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12-18 September 1985

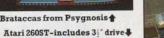
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Vol 4 No 37

Smash-hit PCWshow breaks all records



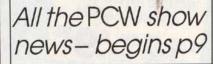
















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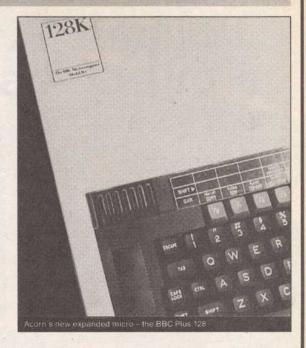
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EDITORIAL

part from the disappointment of the Sinclair stand, this year's Personal Computer World Show was the most exhilarating for years. For one thing it signalled the first signs that the new 68000-based machines really will be a quantum leap. Brataccus on the Atari looked very good indeed and, for what is almost the first entertainment package for the new machine, it was outstanding. It will also run on the 260ST - a machine which should sell for under £500.

The Amiga - Commodore's ST rival - also looks set to have some dazzling software. Although the machine was not shown in the public display, Commodore's private previews showed among other things a flight simulator with incredibly fast solid 3D graphics and stereo sound sampled from a real 747. The two machines are a vindication that 68000 is a fundamental advance for domestic micros. But it is also an important reminder of the importance of support chips in the design of a new machine. The more one sees of these machines the more one realises how horribly wrong Sinclair went with the QL.

Between the ST and the Amiga a choice is easy. The Amiga has everything, Sound sampling, Graphics and animation capabilities the like of which have never before been seen at four times the price. True multitasking. And because of its three custom chips the processor is often only using a fraction of its power. The speed of its line drawing and hardware area-fill routines have to be seen to be believed. As if that wasn't enough the Amiga can be fully IBM compatible running IBM software at the IBM's slow speed (Commodore's joke). Everyone who sees the machine becomes captivated by it.

But there is a real danger that this wonderfully intoxicating micro cocktail has too many ingredients.

Its performance-per-buck is incredible. But, whichever way you look at it, £1,000 is still an awful lot of money.

It is quite likely that Atari has better judged the market in the UK. Its 260ST offers a lot less but costs under half price. The Amiga may be the machine you would love to own, but the ST may be the one you can afford.

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Computer Trade Association Magazine of the Year

Cl6s and Plus/4s go out of fashion

COMMODORE has confirmed that it is to drop the C16 and Plus/4 computer in the UK.

"I don't think there will be any Plus/4s or C16s available after Christmas," said Commodore's sales and marketing manager Paul Welch. "By then we will have built out all our remaining component stocks."

Sales of both machines have been disappointing, and each has suffered heavy high-street discounting, especially the C16, which was launched at £129 and has been widely available at £69.95 for some months.

Upgrades for 664 on the way – but not from Amstrad

AMSTRAD has categorically denied that it will offer any up-grade to CPC 664 owners to turn their micros into the equivalent of the CPC 6128.

However, add-on Rampacks are expected by the end of October from third-party vendors. In Germany, users can already buy 256K of add-on memory.

"Amstrad will not be doing any up-grade or compensation scheme itself, but we're quite happy for third parties to provide add-ons," said Amsoft's William Poel.

The CPC 6128, which has superseded the 664, was launched in the US in June. At that time, Amstrad claimed it would not be launched over here until next year.

The discontinuation of the CPC 664 has provoked an angry reaction from owners, not only because that their machine was withdrawn so soon after launch, but also because Amstrad gave no warning of the machines demise. Many dealers have also been left with quite high stocks of the 664, whose price was higher than that of the 6128.

Despite the absence of any C128D models at the Personal Computer World Show, Commodore claims that the machine – the version of the C128 with a built-in 5½ inch disc drive – is still planned for release, possibly in time for Christmas.





The C16 (top) and Plus/4

"We don't have any dates finalised for the C128D, but it's not dead," said Gail Wellington, Commodore's European software manager.

It is understood that Commodore UK is keen to introduce the machine in this country, as a reply to Amstrad's CPC6128 and PCW8236, and Atari's 260ST, all of which have built-in disc drives.

Amstrad apparently denied it had any plans to launch the 6128 in the UK up to as little as 25 days before the machine appeared in the shops. One 664 owner, college student Ben Woolley, claims that before buying his machine on July 20, he telephoned Amstrad to ask if the machine was to be discontinued. According to Ben an Amstrad representative assured him that the CPC664 would not be dropped, and that the 6128 was intended only for the US market.

"Amstrad never announces a product before it is ready," William Poel explained. "It is entirely possible that the person on the phone did not know of the policy to bring over the 6128.

"Amstrad is a large company and there are employees who don't even know we produce computers at all." However, Commodore US is not so keen – in the States, the 8-bit machine could conflict with Commodore's new 16-bit Amiga, even more heavily than the stand-alone C128, as a home machine. Moreover, the external appearances of the C128D and Amiga are very similar, with separate keyboard and drive unit in almost identical colours.

When the C128D does appear in the UK, it will be priced at around £500, according to Paul Welch. The arrival of both the C128 models will also pave the way for the Commodore 64 to be rehoused next year. Paul Welch admitted that its five-year-old casing is beginning to look a little dated.

Over 170 titles for Atari ST

ATARI has an impressive list of over 170 software titles currently being written for its 520ST micro, publicly shown for the first time in the UK at the *PCW* Show.

The majority of the titles will also run on Atari's cutdown ST model – the 260ST. The 260ST is now scheduled for UK sale between October and Christmas.

The majority of the planned programs are business titles such as word processors—with BOS's BOSWriter, Fydler's Mailmate, Spellmate and Wordmate and Precision's Superscript all set for launch before Christmas, in addition to Gemwrite which is bundled with the ST.

Database packages are expected from Talent Computer Systems, BOS (Autoclerk and Autoindex) and Precision (Superbase) among others, although Precision and Talent do not expect to release theirs until January 1986.

Mosaic, BOS, Kuma and Haba Systems all have spreadsheets planned, and business graphics packages,

High street shuns Acorn

FOLLOWING the launch of the 128K version of Acorn's BBC B Plus, the future of the existing BBC machines and the Electron looks doubtful.

The machines have already been dropped by some retailers, and the Electron was given a very low profile at the PCW show.

W H Smith has already discontinued both the BBC micro and the Electron and Rumbelows is not now reordering until it has selected its Christmas range and ascertained that Acorn's machines are on the list.

"We're completely out of stock of the BBC at the moment," said Terry Greenwood of Rumbelows. "But we still have to decide which micros we'll be offering at Christmas, and we're no more likely to drop the BBC than any other machine."

Acorn has recently concluded an agreement with Dixon's for the latter to sell the Electron in a bundled pack - a deal which, it is thought, will clear most of Acorn's remaining stocks.

Dixon's Electron pack costs £99.99, and offers the computer with a data recorder and five pieces of software.

include Fydler's Mastergraph and Cadcam from Rising Star.

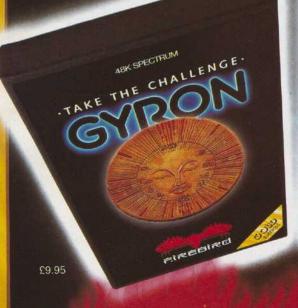
There will also be a number of languages, including Metacomco's series, HiSoft's C, Pascal and Devpac, and Computer One's Assembler Monitor, C, Pascal and Forth.

Island Logic is converting its Music System, Crossbox Music plans a Music Writer, and Mirrorsoft releasing Fleet Street Editor.

On the entertainment side, Infocom is translating its entire adventure range, and hopes for launch by October. Jeff Minter is converting his light show Colourspace for Llamasoft, Talent plans to make Zkul and West available while Firebird is developing a new game, Star Glider.

More news on page 8

FROM OUT OF THE FIRE.





うがいった

£1.Rebired

GYRON - Spectrum 48K
"A serious contender for the
Game of the Year award"
Personal Computer World, Mar. 1985

"Hyperbrill Crash Smash 93% rating Mar 1985

ELITE · Commodore 64 "The game of a lifetime" Zzap! 64. Gold Medal Award. May 1985

BUGGY BLAST - Spectrum 48K "This is what I call fun... an addictive and very playable game" Crash .91% rating. Feb. 1985

DEMONS OF TOPAZ

Commodore 64

"Its addictiveness grows from strength to strength"

Commodore Computing Int. Game of the Month. May 1985

FIREBIRD SOFTWARE WELLINGTON HOUSE



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It does accounts, projections,



No wonder people are racing out to buy Amstrad's new CPC 6128 computer.

Not only does it answer all your business needs, it's also compatible with nearly 200 arcade and adventure games. So it can either speed you through your

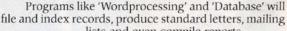
can either speed you through your income tax returns or whizz you round a simulated Silverstone.

On the business side we start

you off with a free disc

which introduces you to the Amstrad CPC 6128's impressive range of capabilities, and the best ways to exploit them.

You'll discover how its massive 128k memory can open the door to over 8,000 CP/M* applications.



lists and even compile reports.

There's a series of business control programs which form a complete invoice, stock control and statement system.

In other words it's easy to choose

the software you need to take the big problems

out of your small business.

But even if you don't own a business there are plenty of good reasons for owning an Amstrad CPC 6128.

It makes short work of the problems
we all face. Like keeping track of rates, mortgage and
HP payments

However even software packages as comprehensive





wordprocessing and 180mph.



as Amstrad's are only as good as the hardware they're loaded into.

You need a complete system.

That's why the Amstrad comes complete with a built-in disc drive as well as a monitor (green screen or full colour). So it's ready to go to work as soon as you get it home.

And if you want to go further additional disc drives, printers and joysticks are all available to ensure that your computer can grow with your growing needs.

Finally there's one feature of the Amstrad CPC 6128 that's both good business and a pleasure: the price.

With Green Screen around	£299
With Colour Monitor around	£399

Tell me more about the Amstrad CPC 6128

Address_

Amstrad CPC 6128 with 128k memory

Who says business and pleasure don't mix?

Amstrad P.O. Box 462, Brentwood, Essex CM14 4EE

*CP/M is a trademark of Digital Research Inc

Letters

MULTI USER DUNGEON

In proportion?

W Thompson (letters, August 8) has got things rather out of proportion.

No one is denying that playing computer games is not fun and, yes, we all enjoy zapping rampaging toilet seats.

But that doesn't mean we live all our lives playing games.

> Cetin Munir Stroud Green London N4

QL flop

A Sinclair spokesperson said that the decisions to halve the price of the Sinclair QL was due to "reduced component cost, and increased volumes".

What twaddle! You must either be a loyal owner of a QL, or a Sinclair employee not to realise the QL has been a flop, a whole flop and nothing but a flop.

Only 60,000 QLs have been sold in the 19 months since its triumphal launch. After the delivery delays that every-

> ere is the first of the four coupons you will

need to claim your

special Popular Computing

Weekly Free Gift - a tape of

Cut out the coupon and

stick it onto the special reply

flap attached to the front of

Arcade Addicts Handbook.

Popular Free Gift Coupon

one but Sir Clive expected, the QL hit the streets and that's when the trouble really began.

There seemed to be more bugs in the Basic and the operating system than there were machines sold! The Microdrives, with the bundled software, were as slow as the Sinclair delivery department.

I admit the machine has memory, enough to make any BBC owner drool visibly. But it has yet another disadvantage, which must have put off more potential customers than Sir Clive's creditors would like to recall. Software. Or a lack of it. You can count on the fingers of no hands the amount of "megagames" out for the OL.

Sinclair should now admit defeat in the business market, and put every effort into ensuring that software houses unleash their programming skills on to the QL.

this issue. Collect the cou-

pons from the next three

issues as well,

stick them to

the reply flap

and send it in

to claim your

Popular Free

Gift.

Peter Scott Bedlington Northumberland

Free

Gift

Coupon

No 1

MUD Challenge Competition

More than a competition, more like the greatest challenge an adventurer can face.

This week Popular Computer Weekly (where things of beauty, truth and honour hold sway) seeks a champion to take on representatives from the plains of darkness, evil and inflated circulation figures (other computer magazines) and fight for us in MUD – where the baddies are so real you can speak to them!

MUD

MUD is an adventure game played, using a modem link, on a vast database run by British Telecom. It features all the classic adventure elements, mysterious objects, magic objects, treasures forests and complex puzzles but with one important additional feature - lots of people can play it at once and you can meet and converse with other players on your travels. This adds possible elements like rivalry, betrayal and joining forces.

The Challenge

A representative from each of the computer magazines will be provided with a MUD pack consisting of all you need to get started and free tuition on-line advice on how to play from a MUD champion.

You will fight it out at a MUD marathon to be held later in the year at the London Dungeon.

The Competition

Our champion will be the winner of the following competition. All you have to do is answer the following questions, carefully designed to reveal your true adventuring mettle, then fill in the sentence at the end in not more than 12 words. Competition closes 30th September 1985. Five runners up will receive Firebird Silver Games.

- Who wrote the original Colossal Caves?
- 2. How do you escape the Trolls in The Hobbit?
- 3. Who wrote the Zork trilogy?

I want to be PCWs champion

Name

Address

News Desk

01-437 4343

Amiga – further details emerge

MORE details are emerging on peripherals available for the advanced Commodore Amiga micro, now scheduled to be launched officially in the UK in the first two months of next year.

The machine is available in the US at a price of \$1295 (around £1,000) for the keyboard, mouse and disc drive. The A1080 monitor, a high resolution ((640 x 400 pixels) 80-column colour model costs an additional \$500 (£380), although the Amiga does in-

clude a modulator, allowing it to be connected to an ordinary domestic television. The PAL UK TV version is currently under development and first models could well be circulated to development houses by the end of this year.

A second 3½ inch disc drive costs \$300 (£230) and a 256K memory expansion – bringing the memory up to 512K – costs \$195 (£150).

With the addition of a PC DOS emulator for under \$100

(£80), the Amiga becomes IBM compatible. Another \$100 will buy an accelerator to make transfer speed on IBM files the same. A $5\frac{1}{4}$ disc drive to take IBM compatible discs costs \$500 (£380).

Olivetti completes Acorn rescue

ACORN's refinancing procedures are now complete, and Olivetti has officially acquired 79.8% of the company (see *Popular*, August 1).

At the Extraordinary General Meeting held last week, shareholders approved the issue of 400 million new shares to Olivetti International for £4m.



"Which is the main event?"

PCW Show News

Pazazz at PCW

The star of this year's Personal Computer World Show – the most exciting for several years – was unquestionably Atari. Its new low-cost 16-bit 520ST stole the show with strong software support. Amstrad proved a big attraction, too, its stand showing the 6128 and 8256 for the first time was an impossible crush throughout the five-day event.

Big crowds and many new products made it the biggest ever Personal Computer World Show – with a record 70,000 visitors. Not bad for an industry fashionably at death's door. The only let-down was Sinclair which

had nothing new on the hardware side except a new printer.

The promotional displays are getting bigger and brasher, though. For movie lovers, clips from Rambo: First Blood Part II and Goonies were on continuous display at Ocean and US Gold's stand respectively. Ariolasoft showed its games on a giant screen overlooking the balcony; Melbourne House incorporated holograms. Quite what System 3 was attempting to promote was unclear, but it involved a mix of karate, a Rambo not-very-look-alike (on loan from Ocean?) and a troupe of women brandishing whips and weaponry.

tari and Amstrad dominated as far as hardware at the show. Atari had always threatened to take over virtually the whole of the ground floor with its 520 STs — on show in the UK for the first time in public — officially launched at the show.

Perhaps Atari had not bargained for Amstrad's whirlwind of summer activity, when it looked as though we could

expect a new machine a week.

Amstrad's PCW 8256 and CPC 6128 were being warmly received by visitors. However, the company was also showing software running on the now defunct CPC 664. Reactions to this were rather cooler, particularly from people who had bought a machine recently and dealers left with large stocks.

In addition to well over 50 520STs, Atari also showed a 260ST, with the builtin drive, in a vast glass case which also housed a Winchester hard disc unit for back of the left hand side. Atari hopes the 260 ST will become available before the end of year, and possibly as early as October, at around £450.

The 10M hard disc shown, the SH 317, was a prototype version only, but again this is scheduled for a Christmas release at around £650.

One disappointment was the non-appearance of the CD Rom which Atari showed at the American CES in June.

"Our CD Rom player is with software developers at the moment," said Atari's UK sales and marketing manager, Bob Harding. "We are still planning to release it in this country."

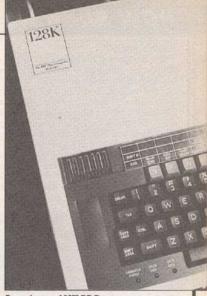
Acorn managed to spring a surprise on most people at the show by prominently displaying a 128K version of the BBC B.

The 128K BBC B Plus is simply the 64K version with another board fitted in. The extra 64K Ram is made up of four side-

ways Ram slots, and Basic programs are stored in this space. The new machine should be available by the beginning of October at £499. The 64K BBC B Plus sells at £469. Acorn claim no price changes planned, but seems likely that the 64K B Plus will now quietly disappear.

Acorn was showing a number of peripherals with the BBC — including a display of robots

controlled by the machine. It also had a CAD (computer aided design) system controller from Robocom on show. The Bitstick itself looks a little like a joystick, but each movement is precision controlled, to enable meticulous design graphics on screen.



Acorn's new 128K BBC +

New products on Sinclair's stand were confined largely to software, although some new peripherals for the QL were on show. The disc drive from Microperipherals, which Sinclair is putting its own name to, was being shown prominently. The 3½ inch disc drive package comprises drive, disc interface, and a utilities disc for £296.70. Additonal drives cost £159.85.

CST's Winchester hard disc was also being shown; with a 10M capacity, and a peak transfer of 600K per second, this costs £1,380.

Sinclair is also planning to badge manufacture a printer for the QL to be brought out around Christmas, at around £250. Sinclair stand representatives were quick to point out that the unnamed, unmarked printer being used with the QL was not necessarily the model that will be appearing in the shops under Sinclair's name.

However, there was no sign of any new machines. It is now thought any further embellishments to the Spectrum Plus may not appear until next year. Sinclair claims that the Spectrum Plus is currently selling as strongly as ever, if not more strongly, and "if it ain"t broke, don't fix it" was the attitude, according to a Sinclair spokesman.

Commodore's stand was almost entirely devoted to the C128, although Music Sales took over around one quarter of the space to demonstrate its range of music hardware and software for the Commodore 64.

The C128 is now expected in the shops any day now, although only in the stand alone configuration — there were no C128Ds at the show.

"We don't have any release dates for the C128D at the moment, but it is by no means dead," said Commodore's Gail Wellington. "We never deliberately set out to release the two versions continued over the page



the 520ST.

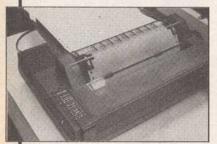
The 260 ST is designed to be fully software compatible with the larger version. The disc drive version, which will probably only be available in Europe, has the $3\frac{1}{2}$ inch drive fitted very unobrusively under the keyboard at the

12-18 SEPTEMBER 1985

PCW Show News

simultaneously."

The Amiga was not shown to the public. Special viewings to trade and press representatives were arranged, however. The reason, according to Commodore staff, was twofold — the C128 was intended to attract all the attention at the show, and it was too early to be showing a machine that will not be launched in this country until early next year. Despite this, there were huge queues at Metacomco's stand, where visitors hoped that the authors of Amiga Dos would have it on public display, and Commodore's trade and press demon-



Sinclair's new printer

strations at the nearby Royal Kensington Hotel were packed.

The C128s were shown running a variety of software — Way of the Exploding Fist and Frankie to demonstrate C64 compatibility, and CP/M programs showing the machine in CP/M mode.

Music Sales gave continuous demonstrations of its range for the 64. Its series includes, on the hardware side, a mini

synthesiser overlay for the 64's own keyboard as part of the £29.95 Music Maker package, which also contains software and songbook, and a sepasynthesiser. rate The Playalong album range and Sound Sampler are also available, the Sound Sampler coming out next month.

Enterprise

stressed its 128K machine strongly at the show—there were no 64s on the stand at all. "Frankly, the 64K machine simply isn't in demand," said on stand representative.

However, with the 128, Enterprise was making a strong display of its disc controller EXDOS. This powerful controller will connect to any Shugart 410 interface drive, so that, 3, 3½ or 5½ inch drives can all be used. It is also compatible with MSDOS, which gives the machine file compatibility with IBM, Apricot and MSX type machines. The disc controller costs £99, and is due out this autumn.

Four of the MSX manufacturers joined forces for an MSX stand — JVC, Sony, Mitsubishi and Toshiba. Toshiba, incidentally, also gave a 'home of the future exhibition' separately at the show.

Toshiba's new HX-22 adorned both stands, while Mitsubishi and JVC also displayed enhanced MSX machines, with 128K Video Ram and 80 column screens.

ACORN The Best gets Better.

JVC's HC-80, already availabe in Japanese shops, is set for launch here in spring 1986. The display at the show demonstrated the capability of the HC-80 to control a video disc player, putting captions on screen from the computer.

Mitsubishi's GLI was being used as a frame grabber, digitising pictures from a video camera set adjacent to the stand. Software can then be used to manipulate the digitised image, making it smaller, larger or changing its screen position.

Mitsubishi was also showing a version of its enhanced machine configured like a PC with a separate keyboard, connecting to a 3½ inch disc drive and cpu in one unit, but still retaining the standard Z80 processor. This machine, in prototype version only at the moment, will cost around £500 when brought over here.

The other enhanced MSXs are expected to cost around £250-£300 as the prices of current models continue to fall.

Christina Erskine

Software takes a leap

Much new software was promised for the PCW show and some was delivered. Several promised megagames either didn't turn up or were represented by demo screens only; others appeared vicariously as excerpts from the films they were based on.

his is a bizarre trend I've noticed over a couple of shows now, some of the bigger companies bring along great piles of monitors showing last year's blockbuster film they've licenced, or various pop groups. Certainly people stand and watch the movies, but does it make them buy the game?

During my two hour quest for the Sunshine stand I came to several conclusion. There were some new programs that were superb and there were some that were so astoundingly tedious you could be forgiven for thinking this was 1983.

Some of the impressive new games were expected — Fairlight, Wizardry. Some were real surprises like Sandy White's stunning new game I, of the Mask and Psygnosis' Brataccas, the best kept secret since the bombing of Pearl Harbour and my vote for game of the

show. More of these two later.

Some of the most awe-inspiring computer program demos weren't at the show at all. That is to say they were in the show, but not at it. Or rather they were in

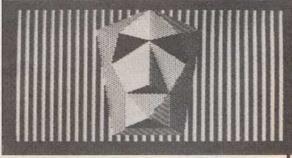
the show to those at the show with a magic grey invitation. You can tell from all this stuff that what we are talking about here is the Amiga which was and wasn't there.

The demos of a flight simulation on the machine featured samples 737 engine noises — it sounded exactly like a real plane. After seeing the

Amiga in action, Jeff Minter, famed psychedelic game designer, seemed to be walking two inches off the ground in ecstatic delerium.

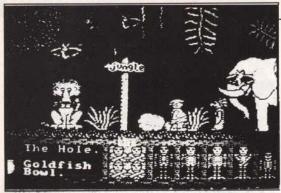
From software you can't buy on a machine that wasn't at the show to the stuff that you can buy on the machines that were. Mikro-Gen was due to show Shadow of the Unicorn, the first of its series of games using the Mikro Plus, but it was not in evidence. Apparently it was 'sent back for improvements to some of the graphics'.

Mikro-Gen were showing a demo of



the I, of the Mask from Electric Dreams

PCW Show News



Three weeks in Paradise from Mikro-Gen

Three weeks in Paradise, a Wally program that will be using the device although the demo, in fact, was not using the system. As such it looked like the other Wally games with nice detailed graphics and an assertive indifference to attribute problems. Also impressive was a demo screen of Battle of the Planets, licenced from the BBC cartoon and featuring slick vectors graphics.

In a similar position was Beyond who showed a short demo program of its mega marketing deal, Superman which revealed some smart graphics, but little

More complete was Enigma Force, a mightly impressive Shadowfire followup, which looked to have similar design but some nice new touches, including even hetter music

Around the corner, Melbourne House was showing Lord of the Rings featuring full colour and animation - the only problem was that it was the cartoon film



Young Ones from Orpheus

not the computer game. The latter was nowhere in sight. Way of Exploding seems to have chopped its way deep into the company's consciousness because being demoed was Fighting Warrior a game which, though described as a quest arcade game set in Egyptian times", seemed to feature quite a lot of kicking, punching and hacking.

When not dreaming of Amigas, Jeff Minter was to be found on the Llamasoft stand with his latest creation, Batlyx which looked fiendishly complicated and very colourful. I can say little about it except that I think the goats are back

The System 3 stand drew vast crowds every two hours, hmmmm, must be the new Karate game you're saying. Wrong!

Instead of films. people in fancy dress or a guest celebrity, System 3 had a dance troup of writhing women wearing virtually no clothes at all. This is an old computer show trick and goes a bundle with tired distributors in need of entertainment.

Orpheus were few showing a of the screens Young Ones, the computer game

version of everyone's favourite half hour of anarchy. The characters did vaguely resemble the people they were supposed to be; Neil's round shoulders being particularly in evidence. The Commodore version of the game featured some excellent sound as well.

Martech had the biggest personality tie-up, when it had big personality Geoff Capes tied up with trucks in Geoff Capes Strong Man - the game. The graphics looked nice, but I couldn't help thinking that sporting personality tie-ins were beginning to get a bit tired. Who's going to be first with Terry Wogan's chat show challenge?

Rod Cousins had a section of the Activision stand for the first two titles from Electric Dreams - his new software house. Riddler's Den looked a bit Ultimatesque, but I, of the Mask looked stunning. The game appears to use the

kind of 3D design and shading techniques Sandy White used on Ant Attack to create a vast three dimensional maze.

It also features a giant mask that floats across the screen. Parts of the game could almost be left static like computer art, just to be appreciated for their own sake. Sandy hopes to get the game finished within a couple of weeks.

The Activision stand proper had a couple of new titles Brataccas from Psygnosis on show, in particu-

lar the enigmatic Hacker. A program whose complete lack of background information is part of the point. You Log on and take it from there, trying to find out what on earth is going on. It looked impressive, but isn't the sort of game to be judged quickly, staring at a monitor at the show.

Firebird finally showed its Ultimate conversions for the Commodore 64. Sabre Wulf looked exactly like Sabre Wulf down to the last detail - I almost think I saw an attribute problem.

Mirrorsoft had the first BBC version of Fleet Street Editor on show. This all in one package mixes word processing, layout, design, picture manipulation, etc, and is designed to enable the simple production of magazines, fanzines and other printed information.

There were inevitable jokes about it replacing the NGA and solving the Mirror's problems that were greeted with fixed grins by Mirrorsoft staff. It impressed me a great deal, although the system only becomes really viable with plenty of memory, a disc drive and a good printer.

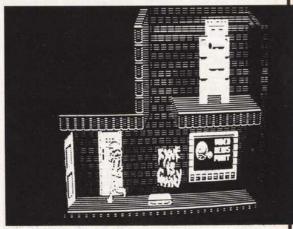
Also on the BBC was Strike Force Harrier, a simulation of the Harrier Jump let which featured quick screen updating and detailed graphics.

A surprising proportion of the serious software around was for the ST which was much better supported than anyone expected.

The ST was also running the game of the Show - Brataccas by a new company called Psygnosis.

Psygnosis turns out to be some ex-Imagine people and Brataccas turns out to be stunning.

It's the first game that really looks like it's running on a powerful machine. Imagine Dun Darach with much more detailed and colourful graphics, even more character independence, and some stunning animated effects. From the box cover by Roger Dean, to the beard on the funny man who floats about



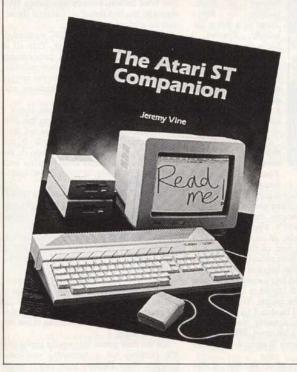
on a hover chair the package looks impressive. Don't look at it if you can't afford an ST!

Games are getting closer and closer to movies and Brataccas is a pretty big jump in the right direction.

Things are looking up - the most interesting show for software in a long

Graham Taylor

Discover the Atari ST



Jeremy Vine's Atari ST Companion will tell you all you need to know if you're wondering whether to invest in the most talked-about new micro of 1985 — the Atari 520ST. Jack Tramiel's new wonder-machine offers you the "power without the price" - a 68000-based window, icon, mouse micro with the GEM graphics environment from Digital Research, all for £750.

The Atari ST Companion has been written with the benefit of full hands-on experience of the machine. Jeremy Vine begins with an overall look at the ST, followed by a detailed introduction to the GEM (Graphics Environment Manager) system. This offers facilities comparable with the much more expensive Apple Macintosh, including windows, pull-down menus and the facility to use a mouse to point to icons to replace typed commands.

Also covered is the Atari Intelligent Keyboard Controller, the very sophisticated sound system of the ST (which includes the industry-standard MIDI interface), the TDS operating system and the graphics LINE "A" interface.

So, whether you are already the proud owner of a new ST, or just thinking of learning more about this revolutionary new micro, send off today for this great new Sunshine book.

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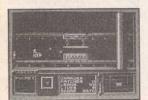
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Reviews

Smash hit

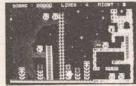
Program Now Games Micro Spectrum 48K Price £8.95 Supplier Vigin Games.

arning! Do not confuse this with the chart-topping Now That's What I Call Music LP tape. I have no idea whether it would be worse to play it through your Walkman or feed The Thompson Twins into your Spectrum!



Strangeloop

This is, however, the micro equivalent of those musical compilations, and should prove to be a similar smash. First up is Lords of Midnight, an undeniable classic which,



Arabian Nights

if you don't already have it, probably alone makes this worth buying. My only grumble is that you need a magnifying glass to read the map of Midnight once it's reduced to standard cassette-box size.

As the arcade adventure has been the favourite genre of the past decade (or so it seems) it's not surprising to find four of them here. Brian Bloodaxe shows most familial resemblance to his alliterative relative, the Manic Miner, while Strangeloop adds to the

complexity and includes a lot of shooting. Arabian Nights seems to be more about preplanning and careful timing, while Pyjamarama marked the second appearance of Wally Week, trapped in a nightmare. These games prove that there is variety within the type and while I distinctly preferred two of them, none can actually be called bad.



Lords of Midnight

Falcon Patrol II, a shoot 'em up, is the only iffy offering, lacking the frills we expect today, though it makes a reasonable filler at this stage.

Whether you rate this as highly as I do will depend on how many of the six you already have; I think the break even could come at the halfway mark and, if you're new to computing, you're laughing.

One complaint about the package as a whole, though; the programs loaded at several different volume levels, which is downright inconvenient. I hope it was a one-off flaw.

John Minson



No frills

Program Mordon's Quest Micro Spectrum Price £6.95 Supplier Melbourne House, Castle Yard House, Castle Yard, Richmond TW10 6TF

he Classic Adventure continues,' says Mel bourne House, which it does in the sense that Mordon's Quest is by the same author. It's also a sequel in style to its predecessor.

Traditional values are the order of the day here. There are no pictures but the descriptions paint far more vivid scenes: in a jungle the light shines through the high trees and water drips from broad leaves on to a mossy carpet. A neatly justified, reduced typeface avoids too much scrolling. A pity, though, that the absence of frills goes so far as no keyboard click.

The richness of the descriptions stops the lateral thinking involved in the many puzzles looking like a mere succession of intelligence tests and the vocabulary seems broad enough to avoid that curse of the adventurer, Thesaurus thumb. I wasn't too sure about this world's location with its ancestral pile in a jungle, but the pleasing humour and urgency of the quest kept me fully occupied. And I'm delighted to report that I've not yet seen hide nor hair of an elf!

Definitely one for the traditionalists then, but I also suspect that it will seduce those who've only gone for memory consuming illustrations in the past.

John Minson



Decision time

Program Decision Maker Micro QL Price £39.95 Supplier Sinclair Research, 25 Willis Road, Cambridge CB1 2AO.

he famous renaissance philosopher Liebnitz reckoned the chances of throwing two coins and having both come up heads as 1:3.

Since this shaky start, probability theory and statistics have progressed to become a useful and widely applied way of thinking: though they remain tricky territory for the unwary.

In everyday life, and particularly in business, we continually weigh up the pros and cons of our response to problems. If we decide on a particular course of action, we may expect a number of outcomes, some of which are more likely than others. One can imagine further decisions made in response to these various outcomes, and the process continuing. This is the idea of a decision tree.

In business, the aim of the game is to make decisions that pay off in money terms. So the final consequences can be given monetary values. The task is to move up the tree making decisions to get to the end of the most profitable branch. Except that if a very unlikely event is necessary to reach the maximum payoff, it may be wise to try for something less profitable but more likely. Decision analysis solves the tree by identifying the course of action that would (if repeated in trial after trial) tend to give the best return in the long run.

The weak part of the method must be one's assessment of the likelihood of the various outcomes throughout the decision tree. Fortunately, with a computer and a well designed program, estimates can easily be varied and the effect seen.

This then is another advanced management technique made widely accessible by Triptych. As is to be expected with this sort of material, *QL Decision Maker* contains a textbook and teaching program to ensure users thoroughly understand what they're doing. The explanations of EMV, EVSI and Bayes theory are clear with polenty of exercises.

The decision tree is constructed in one half of the screen by specifying the decisions, the actions chosen, the chances of events happening, and their outcomes. Such data is easily altered during and after input, using a smaller detail window. Other windows are used to show prompts and define the function keys. Decisions are made between up to five actions, and events can have up to five outcomes. The manual explains how to overcome these constraints, and the constraint on the size of the tree of 149 should nodes. necessary.

All reports can be printed to an Epson RX or FX compatible printer. The main report is the decision tree itself, together with EMVs. Detailed print-outs of any part of the tree can be obtained. A risk profile is given, so that one can plan to avoid unacceptable risks.

As is usual with microdrive QL software, file handling and medium formatting can be done from within the program.

User friendly, powerful and educational, this program should find many users wherever complex risky decisions with financial consequences are taken.

John Sucher

Enigmatic

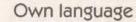
Program Nightshade Micro Spectrum Price £9.95 Supplier Ultimate Play the Game, The Green, Ashby-de-la-Zouch, Leics.

e always expect something special from Ultimate, whose brilliantly detailed graphics, 3-D animation and complex programming never fail to bring the best out of the Spectrum. Perhaps it's asking too much that every game should be an improvement on the last. In the case of Nightshade, it's possible to see why Ultimate thinks it's an improvement on Alien 8 or

aging, enigmatic gameplay, good sound effects and music - what's disappeared is the element of interaction.

All the interiors of the buildings are featureless squares; there are no objects you can use or move, just floating weapons to collect and baddies to shoot at or avoid. Although there are some good effects – such as your man changing colour when infected by disease, running faster on finding secret potions, and so on – it all seems rather pointless without that vital involving element.

Although there's a much greater element of zapping than in previous games, there's also a good deal of strategy involved in finding



Program The Hobbit Micro BBC + disc drive Price £17.95 Supplier Melbourne House, Castle Yard House, Castle Yard, Richmond, Surrey.

he Hobbit has been around for some time but for BBC micros it has been text-only until this disc version appeared.

On first running, the game prompts you to insert a blank formatted disc which becomes the picture disc. You follow the prompts and much copying from master-disc to picture-disc ensues. Once you have done all this you can begin.

Pressing the space-bar toggles between pictures and text. The pictures start appearing rather nicely but are disappointing – still, it's nice to have them. The text is much fuller than the BBC cassette version – which is great.

The game is, of course, based on Tolkein's book and it helps to know the book well. The game doesn't always understand familiar adventuring words but uses 'Inglish' - its own language and to an extent you can actually talk to the characters. They may or may not answer! Most directions can be entered with a simple 'N', 'S' etc. or even using the BBC's arrow keys. Gandalf - the wizard - has a mind of his own and can be infuriating. When asked for food he replied. "No!" - but gave me some anyway. Just as well too, because if you don't eat in this game you starve to death. As with most adventures it helps to draw a map. You can then avoid dangerous points.

The game can be saved at any stage and restarted when you next get going.

If you haven't already got The Hobbit and you do have discs then this is the version to get. You'll have endless hours of fun for your money. Users of Watford's double density disc filing system beware – it isn't compatible.

Dave Watterson and Michael Reid





Knightlore; the backgrounds are much more detailed, representing a Tudor village afflicted by all kinds of cleverly-designed and amusing demons, plagues and bacteria. As your animated adventurer steps into each building, the walls dissolve to show the inside.

The game falls down though, because, despite having most of the usual Ultimate elements – good packyour way around the village, discovering which weapons work on which demons, and so on.

Still, the game's ahead of nearly everything else for the Spectrum; but it would have been nice if the much-vaunted "Filmation 2" had turned out to be something more than pretty backgrounds.

Chris Jenkins



Balanced

Program Dragontorc Micro Amstrad Price £7.95 Supplier Newson Consultants, 56B Milton Trading Estate, Milton, Abingdon, Oxon

ere comes the sequel to Avalon, and for the first time at last

Amstrad owners can sample one of Hewson's finest pieces of software to date.

Although Dragontorc hasn't been converted by Steve Turner, the original author, it is, nevertheless, as faithful, if not better, a reproduction than the original Spectrum version.

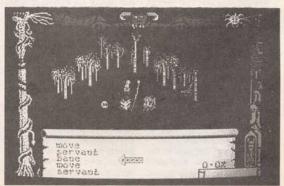
Once again, our hero Maroc the Mage, fresh from defeating the Lord of Chaos, is set another task. That of outwitting Morag the Shapeshifter in search of the five crowns of Britain. The program is very much an arcade/adventure being entirely visual and joystick driven. with many locations to explore, problems and tasks to complete and over 80 creatures to meet, battle and trade with, in order to collect the various spells needed to solve the game.

Obvious comparisons will be made with *Dun Darach* and *Tir Na Nog*, also billed as adventure movies, and graphically they are superior. However, Dragontorc is in some ways more playable and the problems, although very complex at the end, are nicely balanced at the start, allowing you to at least become familiar with Maroc's strange world.

I always felt the Spectrum version was slightly spoiled by bad flicker as Maroc moved through his pseudo 3D world, but this has all but solved that problem.

Andy Moss





Force fields

Program Cylu Micro Spectrum 48K Price £2.50 Supplier Firebird Software, Wellington House, Upper St Martin's Lane, London WC2H 9DL.

hile the world waits with bated breath for the new Ultimate games (and turns blue while they're delayed) what should appear, sans fanfare, but a new offering from Firebird; and it's a Knight Lore type game at a quarter the price of Ashby-de-la-Zouch the masterpiece!

Unless you're a total newcomer to Spectrum gaming, you'll know that this means a 3-D maze with overhead view and a multitude of screens... 200 in all, I believe, and no, I've not counted them all because the maze makers kindly installed force fields, just in case it all got too easy.

Still, if you insert the cor-

rect chip into the maze's central computer, a barrier can be cancelled, and these chips are to be found lying around all over the place. This proves that however clever you are as a maze designer, unless you're also tidy, your efforts will count for nothing.

The place is somewhat untidier than the Popular office in fact, with all sorts of other potentially useful goodies to be picked up. Priority goes to fuel pods, though, because despite your neat little body and clicking walk, you consume fuel faster than the Viroin Atlantic.

Actually this rate of energy loss is rather too swift for comfort, and using the turn keys can be a bit tricky too. The whole game with its handful of keys can take some getting into, but persevere and this neat little program will become as addictive as its more elaborate - and expensive - big brothers.

John Minson



drawing or erasing, which Sketched out Program The Artist Micro Spectrum 48K Price £9.95 Supplier SoftTechnics, 12/13 producing even Street, London Henrietta

and Circle. Box

here's almost a glut of graphic packages for the Spectrum, and newcomers face opposition. So what has The Artist got

that the others haven't? It's rather easier to ask what it hasn't got - I only noticed the absence of rubber-banding for line drawing.

WC2.

What it does have going for it is stunning ease of use. It's almost completely menu driven, with many single strokes giving way to further menus. This results in a logical approach to picture-making and the illustration of the various options where possible, such as the patterns for fill, in the status panel.

The initial line-drawing is controlled by joystick or keys with eight directions. You choose brush width, pattern or character square, then use the fire button or a third key invisible movement,

isn't as much of a handful as it sounds. The brush is 'intelligent' in that it speeds up if you keep the key depressed and I found it easy to sketch, curves, though there are also good commands.

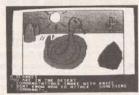
Next the Fill commands which provide both solid colour and a multitude of patterns and textures. Setting attributes is easily achieved with a chance to try out Paper, Ink and Border before committing yourself to a choice. At this stage it's worth mentioning that pressing



Word games

Program Wizard and the Princess Micro Commodore 64 Price £12.95 Supplier All American Adventures, Unit 10. Portiway Industrial Centre, Birmingham B7 4LY

first saw this adventure on an Apple Computer about three years ago and at that time its style was quite innovative being mainly



graphic screens with just a small amount of text. Unfortunately it hasn't worn well over the years and now looks extremely dated indeed.

The plot concerns the usual dreadful wizard who has kidnapped the fair princess and taken her to his castle beyond the Great Mountains. Beginning the adventure in the village of Serenia, you have to find and defeat the wizard and rescue the princess.

The problem here is that most clues are contained in the screen images, giving the player no idea what words the computer will understand, indeed only two word inputs are accepted - a sure sign of age. I don't believe statements like "Go Cave, Look Tree, etc." enhance the atmosphere one bit. A good adventure will let you roam around for a while before hitting you with your first problem, letting you get a feel for the story and providing some descriptive elements for your imagination. Wizard and The Princess throws you into a puzzle from your first move making the whole thing frustrating.

If you enjoy playing word games with the program's limited vocabulary and have all the patience in the world. it's worth getting, but, as adventures go, this one doesn't anymore.

Andy Moss



means that the picture is okay until that stage; pressing 'U' undoes everything from the previous 'O' or fill, which encourages experimentation.

Cutting and pasting is a crucial part of traditional graphic design and the movement and manipulation of blocks of screen is again easily accessed and can be previewed.

You can slide a section of picture around the screen, invert it, mirror it, even squeeze and stretch it, before putting it in its final position.

This last option makes elipses very simple.

Finally there's the text mode, with a selection of typefaces including reduced, though if you're really looking for something personal these can be redefined, and there's the UDG designer. This is one of the best I've seen, and its block of nine graphics means that characters larger than one square can be constructed without too many hassles.

All that remains is to praise the clarity of the instructions which are packed with examples. There's even a tape compressor on the reverse side of the tape and SoftTechnics will make colour screen dumps from your artwork if you cross their palms

with silver.

The package is more than good - it's fun to use. It may not make you an artist, but at least you won't be able to blame the mechanics of producing pictures for interferwith your ing imagination.

John Minson



Shuffle

A taste of Eastern promise on the Commodore 64 written by Mark Gornall

huffle is based on the old game where a bead is placed under one of three up-turned half shells, the shells are swapped around and the player has to choose under which shell the bead is hidden. Shuffle is the modern equivalent of this game, with pyramids as the shells and a cube as the bead. But it is the computer who shuffles the pyramids around and your job as the player is to choose the pyramid where the cube is hidden.

If you choose the correct pyramid you win ten drosnas (the currency), if you

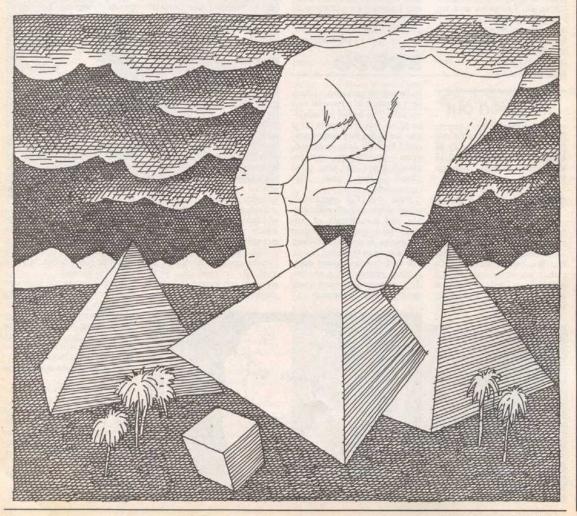
choose the wrong pyramid you lose ten drosnas. You win the same when you have one hundred drosnas and you lose the same when you have no drosnas. Keys one, two and three are used to choose the pyramid where you think the cube is hidden.

The program is written entirely in machine code, but can be entered by running the Basic program. Since there is a lot of data to enter, I have included a checksum to cut down on errors, but I would also suggest saving the Basic program before running it, since a mis-

take in the machine code could result in a fatal crash.

Once you have run the program (and saved it), you could just save the machine code using a monitor. I would suggest saving from \$CDDD to \$CFFF, since the program and all the data (scroll, sprites, etc) are contained within these addresses, and when you want to run the machine code again just type: Sys49152.

Rem statements are included for clarity and may be omitted when entering the program.



```
10 REM ***** SHUFFLE *****
20 REM *** BY MARK GORNALL ***
20 REM *** BY MARK GORNALL ***
30 1
40 K=0
50 REM *** HAIN PROGRAM ***
60 FORL=GTO1478' READBH KWK+RI-POKE49152+1,A:NEXTI
70 REM *** INTERRUPT ROUTINE ***
80 FORL=GTO358' READBH KWK+RI-POKE52736+1,A:NEXTI
90 FORL=GTO358' READBH KWK+RI-POKE52736+1,A:NEXTI
100 FORL=GTO447' READBH KWK+RI-POKE52688+1,A:NEXTI
1120 REM *** SCROLL DATA ***
1121 REM *** SCROLL DATA ***
1120 FORL=GTO255' READBH KWK+RI-POKE51712+1,A:NEXTI
120 REM *** SCROLL DATA ***
121 REM *** LOU FREQ ***
120 FORL=GTO355' READBH KWK+RI-POKE51712+1,A:NEXTI
120 FORL=GTO355' READBH KWK+RI-POKE51712+1,A:NEXTI
121 REM *** LOU FREQ ***
122 FORL=GTO15
123 POKE51968+NF1,R
123 POKE51968+NF1,R
123 POKE51968+NF1,R
124 READBH KWK+R
125 FORL=GTO15
126 FORL=GTO15
127 FORL=GTO15
128 FORL=GTO16
128 FORL=GTO17
128 FORL
      1438 DRTR 288.169.125.141.2.208.169.139.141.4.208.165.175.4208.232.232.224.11
449 DRTR 208.247.169.225.141.12.208.162.0.142.13.208.32.243.196.32
448 DRTR 208.247.169.225.141.12.208.162.0.142.13.208.32.243.196.32
469 DRTR 208.247.169.225.141.12.208.32.243.196.32.243.196.32
476 DRTR 18.208.162.255.142.11.208.32.243.196.32.243.196.32.243.196
480 DRTR 32.243.196.2205.142.11.208.32.243.196.32.243.196.32.243.196
480 DRTR 32.243.196.202.224.118.208.236.32.81.97.32.8.197.32.8
490 DRTR 197.162.225.160.256.142.12.208.140.10.208.32.243.196.32.243.196
532.243.196.32.243.196.32.243.196.32.243.196.32.243.196.32.243.196.32.243.196
532.243.196.32.243.196.32.243.196.32.243.196.32.243.196.32.243.196
532.243.196.32.243.196.32.243.196.32.243.196.32.243.196.32.243.196
530 DRTR 32.243.196.32.243.196.172.18.208.232.136.196.32.243.196.32.243.196
530 DRTR 31.92.71.699.81.57.192.219.222.224.48.208.223.136.32.243.196
540 DRTR 224.255.208.242.32.43.193.76.20.193.162.0.189.193.7.157
550 DRTR 327.1699.81.57.192.142.622.208.202.32.243.196.32.243.196
550 DRTR 0.202.141.231.7.209.140.60.3.88.165.197.201.64.200.2
570 DRTR 209.6169.147.32.218.255.159.1141.22.208.141.20.3.165
580 DRTR 30.202.141.23.169.0.141.102.3.141.103.3.141.105.3.162
680 DRTR 208.233.162.0.189.64.205.157.0.482.22.224.63.224.63
680 DRTR 208.233.162.0.189.64.205.157.192.408.222.224.63.2069.245.169
680 DRTR 208.233.162.0.189.64.205.157.192.48.222.224.63.2069.245.169
680 DRTR 31.89.0.285.157.0.484.157.64.206.227.157.155.5.232.224
640 DRTR 11.205.169.185.141.120.5.162.0.169.169.157.308.5.322.224
640 DRTR 11.205.169.185.141.120.5.162.0.169.169.157.308.5.322.224
640 DRTR 11.205.169.185.141.1208.5.162.0.169.169.157.308.5.322.224
640 DRTR 11.205.609.186.159.109.141.325.5.141.132.5.141.132.5.141.132.5.141
629 DRTR 5.141.196.5.141.123.5.5.141.1235.5.141.152.5.141.153.5.152.208.244.169.109.169.109.169.109.169.157.308.522.224.63
680 DRTR 11.208.6169.109.1141.123.5.5.141.1235.5.141.152.5.141.1532.5.141.132.5.141.132.5.141.132.5.141.132.5.141.132.5.141.132.5.141.132.5.141.132.5.141.132.5.14
```

```
998 BRTR 32, 288, 141, 1, 212, 169, 25, 141, 128, 7, 169, 15, 141, 129, 7, 169
1899 BRTR 21, 141, 139, 7, 169, 23, 141, 132, 7, 169, 151, 141, 132, 7, 169, 141
1800 BRTR 41, 134, 7, 162, 168, 6, 169, 0, 201, 141, 1, 21, 159, 43, 241
1800 BRTR 41, 0, 212, 189, 224, 5, 269, 223, 228, 197, 169, 141, 24, 212
1800 BRTR 41, 0, 212, 189, 224, 5, 269, 223, 228, 197, 169, 141, 24, 212
1800 BRTR 52, 197, 922, 197, 76, 83, 193, 169, 49, 141, 20, 3, 169, 234, 141
1800 BRTR 61, 157, 252, 19, 197, 76, 83, 193, 169, 49, 141, 20, 3, 169, 234, 141
1800 BRTR 129, 71, 189, 21, 141, 128, 77, 169, 151, 141, 132, 77, 169, 151, 141
1800 BRTR 129, 71, 189, 21, 141, 128, 77, 169, 151, 141, 132, 77, 169, 151, 141
1800 BRTR 129, 71, 189, 21, 141, 128, 77, 169, 151, 141, 132, 77, 169, 151, 141
1800 BRTR 129, 71, 189, 21, 141, 128, 77, 169, 151, 141, 132, 77, 169, 151, 141
1800 BRTR 129, 169, 201, 141, 10, 212, 144, 129, 23, 142, 23, 33, 32, 10, 0, 48, 3
1120 BRTR 28, 169, 22, 249, 198, 172, 229, 174, 93, 32, 2209, 224, 28
1120 BRTR 28, 169, 28, 29, 189, 189, 189, 189, 189, 29, 189, 189, 29, 293, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 283, 189, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 283, 189, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 283, 169, 9, 289, 28
```

12-18 SEPTEMBER 1985

Standard deviation

Statistical functions at your fingertips on the Spectrum 48K from Robert Kirtland

his program performs various statistical functions on numerical data. If this is two variable data, in which one depends on the other as a linear relationship, but when plotted don't form a straight line due to experimental error, then the computer can work out the position of a line which best represents the relationship between them. However, if the data is less than perfect, then the position of this line depends on whether Y depends on X or X on Y. Therefore both lines are drawn,

the X on Y one being the dotted line.

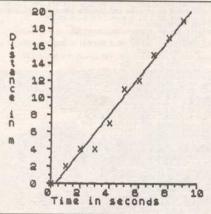
If it is one variable data, then it can be represented by a 3D histogram or a line graph. Due to the limitations of the screen size only 12 values can be displayed in these ways.

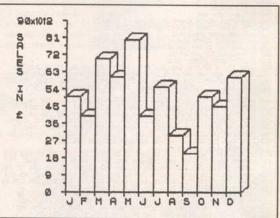
For both types of data, the computer will perform a statistical analysis. For single variable data this will only be the mean, variance and standard deviation. For two variable data the computer will calculate the mean, variance and standard deviation of each variable inde-

pendently. It then goes on to print-out the lines of regression, covariance and correlation coefficient.

The correlation coefficient is an indication of how good the correlation between the two variables is. A value of one indicates a perfect correlation, and zero indicates no relationship. A negative coefficient indicates a negative correlation.

When the graphs are drawn the axes are automatically scaled with large values being displayed as values multiplied by a power of ten. However, negative values cannot be displayed. When a graph is drawn it can be copied to a printer by typing "C" or you can return to the menu by trying "M". This information would normally be printed on the screen but in this case there is simply no room.





```
15 REM STATISTICS

20 REM R.KIRTLAND

25 REM

30 CLS; LET F=0

40 DIM N(2); DIM M(2)

50 GO SUB 9500

60 LET NU=0; LET T=0

80 DIM 1(20); GU TO 9000

1000 REM IMPUT DATA

1010 CLS; PRINT AT 0,7; "ENTER COORDINAT

ES";AT 1,6; "TYPE (ENTER) TO END"

1020 DIM X(100); DIM Y(100)

1030 LET K=0

1100 INPUT "X-VALUE"; LINE X$; IF T TH

EN IMPUT "Y-VALUE"; LINE X$; IF T TH

EN IMPUT "Y-VALUE"; LINE X$; IF T TH

EN IMPUT "Y-VALUE"; LINE X$;
1105 GO SUB 2500; IF 6f THEN BEEP .5,0;

GO TO 1100

1110 IF X$*"" DR Y$*"" THEN LET N=N-1;

LET K=1; CLS; SD TO 2000

1120 LET X(N)=VAL X$;
1130 LET Y(N)=VAL X$;
1140 LET N=N-1

1150 LET N=N-(INT (N/20))*5+5

1160 LET N=N-(INT (N/20))*5+5

1160 LET N=N-(INT (N/20))*5+5

1160 LET N=N-(INT (N/20))*5+5

1160 LET N=N-2

1170 PRINT AT NY,NXIX$;+(","+Y$) AND T)

1180 LET N=12 AND NOT T THEN CLS; LET

N=1: GO TO 2000

1200 GO TO 1000

1300 CLS ; PRINT AT 3,2; "STATISTICAL ANA

LYSIS GF DATA"

1510 PLOT 15,160; DRAW 225,0

1520 DRAW 0,-24; DRAW -223,0

1530 DRAW 1,-24; DRAW -223,0

1530 DRA
```

```
1980 PRINT AT 15,2; "Variance of x:"; stx^2
1990 PRINT AT 16,2; "Variance of y:"; sty^2
1400 PRINT AT 18,2; "Covariance:"; co
1410 PRINT AT 20,2; "Correlation coeff.:"

17
1450 LET T$=""
1450 LET T$=""
1450 LET T$=""
1570 PRINT $1; "COPY OR MENU"
1710 IF INCEYS="M" OR INKEYS="M" THEN R
1710 IF INCEYS="M" OR INKEYS="C" THEN C
1730 IF INCEYS="C" OR INKEYS="C" THEN C
1730 BO TO 1710
1730 FOR N=1 TO M
1730 BO LET YS=XSEX (N) *2
1730 LET YS=XSEX (N) *2
1730 LET STX=(SDR (Y2S/M-XM-2))+1E-6
1730 LET STX-STX-STY)
1730 LET STX-STX-STY
1730 LET STX
```

```
2530 FOR j=1 TO LEN v$
2540 IF CODE y*(j)>57 OR CODE y*(j)<48 T
HEN LET ff=1
2550 NEXT j
  2560 RETURN
  3000 REM PLOT GRAPH
 3005 CLS : LET M=XMAX: GD SUB 4000
3010 LET XV=V: LET XMAX=M: LET SX=160/XM
  3015 LET MaYMAX: GD SUB 4000
  3020 LET YV=V: LET YMAX=M: LET BY=160/YM
 AX 3030 GU SUB 7500 3050 PLDT 47,9: DRAW 0,163 3060 PLDT 44,12: DRAW 163,0 3070 FDR 3-12 TO 172 STEP 8: PLDT 47,J: DRAW -2-2*([INT ((j-12)/16))*((j-12)/16)
 3080 FOR J=47 TO 207 STEP 8: PLOT J,12:
DRAW 0,-2-2*((INT ((j-47)/32))*((j-47)/3
 DRAM 0,-2-2*((INT (()-47)/32))=((
2)): NEXT J
3100 FDR J=1 TO NU
3110 LET X=X*(3): LET Y=Y(J)
3120 LET X=X*63: LET Y=Y(J)
3130 PLOT X-2,-2: DRAM 4,4
3140 PLOT X-2,Y=2: DRAM 4,-4
3150 NEXT.
 3150 NEXT J
 3160 LET C=C1+SY: LET H=H1/SX+SY: 80 SUB
3190
3165 IF ABS R>.95 THEN RETURN
3170 LET C=C2*Sx: LET H=H2/Sy*Sx: 80 SUB
3170 LET C=C2*8XX LET H=H2/5Y*8XX SU SAUS

3400: RETURN

3190 LET N=1

3200 IF C>O AND C<160 THEN LET N(N)=O:

LET H(N)=C: LET N=N+1

3210 IF 160+HC>O AND 160+H+C<160 THEN

LET N(N)=160: LET H(N)=160+H+C: LET N=N+.
 3220 IF -C/H>O AND -C/H(160 THEN LET H)
N)=0: LET N(N)=-C/H: LET NeN+1
3230 IF (160-C)/H>O AND (160-C)/H<160 TH
EN LET M(N)=160: LET N(N)=(160-C)/H: LE
T N=N+1
```

3240 PLOT N(1)+47,M(1)+12 3270 DRAW N(2)-N(1),M(2)-M(1) 3300 RETURN

```
5110 IF X(J)>XMAX THEN LET XMAX=X(J)
5120 NEXI J
5130 LET M=XMAX=BD SUB 4000: BD SUB 400
5140 LET XMAX=M: LET SY=160/XMAX: LET YV=V: LET YP=INT (LN (XMAX/YV)/LN 10)
5150 FOR J=1 TO NU
5170 INPUT "Do YOU WANT MORTHS ON X-AXIS 7": "#8
5173 BO SUB 7500
5180 LET W=(wB="")"+(wB=""")"
5190 LET DB="JFMAMNJASDND"
5200 PLOT SS,9: DRAW 0,163
5210 FLOT J=12 TO T2 STEP S: PLOT SS,3:
DRAW -2-2*((INT ((d-12)/16))=((d-12)/16))
1,0: NEXT J
5230 FOR J=35 TO 247 STEP 16
5240 PLOT J,12: DRAW 0,-3
5250 FRINT AT J,4:I
5290 LET I=1
5290 LET I=1+1: NEXT J
5290 LET I=1+1: NEXT J
5340 IF YP=1 THEN GO TO 5360
5350 PRINT AT J,3: STRAW 16,0
5340 LEN STRE (YP=1):=1)
5390 IF L THEN GO TO 5360
5350 PRINT AT C,13: DRAW 16,0
5400 DRAW 0,-Z(J): DRAW 16,0
5400 DRAW 0,-Z(J): DRAW 8,6
5400 DRAW 0,-Z(J): DRAW 8,6
5400 DRAW 0,-Z(J): DRAW 8,6
5400 DRAW 8,6
```

NA
6100 BD TD 1700
7110 PLOT 55,z(1)+12
7120 FOR J=2 TO NU
7130 DRAW 16,Z(J)-Z(J-1)
7140 NEXT J
7200 GD TD 1710
7500 INPUT "X-axis title, max 30 chars. 7
"125
7510 IF LEN t#>30 THEN GD TD 7500
7520 INPUT "Yraxis title, max 18 chars. 7
"ihs
7530 IF LEN h\$>18 THEN 80 TO 7520
7540 FOR 1=1 TO LEN h\$
7550 PRINT AT 1+1,0:h*(1)
7560 NEXT 1
7570 PRINT #11" "1t#
7600 RETURN
9000 PRINT AT 2,71"DPTIONS AVAILABLE"
9010 PLOT 51,1641 DRAW 144,0
9020 DRAW 0,-17: DRAW -144,0
9030 DRAW 0,17
9040 PRINT AT 5,41"1) ENTER 1 VARIABLE D
9045 PRINT AT 7,41"2) ENTER 2 VARIABLE D
ATA"
9050 PRINT AT 9,4; "3) STATISTICAL ANALYS
IS"
9060 PRINT AT 11,41"4) DRAW SCATER PLOT
GRAPH"
9070 PRINT AT 13,4;"5) DRAW HISTOGRAM"
9080 PRINT AT 15,4; "6) DRAW LINE GRAPH"
9200 LET AS=INKEYS: IF AS="" THEN GO TO
9200
9210 IF As="2" THEN LET T=1: 60 SUB 100
0
9215 IF AS="1" THEN LET T=0: 80 TO 1000
9220 IF A\$="3" AND NU>1 THEN CLS : 60 6
UB 1500
9230 IF As="4" AND T THEN GO SUB 3000:
GO SUR 3500
9240 IF AS="5" AND NOT T THEN LET L=0:
GO SUB 5000
9250 IF A\$="6" AND NOT T THEN LET L=1:
GO SUB 5000
9300 CLS : 60 TO 9000
9500 FOR j=USR "a" TO USR "b"+7
9510 READ at POKE J. at NEXT J
9520 DATA 0,2,6,146,98,98,146,0
9530 DATA 0,98,151,146,146,146,98,0
9600 RETURN

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standard Basic commands and structured statements derived from languages like Algol and 'C'. It does contain facilities to debug programs written in simple Basic, but very little for those who want to test programs which use procedures and functions.

However, now help is at hand, in the shape of our 'structured debugging' commands, Find and How Come. One allows you to locate any procedure or function just by typing its name. The other traces through the procedure and function-calls at any point as a program is running. There's no longer any need to memorise line-numbers, or decorate your code with Print statements to keep track of the program flow.

The procedure presented here and next week have been tested over several months, on all versions of the QL. They've been used to develop complex, structured SuperBasic programs (sometimes over 2,000 lines, without a single Go To or Go Sub!) and they've saved many hours which would otherwise have been spent poring over listings.

Before we get to the procedures themselves, let's look at how SuperBasic programs are stored within the QL.

QL SuperBasic is organised very differently from the majority of micro Basics, which keep the program in a similar form to that produced by the *List* command. Here, statements are stored in memory much as they were entered; special values called 'tokens' are used to represent common words, such as *Print* and *Stop*, but the rest of the program is stored in textual form – just as a string is stored in memory. The QL uses a more complex system which is designed to cope with very large programs.

On a standard QL there is about 88K free for Basic; this figure can be increased to 600K without problems if addon memory is fitted. Contrast this capacity with that of the IBM PC, which allows only 63K for Basic programs, even on a 640K machine. The Microsoft Basic used by IBM, and many other suppliers, is based on a program written in 1977, when 64K was considered an enormous amount of memory.

Microsoft keep data in a small group of tables. This system works very well for small programs, but it becomes increasingly inefficient as programs get longer. Every time you refer to a variable in a Microsoft Basic program, the computer has to search through the table of names, one by one, until it finds the one you want. This doesn't take long in short benchmark' programs, but it can take ages when programs get large – per-

haps half the execution time in a 40K program.

The QL scheme is rather different. Names in a QL program are not stored in their text form, but as index numbers. Each number corresponds to an entry in an index for every name – the Name Table. In turn, that table contains numbers which indicate the position of the text of the name and its value, within two more tables. The 'type' of each name – function, string or whatever – is also stored in the Name Table.

Figure 1 shows the storage of a twoline program: 10 PRINT number 20 STOP. The first 114 entries in the Name Table describe procedures and functions built-in to the QL; we've only listed the first three of these.

At times this just makes life more complicated. When the computer Lists a program it finds the index numbers and

must up in them the Name Table. The Name Table indicates where text of the name is stored. List outputs that text and carries on. Microsoft Basic just spits out the characters as it finds them.

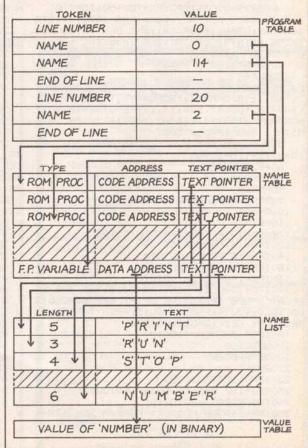
When you come to Run program, however, the QL scheme begins to make sense. As names are found. thev be can looked up directly in the Name Table. There's no need to search the table from the start. since the details of each name occufixed py a amount of You

can take the index number, multiply by that fixed amount, add the start address of the table and the details are at your finger tips (or, at least, your digits!). The entry in the Name Table tells you exactly where to go to find the correct data.

Microsoft Basic has to search through its list from the start, because it stores names in text form and keeps the values and names muddled together in one big list. Different types of variable need different amounts of storage, so Microsoft can't just go directly to the correct entry: a slow, painstaking search is needed.

The QL keeps values jumbled up as well, but it can find them quickly by using the Name Table as a kind of intermediate index. The Name Table and the variable values are kept apart, so that entries in the Name Table are always the same size. The text for each name is only stored when the name is first typed, so you can use long, readable names in your programs without wasting memory. Thereafter, names are just stored as index numbers within the program.

So much for the theory – next week the practice, with Find and How Come program notes and listing.



Part of the process

A useful mini-wordprocessor for the BBC B from the keyboard of M Smith

ordway is a tape-based miniwordprocessor written in Basic for the BBC Model B. It supports a 66 line page of 80 column text with an 80 column display. The features within the program include Text Entry, Text Editing, Saving To or Loading From Tape, a simple form of Justification with a Preview Mode and of course Printing. It is not in the same league as Rom-based wordprocessors, but it is easy to use and gives good results.

Text Entry: fl - opens Entry Mode, f2 - closes Entry Mode. Tab indents your paragraphs. Press fl, type in your text using Tab to indent each paragraph (if you so want) and using Return to close each paragraph. Do not worry about the line endings as these will be sorted out when you print your text and you can preview the effect before printing. If you are preparing lists or forms that must appear as entered you will be able to print these in your selected format.

Editing: f3 - opens Edit Mode, f4 closes Edit Mode, f5 - to Insert, f6 - to Delete, f7 - to Overwrite, f7 then f8 - to Split a Paragraph, 19 - to Jump. Use the cursor keys to move the Editing Cursor to the required position on the page.

To Insert, position the cursor at the space into which you wish to insert and press f5. You will be asked to wait for space to be created and the screen will clear. Type in your new letter, word, sentence or paragraph (if paragraph close it with Return) press f2 and wait for the computer to sort out your text.

To Delete, position the cursor under the first letter or space you wish to Delete, press f6 and then press Copy, move the cursor to the last letter or space and press Copy again. Wait while the offending passage is removed. If you are removing a single letter or space position the cursor and press Copy twice. Do not use Delete if Overwrite will do the same job as Overwrite is faster.

To Overwrite, position the cursor under the first letter or space you wish to overwrite, press f7, type in your alteration taking care not to go past the end of the line. Press Return when finished or at the line end and the change is made.

This week, part of the listing - next week the remainder plus more instructions. Meanwhile, if you find the idea of typing it all in a bit daunting, I can send you a copy on tape for £3.00 (disc £6.00) and a 17p stamp. Write to M Smith, Gwylfa, Llangadfen, Welshpool, Powys SY21 ONW.

OFORI%=OTO3STEP3:P%=TOP+50:COPT O 10.start LDY #0:.100p LDA (&72),Y:STA (&70), Y: LDA&73: CMP &81: BNE ok: TYA: CMP &8 1: BNE ok: RTS: . ok INY: BNE loop: INC &71: IN C &73: JMP 1000 203: NEXT: GOTO 1470 **30CLEAR** 40MODE7: PRINTTAB (11,7) CHR\$141 "WORDWAY ", TAB(11,8)CHR\$141"WORDWAY", TAB(16,9)"0" TAB(16,10) "R", TAB(16,11) "D", TAB(16,12) " WORDWAY", TAB(16,13) "A", TAB(16,14) "Y M.S 1985": PROCD (300) MITH 50MDDE3: HIMEM=&2ACF: CU=B: HP=40: DHP=HP :S=0:T1=1:M=10960 60*FX225.14B 70*FX226,148 BOPROCC 90PROCH: ONERRORGOTO1080 100G=GET 110*FX4.0 120IFG=149PROCPR: PROCEN: GOTO90 130IFG=151PROCED: GOTO90 140IFG=153PRDCS:GOT090 150IFG=154PROCL: GOT090 160IFG=148PROCCH: GOTO90 170IFG=156CLS: PRINTTAB (20,5) "IF THE DI SPLAY STOPS PRESS THE SHIFT KEY": PROCD (2 00):CLS:VDU14:PROCJ:VDU15:PRINTTAB(26)"P RESS ANY KEY": G=GET: GOTO90 1801FG=155PROCPT: GOTO90 190GDTD100 200DEFPROCEN 210G=GET 2201FM>16239ENDPROC 230IFG=127 M=M-1:VDU127:GOTO210 240IFG=9PROCI:GOTO210 250IFG=13ANDM MODBO<>OFORP=M TOM+(79-(

M MODBO)):?P=4:PRINTCHR\$32;:NEXT:M=M+(80 -(M MOD80)):GDT0290 260IFG=13ANDM MOD80=0FORP=M TOM+79:?P= 5: PRINTCHR\$32:: NEXT: M=M+80: GOTO290 270IFG=150ENDPROC 280PRINICHR#G:: ?M=G: M=M+1:GOTO210 290IFM<16240GDTD210ELSEENDPROC 300DEFPROCPR: CLS: P=10960 310IF?P=40R?P=5 PRINTCHR\$32::GOTO330 320PRINTCHR\$?P: 330P=P+1: IFP<M GOTO310 ELSEENDPROC 340DEFPROCED: M1=10960: VDU23,1,0;0;0;0;0; 350CLS: PRINTTAB(0.0) "f5.TO INSERT LETT ER. WORD OR PARAGRAPH... f6. TO DELETE LET TER, WORD OR PARAGRAPH", TAB(8,2) "f7.TO D VERWRITE... f7. THEN f8. TO SPLIT A PARAGRA PH... f9. TO JUMP" 340PRINTTAB(0,4) "USE CURSOR KEYS TO PO SITION CURSOR.... f4. TO LEAVE EDIT MODE.. .. ESCAPE TO ABORT": PROCEP: *FX4.1 370HP=40: 0HP=HP 380PROCPC 390G=GET 400IFG=136 HP=HP-1: IFHP<OTHENHP=0 410IFG=137 HP=HP+1: IFHP>79THENHP=79 420IFG=138 M1=M1+80 430IFG=139 M1=M1-80: IFM1<10960 M1=1096 4401FG=1380RG=139PROCEP 4501FG=153PROCPA: GOTO350 4601FG=155PROCAL:GDT0380 470IFG=157PROCJM: PROCEP: GOTO380 4BOIFG=154PROCDL: PROCEP: GOTO380

5201F?P=0DR?P=40R?P=5PRINTCHR\$32;:GOTO 540

530PRINTCHR\$?P; 540IFP MODBO=79 VDU10 550NEXT:ENDPROC

560DEFPROCAL 570M2=M1+HP

580H=GET

590 IFH=13ENDPROC

600IFH=156 H=4

610?M2=H:PRINTTAB(HP,CU-1)CHR\$H:OHP=HP:HP=HP+1:M2=M2+1:PROCPC:GOTO580

620DEFPROCPC:PRINTTAB(OHP,CU)CHR\$32:PRINTTAB(HP,CU)CHR\$94:OHP=HP:ENDPROC

630DEFPROCC: CLS: PRINTTAB (17,12) "PLEASE WAIT I'M BUSY CLEARING SPACE IN MEMORY ": D=10960: REPEAT: ?D=0: D=D+1: UNTILD=16320 M=10960: ENDPROC

640DEFPROCJ: A=10960 650B=0: A\$=""

660X=?A

670 IFX=OPRINTAS: ENDPROC

680IFX=4 A\$=A\$+STRING\$(80-LENA\$," "):P RINTA\$;:REPEAT:A=A+1:UNTIL?A<>4:GOTO650

6901FX=5PRINTSPC80;:S=1:REPEAT:A=A+1:S

=S+1:UNTIL?A<>50RS=81:GDT0650

700B\$=CHR\$X:A\$=A\$+B\$:A=A+1:B=B+1:IFB<>
80GDTD660

7100=80

720IFMID\$(A\$,C,1)=CHR\$32G0T0730ELSEC=C -1:G0T0720

730C\$=MID\$(A\$,1,C-1):T\$=MID\$(A\$,C+1,LE NA\$-C)

740E=LENC\$

750IFMID\$(C\$,E,1)=CHR\$32 C\$=MID\$(C\$,1,

E-1):GOT0740

760IFLENC\$<BOPROCST 770PRINTC\$;:A\$=T\$:B=LENA\$:GOTO660

780DEFPROCST: D=LENC\$

790IFLENC\$<70 C\$=C\$+STRING\$(80-LENC\$,"
"):ENDPROC

800D\$="":F\$=""

810IFMID\$(C\$,D,1)=CHR\$32GOT0820ELSED=D -1:GOT0810

B2OD\$=MID\$(C\$,1,D-1):F\$=MID\$(C\$,D+1,LE NC\$-LEN D\$-1)

830C\$=D\$+" "+F\$:D=D-1

840IFLENC\$<>80GUTU800ELSEENDPROC

850DEFPROCD (TM): T=TIME

860IFTIME-TOTM THENBEOELSEENDPROC



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More demolition data

Your final helping of Smasher code for the Amstrad machines by A Williams

gour on stop holding your breath now; at last - the remainder of the Smasher listing.

If your fingers don't feel up to all the work, I can supply a copy of the program if you send me a tape, your name and

address and £1.00. Write to me at 122 Caledonian, Glascote Heath, Tamworth, Staffs, B77 2EH.

970 RESTORE 990 980 FOR T-1 TO 5:READ 10:E-4:Y-T03+4:PEN T:GOSUB 139	1370 DATA OA.DD.66.0C.18.24.F5.E5.C5.D5.CD.50.BC.D1. C1.E1.F1.OD.C8.18.F1.OE.19.18.O3.DD.4E.00.C5.CD.17.B
0:KEXT	C,50,C1,3E,00,06,01,1E,18,6F,67,F5,79,FE,00,28,03,F1
990 DATA 1) CURSORS,2) JOYSTICK A,3) INSTRUCTIONS,4) KEYBOARD,5) PLAY THE SAME	.18,03,F1,C9,00,00,00
1000 AF(1)=*PRESS '5' TO START D	1390 LARGE=42239
R 1-4 FOR YOUR OPTION *+CHR#(164)+*A:WILLIAMS 1985 6	1400 LOCATE X,Y:FOR ABC=1 TO LEN(X\$):TI=LARGE+1+8+(A
UIDE YOUR BAT 10 DEFLECT THE BALL AND KNOCK DUT THE BRICKS MANY THANKS TO FIONA FOR THE IDEA ALLAN FOR T	SC(MID*(X*,ABC,1))-32) 1410 A1=PEEK(T1):A2=PEEK(T1+1):A3=PEEK(T1+2):A4=PEEK
HE SOUND AND MARK FOR THE *	(TI+3)
1010 A\$(1)=A\$(1)+*GRAPHICS OK U:0:5'5	1420 A5=PEEK(11+4):A6=PEEK(T1+5):A7=PEEK(T1+6)
******	1430 SYMBOL 248,0,41,41,42,42,63,43,44 1440 SYMBOL 249,44,65,65,66,86,47,47,0
1020 A\$(2)=*	1450 PRINT CHR\$(248); CHR\$(10); CHR\$(8); CHR\$(249); CHR\$
THATS ALL WITH OUT CHEATING YOU GET A BONUS EVERY	ung
SCREEN ACORDING TO YOUR CHOICE OF SKILL	1460 NEIT 1470 RETURN
1030 PEN 2:LOCATE 1,22:PRINT CHR\$(150);STRING\$(18,15	1480 REN QUIT
4); CHR\$(156):LOCATE 1,23:PRINT CHR\$(149); STRING\$(18,	1490 MODE 0:FOR T=1 TO 15:SOUND 4,0,1,15,0,0,T:BORDE
32);CHR\$(149);CHR\$(147);STRING\$(18,154);CHR\$(153)	R RND+26:NEXT:BORDER 0
1040 A\$(3)="OTHER KEYS TO USE DU RING GAHE ARE LARGE ENTER=MUSIC ON/OFF DEL=PAUSE	1500 X\$="\$HAME!":X=7:Y=1:PEN 1:605UB 1390 1510 X\$="YOU GAVE UP AFTER.":X=2:Y=5:PEN 2:605UB 139
ON CLR=PAUSE OFF ESC=QUIT AN	0
D MON THIS*	1520 X\$="SCORING ":X=6:Y=10:PEN 3:GOSUB 1390:X\$=STR\$
1050 FOR T=1 TO 3:FOR Y=1 TO LEN(A\$(T))-20	(SC)+* POINTS*:X=1:Y=14:PEN 4:605UB 1390:60T0 1640 1530 REH LOSE A LIVE::
1060 LOCATE 2,23:PEN 3:PRINT MID\$(A\$(T),Y,18) 1070 IM\$=INKEY\$:IF IN\$="" THEN 1130	1540 LI=LI-1: IF LI=-1 THEN 1580
1080 IF INS="1" THEW L1=8:R1=1	1550 BORDER 26:SOUND 135,100,150,15,2,2,15:FOR T1=1
1090 IF IMS="2" THEN L1=74:R1=75	TO 20:NEXT:BORDER 0 1560 X\$=STR\$(LI):PEN 8:X=19:Y=1:60SUB 1390:LOCATE BA
1100 IF INS="3" THEN 1180 1110 IF INS="4" THEN L1=71:R1=22	LX_BALY:PRINT *
1120 IF INS="5" THEN RETURN	1570 BALX=10:BALY=10:BALUD=1:LOCATE 5,15:PEN 1:PRINT
1130 NEXT:NEXT:	"HIT A KEY!!!": WHILE INKEY\$<>"": WEND: WHILE INKEY\$="
1140 A=1:FOR Y=1 TO 10:FOR T=1 TO 15:INK A,T:A=A+1:S OUND 1,100+T+A,1,15,6:IF A=8 THEN A=1	":NEND:LOCATE 5,15:PRINT STRING\$(12," "):RETURN 1580 CLS:X\$="HARD LUCK YOU":X=4:Y=2:PEN 1:80SUB 1390
1150 NEXT:NEXT	1590 X\$="PERISHED": X=6:Y=6:PEN 2:60SUB 1390
1160 INK 1,6:INK 2,22:INK 3,2:INK 4,5:INK 5,26:INK 6	1600 PEN 2:X4="AFTER SCORING.":X=3:Y=9:60SUB 1390
,24:60TD 1050 1170 LOCATE 1,24:END	1610 K\$=STR\$(SC)+" POINTS!!":X=1:Y=12:PEN 4:80SUB 13
1180 REM INSTRUCTIONS	1620 FOR T=1 10 3000:NEXT
1190 MDDE 0	1630 GOSUB 2150
1200 PRINT CHR\$(22)+CNR\$(1) 1210 PEN 1:K\$=*>>>>*:X=1:Y=2:80SUB 1390:PEN 4:X=5:X\$	1640 XF="ANOTHER GO (YES/NO)?":X=1:Y=20 1650 PEN 5:GOSUB 1390
=*INSTRUCTIONS*:60SUB 1390:14=*<<<<*:PEN 1:1=17:60SU	1860 IF INKEY(43)=0 THEN ERASE BRICK, A: GOTO 50
B 1390	1670 IF INXEY(46)=0 THEN MODE 1:PEN 1:END
1220 LOCATE 1,5:PEN 5:PRINT "GUIDE YOUR BAT TO DEF LECT THE BALL ANDKNOCK OUT THE BRICKSA BONUS IS GIVE	1680 SDTO 1660 1690 REM BACKGROUND MUSIC
N AFTER EVERY SCREEN IF USIN	1700 READ NOTEL DURATIONI
G KEYBOARD Z=LEFT \=RIGHT*	1710 IF NOTEX=-999 THEN RESTORE 1740:60T0 1700
1230 PEN 3:PRINT *LAYER SCORE/BRICK 1240 PEN 6:PRINT * 1 2"	1720 SOUND 1,NOTEX,DURATIONX+3*10,15,7 1730 RETURN
1250 PRINT * 2 4*	1740 REH DATA FOR MUSIC
1260 PRINT * 3 8*	1750 DATA 494,1,494,1,415,1,494,1,415,1,494,1,415,1,
1270 PRINT * 4 16*	494,1,494,1,415,1,440,1,349,1,349,.5,349,2,440,1,44 0,1,349,1,440,1,349,1,440,1,349,1,493,1,493,1,440,1,
1280 PRINT * 5 32* 1290 Ks="ANY KEY TO RETURN!!!": X=1:Y=22:PEN B:INK B.	391,.5,349,1,329,.5,329,2
15:60SUB 1390	1760 DATA -999,-999
1300 WHILE INKEY\$<>*":MEND:WHILE INKEY\$="":WEND	1770 DATA 1780 REM HIT A BRICK
1310 BOSUB 1340 1320 FOR T=1 TD 25:1SCROLL,1,5,T,T+1,0,1,0::SCROLL,5	1790 IF T=4 THEN FOR T=1 TO 5:LOCATE BALK, BAL:PRINT
,15,T,T+1,2,1,1NT(T/2)	* *:60SUB 2450:BALY=BALY+1:BALUD=1:BALX=BALX:HEXT:RE
1330 15CROLL,15,20,T,T+1,0,1,0:FOR Y=1 TO 50:MEXT:ME	TURN
XT:\SCRGLL:GOTO 830 1340 RESTORE 1360:AB=&AB14:FOR T=1 TO 107:READ A\$:PO	1800 IF BRICK(EALX,BALY)=0 THEM RETURN 1810 GROUB 1820:60T0 1880
KE AB. VAL("4"+AS): AB=AB+1: NEXT	1820 IF BALY=9 THEN SC=SC+2:SOUND 4,200,2,15:BRICKSC
1350 CALL &AB14: RETURM	#BRICKSC-2
1360 DATA 01,1E,AB,21,7B,AB,CB,D1,BC,C9,23,AB,C3,2A, AB,53,43,52,4F,4C,CC,00,FE,00,2B,20,FE,01,2B,2D,FE,0	1830 IF BALY=8 THEN SC=SC+4:SDUND 4,300,2,15:BRICKSC =BRICKSC-4
7,CO,DD,7E,00,DD,4E,02,DD,46,04,DD,5E,06,DD,6E,08,DB	1840 IF BALY=7 THEN SC=SC+8:SOUND 4,400,2,15:BRICKSC
,56	=BRICKSC-8

Amstrad

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1850 IF BALY=6 THEN SC=SC+16: SOUND 4,500,2,15: BRICKS
C=BRICKSC-16
1860 IF BALY=5 THEN SC=SC+32: SOUND 4,100,2,15: BRICKS
C=BRICKSC-32
1870 RETURN
1880 BALUD=1
1890 BALM=INT (RND+10)
1900 IF RALV=3 THEN RALUD=-1:SDUND 4,200.2,15:BALY=4
1910 DEF FN IIS=RIGHTS(STRS(POIN), (LEN(STRS(POIN))-1
1920 PBIN=SC: X$=FN X1$: PEN 8: X=8: Y=1: BOSUB 1390: BRIC
K60=BRICKGO-1
1930 IF BRICKGO=0 THEN 1970
1940 IF BRICKSC(=0 THEN 1970
1950 BRICK(BALK, BALY)=0
19AO RETHRN
1970 REM NEW SCREEN
1980 BRICKSC=1240:LOCATE BALK, BALY:PRINT * *
1990 WINDOW #1,1,20,3,25:PAPER #1,0:CLS #1
2000 LOCATE BATI, 24: PRINT * *: PEN 7
2010 IS=*BONUS*: I=6: Y=B: 605UB 1390
2020 IS=STR$(BONUS)+"
2030 X=13:PEN B:60SUB 1390
2040 FOR P=BONUS TO 0 STEP -1
2050 SOUND 4,P,2,15
2060 PDIN=F:I$=STR$(P)+" ":X=12:Y=8:PEN 8:50SU8 139
2070 PDIN=SC+1:SC=SC+1:X$=STR$(SC):X=7:Y=1:PEN 8:60S
UB 1390: NEXT
2080 WINDOW #1,1,20,3,25:PAPER #1,0:CLS #1:BONUS=BON
US+10: DELAY=DELAY-10: IF DELAY(O THEN DELAY=0
2090 IF BONUS)=200 THEN BONUS=100:LI=LI+1
2100 FOR T=1 TO 20:FOR Y=1 TO 20:BRICK(T,Y)=1:NEXT Y
2110 FOR T=1 TO 5:PEN T:FOR Y=1 TO 20:LOCATE Y,T+4:P
RINT CHR$(233):NEXT Y.T
2120 BALX=10:BALY=10:BALUD=1:BATX=10
2130 BRICK60=120
2140 6010 600
```

```
2150 FOR TOP=1 TO 10:1F SC(HI(TOP) THEN NEXT: RETURN
2160 IF TOP()10 THEN FOR B=10 TO TOP+1 STEP -1: NAME$
(B)=NAME$(B-1):H1(B)=H1(B-1):NEXT
2170 MODE 0: PAPER 2: PEN 1
2180 WHILE INKEY$() **: WEND
2190 Y=2:X$="CONGRATULATIONS!":Y=1:GOSUB 1390
2200 P$=STR$(SC):P$=LEFT$(P$,LEN(P$)-1)
2210 IS=*YOUR *: POIN=TOP
2220 A=TOP
2230 IF A=1 THEN 15=15+" 1ST"
2240 IF A=2 THEN IS=IS+* 2ND*
2250 IF A=3 THEN X5=X5+* 3RD*
2260 (F A)=4 THEN X$=X$+STR$(A)+*TH*
2270 X$=X$+* H16HEST*
2280 PAPER 0
2290 X=1:Y=8:PEN 3:80SUB 1390
2300 LOCATE 2,13:PEN 4:PRINT "ENTER YOUR NAME."
2310 ##=STRING$(10,208):Y=24:X=5:GOSUB 1590
2320 NAM*=""
2330 FOR T=1 TO 10
2340 As="":NHILE As="":AS=UPPER$(INKEY$):MEND
2350 IF A$=CHR$(13) THEN T=10:58TO 2380
2360 NAME=NAME+AE: X=T+4: Y=22: PEN 1: X$=A5: GGSUB 1390
2370 SOUND 1,2000,2,15
2380 WEYT
2390 NAMES(TOP)=NAMS:H1(TOP)=SC
2400 MODE 0: PAPER 0
2410 LOCATE 5,1:PRINT "HI-SCORES!"
2420 FOR T=1 TO 10:PEN T: X$=NAME$(T): X=1:Y=T#2+1:GOS
UR 1390
2430 X$=STR$(H1(T)):X=13:80SUB 1390
2440 NEXT:FOR T=1 TO 2000:NEXT:FOR T=1 TO 25:LOCATE
1.1:PRINT CHR$(11):NEXT:RETURN
2450 IF BRICK(BALK, BALY)=0 THEN RETURN
2450 SBSUB 1820
2470 POIN=SC:PEN 8: X$=FN X1$: X=8: Y=1: 60SUB 1390: RETU
24BO IF MUSIC THEN ON SQ(1) GOSUB 1690
2490 RETURN
```

You can do it!



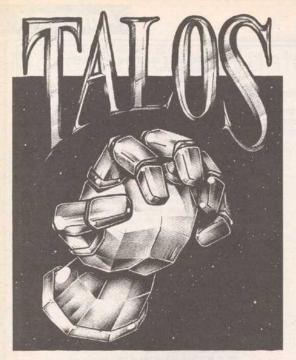
You don't have to have a wet towel wrapped round your head and a bottle of aspirin at your side to learn to program your Commodore 64 in machine code — there is an alternative method. By concentrating on simple concepts, and by explaining every step carefully, with plenty of examples, David Lawrence and Mark England show it to you in their book Beginning Machine Code on the Commodore 64.

Although it can be difficult to become fully proficient in machine code programming, each instruction, in itself, is relatively simple to understand. The authors are careful to bring out this in their approach, showing clearly and carefully what each instruction does and how it is used. Then, when you feel more confident as a machine code programmer, you can begin to construct more and more adventurous routines from a collection of the simple individual instructions.

David Lawrence and Mark England are experienced machine code programmers on the Commodore 64, being authors of Machine Code Graphics and Sound for the Commodore 64 and The Commodore 64 Machine Code Master, but not so experienced that they have forgotten the pitfalls and confusing points that await the beginner.

So, if you are ready to take your first steps into the world of machine code programming on the C64, this is the book for you.

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Arcade Avenue



Finders keepers

It seems that the gremlins have crept back into the column again and one of the first mistakes that I have to correct concerns JSW II.

In addition to some letters on the subject, I have also had some messages from over-wrought members of the Software Projects team who wanted to point out that, contrary to the letters we printed a few weeks ago, you can in fact take a ride on the yacht. It's not surprising that so many people have got misled on this point because to succeed involves some very tricky gamesplay.

Anyway my thanks go to Mark Whitaker and A. Nonny Mouse (!) amongst others for explaining how it works - to ride the yacht you must trip switch and then get to the yacht to collect the object and the one in the bow without losing a life on the way! Then walk left and wait for your trip to the desert island. The switch has nothing to do with the cartography room - instead you find that every new room you enter makes a block appear in this location, hence the name, and you have to visit enough of the lower rooms before going here to make it possible. Apologies to everyone concerned for barking up the wrong tree.

I have also been supplied with info about two secret rooms that can only be entered by cheating with *Pokes*. I will assemble these *Pokes* and some for the infinite lives on the Spectrum and MSX versions and print them in the column in a week or two.

More urgently this week I want to clear up a couple of errors printed in the August 8th issue that dealt with Finders Keepers. First of all I misread the name at the bottom of the letter and it should in fact have been credited to John Wilson of Rochdale rather than the mythical John Wat-

son, secondly there were two errors in the program he sent in for reading hidden words in machine code programs – line 40 should be If Peek F= 32 Then Go To 70 and line 50 is If Peek F= 127 Then Go To 70.

Anyway there is good news for both John Wilson and John Watson in the form of this letter from David Jones, the very hand responsible for all the sleepless nights *Finders* is giving gamesplayers everywhere.

"As a regular reader of your column, I would like to Merge the old Basic header and edit it or enter a completely new one to produce the program below.

"The program will load as before but will enable a 100% score, if you can work out how. Have any of you hackers out there discovered my test routine that enables the player to go direct to any room? If not then I'll give you a clue; it requires three pokes to locations that are zero when you load the game."

If no one can crack his challenge in a few weeks we will print the answer. times as low as 58 seconds. Start the qualifying lap as usual but just before the Becketts corner stop, turn the car through 180 degrees and drive back down the course to pass the starting flag again. Then brake the car, reverse back over the flag and it is recorded as a valid qualifying time."

Now then, in response to many pleas for help, David Noble of Bexleyheath has kindly sent in a complete solution to the game Castle Quest. The problem I face in giving answers to your spe-

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10 CLEAR 28600: BEEP .1,1: BEE P .1,2: BEEP .1,3: BEEP .1,4: BE EP .1,5: PAPER 0: BORDER 0: INK 7: BRIGHT 1: CLS : PRINT BRIGHT 1; INK 7; AT 9,3; "FINDERS KEEPERS IS LOADING"; AT 12,10; "PAPER INT PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : INK 0: PAPER 0: PRINT AT 0,0; LOAD ""SCREEN$ : LOAD ""SC
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offer some solutions to the problems posed by John W. First of all I would like to point out that the Rooms score was never intended to reach a total of 100 - I didn't think people would mind since many games put the % sign after numbers that never reach (or go beyond) 100. Having now had time to think about the game, I have taken some time out to manufacture a few Pokes to increase the total room score to 100 - it works by rerouting the score routine to a new subroutine stored in front of the main code.

"The problem with the mouse is an oversight on my part (sorry folks) but it will also be corrected and included within the game. To get the new Pokes in, either

David finishes his very welcome letter with some exciting news about a game I'm very much looking forward to. "My new game will be out in about a month and is much more of an arcade/adventure than most games that claim the title. It will be called Spellbound and is considerably more advanced than Finders Keepers."

To round up this week's column I've got a couple of tips for the BBC. Simon Whitelegg and Tim Moll of Sheffield write concerning the excellent game Revs. "On August 1st I achieved a lap record of 1:24.4 on the Silverstone circuit without cheating and Tim managed 1:24.5. Can anyone beat these times? We have also discovered a way of qualifying with

cific queries is that they are very complicated and may not work unless you have followed David's route through the earlier parts of the game.

However, many people want to know what they should do with the wand - as far as I can see its only function is to be restored and in your possession at the end of the game - it stops you falling into the water and a game completed message appears. Not very helpful eh? I think the best approach is to serialise the solution to the game in small doses over several weeks of the column, starting next week. This ensures that we don't spoil the enjoyment too much and stops it being too boring for other people.

Tony Kendle

Tony Bridge's Adventure Corner



Wide vocabulary

alling Bridge! Calling Bridge!"
Yup, it's a weirdo, but it's also an adventurer in distress, so we must help if possible: "This is Jim Richards below decks on Starship Snowball... Wheep... Rzzt... unable to find welding glasses... Bleep... to repair tractor, request assistance... Rzzt... also what happens to bomb (I know/assume that it explodes)... request assistance!

"Ere! Wot's yer 'andle on CB, guv? I bin pickin' me brains ter fink of a way ter get inta the deserted 'ouse in *Urban Upstart*. Can yer 'elp this snotty-nosed back or hard to present the reset the reset the present of the present

berk get parst the rusty door?

"Ahar, matey, oi be stuck also in Pirate's Cove, oi ain't found much, ceptin' a bag o' munchies, a lifebelt an' a rusty torch. Can 'ee 'elp, where be I agoin' next, matey?

"Also, verily, I am a weary traveller stuck in the mystic cheapo game entitled The Helm. Can ye mayhap assist my passage beyond the first 13 locations — can I enter the shop? How do I cross the chasm/ravine etc?"

As I said, a complete weirdo, but here's some help, Jim: Beep beep... the glasses are in the Observatory... crackle... it's a very red bomb... rzzt... smells fishy, too...

Look John, don't yer know nuffink? Yer 'afta 'ave yer bottle of milk in the mornin', don't yer? I mean, 'ow else are yer gointa get the strengff what yer need? Cor blimey, some people!

Avast there, Jim lad, why don't 'ee try going to the window, ahar! Then say what us salts of the sea are always saying. Yea, verily, one of your stature must needs enter the shop, yet a key is needed to unlock the door. Hasten ye to the well in the desert, good knight, and there shall be found a small key (a good score is to be had for entering the store, so you must work out how to get the key for yourself). And yea, the signs will tell you how to find an object which will aid your passage across the gorge.

I hope you persevere with the rest of the adventures that you mentioned, Jim, as games like *Heroes of Karn* are well worth getting further into: in this particular instance, have you tried lighting the marsh gas with the tinder? Then you can

take the frog and then kiss it.

On to a comparatively normal adventurer, Tim Emanuel from Rossendale, who is creeping about the Count's castle (in Scott Adams' The Count). He's having trouble getting a light. You'll find a torch down a dark pit, and you can actually get it without seeing it — but in order to light it, you'll need the matches from the pantry.

Worst aspect

Di Spencer (bet you've heard all the jokes, Di) writes from Wolverhampton, in part to take me to task for not ever having mentioned Twin Kingdom Valley—well, I have occasionally mentioned it, but never played it, so I must recruit some help. John Rundle seems to have the adventure tied up—if you write to him at 26 Western Road, Aldershot, Hants GUI1 3PL, I'm sure that he can sort out any problems you still have.

Di is also stuck in Channel 8's Circus. To fix the Generator, all you need do is type just that! But the maintenance wagon, as you suspect, does hold something that you'll need in another part of the adventure, and to get in, all you need do is type Open Door and then Go Door (a construction that you'll need elsewhere). This is a good example of the worst aspect of this whole series of adventures—it may well be that you enjoy finding the right words to spur the computer on, but I prefer to spend time on the problems themselves.

While I'm talking about Mysterious Adventures, Liz Stafford wrote to tell me how pleased she was to be getting so much correspondence a year after putting in a cry for help in the Helpline.

She reckons that Brian Howarth's adventures are very good and wonders what is happening to him now. I imagine that he is still out there somewhere knocking out excellent programs — the last adventure he wrote (as far as I know) was Gremlins, and that upheld the fine tradition that he had built.

Simon Hegarty is looking for someone to write to him about Spiderman and System 15000 on the C64. He is willing to exchange help in many adventures, including The Hobbit, Thompson Twins, Gremlins, Twin Kingdom Valley, Subsunk, Hulk and so on. His address is 15 Highfields, Hoylandswaine, Sheffield S30 6IP.

Logical pattern

Tel and Jok (from where, I don't know) are having trouble with Heroes of Karn and Jewels of Babylon: of the former, another enduring adventure, our intrepid Tel and Jok want to know how to negotiate and/or kill the Phoenix, and also how to kill the Bat. To deal with the Phoenix, which as you know rises from that pile of ashes, just water the ashes before it appears - if you're a bit tardy in this, though, you could ask Beren to attack it with the sword. Shortly after this, you'll need more water to deal with another adversary, remembering your Wizard of Oz. As for the mazes in Jewels, I don't know if they follow a logical pattern, but a recent Corner gave the route through a couple of them, so refer back for a solution.

Tel and Jok have asked me to pass along a couple of hints to anyone currently in another Interceptor adventure, Forest at World's End. "When you have the sword," they say, "go to the glowing rock and type Touch Rock. Secondly, do not attempt to force yourself on the Princess, as she will run away."

Incidentally, some people find that the vocabulary in these Interceptor games takes a little getting used to: many of your comments will take the form of 'Attack thingy With whatsit', 'Say To fred 'Hello'' 'or 'Go To x room' as well as the more obvious constructions.

Rafael Stroinski is having trouble in The Hulk and Snowball. To get out of the chair, Rafael, you must Rock Chair (and maybe correspond with Simon Hegarty for more help later). If you get the Extinguisher in Snowball's Engine Room, you can put out any fires.

Finally, a bit of help in Se-Kaa of Assiah in response to a plea of help from Carl Brennan. Clive Wilson has written to say that, as regards the sliding doors, you should try sliding them; and to get the Rod of Light, go East twice from the Ice Block Room and open the Red Valve. Light the Torch and return to the West (twice remember) and light the gas. Now go east twice and open the Green Valve and return to the West—you should now have the Rod.

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2	(-) Summer Games II (C64)	Epyx/US Gold
3	(-) Sky Fox (C64)	Ariolasoft
4	(3) Nightshade (Spectrum)	Ultimate
5	(4) Frank Bruno's Boxing (Spectrum)	Elite
6	(7) Frankie Goes to Hollywood (Spectrum C64)	Ocean
7	(6) Hypersports (Spectrum C64)	Imagine
8	(5) Beach-head II(C64)	Access/US Cold
9	(-) Now Games (Spectrum C64)	Virgin
10	(9) Action Biker (Spectrum C64)	Mastertronie
11	(8) Finders Keepers (Spectrum C64 Amstrad M	(SX) Mastertronic
12	(11) Elite (C64 BBC Electron)	Firebird/Acornson
13	(10) Dambusters (Spectrum C64)	Sydney/US Sold
14	(14) Soft Aid (Spectrum/C64)	Various Artists
15	(17) Red Moon (Spectrum C64 BBC Electron Am	
16	(12) Beach-head (Spectrum C64 BBC Amstrad A	tari) Access/US Gold
17	(13) Formula I Simulator (Spectrum C64 C16)	Mastertronic
18	(-) Highway Encounter (Spectrum)	Vontex
19	(-) BMX Racers (Spectrum C64 C16)	Mastertronie

Readers' Chart No 41

20 (-) Spy vs Spy (Spectrum | C64)
Figures compiled by Gallup/Leisurescope

10 (-) Summer Games II (C64)

			100000000000000000000000000000000000000
1	(3)	Way of the Exploding Fist (Spectrum/C64/Amstrac	d)Melbourne House
2	(1)	Hypersports (Spectrum/C64)	Imagine
3	(5)	Dun Darach (Spectrum/Amstrad)	Gargoyle
4	(6)	Frank Bruno's Boxing (Spectrum)	ERG
5	(2)	Elite (C64/BBC/Electron	Firebird/Acornsol
6	(4)	Soft Aid (Spectrum/64)	Various Artists
7	(-)	Spy vs Spy (Spectrum/C64)	Beyond
8	(T)	Red Moon (Spectrum/C64/BBC/Electron/Amstrad)	Levels
9	(8)	Shadowfire (Spectrum/64)	Beyond

Winning phrase No 41: "Kangeroo softies hit for six, sport!" from Darren Levens, Hord, Essex, who receives £25. Runners up: "Paris ghost exposed in Eiffel tower" from T E Burdia of Landon SW14, "I was thirsty, exploring deep potholes" from Andrew Cunningham of Oban, Arry II, a "Frankly, I find this too easy for words" from David Crighton of Retdord, Notts.

Epyx/US Gal

Now voting on week 43 - £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart veles, the most original (witty, neat or clever—but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 43 closes at 2pm on Wednesday September 18 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name	My top 3: Voting Week 43
Address	1
	2
	3
363	7479

GET EVEN MORE ATTAC













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	Tell me more about the Amstrad range of peripherals.
1	Name

Amstrad peripherals

Amstrad, P.O. Box 462, Brentwood, Essex CM14 4EF

MATERIALISE

Wirard's Lair was a fairly sucsessing game on the Spectrum and thevitably, conversions over follow. Unusually amstrad and Commodore 64 editions of the game are parted on one tape — a comphatten that I've not seen beore, Spectrum/Amstrad being more continon.

he game owes more than the to Ultimate: take Sabre fall's setting and add Atic se's plot and you're getting idea. The game has you king the four pieces of a over the usual ancient im full of the usual nasties. ou need keys to get through rs secret exits and enances, eating is a good idea id mostly you fight off the ordes of things that naterialise moments have entered a room.

find the unoriginality of the game rather irritating articularly at full price, but if the other hand it is perify done, graphics are



colourful and detailed and the pace of the game is well structured so that it isn't too infuriatingly difficult for beginners. Hardened arcade freaks probably won't be impressed — others may enjoy the game very much.

Program Wizard's Lair
Price £7.95
Micro Amstrad|
Commodore
Supplier Bubble Bus
87 High Street
Tonbridge
Kent TN9 1RX

LOW KICKS

Karateka is a karate game that pre-darts (in the US on the Apple II) Way of the Exploding Fist by a year or more. On balance it isn't as good on the C64 but nevertheless there is much to recommend it.

Like Way the game is basically a series of fights against ever more powerful opponents; fight movements are all joystick controls and mixed short and long fire button presses.

The manoeuvres have been kept to high/middle/ low kicks and high/middle/ low punches – it's adequate, and there are some nice comic book 'off' flashes when you hit home, but I missed the old low punches and sliding side sweeps.

Where Karateka does score is in background plot. Where Way basically had you seeking higher spiritual planes through correct fighting technique, Karateka gives you a damsel in distress to rescue. Each opponent is sent to meet you by a baddie war-

Pick of Week

MINOR STRATEGY

A long time ago, an American company called Williams produced the best arcade machine in the world and they called it *Defender*. Being an arcade classic, when the home micro boom took off, it became one of the most frequently plagiarised formats, even to the present day – take a good look at the excellent *Dropzone* for example.

Defender was a great success for Williams, as (to a lesser extent) was the follow-up, Stargate. One of their lesser post-Defender ventures, though, was a game called Sinistar.

It is now available, called Deathstar, on the BBC and Electron from Superior Software – and it really is very good indeed.

Very fast smooth scrolling with bags of zapping plus a minor strategy element. As far as I'm concerned, it's better than the original (for a start I now know what I'm supposed to be doing), and it's all very professional as you mine the planetoids for Starbombs to destroy Sinistar (whoops, sorry, I mean Deathstar), and blow away the assorted nasties



that get in the way. And just like the original – and this must have taken up bags of code to implement – you can't turn the sound off. Oh well ... despite this major drawback for we late night addicts, this one is a must for all BBC zap fiends.

Program Deathstar
Price £11.95 (disc)
£9.95 (tape)
Micro BBC B| Electron
Supplier Superior Software
Regent House
Skinner Lane
Leeds 7

lord called Akuma, who has incarcerated the beautiful but helpless and hopeless Princess Mariko – you actually see this bit as a sort of cameo screen – warlord points angrily, princess moves slowly to cell, collapses crying on

cell floor . . . it's pretty tragic, I can tell you.

You race towards the mountain fortress doing battle with each new champion (and an occasional bird as

All this plot adds something

his Week

300								
Program	Type Mic	cro Pri	ice Supplier	Barry McGuigan	S	Commodore 64	29.99	Activision
Endon	Ad Am	nstrad £8.5	95 Orpheus	Hacker	S	Commodore 64	29.95	Activision
Soutderdash -	Arc Am	nstrad £9.	95 Mirrorsoft	ICE	Ut	QL	£49.95	Eidersoft
The Illustrator	Ut Am	nstrad £16	5.95 Gilsoft	Madcap Manor	Ad	Spectrum	£5.50	Gilsoft
Westrzkul	Ad Ata	ari ST £24	4.95 Talent	Merlock the Mede	Ad	Spectrum	€5.95	Terminal
Labyrinin	Arc BB	BC £9.5	95 Acornsoft	The Hollow	Ad	Spectrum	£5.50	Gilsoft
Mare	Arc BB	BC £9.	95 Acornsoft	Elite	Arc	Spectrum	£14.95	Firebird
Tetrapod	Arc BB	BC £9.1	95 Acornsoft	Geoff Capes St Man	Arc	Spectrum	£7.95	Martech
Volcano	Arc BB	E9.	.95 Acornsoft	Tujad	Arc	Spectrum	€8.95	Orpheus
Enigma Force	Ad Co	mmodore 64 £9.	.95 Beyond	Zolds	Arc	Spectrum	£7.95	Martech
Crazy Comets	Arc Co	mmodore 64 £7.	.95 Martech	Narrow Squeaks	Ed	Spectrum	£6.95	Macmillar
Sehre Wulf	Arc Co	mmodore 64 £9.	.95 Firebird	Screen Play	Ed	Spectrum	£8.95	Macmillar
Underwurlde	Arc Co	mmodore 64 £9.	.95 Firebird	The Birthday Party	Ed	Spectrum	£6.95	Macmillar
Ball Blazer	S Co	mmodore 64 £9.	.99 Activision	The Patch	Ut	Spectrum	25.99	Gilsoft
Underwurlde	Arc Co	mmodore 64 £9.	.95 Firebird	The Birthday Party	Ed	Spectrum	£6.95	Macm

New Releases

to the game, the movie-like cutting from one scene to the other works well, eg, you defeat a baddie, cut to warlord sending another to meet you, cut back to you running on and meeting new baddie. The music too, is more inventive than usual, if somewhat bizarre.

My only real criticism is the way the tape produces an infuriating version of the disc. On disc the game loads in different sections for different stages. On tape this means loading up a new bit every so often and it gets very infuriating.

It's a shame that Way is that little bit better, because that factor aside, this is an excellent program.



Program Karateka
Price £9.95
Micro Commodore 64
Supplier Ariolasoft
Suite 105|106
Asphalte House
Palace Street
London

SWIE 5HS

HIGH KICKS

Once Moore Bond leaps into action like an emaciated ballet dancer in the Amstrad version of A View to a Kill, the Domark spectacular that has already had Spectrum and Commodore owners feverish with indifference.

Not that the game is exactly bad. Hype and film tie-ins aside, it would probably be pronounced okayish to good, but everybody expected so much more from its possibilities.

Actually A View to a Kill is three arcade games and an animated intro which replicates the moving eyeball/blood section that preceeds every Bond movie (it may be the best bit of the whole program) — the Amstrad chugs out the Bond theme rather tinnily, but at least it's a million times better than the Spectrum equivalent.

Curiously enough the first game, universally considered to be the worst one on the other machines, has now been sent to the back of the queue, as game number three. This, of course, makes nonsense of the plot, but never mind.

Game one is now the silicon mine where James Bond leaps about doing high kicks and pirouettes, searching for a way to defuse the timer and the situation. There is also a joystick controlled menu system which lets our hero select different actions and objects. It reminds me of an inferior Impossible Mission.

Game two uses a similar menu system to part one but in a slightly more adventure



orientated setting. The task is to get out of the burning city hall, with the usual half witted Bond woman. It involves finding keys, solving puzzles, and quite an ingenious mixture of text and graphics. I think it's the best section.

Part three was part one and supposedly what you have done in the past sections has some sort of bearing on how you do in this one, according to the instructions. Since the Paris section is sequentially first in the film, presumably you get beamed backwards in time.

The Paris section is still pretty bad although the display has been beefed up a bit. Bottom right is a top view of city streets and your car—you have to chase a parachute around trying to catch Mayday where she lands. Above this is a rather spurious forward view, it doesn't show any other cars, and doesn't must relate to the map at the bottom anyway.

So, several curate's eggs on one tape, and a program that is both laughably incompetently bodged, clever and dull, impressive and tedious.

Program A View to a Kill
Price £10.90
Micro Amstrad
Supplier Domark
204 Worple Road
London
SW20 BPN

A BONUS

Macadam Bumper is, oddly enough, a French program being issued here by PSS. It's a pinball constructor and contains Amstrad and Spectrum versions on one tape.

First attempt at playing the game revealed a major question — how to make the ball fire. I pressed every key I could think of and discovered the answer well hidden on the insert.

The system works very well, the demo pinball machine has all the right ingredients; flashing lights, bonuses, sets of flippers, etc.

Devising your own pinball table is straightforward, simply choose a component from a selection on screen and position it where you want on the basic board layout.

To the best of my knowledge, Macadam Bumper is the first pinball constructor for either the Amstrad or the Spectrum and that should make it pretty successful.

Program Macadam Bumper
Price £7.95
Micro Spectrum/Amstrad
Supplier PSS
452 Stoney Stanton
Road

This Week

37

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Key: Ad – adventure Arc – arcade Ed – education S – strategy-simulation Ut – Utility

A + G, 44 Casewick Lane, Uffington, Stainford, Lincs PE9 45X.

Acornsoft, Betjeman House, 104 Hills Rd, Cambridge CB2 1LQ.

0223 316039. Activision, 15 Harley House, Marylebone Road, London NW1. 01-486 7588. Beyond, Lector Court, 153 Farringdon Road, London EC1R 3AD. 01-837 2899. Eidersoft, Hall Farm, North Ochendon, Upminster, Essex. 01-478 1291. Firebird, Wellington House, Upper St Martin's Lane, London WC2H 9DL. 01-379 6755. Gilsoft, 30 Hawthorne Road, Barry, South Glam, 2CF 68LE. 0222 41361. Macmillan, Macmillan Information Systems, 4 Little Essex Street, London WC2R 3LF. 01-836 6633. Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE. 0323 768456. Mirrorsoft, Mirror Group, Holborn Circus, London EC1P 1DQ. 01-353 0246. Orpheus, Unit 1, Church Farm, Hatley St George, Nr Sandy, Beds SG19 3UP. Talent, Curran Building, 101 St James Road, Glasgow G4 0NS. 041 552 2128. Terminal, Derby House, Derby Street, Bury BL9 0NW. 061 761 4321.

12-18 SEPTEMBER 1985



Tower of Babel

Groups of workers were commissioned to build a magnificent tower. It was to reach the skies and be the largest such edifice ever constructed

They started out with enthusiasm and conferred together on the technology and the processes required to achieve their goal.

But, as work progressed, each small caucus developed its own way of speaking within its small circle to like-minded workers, to help them solve their own particular problems in building their part of the tower. Slowly they began to find difficulty in communicating with members of other groups until, finally, each worker had developed his or her own tongue and had become unable to talk to any one else. And work on the tower ceased.

The characteristics of the work and the complex demands of the technology involved the rejection of other work, technology and groups. In other words, as the database of knowledge required to work increased, it was no longer possible for any one person to comprehend the whole — and each was forced to specialise. The same situation exists today in the scientific community. A solid-state physicist would find great difficulty in communicating details of the 'leading edge' of his or her technology to, say, a mediaeval historian.

We are fast reaching a similar situation to the workers on the tower with micros.

Take the early days when dialogue was difficult to learn and the machine relatively simple (with mechanical contrivances and hand operations). People could converse with one another in a common attack on the vagaries of the machines.

With the advent of Basic, developed out of Fortran, the troubles really began. Not even abbreviations were agreed – whereas some machines accepted? others wanted P. and there was singlestroke key entry and refusal to accept abbreviations at all (and everything in upper case).

We were bewildered by Basic Levels I, II and III, as if there was some hierarchy of the language which only the sophisticates could understand.

With the advent of procedures, of which there is no agreed format, *Gosub* and *Goto* were relegated to Non-U ways of addressing machines.

Perhaps it is a mistake to call 'language' the instruction design for getting the computer to work. Unlike human beings, the computer cannot draw in historical contexts of what the words mean. Nor can it evaluate the intelligence of the source of the commands by slender clues about the originator of the words.

Human beings, like computers, bring to language a labelling system. But they also weave the spell of language to give an indexical expression to the words of almost infinite variation.

Computers have no such complex communicative and interpretive skills. Their understanding is almost completely inflexible – the syntax has to be absolutely correct for meaing to be transferred. Yet different computer languages are still proliferating at a hectic rate – all the time reducing the number of machines that can talk to each other.

If we are to avoid the kind of Babel chaos that at the moment seems inevitable, some form of standard protocol for communication between micros must be established. Agreement must be reached between manufacturers to at leat standardise some of the Basic instructions so that people can transfer from one machine to another without extensive re-learning.

Rod Dawson

Curious property

Puzzle No 174

Jamie was idly toying with his pocket calculator the other day when he found a couple of numbers which exhibited a rather curious property. The digits in the product of the two numbers were in reverse order to the digits of their sum. He was so impressed by this that he showed his results to his father, who told him that there were an infinite number of such pairs of numbers, each one having a direct relationship to the pair that he had discovered.

If Jamies' numbers contained three and one digits respectively, can you determine what these numbers were and find the basis of the infinite series of pairs of numbers?

Solution to Puzzle 169

In the crossnumber puzzle, $A=263\ B=239$ and C=107. From the number of spaces in the grid we know that both B and C must be in the range 100 to 317, as they both have five digit squares.

Also, the difference between A and B must be in the range 22 to 31 in order to result in a five digit cube and a three digit square. In the case of the cube, A must be larger than B, otherwise a negative value would result. Therefore A is in the range of B+22 to B+31.

10 FOR B=100 TO 317
20 FOR A=8422 TO B+31
30 LET P=0581 LET P=05TR\$(P)
30 LET P=0581 LET P=05TR\$(P)
50 LET R=(A-B)**(A-B) | LET R\$=5TR\$(R)
50 LET R=(A-B)**(A-B) | LET R\$=5TR\$(R)
60 LET N=(A-B)**(A-B) | LET R\$=5TR\$(R)
60 LET N=(A-B)**(A

The program tests the values for B for values for 100 to 317 and computes values for clues one across, four across, one down, and two down. It then checks to determine if digits which interlock in the grid are alike.

Winner of Puzzle 169

The winner is P J Gabbitas of Station Road, Hailsham, East Sussex, who receives £10.

Rules

The closing date for Puzzle No 174 is October

The Hackers



NEW COMMODORE 64 CASSETTES OUT NOW FROM ARIOLASOFT

KARATEKA

from Broderbund

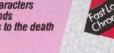
A Karateka is one trained in the Way of Karate, the centuries old martial art of Japan. In this classic story of one man's battle against insurmountable odds, your mission is to rescue a beautiful princess from a dungeon deep inside the palace of the evil warlord Akuma

Brøderbund have created an arcade action game as close to an interactive movie as computer game players are likely to see. Extremely large and realistically animated figures come alive against beautifully detailed scrolling backgrounds. You are in full control of the hero's every movement. Walking, running, bowing and all fighting movements including the strategic timing and placement of kicks, thrusts, jabs and punches are an integral part of the gameplay.

The story progresses through a series of increasingly more challenging encounters with the enemy, until you finally meet the ultimate opponent. Built-in surprises make trying to rescue the princess difficult and addictive.

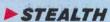


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