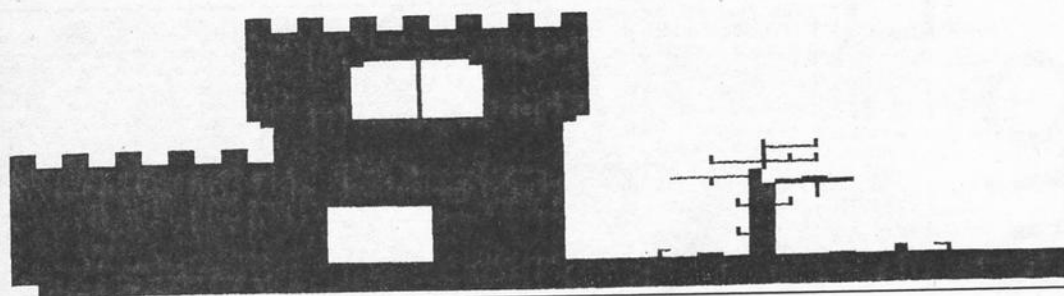
`CTRL W` - NO SPACES BETWEEN LINES

`CTRL D` - DOUBLE WIDTH CHARACTERS

`CTRL B` - BOTH WIDE CHARACTERS AND NO SPACES BETWEEN LINES

READY.

4) USING `CTRL B` :

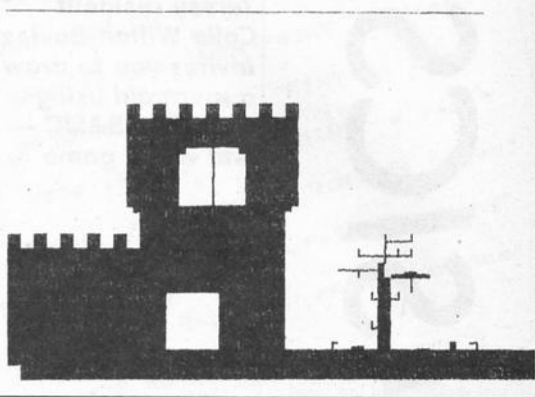


```
10 REM *** AUTO SCREEN DUMPER ***
20 REM *** (C) IAIN MURRAY 1985 ***
30 REM *** FOR HOME COMPUTING WEEKLY ***
49 REM [CLR] [2 DWN] [10 RGT] [REV ON] [REV OFF]
50 PRINT "████████████████████████████████████████████████████████████████████████████████"
59 REM [4 DWN]
60 PRINT "██████████ PLEASE WAIT WHILE I LOAD IN THE DATA"
100 C=0
110 FOR I=52228 TO 52536
120 READ A:POKE I,A:C=C+A
130 NEXT I
139 REM [2 DWN]
140 IF C<>38166 THEN PRINT "XXX ERROR IN DATA! ERROR =";38166-C:END
150 SYS 52506
159 REM [2 DWN]
160 PRINT "XXX SCREEN DUMPER NOW ACTIVATED"
169 REM NEXT 4 LINES HAVE [DWN] [REV ON] [REV OFF]
170 PRINT "X CTRL P - NORMAL PRINTING"
180 PRINT "X CTRL W - NO SPACES BETWEEN LINES"
190 PRINT "X CTRL D - DOUBLE WIDTH CHARACTERS"
200 PRINT "X CTRL B - BOTH WIDE CHARACTERS AND NO SPACES BETWEEN LINES"
```

210 NEW

1000 DATA	96, 173, 141, 2, 201, 4, 208, 248, 169
1010 DATA	0, 141, 2, 204, 141, 3, 204, 165, 197
1020 DATA	201, 41, 240, 36, 201, 9, 208, 8, 169
1030 DATA	1, 141, 2, 204, 76, 62, 204, 201, 18
1040 DATA	208, 8, 169, 1, 141, 3, 204, 76, 62
1050 DATA	204, 201, 28, 208, 206, 169, 1, 141, 2
1060 DATA	204, 141, 3, 204, 120, 169, 49, 141
1070 DATA	20, 3, 169, 234, 141, 21, 3, 173, 24
1080 DATA	208, 201, 21, 208, 5, 160, 0, 76, 87
1090 DATA	204, 160, 7, 169, 4, 170, 32, 186, 255
1100 DATA	169, 0, 32, 189, 255, 32, 192, 255
1110 DATA	162, 4, 32, 201, 255, 169, 0, 133, 251
1120 DATA	169, 4, 133, 252, 160, 0, 173, 3, 204
1130 DATA	240, 5, 169, 14, 76, 128, 204, 169, 15
1140 DATA	32, 210, 255, 177, 251, 201, 128, 16
1150 DATA	10, 72, 169, 146, 32, 210, 255, 104
1160 DATA	76, 157, 204, 72, 169, 18, 32, 210
1170 DATA	255, 104, 24, 105, 128, 201, 32, 16
1180 DATA	6, 24, 105, 64, 76, 202, 204, 201, 64
1190 DATA	16, 9, 201, 34, 208, 27, 169, 39, 76
1200 DATA	202, 204, 201, 64, 208, 5, 169, 96, 76
1210 DATA	202, 204, 201, 96, 16, 6, 24, 105, 128
1220 DATA	76, 202, 204, 24, 105, 64, 32, 210
1230 DATA	255, 200, 192, 40, 208, 177, 24, 169
1240 DATA	40, 101, 251, 133, 251, 169, 0, 101
1250 DATA	252, 133, 252, 173, 2, 204, 240, 18
1260 DATA	169, 8, 32, 210, 255, 169, 13, 32, 210
1270 DATA	255, 169, 15, 32, 210, 255, 76, 251
1280 DATA	204, 169, 13, 32, 210, 255, 165, 252
1290 DATA	201, 7, 240, 3, 76, 114, 204, 165, 251
1300 DATA	201, 232, 240, 3, 76, 114, 204, 169

2> USING MARBLE W :



1310 DATA	13, 32, 210, 255, 169, 13, 32, 210
1320 DATA	255, 32, 231, 255, 120, 169, 39, 141
1330 DATA	20, 3, 169, 205, 141, 21, 3, 88, 96, 8
1340 DATA	72, 152, 72, 138, 72, 32, 5, 204, 104
1350 DATA	170, 104, 168, 104, 40, 76, 49, 234

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BACK TO BASICS

**Jersey resident
Colin Wilton-Davies
invites you to draw
a mermaid using
Spectrum BASIC —
and win a game**

We ended up last time with a picture of a sailing boat on a very calm sea under a sunny sky. I hope that by this time most of you will have played around a bit with the simple line-drawing statements used, and will have introduced a few of the run-of-the-mill sights which greet a sailor's eye. Such as mermaids, sharks, mermaids, rough seas and mermaids — you can tell I kept my eyes open when I was at sea, can't you?

Let's have a little competition. Write a program in Spectrum BASIC to draw a mermaid and send it to me care of HCW. I'd prefer entries on cassette or Microdrive to save time, and these will be returned to you if you enclose a self-addressed label. No stamps, thanks — we use our own ones here in Jersey.

If you don't send a cassette with the program, your entry should be in the form of a PRINTED listing with a screen dump of the picture (use the COPY statement on the Z key). The senders of the ten best (in my opinion) will receive a copy of my Tradewind game, and will be able to compare the artistic merits of their mermaid with my girl on the raft. Entries must be at HCW within 28 days of the publication date of this article.

When you're sailing, even with wellpeeled eyes, the sighting of sharks and mermaids is a matter of luck or chance; and it is common to decide the outcome of a play on the throw of dice or the toss of a coin. The equivalent of this in a Spectrum

BASIC game is the RND function, obtained on the T key in extended mode.

Enter as a direct command PRINT RND, and a number like .0011291504 will appear on the screen. You can do this a lot of times before you will see the same number twice. If you don't believe me, RUN this short program:

```
100 FOR c=1 to 100
110 PRINT RND
120 NEXT c
```

This will print a series of 100 numbers one below the other. As there isn't room for 100 lines of text on the screen, the Spectrum very politely waits when there are 22 on the screen and says "scroll?" If you press SPACE, BREAK or N, this will interrupt the program at this point; any other key will scroll the numbers up the screen until the next 22 have appeared. I'll be very surprised if you find two numbers the same, but you won't find any smaller than zero or quite as big as one.

The numbers are actually generated by means of a complex formula, so are not truly random. Mathematically, they are "pseudo-random numbers between zero and one", which sounds posher than saying you are throwing a die with more than a million sides, but comes to much the same thing! The formula used starts with a "seed" in the Spectrum's memory which is a count of the number of TV frames generated since it was switched on. If for some reason you want the random numbers to follow the same sequence (there's a contradiction!), you can do this by using the RANDOMIZE function, which is also on the T key. Change the little program above so that the first line is:

```
100 FOR c=1 TO 5
```

and each time you RUN it, you will get a different group of numbers. Now insert:

```
90 RANDOMIZE 10
```

and you will get the same sequence of pseudo-random numbers each time. These numbers are inconveniently small for many purposes such as simulating the throw of a die; if you try:

```
100 FOR c=1 TO 6
100 LET n=RND * 6
```

```
150 PRINT n
160 NEXT c
```

You will get nearer to the sort of thing you would expect from throwing a die six times. Insert the line:

```
120 LET n=INT(n)
```

and you will get nearer still. The function INT is short for INTEGER, or whole number. What it does is to keep the part of a number like 23.45 which is greater than one (23) and discard the rest (.45), which is called the fractional part. Some dialects of BASIC have a FRAC function, which is the opposite of INT. The Spectrum doesn't have this; you would use something like:

```
LET frac = n - INT(n)
```

Anyway, you will probably find some zeroes in the sequences, and you certainly won't find any sixes, so to make it more like dice-throwing you must add:

```
130 LET n=n + 1
```

and you have a pretty good imitation of the throwing of a die. If you prefer, all this can be packed into one line:

```
140 LET n=INT (RND * 6) + 1
```

and you can scrap lines 110 to 130 inclusive.

Many traditional board games, including a well-known property-trading game, use two dice, and some games use more than this. For example, poker dice are thrown in fives. Now it would be easy but wasteful to program five separate sequences of lines to generate appropriate random numbers and translate these into card names. It's very common in computing to have jobs (large or small) which have to be done repetitively and sometimes by different parts of a program. These jobs are called "sub-routines" and are accessed by the "GO SUB" statement. The end of the job is recognised by the occurrence of a "RETURN" statement, which causes program control to return to the statement following the GO SUB. Let's suppose we have a game in which ordinary and poker dice are to be used:

```

100 REM mixed dice program
110 GO SUB 1000: REM throw die
120 CLS
130 BORDER d
140 PRINT "You threw a "; d
990 STOP
1000 REM die throw routine
1010 LET d=INT (RND*6) + 1
1020 RETURN
    
```

and you have a simple dice-throwing simulation which tells you what you thre and changes the border colour to match. Now add:

```

150 PRINT "You also threw :-"
160 FOR c=1 TO 5
170 GO SUB 1000: REM throw die
    
```

```

180 GO SUB 2000: REM a poker die
190 NEXT c
2000 REM poker die routine
2010 IF d=1 THEN PRINT "a Nine"
2020 IF d=2 THEN PRINT "a Ten"
2030 IF d=3 THEN PRINT "a Jack"
2040 IF d=4 THEN PRINT "a Queen"
2050 IF d=5 THEN PRINT "a King"
2060 IF d=6 THEN PRINT "an Ace"
2070 RETURN
    
```

Now you have the nucleus of a gambling game which I will leave to you to build up into something more entertaining. You could use subroutines to play a different tune for each "card", or to draw different pictures. If this inspires a best-selling game, a royalty of one per cent would be very acceptable!

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

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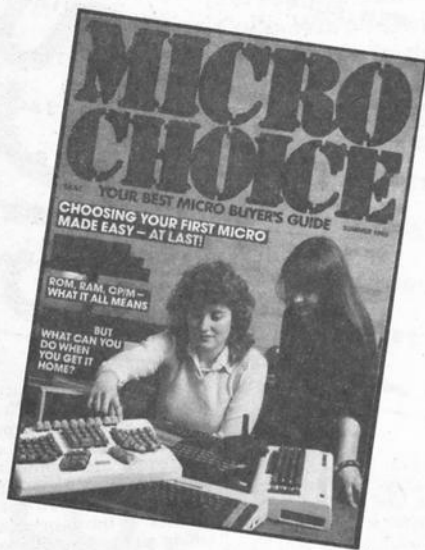
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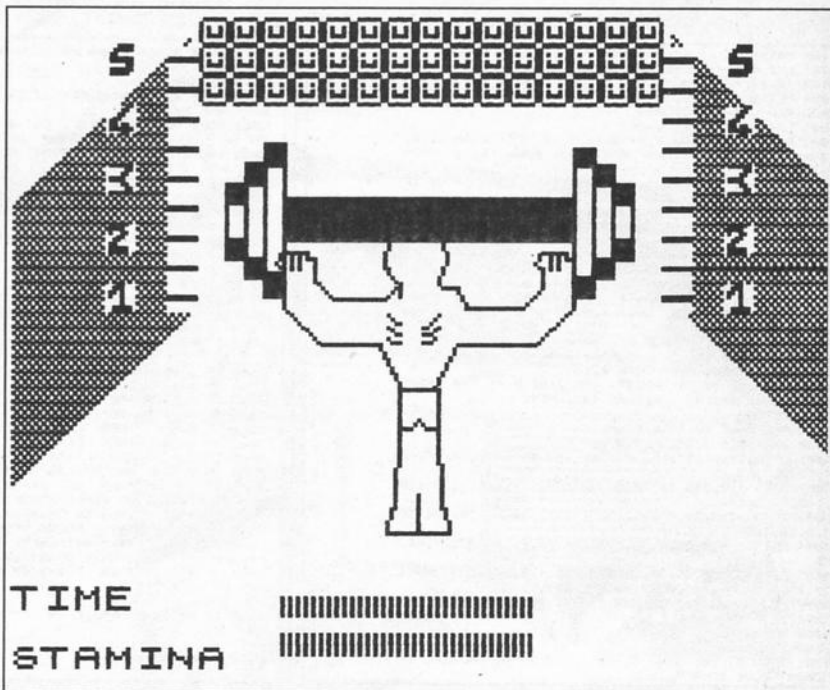
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MUSCLE BOUND



Get a buzz from pumping iron? Now's your chance to beat Geoff Capes, in Andrew Ritson's program for the Spectrum

You're measuring up to Geoff Capes in this weight-lifting game. He currently holds the world record of a height of five metres, and if you can beat this, you'll be declared new world champion weight lifter.

You're watched by an eager crowd of spectators, so give your best performance. Your time and stamina decrease randomly, and your efforts are rewarded by the thumbs-up sign at the bottom of the screen. You're aiming for three thumbs-up.

Don't use any keys: just watch yourself. All you have to do is beat Geoff Capes — and that isn't impossible.

Variables

S1 vertical position of bar
S2 horizontal position of bar
A-Y draw maze
AS thumbs-up

How it works
19-90 draw weights
1000-1011 draw man
5000-5999 UDGs
7000-7999 draw legs
9550-9999 procedure for end of game

Next to the weights is a set of numbers from one to five, representing metres. You can alter the speed at which the weights are lifted by changing the random number in line 999. UDGs are underlined>.

```

1 REM Weight-Lifting Written By Andrew Ritson 1
984
5 BORDER 0: PAPER 0: INK 7
6 CLS : GO SUB 5000
7 FOR f=30 TO 0 STEP -1: PRINT AT 9,f: INK INT
(RND*7):"LAAA "; FLASH 1;AT 9,9:"WEIGHT LIFTER";AT
10,3;"Written By Andrew Ritson": BEEP .003,f+1: N
EXT f
8 GO SUB 8500: GO SUB 1000: GO SUB 7000
9 LET a$=""
10 LET a$="J"
11 ET s1=19: LET s2=20: LET s3=21: LET s4=22: LET p=2
12 S: LET a=70: LET b=120: LET v=15: LET c=50: LET d=
75: LET e=150: LET x=10: LET y=20
13 PRINT AT 19,0: PAPER 1: INK 7:"TIME ";AT 21
,0:"STAMINA": FOR l=70 TO 170 STEP 2: PLOT l,20: D
RAW INK INT (RND*4)+3;0,-5: NEXT l: FOR l=70 TO 1
70 STEP 2: PLOT l,10: DRAW INK INT (RND*4)+3;0,-5
: NEXT l
14 FOR l=50 TO 125 STEP 2: PLOT 0,l: DRAW INK 4
;45,45: NEXT l
15 FOR l=170 TO 100 STEP -2: PLOT 170,l: DRAW 1
NK 4;45,-45: NEXT l
16 PRINT BRIGHT 1: INK 7: PAPER 1;AT 9,23:"C":A
T 7,23:"E";AT 5,23:"E";AT 3,23:"E";AT 1,23:"E"
17 PRINT BRIGHT 1: INK 7: PAPER 1;AT 9,3:"C":AT
7,3:"E";AT 5,3:"E";AT 3,3:"E";AT 1,3:"E"
18 FOR f=1 TO 9: PRINT FLASH 1: INK 7: BRIGHT 1
;AT f,5:CHR# 144;AT f,21:CHR# 144: NEXT f
19 REM Drawing Of Weights
20 PLOT a,b: DRAW d,0: DRAW 0,-5: DRAW -d,0:
30 DRAW 0,-v: DRAW -5,0: DRAW 0,v: DRAW 0,y: DR
AW 5,0: DRAW 0,-v
40 DRAW 0,v: DRAW -5,0: DRAW 0,-5: DRAW -5,0: DR
AW 0,-p: DRAW 5,0
50 DRAW -5,0: DRAW 0,5: DRAW -5,0: DRAW 0,v: DR
AW 5,0
60 DRAW 0,5: DRAW 5,0: DRAW 0,5: DRAW 5,0: DRAW
0,-v
70 DRAW d,0: DRAW 0,v: DRAW 5,0: DRAW 0,-v: DRAW
0,-v
80 DRAW -5,0: DRAW 0,v: DRAW 0,y: DRAW 5,0: DRAW
0,-5: DRAW 5,0
90 DRAW 0,-p: DRAW -5,0: DRAW 5,0: DRAW 0,5: DR
AW 5,0: DRAW 0,v: DRAW -5,0
99 PRINT AT 10,12:"JH"
    
```



```

100 PRINT AT S1,S4;" ";AT S2,S4;" ";AT S3,S4;" "
101 LET S4=S4-RND*0.9
102 IF S4<=7 THEN CLS : GO SUB 9550
999 LET B=RND*1.15: GO TO 20
1000 REM Drawing Of Man
1001 LET X=100: LET Y=100
1002 PLOT X,Y: DRAW 0,3: DRAW 7,14,-PI: DRAW 3,-1:
DRAW 1,-2: DRAW 1,-3: DRAW 0,-2: DRAW -1,-2: DRAW
-1,-4
1003 DRAW 2,-1: DRAW 3,0: DRAW 2,-5: DRAW 15,0: DR
AW 5,5: DRAW 0,3: DRAW 0,2
1004 DRAW 2,5,-PI: DRAW 0,-5: DRAW 0,5: DRAW 2,0:
DRAW 0,-5: DRAW 0,5: DRAW 2,0: DRAW 0,-2: DRAW 2,0
: DRAW 0,-3
1005 DRAW 0,-10: DRAW -10,-10: DRAW -20,0
1006 DRAW -6,-12: DRAW -8,0: DRAW -6,12
1007 DRAW -15,0: DRAW -10,10: DRAW 0,10
1008 DRAW 2,5,-PI: DRAW 0,-5: DRAW 0,5: DRAW 2,0:
DRAW 0,-5: DRAW 0,5: DRAW 2,0: DRAW 0,-2: DRAW 2,0
: DRAW 0,-3
1009 DRAW 0,-3: DRAW 5,-5: DRAW 13,0: DRAW 3,3
1010 PLOT 100,75: DRAW 0,-10: DRAW 3,0: DRAW 2,2:
DRAW 2,-2: DRAW 3,0: DRAW 0,10
1012 FOR X=6 TO 20: PRINT INK 7;AT 0,X;CHR# 145;A
T 1,X;CHR# 145;AT 2,X;CHR# 145: NEXT X
1022 RETURN
4999 REM User Defined Graphics
5000 DATA 0,0,0,255,255,0,0,0
5001 DATA 126,129,165,129,165,189,129,126,24,56,10
4,72,8,8,62,62
5002 DATA 124,248,76,24,48,96,124,124,126,6,12,120
,120,12,6,126
5003 DATA 6,12,24,48,96,108,126,12,30,62,96,126,12
6,6,126,124
5004 DATA 2,4,8,50,4,56,4,56,64,32,24,64,32,24,64,
56
5005 DATA 12,30,30,30,98,255,255,127,127,255,255,1
27,17,255,255,126,0,32,96,255,255,96,32,0
5999 FOR F=USR "a" TO USR "1"+7: READ A: POKE F,A:
NEXT F
6000 RETURN
7000 REM Legs
7001 DRAW 0,-18: DRAW 1,-20: DRAW 2,-6: DRAW 0,-2:
DRAW -8,0: DRAW 0,10

```

```

7002 DRAW 0,-10: DRAW -8,0: DRAW 0,2: DRAW 2,6: DR
AW 1,20
7999 RETURN
8500 POKE 23658,0: INPUT AT 21,0;"Please type in y
our name ";D$
8501 POKE 23658,0: CLS : PRINT AT 10,2: INK 7: PAP
ER 1: FLASH 1;0$;" VERSES GEOFF CAPES"
8502 PAUSE 100: CLS : PRINT FLASH 1;AT 12,2;0$;"
PREPARE TO QUALIFY!"
8505 PAUSE 80: CLS
9000 RETURN
9550 PRINT AT 6,0: FLASH 1;"Your Time and Stamina
have run out!"
9560 IF B>=132 THEN LET D$="E"
9561 IF B>=137 AND B<141 THEN LET D$="E.C"
9562 IF B>=144 AND B<149 THEN FOR X=0 TO 50: BEE
P .01,X+1: BEEP .01,X+3: BEEP .01,X+5: BEEP .01,X+
6: NEXT X: FOR F=0 TO 18: PRINT AT F,0: INK INT (R
ND*7);" : NEXT F:
PRINT FLASH 1;"YOU HAVE MATCHED THE EUROPEAN RE
CORD!": PRINT AT 10,0: INK 7;"THUMBS UP="
9563 IF B>=124 AND B<131 THEN LET D$="E"
9564 IF B>=127 AND B<130 THEN LET D$="E.C"
9565 IF B>=124 AND B<126 THEN LET D$="E.E"
9566 IF B>=135 AND B<138 THEN LET D$="E.D"
9567 IF B>=141 THEN LET D$="E.C"
9568 IF B>=140 THEN LET D$="E.C"
9569 IF B>=135 AND B<136 THEN LET D$="E.E"
9570 IF B>=131 AND B<135 THEN LET D$="E.C"
9571 IF B>=150 THEN LET D$="S.C": CLS : PRINT "YO
U HAVE BEATEN THE WORLD RECORD OF 0 METRES....YOU
SCORED A NEW HEIGHT OF ";D$: GO TO 9571
9575 PRINT : PRINT : PRINT "You Lifted 8000 lbs to
a height of ";D$;" metres!": PRINT "The EUROPEAN
record still stands at 0 metres"
9976 IF B>=131 THEN PRINT AT 10,0: INVERSE 1;"THU
MBS UP ="
9977 IF B>=139 THEN PRINT AT 10,0: INVERSE 1;"THU
MBS UP ="
9999 PAUSE 0: STOP

```

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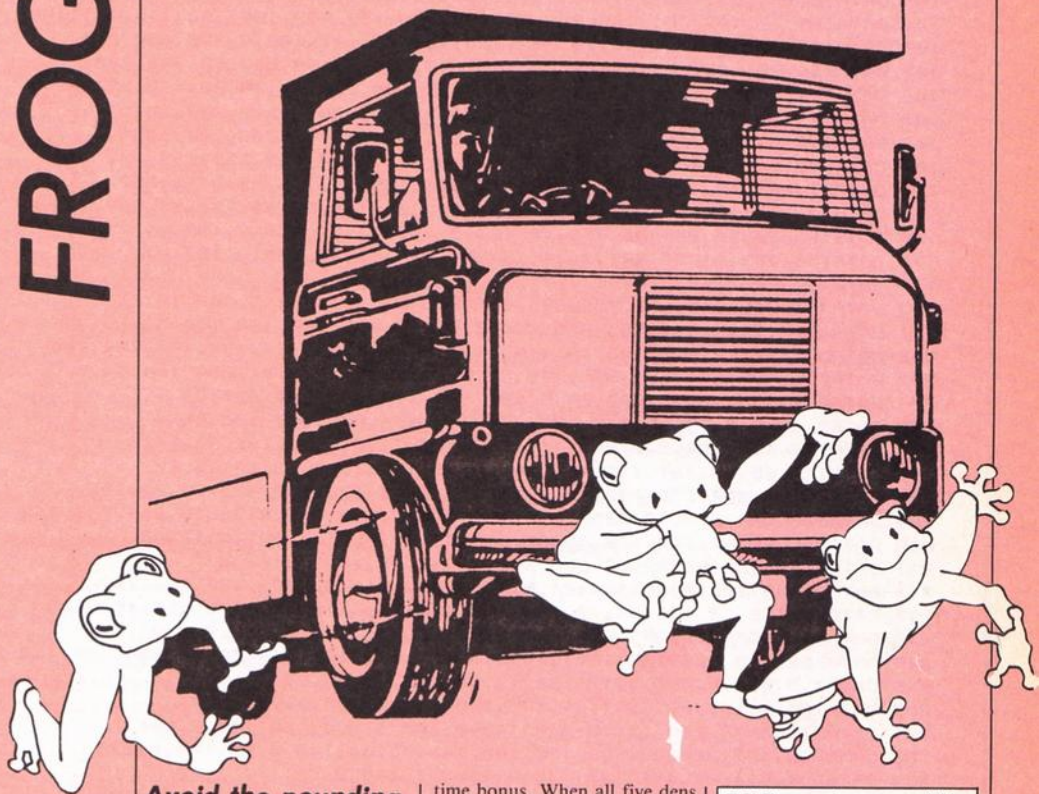
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VIC-20 GAME

SQUASHED FROG



Avoid the pounding lorries in this obstacle game by Paul Burke

In this version of the well-known arcade game you control the frog in its efforts to reach safety.

You start out at the side of the road. Traffic is speeding by in both directions. Hop across the road avoiding the cars and lorries until you reach the river bank. Now jump on to the floating logs. Be careful not to fall in the river, as this means death.

Finally, jump into a den at the top of the screen and you will receive 500 points plus a

time bonus. When all five dens are occupied you get a 1500 point bonus and go back to the start; the traffic and logs however now move a little faster. You are allowed a maximum of 30 seconds to get each frog home. You start off with three lives and win an extra one every second sheet. When the game ends, if you have a high score you can enter your initials in the score table which holds the five best scores of the day. Controls are: **T** forward, **H** right, **V** back, **F** left.

To start the game press any key.

Variables

A width of screen (22)
C difference between screen and colour memory (30720)
F number of occupied dens
H skill level: the lower it is the harder the game is
L number of lives left
M score
S,S-1 sound registers
S+1 white noise
TI VIC's own timer

T,U,X general purpose variables
V volume control
A() occupied den array
SO high scores array
HS() high scorer's array
HS used in GET statements
DS contains a line of road markings
GS used for frog printing routine
TIS VIC's own internal clock
QS contains [HOME] [21xCUD] [RVS] [WHT]

How it works

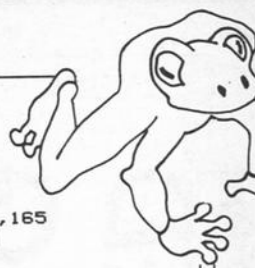
1-2 initialise variables and arrays
 3 set up variables for a new game
 4 display number of lives left
 5-6 main part of game: SYS6971 scrolls cars and logs and moves frog
 7-14 dead frog routine
 15-19 frog has reached den routine
 20-23 all dens filled
 24-29 set up screen
 30 initialise machine code variables
 31-32 routine to print in dens the characters in GS
 33-45 game over and high score table routine



Listing 1.

```

0 POKES2,27:POKE56,27:POKE55,58:POKE55,58:CLR
10 FORT=6971T07641:READA:POKET,A:B=B+A:NEXT
20 IFB<>79868THENPRINT"ERROR IN DATA":STOP
30 LOAD
100 DATA32,191,29,160,0,177,251,201,31,240,5,169,8,133,9,96
101 DATA165,87,145,251,165,252,24,105,120,133,252,165,195,145,251,165
102 DATA197,201,50,208,4,198,254,198,254,201,27,208,4,230,254,230
103 DATA254,201,43,208,2,230,253,201,42,208,2,198,253,201,64,240
104 DATA5,169,128,141,11,144,165,254,201,22,208,4,169,20,133,254
105 DATA32,120,29,165,254,201,2,240,4,201,6,208,2,230,253,201
106 DATA4,240,4,201,8,208,2,198,253,32,191,29,165,253,201,255
107 DATA208,9,201,22,208,5,169,4,133,9,96,160,0,177,251,133
108 DATA87,201,15,176,5,169,10,133,9,96,169,31,145,251,165,252
109 DATA24,105,120,133,252,177,251,133,195,169,5,145,251,96,162,198
110 DATA189,21,30,201,32,208,10,169,0,157,21,30,169,6,157,21
111 DATA150,189,21,30,201,0,240,9,189,21,150,24,105,8,157,21
112 DATA150,202,208,220,96
200 DATA255,255,255,255,255,255,255,0,1,2,63,115,109,18,12
201 DATA254,17,16,255,255,255,0,0,0,128,252,156,108,144,96
202 DATA0,255,143,175,143,191,163,171,0,188,164,164,164,166,254
203 DATA235,225,237,225,255,148,99,0,190,190,191,191,254,164,24,0
204 DATA0,1,1,0,15,63,229,24,6,184,128,156,226,235,226,28
205 DATA3,15,9,9,15,3,2,192,240,144,144,240,240,192,64
206 DATA195,112,204,3,3,204,112,192,195,14,51,192,192,51,14,3
207 DATA127,65,65,127,115,109,18,12,12,18,51,63,23,24,15,27
208 DATA48,72,204,252,232,24,240,216,19,83,123,253,223,75,33,192
209 DATA200,202,222,191,251,210,132,3,219,219,219,219,219,219,219,219
210 DATA255,85,85,170,170,85,85,255,0,123,66,122,10,10,123,0
211 DATA0,222,82,82,82,82,222,0,0,19,50,82,18,18,123,0
212 DATA0,123,10,10,58,10,123,0,221,187,221,187,221,187,221,187
213 DATA255,36,73,146,36,73,146,255,153,189,219,126,126,255,153,129
214 DATA126,255,255,255,255,255,255,126,255,165,0,0,0,0,0
215 DATA255,129,189,165,165,189,129,255,146,186,214,56,56,254,146,130
216 DATA0,0,0,0,0,0,0,119,39,17,58,145,52,23,94
300 DATA165,0,133,2,165,1,24,105,120,133,3,160,0,177,0,72
301 DATA177,2,72,200,177,0,136,145,0,200,177,2,136,145,2,200
302 DATA200,192,22,208,239,136,104,145,2,104,145,0,96,165,0,133
303 DATA2,165,1,24,105,120,133,3,160,21,177,0,72,177,2,72
304 DATA136,177,0,200,145,0,136,177,2,200,145,2,136,136,192,255
305 DATA208,239,200,104,145,2,104,145,0,96,165,87,201,32,240,4
306 DATA201,15,176,4,160,0,234,234,169,30,133,1,169,44,133,0
307 DATA32,61,29,169,88,133,0,32,16,29,169,132,133,0,32,61
308 DATA29,169,176,133,0,32,16,29,169,8,133,0,169,31,133,1
309 DATA32,16,29,169,52,133,0,32,61,29,169,96,133,0,32,16
310 DATA29,169,140,133,0,32,61,29,169,162,133,0,76,61,29,162
311 DATA22,169,30,133,252,165,253,133,251,165,251,24,101,254,133,251
312 DATA165,252,105,0,133,252,202,208,240,96
    
```



Listing 2.

```

1 PRINT"Q":C=30720:V=36878:POKEV-9,255:S=V-2:A=22:DIM A(4),S(5),H$(5):G$="OP"
QR"
2 FORT=0T04:A(T)=1:H$(T)="VIC":S(T)=1E3:NEXT:H$(0)="PGB":S(0)=2E5:POKEV+1,12:GOT
042
3 L=3:M=0:H=130:FORT=0T04:A(T)=0:NEXT:F=0:GOSUB24
4 GOSUB30:G$="":IFNOT-LTHENFORT=2TOL:POKE8162+T,31:NEXT
5 POKEV,255:PRINTQ$RIGHT$(TI$,2),M:IFPEEK(254)=0THEN15
6 SYS6971:FORT=1TOH:NEXT:POKES-1,0:IFPEEK(9)=0ANDT1<1800ANDPEEK(253)<22THEN5
7 L=L-1:X=PEEK(253):IFX<21THEN9
8 IFX>21THENX=20:IFPEEK(253)>200THENX=0
9 POKE253,X:POKES-1,0:POKES+1,0:SYS7615:T=PEEK(251)+256*PEEK(252):X=C+T
10 POKEK,1:POKET,27:POKES,200:GOSUB14:POKET,28:POKES,180:GOSUB14:POKEK+1,1:POKEK
+A,1
    
```


QUAD WRANGLE



ANTONY

Mutant beachballs are out to crush you. Can you survive?
 By Stephen Gray

An evil wizard has changed you into a bert and put you in wobble land. Your task is to change the land's colour by jumping on the squares. Don't jump off the land — it's a long drop, and beware of the mutant beach balls which jump down to crush you.

Keys

North-west A
 North-east *
 South-east Z
 South-west ?

How it works

10-160 initialisation
 170-260 main loop
 270-440 bert subroutine
 450-580 ball subroutine
 590-880 draw screen subroutine

890-920 fill in square subroutine
 930-970 draw sides of square subroutine
 980-1120 initialisation subroutine
 1130-1160 start new game
 1170-1290 new level subroutine
 1300-1540 new high score subroutine
 1550-1690 display high scores subroutine
 1700-1800 dead bert subroutine

Variables

L% level
 S% score
 D% dead or not
 B% squares filled in

BX% ball co-ordinates
 R% delay for ball bounce
 BB% number of ball bounces
 A% bonus
 X%,Y% bert co-ordinates
 P% colour of square bert's on
 M%,N% bert's last co-ordinates
 H% has bert moved or not?
 J% which way bert is facing
 C% colour of squares at start
 CC% colour squares are changed to
 MX%,MY% ball last co-ordinates
 BS prints ball
 MS,NS print bert
 H%(8) high score array
 NS(8) names of high scorers array
 V% rank

```

10 REM *****
20 REM * QUAD WRANGLE *
30 REM * By Stephen Gray *
40 REM * For H.C.W. *
50 REM * BBC MODEL B *
60 REM * Grayface *
70 REM *****
80 MODE 7
90 *FX9,10
100 *FX10,10
110 PROCinitialisation
120 MODE 2
130 VDU 23;B202;0;0;0;
140 L%=1;S%=0;D%=0;B%=0;BY%=800
    
```



```

150 PROCscreen
160 TIME=0
170 PROCbert
180 IF RND(220-(LX MOD9)*20)=1 AND BBX=0 BX=RND
(B)*128+96:BBX=5:BY=800:RX=100
190 IF BBX<>0 AND RX MOD10=0 PROCdisc
200 RX=RX-1
210 IF DX PROCdead:GOTO1130
220 IF BX=43 PROClevel:GOTO150
230 AX=50-(TIME DIV100):VDU4:COLOUR7:IF AX>9 PRI
NTTAB(12,3):AX ELSE PRINTTAB(12,3):"0":AX
240 VDU5
250 IF AX=0 GOTO1130
260 GOTO170
270 DEFPROCbert
280 MX=X:NX=Y:PX=POINT(X+32,Y+8)
290 IF INKEY(-66) X=X-64:Y=Y+128:H=1:J=1:G
DOTO330
300 IF INKEY(-98) X=X+64:Y=Y-128:H=1:J=2:G
DOTO330
310 IF INKEY(-105) X=X-64:Y=Y-128:H=1:J=1:
GOTO330
320 IF INKEY(-73) X=X+64:Y=Y+128:H=1:J=2
330 IF PX<>CX AND PX<>CCX DX=1:ENDPROC
340 IF (PX<>CX AND PX<>CCX) OR (POINT(X+32,Y+8)
)<>CX AND POINT(X+32,Y+8)<>CCX) DX=1:PROCFill(MX
-32,NX-32,CX):ENDPROC
350 IF HX=0 ENDPROC
360 GCOLOR,0
370 MOVE X,Y:IF JX=1 PRINT N# ELSE PRINT M#
380 COLOUR3
390 IF PX=CX BX=BX+1:SY=SY+1:VDU4:COLOUR7:PRINTT
AB(5,3):S:VDU5
400 PROCfill(MX-32,NX-32,CCX)
410 HX=0
420 SOUND 1,1,100+LX*5,3
430 IF BX=X AND BY=Y THEN DX=1
440 ENDPROC
450 DEFPROCdisc
460 SOUND 2,2,0,10
470 MX=BX:MY=BY
480 ON RND(2) GOTO 490,500
490 IF BX>160 BX=BX-64:GOTO 510
500 IF BX<1088 BX=BX+64 ELSE GOTO 490
510 BY=BY-128
520 MOVE BX,MY
530 PRINT:B#
540 IF BBX<5 PROCfill(MX-32,MY-32,POINT(MX+10
,MY))
550 BBX=BBX-1
560 IF BX=X AND BY=Y DX=1
570 IF BBX=0 PROCfill(BX-32,MY-32,POINT(BX+10
,BY)):BY=800
580 ENDPROC
590 DEFPROCscreen
600 VDU4
610 FOR A=1 TO 12:VDU 19,A,0,0:NEXT
620 IF LX MOD2=1 CX=4:CCX=1 ELSECX=1:CCX=4
630 IF LX<>1 PROCfill(X-32,Y-32,CX):GOTO770
640 RESTORE 660
650 FOR B=1 TO 15:READ F,H:SOUND2,7,F,H:NEXT
660 DATA 53,4,53,2,53,6,33,6,69,4,69,2,69,6,53,6
,53,4,69,2,81,10,81,2,73,4,69,2,61,6
670 FOR Y=128 TO 800 STEP256
680 FOR X=128 TO 1152 STEP128
690 PROCside(X,Y)
700 PROCfill(X,Y,CX)
710 NEXT:
720 FOR Y=256 TO 512 STEP256
730 FOR X=192 TO 1088 STEP128
740 PROCside(X,Y)
750 PROCfill(X,Y,CX)
760 NEXT:
770 IF BY<800 PROCfill(BX-32,MY-32,CX)
780 COLOUR12:PRINTTAB(5,1):"QUAD WRANGLE":COLOUR
2:PRINTTAB(2,3):CHR#238:CHR#239:CHR#9:COLOUR7:PRI
NT:SY:COLOUR6:PRINTTAB(9,3):CHR#240:CHR#241:CHR#24
2:COLOUR7:PRINT:"50":COLOUR1:PRINT:CHR#243:CHR#
244:"":LX
790 COLOUR5:PRINTTAB(2,5)"CHANGE TO ":COLOURCX:
PRINTTAB(12,5):
800 VDU255,255,255
810 X=160:Y=160:BX=0:H=0:A=50:J=2
820 BY=800:BX=0
830 RX=0
840 BBX=0
850 FOR A=1 TO 12:VDU 19,A,A,0:NEXT

```

```

860 VDU5
870 MOVE X,Y:PRINT M#
880 ENDPROC
890 DEFPROCfill(AZ,BX,CX)
900 GCOLOR,CX
910 MOVE AX,BX:MOVE AX+64,BX+64:PLOT 85,AX+64,BX
-64:PLOT 85,AX+128,BX
920 ENDPROC
930 DEFPROCside(AZ,BX)
940 GCOLOR,6:MOVE AZ,BX
950 MOVE AX,BX-64:PLOT 85,AX+64,BX-64:PLOT 85,AX
+64,BX-128
960 GCOLOR,5:PLOT 85,AX+128,BX:PLOT 85,AX+128,BX-
64
970 ENDPROC
980 DEFPROCinitialisation
990 ENVELOPE1,1,10,10,20,1,1,1,120,-2,-2,-2,120,
100
1000 ENVELOPE 2,128,2,2,10,20,20,127,-47,0,-80
,127,80
1010 ENVELOPE 7,1,0,0,1,1,1,120,-1,-1,-1,120,60
1020 DIM HX(B),N#(B)
1030 FOR A=1 TO B:HX(A)=200-A*20:N#(A)="Grayface"
:NEXT
1040 PROCshow
1050 VDU23,255,255,255,255,255,255,255,255,23
,224,112,248,232,203,207,255,223,192,23,225,0,0,0,
0,16,16,0,0,23,226,0,0,16,48,32,0,32,56,23,227,248
,248,112,96,0,0,0,23,228,0,0,0,6,231,255,255,254
,1060 VDU23,229,14,31,23,211,243,255,251,3,23,230,
0,0,0,0,8,8,0,0,23,231,0,0,8,12,4,0,4,28,23,232,31
,31,14,6,0,0,0,23,233,0,0,0,96,231,255,255,127
1070 VDU23,236,0,0,24,0,126,0,255,0,23,237,0,0,0,
60,0,126,0,255,23,234,255,0,126,0,60,0,0,23,235,
0,255,0,126,0,24,0,23,238,219,146,146,210,82,82,
82,219,23,239,187,170,170,187,178,170,170,171
1080 VDU23,240,206,170,170,202,170,170,170,206,23
,241,149,149,213,213,181,181,149,151,23,242,96,64,
64,96,32,32,32,96,23,243,154,146,146,154,146,146,1
45,217,23,244,180,164,164,180,164,164,36,54
1090 M#CHR#18+CHR#0+CHR#3+CHR#224+CHR#8+CHR#10+C
HR#227+CHR#8+CHR#11+CHR#18+CHR#0+CHR#0+CHR#225+CHR
#8+CHR#18+CHR#0+CHR#2+CHR#226+CHR#8+CHR#10+CHR#18+
CHR#0+CHR#0+CHR#228
1100 N#CHR#18+CHR#0+CHR#3+CHR#229+CHR#8+CHR#10+C
HR#232+CHR#8+CHR#11+CHR#18+CHR#0+CHR#0+CHR#230+CHR
#8+CHR#18+CHR#0+CHR#2+CHR#231+CHR#8+CHR#10+CHR#18+
CHR#0+CHR#0+CHR#233
1110 B#CHR#18+CHR#0+CHR#9+CHR#236+CHR#8+CHR#10+C
HR#234+CHR#8+CHR#11+CHR#18+CHR#0+CHR#11+CHR#237+CH
R#8+CHR#10+CHR#235
1120 ENDPROC
1130 MODE7
1140 PROCi_scores
1150 PROCshow
1160 GOTO120
1170 DEFPROClevel
1180 FOR A=1 TO 300:NEXT
1190 VDU4
1200 REPEAT
1210 SX=SX+1:AX=AX-1
1220 FOR B=1 TO 100:NEXT
1230 SOUND 1,-15,AX+4,1
1240 PRINTTAB(5,3):S:IF AX>9 PRINTTAB(12,3):AX E
LSE PRINTTAB(13,3):AX
1250 IF AX=9 PRINTTAB(12,3):"0"
1260 UNTIL AX=0
1270 FOR A=1 TO 4000:NEXT
1280 LX=LX+1
1290 ENDPROC
1300 DEFPROCi_scores
1310 IF SX=HX(B) ENDPROC
1320 VX=0
1330 REPEAT VX=VX+1
1340 UNTIL SX=HX(VX)
1350 IF VX=8 GOTO1390
1360 FOR NS=8 TO VX STEP-1
1370 HX(NS)=HX(NS-1):N#(NS)=N#(NS-1)
1380 NEXT
1390 HX(VX)=SX
1400 PRINT "CHR#131:CHR#141:" CONGRAT
ULATIONS"
1410 PRINTCHR#131:CHR#141:" CONGRATULA
TIONS"
1420 PRINT "CHR#129:CHR#141" YOUR SCORE I
S RANKED ";VX
1430 PRINTCHR#129:CHR#141" YOUR SCORE IS R
ANKED ";VX

```

```

1440 PRINT 'CHR#130;"          ENTER YOUR NAM
E"
1450 PRINTTAB(11,18);CHR#134;CHR#157;CHR#132;"
";CHR#156
1460 N$(V%)=""
1470 *FX15,1
1480 PRINTTAB(14,18);"";
1490 A=GET:IF A=13 GOTO1540
1500 IF A=127 AND LENN$(V%)=0 VDU7:GOTO1490
1510 IF A=127 N$(V%)=LEFT$(N$(V%),LENN$(V%)-1):VD
UA:GOTO1490
1520 IF LENN$(V%)<14 N$(V%)=N$(V%)+CHR$(A):VDUA E
LSE VDU7
1530 GOTO1490
1540 ENDPROC
1550 DEFPROCshow
1560 CLS
1570 PRINTCHR#131;CHR#157;"
1580 PRINTCHR#131;CHR#157;CHR#129;CHR#141;" Q
U A D W R A N G L E "
1590 PRINTCHR#131;CHR#157;CHR#129;CHR#141;" Q
U A D W R A N G L E "
1600 PRINTCHR#131;CHR#157;CHR#132;"          BY STE
PHEN GRAY"
1610 PRINTCHR#131;CHR#157;"
1620 FOR A=1 TO 7
1630 PRINT 'CHR$(128+A);A;"." ,H%(A);"          ";N$(A)
1640 NEXT
1650 PRINT 'CHR#129;"B";"." ,H%(B);"          ";N$(B)
1660 *FX15
1670 PRINT 'CHR#134;CHR#136;" Press RETURN t
o
start"
1680 A=GET:IF A>13 GOTO 1680
1690 ENDPROC
1700 DEFPROCdead
1710 GCOL 0,6
1720 MOVE 600,100
1730 MOVE 750,100;PLOT 85,600,700;PLOT 85,750,700
    
```



ANTONY

```

1740 MOVE 400,500;MOVE 400,400;PLOT85,950,500;PLO
T 85,950,400
1750 GCOL 0,0;MOVE 512,466;PRINT"R.I.P."
1760 RESTORE1780
1770 FOR G=1 TO9:READ F,H:SOUND2,7,F,H:NEXT
1780 DATA 33,9,33,9,25,3,17,3,13,3,13,3,17,3,25,3
,17,3
1790 FOR B=1 TO 7000:NEXT
1800 ENDPROC
    
```

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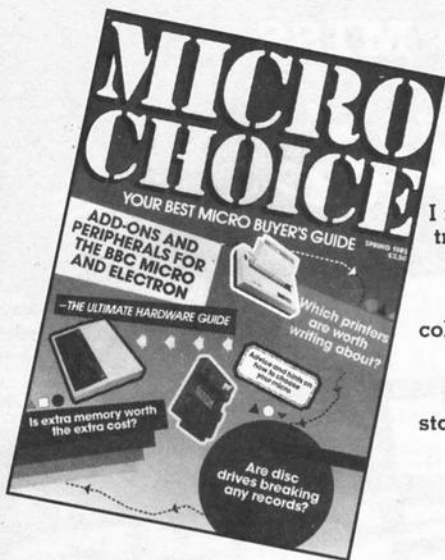
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MAKE LIFE EASIER

Shingo Sugiura continues his series on user defined characters — and shows you some short cuts

As I explained in my last article, user defined characters are very useful for games programs and are easy to make. However, the process is time consuming and it would be nice if you could define the characters on an electronic graphic paper with you simply having to fill in the appropriate dots and the computer calculating the values for each row. Well, a program to do just that will be printed in several sections over the coming weeks. In each article, a section will be thoroughly explained. So it should prove a useful programming exercise as well as providing you with an invaluable utility!

First we must decide what facilities we want from this utility program. Obviously, we must be able to define a character on an enlarged grid. We also want it to be shown in real size as we design the character in enlarged mode. So, the basis of this program is a large 8x8 grid in which you can move about via the cursor keys and each dot may be filled in or deleted with ease. While we are at it, we might as well print the number for each row.

Now that we've decided on the basis of this utility, we need the "frills". I have decided to include the usual facilities such as clear grid, rotate left/right, invert, upturn and mirror. All these facilities may be used during editing.

Probably the most important facility is save, which you



allows you to save the characters in BASIC format, such as "10VDU23,224,255,23,54,-65,23,43,66,34". This is useful if you design lots of characters in one go but is often neglected for some reason.

I believe the quickest way to write a program is to write modularly, that is to say, write the program in small distinct sections. Also, definitely no GOTOs or GOSUBs. Recently, there's been a big debate over this and some people seem to avoid using GOTOs without knowing why. Well, using GOTOs slows down program development and also makes debugging a pain in the neck. Because of the inclusion of procedures in BBC BASIC, you can start writing a program by a section of code such as the one shown below.

```
10PROCinit
20PROCmain
30PROCend
40....
```

You can immediately see the structure of the program and yet, we have hardly written any code! In this way, you can write PROCEDURE "init", then debug it, then PROCEDURE "main" then debug that and so on. It also means that if you find a bug at a later stage, you can quickly track it down and deal with it.

So to finish off, I will leave you with the first few lines of the program. As you can see, it's just a series of PROC statements. All that's left is to add the various procedures! That's it for this week. In my next article, I will go on to the main procedures.

```
10REM Character Generator
20REM By Shingo Sugiura
30REM For HDW
40
50MODE4
60PROCassemble
70PROCinit
80PROCscreen
90REPEAT
100PROCprompt
110IFA#="1" PROCedit ELSEIFA#="2" PROCsave ELSEIFA#="3" PROCnew ELSEPROCquit
120UNTIL A#="4"
130*FX4
140*FX200
150END
160
```



PERIPHERAL



Richard Seeley gives the thumbs-up to Micro Pulse's ROM Box

One of the BBC's most useful design points is its ability to use up to 16 paged ROMs. One of its worst design faults is that there are only four sockets provided for such programs to occupy. This means that many users have a need for more ROM space and there is a whole range of options available: internal and external ROM boards, ROM cartridge systems and even RAM-based emulators which allow you to load such programs from disc instead of cassette. The question is which one of these systems best suits your needs and is available at the right price.

This product from Micro Pulse may seem slightly strange at first glance. It is an external ROM box with spaces for eight ROMs but only one of which can be used at a time. This might be construed by some as a rather useless concept: why have eight sockets and only be able to use one?

I have to disagree. Having used the box for a number of weeks I find that not only does it fulfil a purpose but it can make life much easier for the ardent BBC user and reviewer.

The unit is supplied as a cream coloured box, connecting

cable, instruction sheet and guarantee. Fitting is simplicity itself and the explanation sheet is quite specific although a diagram might help those less familiar with the machine.

The cable trails from the right hand side of the BBC case and can be lightly clamped into position when you screw the case back together. This then connects to the box via an insulation displacement connector. This is an excellent feature as it makes the BBC easy to transport and the box itself cableless.

At the top right of each socket there is a red LED, which responds to the switch which selects the ROM to be powered. This too is a good design feature and shows instantly through the perspex cover which program is ready for use. As all the ROMs are memory mapped into the same area and share a single register location, they can be switched with the BBC power on and then called as required.

One of the sockets is a zero insertion force socket and this allows very easy exchange of ROMs with no damage possible to either ROM or board. You simply place it between the "jaws" and then clamp them shut. All the other sockets are of the usual main board type but are of a very high quality.

I thought at first that this box would only have been of use for language ROMs which you only use one at a time, and this is how I have mainly used it. I find however that it can also be

used very effectively with utility ROMs. The instructions say that you need to select the ROM and then press CTRL/BREAK but I find that if you are switching between service ROMs then this is unnecessary and you only need to call the routine you want. You do have to press BREAK when changing from one language to another, however.

In summary, I have to declare that this is a very well built and designed product. It seems a little expensive but is certainly the Rolls Royce of such units. All of the design features contribute to its simplicity and it will be of very great use to those who have a number of ROMs which they use occasionally but not enough to justify their taking space on the main board.

There are no problems of overheating and none of the ROMs in the system I used interferes with any of the others. It can even be used with an internal ROM board and allows you to have up to 23 ROMs attached to the BBC, with 16 in use at any one time.

R.S.

Price: £39.95

Publisher: Micro Pulse

Address: Churchfield Rd, Frodsham, Cheshire WA6 6RD

BBC





Find those sprites!

I was very interested in the TI program in HCW 105 about the use of CALL PEEK to detect a sprite coincidence. I was wondering if anyone knew about other uses of CALL PEEK without the memory expansion system for finding which two, even 28 sprites are the ones involved with the coincidence.

In TI Extended BASIC you can't use character sets 15 or 16 because the computer uses these memory locations to handle sprites, but if your program (in Extended BASIC) doesn't use any sprites then can you in any way access sets 15 and 16? I don't have a memory expansion.

Mark McGurn, Cheshire

Mum's the word

This is the first time I have written to any magazine, but I felt that I had to tell you how much I enjoy your magazine. I don't think that I am an average reader in that I am a little older and a mum (not a dad). I do find some articles assume that only dads and sons like computers. I am the proud owner of an Amstrad CPC464 and your articles in the main are easy for me to understand.

My only problem purchase is the Camel Toolbox. I know it is me but I can't make the Amspit work. It keeps saying out of screen range. Any help would be appreciated. As for high scores I was well and truly hooked by Pyjamarama and have now scored 100%. Then I got Sorcery and have eight sorcerers and a score of 69,000.

I was lucky enough to win Mikro-Gen's new game in one of your competitions and I'm looking forward to playing it.

Pauline Hinton, Reading

Sharing software

At last! At long last! Someone has realised that what is needed is an adaptor which will allow one computer to use another's software. I am of course talking of Memotech's Spectrum ROM emulator, which allows the Memotech 512, with the use of an options tape, to run Spectrum software.

This is precisely what is needed for all those neglected Z80-A micros out there.

It would also be nice to have cross CPU versions, i.e. 6502: Oric, Atari; 6809: Dragon, Tandy; 9900: TI-99/4A. What is needed for these is either a CPU language converter plus adaptor, or a BASIC language converter, e.g. Commodore to Oric, Dragon to Oric, etc.

For months I've been thinking: Why don't the software producers come up

with an adaptor, which will enable me to use Spectrum programs on my Oric or Sord?

Surely this would also be an advantage for software writers, although the last thing I want is Orics to run Spectrum ROM, because different ROMs have different advantages. I also don't want creativity of software writers dampened by limiting them to one computer system. I think that what will be best is a computer-type interface which converts one type of system software to another, using the receiving computer's abilities to its fullest, i.e. Spectrum characters which need to be erased each time they are used. When the program is used on, say a Sord, it can be replaced with sprites.

Thank you very much, Memotech for solving a widely felt problem.

Ronald James, Streattham

Amstrad old boy

I disagree with N Middleton's letter in HCW 107. Why doesn't he go and buy the Beano or the Dandy, or give up computing?

I have taken every copy of HCW and being an Amstrad old boy — 60 years next month — I have several other mags as well. You are producing a really first class mag, so keep it exactly as it is. I know there's not much on the Amstrad, but I'm pleased with it.

The only thing that is bad is the classified advertisements. The rate is too high, at 35p per word, as against other mags which are 25p at the most — and some are free.

Thanking you for good value.

S Fowell, Dagenham

PS: Any chance of music programs on the Amstrad?

Watch this space!

Play it again, Sam

I was pleased to see the new look HCW, which now rates as one of the best weekly magazines. Most magazines can be measured for quality by how long they hold your attention. Several last a few minutes — HCW lasts for hours.

One thing I would like to see is a section where readers write in with games they would like to see reviewed again. So often I've missed a review of a game I'd thought of buying, and ended up not getting the game for fear of it being a turkey. This is especially relevant when games are being sold at cut prices.

Of course a section like this

would be rather like repeats on television — but far more beneficial to your readers. Or maybe you could unearth all your reviews from old issues and get them into a book — the HCW Buyer's Guide to games and software.

For starters, what do you think of US Gold's C64 version of Spitfire Ace for £6.95?

Andy Clarke, Baddesley, Ensor

We're interested in taking up your idea, Andy, but we would only feature highlights of the review. It's up to you, readers, to let us know which game reviews you would like to see again. Write to our readers page.

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Your jokes

Have you heard about the squashed chocolate bar in the middle of the road?

It was a careless Wispa.
Hilary Buswell, Slough

Two eggs sitting in a pan of boiling hot water. One says to the other: "Cor blimey, it's hot in here!" The other egg replies: "Just wait till you get outside, they smash your head in!"

Wendy Palmer, Croydon

What do you call a boomerang that doesn't come back?
A stick.

Kerry Fowler, Camberwell

What's green and red and spins round at 60 mph?
A frog in a liquidizer.

Pete Foote, Guernsey

Two cowboys were playing cowboys and Indians. Which one was the cowboy?
Neither, they were both redskins.

Nick Collett, Manchester

What do you call a Chinese woman with a food mixer on her head?
Blenda

Nicole Segrey, London

What do glow worms eat?
Light meals
What do sheep and ink have in common?
They both live in pens.

What is the longest word in the English dictionary?
Smiles (there's a mile between the first and last letters).

The sky is full of holes
That's where rain comes in
The holes are very small
That's why rain is thin.

Deirdre Boyd, Twickenham

What's the difference between a ZX81 and a cardboard box?
A ZX81 has wires coming out of the back.

Simon Forth, Brough

Solution to last week's puzzle

The answer is 40.
Each number is formed from the two numbers below it. Multiply the two digits which make each number and then add the two answers together.
From 28: $2 \times 8 = 16$ and
from 38: $3 \times 8 = 24$ and $16 + 24 = 40$.

Wizard and the Princess

This game is an adventure. It has five separate stages, and at the end of each stage you have to wait for the next to be loaded. This can get annoying sometimes.

The point of the game is to save the princess from the evil wizard. Heard it somewhere before? You are the brave young knight willing to risk his life for this quest.

You start by finding the castle of the wizards, but if you aren't careful, by taking a wrong move you may find yourself falling off the cliff. Once you've found the castle you have to fight a dragon, which guards the gate, in order to enter.

Next you have to find your way through a labyrinthine, which I haven't yet succeeded in doing. If that wasn't enough you then have to fight monsters which protect the wizard. These monsters are in different rooms

and you must find your way through the rooms, killing the monsters until you find the princess.

Finally, in order to escape the castle you are confronted by a troll which you must kill. At the same time you must avoid falling debris. You are then congratulated on your success.

Exciting and interesting when I first bought it but after a while it did get slightly boring. The graphics were very good, considering its for the standard VIC-20.

I can't say I would recommend it, but I think it was worth the money.

Price: £4.95

Publisher: Melbourne Hse

Address: Castle Hse, Castle Yd, Richmond

Machine: VIC-20

Rating: keen

Over to you . . .

Julie Busby from Petersfield, Hants, has sent us a review she's written for Wizard and the Princess, on the VIC-20. See what you think — and send us your reviews of your favourite — or most un-favourite — games.

Helpline

Andrew Russell, of 19 Eves Gardens, Wasingborough, Lincoln LN4 1QU, wants to know about software or books which would help him to program in machine code. He also wants to know how to get the golden eagle in Eureka.

D Briggs of 145 Queen St, Retford, Notts DN22 7DA, has compiled a detailed list of books available for the TI-99/4A. Contact him for details.

Garry Baker, of 27 Clayburn Gdns, S Ockendon, Essex RM15 6AT, wants to know where he can get hold of software and peripherals for his Aquarius. He's looking for a mini expander and an interesting game.

Vicky Wright, of 1 Mill Green, Willaston, S Wirral, Cheshire L64 2TE would like to hear from Electron users who are interested in the machine.

Lee Goddard, of 45 Bamford Ave, Northwingfield, Chesterfield, Derbyshire SK2 5JR needs help on Dennis through the Drinking Glass. He can't work it out. He's also stuck on Select 1.

Kevin Fourie, of 16 Shearer Rd, Ladysmith, Natal, 3370 S Africa wants penfriends. He owns a Spectrum and is interested in adventures.

Kenneth Grant, of 58 Rye-croft Dr, Withersea, N Humberside HU19 2LX is a 15-year-old TI-99/4A owner who would like to write to other TI owners to swap ideas. He owns the basic machine, a few cassettes, books and Parsec.

Ian Longdon, of 9 Meadow Close, Wolvey, Hinckley, Leics LE10 3LW owns a C64 and Simon's BASIC. He would like to get in touch with others to swap cassettes and ideas.

Rogues gallery



Martin Cotton beat Guttang Gottong



Carolyn Bel did wonders at Chucky Egg



Jonathan Osborne scores on Castle Quest

Readers' hi-score table

Name	Game	Machine	Score
K J Macaulay	Munchmobile	TI-99/4A	256,330
Martin Cotton	Guttang Gottong	Sord M5	12,290
Jonathan Osborne	Castle Quest	BBC	2,090
Yvonne West	Impossible Mission	C64	19,203
Neil Alldritt	Yie Ar Kung Fu	MSX	1,734,300
Carolyn Bel	Chucky Egg	Spectrum	558,900
Dean Moxon	Buck Rogers	TI-99/4A	459,310
Brian Peacock	Fairground	BBC	432,590
Alan Peacock	Spaceguard	BBC	49,350
Stephen Foy	Pitfall II	C64	92,624
Lee Caller	Defender	Atari	5,094,450
Simon Robinson	Buck Rogers	TI-99/4A	292,194
Neil Swift	Jungle Hunt	TI-99/4A	14,870
	Blasto	TI-99/4A	31,080
Craig Newman	Pole Position	C64	65,350
Simon Forth	Beamrider	C64	6,420

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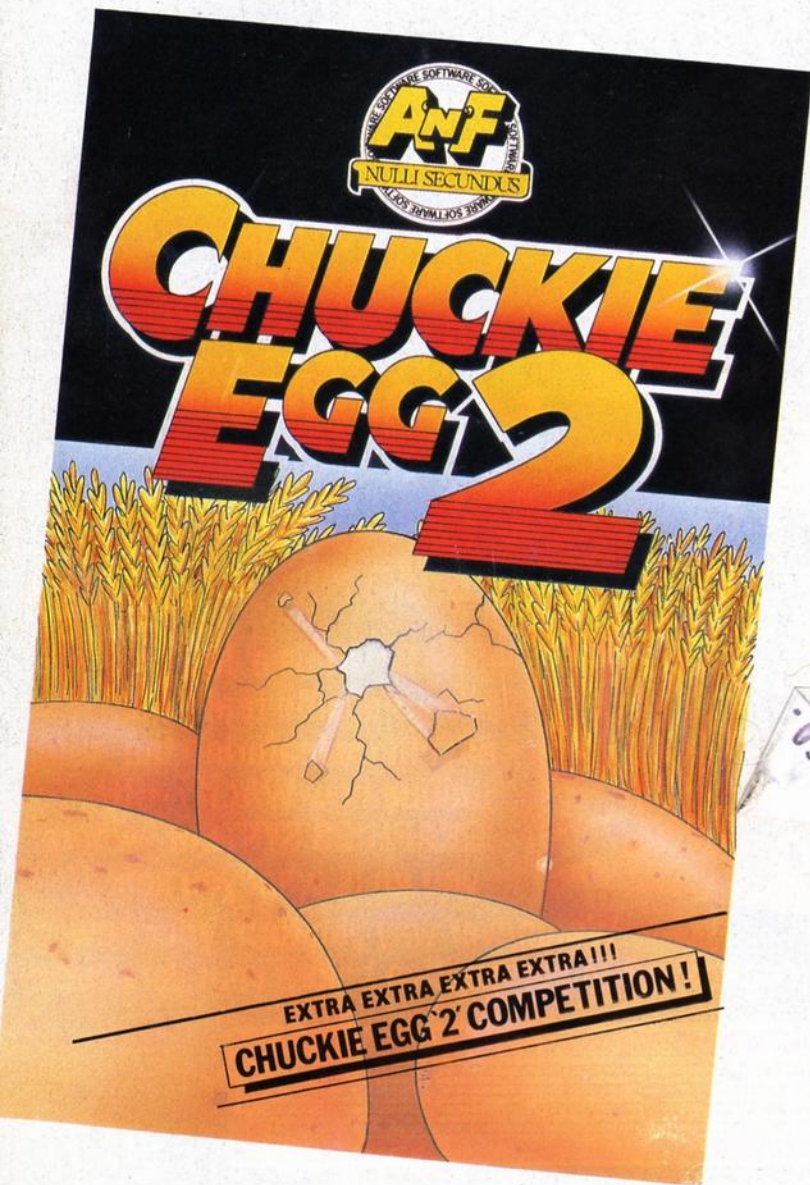
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A great NEW game from A&F.



Our intrepid hero "Hen House Harry" of "Chuckie Egg" fame has been called in to help a "Chocolate Egg" manufacturer sort out his automated factory, which has gone haywire. Harry, using all the skills he acquired working in the Hen House must get the wheels of industry moving.

Not only does Harry have to collect the ingredients to mix the eggs, but he will also have to collect the parts for the toys that go inside the eggs.

As if all these problems were not enough there are a number of other items that Harry will need to find and use to be able to complete the task. Things like ladders, bits of girders, keys and many more.

Chuckie Egg 2 contains 120 screens, plenty of surprises, and it is a true Arcade/Adventure game - you don't just find things, you actually move them and use them.



Great games. Great ideas.

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