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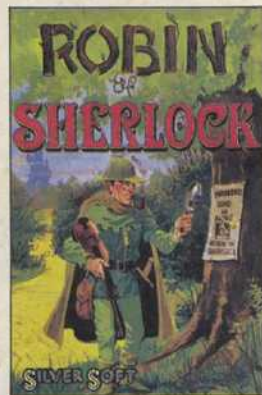
THIS WEEK

Spectrum to break £100 as 128 looms in January



Review

Casio micro calculator



AS THE launch date of Sinclair's Spectrum 128 machine approaches - now believed to be planned for either January 30 or 31 - its predecessor, the Spectrum Plus, is available for the first time for under £100.

WH Smith has just cut the price of the Plus down to £99.95. WH Smith's price applies to the Spectrum Plus itself, rather than the package containing software, joystick and interface, which the store is continuing to sell at £139.95.

"We felt this was a good move as people might well want to buy the micro on its own," said a WH Smith spokesman. "It's a unilateral move and does not emanate from Sinclair, and I don't know how long this offer will last. We'll see how things go."

The spokesman said the move had nothing to do with any impending new machine from Sinclair. After the proposed January launch of the Spectrum 128, it is likely Sinclair will follow by launching its 128K Spectrum compatible portable in April and the 3½

inch disc-based version of the QL in May.

The portable will apparently include a built-in green screen and microdrive.

The new QL will be similar to the present model except the four Psion software packages are likely to be in Rom and the Digital Research Gem operating system is likely to be offered as an option for the machine.



Amiga's UK delivery dates - p4

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Beginner's guide to accessing Britain's bulletin boards

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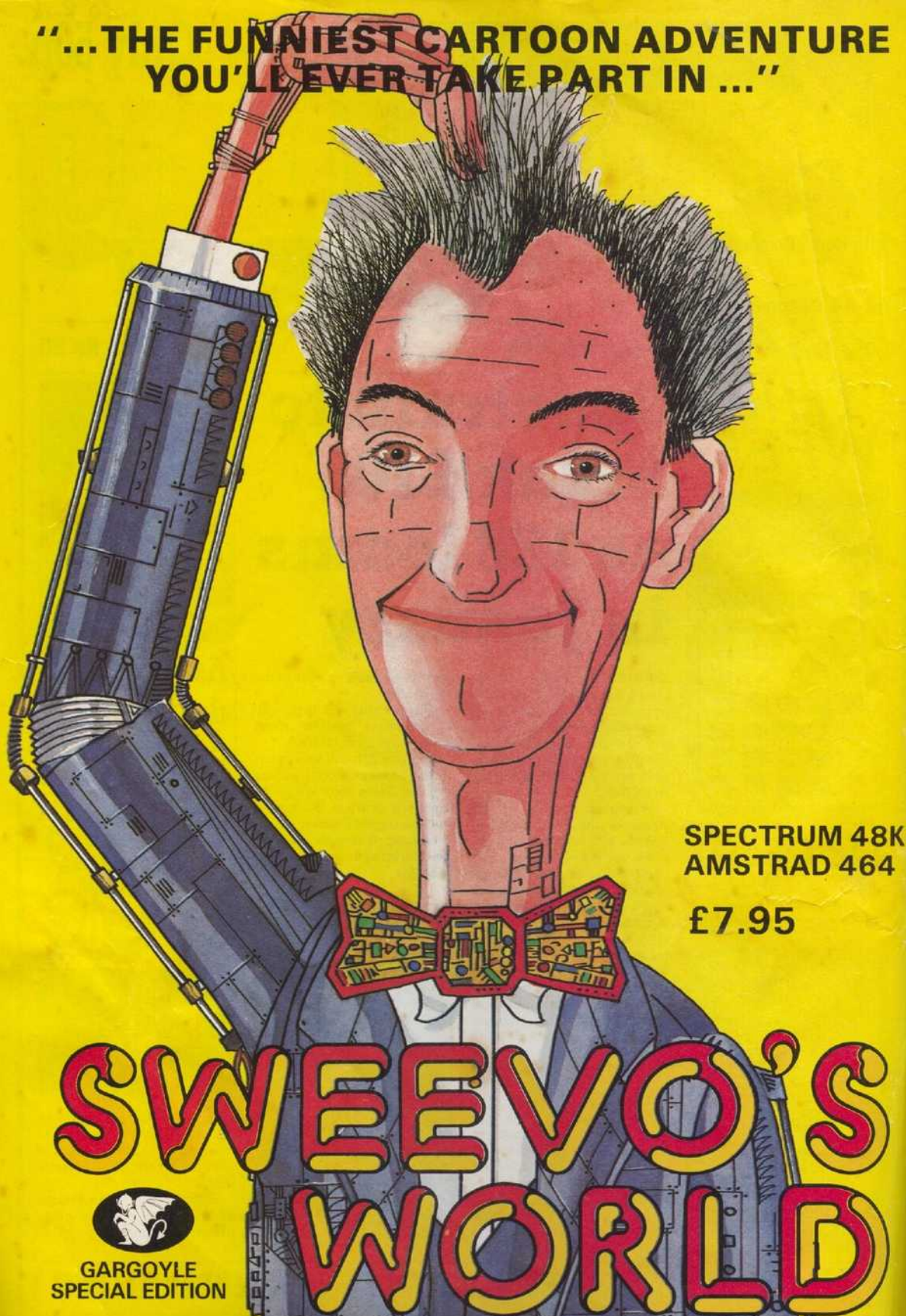


Find out if you have won an Amstrad 6128 this week or at least some special Popular Computing Weekly cassette labels.

Enter your Micro Magic number into our computer program on page 37.

INSIDE } WIN A SPECIAL ROBIN HOOD ADVENTURE WEEKEND FOR TWO }

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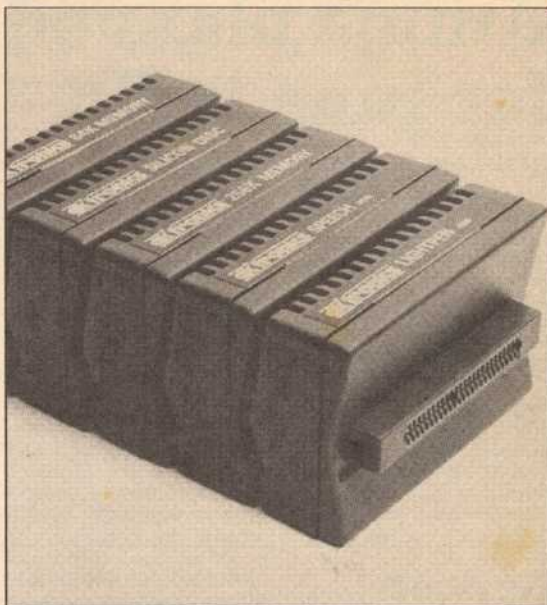
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EDITORIAL

All but one of the major micro companies is fielding a new micro this Christmas. And Sinclair, the odd one out, looks set to come into line at the end of January.

The interesting thing is that all the companies have adopted the same approach for 1986. All have 128K versions of their present top sellers - the Amstrad 6128, BBC 128, Commodore 128 and Spectrum 128. In fact it is the first time that all the top companies are selling models with the same memory capacity.

Unlike the QL none of these are 'true' 128K machines. They all use bank-switching techniques and use the extra 64K in (usually 16K) chunks to store data, called up by the core program running in the other 64K.

So what will 128K mean for software in 1986? Quite simply,

programs will look good. Most of the additional 64K will be used by software houses for storing graphics information, and in the case of the C128 also music notation. Take a program like *Way of the Exploding Fist* for example. The complexity of the core program - the animation and logic of the fighting figures - would have to remain largely the same. But the backgrounds could be greatly enhanced, both in quality and number.

It is very likely that programs will be written to run automatically on both the 64K and 128K machines. The program itself will check which machine it is running on and on the 128K version the only difference is likely to be the number of screens available in an arcade game, an increased number of illustrations in an adventure or an increased maximum document size for a word processor.

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Amiga planned for June in UK

MORE DETAILS are emerging of the availability of the Amiga micro in this country. Commodore plans to have machines in the shops next June, although NTSC (the American TV standard) machines will be here from March, and PAL (the British standard) prototypes in May.

The Amiga gets its first public display at January's Which Computer? show for business micro users (see *Popular Computing Weekly*, November 28).

The company has also an-

nounced that the Amiga will not be sold through high street stores, but through specialist dealers only. Commodore feels that the technology of the machine will be better understood and supported by the specialist centres.

Two software packages are to be bundled with the Amiga - *Kickstart*, which includes AmigaDos the operating system written by Bristol firm Metacomco, and *Extras*, a disc containing a tutorial program, Microsoft's *ABasic*,

and demonstration programs.

Commodore will market three more entry-level titles under its own name in the UK - *Textcraft*, *Graphiccraft* and *Musicraft*. All other software titles will be written and published by third-party companies. Commodore claims that already around 80 British software companies have Amiga development systems to work on. About 100 British firms attended a recent two-day software developers' conference held by Commodore last week.

Commodore is also pressing ahead with plans to launch a second up-market Amiga model - the Amiga 2 - before the end of 1986. It will be fully software compatible with the present Amiga machine.

MSDOS board for 6128

IBM PC compatibility for the Amstrad 6128 will be possible by April with the launch of an 16-bit processor MSDOS add-on board for the machine from Screen Micro.

The board will be launched around the same time that Amstrad plans to announce its own PC compatible business system (see *Popular Computing Weekly*, December 5).

"The MSDOS board will run in conjunction with our own memory expansion board, which will also be launched early next year," said Nigel Sinclair of Screen Micro. "It will mean that anyone with an IBM in the office can run programs on their Amstrad at home."

"So far, all the software we've tested run perfectly on the board, with the exception of *Flight Simulator*. But it will run *Lotus 1-2-3*, *Dbase II*, and *Symphony*."

The MSDOS board, memory expansion board and 6128 combination will compete with Amstrad's own PC compatible. Screen Micro hopes to be able to price the MSDOS processor board at around £299. Its expansion board (which also runs on the CPC 464 and 664) will be offered in configurations of 64K from 64K up to 512K, and includes a resident machine-code monitor, a 32K printer buffer, and an extra 22 Basic sub-set instructions. Prices for the expansion range from £99 (64K expansion) up to £159.95 (512K).

The company also plans a hard disc and controller for the 6128, and a disc drive for £399.

Further details from Screen Micro, 6 Main Avenue, Moor Park, Northwood, Middx (09274 20681).

Tandy cut

TANDY has cut the cost of its 'Co-Co' colour computer for Christmas.

The 16K standard Basic version is now available for £49.95, the 16K extended Basic version for £69.95, and the 64K extended Basic version at £129.95.

Apricot drops F1 and F1e

APRICOT has announced it is to cease manufacture of its low-end F1 and F1e machines, and also its portable business micro.

These machines, with 256K and a built-in disc drive, were intended to give Apricot software compatibility for under £1000. The F1e was particularly targeted at schools and colleges at £685.

Instead the company is to continue with an enhanced version of the F1 with 512K Ram and a Gem interface at £999.

"We still have some stocks of the F1 and F1e, which will sell into 1986, but we're not manufacturing any more," said John Leftwich, Apricot's group marketing director.

"We felt that end of the market has become very competitive with ferocious pricing. We have made very little money with these products - the dealer margins were insufficient, and we were getting inadequately supported users as a result."

While he agreed that the decision reflected a shift in product profile to Apricot's top-end professional machines, John Leftwich said the dropping of the F1e did not signify any pull out from the educational market.

"We are still very much in higher education and have agreements with 35 universities and education authorities. But we felt that these bodies were just as interested in our Xi series, and the F2 and F10 micros."

New deal on Commodore 128

COMMODORE has announced new deal on the Commodore 128 machine.

Buyers of the C128 can trade in their old Commodore 64 when they buy the 128, and get £50 off the new machine.

For those without a C64 to trade in, Commodore has decided to bundle the 1530 C64 cassette recorder free with the C128.

The offer runs until January 31st, 1986, and is available, according to Commodore, from all major retail stores and many independent dealers.

"The offer is designed to appeal firstly to Commodore 64 owners who want to upgrade to a more powerful machine," said Commodore UK's marketing manager Chris Kaday.

The company also hopes to attract users of other micros. The free data recorders immediately gives the C128 running in C64 Mode access to the vast majority of Commodore 64 programs.

On the cards from Electric

CREDIT CARD software is now available for the first time in the UK from Electric Software.

The company has signed a distribution deal with NDSL to supply Astron Softcards for nine of its MSX titles, including *The Wreck* and *Shark Hunter*.

The software is carried on a Rom cartridge the same size and shape as a credit card.



Electric Software also markets an adaptor to fit on the MSX machine to slot the card into.

The company's marketing manager, Mike Hall, claims, "The industry has for years been totally reliant on the audio cassette for data storage. Mechanically unreliable and the target for mass piracy, it needs replacing."

The MSX adaptor costs £7.95. Prices for the cards range from £14.95 to £19.95 for *The Wreck*.

Xmas ZX Fair

NEW SOFTWARE for the Sinclair QL will be among the attractions at the ZX Christmas Microfair, being held at London's Horticultural Hall, near Victoria Station, this weekend.

Three new QL titles will be launched by Sinclair: *QL Pawn*, the adventure – already previewed – featuring

a sophisticated parser, *QL Fictionary*, a program containing two word games, one a *Call My Bluff*-style game, and *Word Horde*, a series of anagram puzzles and GST's QL Macro Assembler.

The Christmas Microfair is open from 10.00am to 6.00pm. entry is £1.75 for adults, and £1.25 for children.

Venture aid

ADVENTURE game writers' aids continue to appear – the latest is Sigma's *Adventure Description Language (ADL)*.

ADL, however, is a book rather than a generating program, which aims to explain how to write large adventures on small micros. The book defines ADL itself and shows readers how to write a compiler, and an interpreter for their adventures.

It should be out this month, priced at £8.95. Further details from Bernice Preddy at John Wiley and Sons, Baffins

Lane, Chichester, Sussex (0243 784531).



Enterprise mail order price drop

ENTERPRISE has lined up a special Christmas deal on its Enterprise 128 computer, in conjunction with Merseyside mail order firm Macintyre Marketing.

The machine is now on sale mail order with Fidelity TV/monitor and some software in one package at £229.

An alternative pack includes the 128, data recorder, joystick and software at £119.95.

The intention is to compete head-on with Amstrad, whose 6128 comes complete with colour monitor and disc drive at £399. Adding a disc drive to the Enterprise 'bundle' would put the price up to around £450, but the Amstrad monitor cannot be used as a TV.

Technical details can be obtained from Enterprise on Sales enquiries to Macintyre Marketing on 01-739 4282, 051-708 8202 or 01-936 9330.

Downhill racer

ELECTRIC Dreams has released *Winter Sports*, for the Spectrum, thus beating US Gold and *Winter Games* to the first winter sports simulation on the Spectrum.

The program includes ice hockey, speed skating, ski jumping, downhill skiing, slalom, giant slalom, bob sled and the biathlon.

Winter Sports costs £9.95.

Daddy hitch

MELBOURNE House has delayed its follow up to *Way of the Exploding Fist*, *Big Daddy's Rock 'n' Wrestle* until after Christmas.

Rock 'n' Wrestle has been written by the team which wrote *Fist*, and uses the same graphic style for a wrestling simulation.

"It will now come out on January 7," said the company's Paula Byrne. "We didn't fancy squeezing it on to the Christmas shelves along with everything else."

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SPECTRUM 48K

File eraser

Issue No 48 contained an interesting routine from Mr R Abrahams concerning the ability to erase a file from within the *Tasword* program itself. I found the program very useful as it is pedestrian to have to break into Basic every time a file must be deleted.

However, while typing the program into my Spectrum I discovered a number of what I am sure are "typos" together with a line which unless altered will not allow the program to run. I have listed these below, line by line, so that your readers can benefit from this routine.

Line 22 (a) Colon should be a semi-colon (b) Insert 16 spaces between the words "File" and "e" so that it is printed correctly on screen. Line 180 The program will not execute correctly if left unchanged. Alter IF i >= 0. Line 8000 Insert a semi-colon between "Erased" and FLASH 0. Line 9010 Should read 8010 not 9010. Line 8020 (a) Insert a colon between INPUT a\$ and IF a\$ = (b) Alter IF a\$ = "

M. J. Nancarrow
8 Meadway Park
Gerrards Cross
Bucks

Spectrum defence

Thank goodness for Geoffrey Wearmouth's support of the Spectrum (Letters, 5-11 Dec 1985). Spectrum knocking seems to have become the great blood sport of the time, and it is good to read someone leaping to the defence of this endangered species. For the Spectrum is indeed a good computer.

When I 'upgraded' to a CPC 464 I expected my poor old Spectrum (a 16K, too) to be relegated to oblivion, or at least to the performing of secondary tasks. Not a bit of it. Its string handling is in many ways superior to the Amstrad's. (A\$(3), for example, is a good deal easier than MID\$(A\$,3,1), especially as the latter keyword needs to be typed letter by letter.) Assigning values to the Amstrad's MID\$ can sometimes be a problem, especially to a beginner.

I do a great deal of applied mathematics, and for this the Spectrum leaves the CPC 464

standing. (Significantly, most people seem to have forgotten that the verb 'to compute' used to be synonymous with 'to calculate'.) The *Vai* function on the Spectrum seems to be almost unique; it evaluates the whole string, and not just the value at the start of the string. This enables equations to be *Input* during execution of a program - a facility which I have found to be very powerful.

I have often read such phrases as "that abominable (or atrocious, or terrible) single keyword entry". What is the fuss about? Just because most computers have a QWERTY keyboard, it doesn't mean that they are designed exclusively for the use of trained typists, who may indeed find single keyword entry takes some getting used. Most micro users are not trained typists, and thus can be expected to find it easier to press one key rather than five, as in *Print*. (Six actually, since the Spectrum adds its own space after the keyword.)

I purchased my CPC 464 with *Tasword* and a Brother Mi009, so it is used for word processing almost exclusively. (I am the Hon Sec of a society, and edit 16 publications a year. Word processing is thus a major task for me.) When I want to compute, however, (sorry, I mean 'calculate') I reach for my beloved old Spectrum.

RJ Peters
8 Fitzherbert St
Warsop
Mansfield
Notts



Useless box

If you are having trouble with the Currah Microspeech and Wafadrive, try this: *Poke 23734,0*.

This initialises the Wafadrive and makes it believe that it is a useless plastic box. At the end of your program use *Poke 23734, 167* and the Wafadrive is one again activated. Some strange effects may be noted during the use of *CAT**, but your program will function properly.

I also discovered that the Cambridge joystick would not work behind the Wafadrive, but that it fine between the Spectrum and Wafadrive.

Paul Gera
Cheltenham

New toys

I would like to comment on some of the Ziggurat articles even if I am a mere tyro at the computer game.

One of the most interesting articles to me related to the change from eight to 16 bit micro design. Regardless of the benefits, it might just come as a shock to Mr Sinclair or Mr Tramiel that just because they happen to design an all-singing, all-dancing 16 bit doo-hickey, the market for such purely on price has to be more limited, and the development costs can never be really recouped.

The increase in Ram per chip is another area where there will undoubtedly be a revolution... When? If the development of the QL or the latest Commodore machines are to be the yardstick by which such development is to be measured then I will stick to my lowly eight bit, 64K machine for quite a while yet.

Just where in the great scheme of things do all of these new toys fit? We have to ask ourselves just where is the market for the new machines, because as a home micro user I cannot see myself being able to spend the kind of money involved.

I would say that these new developments have either a wrong marketing target or, worst of all, no target at all. If the home buyer doesn't like the price and the small business user doesn't like the facilities offered, then you are

indeed sunk.

Don't misunderstand me, I think the revolution in technology is very exciting; however, I don't think that it will all happen tomorrow or the next day for that matter.

Dave Race
Droitwich Spa
Worcestershire

No research?

I read with interest your article titled *Hardware Spectacular* (issue 21-27 November) and wish to comment on the apparent lack of research.

Although it is true that MSX is a standard (and therefore all software/peripherals are intercompatible) and most machines have high quality keys, etc, to say that the software is generally of poor quality is ridiculous. To go on to say that machines are 'supported by few companies' and 'most software comes from Japan' proves my point that little research was done. *MSX Computing* has reviewed over 300 titles to date (mostly UK titles) and has no fear of the glut of MSX software coming to an end. There are over 400 different MSX games currently available; the small majority from Japan are excellent and make most of the Amstrad offerings look very poor.

You can now buy an MSX 64K computer for as little as £69, and that must be one of the best deals around.

Fortunately, magazines such as yours, which misrepresent MSX, (although damaging sales at the moment) will do little damage to its long term success. MSX will succeed despite the current bad press and will be around long after the likes of Sinclair, Acorn et al have gone!

Neil Alldritt
Advertising Manager
MSX Computing
Haymarket Publishing

I cannot agree as far as software is concerned. Programs for MSX are fewer in number and often of less originality than for either the Spectrum or C64.

That said, at £69 MSX looks more interesting than it did a few months ago at £300.

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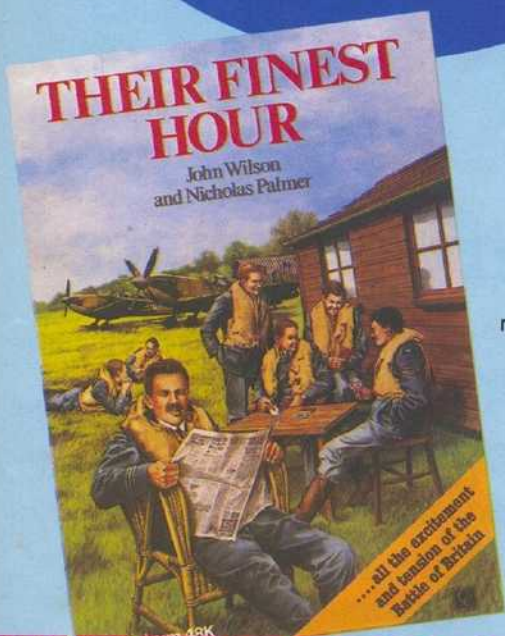
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"Well, er ..."

"Right, we'd better hurry up and design a new ad before the game hits the streets on 9 December, and people start writing to and phoning Century Communications at 62-65 Chandos Place, London WC2N 4NW, Tel: 01-240 3411 and asking for copies."



THEIR FINEST HOUR



Their Finest Hour — a great strategy game simulating The Battle of Britain, by Nicholas Palmer and John Wilson. Published by Century Communications for the 48K Spectrum at £9.95.

48K Spectrum

Tyneside specialist

Newcastle is not the first place you'd go looking for one of Britain's best known computer games whizz kids – nor, in these days of 14-year-old genius, would you necessarily expect that whizz kid to be pushing 30.

But Rob Hubbard is a man who's made a career out of the unexpected. After all, nobody expects their Commodore's hard pressed 3-voice Sid chip suddenly to issue forth expensive-sounding, complex multi-part arrangements of real, original music either: but if you've got *Zoids*, *Monty On The Run*, *Crazy Comets*, or any one of a growing number of a slightly-special Mastertronic games sitting on your shelf, then you've had a taste of what it can do in the hands of an expert.

If, as has often been observed, the software industry is a re-run of the pop business, then Rob Hubbard must surely be its Phil Spector, a great original, extending the bounds of the possible, and masterminding hits for others. (How many so-so games have benefited from reviewers passing comment: 'another great soundtrack from Rob'?) The analogy goes further: Rob Hubbard writes *just* the music for other people's games, making him the only 'name' music specialist in an industry increasingly dominated by anonymous programming teams.

We're sitting in a decidedly low-tech living room in his Newcastle flat. On a desk in the corner stands a 64, disc drive, and (covered) printer. A perfectly ordinary black and white portable TV serves for a monitor, whilst a bit further along sits a brand-new Amstrad 8286. Unplugged. Next to that, the only visible musical instrument, a virtually prehistoric Casio portable mini keyboard. Discs and music manuscript papers are everywhere.

"I started playing music when I was seven," he begins, his native Yorkshire burr overlaid with a Geordie twang of nine years standing. A relative latecomer to computing, Rob was, until four years ago, plying his trade as a professional musician, and turning the skills gained from three years of music college to a variety of jobs.

"I've arranged for string quartets and pub-rock groups, worked as a musical copyist, and even pushed a knackered transit full of band gear through waist high snow at four o'clock on a January morning!"

Tyne Tees TV is currently filming a 'concept musical' he wrote a couple of years ago, *Work*, 'About life, society, and the whole bit, y'know?', but now computing affords the most satisfying –

and lucrative – creative outlet. Ironic really, since Rob bought his first machine simply to keep abreast of the impact computers were making in music. He was considering the ill fated Memotech (How history would have changed if he'd bought it...) but when the price of the C64 dropped to the £230 mark, Rob, intrigued by its musical facilities, took the plunge.

"I was completely self-taught, starting off like everyone else with Basic graphics routines, but the great thing about the 64 is how it encourages you to get into

games"), Rob has come up with some truly disgusting sound effects (watch out for the Bladder and Bowel) and effective audio/visual links (ie, a stunning train sequence complete with whistle, and the clack of wheels over track) for this 'journey through the body' game.

He usually has about 4K of memory space to hit the music code in "... Sometimes as little as 3, never more than 6", and this leads to some hard decisions.

"Basically," he explains, "You have to take your pick – either a 'soundtrack' running all through the game, with a few effects thrown in at the right moment, like the motorbike in *Commando*, or sound effects for *everything* that happens, and no music. It depends on the game: in *Commando* there's so much happening on screen that if you had



machine coding. I think I wrote my first code routine after about two months."

Early forays into educational programming having elicited little response, Rob chanced upon the idea that was to change his life.

"There were already specialist graphics programmers – why shouldn't there be specialist music programmers too? I went for it... I guess my breakthrough games were *Confuzion* and *Monty*. Since then, I haven't had to look so hard for work." He laughs. In fact, his biggest problem these days is keeping up with the sheer volume of commissions. What's the fastest so far?

"That'd be *Commando* for *Elite*. They called me on the Wednesday evening, dragged me down to Birmingham on the Thursday, plonked me in a hotel room with all the gear at about 10 that morning – and I finished at about 8 the following morning. I still haven't seen the version that's on sale!"

Usually Rob takes about two weeks to complete a 'soundtrack', but the earlier he becomes involved, the better he likes it – and the more 'integrated' the results tend to be, as his work on another forthcoming Mastertronic game, *Gerry The Germ*, demonstrates. Supplied with a 'cheat screens' version ("I'm useless at

sound effects for all of them, there wouldn't be any point in having music... Generally, I do both music and sound effects on a game, though people seem more interested in the music now...")

"I think the key for me as far as programming goes was understanding interrupts – 98 per cent of games work on Rasta interrupts. I just make sure my music routines are run from them... As time's going on, I've built up a set of routines which let me do everything a lot more efficiently... For instance, I like Pitchband, and use it a lot – a routine I developed while working on *Monty On The Run*. I also like things to sound rich, not wimpy. I think my experience of sync programming has been of help there: I've got two Pulse width routines, a short one and a long one, and a vibrato routine – between them you can get some great sounds. Ring Mod and Sync are the most versatile things to use on the Sid chip though – they are hard to use, because they take two of the voices, but are your best chance of getting distinctive sounds.

"I soon worked out that as long as you keep *something* going – the bassline, or percussion – you can 'steal' the other two voices for a quick effect or impressive

Street Life

noise. On *Commando* I've taken it to ridiculous extremes - voice 1 carries the tune, with the second and third voices flitting all over the shop doing different things. In comparison with someone like the American kid who did *Master Of The Lamps* for Activision, my routines are very efficient. Although I admire his work, it's very wasteful of memory, at least, from what I could tell from his coding."

He laughs: "You can break into any Turbo with a machine code monitor and a bit of patience... it's very educational!"

"Anyway, the impression of so many voices playing at once is most helped by proper musical arranging, as much as being a programming whiz."

Results are monitored over the 'typical punter system' used for all his work.

"It's like a recording studio, listening to the final cut over tiny monitors - if a track sounds good then, you know it will when people play it at home." The spartan approach extends to programming aids.

"I've got a couple of Turbo loaders for the disc drive, and Andrew Trot's Assembler Package, but that's about it. I was impressed with the Orpheus *Electrosound* music utility - with that, someone who knows what they're doing should be able to put me in the dustbin - but the manual's about half an inch thick

and it's not very user friendly... I wouldn't write one myself, for the same reason. I don't think I could make it friendly enough."

Does his own taste in music influence his writing?

"I make a point of listening to the Top 40 every week. After all, most of these games sell to kids, so what's the point of putting in an obscure classical piece? They need to hear something they can relate to... One of my own favourite tunes, *Crazy Comets*, was a compromise between New Order, who I like, and a funk 'slap-bass' sound... it all depends. Sometimes the tunes are totally original, sometimes I adapt things, and make them my own. *Monty* was like that - it started out as the theme from the old radio detective show, Dick Barton!"

Rob now feels that he has got the best he can out of the 64:

"I'm probably going to carry on working with Mastertronic: they now pay me over five times what I started out getting! But I'm also keen to do other things. I can push the Sid chip to its limits but I don't think there's much more soundwise I can get out of it. Of course, as a programmer and a musician, I'm very keen to get my hands on an Amiga - built-in Midi, Fairlight compatible, 4-channel stereo (pinnacle, I hope) - I've even heard that the sounds are produced digitally like the DX7 [Rob's got one, and plays it in a

local club band, whenever he gets the time]. Obviously, I hope it sells - because if it does, there'll be a lot more work for me! Though I do wonder if it's the right machine at the right time.

"I bought the Amstrad simply because there's so much work around for it. Frankly, though, it's like going from a Rolls to a Morris Minor. The monitor leads are too short, the speaker's pathetic, and the sound chip! OK, the graphics are good, and the disc drive is unbelievably fast against the Commodore - though not as reliable. I've lost stuff on it already, and that's never happened on the 1541, despite a lot of hard use. But as a programmer, I find the Amstrad unfathomable. Maybe I'm impatient, coming from a machine I know inside out, and immediately wanting to jump in the deep end. I'm transcribing some of my Commodore work for other people to code, but I think it'll be a long while before I do anything commercial myself on it."

Rob smiles.

"Do you know what I'd really like to do? If had the choice now - I'd be playing in a straight-down-the-line, honest-to-God blues band!"

Fortunately for music lovers everywhere, the man who made the 64 sing looks like staying with keyboards of the Qwerty variety for a little while longer.

Tony Reed

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A beginner's guide to treading the bulletin boards

To most micro enthusiasts, networking is probably the most confusing and least understood area of home computing.

Most people think of networking as services like Prestel and Micronet 800. While these 'professional' services are interesting enough there are also now several hundred 'bulletin boards' around the country with which you can talk.

Most are set up and run by fellow computer enthusiasts and finding your way around the 'boards' is tremendously exciting.

To access a bulletin board you will need a computer, preferably colour (the BBC is ideal because of its teletext mode - this is the mode which many boards run on), and a modem with a communication speed of either 300/300 baud or 1200/75 baud or ideally both (a second-hand one should be about £50). You will also need a phone extension in your computer room and have to be prepared to see a sharp increase in your phone bills.

Bulletin boards offer a number of services, some of which may include technical help, sales and wants, teletext, lists of other bulletin boards and what's new in the computing and modem world. The fun in 'walking the bauds' is finding out what each one offers and talking to new people. Every bulletin board is different so 'phone around to find the ones you like most.

My favourite is 'The Micrognome' which is running on 1200/75 and can be contacted on 01-888 8894.

Any home computer should be suitable although if - like the Spectrum - it doesn't have a serial interface, such as an RS232, you will have to make or buy one for between £30 and £40 depending on the micro. On the Spectrum the most popular modems are designed to plug directly into the user port.

The modem is probably the most unfamiliar part for the newcomer. Modem stands for modulator demodulator. It takes an instruction or some data and converts it from a line of text on a screen to noises similar to those made by a computer program on a tape, only at a different tone. This alteration of tone is necessary to help prevent loss of corruption of data as it travels down the phone line. The receiving modem at the other end then converts the noises it receives to the correct data or set of instructions.

When you buy a modem it will have transmission/receiving speed of either 1200/1200, 1200/75 or 300/300 or a combination of these written on the box or in the accompanying blurb.

300/300 baud was the first speed used on a large scale and it is still very popular, especially in the USA. Many

boards in this country are 300/300 and it is still the most popular speed but 1200/75 is quickly catching up in popularity. About 59% of the bulletin boards in this country are 300/300, 30% are 1200/75 and 10% are both 1200/75 and 300/300. The other 1% are run at wierd speeds such as 600/600, 1200/1200 and 2400/2400.

Many modems which run at 1200/75 also run at 1200/1200, this is because the two speeds are easy to mix on one modem at a low cost. Speeds like 1200/1200 tend to be used for user-to-user communications rather than for connection to a bulletin board.

There is one more thing I should mention. This is full- or half-duplex. Full-duplex allows communication in both directions at once while half-duplex allows communication in only one direction at a time. An example of full duplex is when you are talking on the phone, you can hear the other person at the same time as you are talking to them. A walkie-talkie is an example of half-duplex, it you wish to talk to the other person then you cannot hear them while you are doing it.

Please be polite when on a bulletin board as it is more than likely being run by a person just like yourself. If people are rude they may decide to close down and this would spoil it for them and others.

Most bulletin boards are colour and use a 40-column display but some 300/300 boards use an 80-column screen.

How good your modem is really depends on the quality of the communications software. With most popular

you. The VTX 5000 modem for the Spectrum is an example of a modem with its software built-in.

If you have a modem but no software and you don't feel that you are an expert at programming then I would advise purchasing some rather than writing your own.

The procedure now will vary from modem to modem and from software to software.

How do you log on? If your modem has an auto-dial facility then you will not have to even touch the phone, it will all be automatic. If you have a non-autodial modem then follow the procedure below which shows how to log on or dial up a bulletin board.

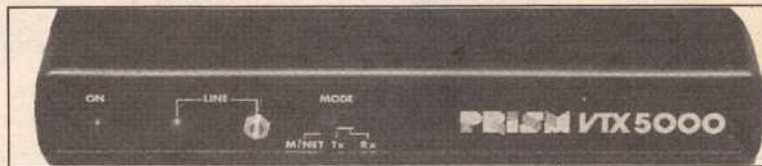
If you have a VTX 5000 then this is the correct procedure for you to use.

Before dialing always check that the bulletin board is operating at that time of day.

Also check that it runs at the correct speed for your modem - if it doesn't then the board will not work with you and your modem so look down the list of boards for one that does run at a speed compatible with your modem.

The logging on procedure is as follows:

- 1) Turning on the computer, with the modem plugged in.
- 2) Work your way through the software until a message similar to 'Phone computer' is displayed on your screen.
- 3) Pick up the receiver.
- 4) Dial the number of the bulletin board, eg, 01-888 8894 (The Micrognome).



modems the software is contained in Rom, in other words it doesn't have to be loaded from a tape or from a disc. The software may be a cartridge, a sideways Rom or it may be built into the modem. The BBC and Amstrad computers both have sideways Rom sockets so the software is likely to be on a sideways Rom. On a BBC to plug a Rom in you have to first take the top off of your computer, next you must unscrew the keyboard. You will then see on the right-hand side a number of Rom sockets and typing in the correct command, having put the top back on the computer, will cause the software held in the Rom to be executed, and work as if it had just been Chained from a tape. If you don't feel happy about this then your local dealer will do it for

- 5) If the number is engaged hang up and either try again in a few minutes or try a different board. Very early morning two - five am is often the best time as most people are asleep and don't bother trying to log on at that time.
- 6) If a person answers the phone it is likely that you dialed a wrong number. If so apologise and hang up.
- 7) When you hear the carrier tone (a low pitched hum or whistle) go on-line. To do this you will either have to switch a switch or press a button, marked on-line.
- 8) Replace the receiver.
- 9) Follow the on screen instructions.

Having logged on, the bulletin board is likely to display a title page.

Bulletin Board Survey

Type in your name and for some boards a password or your phone number. Next you will get a menu giving you the basic options. Below is the menu for the Micrognome.

Press the number corresponding to the option that you require. On the Micrognome for example one of my favourite options is the Babble Board. Option No 9 The Babble Board is a series

```
The Gnome at Home      HALLOs
-----
Hello There!           Please enter...
David Wallin          #+ YOUR NAME here!
This screen is        3+ chars please
for PCM               #+ and anything else
                     ## to clear noise
                     #+ you can fit in...
```

Please enter your name or pseudonym as you log on, it's good to know who calls and when you send us a message we'll all know where it came from...

```

  Home of the Gnome
  MicroGnome
  -----

```

of pages which logger-oners can leave messages to all other modem users. These can be anything from adverts for pirate radio stations or other bulletin boards to recipes for stewed Spectrums to lots of jokes, a similar feature to a babble board (not offered on the Micrognome) is electronic mail. This is similar to a babble board except only the person for who the message is intended can read it.

The opposite to logging on is logging

```
The Gnome at Home      Oa
```

```

  Home of the Gnome
  MicroGnome
  -----

```

```

  1 Latest News
  2 Comunicado
  3 Beebomania
  4 Gnome Diary
  5 Underware
  6 Goblin Party
  7 Write to Gnomes
  8 Combination
  9 Babble Board
  0 Our Address

```

DA Help! New Readers - please key 0
131 Have fun! Please leave by 16:45

off. Surprise, surprise! Different boards have different commands for logging off but it is likely to be one of the following commands; *90, *91, *900, *901, *BYE, *bye, *log off or *01

The one to use will depend on the software that the bulletin board itself uses. When you type the correct one (*90 on Micrognome) a farewell message is displayed.

Never just hang up on a bulletin board as it can't tell that you have and will assume that you are still on-line to it. If this happens the board will be engaged for other users.

And that's all you have to do to get on to the boards. Just don't go and break into the bank of England central computer without telling me how to do it. Anyway the bulletin board list below includes as many boards as I know. Read the list, phone them up and have fun.

David Wallin

1200/75 boards

Name	Area	Number	Time	Comments
ITeC	Basildon	0268 22177	24 hours	Also 300/300
ITeC	Brixton	01 735 6153	Mon - Fri 1400-1700	
ITeC	Aberdeen	0224 641585	24 hours	
ITeC	Cardiff	0222 464725	24 hours	
ITeC	Deeside	0244 821231	Hours Unknown	
ITeC	Stoke	0782 265078	24 hours	
ITeC	Dundee	0382 25820	Hours unknown	
ITeC	Isle of White	0983 528561	Hours unknown	
ITeC	Scunthorpe	0724 588403	Hours unknown	
ITeC	Telford	0952 677485	24 hours	
ITeC	Brighton	0273 609554	Mon - Fri 1400-1700	
ITeC	Gloucester		0425 63415	Mon - Thur 1400-1700 + Weekends
ITeC	Bradford	0274 725895	Hours unknown	
ITeC	Hastings	0424 445716	Mon, Wed & Fri 1400-1700	
ITeC	Hebburn	0632 445772	Hours unknown	
WITeC		0942 677485	Mon - Fri 1400-1600	
ITCU Exchange & Mart	London	01 960 4742	24 hours	Connected to ITeC's
Communitel ITeC news	London	01 960 0327	24 hours	Connected to ITeC's
Communitel ITeC news	London	01 958 7098	24 hours	Connected to ITeC's
CABB	London	01 631 3076	24 hours	Also 300/300
RSCB	London	0707 57477	24 hours	
CBBS	Exeter	0392 53116	24 hours	Also 300/300
Inter Co. Comparisons	London	01 253 8788	24 hours	
OBBS	Morecambe	0524 426132	24 hours	Also 300/300
Micrognome	London	01 888 8894	24 hours	My favourite
Metrolite	London	01 941 4285	24 hours	
Technomatics	London	01 450 9764	24 hours	
Microtest		0208 77677	24 hours	
NBBS	Essex	0277 228867	24 hours	Also 300/300
NBBS	London	01 648 0018	Mon - Fri 2100-0800	
NBBS	Hornig	0692 530186	24 hours	Also 300/300
NOBBS		0295 72082	1800-1900 0244 54336	Hours unknown
FBBS	London	01 346 7150	1000 2200	
CB	Cambridge	0767 77792	2100-2200	
SBBS		0923 67644	2100 0800	
NBBS	London	01 83 5290	Mon - Fri 2100-0800	Also 300/300
NBBS	Marlow	0628 46691	Hours unknown	
NBBS	Aberdeen	0224 641066	Mon - Fri 2100-1600	Also 300/300
NBBS	Wallington	01 669 7249	Mon - Fri 2100-1600	Also 300/300
CABBS		0892 662698	Hours unknown	ring back
BB	London	01 455 6607	24 hours	Also 300/300
BellTon		0493 781334	Hours unknown	
EMOC		0612-734066	Hours unknown	
MOBBS	Manchester	061 736 8449	24 hours 0502-515935	Also 300/300 1800-0800
Oxford	Oxford	0885 67788	Hours unknown	
Martel	London	01 346 7150	Hours unknown	Also 300/300
Estelle	Harlow	0279 441188	24 hours?	Teleshopping - STC electronics
NI-MEP		0265 52346	Mon - Fri 1000-1700	
DISTEL London	01 679 6183	24 hours	Also 300/300	
NetFlash	London	01 941 4285	Hours Unknown	
Communitel demo 1	London	01 968 7402	24 hours	Demonstration of Communitel bulletin board software
Healthdata	London	01 986 4360	Hours unknown	Medical bias
Libertel	London	01 73 7730	Hours unknown	
Open University		0908 643298	Hours unknown	
OWLTEL	London	01 927 5820	Hours unknown	BBC biased
SWAFAX		0622 580440	Hours unknown	
NBBS	Cheshire	0936 77025	Hours unknown	Also 300/300
CBBS	Cumbria	069 92314	24 hours	Ring back Also 300/300
Acorn		0223 2343642	24 hours	Both of the two Acorn boards are
Acorn (Education)		0223 245200	24 hours	run by Acorn and give info on BBC micro products
Local information	Hackney London	01 985 3322	24 hours	Both of these boards are run by local councils and give information about local activities
Local information (C-View)	Rochford	0702 546373	24 hours	

continued on page 24



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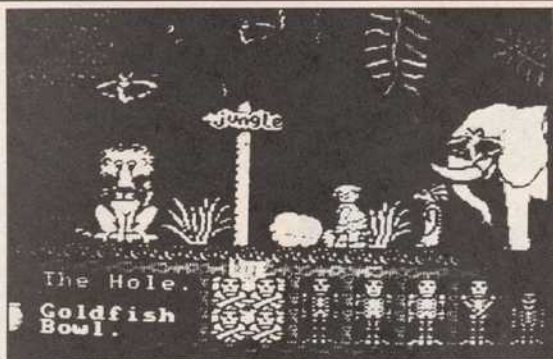


Remember **SORCERY**; this year's most **ACCLAIMED** title for the **AMSTRAD**? Well **VIRGIN GAMES'** unrivalled reputation for **AMSTRAD** software is upheld again with the Gang of Five's latest **MASTERPIECE**.

Weak jokes

Program *Three Weeks in Paradise* **Micro Spectrum Price** £9.95 **Supplier** Mikro—Gen, Unit 15, Western Centre, Bracknell, Berks

How fitting that Mikro-Gen, home of Wally, are based in Berks. The fat little fool made his fortune doing odd jobs and now, reunited with his son, has decided to take the family on holiday. No surprise then that with Wally at the helm they ended up on an island inhabited by the Can Nibbles tribe who immediately appropriated Herbert and Wilma for their next meal.



Fans of this series will already have an idea of what to expect as they move the desert island dimbo round the jungle and through a lot of unlikely locations in the

search for solutions to his family's fate. It'll come as no surprise that the clubs are cryptic as ever and once, after much effort, you find the connection between objects

you'll kick yourself for not seeing the visual pun before.

New to this game is the ability to pick up, drop and use objects in various places, which leads to added subtlety in play. It's probably the most difficult Wally game yet. It's also the funniest.

There's still a certain amount to dodge though less than in the previous games, but the screens are full of amusing animation and poor Wally's loss of life routine is great fun.

I actually enjoyed this more than the previous games in the series. It marks a giant step forward for the morons of this world.

John Minson



Brave speech

Program *Speech ROM* **Micro BBC Price** £28.00 **Supplier** Computer Concepts, Gaddesden Place, Hemel Hempstead, Herts HP2 6EX.

For most Beeb owners the upgrade to speech processing comes a long way down their list of add-on priorities it may sound like fun but what does it actually do? But Acorn's speech system is rather off-putting to fit - a couple of chips (fine), more internal wires (okay) and the left of the keyboard cluttered up with sockets for plug-in cartridges (forget it).

Now, thanks to Computer Concepts, there is an easier, cheaper and more versatile option that leaves the BBC looking much as before: and, thankfully, you can fit it yourself in a matter of moments rather than having to have the Acorn system fitted by a dealer. The package couldn't be simpler: a chip and a manual.

However, you will also need the Texas Instruments TMS Speech Synthesis Processor chip - as used by the Acorn system. These are not hard to track down and Computer Concepts will supply you with one for an extra £10.

The TMS 5220 takes speech data from a serial Rom in the Acorn system - this gives good reproduction, fixed intonation and a limited vocab-

ulary. The Speech Rom takes a different route: it drives the processor directly, allowing you to construct any English word with a wide range of intonation through stress and rhythm control. It can even sing!

The Rom takes two pages of memory unfortunately, but cunningly does not require this permanently. You must enable it before use with the command **Spon Return* followed by *Break*. Although the OS won't allow memory pages to be allocated except through a *Break*.

However, after initialisation it is reasonably easy to use -

the command structure makes sense and practice soon pays dividends. Using **Utter*, you first need to decide on an intonation pattern - there's a choice of up to 24 tone patterns ranging from neutral through tentative to resignation and even grudging agreement. Great pleasure can be had changing the intonation of standard phrases.

The tone pattern and the rhythm of the word (marked by + in front of each vowel with a beat) together with word emphasis (* in front of the most prominent vowel of the emphasised word) pro-

duce wide range of possible intonation patterns.

Once you have a pattern, the next step is obviously to work out the pronunciation. The Speech Rom gives you a choice of 84 individual sounds to generate the entire English dialect - 'computer' for example, would be spelt with eight separate sounds: K U H M P Y O O T U H. Although the comprehensive manual does slip some way into the science of linguistics, most of what is discussed is vital to an understanding of speech.

Dave Reeder



Maze

Program *Chimera* **Micro Commodore 64 Price** £3.95 **Supplier** Firebird Software, Wellington House, Upper St Martin's Lane, London WC2H 9DL.

With a scream akin to one who is trained in the martial arts, the word *Chimera* comes tearing out of my TV speaker to herald the start of this new arcade puzzle from Firebird's Super Silver range.

The price may be budget but the game certainly isn't.

The first thing you notice apart from the speech is the great music complete with some excellent drum effects. The second thing you notice

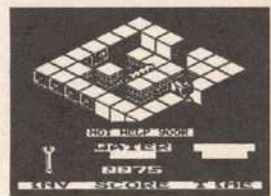
is that although the game is yet another in the *Alien 8* look-a-like contest, it's immensely playable and leaves you every time you get killed off with the feeling of "well, just one more go."

The plot is a familiar one; you are transported aboard a strange silent spaceship which while orbiting the earth has its weapon systems primed and targetted on us poor humans. The task is to find the obligatory self-destruct mechanism on the ship, initiate it and get out as quickly as possible. Fortunately, those caring aliens left heaps of food and water lying around to keep you going, so it's shut the airlock time and lets be on our way.

Graphically, it is very reminiscent of the now familiar *Alien 8* type maze. It's very

nice drawn, allowing you to wander around the ship until you find objects which make up other objects which will ultimately be of use in the final stages. Messages scroll across the screen giving out relevant information and help, along with your current food and drink supplies.

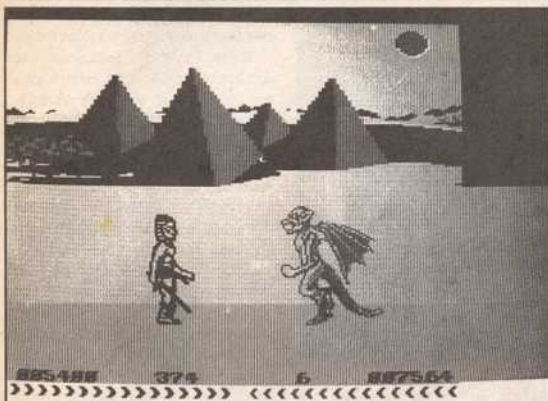
Great value and very



entertaining.

Andy Moss





Headbangers

Program *Fighting Warrior*
Micro Amstrad **Price** £7.95
Supplier Melbourne House,
Castle Yard House, Castle
Yard, Richmond, Surrey.

Though *Fighting Warrior* suffers by comparison with *Way of Exploding Fist* (also by Melbourne House) the game has much to recommend it.

The animated fights have all the detail of *Fist* with the addition of some vicious club swinging and hand banging.

The Amstrad version has been deftly converted with the monitor graphics adding even more detail to the violence. The plot remains the same, you look like some sort

of Sanhedrin labourer and as you trudge across the desert landscape get embroiled in a series of fights with mythological creatures, many of which play dirty and try to club you with wings and tails - parts of the body you lack.

There are other bits and bobs to the plot - scattered around are what look like vases, take a swipe at one and you get extra energy or a similar bonus.

The actual fighting mechanism is not as complicated as *Fist* and the game is not as satisfying to play. Nevertheless, some skill is required, it is very bloody and vicious and destined to be a success just like the Spectrum version.

Graham Taylor



Program aid

Program *Master Tool Kit*
Micro Spectrum **Price** £8.95
Supplier Oxford Computer
Publishing.

Master *Tool Kit* is a machine-code tool kit for Spectrum Basic programmers.

The kit occupies 7.5K of Ram, leaving about 31K on the 48K Spectrum free which is enough for most programs. (It also works on ye ol' 16K Spectrum but you would be very pushed for space.)

It offers over 40 commands from the simple *free memory* command to some quite involved ones which would seem to do everything except write your program for you.

All the commands are well documented in a thin but compact handbook.

There are many compressing and memory saving commands: the usual purging down of Rem statements command, and some more sophisticated ones which concentrate program lines, and do some magical compression on the hidden binary forms of Sinclair Basic. Also included are *Find* and *Substitute* commands which save a lot of drudging though endless programs.

Debugging is well catered for, there is a *Trace* command and a command to display a table of all the variables and their values. Even error trapping commands are provided, though unfortunately any error trapping will not work when the tool kit is removed.

Your choice

Program *Sea of Blood*
Micro Spectrum **Price** £9.95
Supplier Adventure International,
88 New Summer Street,
Birmingham B19 3TE.

Which came first, the adventure game or the *Fighting Fantasy* book? If you thought Steve Jackson and Ian Livingstone's highly successful range of multiple choice narratives were merely low tech computer adventures, think again, because now one of them has made it to the micro.

The plot for this one has you as a clot. . . sorry, pirate in the *Sea of Blood*, searching for 20 treasures to deposit on the top of a mountain, which is probably as good a place for them as any. Being a seafarer you'll spend much of the time on your ship, the *Banshee*, using the command *Sail* followed by a directional, which, it took me an age to realise, cannot be abbreviated.

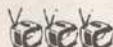
The format is standard Adventure International, which is to say three part screen, the

top part taken up by some pleasing illustrations. What's new here is the combat system, based on the book so closely that you even get as rolling dice graphic! On land you can run away to live another day, but at sea you stand and fight like a sailor. Actually there's a chance to stop the dice at their optimum score if your finger's fast enough.

The freedom of the ocean certainly gives this a slight role playing feel, but one thing I remember about these books is their lavish descriptions. The micro reduces atmospheric prose to a few lines. There are too many sudden deaths for my liking, which seems unfair when you can apply skill in combat and there's no memory Save. I also found the vocabulary unfriendly at times.

If you like Adventure International products you may like this, though the price seems rather steep, and the addition of *Fighting Fantasy* features is less than wholly successful. In this case I'd rather read the book.

John Minson



Toolbox

Program *Oddjob*
Micro Any Amstrad CPC **Price** £9.95
Supplier Pride Utilities, 7
Chalton Heights, Chalton,
Luton, Beds, LU4 9UF.

Pride's latest release is an extremely powerful and quite original disc users toolbox. Some are invaluable tools and some are just curiosities but overall it is well worth the money.

The program offers, amongst other things, a directory editor to restore files, hide files from the directory (as used in games like *Sorcery Plus*), set files to Read Only or vice versa etc. The

restore feature has already saved me from disaster.

There is a very useful *FastFormat* program that not only whizzes along at twice normal speed but also lets you format in IBM mode (normally the CPCs can read/write IBM format files but cannot create or copy the discs).

Another original touch is a program that speeds disc access up by 20%, until the machine is completely reset. I was surprised by how noticeable the effect is on long files but it is really a bit of a luxury.

There is a *Discclone* utility that will handle damaged or illegal disc sectors and a sector editor.

Tony Kendle



Most of the new commands are only one or two characters but just in case you find this too strenuous a user-defined function key feature has been provided. A save-to-microdrive option is included which is very welcome, and

another nice finishing touch; an on-screen clock.

I was impressed and would recommend it for the serious Spectrum user.

Jon Prestidge



Words worth

Program *Tasword 6128 Micro* Amstrad 6128 - **Price** £24.95 **Supplier** Tasman Software, Springfield House, Hyde Terrace, Leeds LS2 9LN.

This is the very latest version of Tasman's word processor for home micros, and is certainly the most interesting.

I started using Tasman's program some years ago, on the Spectrum. Several dozen articles and a couple of books later, I have to admit to a sneaking fondness for it, even though a more streamlined disc-based American word processor has taken precedence in the last year or so.

This then is the disc version of *Tasman* for the Amstrad

6128. As well as using the disc it sets up a Ram disc for handling files while moving between the text and the main menu.

Much has been written of the various examples of this program, so I won't go into all the tiniest details of text handling possible with this utility. Requirements such as block moving and erasing, search and replace, tab and margin commands, headers and footers, word-wrap and paragraph justification, and very quick file-handling are all supported, as well as a unique on-screen notepad facility. Compared with more expensive systems, some of the commands are ultimately lacking and it is a little slow but, balancing this is the extensive and well-written manual, the comprehensive printer tutorial and very useful customising procedures,

which enables the user to re-define much of the operating environment.

Professional users may want to use something a little more powerful, like Arnor's Rom-based *Protext* (£40-plus), *Pocket Wordstar* (£120) and Newstar's fabulous *NewWord* (about £70, I believe), all out-performing *Tasword* in certain departments, and Amstrad's own PCW 8625 word processing system, which is an almost irresistible alternative.

But for the home user who just wants to produce neat letters, and the small businessperson or club secretary who wants to use the powerful mail-merge facility in conjunction with Campbell System's *Masterfile*, then *Tasword 6128* is a very worthwhile program.

The only doubt I have is about the program's robust-

ness - the Spectrum version was always a little nervous when getting full (about 300 meagre lines in that case), and this present version appears occasionally to lose the first few characters of a file when being saved. While text appeared to be otherwise safe (the last thing a writer wants is several thousand words disappearing up his computer's Ram), nevertheless, full files (65,000-odd characters on the 6128) did cause the program to lock up, requiring the user to erase a few words in order to regain control.

At the price, though, and with the companion *TasSpell*, Amstrad owners are lucky indeed to have such a sophisticated word processor to use.

Tony Bridge



Head to come

Program *Fat Man Sam Micro* BBC **Price** £3.95 **Supplier** Firebird, Wellington House, St Martin's Lane, London

Oh no, this has got to be the worst platform game I've seen on the BBC. Not only is it a Miner Willy copy even down to the little dancing men doing a sad version of the Conga, but the instructions are awful and



also incomplete. The box inlay states keyboard only - I played it using a joystick and it worked perfectly well. You can select any screen from the first ten to start from - this is not mentioned in the in-

structions and the platforms in the game are so difficult it's almost impossible to play. OK, I accept that if games are easily completed they prove no challenge, but *Fat Man Sam* is just the opposite - it's too difficult and fussy! I cannot understand why Firebird have released this under their Super Silver range, because apart from being two years out of date it's not up to the standard of their other releases.

True, there are 40 screens to play though and the graph-

ics are quite pretty but it's boring in the extreme and there's really no music to speak of. Practically every thing on screen is deadly apart from the objects that have to be picked up and unless you are a platform expert you won't get past screen one.

Sorry, Firebird this is a very poor release and even if it was priced at £1.99 it would not be value for money.

Andy Moss



Tally Ho

Program *Their Finest Hour Micro* Spectrum 48K **Price** £0.00 **Supplier** Century, 12-13 Greek St, London W1V 5LE

It was midnight when Winston summoned me to his bunker. The hun had swarmed over the channel in huge formations of planes to blast airfields, bomb ports and wipe out radar installation.

"The cabinet," Winston growled, "has decided to ask for your resignation . . . cataclysmic losses . . . war in the air lost . . ."

Winston's bombshell at the end of several hours struggling to stem the Luftwaffe

tide was one of the most emotionally upsetting experiences I have had in computer gaming. In part, no doubt, it's due to the power of that familiar face staring out of the screen but it's also a result of the cleverness of that old fox Nicky Palmer and the absorbing nature of the game he and John Wilson have designed.

It's an excellent adaptation of the Battle of Britain in which the player controls the RAF and attempts to protect Britain from German bombs while shooting down as many German bombers as possible and losing as few Hurricanes and Spitfires as possible. As the little crosses which represent Luftwaffe raids swarm over the south coast the player is stretched to the limit, keeping track of them, planning inter-

ceptions and generally taking charge of 10 RAF squadrons.

The game looks good and feels good and uses some excellent and innovative windowing techniques. Although it would be improved with some readily available chart that would instantly present the stamina of each force (they vary from rested to 'end of tether') and the alert status of each. There is no way of checking the latter so a player can often forget which forces are sitting in their cockpits waiting for the call to arms and getting exhausted.

My major problem with the game is that it totally fails to tell you how it assesses victory conditions. Presumably Winston and the cabinet consider strategical objectives

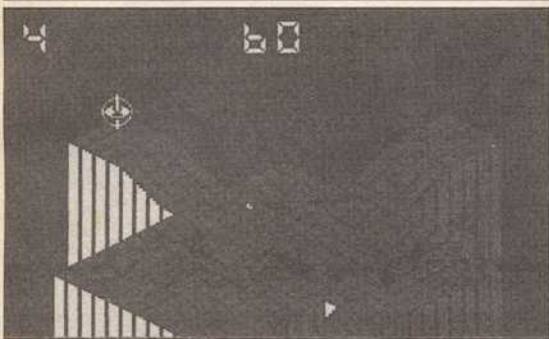
before they fire you, so why can't the player know them too.

There are also some programming bugs. The game crashed on me once ("It's in the drink, Sir, off Dover") and I won one game with an absurd kamikaze blitz after a huge Luftwaffe attack had resulted in all my aircraft being shot down. The computer promptly boosted the strength of the non-squadron to '655' planes (it had been 27) and I merrily destroyed the main German strikeforce with it.

Also there are the mysterious Heinkel squadrons which hover above Hampshire all day and can't be attacked.

Peter Berlin





Spinning top

Program Gyroscopic Micro
Commodore 64 **Price £7.95**
Supplier Melbourne House,
Castle Yard House, Castle
Yard, Richmond, Surrey.

This is an incredibly simple yet deviously addictive program from Melbourne House, based loosely on the arcade hit *Marble Madness*.

All you have to do is guide your spinning gyroscope down a superbly created 3D course full of craters, slides, and narrow paths, till you reach the bottom and then process to the next. Sounds simple doesn't it - not so, for I spent hour after maddening hour trying to negotiate the humps and hollows only to come to grief each and every time. There are 30 different courses to complete with a

promise of a real surprise at the end.

As if just guiding the gyro is not enough, there are numerous other obstacles standing in your way like slipping glass, magnets and little aliens which always appear in the most annoying places.

Time is important, too. The quicker you finish each course the more points you will accumulate and for every 1,000 points gained you get another 'life'. If the timer drops to zero the gyro stops spinning and its curtains.

One niggle is in the instruction leaflet, we are told we start with seven lives, in fact, you only get five, an unusual oversight for the normally meticulous Melbourne House. This aside, it's a glorious game for those with the patience of a saint - and nice music too.

Andy Moss



Rom at the top

Program Inter-Chart Rom
Micro BBC B **Price £36.80**
Supplier Computer Concepts,
Geddesden Place,
Hemel Hempstead, Herts HP2
6EX.

Most people don't like figures but can grasp pictures quickly and easily.

If you have to present the club's accounts, explain to your partner where you find the cash to buy a disc-drive, show to the uninitiated the results of a scientific experiment - then graphs are the answer.

Drawing graphs can be a pain - or you can use *Inter-*

Chart, the zippy chip that makes drawing graphs as easy as pie.

Computer Concepts has produced a chip which makes it a positive pleasure to prepare graphs, bar-charts and pie-charts. Plug it into your BBC and by typing **IC*. You find a familiar menu deliberately designed to be similar to that used by *Wordwise*.

It is extremely simple, yet if you want to specify your graph in minute detail you can have a highly sophisticated one in a very short time indeed.

You start with a bar-chart. The BBC's function and edit keys are used to manipulate your figures and labels.

You simply type in your figures and the graph auto-

Desk job

Program Ice Desk-top manager for the QL Micro QL
Price £49.95 **Supplier**
Eidersoft, The Office, Hall
Farm North Ockenden,
Upminster, Essex RM14 3QH

Most day-to-day users of computers in the commercial world are not experts, so if you want to market a successful business package - you have to make it as user-friendly as possible. Up to now, the QL has been more a device for enthusiasts, but Eidersoft has released a desk-top manager package aimed at giving even computer illiterates an integrated and versatile program aimed at unleashing the machine's real capabilities.

ICE (icon controlled environment) consists of an Eprom cartridge which plugs into the QL's Rom port in the rear and a microdrive containing multi-tasking software enabling the user to load and switch between up to five programs depending upon the amount of the system's extended Ram. But, even at the basic 128K of the unextended QL, the software allows a diverse number of multi-tasking, file editing copy operations.

The package also contains a mailmerge function for Quill/Archive and a name/address database. At the moment, the mailmerge program is missing from the software being shipped, but

buyers will be able to obtain an upgraded microdrive shortly (along with a full manual to replace the provisional one now being issued) at no added cost. Some 'JS' versions of the QL will apparently not work with ICE, but the company will replace the Eprom cartridge with an adapted version which the computer will accept.

Loading ICE gives a screen filled with little pictures representing the devices/functions you wish to access - a microdrive, a disc drive or Ram-disc, for example. Control is via the cursor keys/ space bar or a joystick which moves a targeting arrow around the screen with - depending upon your dexterity - a mouse-like movement. ICE is fully mouse-compatible for those who want to spend a little extra cash on the real thing.

Some of the graphics are quite good (a calculator option for simple maths) but others leave something to be desired - for example, an old boot for the "boot" function. ICE's strength lies in the number of complex tasks that it simplifies and anybody wanting to use a QL for heavy duty, but who feels uncomfortable with a lot of involved Superbasic commands and inter-peripheral operations, should definitely consider buying it. I do recommend using a mouse or perhaps a joystick, however, as manipulating the keys can be a bit annoying.

Brian Beckett



matically builds up and rescales itself. Then you go to the display option and choose whether to have a line graph, bar-chart or pie-chart.

You add notes exactly where you want them, can shade sections, highlight a section (on a pie-chart the highlighted part looks like a segment of pizza being removed from your plate!) You can display in colour.

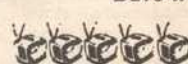
You can also overlay other charts - to compare last year's figures for example. Finally the whole display can be dumped to a printer. The chip is configured for Epson types but it is easy to adapt for other printers.

Inter-Chart is superb. The package is full of neat touches (eg, on pie-charts you can display the actual numbers or percentages at the touch of a key.)

The documentation is clear and detailed. And it is part of Computer Concept's link range which means you can import figures from for example the spreadsheet instantaneously.

It makes it feasible to produce those visual aids your non-numerate audiences need!

Dave Watterson



Robin of Sherlock

As you may know *Robin of Sherlock* is an adventure game unlike any other. It has almost nothing to do with the historical details of Robin Hood. Nor are the works of Conan Doyle dealt with in any real depth.

In this, the latest in a series of epic competitions held in this magazine, we ask: What does Robin Hood mean to you? In this diary extract printed below you can see how Silver Soft view Robin. Study it carefully. Well, quite carefully.

I leant back against the lamp-post, surveying the busy rush of traffic along Sherwood Boulevard. It had been a hard day at the forest. First there was the Dorothy Kid, bush-whacked on her way to the Wizard of Huddersfield, her dog held to ransom. Then there was the anonymous tip-off about the convent's link with Godfather Smurph. When his name crawled out of the files it always meant some sort of racket. I smelled a rat, and one using Brut 33!

Jerking myself away from the cold security of the streetlight, I trudged down a dim alley to where I knew I could get a cab and it wasn't long before Al pulled up. Al had always been a good cabbie but that night I couldn't help noticing something odd about him, or rather his cab. It had been stolen!

Yet another mystery in one day! Something had to be going down. I figured I'd better go and checkout Marion and see if she was okay. It looked like being a tough week!

What you have to do

After reading the diary extract we want you to come up with something along the same lines - another page from the Diary of Sherlock.

Don't write more than 200 words or it will be totally ignored. Do remember that there are no prizes for consistency, but legibility would be useful and is, in any event, something to be cherished.

Prizes

You don't just enter the competition for fun. The best diary page will win a first prize of two tickets for a special Robin Hood weekend (your choice of dates between March 21st and October 24th) featuring mediaeval banqueting, jaunts

into Sherwood Forest to see the key Robin Hood sights and two nights in a four star hotel.

(Entrants must be 12 or over unless accompanied by an adult.)

Thirty runners up will win a copy of the computer game *Robin of Sherlock* for the Spectrum.

Where to send your entry

Send your page of Robin's Diary to *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP and clearly mark your envelope 'Robin of Sherlock Competition'.

The closing date for the competition is December 30th. The best of luck to everyone.

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4718 3 1 31 5 254 79	4858 1 34 29 188 71	4882 1 18 20 129 71	4882 2 1 34 29 188 71	4914 2 1 34 29 188 71
4716 2 1 31 5 258 71	4864 1 34 29 188 71	4888 1 18 20 129 71	4886 2 1 34 29 188 71	4918 2 1 34 29 188 71
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4710 1 4 29 7 141 71	4882 1 34 29 188 71	4906 1 18 20 129 71	4898 2 1 34 29 188 71	4930 2 1 34 29 188 71
4708 1 4 23 4 198 71	4888 1 34 29 188 71	4912 1 18 20 129 71	4902 2 1 34 29 188 71	4934 2 1 34 29 188 71
4706 1 1 31 5 154 79	4894 1 34 29 188 71	4918 1 18 20 129 71	4906 2 1 34 29 188 71	4938 2 1 34 29 188 71
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4696 2 1 31 5 258 71	4924 1 34 29 188 71	4948 1 18 20 129 71	4926 2 1 34 29 188 71	4958 2 1 34 29 188 71
4694 2 1 31 5 262 71	4930 1 34 29 188 71	4954 1 18 20 129 71	4930 2 1 34 29 188 71	4962 2 1 34 29 188 71
4692 1 4 29 7 141 71	4936 1 34 29 188 71	4960 1 18 20 129 71	4934 2 1 34 29 188 71	4966 2 1 34 29 188 71
4690 1 4 23 4 198 71	4942 1 34 29 188 71	4966 1 18 20 129 71	4938 2 1 34 29 188 71	4970 2 1 34 29 188 71
4688 1 1 31 5 154 79	4948 1 34 29 188 71	4972 1 18 20 129 71	4942 2 1 34 29 188 71	4974 2 1 34 29 188 71
4686 2 1 31 5 210 71	4954 1 34 29 188 71	4978 1 18 20 129 71	4946 2 1 34 29 188 71	4978 2 1 34 29 188 71
4684 2 1 31 5 214 71	4960 1 34 29 188 71	4984 1 18 20 129 71	4950 2 1 34 29 188 71	4982 2 1 34 29 188 71
4682 2 1 31 5 218 71	4966 1 34 29 188 71	4990 1 18 20 129 71	4954 2 1 34 29 188 71	4986 2 1 34 29 188 71
4680 3 1 31 5 254 79	4972 1 34 29 188 71	4996 1 18 20 129 71	4958 2 1 34 29 188 71	4990 2 1 34 29 188 71
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4672 1 4 23 4 198 71	4996 1 34 29 188 71	5020 1 18 20 129 71	4974 2 1 34 29 188 71	5006 2 1 34 29 188 71
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4656 1 4 29 7 141 71	5044 1 34 29 188 71	5068 1 18 20 129 71	5006 2 1 34 29 188 71	5038 2 1 34 29 188 71
4654 1 4 23 4 198 71	5050 1 34 29 188 71	5074 1 18 20 129 71	5010 2 1 34 29 188 71	5042 2 1 34 29 188 71
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4584 1 4 29 7 141 71	5260 1 34 29 188 71	5284 1 18 20 129 71	5150 2 1 34 29 188 71	5182 2 1 34 29 188 71
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4580 1 1 31 5 154 79	5272 1 34 29 188 71	5296 1 18 20 129 71	5158 2 1 34 29 188 71	5190 2 1 34 29 188 71
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48016	6	184	79	2	1	42
48022	1	87	79	2	1	42
48028	5	27	79	2	1	34
48034	29	251	71	2	1	38
48040	71	240	71	2	1	42
48046	3	205	71	2	1	42
48052	6	194	71	2	1	31
48058	2	192	71	2	1	31
48064	2	33	79	2	1	42
48070	79	4	79	2	1	42
48076	3	5	127	79	2	1
48082	213	71	13	1	79	
48088	4	16	103	71	2	1
48094	184	117	2	104	143	
48100	71	18	0	49	87	
48106	16	104	117	1	104	143
48112	87	2	4	1	64	
48118	184	117	2	104	143	
48124	4	4	1	112	120	
48130	117	2	104	141	70	
48136	4	1	1	178	143	50
48142	0	128	108	67	16	4
48148	0	3	128	79	140	8
48154	128	108	67	16	4	
48160	3	128	67	16	4	
48166	128	67	16	4		
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48178	42	224	79	2	1	34
48184	21	220	79	2	1	34
48190	21	224	79	2	1	34
48196	29	240	79	2	1	34
48202	29	44	79	18	1	34
48208	29	24	79	1	34	
48214	29	121	79	2	1	34
48220	29	228	71	4	1	34
48226	29	174	21	1	34	
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48244	29	67	87	2	1	34
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49318	29	151	79	2	1	42
49324	29	151	79	2	1	42
49330	29	151	79	2	1	42
49336	29	15				

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New NLQ PICA print style
Standard PICA text (100cps)
True descenders on jpg etc.

ELITE mode gives 96 columns

CONDENSED mode gives 142 columns

ENLARGED mode
SUBSCRIPTS and SUPERSCRIPTS

underlines nicely

Good italic character set

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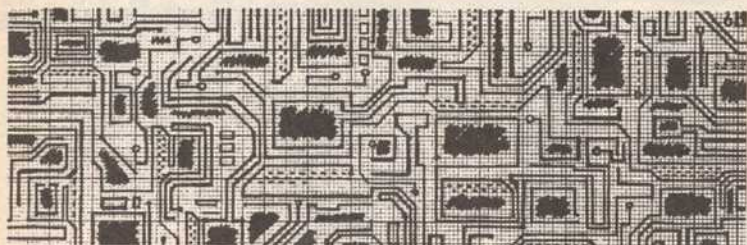
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CALENDAR

by John Beckett

If you are like myself and cannot remember the date or how many days there are in the month, then this is the program for you.

It is a once a year calendar program, which will give you a hard copy of the calendar from any year between 1753 and 8500!

The program is suitable for a printer which has Epson compatible control codes. If you have a printer which does

not use the same codes, using the following list should make conversion easy.

- VDU1,27,1,64 - Resets printer.
- VDU1,27,1,65,1,9 - Sets line spacing to 9/72".
- VDU1,15 - Turns on condensed print.
- VDU1,27,1,108,1,28 - Sets right margin to 28 characters.
- VDU1,27,1,87,1,1 - Turns on enlarged print.

Program Notes

- DEF PROCread: Reads months into array.
- DEF PROCdoub (A\$,x%,y%): Prints a string of text at x% and y% in double height.
- DEF PROCintro: Provides program introduction.
- DEF PROCmon: Prints out each month.
- DEF PROCu(F%): Turns on/off underline. 1 - on, 0 - off.

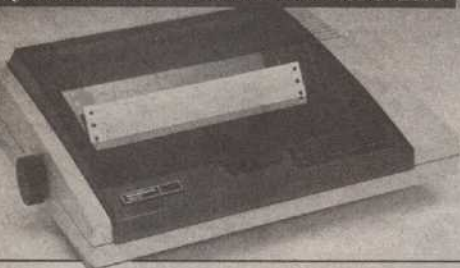
```

10REM --- Calendar --- Electron
20REM John T M Beckett 1985
30DIM D$(12):PROCread
40MODE4
50PROCintro
60VDU2:PRINT TAB(10);:PROCu(1)
70PRINT Y$;" Calendar":PROCu(0)
80FOR M%=1 TO 12:PROCmon:NEXT
90VDU3
100CLS:PRINT "Continue (Y/N)";
110AZ=(GET AND &F)
120IF AZ=89 THEN 40
130END
140:
150DEF PROCread
160FOR M%=1 TO 12:READ D$(M%):NEXT
170ENDPROC
180:
190DEF PROCdoub (A$,x%,y%)
200AZ=A$:X%=X%:Y%=Y%:E=4900
210FOR J=1 TO LEN(A$)
220?E=ASC(MID$(A$,J,1)):CALL&FFF1
230VDU23,224,E?1,E?1,E?2,E?2,E?3,E?3,E?4,E?4
240VDU23,225,E?5,E?5,E?6,E?6,E?7,E?7,E?8,E?8
250PRINT TAB(x%+J,y%);CHR$(224);TAB(x%+J,y%+1);CHR$(225)
260NEXT
270ENDPROC
280:
290DATA January,February,March
300DATA April,May,June
310DATA July,August,September
320DATA October,November,December
330:
340IF ERR=17 THEN 40
350REPORT:PRINT " at line ";ERL"
360$CLI("KEYO LIST"+STR$ERL+"(N")
370+F138,0,128
380END
390:
400DEF PROCintro
410VDU19,1,3;0;
420VDU2,1,27,1,64
430VDU1,27,1,65,1,9
440VDU1,15
450VDU1,27,1,108,1,28
460VDU1,27,1,87,1,1,3
470PROCdoub("Calendars",14,0)
480PRINT TAB(10,3)"John T M Beckett 1985"
490PRINT "This program will give you a copy of"
500PRINT "the calendar for the year you enter."
510PRINT STRING$(40,"-")
520VDU28,0,31,39,9
530INPUT "Enter year - ";Y$
540IF VAL(Y$)<1752 VDU7:GOTO530
550ENDPROC
560:
570DEF PROCmon
580Y=VAL(Y$):C=VAL(LEFT$(Y$,2)):D%=1
590IF Y MOD4<>0 D%=0:GOTO620
600IF Y MOD100=0 AND C MOD4<>0 D%=0
610IF Y MOD4000=0 D%=0
620Y=Y-1:S=365*Y
630Y=Y DIV4:S=S+Y
640Y=Y DIV100:S=S-Y
650Y=Y DIV400:S=S+Y
660S=S+1:S=S MOD7
670TX=31:IF M%=1 THEN 790
680S=S+TX:TX=28+D%:IF M%=2 THEN 790
690S=S+TX:TX=31:IF M%=3 THEN 790
700S=S+TX:TX=30:IF M%=4 THEN 790
710S=S+TX:TX=31:IF M%=5 THEN 790
720S=S+TX:TX=30:IF M%=6 THEN 790
730S=S+TX:TX=31:IF M%=7 THEN 790
740S=S+TX:TX=31:IF M%=8 THEN 790
750S=S+TX:TX=30:IF M%=9 THEN 790
760S=S+TX:TX=31:IF M%=10 THEN 790
770S=S+TX:TX=30:IF M%=11 THEN 790
780S=S+TX:TX=31
790S=S MOD7:W%=4020005
800PRINT STRING$(33,"-")
810PRINT TAB(13);:PROCu(1)
820PRINT D$(M%):PROCu(0)
830PRINT"Sun Mon Tue Wed Thu Fri Sat"
840FOR J%=0 TO 5:FOR J1%=1 TO 7
850D1=J%*7+J1%-S
860IF D1<1 OR D1>TX THEN D1=0
870D1$=STR$(D1):D1$=RIGHT$(" "D1$+",4)
880IF D1=0 D1$=" "
890PRINT D1$;;NEXT:PRINT:NEXT
900ENDPROC
910:
920DEF PROCu(F%)
930VDU1,27,1,45,1,F%:ENDPROC

```


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NEW FUNCTION

by Dr R K Lowry

This article describes the function *NBSET(x)* which returns the number of bits set on in the least significant byte of *x*. On its own, this is a singularly useless piece of information to derive. However, the function is designed to be used in conjunction with the Super Basic *KEYROW* function. The value returned by *NBSET(KEYROW(0))* is the number of keys which are being pressed in row 0 of the keyboard. The main use I make of the function is in the unambiguous reading of the function

keys. The function keys are read using *NBSET(KEYROW(0)&&59)* which returns 'one' when a single function key is pressed, zero when no function keys are pressed or 'two' when two function keys are depressed simultaneously.

The assembler source code consists of four subroutines. Subroutine *INIT* is the standard code which links additional functions and procedures into Super Basic. Subroutine *L11* is a general purpose routine which returns a single long integer parameter in the register *D1*. If a

string is passed or more than one parameter is supplied, then a bad parameter error code is returned in *DO*. Yet a third general purpose routine, *IFSTK*, is used to store the result held in *D1* on the *RI* stack in the appropriate manner for an integer function.

The final routine is the guts of the *NBSET* function which simply *ANDS* the low byte of the argument with a set of single-bit masks and counts the number of times that the result is non-zero.

```

100 DIM array(5)
110 CLS:CLS#0
120 address=RESPR(512)
130 CLS#0:RESTORE
140 READ nwords
150 IF nwords<=0 THEN PRINT"Load complete":CALL RESPR(0):STOP
160 csum=0:FOR i=0 TO nwords-1:READ array(i):csum=csum+array(i):NEXT i
170 READ csum2:IF csum<>csum2 THEN
180 PRINT"Checksum error":PRINT"Correct checksum",csum2
190 PRINT"Line of data":FOR i=0 TO nwords-1:PRINT,array(i):",":NEXT i:STOP
200 END IF
210 FOR i=0 TO nwords-1:POKE_W address,array(i):address=address+2:NEXT i
220 GO TO 140
230 DATA 6.24576,18.0,0.1,60,24655
240 DATA 6.1358,15979,17748,0,17402,-18,53169
250 DATA 6.13432,272,20114,28672,20085,8614,91389
260 DATA 6.88,13432,289,20114,19072,26432,79118
270 DATA 6.28913,3139,1,26124,8758,-26624,40311
280 DATA 6.22665,11593,88,28672,20085,28832,107935
290 DATA 6,-38,19072,26138,30728,29597,17027,122624
300 DATA 6,4098,-16383,26370,21059,-7814,21252,48982
310 DATA 6,26354,8707,28836,17028,20085,8614,105820
320 DATA 6,88,21897,11593,88,19749,-26624,22787
330 DATA 1,30723,30723
340 DATA 1,20085,20085
350 DATA -1
    
```

BP.INIT EQU \$110	*			NBSET0 MOVE.B D2,D0
CA.GTLIN EQU \$118		L11 MOVE.L BV.RIP(A6),A1		AND.B D1,D0
BV.RIP EQU \$58		MOVE.W CA.GTLIN,A2		BEQ.S NBSET2
ERR.BP EQU -15		JSR (A2)		ADDQ.W #1,D3
PROCDEF BRN INIT		TST.L D0		LSL.B #1,D2
DC.W 0	*	BNE.S L11X		SUBQ.B #1,D4
DC.W 0	*			BNE.S NBSET0
DC.W 1	*	* Ensure that there is 1 argument		*
DC.W NBSET*	*			* Return result
DC.B 5,'NBSET'	*			*
DC.W 0	*			
		MOVEQ #ERR.BP,D0		MOVE.L D3,D1
		CMPI.W #1,D3		BSS.S IFSTK
		BNE.S L11X		CLR.L D0
* Subroutine INIT	*			NBSETEX RTS
* Links machine code procedures	*			*
				* Subroutine IFSTK
INIT LEA PROCDEF,A1		MOVE.L 0(A6,A1.L),D1		*
MOVE.W BP.INIT,A2		ADDQ.L #4,A1		* Stores integer function result on
JSR (A2)		MOVE.L A1,BV.RIP(A6)		* RI stack
MOVEQ #0,D0		MOVEQ #0,D0		*
RTS		L11X RTS		* Input register
				*
* Subroutine L11	*			* D1 - Value to be stored
				* Output register
* Returns single procedure argument	*			* D4 - Set to appropriate code (3)
* as long integer.	*			*
				* A1 destroyed
* Output registers	*			*
		NBSET BSR L11		
* DO - Error Code		DO		
* D1 - Argument		BNE.S NBSETEX		IFSTK MOVE.L BV.RIP(A6),A1
				SUBQ.L #2,A1
* A1/A2/D2/D3/D6 destroyed.	*			MOVE.L A1,BV.RIP(A6)
				D1,0(A6,A1.L)
* Name table pointers passed in A3/A5	*			MOVEQ #3,D4
		MOVEQ #8,D4		RTS
* Move arguments onto RI stack	*	MOVEQ #1,D2		END
		CLR.L D3		

PAUSE MODE

by David Shaw



This is a short but effective machine code routine which can be used by programmers of any experience on the 64; a colourful pause routine.

Using interrupts, it will allow the user to freeze Basic and machine code programs by simply pressing F1. While the pause mode is operative, a very colourful screen display is generated, giving a constant reminder that the computer is in pause mode. Pressing F1

again returns control to the original program, leaving all registers, etc, untouched, and most importantly, the screen display intact.

Either use the Basic loader (it's short and has a checksum) or the assembly listing to install the routine.

I'm sure that everyone will appreciate the program next time the doorbell rings - and you are just about to get that high score!

```

1 B=0:FOR T=49152 TO 49243:READ A:POKE T,A:B=B+A:NEXT T:IF B<>12986 THEN PRINT "CHECK DATA"
2 DATA 120,169,192,141,21,3,169,13,141,20,3,88,96,165,203,201,4,208
3 DATA 55,32,77,192,174,32,208,134,251,174,33,208,134,252,162,0,232
4 DATA 142,32,208,142,33,208,160,0,200,192,40,208,251,224,31,208,238
5 DATA 32,159,255,165,203,201,4,208,227,166,251,142,32,208,166,252,142
6 DATA 33,208,32,77,192,76,49,234,32,159,255,165,203,201,4,240,247,96
7 DATA 240,247,76,49,234
8 SYS 49152
  
```

LINE#	LOC.	OBJECT LABELS	LINE	
			.ORG	\$C900
10	C000		SEI	
20	C000	78	LDA	#\$C0
30	C001	A9C0	STA	#\$0315
40	C003	8D1503	LDA	#\$0D
50	C006	A90D	STA	#\$0314
60	C008	8D1403	CLI	
70	C00B	58	RTS	
80	C00C	60	LDA	#\$CB
90	C00D	A5CB	CMP	#\$04
100	C00F	C904	BNE	EXIT
110	C011	D037	JSR	TEST
120	C013	204DC0	LDX	#\$D020
130	C016	AE20D0	STX	#\$FB
140	C019	86FB	LDX	#\$D021
150	C01B	AE21D0	STX	#\$FC
160	C01E	86FC	LDX	#\$00
170	C020	A200	INX	
180	C022	E8	STX	#\$D020
190	C023	8E20D0	STX	#\$D021
200	C026	8E21D0	LDY	#\$00
210	C029	A000	INY	
220	C02B	C8	CPY	#\$20
230	C02C	C028	BNE	LOOP
240	C02E	D0FB	CPX	#\$1F
250	C030	E01F	BNE	STORE
260	C032	D0EE	JSR	\$\$\$F9F
270	C034	209FFF	LDA	#\$CB
280	C037	A5CB	CMP	#\$04
290	C039	C904	BNE	START
300	C03B	D0E3	LDX	#\$FB
310	C03D	A6FB	STX	#\$D020
320	C03F	8E20D0	LDX	#\$FC
330	C042	A6FC	STX	#\$D021
340	C044	8E21D0	JSR	TEST
350	C047	204DC0	JMP	\$\$\$A31
360	C04A	4C31EA	JSR	\$\$\$F9F
370	C04D	209FFF	LDA	#\$CB
380	C050	A5CB	CMP	#\$04
390	C052	C904	BEQ	TEST
400	C054	F0F7	RTS	
410	C056	60		

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THE SECRET DIARY OF ADRIAN MOLE AGED 13³/₄

Friday October 11th

I learned today that I have become the subject of a computer game. It has been written by somebody called Level 9 (perhaps they live in a multi-storey car park) and apparently it contains more than 200 kilos of text which Brainbox Henderson says is a lot. The object of the game is to make me popular with everyone, so I expect Gran will get me one for Christmas even though it does cost £9.95. But I don't suppose anyone will get me a Commodore, Spectrum, Amstrad, BBC, MSX or Atari to play it on.

Wednesday December 25th
 CHRISTMAS DAY

Mosaic who have published my diary as a computer game have sent me some reviews. They're dead brilliant!! Pandora says I should keep notes of the best bits so I can use them on the back cover of my next best-seller. I thought I'd note them down today while we're still waiting for the stupid turkey to defrost.



My reviews

'A Crash Smash' 'Mole is brilliant and so is this game' **Crash**

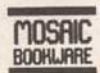
'Ten out of ten' **Commodore User**

'Pete Austin - The man's a genius! . . .

I reckon this is an important program' **Zzap 64**

'Destined to appeal to all ages is this one' **CTW**

'This is a game you should get - right now' **Amtix**



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Line Scroll on Spectrum by Ray Heslop

These routines will scroll just one line of the display either to the left or right. Listing one scrolls from right to left, and listing two from left to right.

The address 60000 can be changed to any spare memory location as it is only used as a variable.

To test the routines, simply print two lines of anything at the top of the screen and type:

```
Randomise Usr 50000: Randomise Usr 58000
```

To alter the line you wish to scroll, you must (in listing one) load DE with the address at the first byte of the first character in the line you wish to scroll, and load HL with one above DE.

In listing two, load DE with the address of the bottom byte of the last character in the line you wish to scroll, and load HL with one below DE.

Both routines are relocatable.

```
ORG 50000
LD B,8
LD DE,16384
LD HL,16385
LD (60000),HL
LOOP PUSH BC
LD A,(DE)
LD BC,31
LDIR
LD (DE),A
LD HL,(60000)
INC H
LD (60000),HL
LD DE,(60000)
DEC DE
POP BC
DJNZ LOOP
RET
```

```
ORG 55000
LD B,8
LD DE,18239
LD HL,18238
LD (60000),HL
LOOP PUSH BC
LD A,(DE)
LD BC,31
LDDR
LD (DE),A
LD HL,(60000)
DEC H
LD (60000),HL
LD DE,(60000)
INC DE
POP BC
DJNZ LOOP
RET
```

Big Screen on Vic 20 by L W Betteridge

When this program is 'Run' a much larger screen will be seen. The normal area of the screen is the lower half of this new screen. Conventional printing will only work in this lower half, to access the upper half we have to use the *Poke* command. Taking the screen as a whole, the bottom left is *Poke* location 8185, as is usual, but the top right of the screen is 7165.

This enlarged screen can be switched in and out by using SYS 828 and by pressing *Run/Stop* and *Restore* together.

```
10 FOR I=828 TO 856
20 READ A
30 POKE I,A
40 NEXT I
50 DATA 169,28,141,52,0,141,56,0,169,6,141
60 DATA 0,144,169,21,141,1,144,169,30,141,2,144
70 DATA 169,68,141,3,144,96
```

Line Count on Commodore 64 by Peter Graves

This program counts the number of program lines in a Basic program, irrespective of how they are numbered.

When a program line is stored in the memory it has a link address stored with it, holding the address of the start of the next line. This program begins at the start of the normal line storage area (address 2049) and jumps from line to line using the link addresses, counting one each time, until it reaches the end of the lines in memory - detected by the zeros in the link address following the last line.

```
63000 PRINT CHR$(147):AD=2049:N=-4:REM THESE 4 LINES ARE
NOT INCLUDED IN COUNT!
63010 IF PEEK(AD)=0 AND PEEK(AD+1)=0 THEN END
63020 AD=PEEK(AD)+256*PEEK(AD+1):N=N+1
63030 PRINT CHR$(19);"NUMBER OF LINES = ";N:GOTO 63010
```


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Many machine code listings are given, starting with a simple sorting routine which is developed to a full database program.

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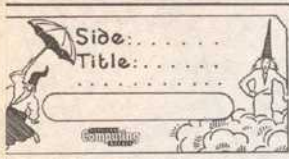
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- 3) The program will tell you if you have won a prize this week and what it is.
- 4) If you have won a prize you can claim it by filling in the coupon on the back of your special Micro Magic card. Then send

```

3 PRINT "Input your personal Micro
  Magic number"
10 INPUT A
15 FOR B=1 TO 3
20 LET A=C + (A*27)
30 LET A=C + D
40 LET A=C + E + 1050
45 NEXT A
50 IF A=1480440 THEN GOTO 60
55 IF A=1129752 THEN GOTO 70
60 PRINT "Your matching Micro Magi
  C number is:"
61 PRINT "Better luck next week!"
65 GOTO 60
66 STOP
70 PRINT "Vose matching Micro Magi
  C number is:"
71 PRINT "You have won an Amstrad
  6128!"
75 GOTO 70
76 STOP
80 PRINT "Your matching Micro Magi
  C number is:"
91 PRINT "You have won cassette la
  bels!"
92 GOTO 90
95 STOP
  
```

Micro Magic: Week 11 Program listing

the completed card off to: **Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.**

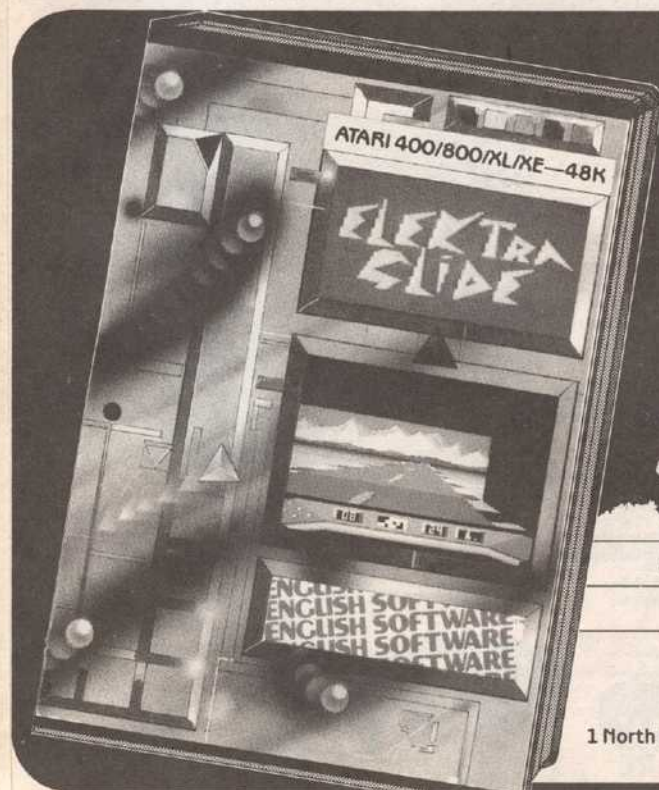
Don't forget to fill in both your name and address, and also both your winning **Micro Magic** answer from this week and your special **Micro Magic** number.

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Have you heard about "AMSNET", the NEW section on PRESTEL*25864 # run by Viewfax just for Amstrad owners? Multiport is the only interface which is Viewfax/Micronet approved, (granted 18/7/85) and you can download software using the telesoftware format developed by us in conjunction with Viewfax258. This means that you can access the many free Amstrad programs currently on the system and all the other programs about to be put up.

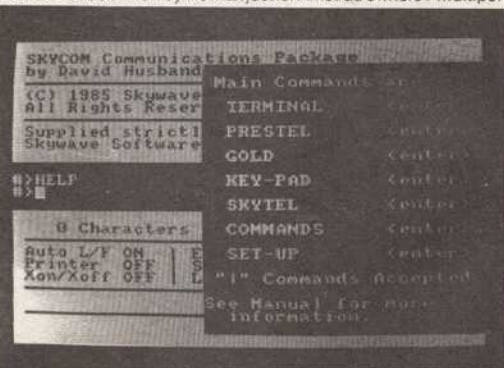
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Memory expansion

Hardware Memory Expansion Board Price 64K £49.95, 256K £99.95
Micro Any Amstrad CPC **Supplier** DKTronics, Longs Industrial Estate, Englands Lane, Gorleston, Great Yarmouth, Norfolk NR31 6BE.

The potential for memory expansion has always been promoted as integral to the CPC machines. It's peculiar therefore that Amstrad has shown no interest in selling expansions itself. Spurred on by the release of the 6128, DKTronics has leapt where Amsoft fears to tread and I'm sure that it will reap its own reward.

Two boards are available, 64K and 256K. Like the 6128 the extra memory is only usable from Basic via software, RSX Basic keywords or using the *Out* command.

Commands for loading and saving 16K screens into any of the new memory blocks are complemented by the ability to switch the screen Ram between two addresses in turn. Together these features allow some impressive animation techniques.

Data, in the form of variables, strings or arrays can be stored in, and retrieved from specified areas in the new memory. Information in the expansion can also be used one byte at a time via *IPeek* and *IPoke*. Some of the most useful com-

only be useful in your own programs, unless it sells in large enough numbers to attract software, or to persuade software writers to at least allow you the option of using it. On the other hand it is much cheaper per K compared to the 64K. Both boards will be sold to fit the 6128 as well. You can add up to 512K of banked memory in total.

DKTronics has made every effort to make the expansions compatible with 6128 software, but realistically admits that a small percentage of programs will probably need adaption. Any sensible software house will widen its market by making sure that all releases work with the 464/664 and board.

The memory is fully compatible with CP/Mplus but DK does not supply you with a system disc to use. However, since CP/Mplus with a large program area was regarded by many as the primary vindication of the 6128, some important business programs recently released run under this system only. DKTronics should be pestered to bring out an optional CP/Mplus disc as soon as possible.

To date, there are only two 6128 specific programs to test the board on. *Tasword 6128* is the best of the *Taswords* to date - and as long as the DKTronics installation software is run first it works smoothly on the 464.

The second, *Masterfile 128* is an expanded version of the successful database with 64K free for data. It incorporates features from the *Masterfile Extension Pack*, ie, User Basic that lets you customise your database and perform almost any new function you need, file merging, and data export, the ability to save data in a variety of file formats.

Both of these programs represent better value than the equivalent 64K releases. There will doubtless soon be more 128K business software, and perhaps some games as well. The boards work well and therefore offer salvation for those that feel obscurely cheated by the release of the 6128. With the proviso that something needs to be sorted out about CP/Mplus, I can't recommend them strongly enough.

Tasword 6128 - £24.95 from Tasman Software, Springfield House, Hyde Terrace, Leeds LS2 9LN.

Masterfile 128 - £34.90 from Computer Software Design, 57 Trap's Hill, Loughton, Essex, IG10 1TD. Available from Amsoft next year.

Tony Kendle

Casio CM-100

Hardware Casio CM-100 Price £17.95
Micro Any **Supplier** Casio Electronics, Unit 6, 1000 North Circular Road, London NW2 7JD.

The first Casio calculator I ever had - eeee... it were back in 1975 - weighed about two pounds, you had to wheel the batteries around in a trolley and the illuminated display



jammed most electrical appliances within a radius of 100 yards.

Things have changed a bit since then; nowadays Casio make more models of calculator than there are brands of cat food. Far from being yet another gimmick, Casio's new CM-100 may well prove to be a useful tool for many programmers.

It has all the normal arithmetic functions of course, but what makes it interesting for any programmer is that it can calculate and perform logical operations, shifts and rotations, not only in decimal, but in binary, hex, and Octal. You can switch freely between each mode, with automatic conversion. A nice trick - in fact the whole thing appears to be well thought out, with the machine-code programmer in mind.

Although the liquid crystal display is limited to the normal 10 digits, octal and binary numbers overflowing this area can be displayed as consecutive blocks of eight figures, up to 32 digits in the case of binary. Various bit sizes can be set (one, four, eight, 16, 32) and flags indicate when a carry has occurred; the most significant bits being deleted.

Perfect for machine-code programmers then, but what about general use? No room on the board for any normal scientific functions - you've got a percentage button, square root, square, reciprocal, and that's about it.

If you're an ardent machine-code programmer, then this little device will be of great interest... possibly even of great use. For the Basic hacker, though, not really worth the investment.

John Cook



mands are for the rapid storage and retrieval of the contents of screen windows.

Finally *IAskram* allows you to test the memory for capacity and errors, *IBank* will switch an entire 16K block without worrying about the contents and *IEmulate* lets you fool any program that performs a Romtest to check that it is actually running on a CPC 6128.

It now costs the same to buy 256K as it did to get an early 16K rampack for the ZX81, but it is perhaps more important that the advance of technology should have put an end to 'Rampack wobble'.

The extra Ram of the 256K board will



Altered layout

An interesting package has arrived in the form of *The Hacker*, no relation to the Activision game, from a new company called Utopia Software. This is designed to help people poke around in computer games, to make changes and learn how they work. The program is compact and resides in a choice of two little used areas of the Spectrum's memory. Once there you *Load* in your computer game in top, which may be difficult if the software is protected. Usually, however, you should be able to load at least some of the game into memory. *The Hacker* will then provide the following options, you can view and delete sprites, study and alter high score tables and text, dump text to a printer (useful for adventure games), search for infinite lives pokes, find pointers to areas of graphics or text, and study and perhaps alter the layout of

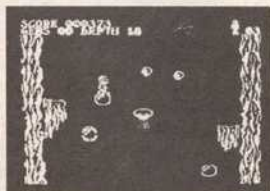
be able to make full use of this program. You will also find that it can't be used on all of your software, notably those that are protected by speed loaders or which have headerless blocks. It also won't possibly be able to recognise and display all screen formats used in different games. Having said that, I'm sure that a lot of readers of this column, who seem to find the process of digging around in the insides of games more fun than the games themselves, should find it invaluable. It costs £4.95 from Utopia Software, 38 Ridley Avenue, Acklam, Middlesborough, Cleveland TS5 7AN.

Extra energy

Amstrad owners may be interested in another program I was sent called *RSX Basic*. This gives you no less than 17 new Basic keywords including an option to deprotect Amstrad Basic programs. It will be of particular use in entering Pokes into the headers of commercial games. *RSX Basic*, with instructions, is available from Kevin Young, 50 Ronelean Road, Tolworth, Surbiton, Surrey KT6 7LL, at the extremely reasonable price of £3.00.

Now then, on with the tips, John Powell and Chris Butcher of Brecon have

phatically. The rocket fuel can be found at Q27. A teleport at L7 takes you to D39. The key opens the doorway at the top of the main passage, you need the rocket, fueled, to get there. Make sure you have a bomb with you or you can't get past the



Underwuride

laser.

"To cheat and gain extra energy just keep going between two rooms on the ground (any level) and your energy goes up five points each time. The last screen is at A42. When you finish a ZX81 appears and you get the message "CONGRATULATIONS YOU HAVE FOUND THE EVIL ZX81 WITH RAM PACK LAIR. WELL DONE."

"The game is hard to map because if you go through certain exits you end up in a wall and the game crashes." Well, that doesn't sound right! Has anyone else had this trouble with the game, and has anyone told Mastertronic?

On the subject of Mastertronic no one has managed to solve the challenge posed by David Jones, the author of *Finders Keepers*, so here to put you out of your misery are the special pokes to enable a transport function (Spectrum version).

The Pokes are 28802,194: Poke 28803,145: Poke 28804,113. To insert them Merge the basic loader and enter them before the *Rand Ustr* statement. You can then go to different rooms by pressing the down key and any letter from A to W. Pressing O will return you to Basic. If you read this David, thanks.

Peter Page and Andrew Woods have written about the Odin game *Nodes of Yesod* (sic), which they recommend as "a great game that steals all the good parts of *Underwuride* and disposes of the rubbish". Pressure of space stops us printing your map, but here are the tips and thanks for writing.

"The first task is to catch a mole. The easiest way to do this is to walk along the surface until you see one and wait by the crater until he pops up again. You must then make friends with the mole which is done by leaping on him (funny way to make friends!).

"Once this is done make your way to the lunar caverns by falling down a pot hole. There are six pot hole screens, two with two holes each.

"The map is a 16 x 16 grid. If you number this 1-16 down the left and A-P across then you will find the following:

"Object rooms contain either a helmet (extra lives) or an alchium. You need to collect eight alchiums to finish (we think). The location of the objects differ rather like in Ultimate games but we have found things in P2 L3 B4 F4 J4 M4 B5 D5 J5 E8 J6 K6 P6 O7 A8 E8 G8 M8 O8 E9 M9 O9 A10 C10 D10 M10 G11 P11 K12 L12 D13 A14 K14 M14 D15 G15 K15 D16 M16 P16.

"Eddible walls can be removed by pushing the mole into the bottom of them. These are found on the right of rooms A2 O2 D3 E3 P3 F4 L4 B5 D5 F5 J5 N5 M7 O7 A8 D8 I8 I9 N10 P10 B11 C11 I11 B12 F12 F12 H12 N12 P12 D14 F14 N14 P14 D16 E16 F16 M16.

Fusty tunnel

"Transport rooms are found at G7/H7 A16/17 K16/17. Tornadoes here will deposit you into the transport room adjacent to it.

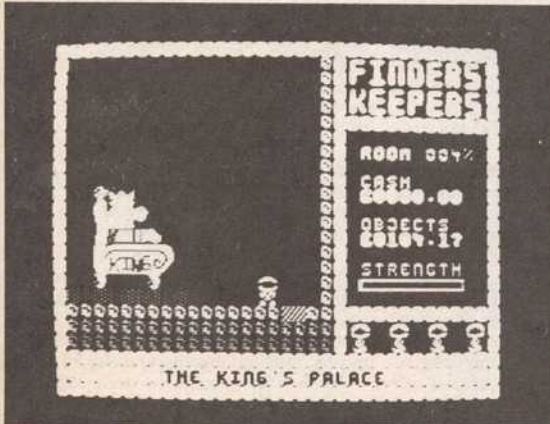
"You get some gravity sticks when you find a helmet. Dropping one will drag the nasties to the ground and kill them.

"One way floors, hidden areas in the following rooms, drop you into the room below: N5 P7.

"The rooms from A2 to A7 from a 'gusty tunnel' mentioned in the booklet. Falling from the top will float you safely to the bottom. Jumping from the bottom will float you to the top (make sure that you are facing an open door or you will hit the ceiling and die).

"There are certain inaccessible rooms at B14 G13 G6 O13. Perhaps they will open up once eight alchiums have been found."

Tony Kendle



Finders Keepers

screens on multi-level games. From my experience of the problems people have with pokes, absolute beginners and those who don't understand the way the Spectrum loads files, will probably not

finished Mastertronic's *Nontorraqueous*, which is no mean feat, and offer these hints for those still struggling.

"Make a map of squares numbered from 1-42 upwards, 24 across labelled al-

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Tony Bridge's Adventure Corner



Still stuck?

Some time ago, and I'm sorry I haven't mentioned this before, two adventurers rang the offices of Popular to tell us of their achievements - Ralph Bruckshem and Andreas Gamsen or Moers of West Germany managed to solve *Fourth Protocol* in just three weeks.

The *Fourth Protocol* is one of those programs that interested me a great deal, being released with much publicity and many screen-shots; unfortunately, the reality is that I have never got around to seeing it, so any advice you may read here is received (but of the highest standard, I'm sure).

James Cesaro, for example, wrote to me after seeing a plea for help in the *Adventureline*, concerning in part the questions asked by Sir Anthony Plumb: 'where happened' and 'how recruited' can be answered 'Gaza' and 'False Flag' respectively (the latter is mentioned only in the handbook included with the packaging).

Giving a bit more away, James recommends flying to Stockholm and searching the overseas area - he says that you must be very quick otherwise risk being posted to the Falklands. The actual order of events, says James, is:

Go to Stockholm, look at Civil Record, Go to Umea and then Go to Anna who will provide you with proof of Nilson's real identity. Sam Johnson must also be followed as a friend of his has important information pertaining to the final part of the adventure.

James is happy to give help to anyone currently stuck in *Fourth Protocol*, and he can be found at: 69 Tollgate Drive, Grasslands, Colchester, Essex CO3 5PR. From Norway, Alf-Ivar Holm sends his plea concerning *Fourth Protocol*: I don't know what to do with the Abbs - and Thorp affair.

In *Lords of Time*, Alf, the Snow Queen in the ice cube will give you the Sword (though you should beware of

switch off the gas main lever in the gate house - then to use the lamp, just type On/Off as required, ensuring that you don't waste it when not needed.

Back to *Fourth Protocol* now, where Scott MacFarlane of Edinburgh has solved Apps as well as Willis, Warburton, Allen, Bracton and possibly Johnston - possibly, says Scott, because Pasternak, his contact, muttered just before he died: 'SVETOFOR'. What does it all mean, Scott wants to know? Another problem lies in how to listen in to Faulkner's conversation: and finally, Scott needs help in decoding the NATO papers. Write to Scott for mutual help and consolation at 2 Broomside Terrace,

medical security, put 25 watchers on Bracton not Thorp. His address is 60 Druce Way, Blackbird Leys, Oxford.

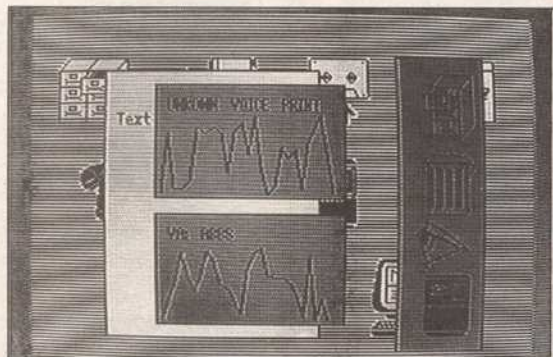
A few weeks ago, I mentioned CRL's adventure creator, *Genesis*: the Elf's little helpers slipped up a bit and attributed the program to Silversoft. While it's true that *Bored of the Rings* will be written for the Amstrad using *Genesis*, the utility was actually written by Camel Micros for CRL, and I apologise to all parties. At around the same time, I offered some help to a reader stuck in *Smuggler's Cove*, and I confused everyone by referring instead to *Pirate's Cove*, obviously a completely different adventure!

Camel's is not an adventure I'm familiar with, so anyone requiring help would do well to write to Camel at: Wellpark, Willeys Avenue, Exeter, Devon EX2 8BE.

Do you listen to music while you are adventuring? A whole article could be written about the different sorts of scene-setting music that players like to listen to while working out how to unlock the door. But a newly-released double album provides the *Dungeon-and-Dragon* as well as adventurers with ready-made mood music. Not only do you get for your money a beautifully-painted gatefold cover and music with evocative titles like *The Sorcerer's Apprentice*, *The River of Souls*, *The Dragon Passages*, *Hobgoblins* and *The Bloodguard* (beats *Careless Whisper* and *Young Guns* for if), but also two dungeons for the D&D'er. The whole project has the active participation of TSR, the original producers of D&D.

The music's pretty good in its own right, and the narration, by the late Valentine Dyall (whose tonsils seem to have been dipped in treacle), goes even further in transporting you into a world of fantasy.

Not only would this make an ideal Christmas present for your favourite adventurer, but if your computer finally gives up the ghost, then you can lower the lights and play *First Quest* from Filmtrax Records, catalogue number DRAGON 1.



Screen dump from *The Fourth Protocol*

killing the Knight) and you should leave the man in the stocks alone (let justice take its course). In the Roman scenario of *Eureka!*, you must wait on the road outside the army camp for a night before attempting to go in (and incidentally, 'Cave Equis' translates as 'Beware to the horses' - 'Cave Equi' is the correct way of saying 'Beware of the horse').

Finally, to get the lamp in *Golden Apple*, you must first

Corstorphine (it's a fine town!), Edinburgh EH12 7LZ.

From Cardiff, Steven Edwards writes asking for help in the Abbs affair ('how do I stop Stanistar defecting?') and how to stop Bracton phoning him all the time. He's always running out of time in Stockholm - see James' recommendations, Steven, or write to Scott.

Daren Green, meanwhile, is also having trouble with those NATO documents and can't get any more than 78%. 'Also, how do I solve Building 17 security?' He is at 85 Stamford Road, Dagenham, Essex RM9 4EX and would love to hear from you.

Mr J Jennings wants to use the lift, but can't until he finds the code - the portable computer tells him that $x=3$, and this is as far as he can get. Tips he passes on to other readers are - the correct order of importance of the security list is 534612 and to ring

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Oric adventure

K Robinson of Newcastle under Lyme, writes:

Q I am writing a graphics adventure for the Oric-1 and I need to know the position of the cursor when in ordinary and in hi-res mode. How can I do this please?

A Address 616 holds the Y cursor (ordinary mode) 617 holds the X cursor (ordinary mode)

537 holds the X cursor (Hires) 538 holds the Y cursor (Hires)

I am pleased to see that someone is still producing programs on the Oric; don't forget to let Tony Bridge have a look at your finished product!

Peculiar program

Anthony Lenaghan of Sharjah Soccer Club, United Arab Emirates, writes:

Q Here is a small listing for the Spectrum.

5 Border O
10 Border 2: Border 5
15 GO TO 10

The program uses the following keys: *Space* to reverse quickly; *Symbol Shift* to pause; any other key to reverse slowly.

Could you please explain why the machine reacts this way, when there are no keyboard input statements in the program?

Also do you know of any books which teach Forth as used in the White Lightning language from Oasis Software, as I find the Forth section in the manual very confusing.

A Although there are no statements in your program that does not mean that the keyboard is not being read by the Rom software, does it?

In fact this is one of the causes of the effect you describe, the other is the way that the Spectrum produces the *Border* colour. You will have noticed that on loading you get a striped border and a lot of noise! This is produced by the equivalent of the *Out* statement which can be affected by a key depression, as this affects the contents of certain system variables. The actual effect produced varies from model to model on the Spectrum. On the Plus for instance only *Space* produces any real effect and that is only to slow down the display.

As far as Forth is concerned I particularly like *Exploring Forth* by Owen Bishop (published by Granada). Although all the examples are produced via a BBC, Forth is such a portable language (unlike Basic) that it makes no real difference.

Keyboard training

C Puncher of Barry, South Glamorgan, writes:

Q I have recently been considering a Spectrum Plus up-grade, but suddenly my keyboard has stopped working. The fault turned out to be a tear in the eight-line, connecting ribbon and, as my Spectrum is two and a half years old it is not covered by the guarantee. Does the new Spectrum keyboard still require a new membrane?

A The Spectrum must have a new membrane fitted when it is up-graded to a Plus, as keyboard layouts are somewhat different.

BBC emulator

Alan Bute, of Cemberley, Surrey, writes:

Q I wondered if there is a device for the BBC B which allows it to play Commodore games - or

any other games. If there is such a device, where can I get hold of it, and how much would it cost?

A I'm afraid I don't know of any emulators for the BBC... however, if anyone out there knows of one, please write to *Popular* and tell us!

One-time file

R McHugh, of Manchester, writes:

Q I wish to set up a file of one-line entries, but in such a way that when I wish to search one out, I also want to see the six lines preceding and following the line selected. How can I program for this on my Spectrum.

A One way would be to write record numbers as well as the data that you wish to store (these would simply be the sequential number of the record on the file, starting at one).

Then it would be a simple matter to search the file for the correct start record number required (after having found the desired record of course!) and read the 13 records required.

One other method would be to use arrays to store data (up to six records at a time being stored in this way), then when the desired record is read, the preceding records will already be available in the array, and it will only be necessary to read the following six.

Printer repair

David Mills of Biggin Hill, Kent, writes:

Q I own a Sinclair printer that was given to me after the guarantee had expired. The main problem seems to be the lack of power it is receiving. When the automatic feed button is pressed nothing happens. Neither *Llist* or *Lprint* work. Are there any companies that repair these printers?

A As with computers there are a number of companies that will repair your printer that regularly advertise in *Popular*. I have mentioned many names in the past. At the moment I do not know how many of these companies still quote for repairs to ZX printers, except one, Interservice Electronics Ltd, 85-95 Park Street, Southend on sea, Essex SSO 7PX.

A load off your mind

Frank Nyatt of Manchester, writes:

Q I am having problems loading programs into my Spectrum. When I first bought it 2½ years ago it loaded programs as stated in the manual, but now it will only load with the tape recorder at full volume.

A The problem is most likely to be the input/output sockets on the machine into which the Ear and Mic leads are connected. Any reputable repairer will carry out any necessary repairs.

Up-grade uncertainty

J M Aziz of London, writes:

Q Having owned a Spectrum for several years, I want to up-grade it to a better future games machine. Anyway what I wanted was a Commodore 64, but along came the Plus/4 and the Amstrad. Could you tell me if 64 software is compatible with the Plus/4 as the Plus/4 is cheaper at the moment. Also what about the Amstrad?

A First things first... Commodore 64 software is not compatible with the Plus/4. Remember too, that the compatible C128 is now available. However, to run CP/M to its best advantage, you will also need Commodore's 80-column monitor (£299) and its new fast disc drive, the 1570 (£199).

The Amstrad has some good software, though not as much yet as the C64, but runs CP/M more easily than the C128.

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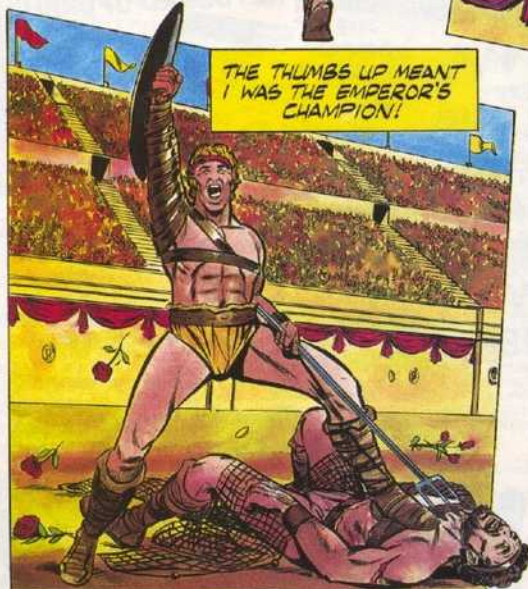
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Zork II on Apple. How do I get into the room behind the menhir? Where do I find the candy? What is the rose for? Lawrence Coleman, 28 First Street, East Fairwood, Johannesburg 2192, Transvaal, South Africa.

Eureka (Nazi Germany) on C64. How do I use the dynamite and where do I use the ID card? Marcus Liversedge, 387 Radcliffe Road, Darcy Lever, Bolton, Ctr Manchester.

Zork II on Apple. What is the answer to the riddle in the riddle room? Lawrence Coleman, 28 First Street, East Fairwood, Johannesburg 2192, Transvaal, South Africa.

Kentilla on Spectrum. I can't get through the glowing ward nor can I find the key to a chest. Sara Greenough, 27 Clough Road, Birkby, Huddersfield.

Hampstead on Spectrum. Have bought suit with credit card - what next? Can help on The Hobbit. Paul Rollinson, 18 Church Street, Ockbrook, Derbyshire.

Eureka on Spectrum. I need help on all the adventures. How do I get into the house in the Caribbean section? Dorothy Rose, 11 Rede Way, Great Cornard, Sudbury, Suffolk (0787 76891).

Fantasia Diamond on Amstrad. How do you cross the river or open the window in the caves? Andrew Renouf, 113 Le Squez, St. Clement, Jersey, CI.

Emerald Isle on Atari. How do I cross the river? Where is the identity card? Adrian Carter, 26 Little Norton Lane, Sheffield.

Catacombs on C64. How do you get past the coffin lid, the mega rat and the pilgrims' pathway? Christopher Waite, 16 Sussex Close, Boreham, Chelmsford, Essex.

Twin Kingdom Valley on C64. Where is the giant, the silver dagger and the staff? Christopher Waite, 16 Sussex Close, Boreham, Chelmsford, Essex.

The Hobbit on BBC. How do I get out of the goblin's dungeon? J. P. Temprell, 3 Tiggington Avenue, Church Warson, Mansfield, Notts.

Crystal of Chantie on Spectrum. How do I get the magic staff out of the rock? Steve Richmond, 8 Pulborough Way, Flansham, Middleton on Sea, Bognor Regis, Sussex.

Classic Adventure on C16. Cannot find way to get past temple. P W C Weaver, 476 Mutton Lane, Potters Bar, Herts.

Bored of the Rings on Spectrum. Where is the pepper? Val Douglas, 105 Gladstone Road, South Wiltshireborough, Ashford, Kent.

Exodus Ultima III on C64. How do you increase magic points for spells C and above? Where is the exotic arms? I have found the city of dawn and 7 dungeons. S G Rimmer, 4 Bartlett Close, Preston, Hull.

Bored of the Rings part III on Spectrum. Have got map. How do I get out of the maze? Do I have to open desk in office, and if so, how? Peter Harwood, 8 Haggie Avenue, Holy Cross, Wallsend, Tyne and Wear.

Twin Kingdom Valley on BBC. How do I kill the witch and dragon in the castle? J P Temprell, 3 Tiggington Avenue, Ols Church Warsop, Mansfield, Notts.

Woodbury End on Electron. How do I get out of the darkened room? Ingrid Legat, 8b Yarborough Close, Godshill, Isle of Wight.

Ground Zero on Spectrum. Where is the battery and the shelter? Other help appreciated. Christopher Hallam, 43 Duke Street, Cotmanhay, Ilkeston, Derbyshire.

Yalhalla on Spectrum. Cannot find third quest object - Skornir, Harold Silander, 13 Craiglockhart Grove, Edinburgh. PS Can help on Tyr Na Nog, Dun Darach and Hobbit.

Mindshadow on C64. Can't get off the island. G Silver, 383 Bastable Avenue, Barking, Essex.

Snowball on BBC/Spectrum. What is the code for the crew members' coffin? What floor is it on, and what next? J Haslam, 6 Sittingbourne Avenue, Bush Hill Park, Enfield, Middx.

Twin Kingdom Valley on Spectrum. At the end, what do I have to take where to end the adventure? John W Rundle, 28 Western Road, Aldershot, Hants.

Bored of the Rings on Spectrum. Where are the magic scissors in part three? R Hill, 14 Alexandra Road, Margate, Kent.

Emerald Isle on Amstrad. How do you get past pile of plectrums? What do you do at the statue and the monument? P Walker, 41 East Leys Court, Moulton, Northants.

Sub Sunk on Amstrad. Where do I find the acid? How do I get the pill out of the bottle? P Walker, 41 East Leys Court, Moulton, Northants.

Sherlock on Spectrum. How do I get to Old Mill Road? Colin Barker, 88 Oaktree Grove, Gipton, Leeds 9.

Heroes of Karn on Amstrad. What do I do with the tinderbox? How do I get out of the dungeon, and what's the frog for? Roger Wilson, 7 Gawthroppe, off Dukes Brow, Blackburn, Lancs.

Final Mission on Spectrum. Where is the key to the second iron door? A D Ainslie, 17 Muirhouse Road, Motherwell, Lanarkshire, Scotland.

Questprobe II Spiderman on Spectrum. I want to know how to stop Electro and Mystic. Can help on Hulk. Adrian Carter, 26 Little Norton Lane, Sheffield 8.

Planet of Death on Spectrum. How do I get past the force field and how do I dance to the music played? D Roper, 13 Coalbrook Avenue, Woodhouse Mill, Sheffield.

Charts

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All figures compiled by Gallup/Microscope

Top Twenty

1	(1)	Commando	(Spectrum/C64)	Elite
2	(-)	Yie Ar Kung Fu	(Spectrum/Amstrad/BBC/MSX)	Imagine
3	(5)	They Sold A Million	(Spectrum/C64/Amstrad)	Hit Squad
4	(2)	Elite	(Spectrum/C64/BBC)	Firebird/Acornsoft
5	(4)	Rambo	(Spectrum/C64)	Ocean
6	(7)	Formula One Simulator	(Various)	Mastertronic
7	(-)	Little Computer People	(Various)	Activision
8	(9)	Computer Hits (10)	(Various)	Beau Jolly
9	(11)	Way Of The Exploding Fist		Melbourne House
10	(10)	Back To Skool	(Spectrum)	Microsphere
11	(13)	Finders Keepers	(Spectrum, C64, Amstrad)	Mastertronic
12	(13)	Winter Games	(C64)	Epyx/US Gold
13	(-)	Rockman	(Spectrum/C64/Vic20/C16)	Mastertronic
14	(8)	Tomahawk	(Spectrum)	Digital Integration
15	(14)	Monty On The Run	(Spectrum/C64/Amstrad)	Gremlin Graphics
16	(12)	Beach Head 2	(Spectrum, C64, Amstrad)	Access/US Gold
17	(17)	Frank Bruno's Boxing	(Spectrum, C64, Amstrad)	Elite
18	(-)	Gyroscope	(Spectrum/C64/Amstrad)	Melbourne House
19	(15)	BMX Racers	(Spectrum, C64/C16)	Mastertronic
20	(-)	Tutti Frutti	(Atari/C16)	Mastertronic

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Readers' Chart No 54

1	(6)	Elite	(Spectrum/C64/BBC/Electron)	Firebird/Acornsoft
2	(1)	Way of the Exploding Fist	(Spectrum/C64/Amstrad/Melbourne House)	Melbourne House
3	(4)	Monty on the Run	(Spectrum/C64)	Gremlin Graphics
4	(2)	Fairlight	(Spectrum)	The Edge
5	(-)	Winter Games	(C64)	Epyx/US Gold
6	(-)	They Sold A Million	(C64)	Hit Squad
7	(5)	Red Moon	(Spectrum/C64/Amstrad/BBC/Electron)	Level 9
8	(-)	Commando	(Spectrum/C64)	Elite
9	(10)	Flight Simulator II	(C64)	Sub-Logic
10	(10)	Finders Keepers	(Spectrum/C64/Amstrad)	Mastertronic
	(10)	Bored of the Rings	(Spectrum/Amstrad)	Delta 4/Silversoft

Winning Phrase No 54: "Snow threat destroys pig flight hope" from Graham Smith of Leeds who receives £25. Honourable mention to "Hypersports - self explanatory" from R Robertson, of Mossend, Lanarkshire.

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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.

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New Releases

UNLUCKY 13

Friday the 13th the computer game is, as you can hardly fail to have noticed, the latest release from Domark. Domark seem to be trying to claim that the game is, simultaneously, gory and fun for all the family.

It's fair to say that the game is no bloodier than many other games and won't offend most people. It's also fair to suggest that Domark would quite like to imply that it's very gory to the kids who will buy it (goryness is a very attractive concept to little kids), but are keen to suggest that it's not at all nasty in any way to the paranoid owners of the retail chains who are worried what Mr and Mrs Ordinary might think.

Anyway, away with all this silliness, *Friday the 13th* is not really a very good game and if it were not called *Friday the 13th* but instead titled *Crazy Christoph* it would sell around three copies. It features moderately wacky, rather small and undistinguished graphics, depicting the various characters who get killed for no particular reason, and sort of 3D graphics showing the area around the Crystal Lake holiday camp complete with forests and old churchyards.

The idea is that you have to



find the various members of the teenage party and lead them to safety. This involves finding a cross which represents safety and placing it in a location where the group can gather. Once touched, they make their jerky way to the safe place. However, in the time it takes to collect everybody, those who have already made it to the sanctuary may get bored and wander off. There is also the problem of discovering which character is Jason, a fact that doesn't become obvious until he (or she) actually tops someone (complete with blood curdling digitised scream). It is not a good idea to tell Jason where the sanctuary is.

You also get to attack Jason yourself, or at least defend

yourself, by picking up one of ten weapons which are lying around. This can lead to amazing low res fights in which it's almost impossible to see what's going on.

I found it all fairly dull, although the chasing about might entertain some people. If it wasn't called *Friday the 13th* it would be a budget game and if its gory bad taste and jokes you're after, try Creative Computing's *Mad Doctor* instead.

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ENTERTAINING

Bruce Everiss, industry, er, figure has a new software house called Everiss Software and has just released a zap zap game for the BBC B called *Wet Zone*.

Now I had grave doubts about a game called *Wet Zone*, but in fact it proves to be, more or less, *Arcadia*, in its time about the best plain pow-pow-pow game on the Spectrum. No prizes for innovation or inventiveness then. On the other hand, it's still a fairly entertaining game and there are some pretty nifty,

largish sprites to represent the bizarre hoards of aliens.

You have a mega spaceship and armed only with twin photon laser blasters must clear the skies of an assortment of umbrellas, little squiggly objects and other household items that form the aforementioned hoards. It's quite fun actually and is colourful and fast, it's also (relatively) cheap.

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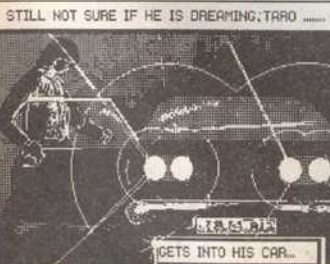
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The Rogue Program



New Releases



ACCEPTABLE

QL Adventure is a home grown, low budget release for the Spectrum. It combines two almost totally incompatible concepts, 1) a Spectrum adventure from a small independent company, 2) not being written with the Quill. This means that it does, at least, not look like every other adventure but is written mostly in Basic instead.

To be fair the game moves along quite quickly, the graphics are drawn well and within the limits of standard Basic shapes are quite effective. It also has a good deal of wit and irreverence which can redeem almost anything.

On balance I'd say I found it a bit slow but the wacky plot, strange locations and in-jokes make this a reasonable, acceptable effort in the style of Fergus McNeill and the *Bored of the Rings* crowd.

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IT WORKS

What the CX5 needed, everyone said, was a real time sequencer, so that it could be used as a live performance instrument and as a controller of other instruments. The Music Composer cartridge, though powerful, was hardly flexible enough to implement instant changes and anyway required a fairly sound knowledge of notation.

The first *Real Time Sequence/Recorder* is now available and comes not from Yamaha but Digital Music Systems - that may explain the fact that it costs £86. For those of us already enamoured of the machine it's obviously a welcome release which represents quite a feat of technical information wheedling out of the obsessively secret Yamaha.

The good news about the package is that it does everything it's supposed to and is relatively easy to use (thankfully, since the manual is minimalist to say the least).

The bad news is that's all that can be said of it; the actual design and presentation of the package is pretty poor.

You can think of the program as analogous to the Composing program except that you don't notate the music you wish to enter, you simply play it on the Yamaha keyboard. The actual sounds

PEERLESS ADVENTURE

OK, pixie hats on, mighty axes of Tharg wielded, ancient quest mode set to 'accept' and obscure bugs discovered. *Lord of the Rings* (part one) is here! In a package almost as mighty as the very quest itself you get two tapes, an instruction manual and the first volume of Mr T's very, very long book.

Frivolous good news is that absolutely nobody sits down and sings about anything (at least not in the first section that I've been able to play through). Real good news is that *Lord of the Rings* is everything every Hobbit addict hoped for.

Though there are graphics about as frequently as in *The Hobbit*, they are quite plain and are clearly not intended to be of equal importance to the text, but merely icing on the cake. The cake, on the other hand is one of the most advanced, original and involving text adventures you'll ever play.

Lord of the Rings Part 1 is divided into two tapes, one of the sides containing a special beginners' version of the game which reduces the problems and provides hints where they are wanted. The main adventure would seem to be as hard if not harder than *The Hobbit*.

You can say things in a variety of ways and mostly it



will understand you; phrases can be linked by *and*, giving you plenty of scope for time-saving multi-instruction. An exciting new feature found in *Lord of the Rings* is a multi-player option where up to four people can choose to be different members of the company of the ring (I'd like to meet someone who chooses to be that loyal rustic and all-round sycophant Sam, though). The situation is presented from the viewpoint of each of the characters, giving extra insight into the environment.

A lone player may also choose to take the part of several different characters - it can be useful in keeping the ring safe if someone is

to be used to play each phrase may be the Yamaha presets, sounds constructed using the FM cartridge, or one of 100 presets contained

within the Real Time Sequencer (mostly these are not terrifically exciting it must be said - perhaps 10 are really useful).

This Week

Program	Type	Micro	Price	Supplier	Transformers	Arc	Commodore 64	£8.95	Ocean
Bridge Player	S	Amstrad	£14.95D	CP Software	Yabba Dabba Dool!	Arc	Commodore 64	£7.95	Quicksilva
Bridge Player 3	S	Amstrad	£12.95	CP Software	Zoids	Arc	Commodore 64	£8.95	Martech
Endurance	S	Amstrad	£7.95	CRL	Alien 8	Arc	MSX	£9.95	Ultimate
Big League Soccer	St	Amstrad	£6.95	Leasuretime	Knight Lore	Arc	MSX	£9.95	Ultimate
American Road Race	Arc	Atari	£9.95	English Soft	Nighshade	Arc	MSX	£9.95	Ultimate
Mediator	Arc	Atari	£8.95C	English Soft	QL Flight	St	QL	£19.95	Microdeal
Mediator	Arc	Atari	£12.95D	English Soft	Cosmos	Ut	QL	£13.00	Talent
Ram Disc/Print School	Ut	Atari ST	£24.95	Talent	Desperado	Ad	Spectrum	£3.99	Cent Solutions
Crack II!	Ed	BBC	£9.95	Mirrorsoft	Lord of the Rings	Adv	Spectrum	£15.95	Melbourne House
Giddy Game Show	Ed	BBC	£9.95	Mirrorsoft	Antteroo	Arc	Spectrum	£3.99	Cent Solutions
Commando	Arc	Commodore 64	£9.95	Elite	Cyberrun	Arc	Spectrum	£9.95	Ultimate
High Noon	Arc	Commodore 64	£9.95	Ultimate	Dungeon Dare	Arc	Spectrum	£3.99	Central Soins
Now Games 2	Arc	Commodore 64	£8.95	Virgin Games	Now Games 2	Arc	Spectrum	£8.95	Virgin Games

killed or captured.

There are reams and reams of descriptive text in every location, it's nicely presented with a redesigned character set, and it also echoes the book closely. On the question of faithfulness of the game to the book, there are obviously some variations. There would be little point to the game if all you had to do was re-enact the book.

Lord of the Rings fans will find all the characters they know and love/hate, including the dubious Tom Bombadil whose interest in mushrooms always seemed to me to smack of chemical experimentation of a most illegal sort.

Adventure addicts will find a sophisticated text adventure without peer in terms of scope, imagination (even if its someone else's), and involvement. Here at last is the definitive Christmas present to buy anyone with a Spectrum this year, even if they usually use it for stock-taking.

It should be out on a lot of other machines as well.

Program *Lord of the Rings*
Price £15.95
Micro Spectrum
Supplier Melbourne House
 Castle Yard House
 Castle Yard
 Richmond
 Surrey TW10 6TF

You work with 'phrases' - this represents a section of music, which may be mono or polyphonic, which is assigned to a part in the music.

The part represents one of the up to eight musical voices you may play simultaneously. Creating music works like this: pick a phrase number and assign it a number of bars, then specify how many notes polyphonic it needs to be.

Select a time signature, play your phrase along with a metronome beat that counts out the beats in the bar. The complete phrase is then inserted in one or more parts, using a simple up and down cursor mechanism and a long line of phrase numbers. So for example, Part One might begin 001, 004 where 001 is a twelve bar theme and 004 is a twelve bar theme.

Any phrase may be inserted anywhere as may be rests of different lengths. You may also use Midi channels in the parts, sending the note information out to a separate musical instrument.

The faults with the system are these: you have to work out very closely how the music will work in advance and remembering what phrase number is what and having to specify the number of bars in advance are both irksome. The presentation is really 'bare bones'; more could have been done with the MSX graphics facilities than this essentially plain, graphic design lacking, presentation.

Good points: a Quantisation feature that corrects your mistiming, playing to the nearest specified note value, eg, one eighth of a beat. It works and despite the drawbacks is easy to use provided you plan the music carefully in advance. With nothing else

on the horizon, to my knowledge, I'd recommend the package, albeit with plenty of reservations.

Program *Real Time Sequence/Recorder*
Price £86
Micro Yamaha CX5
Supplier Digital Music Systems
 182 Wilmslow Road
 Head Green
 Cheshire
 SK8 3BG

SOME VIRTUES

God knows there are any number of motor racing games around at the moment for the Commodore 64, yet there are still some virtues to the latest one, *Scalextric* from Leisure Genius.

It's based, obviously, on the famous car racing game which filled and probably still fills the bedroom floors of teenagers everywhere.



Scalextric the computer game is basically *Pole Position II* with a nicely designed option to construct your own tracks using track pieces rather like those which form the usual *Scalextric* sets (alas no bridges though).

The track design section used a simple icon system to pick out a track piece from a 'box' and place it in position, thus building a complete layout.

The track includes such nasty sections as Chicanes, so it's possible to create utterly fiendish circuits.

Actually playing the game presents two views - from behind each of the two competing cars, shown on the top and bottom of the screen. The screens move independently and the other car is shown in appropriate perspective according to how far away it is. There is a reasonable amount of scenic detail, though nothing astounding, but the sense of speed is well done.

In fact this is really a car racing game for those who don't usually like them; it isn't hard to play, and is difficult to crash. You don't need to worry all that much about lines of approach and correct cornering - there are no gears to worry about either. *Revs* fans will find it simplistic, but for those who want a simple car race game, this has plenty of speed and excitement and is well presented.

Program *Scalextric*
Price £9.95
Micro Commodore 64
Supplier Leisure Genius
 3 Montagu Row
 London
 W1H 1AB

Transformers	Arc	Spectrum	£7.95	Ocean
Winter Sports	Arc	Spectrum	£8.95	Electric Dreams
Zoids	Arc	Spectrum	£7.95	Martech
Crack It!	Ed	Spectrum	£7.95	Mirrorsoft
Giddy Game Show	Ed	Spectrum	£9.95	Mirrorsoft
Just Imagine	Ed	Spectrum	£3.99	Central Solution
Their Finest Hour	S	Spectrum	£9.95	Century

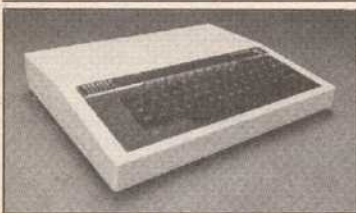
Key: Ad - adventure S - strategy-simulation
 Arc - arcade Ut - Utility

Ed - education

Activision, 15 Harley House, Marylebone Road, London NW1, 01-486 7588. **CP Software**, 10 Alexandra Road, Harrogate, N. Yorkshire, HG1 5JS. **CRL**, CRL House, 9 Kings Yard, Carpenter's Road, London E15 2HD, 01-533 2918. **Central Solution**, 500 Chesham

House, 150 Regent Street, London W1R 5FA, 01-624 1389. **Electric Dreams**, 31 Carlton Crescent, Southampton, Hampshire, SO12EW. **Elite**, 55 Bradford Street, Walsall WS1 3QD, 0922 611215. **English Soft**, 1 North Parade, Parsonage Gardens, Manchester, M60 1BX, 061-835 1358. **Martech**, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE, 0323 768456. **Melbourne House**, 39 Milton Trading Estate, Abingdon, Oxon OX14 4TD, 0235 835001. **Microdeal**, 41 Truro Road, St. Austell, Cornwall, PL25 5JE, 0726 73456. **Mirrorsoft**, Mirror Group, Holborn Circus, London EC1P 1DQ, 01-353 0246. **Ocean**, 6 Central Street, Manchester, M2 5NS, 061-832 6633. **Quicksilver**, Palmerston Park House, 13 Palmerston Road, Southampton, Hampshire SO1 1L. **Talent**, Curran Building, 101 St. James Road, Glasgow G4 0NS, 041-552 2128. **Ultimate**, Ultimate Play the Game, Ashby de la Zouch, Leicestershire, LE6 5JV, 0530 411485

This Week



A dead language

There are a number of analogies which can be drawn between the ancient and dead language of Latin and more recently developed computer languages.

Some of the parallels are complementary, others are darkly portentous

Latin is a precise language with strict rules of grammar. To render a sentence in good Latin is to know the feeling of absolute success. The final product is either correct and its own reward or it is wrong and its own chastener. The satisfaction obtained from getting something perfect in every detail is rarely found in the arts where a search for perfection may actually inhibit expression and where value judgements are imposed in measuring success. Computer languages, with their demanding syntax and finite vocabulary, are seen as modern versions of Latin and intrinsically valuable for the discipline they impose upon the mind. This positive analogy is often quote in support of computer studies in school. The analogy I prefer is the one which questions the present supremacy of BBC Basic in schools.

In the Middle Ages, when the European educated class was so small that no one country's literati could survive in isolation, an international language was essential for the dissemination of ideas. Latin was eminently suitable as it was already the language of the Church, and thus known to all who were educated by the Church. It was a classical language much revered for its antiquity and origins as the language of Imperial Rome and, as a dead language, it was free of political innuendo. That is not to say that

it did not develop. Many 'new' Latin words were coined in medieval Europe; in the main they were words from newer, more dynamic, languages amended to conform with Latin syntax. However, progress in science and the humanities eventually stretched the essentially inflexible of Latin to breaking point. At the same time the spread of literacy and knowledge, freed from the monopoly of the Church, encouraged people to write about the weightier matters of the day in their own, more accommodating, languages. Although never replaced in status or in universality by a single language, Latin lingered on as an increasingly irrelevant school subject and has now just about disappeared from the mainstream of education.

Today, the computer literate of Europe far outnumber the intelligentsia of the Middle Ages and represent a greater proportion of the total population. Basic, the language of the school computer room, is supreme but the increasing demands for complex data constructs, fully structured programs and rapid execution of computing tasks cannot forever be met by merely tinkering with the language. Basic is inherently slow and has very few worthwhile applications. Mainframe manufacturers have their own languages and the microcomputer software houses work mainly in C or assembler code.

And so the Latin trap is this. We teach our children a computer language and call them compute literate. The dialect, BBC Basic, is old and unchanged for many years but it is reversed due to its antiquity and its origins as the language of what was once a very advanced desktop computer. However, the up-start languages such as Locomotive Basic far behind in terms of power and in terms of sales to the home user, but not so far in terms of status. Beyond the Basic dialects, the high-powered compiled languages, led by C, are the future for small business micros.

Like Latin, BBC Basic is likely to endure only as an increasingly irrelevant school language.

Mike Lloyd

Puzzle No 187

Here is an account of my visit to the shops last Saturday:

My first call was at the grocers where I spent exactly one third of the money I had on me. On leaving the grocers I bumped into Tom (to whom I owed a pound). As I was not certain how much money I would need for the rest of my shopping I gave Tom 50 pence and promised him the rest later.

I then visited the butchers where I spent half of the money I had left. After this I went straight to the newsagent where I spent half of what I had spent at the grocers, before making my final call at the chemists where I spent one third of what I had paid the butcher.

Just outside the chemist's shop I saw Tom again, and as I had just 50 pence left I handed it over to him to clear my debt.

Can you say how much I started out with?

Solution to Puzzle 182

A = 79 B = 13 C = 43

```
10 FOR B=10 TO 31
20 B=B*B
30 B=STR$(B)
40 S=STR$(S)
50 IF MID$(B,1,1)<MID$(S,1,1) THEN GOTO 200
60 FOR A=22 TO 99
70 T=AAA
80 T=STR$(T)
90 C=STR$(C)
100 C=STR$(C)
110 IF MID$(T,1,1)<MID$(S,2,1)OR MID$(T,4,1)
    <MID$(C,2,1) THEN GOTO 190
120 U=AB
130 U=AB
140 U=STR$(U)
150 V=STR$(V)
160 IF MID$(U,1,1)<MID$(S,3)THEN GOTO 190
170 IF MID$(V,4,2)<MID$(C,4,1) THEN GOTO 190
180 PRINT A;B
190 NEXT A
200 NEXT B
```

Using the program we can test for the values of A and B. We know that B is in the range 10 to 31 as it has a three-digit square, and A is in the range 32 to 99 as it has a four-digit square. By checking the relevant digits where the various numbers interlock, the values of A and B can be easily identified. The remaining value of C is then readily calculated by inspection as only its 'tens' digit is still unknown.

Winner of Puzzle No 182

Despite a misprint in the clues, Dr D. F. Kinane of Dundee can be congratulated for finding the correct solution, and will be receiving £10.

Rules

The closing date for Puzzle 187 is January 8.

The Hackers

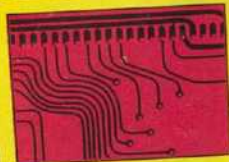


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