POPULAR Computing WEEKLY

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Vol 4 No 32

Atari pressure may force Sinclair into *PCW* launch

BOTH a new Sinclair 128K Spectrum model and Atari's 260ST now look likely to be shown for the first time in the UK at this year's *Personal Computer World* show in September.

Sinclair's 128K micro (see *Popular Computing Weekly*, May 16) is thought to be priced between £175 and £200 and be based on technology developed in conjunction with Timex US for its TS2000 micro, launched in the US over two years ago.

Atari's 16-bit 260ST model features a built-in disc drive, is expected to cost around £360 and should be in the shops in October.

The Spectrum 128K will be software compatible with the existing Spectrum and Spectrum Plus models, yet offer a number of additional features.

It has 128K Ram, bank-switched in two blocks, with a facility for further expansion, and is thought to have built-in three-channel sound using the AY38912 sound chip, three additional display modes including a virtual screen facility, high-resolution display and 64-column text mode, built-in joystick ports and the ability to control an 80-column printer.

The Spectrum 128K is expected to be in the shops in late-September or early October. **cont on page 4 ▶**

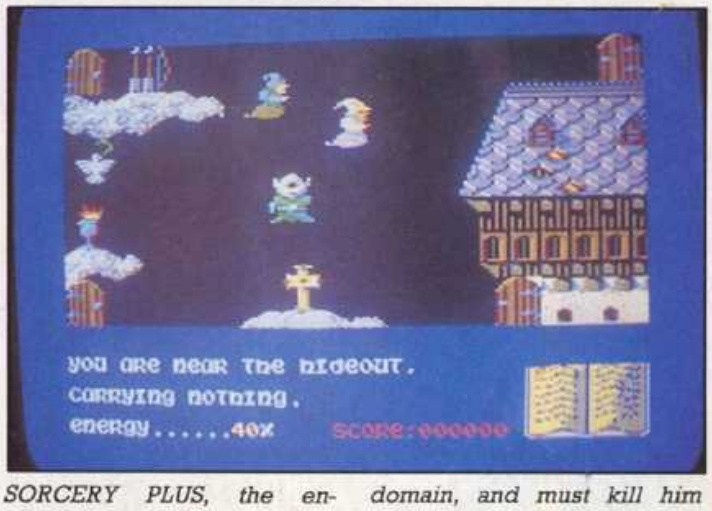
Support grows for new 16-bit micros

BOTH COMMODORE and Atari are working hard to ensure that their new 68000-based machines, the Amiga and ST, do not suffer from lack of software at launch.

Commodore-Amiga has announced that around 50 titles for the Amiga should be available by the end of the year in the US. Some of these will be marketed under the Commodore-Amiga name, but many are in development from third-party software companies. As many of these titles as possible will be brought to this country for Amiga's UK launch at the beginning of 1986.

◀ New Amiga

Atari, meanwhile, has delivered over 100 development 520STs to software houses, and hopes that up to 80 companies will exhibit ST software at September's **cont. page 4 ▶**



SORCERY PLUS, the enhanced version of Virgin's acclaimed Amstrad title Sorcery, *will soon be available on disc under the Amsoft Gold label, priced at £13.95.*

Sorcery Plus *comprises the original* Sorcery, *with extra screens incorporated, and 35 further screens making up a second part to the game.*

In the new part, you find yourself in the necromancer's domain, and must kill him with kindness – surrounding him with hearts found in the screens.

Sorcery Plus *is so far the only non US Gold title on Amsoft Gold – the other games scheduled being* Beachhead, Raid over Moscow, Bruce Lee, Zaxxon, Buck Rogers, Congo Bongo, Tapper, Spy Hunter *and* Up and Down.

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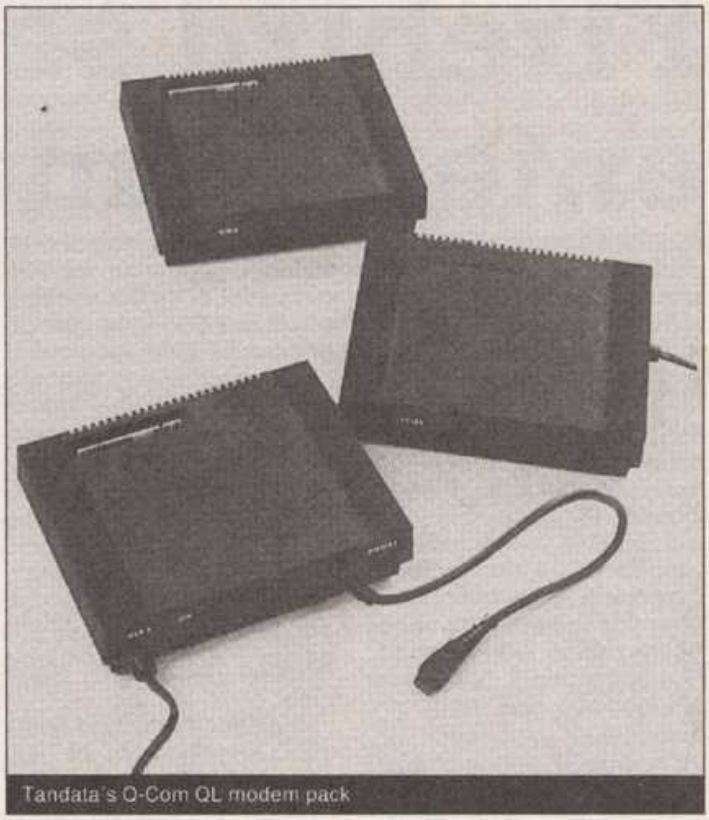

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EDITORIAL

Who, eighteen months ago, would have put money on Amstrad to make a go of its entry into the home micro market?

Lynx and Dragon had gone and Oric was having problems. Sinclair had never looked stronger and Commodore was claiming most of what was left.

Having created the whole micro circus single-handedly four years earlier Sinclair had always forced the pace and when Amstrad announced that its micro would be Z80-based it seemed doomed to failure. The 68000 revolution was just around the corner.

That that revolution didn't happen must also be laid at Sinclair's door. For some reason Sinclair took fright and eighteen months before any of his competitors – and four or five months too soon – he launched the QL. For whatever reason – the hardware design, the operating firmware, the teething troubles – the QL never performed as any Quantum Leap should. And because of that he let in Amstrad, which grasped the opportunity with both hands.

The Spectrum Plus may have been the "first product of Sinclair The Marketing Company". But it was also a weak effort. Instead, Sinclair should have launched the machine it now may release this autumn – the Spectrum 128K. All the work had already been done. The Timex 2000 machine – the unsuccessful American version of the Spectrum – had bank-switching required for the 128K, a three-channel sound chip and higher resolution graphics. But instead we got the Spectrum Plus. The mistake was a costly one for Sir Clive.

Now with Sinclair at an all-time low, Amstrad is on a high. So far Amstrad has shied away from meeting Sinclair head-on, but it must now be looking to compete directly with the Spectrum. It wouldn't take much for Amstrad to produce a version of its CPC 464 without monitor or cassette player at a price that Sinclair would now find very hard to match.

For almost a year now, Sinclair has been following rather than leading.

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Computer Trade Association Magazine of the Year

Firebird set to enter US market

FIREBIRD, British Telecom's games software publishing arm, may enter the American software market.

"We have conducted extensive research on the US market, and we are looking at the possibility of opening an office in the New York area," said Firebird's Herbert Wright.

If Firebird goes ahead with its plan it will become only the fourth British software company to have a US office. Of the others – Mastertronic, Quicksilva and Softek – only Mastertronic has made any real impact.

Firebird is also to publish games for the new US micros, the Atari 520ST and Commodore Amiga. The company has begun development of an arcade-style title for the new machines. With the working title of *Star Glider* the game is rather like *Elite* but without the trading aspect and will feature fully three-dimensional images in colour, rather than line vector drawings.

● Meanwhile, the conversions of Ultimate's *Sabre Wulf* and *Knight Lore* for the Commodore 64, for which Firebird licensed the rights earlier this year, are nearly finished. "We are hoping to have them out within this month," confirmed Herbert, "but that's not 100 per cent definite – we want to get Ultimate's seal of approval on the conversion work."

Amiga and ST support

◄ continued from page 1

Personal Computer World show.

The Amiga packages range from entertainment to languages and business packages.

Infocom hopes its Amiga titles will be ready next month, including the *Zork* trilogy, *Suspect*, *Deadlines*, *Planetfall*, *Suspended* and *The Hitchhiker's Guide to the Galaxy*.

Also in the entertainment field, Electronic Arts is converting its range.

Some programs are designed specially to take advantage of the Amiga's graphic and sound capabilities. Cherry Lane Technologies has written *Harmony*, a musical accompaniment package, and has *Scorewriter* a musical score printing package in development for January 1986. *Musicraft* from Everywave will turn the Amiga into a four-voice synthesiser and sequencer when it is launched in October.

The Island Graphics Corporation has produced *Presentationcraft*, a business graphics package intended to be particularly useful for business presentations, *Moviecraft* an animation package, and *Graphicraft* a painting and art program.

However, Amiga software is not going to be cheap. "I would think that prices will be in the region of between $40 (£30) and $150 (£110)," said a Commodore-Amiga spokesman.

For the ST machines, Atari is planning a large display at the *Personal Computer World* show with software houses invited to show their ST software as part of Atari's stand.

Firebird, Ocean, Talent Computer Systems and Metacomco are among the companies planning to accept Atari's invitation.

The list of companies working on ST software now includes Llamasoft, Mirrorsoft, English Software, GST, Intelligent, Microdeal and Softek.

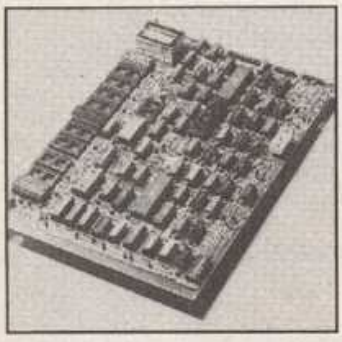
"The 520ST will have a wider range of software than any other micro at launch," claimed Rob Harding of Atari UK.

Relaunch for the Nascom 2

ONE OF the earliest home computers ever to be produced in this country – the Nascom 2 – has been relaunched.

The Nascom was one of the computer industry's first casualties, but the original micro in kit-form first went into production even before the Sinclair ZX80.

Nascom 2 is now being offered in board-form only, al-



though manufacturer Lucas Control Systems is offering additional memory, graphics controllers, and hard and floppy disc controllers as extras.

The basic board costs £310. Details from Lucas at Welton Road, Wedgnock Industrial Estate, Warwick CV34 5PZ (0926 497733).

Amstrad to release comms interface

AMSTRAD is to release an RS232 serial interface add-on for its CPC micros which will enable them to be easily linked up to a modem.

The new peripheral will sell for around £50, and will work on the CPC464, CPC664 and CPC6128.

It will be launched in "a couple of weeks", an Amstrad spokesperson said.

Ocean plans range of business titles

OCEAN is likely to be publishing "cheap and cheerful" business software, says managing director David Ward.

The decision is a departure for the company which – along with its other off-shoots Imagine and US Gold – has so far only published entertainment titles.

"Now that there are retail chains like First Computer around which cater specifically for business users, there is an opening into the market for us," commented David Ward.

"We'll probably be launching a range of CP/M material first, and then license them in the States," he suggested. Interestingly, he added that he was thinking about CP/M games as well as straight business software – "I see a cross-over," he said.

Atari 260ST and Spectrum 128K

◄ continued from page 1

A Sinclair spokesman denied that any new Sinclair model would be previewed in September. "We will be showing the QL and its latest software and the Spectrum Plus pack, but I'm not aware of any new products being shown," he said.

Atari's 260ST model, to be shown in this country for the first time at the show, is the company's 256K version of its 68000-based ST range, featuring a built-in 3½inch disc-drive (see *Popular Computing Weekly*, June 4).

The US price for the model has been fixed at $499.

"We will be showing both the 260ST and our CD Rom player at the show," confirmed Rob Harding, Atari UK's sales and marketing manager.

"We've not yet finally decided which version of the 260ST, the stand alone model or the one with a built-in disc drive, to put out, but I suspect it'll be the built-in drive version that will appear. We're hoping to launch the CD Rom player here before the year end."

Greatest hits tape released by Virgin

VIRGIN is to release a compilation of six best-selling games on one cassette this month, entitled *Now Games*.

"We've taken a leaf out of our record company's sleeve, and produced a sort of software hot hits," explained Nick Alexander, Virgin Games' general manager.

The six titles on *Now Games* are *Brian Bloodaxe* (The Edge), *Lords of Midnight* (Beyond), *Strangeloop* and *Falcon Patrol II* (Virgin),

Virgin boss Nick Alexander

Arabian Nights (Interceptor) and *Everyone's Wally* (Mikro-Gen).

The package will be available for both the Spectrum and Commodore 64 and will retail for £8.95.

"Quite a few companies are working on compilations at

Strangeloop

the moment," said Nick Alexander. "I think after seeing the success of *Soft Aid*, we were convinced that compilations could be popular, although obviously *Soft Aid* was a special case."

The individual companies will each get royalties on sales of *Now Games*, and Virgin hopes to bring out a series of compilation tapes from various companies embracing various themes.

Budget titles dip below £1

BUDGET software prices are continuing to fall with a new range being released – costing only 99 pence.

Central Solutions has released four titles at that price for the Spectrum.

Crystal Quest is a text-only adventure, *A Tangled Tale* is a graphic adventure and *Valley of the Dead* and *Devils Descent* are both arcade-style games.

Eleven further text-adventures are planned by Central Solutions for release in August, also at 99 pence, and a QL adventure at £2.99.

Details from Central Solutions, 500 Chesham House, 150 Regent Street, London W1 (01-624 1389).

Super titles for Christmas

BEYOND HAS announced five new titles to be out by Christmas, including the much heralded *Superman*, licensed from US firm First Star.

Superman will be an arcade-style game with the player as Superman fighting against his arch enemy Darkseid. The game will feature sophisticated animation and be released for Commodore, Atari, Amstrad and Spectrum machines.

The other titles include *Nexus*, which is the name of both game and label, launched as a range of titles written by Paul Voysey and Tayo Olowu, authors of *Psytron* and *Psi Warrior*. *Nexus* is a graphic adventure for the Spectrum and C64.

Iron Heroes, a futuristic gladiator fight by the Shadowfire team Denton Designs, will be on the Monolith label, for the C64 and Spectrum, and *Enigmaforce* and *Eye of the Moon* on Beyond. The latter is the final part of Mike Singleton's *Lords of Midnight* trilogy.

Beyond also hopes to bundle the full trilogy as one package, although the details have yet to be finalised. All the games will cost £9.95.

BORED with the BBC MICRO?

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Letters

Annoying

I've been reading your magazine for a month now and find the style of your reviews annoying.

Would reviewers kindly remember that we readers are not interested in their opinions, but in their observations from which to formulate our own opinions.

N Jealous
18 Arthur Street
Cardiff

It is difficult to make sensible observations about a program without offering some kind of opinion. Personally, I've always felt that the kind of reviews which don't nail their opinions firmly to the mast usually aren't worth reading.

Mental effort

Your magazine has from time to time printed letters deprecating those who use their home computers for playing games. H G Jones' letter (July 25 issue) is a particularly reprehensible example.

There is nothing inherently unhealthy in playing computer games any more than there is in reading, watching television, listening to music, seeing a film or play: need I go on? All these activities can be entertaining, enlightening and, frequently, educational. Modern computer games have as close an affinity to *Snakes & Ladders, Ludo* or *Mousetrap* as does the Post Office Tower to a mud hut. The board games that I know of which require a serious mental effort can be counted on the fingers of both hands. The only skill involved in the games quoted by H Jones is the ability to count from one to six: they are, in fact, games of almost pure chance. Just try to solve a game such as *Knight Lore* with a similar amount of skill!

No, there is nothing clever about punching a few keys to play a game (I press mine, I do not 'punch', 'hit' or 'strike' – the keyboard lasts longer). The cleverness with many computer games, particularly the modern adventures and arcade adventures, lies in determining the object of pressing the keys, which keys to press and when during the game to press them. I find that playing *Boulder Dash* requires more mental effort than does playing *Reversi*, my favourite board game.

I fail completely to understand why a computer game should be expected to contribute to the computing knowledge of the player. Most are not designed for that purpose, they are designed to entertain and that, I find, they do very well.

I'll stick to zapping rampaging toilet seats.

W Thompson
2 Sandon close
Sandy
Beds

Extra command

Those readers who posses the Amstrad DD-1 disc drive may be interested to know that I have discovered a sixth CP/M direct console command. The command is *'User N'* where *N* is the number of the user that you wish to enter (between 0 and 15).

The DD-1 user manual states that there are only five direct console commands *(Save, Dir, Era, Ren* and *Type)*. This undocumented command may be of use to some Amstrad disc users.

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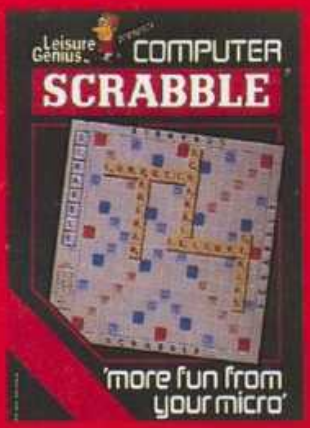

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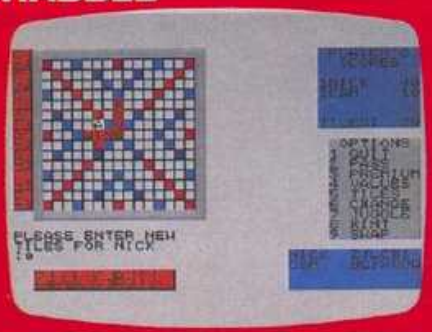

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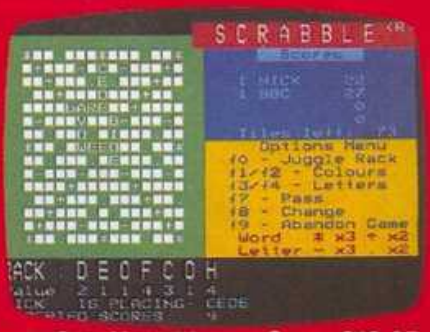

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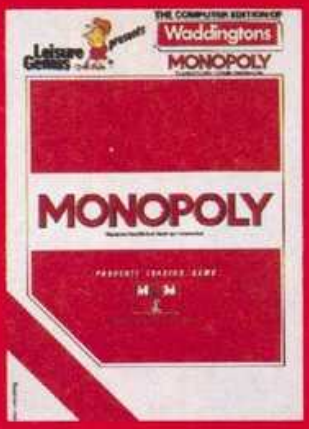

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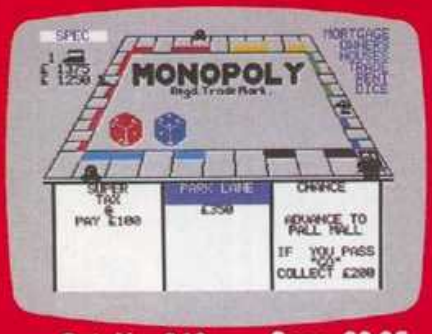

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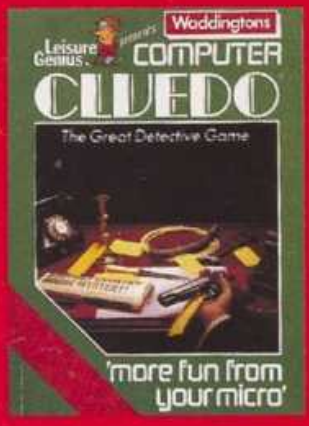

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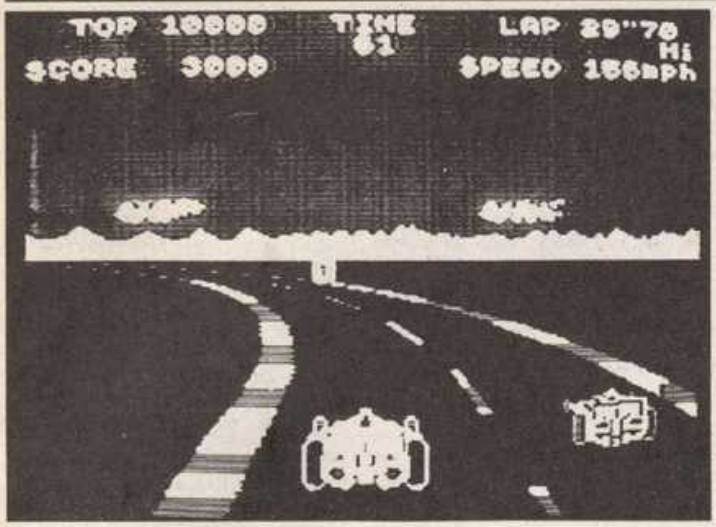
Software Reviews



Random race

Program *Pole Position* **Micro** Spectrum 48K **Price** £7.95 **Supplier** US Gold, Unit 10, Parkway Industrial Centre, Heneage Street, Birmingham B7.

This is another nail in the coffin for those who support the theory that a hit game on one machine will be equally as good once converted to another.

My fears were confirmed by finding the Commodore screen shot on the back of the Spectrum cassette box!

Once loaded, it is soon apparent why. Clearly, this is a sad version of that popular arcade classic that was a hit on the Commodore. All the features of the original are here, the pre-qualifying phase, the race itself, best times and high score tables, etc, but the quality of the programming leaves a lot to be desired. The movement is jerky and the car has no 'feel' to it. As for the other competitors' cars, apart from suffering severe attribute problems, they just appear at random and are passed with ease, hardly the "nerve shattering danger" that was promised on the inlay.

The game may have been good a couple of years back, but nowdays we've all seen the graphics that the Spectrum is capable of (ie, *Chequered Flag*) and this just doesn't do it justice. It's about as entertaining as changing a flat tyre in a storm.

Andy Moss

Time travel

Program *The Amulet* **Price** £2.50 **Micro** Commodore 64 **Supplier** Sentinent Software, Branch House, 18 Branch Road, Armley, Leeds LS12 3AQ.

An unusual marketing policy, this – on one side of the tape is the Spectrum version, on the other is the Commodore program. I'm sure we'll see a lot more of this in the future as companies try to economise.

The object of *The Amulet* is to travel through time in an attempt to locate the seven parts of the shattered amulet. With this in mind, you approach a river. On the bank is a fishing rod. Let's try a spot of fishing. Well, lo and behold! Hooked on the end of the line is a broken, dirty old amulet. After a bit of thinking, you decide to clean it. Before you can say *Popular Computing Weekly*, you are whisked away across the time streams into another distant location and time. How's that for progress?

The Amulet is a traditional, text-only adventure. While the descriptions aren't as detailed and atmospheric as, say, Level Nine's adventures, the author seems to make up for this with plenty of creative flair. On your travels you will come across many weird and wonderful things ranging from giant insects to a farmhouse containing garlic, onions and a book about monkeys. For a change, the adventure doesn't involve lots of monster-bashing, blood and violence (unlike some adventures where you have to kill two orcs before breakfast). The computer also appears to be rather witty and cryptic in places. (For example, it points out what a wally you look carrying a fishing rod across the desert.) In conclusion, a decent adventure at a very reasonable price.

Tom Hussey

Burnt up

Program *Desert Burner* **Micro** Spectrum 48K **Price** £2.50 **Supplier** Creative Sparks, Thompson House, 296 Farnborough Road, Farnborough, Hants.

This is another in the Sparklers budget software range and involves guiding a motorbike along a scrolling road, jumping over lorries, cars, trees and pits, whilst avoiding helicopters which are out to bomb the bike.

Fortunately, on the front of the bike is a fast action cannon which despatches the helicopter with gay abandon.

As the sun in the top right of the screen slowly sinks, day turns into night and the whole process continues, until you finally deliver the mandatory 'secret plans' to a band of freedom fighters.

The trouble with this game is its lack of variety. It becomes boring jumping over the same things all the time.

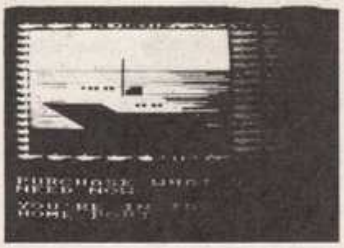
Even allowing for the £2.50 price, it is a disappointment.

Andy Moss

All at sea

Program *North Sea Bullion Adventure* **Micro** Amstrad **Price** £3.95 **Supplier** Kuma Computers, Pangbourne, Berks.

I've always thought that a lot of adventure software is overpriced – there are of course exceptions but often the quality of programming and the amount of development time needed fall far below that of the leading arcade games – so it is a



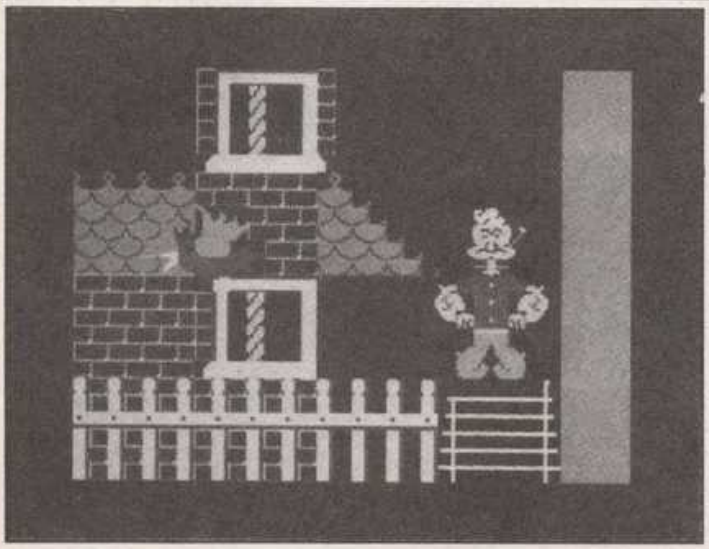
welcome development to see Kuma producing a pair of adventures as the first releases on their budget range.

Shadow of the Bear and *Bullion Adventure* are both written in Basic, both hybrid adventure/strategy games and both written by the same people. I looked at *Bullion Adventure* and found it a reasonably entertaining game. The idea is to locate and loot a shipwrecked boat and to do this involves stocking your ship with your choice of equipment, navigating perilous straits etc. Control of movement is via the cursor keys, and whilst there is text input this is largely limited to a very few options.

Although the strategy elements may give it more potential for long-term play than some adventures, the programming has some unnecessary weak points. It desperately needed someone to sit down and play the thing for a while to produce a list of refinements. The instructions are on screen for *ages*, why no 'press any key' option? The graphics, whilst large and colourful, start to grate when they redraw after every move, even when the picture is the same. The list of things to buy include 'fuel' – type *Buy Fuel*, it says you can't – it's only when you type *Buy Fuel Oil* that it lets you. The game also suffers from overuse of the Random function – too many sudden disasters for my liking.

A few niggles, but not bad for the price.

Tony Kendle



Cartoons

Program *Popeye* **Micro** Spectrum 48K **Price** £5.95 **Supplier** DK Tronics, Unit 2, Shire Hill Industrial Estate, Saffron Walden, Essex.

Did you know that there's a statue to *Popeye* in the USA, erected by the Spinach Growers of America?

Such is the power of the perennial cartoon jack tar in his constant battle for the heart of Olive Oyl against bullying Bluto.

His computer debut was announced some time ago and now appears from DK Tronics who have taken the arcade adventure path, but instead of tiny figures and lots of platforms they've gone for characters who are almost half the screen tall. Although their movement is more jerky than in *Dun Darach* they boast solid colour and avoid most attribute problems. It's all very much like watching a cartoon film.

The 'plot' is suitably faithful too. Popeye has to collect hearts which he takes to Olive who kisses him wildly, so increasing his score. There are also keys to unlock doors (but which particular doors?) and spinach (natch!) which revives our hero when he bumps into Bluto or any other enemy who will bop him.

Now the inevitable 'but'. The trade off for the large characters is lack of screen space. There are several levels of depth but no real way of judging which plane Bluto, et al, are in. Collisions are all too frequent and you'll need all your strategically conserved spinach for situations where KOs are inevitable.

So unless I've missed something this plagues an otherwise interesting adaptation of a cartoon character. Arf, Arf!

John Minson

More Willy

Program *Jet Set Willy II* **Micro** Spectrum 48K **Price** £6.95 **Supplier** Software Projects, Bearbrand Complex, Allerton Road, Woolton, Liverpool 25 7SF.

So what have we here? Not just another clone of Manic Matthew's Moneyspinner but the second coming of Surbiton's most famous (subterranean) son, millionaire Miner Willy.

Firstly feelings of deja vu, because far from being an all new game this is in fact an expansion of the indisputable classic. Here they are again, all those jumping, timing and collecting problems we've grown to know and tear our hair at... maybe even beat by this time. But the mansion has been extended to include previously unreachable areas and even a space ship, which is the nearest piece of shuttle cock (and bull) I've seen all week.

Well, it was heaped with praise in its time but the best of the multitude of imitators have actually added to its charms, so how does *JSW* rate today? I'm pleased to report that it's still as maddeningly addictive as ever. Of course whether the new version is worth purchasing is up to you. The (non-Smith) additions seem neat enough but do they really warrant the purchase of a new game?

If you don't already own an original (where have you been?) or your copy's worn out, I'd say buy. Otherwise there are lots of new, equally worthy programs. Still, there are probably hundreds of you waiting to work out the *Pokes* for this new version!

John Minson

Body blows

Program *Frank Bruno's Boxing* **Price** £6.95 **Micro** Spectrum 48K **Supplier** Elite Systems Limited, Anchor House, Anchor Road, Aldridge, Walsall, West Midlands.

Mmmf nngr rgrf... sorry, I'll take my gum shield out! Well, no sooner has your heavyweight reviewer taken on Gremlin's *Rocco*, which went down in two, than a bout with *Frank Bruno* arrives. So it's on with the gloves, seconds out and...

Round one. Elite's man comes out fighting and he's much more versatile. He knows, and uses, head and body blows, left and right, dodges to either side, ducks and, when the opponent is almost dead on his feet, delivers a neat uppercut that knocks him somewhere into the middle of next week.

Round two. He's not looking so good now. In fact the animated graphics are less good than *Rocco* but apart from the odd confusing aspect they do the job.

Round three. One opponent vanquished but seven more wait to be Loaded using individual access codes. The result is that not only do they look different (unlike *Rocco*) but they also fight differently. The Canadian Crusher is a dumb bruiser but Fling Long Chop from Japan is a niftier character, aiming deadly karate kicks.

The bell. I soon got used to the eight keys used and found the speedy pounding involved most satisfying. With its extra options and variety of fights *Frank Bruno* is current champ.

John Minson

Compilation

Program *Pascal 80* **Price** £39.99 **Micro** Amstrad plus disc and CP/M/Tatung Einstein **Supplier** HiSoft, 180 High Street North, Dunstable LU6 1AT.

Program *Pascal* **Price** £29.99 **Micro** Amstrad **Supplier** Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex.

Through CP/M, Amstrad owners have theoretically been given access to at least a dozen attempts at a Pascal compiler including one from HiSoft which wrote the official Amsoft Pascal.

Aside from the price, what is there to choose between them?

The Pascal 80 implementation is not only cheap for a disc CP/M version, but it is also the closest to the standard, which is probably a good thing for educational use.

On the other hand, for those who are making their first steps up from Basic, Amsoft's Pascal is probably the best bet since you don't have to accomodate the idiosyncrasies of the CP/M disc operating system at the same time. It has also been tailored to make it as easy as possible to achieve similar effects to those available from Basic –

sound, graphics, interrupts etc. While you also get extras like turtle graphic procedures, it is more limited in other areas – notably the file handling which is better on Pascal 80. Only character files can be used and they are accessed serially, not randomly. Graphics and sound are of course not easily available from CP/M, but again HiSoft have provided some predefined routines that expand on the defined core language, eg, *Peek, Poke, Addr*, and some mathematical functions.

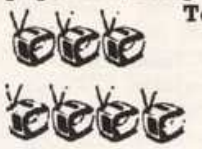
Amsoft Pascal stands out for its better hardware interface. Conversely Pascal 80 can be used to produce running CP/M Com files without the need to learn anything about the appropriate Bdos calls for printing to screen, etc.

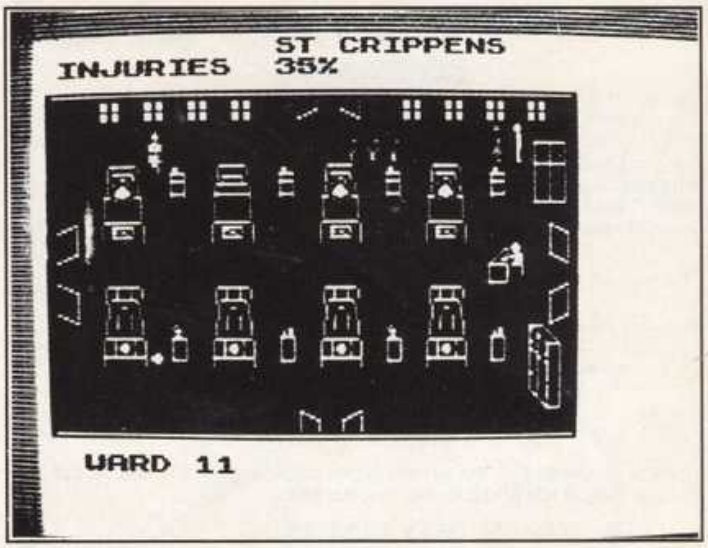
Amsoft Pascal has a line editor similar to Basic with some additional commands whilst the excellent *Wordstar*-compatible *ED80*, familiar to users of *Devpac 80*, is provided with the CP/M disc. You can of course use separate editors or word processors if you wish. HiSoft's documentation is of a high standard but tends to be of reference value rather than pampering to the beginner. Amsoft's version is similar but slightly better in that respect.

In both cases you would do well to look for one of the 'teach yourself' books recommended.

If you are looking for an Amstrad version of Pascal either of these packages could be a good choice – the Amsoft version is a bit easier to get to grips with, though.

Tony Kendle





Health risk

Program *St. Crippens* **Micro** Spectrum 48K **Price** £2.50 **Supplier** Creative Sparks, Thompson House, 296 Farnborough Road, Farnborough Road, Farnborough, Hants.

What a funny game this is. Here you are, cast as a patient interned in the infamous St Crippens hospital after a minor accident.

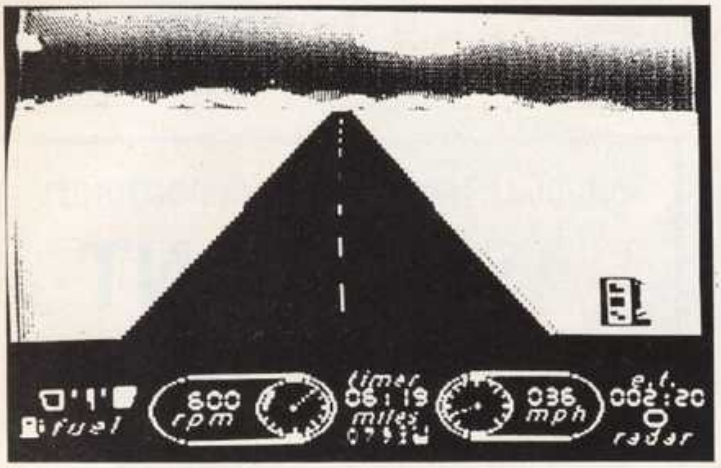
Your aim is to escape as soon as possible, but of course it is not easy. Not only are you pursued by doctors, nurses, and ambulancemen, but hazards such as bed pans, ladders and the odd disease, all there to hinder your exodus.

This is basically a *Pac-man*-type maze game but with many different mazes comprising of hospital wards. You have to manoeuvre your little figure around the various beds and furniture, through such obscure places as the 'Tropical Diseases Ward' and 'the games room' etc. A nice touch is, once up to 80% damage, your figure hobbles around on crutches.

The graphics are very simple but nicely drawn and, above all, sometimes funny.

This game is a bundle of fun and great value for money.

Andy Moss



Road runner

Program *The Great American Road Race* **Micro** Commodore 64 **Price** £9.99 **Supplier** Activision, 15 Harley House, Marylebone Road, London NW1.

At first glance this race game is disappointing, with a seemingly sparse screen display and chunky graphics but, as you progress into the game, it grows into a veritable gem.

The idea is to road race across America from east to west using one of four different routes, planning the quickest way city by city for each. You have to take into account weather conditions, time of day, rush hour traffic, police speed traps, while keeping a check on petrol and engine revs. Driving is the usual joystick left/right, with up and down for changing gear, and the track is the standard 3D *Pole Position* style layout.

Although the other cars on the road are all rather similar, it doesn't matter as your attention is focused on the changing landscape, day turning into night and the approaching skyline of the cities.

This is where the charm of the game comes into its own as each city has its own landmark, for example San Francisco's Golden Gate Bridge. The times of eight pre-programmed drivers are already fixed and these are your targets to beat. However, new times can be added from tape. Sound is used well and the graphics are smooth and effective. An addictive game with a style all of its own which lets you tour America from your armchair.

Another winner from Activision.

Andy Moss

Croak croak

Program *Crystal Frog* **Micro** Spectrum 48K **Price** £2.99 **Supplier** Sentient Software, Branch House, 18 Branch Road, Armley, Leeds, West Yorkshire LS12 3AQ.

The background to *Crystal Frog* is tense: find the crystal frog, visit all the locations and score 100%.

Well, it *is* a budget adventure, but neglecting to mention that it's been *Quill*-ed is rather naughty.

With that off my chest I'm pleased to report that this particular quest doesn't stint on words. From the very first location (a clearing in a grassy field on a summer's day with a cloudless sky with circling birds above) the eye of the imagination is most pleasingly stimulated.

A traditional, not desperately original but atmospheric adventure at a price which won't leave a frog in the throat.

John Minson

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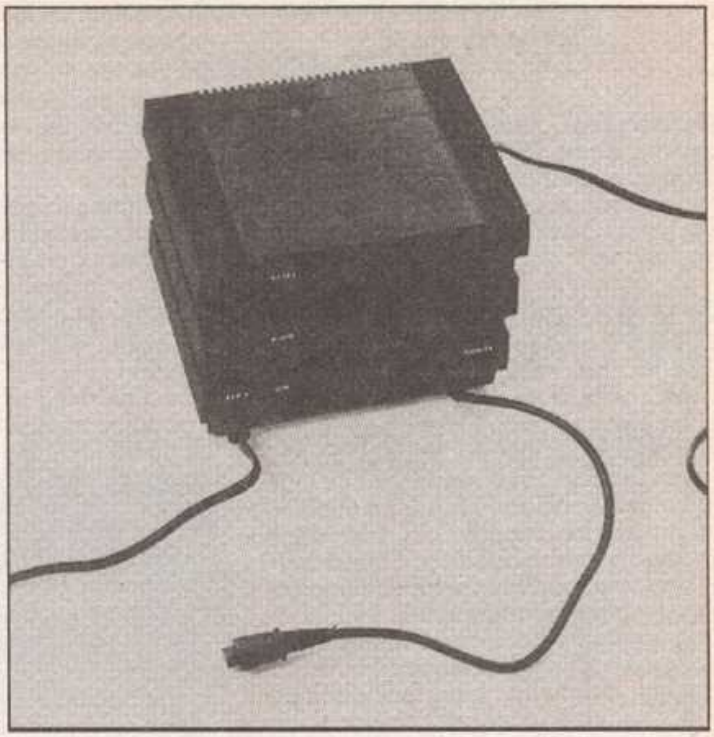
Supplier Tandata Marketing, Albert Road North, Malvern, Worcs (06845 68421)

Sinclair has not had a good year so far but – at long last – there is a communications package available for QL owners who wish to link-up to the outside world.

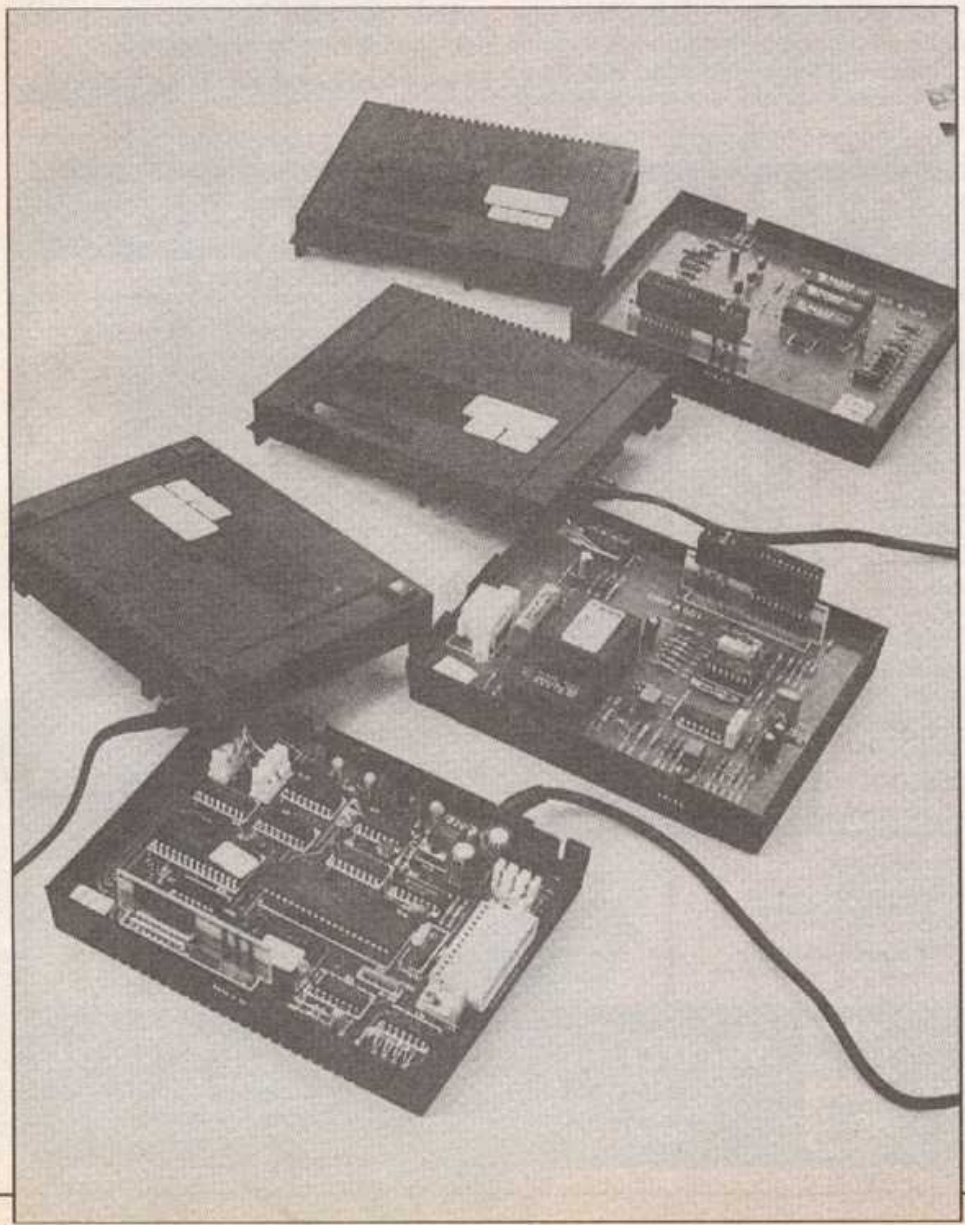
When OEL went bust a few months ago, the company's planned QL communications unit went out of the window. But Tandata took over the project to the relief of all concerned.

According to Tandata, orders left over from OEL's bankruptcy are being fulfilled and the package is now available to others, direct from Tandata Marketing in Malvern.

Tandata's package actually consists of three separate units: Q-Connect, Q-Call and Q-Mod. Q-Mod is the modem enabling communications at 1200/75 baud (full duplex) and 1200/1200 baud (half duplex) for QL to QL communications. The 1200/75 baud operation is for accessing databases such as Prestel and VT-100 facilities such as Telecom Gold. Q-Call is an auto-dial/auto-answer unit. Auto-answer is chiefly for QL to QL communications and the automatic transfer of files and other data.



Q-Connect is the key to the system. It is an intelligent interface supported by an extensive software package loaded into the QL by microdrive. Q-Connect operates between 75 and 9600 baud and will support most asynchronous modems – a fact which should go a long way to satisfying those sceptical of Q-Mod's somewhat limited range of communications. The software is impressive and contains a wide range of features including telephone director, a mailbox menu, a CET telesoftware down-loader, Load/Save facilities, file transmission and data encoding/decoding features.



Q-Call and (if the buyer links Q-Connect to another modem) Q-Mod are optional but, when joined, form a compact unit offering just about all the facilities an up-to-the-minute "off-line" QL owner could wish for, at a total price of just over £200.

Each unit is designed in the QL-style and is made of the same black plastic. The three are linked in a neat stacking system with Q-Connect as the base and joined by vertical bus connectors. My only real criticism is – since the bus connectors are the only thing holding the three units together – there is a real danger of damage from slightly careless handling.

Tandata is actually the second company to put out a QL modem. Modem House has produced Bright Star, an intelligent modem which (for the moment) lacks an auto-dial facility, but has a wider range of communications and costs roughly the same – £179.95. The Q-Com package without Q-Call costs £169.90.

I have not had an opportunity to try the Modem House product so I can't make comparisons, but Tandata's Q-Com device functioned well and makes a very neat-looking addition to your QL.

Tandata has successfully rescued a package originally designed for the computer, and one which offers most owners all they need to link their silent QLs into the world's electronic information pool

Brian Beckett

Drawn out

Hardware *Graphics Light Pen* **Micro** Amstrad CPC 464 **Price** £24.95 **Supplier** DK'Tronics, Unit 6, Shire Hill Industrial Estate, Saffron Waldon, Essex CB11 3AQ (0799 26350).

Who was it that said that there's a novel inside every one of us, just waiting to be written?

Well, if that's the case then there ought to be a picture inside of each of us, just waiting to be drawn.

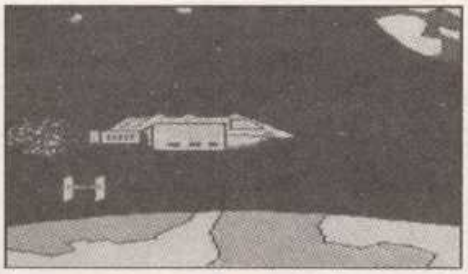
The problem is, of course, while most of us can write – although the spelling might not be too good – drawing is another matter completely. Artistic ability seems often almost inversely proportional to programming skill.

Maybe DK'Tronics' new light pen for the Amstrad could be the answer.

Light pens work using the principle that each part of the TV screen is refreshed (or up-dated if you like) every 1/25th of a second – a ridiculously long time for a microprocessor. The processor calculates the time from the start of a new TV scan to the time the scan reaches and triggers the 'pen' sensor pointed at the screen. By calculating the time interval the micro can work out exactly where on the screen you are pointing. If you want to do something like drawing, then you are thrown on the mercy of the accompanying software and documentation. DK'Tronics seems though to have done a pretty good job with this package.

The light pen plugs into an interface that itself slots into the disc drive port of the Amstrad. Don't worry, though – there is a piggy-back port on the back that supports a disc drive (if you have one) and a DK'Tronics speech unit at the same time.

The first thing to do is load the software. This takes about four and a half



minutes, but the cassette is totally unprotected, so it can be transferred to disc without too much bother.

You are now ready to start. The program works by moving through a series of menu windows which start with Save/Load screen options, and go on through calibration of the pen to the actual graphics options – a total of eight in all. You soon get used to 'the system', but to help, the documentation provides a small flow diagram. . . a nice touch.

The basic Draw functions support ten colours with four drawing widths, plus an air-brush effect – more than enough for most dabbling. Slightly more advanced features include 'rubber banding' for drawing complex shapes, fills, circle and rectangle commands, copy and shrink options, plus text handling. A 'scratch pad' facility is useful, which allows you to create detailed drawings, and then reduce them down and use then on your opus.

So far so good, and the documentation takes you through the program one step at a time.

The last few pages of the manual give listings for dumping screens to DMP 1 or Epson compatible printers, with detailed advice on adapting them for other printers. Also, it gives valuable help on how to use *Saved* screens and/or the light pen in programs of your own. It's a pity that you have to type these routines in yourself though.

If you want an artistic dabble on your Amstrad, then this is for you. But don't expect the level of detail and quality obtainable from a graphics tablet.

John Cook

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You can do it!

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

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

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

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

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Trapper

It's you against the Evil Kraalian on the CBM 64 – written by R Beaven

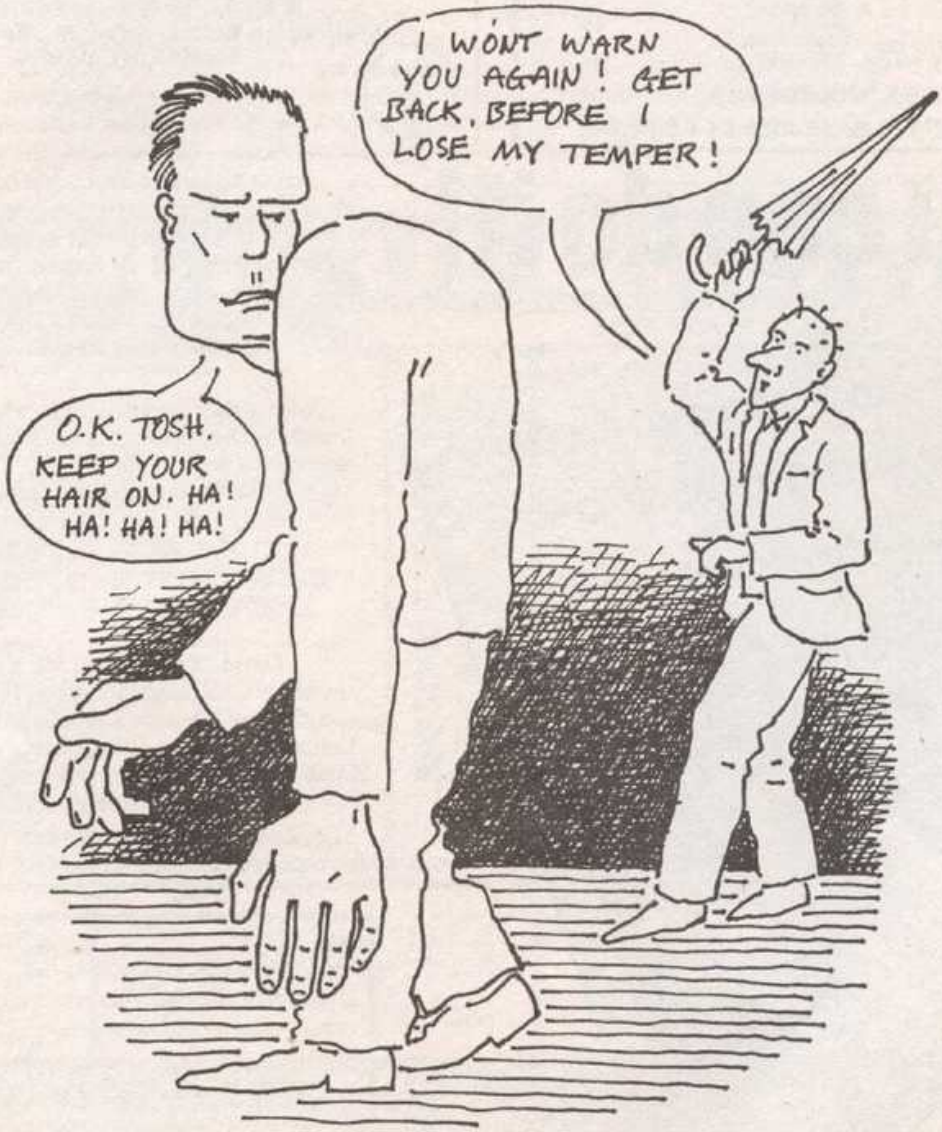
Trapper runs on a Commodore 64 with a joystick in Port One. The idea of the game being to trap the Evil Kraalian.

At the start of the game, a random maze is drawn, then the Kraalian appears, followed by a green man which you control.

The Kraalian will immediately bound around the maze in a berserk fashion – you must manouvre him into a three sided box, closing the gap with yourself. He then dies, and you are presented with another, harder maze... this must be finished within a time limit, of course! Good luck!

Program Notes

Line No	
10 - 54	Display title screen
55 - 57	Accept input
66	Read UDG data
67	Define Char 32 as space
68	Read UDG number data
70 - 151	Character data
205 - 215	Draw boxes round screen
230 - 245	Fill screen randomly with boxes
260 - 280	Display Kraalian
290 - 295	Display Player
300	Update time
310 - 385	Update Kraalian position
1000	Endgame check
1001 - 1030	New direction
1050	Choose random loop entry point
1070 - 1110	Direction choosing loop
5000 - 5070	Sound effect routine
6000 - 6040	Joystick input
6100 - 6420	Player movement
7000 - 7025	Completed level routine
8000 - 8060	End game



```
10 POKE53272,21:POKE53280,0:POKE53281,0:PRINT"■■■■"
20 PRINT" ■  ■■■■■   ■   ■   ■   ■   ■   ■    "
30 PRINT" ■  ■■■■■■■ ■■ ■ ■ ■ ■ ■ ■ ■ ■ ■■■■ ■ "
40 PRINT"    ■■■■■■ ■■ ■   ■   ■   ■   ■■   "
50 PRINT"    ■■■■■■ ■■ ■■■■■ ■ ■ ■■■■ ■■■■ ■■■■■"
51 PRINT"    ■■■■■■ ■■ ■ ■ ■ ■ ■ ■■■■ ■■■■   ■ ■ "
52 PRINT"■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■BY"
53 PRINT"■■■■■■■■■■■■■■■■R.BEAVEN"
54 PRINT"■■■ ■■■  ■■■■■■JOYSTICK OR ■KEYBOARD?"
55 GETA$:IFA$=""THEN55
56 IFA$="K"THENPRINT"■■■■■HARD LUCK,IT ONLY WORKS
   WITH JOYSTICK   (PORT ONE)"
57 IFA$="J"THENPRINT"■■■■■INSERT JOYSTICK IN PORT
   ONE"
66 FORT=0TO87:READA:POKE14336+T,A:NEXT
67 FORT=0TO7:POKE14336+T+8*32,0:NEXT
68 FORT=0TO79:READA:POKE14336+T+8*48,A:NEXT
69 FORT=0TO7:READY(T):NEXT
70 DATA126,219,219,255,255,189,195,126
75 DATA126,219,211,227,195,149,195,126
80 DATA70,129,0,0,1,0,128,38
85 DATA24,24,126,185,153,36,36,102
90 DATA0,234,75,74,74,74,0,0
95 DATA0,46,104,172,40,46,0,0
100 DATA0,0,16,0,0,16,0,0
101 DATA0,142,136,140,136,138,0,0
102 DATA0,139,138,83,82,35,0,0
103 DATA0,160,33,32,33,185,0,0
104 DATA0,0,0,0,0,0,0,0
105 DATA127,65,65,65,65,65,127,0
110 DATA8,8,8,8,8,8,8,0
115 DATA126,1,1,7,28,112,127,0
120 DATA126,1,1,31,1,1,126,0
125 DATA72,72,72,127,8,8,8,0
130 DATA127,64,64,126,1,1,126,0
135 DATA1,1,1,126,65,65,62,0
140 DATA127,1,1,2,2,4,4,0
145 DATA127,65,65,127,65,65,127,0
150 DATA63,65,65,63,1,1,1,0
151 DATA127,127,127,127,127,127,127,0
155 PRINT"■":POKE53272,31
156 REM ******************************
160 C=54272:N=1:SS=54272:Q=1528:W=Q-15:E=INT(RND(1
    )*4)+1:SC=0
200 Q=1528:W=Q-15:PRINT"■":FORT=1064TO1103:POKET,1
    0:POKET+C,14:NEXT
205 FORT=1143TO2023STEP40:POKET,10:POKET+C,14:NEXT
210 FORT=2022TO1984STEP-1:POKET,10:POKET+C,14:NEXT
215 FORT=1944TO1104STEP-40:POKET,10:POKET+C,14:NEX
    T
220 FORT=0TO7:POKE14336+T+80,255
221 A=7:D=1:S=0:R=0:LO=(227+T):HI=22+(T*2):WA=17:G
    OSUB5000:FORH=1TO50:NEXTH
222 NEXTT
225 PRINT"■■DEF000000                              GHI"
    ;N
230 FORT=1TO210-(N*20)
235 X=INT(RND(1)*960)+1
240 IFPEEK(1105+X)<>32THEN235
245 POKE1105+X,10:POKE1105+X+C,14:NEXT
250 A=1:D=1:S=0:R=0:LO=1:HI=10:WA=129:GOSUB5000
255 FORT=0TO7:POKE14336+T+80,Y(T):NEXT
260 POKEQ+C,10
265 FORT=2TO0STEP-1
270 POKEQ,T:FORH=1TO200:NEXTH
275 FORJ=1TO8:A=0:D=0:S=3:R=0:LO=INT(RND(1)*103)+1
    :HI=INT(RND(1)*244)+1:WA=17
280 GOSUB5000:NEXTJ,T
285 POKESS+4,0:FORT=1TO100:NEXTT
290 A=1:D=1:S=1:R=1:WA=33:HI=10:LO=10:GOSUB5000
295 POKEW,3:POKEW+C,5:FORH=1TO500:NEXT:FORT=SSTOSS
    +24:POKET,0:NEXTT
299 TI$="000000"
300 PRINT"■";TAB(4);TI$;TAB(37);N:Z=PEEK(56321):IF
    TI$="000100"THEN8000
310 ON E GOTO350,360,370,380
350 IFPEEK(Q-40)<>32THEN1000
355 POKEQ,32:Q=Q-40:POKEQ,0:POKEQ+C,10:GOTO6000
360 IFPEEK(Q+40)<>32THEN1000
365 POKEQ,32:Q=Q+40:POKEQ,0:POKEQ+C,10:GOTO6000
370 IFPEEK(Q-1)<>32THEN1000
375 POKEQ,32:Q=Q-1:POKEQ,0:POKEQ+C,10:GOTO6000
380 IFPEEK(Q+1)<>32THEN1000
385 POKEQ,32:Q=Q+1:POKEQ,0:POKEQ+C,10:GOTO6000
1000 IFTI$="000100"THEN8000
1001 IFPEEK(Q-40)=32THEN1050
1010 IFPEEK(Q-1)=32THEN1050
1020 IFPEEK(Q+40)=32THEN1050
1030 IFPEEK(Q+1)=32THEN1050
1040 GOTO7000
1050 E=INT(RND(1)*4)+1
1060 ON E GOTO1070,1080,1090,1100
1070 IFPEEK(Q-40)<>32THEN1080
1075 POKEQ,32:Q=Q-40:POKEQ,0:POKEQ+C,10:GOTO6000
1080 IFPEEK(Q+40)<>32THEN1090
1085 POKEQ,32:Q=Q+40:POKEQ,0:POKEQ+C,10:GOTO6000
1090 IFPEEK(Q-1)<>32THEN1100
1095 POKEQ,32:Q=Q-1:POKEQ,0:POKEQ+C,10:GOTO6000
1100 IFPEEK(Q+1)<>32THEN1110
1105 POKEQ,32:Q=Q+1:POKEQ,0:POKEQ+C,10:GOTO6000
1110 GOTO1070
5000 POKESS+4,0:D=A*16+D:SR=S*16+R
5010 POKESS+24,15
5020 POKESS+5,AD
5030 POKESS+6,SR
5040 POKESS+0,LO
5050 POKESS+1,HI
5060 POKESS+4,WA
5070 RETURN
6000 REM ******************************
6010 IFZ=254THENGOTO6100
6020 IFZ=253THENGOTO6200
6030 IFZ=251THENGOTO6300
6040 IFZ=247THENGOTO6400
6050 GOTO300
6100 IFPEEK(W-40)<>32THEN300
6110 POKEW,32:W=W-40
6120 POKEW,3:POKEW+C,5:GOTO300
6200 IFPEEK(W+40)<>32THEN300
6210 POKEW,32:W=W+40
6220 POKEW,3:POKEW+C,5:GOTO300
6300 IFPEEK(W-1)<>32THEN300
6310 POKEW,32:W=W-1
6320 POKEW,3:POKEW+C,5:GOTO300
6400 IFPEEK(W+1)<>32THEN300
6410 POKEW,32:W=W+1
6420 POKEW,3:POKEW+C,5:GOTO300
7000 FORK=100TO150
7001 A=1:D=1:S=0:R=1:WA=33:HI=K:LO=K:GOSUB5000
7002 FORH=1TO10:NEXTH,K
7003 :A=5:D=5:S=5:R=5:HI=40:LO=50::WA=33:GOSUB5000
7004 FORT=0TO2
7005 POKEQ,T:FORJ=1TO200:NEXTJ,T:FORJ=1TO200:NEXTJ
    :POKESS+4,0:POKESS+24,0
7009 BO=1000*N:SC=SC+TI:SC=SC+BO:SC=INT(SC)
7010 PRINT"■":POKE53272,21:SC=SC+BO
7011 PRINT"■■■WELL DONE,YOU HAVE 'TRAPPED'THE EVIL
    KRAALIAN "
7013 PRINT" YOU GET A BONUS OF ";BO
7014 PRINT" WHICH MAKES A SCORE OF ";SC
7015 FORT=1TO1000:NEXT:K=255
7025 PRINT"■■■■■■■■■■■■■■■   PRESS  FIRE  ■"
7050 K=PEEK(56321)
7055 IFK=239THENGOTO7090
7080 GOTO7050
7090 PRINT"■":POKE53272,31:N=N+1:GOTO200
8000 FORF=15TO0STEP-1
8002 A=2:D=5:S=2:R=1:WA=129:HI=F:LO=F:GOSUB5000:PO
    KEW+C,F
8003 FORT=1TO15:NEXTT,F
8004 PRINT"■":POKE53272,21
8005 PRINT"THE EVIL KRAALIAN HAS BEATEN YOU"
8006 PRINT"WITH A SCORE OF ";SC;"PLUS A BONUS"
8007 PRINT"OF ";BO;" WHICH MAKES ";SC+BO;" POINTS!"
8020 PRINT"■■■DO YOU WANT ANOTHER GAME (Y/N)"
8030 GETG$:IFG$=""THEN8030
8040 IFG$="N"THENEND
8050 IFG$<>"Y"THEN8030
8060 PRINT"■":POKE53272,31:GOTO160
```

Getting a word in edgeways

More text compression techniques from the keyboard of ***Jeff Tullin***

This week sees the publication of the Microsoft type 'squash' computer. As it stands, it won't run directly on *any* computer! It is written in such a way as to simply suggest what you should actually type. The syntax for representing Hex numbers, for instance, varies from machine to machine. So too does the command which lowers the 'Top Of Memory' pointer to allow machine code to be assembled safely above it. Even *Peek* and *Poke* can vary between micros, so it is up to you to arrange the program to suit your machine. This should not prove too hard. The 'dictionary' supplied here is smaller than last week's simply to save space, and you may wish to refer to the last section for a wider explanation.

Once the compactor has run (and this can take a long time – my latest game took over three hours to compress), the program will print some addresses on the screen, such as:–

Dictionary from &5200 TO &524C
Text occupies &524C TO &xxyy
Compressed by something %

BBC users, at least, can save the database as a block of memory by the command **save "text" 5200 xxyy*, and then disregard the compactor program entirely thereafter, and just **LOAD* in the block as required. What is important is to keep a record of the address of the start of the dictionary and the text.

But now on to the expander routines. This week, just the theory. We have already replaced common words and phrases by single numbers. What we need to do now is examine the compressed string, byte by byte, and print out normal letters unchanged, but replace the 'special' bytes by the correct keywords. So, in effect, what we must do is tell the computer: "In future, if you come across the code value of 136, instead of printing it, print the word 'HELLO' (or whatever). The same goes for code 137. If this code appears, print 'GOODBYE'". – and so on. Working through a list of codes like 65, 136, 66, 137, 67, the computer might thus print out: 'A HELLO B GOODBYE C'.

In addition, our expander routine will also begin a new line when it encounters a "#" symbol, and again when it finds a full stop. The full stop will itself signal that the next lower case letter should be made into a capital letter as the beginning of a sentence.

Figure 2 is the main flowchart for the expander, slightly simplified for clarity. For completeness, figure 1 is a flowchart for the small subroutine which will handle adding the capital letters required from time to time. Next week, the final program.

Fig 1

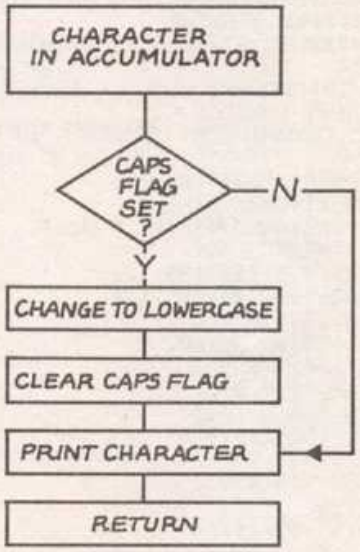
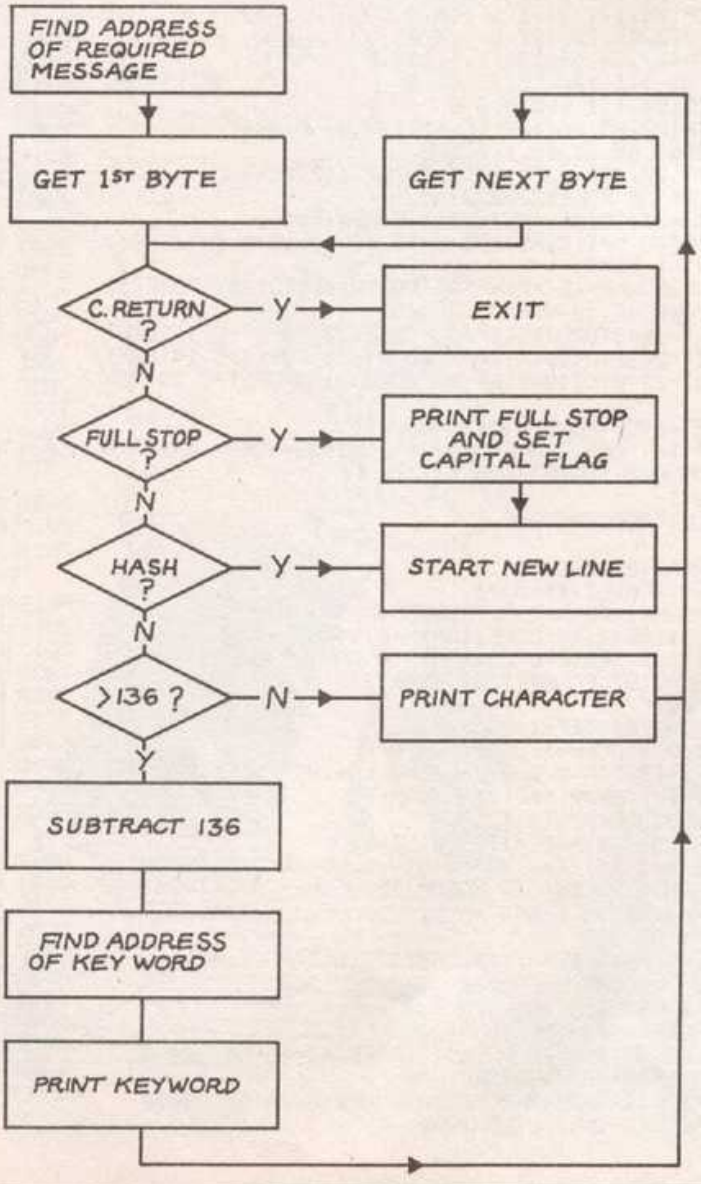


Fig 2



```
 10 REM Text Compactor v.2
 20 REM By Jeff Tullin
 30 REM Pseudo BASIC for MICROSOFT
 40 REM (c) 1985
 50 :
 60 VARTOP=&5200
 70 HIMEM=&5200
 80 REM also known as HIMEM,RAMTOP etc
 90
100 address=VARTOP
101 dictionary=address
110 tokens=28:pointer=0
120 startlength=0:newlength=0
130 DIM T$(tokens)
140 long$="":short$=""
150
160 POKE address,13
170 address=address+1
180 FOR X = 1 TO tokens
190 READ T$(X)
200 A$=T$(X)
210 GOSUB 500
220 NEXT
230
240 textbase=address-1
250 READ long$
260 IF long$="FINISH" THEN GOTO 410
270 PRINT"START ="LEN(long$);
280 startlength=startlength+LEN(long$)
290 S$="":pointer=1
300 FOR X=1 TO tokens:Ax=0
310 IF MID$(long$,pointer,LEN(T$(X)))=
T$(X)THENAx=X:X=tokens
320 NEXT
330 IF Ax=0 S$=S$+MID$(long$,pointer,1
):pointer=pointer+1:GOTO350
340 S$=S$+CHR$(Ax+136):pointer=pointer
+LEN(T$(Ax))
350 IF pointer<LEN(long$)+1 GOTO 300
360 PRINT " NOW "LEN(S$)
370 newlength=newlength+LEN(S$)
380 A$=S$:GOSUB 500:GOTO250
390
410 POKE address,&FF
411 PRINT"DICTIONARY RESIDES &"~dictio
nary;" to &"~textbase
430 PRINT"SQUASHED TEXT FROM &"~textba
se;" to &";~address
450 PRINT"COMPRESSED BY "INT((startlen
gth-newlength)/startlength *100);"%"
490 END
491
492
493
500 FOR M= 1 TO LEN(A$)
510 POKE address,ASC(MID$(A$,M,1))
520 address=address+1
530 NEXT
540 POKE address,13
550 address=address+1
560 RETURN
570
580
590 REM    DICTIONARY
600 REM   Entries made in length
          order, ie 10 chars, then
          9 chars, then 8 etc.
          Max. 119 entries.
610 :
620  DATAlies,old ,the ,all ,east,west
,down,must,see ,but ,too ,now ,one ,have
,top ,even,way ,ing
630 DATAyou,and,ly ,key,in ,it ,is ,of
,es ,tle
640 ********************************
650 :
660 REM  PUT LONG TEXTS HERE
670 REM  NB. Text should always be in
          lowercase except for effects.
          Full stop causes newline and
          forced caps on next character
          Hash # causes newline only.
680 DATA"I can see a large old door to
the #south here"
690 DATA"there is a key in the lock ,i
can't turn it."
700 DATA"a small dusty key lies on the
ground nearby "
710 DATA"all around the castle MOAT li
es magic stone "
720 DATA "FINISH"
```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PD503

Wide vocabulary

Part Two of ZX! Basic written for the 48K Spectrum
by ***Stewart Nichols***

This week, more instructions . . . and more code. Remember, instructions on how to type in the code for Parts One and Two were in last week's issue. For those with numb fingers, copies can be obtained from me on tape at £3.00 each. Write c/o 82 Lays Drive, Keynsham, Bristol, BS18 2LE.

Instructions

!Mx,y – (Move)

Move from current plot position to co-ordinates *x,y* plotting a line or unplotting as specified by the value of *Over*. Values of *x* and *y* can be from 0 to 255. Note that ZX! Basic pixel grid is used.

For example: **10** !E **20** !P0,88 **30** FOR A=1 TO 255 **40** !MA, 88+80*SIN(A/64*PI) **50** Next A **60** Pause 0 will plot a sine wave with a continuous line instead of the more usual series of dots that the normal *Plot* command will give.

!N"test",x,y,h,w – (New print)

This command will print text anywhere on the ZX! Basic pixel grid at any height and width combinations within the limits below. Text will wrap around the screen if it is too big to fit in one screen width/height.

"text" – any string of characters code 32 to 127, or any string expression resulting in charactes code 32 to 127.

x,y – pixel co ordinate of the otp left hand corner of the first character generator in Rom but may be set to any character generator set in Ram.

h – height of characters in character squares (1 to 32)

w – width of characters in character squares (1 to 24)

!Da – (Overall change)

Change the screen attributes to that set by value *a*. This does not change the current attributes for printing etc. For example **10** Print Ink 2;Paper 5; "Hello" **20** !048 will print Hello using red ink and cyan paper then change this to black ink and yellow paper.

!Px,y – (Plot)

Plot the pixel *x,y*. As the Spectrum *Plot* with colours but using the ZX! Basic 255 × 255 pixel grid.

!Q"text" – (64 column print)

This command is similar to the Spectrum Print and ZX! Basic *!T* command but prints at 64 columns per line. This command also supports the following sub commands: (Note Semicolons)

!QChr$3; – will clear all 24 screen lines and reset the 'print at' position to 0,0. *!QChr$4;* – will scroll *Up* the screen by one character line. *!QChr$5;* – will scroll *Down* the screen by one character line. *!QChr$6;* – will print at the next *Tab* position. There are eight tabs in 64 column printing. *!QChr$8;* – move current print position left one position (and scroll the screen down if at 0,0). *!QChr$9;* – move current print position right one position (and scroll the screen up if at 23,63). *!QChr$10;* – move current print position up one line (and scroll the screen down if at line 0). *!QChr$11;* – move current print position down one line (and scroll the screen up if at line 23). *!QChr$12;* – delete character behind present print position and backspace to that position. If at position 0,0; then scroll the screen down and move current print position to 0,63. *!QChr$13;* – newline. *!QChr$16* to *21* as *Ink* to *Over* in normal *Print* but *Inverse* has no effect. *!QChr$22* or *!QAT line,column;* allows line and column values of 0 to 255 but values above 23,63; will wrap around the screen. *!QChr$23* or *!QTAB* allows values of 0 to 255 (but see *!QAT*). *!QChr$24* – to *!QChr$31* are new graphics characters not available from the keyboard.

64 column printing uses a new character generator which starts at address 51850 for *Chr Code 24*. This character generator is automatically selected when using !Q (and reset to its original value afterwards).

!R – (Lprint at 64 characters per line)

This command is similar to *Lprint* and prints to the ZX printer and similar printers at 64 characters per line. The following extra commands are also available.

!RChr$1;ls;le; – will copy the screen from line start to line end. Line start (ls) and line end (le) must be in the range 0 to 23. Note that semicolons must be used.

!RChr$3; clear the printer buffer without lprinting contents. *!RChr$6;* or *!R,* gives 8 tab settings. *!RChr$24* to *31* lprint new graphics characters.

Other codes 8 to 12 are similar to *!Q* codes but alter lprint positions.

!Ssa,sb,fa,fb – (sound effect)

This command can be used to produce thousands of different sound effects. Experiment with different values of *sa, sb, fa,* and *fb* but keep values low until you are able to determine the sound produced. Certain values will make sound continue for hours with no way of stopping it. Use same value for *sa, fa* and for *sb, fb* for single tone.

sa 0 to 65535 start value of parameter one
fa 0 to 65535 finish value of parameter one
sb 0 to 65535 start value of parameter two
fb 0 to 65535 finish value of parameter two

Use the command in a For Next loop for best effect. For example **10** For A=1 to 100 **20** !S50,A,A,40 **30** Next A.

!T"text"

This command is the same as the Spectrum *Print* command but allows printing on lines 22 and 23, has 4 *Tab* stops, backspace error corrected, no *Scroll?* prompt, Chr$9 corrected. Values of line and column from 0 to 255

```
CDB2  44 22 22 11 22 22 44 00 = 21   CEF2  CF 0E 43 CD D0 D0 05 C3 = 55
CDBA  00 55 AA 00 00 00 00 00 = FF   CEFA  A3 D0 0C 3E 44 B9 20 15 = EF
CDC2  66 99 FF DD FF 99 66 00 = D9   CF02  FD CB 01 4E 28 04 0E 43 = 94
CDCA  00 00 00 00 00 00 00 00 = 00   CF0A  18 0B 04 0E 04 3E 19 B8 = 48
CDD2  33 33 33 33 00 00 00 00 = CC   CF12  20 03 CD 2D D1 C3 A3 D0 = 24
CDDA  CC CC CC CC 00 00 00 00 = 30   CF1A  C3 8F D0 FD CB 01 4E C0 = F9
CDE2  FF FF FF FF 00 00 00 00 = FC   CF22  05 20 06 C5 CD DC D0 C1 = 2A
CDEA  00 00 00 00 33 33 33 33 = CC   CF2A  04 C3 A3 D0 FD CB 01 4E = 51
CDF2  33 33 33 33 33 33 33 33 = 98   CF32  C0 04 3E 19 B8 20 06 C5 = BE
CDFA  CC CC CC CC 33 33 33 33 = FC   CF3A  CD 2D D1 C1 05 C3 A3 D0 = C7
CE02  FF FF FF FF 33 33 33 33 = C8   CF42  79 D6 02 E6 07 C3 A1 CF = 71
CE0A  00 00 00 00 CC CC CC CC = 30   CF4A  11 64 CF 32 0F 5C 18 0B = 04
CE12  33 33 33 33 CC CC CC CC = FC   CF52  11 4A CF 18 03 11 64 CF = 89
CE1A  CC CC CC CC CC CC CC CC = 60   CF5A  32 0E 5C 2A 51 5C 73 23 = 09
CE22  FF FF FF FF CC CC CC CC = 2C   CF62  72 C9 11 A5 CE CD 5D CF = B8
CE2A  00 00 00 00 FF FF FF FF = FC   CF6A  2A 0E 5C 57 7D FE 16 DA = 56
CE32  33 33 33 33 FF FF FF FF = C8   CF72  11 22 20 21 7A E6 3F 4F = 62
CE3A  CC CC CC CC FF FF FF FF = 2C   CF7A  3E 3F 91 C6 04 4F FD CB = EF
CE42  FF FF FF FF FF FF FF FF = F8   CF82  01 4E 20 0E 7C D6 18 30 = 17
CE4A  00 00 00 00 00 00 00 00 = 00   CF8A  FC 28 02 C6 18 47 3E 18 = A1
CE52  00 00 FD CB 01 6E 28 FA = 59   CF92  90 47 C3 A3 D0 7C CD DA = 30
CE5A  FD CB 01 AE 06 00 3A 08 = BF   CF9A  CF 81 D6 03 E6 3F C8 57 = 6D
CE62  5C 4F FE 06 C0 3A 6A 5C = 6F   CFA2  CD 8F D0 15 20 FA C9 D9 = FD
CE6A  EE 08 32 6A 5C 18 E3 00 = E9   CFAA  3A 91 5C F5 FD 36 57 00 = A6
CE72  2A 4F 5C 11 0F 00 19 11 = 1F   CFB2  3E 08 D7 3E 20 D7 3E 00 = 98
CE7A  A5 CE 73 23 72 CD C9 1F = 30   CFBA  D7 F1 32 91 5C D9 C9 CD = 56
CE82  11 0F 00 2A 4F 5C 19 11 = 1F   CFC2  F0 CF FD CB 01 4E 20 08 = FE
CE8A  29 F8 73 23 72 C9 2A 4F = 6B   CFCA  ED 43 2B D1 22 29 D1 C9 = 11
CE92  5C 11 05 00 19 11 A5 CE = 0F   CFD2  ED 43 EE D1 22 F0 D1 C9 = 9B
CE9A  73 23 72 CD CD 1F 11 05 = D7   CFDA  FD CB 01 4E 20 08 ED 4B = 77
CEA2  00 18 E0 FE 01 CA 7A D1 = 0C   CFE2  2B D1 2A 29 D1 C9 ED 4B = 21
CEAA  FE 03 CA AF D1 FE 04 CA = 17   CFEA  EE D1 2A F0 D1 C9 FE 90 = 01
CEB2  2D D1 FE 05 CA DC D0 D8 = 4F   CFF2  38 12 D6 A5 38 05 CD 10 = DF
CEBA  CD DA CF FE 18 D2 C1 CF = EE   CFFA  0C 10 DD C6 15 C5 ED 4B = D9
CEC2  21 C9 CE 5F 16 00 19 5E = A4   D002  7B 5C 18 04 C5 01 CA C9 = 4C
CECA  19 E5 C3 DA CF 73 11 2D = 19   D00A  EB 26 00 6F 29 29 29 09 = 04
CED2  48 4A 5A D4 0C 0A 09 7E = 5D   D012  C1 EB 79 D6 03 3E 43 20 = 9F
CEDA  7D 7C 7B 7A 79 73 72 C9 = 15   D01A  10 05 4F FD CB 01 4E 28 = A3
CEE2  FD CB 01 4E 28 0B CD CD = E4   D022  0B D5 CD E2 CE D1 79 18 = BC
CEEA  0E 0E 43 21 00 5B C3 D2 = 70   D02A  06 B9 D5 CC D0 D0 D1 C5 = 96
```

are accepted but values above 23,31; will wrap around the screen.
Do not use local colours when printing on lines 22 and 23 as an OUT OF SCREEN error may occur.

!U – (Up)
Up scroll the whole screen one character line with attributes.

!Vo,n – (Swap attributes)
Swap screen attributes old (*o*) with new (*n*) values 0 to 255.
For example **10** !V56,32 will swap all Ink 0; Paper 7 with Ink 0; Paper 4

!Wcs,ls,cw,lh,rs,d – (Window roll/scroll)
Pixel roll or scroll a window in any direction left, right, up or down. The command will move the window by one pixel without attributes.

cs – is the column start value (0 to 31) left hand column.

ls – is the pixel line start value (0 to 191) top line.

cw – is the window width in character columns (1 to 32)

lh – is the window height in pixel lines (2 to 192)

rs – defines Roll or Scroll. 0 is Scroll; 1 is Roll.

d – defines the direction of movement. 0 is left; 1 is right; 2 is up; 3 is down. Note that *cs+cw* must be less than 33.
For example to Roll the whole screen up by five pixels, type **10** For A=1 TO 5 **20** !W0,0,32,192,1,2 **30** Next A.

!Xn – (Trace On)
This is a trace command that allows you to slow the execution of ZX! Basic by *n/50* secs delay between statements. (A value of 0 will single statement step on a key press). The command executed is indicated at 21,0 with a display of *[Line:Statement]*. A useful command when de-bugging ZX! Basic.

!Y – (Trace Off)
Turn off the Trace set by the *!X* command.

!Zn
The last of the ! commands. This command disables or enables the Break keys. *!Z0* will enable the Break keys. *!Z>0* will disable the Break keys.
Do not use this command until you are happy with the running of your program and you have saved a copy of it, as there is no way of returning to ZX! Basic unless you have an 'End Program' option which enables the Break keys.

Extra Commands
Because ZX! Basic allows plotting over the whole screen but *Point* will only detect a pixel on the 255 × 175 Spectrum Basic grid, the following routine has been aded to point the ZX! Basic screen (255 × 255).
Poke 65362,x co-ordinate
Poke 65363,y co-ordinate
Let variable = USR 64984
This will return a value of 0 or 1 depending on the state of the pixel. Values of *y* from 192 to 255 will return a value of 0.
Spectrum Screen$ (line,column) will only detect characters from Space to Copyright (32 to 127). ZX! Basic has a routine to detect UDG's as well as codes 32 to 127.
Poke 65360,line
Poke 65361,column
Let string variable = Chr$ Usr 64892
Next week, more code plus a demo program.

```
D152  EE AF 06 20 12 1B 10 FC = FC
D15A  C1 E1 25 10 D8 21 DF 5A = 09
D162  11 FF 5A 01 E0 02 ED B8 = F2
D16A  3A 8D 5C 06 20 12 1B 10 = 86
D172  FC 21 1F 40 01 04 18 C9 = 62
D17A  FD CB 01 4E C8 11 85 D1 = 46
D182  C3 5D CF 11 8E D1 32 0E = 9F
D18A  5C C3 5D CF 11 A5 CE CD = 9C
D192  5D CF 4F 3A 0E 5C 47 FE = 64
D19A  18 D0 79 90 D8 F5 78 CD = 03
D1A2  C2 D0 F1 3C A7 17 17 17 = AB
D1AA  47 F3 C3 E2 0E FD CB 01 = 86
D1B2  4E 20 21 21 00 40 11 01 = 02
D1BA  40 01 FF 17 36 00 ED B0 = 2A
D1C2  23 13 01 FF 02 3A 8D 5C = 5B
D1CA  77 ED B0 01 43 18 21 00 = 91
D1D2  40 03 A7 D0 21 00 5B 22 = 14
D1DA  F6 D1 AF 47 77 23 10 FC = 5D
D1E2  FD CB 30 8E 01 43 00 ED = B7

D1EA  43 EE D1 C9 3E 00 02 5D = 66
D1F2  60 20 30 00 = 00

D032  E5 FD CB 01 4E 20 05 3A = 5B
D03A  2B D1 18 03 3A EE D1 06 = 16
D042  F0 0E 0F CB 47 20 03 41 = 83
D04A  0E F0 3A 91 5C CB 47 20 = 5F
D052  02 0E FF 3E 08 A7 FD CB = C4
D05A  01 4E 28 05 FD CB 30 CE = 42
D062  37 08 1A A0 F5 7E A1 77 = 84
D06A  F1 AE 77 08 38 17 24 13 = A4
D072  3D 20 EE 25 FD CB 01 4E = 87
D07A  20 03 CD DB 0D E1 C1 0D = 85
D082  CB 41 C8 23 C9 08 3E 20 = 26
D08A  85 6F 08 18 E2 D5 D9 3A = DE
D092  91 5C F5 3E 20 FD 36 57 = CA
D09A  01 D7 F1 32 91 5C D9 D1 = 92
D0A2  C9 FD CB 01 4E 28 05 21 = 2E
D0AA  60 5B 18 05 C5 CD BF D0 = 99
D0B2  C1 3E 43 91 CB 3F 5F 16 = 52

D0BA  00 19 C3 C4 CF 3E 18 90 = 55
D0C2  57 0F 0F 0F E6 E0 6F 7A = 33
D0CA  E6 18 F6 40 67 C9 FD CB = 2C
D0D2  01 4E C0 11 A3 D0 D5 7B = E0
D0DA  A7 C0 FD CB 01 4E C0 21 = 5F
D0E2  20 40 06 08 E5 0E 03 C5 = 29
D0EA  EB 21 E0 FF 19 EB 01 20 = 10
D0F2  00 ED B0 7D A7 20 F1 21 = F3
D0FA  20 07 19 C1 0D C5 20 EE = E1
D102  AF 06 20 12 13 10 FC C1 = C7
D10A  E1 24 10 D8 21 20 58 11 = 97
D112  00 58 01 E0 02 ED B0 3A = 12
D11A  8D 5C 06 20 12 13 10 FC = 40
D122  21 00 40 01 43 01 C9 00 = 6F
D12A  40 43 18 FD CB 01 4E C8 = 72
D132  21 DF 57 06 08 E5 0E 03 = 5B
D13A  C5 EB 21 20 00 19 EB 01 = F6
D142  20 00 ED B8 7D 3C 20 F1 = 8F
D14A  7C D6 07 67 C1 0D C5 20 = 73
```


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Type righter

The final part of the QL input routine written by ***Jonathan Prestidge***

Shown below is (as Listing One) a sample program. Although it is not a fully fledged program it shows one easy way of implementing the routine in a practical application. Having said that, however, it isn't a bad start to an address data base if you're thinking of writing one.

The first part of the program, Line 130, sets up the error window (which would replace the need for Line 1010 in the main listing). This is where error messages will appear during the running of the program if the user makes a mistake. You can position the error window anywhere on the screen you want to suit your program and have the ink, paper, and character size as you like too, just by altering Line 130. The channel of the error window is set to three by the variable *Echan* but if you want to use Channel three, for a printer say, simply change the '3' for a spare channel number and the error window channel will automatically be changed throughout the routines.

The next thing that the program does is to lay out all the prompts on the screen. Each prompt is next to where the corresponding input will take place, as if a whole blank record were displayed on the screen. This lets the user know what's coming up next, and where he or she can expect the cursor to appear as they input one field after another. Then, since the user can see what input is next, he or she can take full advantage of the QL's type-ahead buffer.

In the 'Set-up variables' section (Lines 170 to 230) the necessary format information for the input command on Line 260, is set up in four arrays. This allows the *Input At* command to be referenced easily by a variable. In the sample program, the command is referenced by the loop *'Fields'*. If you are writing a program from scratch this is probably the easiest way to use the routine – it makes formats easy to de-bug too since they're all together at the top of the program and by adding formats, qualifiers, etc, to the arrays and upping the *'Num Fields%'* variable, you can add fields without ever having to worry about Lines 250 to 330 of the program. Of course, there will be exceptions to this where you want special processing for specific fields or some validation that the routine can't handle; even then there's quite a neat way of doing that, with a *'Select On Fields'* statement (see the QL User Guide under KEYWORDS page 53).

I've utilised the *'F1'* and *Esc* key (with Lines 280 to 300), *F1* being a 'back one field' key and the Escape key as (yes you guessed it!) Escape. The back one field effect is obtained by first checking *Stat$* to see if it equals *'F1'*, then if it does, one is subtracted from the reference variable (ie, *'Fields'*) and the processing is sent back to Line 260. The previously input field is then redisplayed and can be altered, deleted, etc, and re-entered. The actual information from the previous field is recovered for this alteration from *Fie$ (Fields)* which is stored away after every input by Line 270. The effect of the Escape key is achieved by Line 300, which simply stops the program when *'Esc'* is detected in *Stat$*.

It's worth using this program as a guinea pig, trying out anything you're not sure about – always the best way of getting used to a routine. I hope you'll find it useful and easy to program with; and by the way, don't forget to keep a back-up copy of the routine, because typing it in once was enough for me too!

If typing it in is all too much for you, I can supply a copy of both programs in microdrive for the princely sum of £4.50. Write to me at 17 Highfield Drive, Sutton Coldfield, West Midlands.

Last week Part Two of the SuperBasic listing was incomplete – our apologies. This week, Listing Two is the whole of the second part of the routine... honest.

```
100 REMark        An example program for program for use with the
                                  INPUT AT procedure
    ------------------------------------------------------------------
110 MRUN MDV1_INPUT_AT : REMark Or whatever file name you have saved the
                                  procedure as
120 REMark ========== Initialization for INPUT_AT procedure ==============
130 LET ECHAN = 3 :
    OPEN #ECHAN, SCR : WINDOW #ECHAN, 400, 23, 56, 256-25 :
    CSIZE #ECHAN, 1,0 : BORDER #ECHAN, 1,7 : PAPER #ECHAN, 2 :
    INK #ECHAN, 7: REMark Error window ( position & size etc optional )
140 REMark ================== Initialize screen ========================
150 MODE 4
160 REFRESH_SCREEN
170 REMark ===================== set up vars ============================
180 LET NUM_FIELDS% = 5
190 DIM ANSWERS$( NUM_FIELDS%, 30 )
200 DIM FORMAT$( NUM_FIELDS%, 30 ) :
    LET FORMAT$( 1 ) = "Aaaaaaaaaaa" :
        FORMAT$( 2 ) = "Aaaaaaaaaaa" :
        FORMAT$( 3 ) = "CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC" :
        FORMAT$( 4 ) = "99B" : FORMAT$( 5 ) = "XXXXXXXXXXX"
210 DIM FIE$( NUM_FIELDS%, 30 )
220 DIM CHECK$( NUM_FIELDS%, 20 ) :
    CHECK$( 4 ) = "0 TO 140": REMark Age check. (can't be older than 140!)
230 DIM QUALIFY$( NUM_FIELDS%, 40 ) :
    LET QUALIFY$( 1 ) = "NO SPACES, MIN LENGTH = 1."
240 REMark ================= Main Procedure ============================
250 FOR FIELDS = 1 TO NUM_FIELDS%
260 INPUT_AT FIELDS + 2, 23, FORMAT$( FIELDS ), FIE$( FIELDS ),
        CHECK$( FIELDS ), QUALIFY$( FIELDS )
270 LET FIE$( FIELDS ) = STR_INP$
280 IF STAT$ = "F1" AND  FIELDS > 1 THEN LET FIELDS = FIELDS - 1 :
    GO TO 260
290 IF STAT$ = "F1" THEN GO TO 260
300 IF STAT$ = "ESC" THEN PRINT #0, "PROGRAM ABORTED BY (ESC)" : STOP
310 IF STAT$ <>"RETURN" THEN DISP_ERROR STAT$ & " Key Not Usable." :
        GO TO 260
320 LET ANSWERS$( FIELDS ) = STR_INP$
330 NEXT FIELDS
340 PRINT #0, "e n d   o f   d e m o" : STOP
350 REMark
360 REMark 8888888888888888888 REFRESH SCREEN 99999999999999999999999999
370 REMark
380 REMark Print all prompts and other none changing parts of the screen
390 REMark
400 DEFine PROCedure REFRESH_SCREEN
410   PAPER 2 : CSIZE 1,1 : BORDER 1, 7 : CLS
420   AT 1, 20 : INK 0 : PAPER 7 : PRINT " Address Book "
430   INK 7 : PAPER 2
440   AT 3, 10 : PRINT "Surname"
450   AT 4, 10 : PRINT "First Name"
460   AT 5, 10 : PRINT "Address"
470   AT 6, 10 : PRINT "Age"
480   AT 7, 10 : PRINT "Telephone"
490 END DEFine
```

```
5710 IF CT$ = "M" THEN IF ( I< 97 OR I >122 ) AND ( I< 65 OR I >90 )
        AND I <> 32 THEN DISP_ERROR E$ & "Letters or Spaces Only." :
        GO TO 5400
5720 IF CT$ INSTR ALLOWED$ = 0 AND CP = NUM THEN GO TO 5930
5730 AT LIN, COL + CP - 1; : PRINT I$ : LET INP$( CP ) = CHR$( I )      :
     BEEP 1,5 : IF CP < NUM THEN LET CP = CP + 1 : REMark Display Input
5740 IF I <> 0 THEN GO TO 5400 : REMark No need for cursor yet.
5750 REMark ===================== Cursor Keys ==========================
5760 IF I = 192 THEN IF CP > 1 THEN LET CP = CP - 1 :
        IF TYPE$( CP ) INSTR ALLOWED$ = 0 THEN GO TO 5920 :
        REMark        cursor left key
5770 IF I = 200 AND CP > 1 THEN
        IF TYPE$( CP - 1 TO CP ) = "ZZ" AND INP$( CP - 1 ) <> " "
        AND INP$( CP ) = " " THEN
        DISP_ERROR E$ & "Illegal Action" : GO TO 5830
5780 IF I = 200 AND CP < NUM THEN LET CP = CP + 1 : IF TYPE$( CP )="."
        THEN GO TO 5950 : REMark        cursor right key
5790 IF I = 9 THEN LET CP = CP + 5 : REMark Tabulation ( tab of 5 )
5800 IF CP > NUM THEN LET CP = NUM : DISP ERROR " End of Field."
5810 IF CT$ INSTR ALLOWED$ = 0 AND CP = NUM THEN GO TO 5930
5820 REMark ===================== Cursor ==============================
5830 IF "GHOST-CURSOR" INSTR QUAL$ THEN LET CUR$ = INP$( CP )
5840 AT LIN, COL + CP - 1; : OVER -1 : PRINT BACK$ : OVER 0
5850 AT LIN, COL + CP - 1; : OVER -1 : PRINT CUR$  : OVER 0
5860 IF "COUNT" INSTR QUAL$ THEN AT LIN, COL + NUM + 1; :
        PRINT "("; CP - PLACE + 1; ") "
5870 FOR A = 1 TO 5 : NEXT A : REMark Delay loop: speed of cursor flash
5880 AT LIN, COL + CP - 1; : OVER -1 : PRINT BACK$ : OVER 0
5890 AT LIN, COL + CP - 1; : OVER -1 : PRINT CUR$  : OVER 0
5900 IF CHR$( I ) INSTR OUT$ THEN GO TO 6210
5910 GO TO 5400
5920 REMark
                    M A I N    L O O P    E N D

================ Find Next Vacant Space For Entry if Any ================
5930 IF CT$ INSTR ALLOWED$ = 0 THEN LET CP = CP - 1 : CT$ = TYPE$( CP ) :
        GO TO 5930
5940 GO TO 5760
5950 REMark ========= Find decimal point if any ==========================
5960 IF DOT = 0 THEN DISP_ERROR "Sorry, No Decimals in This Number." :
        GO TO 5400
5970 LET CP = DOT : DOT = DOT - 1
5980 FOR A = 1 TO DOT
5990   IF TYPE$( A ) INSTR "Z9B" AND INP$( A ) <> " " THEN
          LET START = A : GO TO 6010
6000 NEXT A : PRINT "FORMAT ERROR. DECIMAL PLACE IN NON-NUMERIC FIELD" :
          STOP
6010 FOR B = DOT TO START STEP -1
6020   IF INP$( B ) = " " THEN LET THE_END = B - 1
6030 NEXT B
6040 IF START > THE_END THEN GO TO 6090
6050 LET TEMP$ = INP$( START TO THE_END )
6060     INP$( START TO DOT ) = FILL$( " ", DOT - START + 1 )
6070     INP$( DOT-LEN(TEMP$)+1 TO DOT ) = TEMP$
6080 AT LIN, COL + START - 1; : PRINT INP$( START TO DOT )
6090 LET DOT = DOT + 1
6100 GO TO 5400
6110 REMark ==== Process Validity of Leading Spaces Before a Value =======
6120 LET ER$ = "OK" : REMark Error flag
6130 IF CP = 1 THEN GO TO 6200
6140 IF I$ = " " AND INP$( CP - 1 )<> " " AND TYPE$( CP - 1 ) = "I" THEN
        LET ER$ = "ERROR" : GO TO 6200
6150 IF INP$( CP - 1 ) <> " " THEN GO TO 6200
6160 FOR A = CP - 1 TO 1 STEP -1
6170   IF TYPE$( A ) <> "Z" THEN GO TO 6200
6180   IF INP$( A )  <> " " THEN LET ER$ = "ERROR"
6190 NEXT A
6200 GO TO 5610
6210 REMark ============= Check and evaluate input before exiting ========
6220 LET STAT$ = "RETURN"
6230 IF I =  27 THEN STAT$ = "ESC"
6240 IF I = 232 THEN STAT$ = "F1"
6250 IF I = 236 THEN STAT$ = "F2"
6260 IF I = 240 THEN STAT$ = "F3"
6270 IF I = 244 THEN STAT$ = "F4"
6280 IF I = 248 THEN STAT$ = "F5"
6290 IF I = 208 THEN STAT$ = "UP"
6300 IF I = 216 THEN STAT$ = "DOWN"
6310 LET MARK2 = 1 : MARK = 0
6320 FOR A = MARK2 TO NUM
6330   IF TYPE$( A ) = "Z" OR TYPE$( A ) = "9" THEN MARK = A : GO TO 6360
6340 NEXT A
6350 GO TO 6430
6360 LET MARK3 = 0
6370 FOR A = MARK TO NUM
6380   IF INP$( A ) <> " " THEN LET MARK3 = 1
6390   IF MARK3 = 1 AND INP$( A ) = " " THEN IF TYPE$( A ) = "Z" OR
          TYPE$( A ) = "9" THEN DISP_ERROR E$ &
          "Disjointed Nuebers not Allowed" : GO TO 5400
6400   IF TYPE$( A ) <> "Z" AND TYPE$( A ) <>"9" THEN LET MARK2 = A :
          IF MARK2 < NUM THEN GO TO 6320
6410 NEXT A
6420 REMark ============== Out put strings ============================
6430 LET DE = "DEFAULT = " INSTR QUAL$ :
     IF INP$ = FILL$( " ", NUM ) AND DE THEN LET INP$ =
        QUAL$( DE + 11 TO DE + NUM + 10 )
6440 LET FUL_INP$ = TYPE$ : LET STR_INP$ = INP$
6450 FOR A = 1 TO NUM
6460   IF TYPE$( A ) INSTR ALLOWED$ THEN LET FUL_INP$( A ) = INP$( A )
6470   IF TYPE$( A ) =  "." THEN LET STR_INP$( A ) = "."
6480   AT LIN, COL + A - 1 :
       IF TYPE$( A ) = "9" AND FUL_INP$( A ) = "0" THEN PRINT ZERO$  :
          ELSE PRINT FUL_INP$( A )
6500 NEXT A
6510 FOR J = 1 TO NUM
6520   IF STR_INP$( J ) <> " " THEN GO TO 6540
6530 NEXT J
6540 FOR I = NUM TO 1 STEP -1
6550   IF STR_INP$( I ) <> " " THEN GO TO 6580
6560 NEXT I
6570 IF I <= J THEN LET STR_INP$ = "" : GO TO 6590
6580 LET STR_INP$ = STR_INP$( J TO I ) : REMark no spaces bef' or aft'
6585 IF NO_SPACES AND " " INSTR STR_INP$ THEN
        DISP_ERROR E$ & "No spaces allowed in this field" : GO TO 5410
6590 LET KEY_INP$ = INP$ : REMark With leading & trailing spaces
6600 REMark ================= check ranges ============================
6610 IF LEN( STR_INP$ ) < MIN_NUM THEN DISP_ERROR
        "Not Enough Characters. (min. = " & MIN_NUM & ")" : GO TO 5400
6614 IF LEN( RANGE$ ) = 0 THEN RETurn
6620 LET TP = " TO " INSTR RANGE$
6630 IF TP THEN IF STR_INP$ < RANGE$( 1 TO TP -1 ) OR STR_INP$ >
        RANGE$( TP + 4 TO ) THEN DISP_ERROR E$ &
        "Out of Range : " & RANGE$ : GO TO 5910
6640 IF TP THEN RETurn : REMark Check already done
6650 LET RAN$ = "" : ER2$ = "ERROR"
6660 FOR A = 1 TO LEN( RANGE$ )
6670   IF RANGE$( A ) = "," THEN IF RAN$ = STR_INP$ THEN LET ER2$ = "OK"
6680   IF RANGE$( A ) = "," THEN LET RAN$ = "" : GO TO 6700
6690   LET RAN$ = RAN$ & RANGE$( A )
6700 NEXT A
6710 IF RAN$ = STR_INP$ THEN LET ER2$ = "OK"
6720 IF ER2$ = "ERROR" THEN DISP_ERROR E$ & "Out of Range : " & RANGE$ :
        GO TO 5400
6730 END DEFine INPUT_AT
6740 REMark
                                  ___ ___
                                 # end proc. #
                                 #_________#
6750 REMark
                  ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
                 # print error message. (PROC. DISP_ERROR)#
                 #_____ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___#
6760 DEFine PROCedure DISP_ERROR ( PRN$ )
6770 CLS #ECHAN : IF EBEEP THEN BEEP 500 , 20
6780 AT #ECHAN, 0,0; : PRINT #ECHAN, PRN$ : PAUSE 130 : CLS #ECHAN
6790 END DEFine DISP_ERROR
6800 REMark
                                  ___ ___
                                 # end proc. #
                                 #_________#
```

Tap dancing

Get your dots and dashes sorted out with this offering from ***Bob Baxter***

Morse Code has proved essential for world communications. From the early Telegraph to DX working, the Samuel Morse code provides us with a format which is quite easy to learn and an international standard for communicating over long or short distances. Where once communications or signals were restricted to a 'line of sight' only, Morse started us on a road where civilisation began to talk over short and then long distances. The fate of nations and the history of the world has been changed due to Samuel Morse and the simplicity and reliability of the *Didah* language.

This program has been developed primarily as a learning tool for those wishing to sit for their Post Office Amateur Radio Licence. The British morse test is 12 groups/min whilst the Americans subject their novices to only 5 g/m. With this in mind, the program has a variable speed menu which should suit the very beginner and the more experienced.

Option seven is not used in this program. It is included to facilitate the further expansion of a routine for hardware interface to a transmitter.

Although the program has been timed using a stopwatch for the 12 and 18 groups, the *X* variable may be adjusted to suit if the program or routines are modified in any way. Likewise the Tone and Volume controls may be adjusted accordingly. The Duration of the sound may also be adjusted, although care should be taken that the duration does not exceed that of the fastest group's time periods of the pulses. Experimenting with Envelope shaping may prove interesting here.

Program Notes

Line No	
10-100	Initial Setup
120-230	Titles
250-400	Main Menu
420-550	Adjustment Menu
570-660	Volume Adjustment
680-750	Speed Adjustment
770-890	Tone Adjustment
910-960	Tone Sounder
980-1020	Time/Delay Counter
1040-1250	Selection & Printout
1270-1300	Random Letters
1320-1350	Random Numbers
1370-1400	Random Procedures
1420-1450	Mixed Groups
1470-1600	Keyboard Output
1620-1630	Transmission Interface (not used)
1650-1720	Instructions
1740-2110	Morse Table
2130-2190	Data Bank

Variables

Char	Ascii Character
Grp	Groups 1-36
Tn	Tone Level
Dur	Sound Duration
Vol	Volume Level
Sp	Output Speed
Cv	Character Value
Ds	Data Store Pointer
Gc	Gabbage Collection
X	Time Variable
Dc	Data Character
P	Delay Period
D	Delay Counter

If you don't want to wear your fingers out typing, I can supply tape copies for £2.75, including postage. Write to me at PO Box 17, Burnham-on-Sea, Somerset.

```
10 REM * AMCODER *
20 REM
30 REM * B.BAXTER *
40 REM
50 INK 1,12:SYMBOL AFTER 90:SYMBOL 95,&0,&0,&0,&0,&0,&0
,&7C,&0
60 REM CHAR=CHARACTER:GRP=GROUP:TN=TONE:DUR=DURATION:VO
L=VOLUME:SP=SPEED
70 REM X=TIME VARIABLE:CV=CHAR VALUE:GC=GARBAGE COLLECT
IGN:DS=DATA STORE
80 REM DC=DATA CHAR:P=PERIOD
90 DIM M$(58):FOR N=0 TO 57:READ M$(N):NEXT:  REM * IN
PUT DATA *
100 VOL=15:SP=18:I=24:TN=50:DUR=75
110 REM
120 REM * TITLE PAGE 1. *
130 REM
140 MODE 0
150 LOCATE 6,3:PRINT"AMCODER"
160 LOCATE 7,7:PRINT"MORSE"
170 LOCATE 6,11:PRINT"TRAINER"
180 FOR J=0 TO 4000:NEXT:MODE 1
190 WHILE OPT<9
200 GC=FRE(""):GOSUB 270
210 ON OPT GOSUB 440,1290,1340,1390,1440,1490,1630,1670

220 WEND
230 CLS:PRINT"Thank you, that was fun!":PRINT:END
240 REM
250 REM * MAIN MENU 2. *
260 REM
270 CLS:PRINT:PRINT"Main Options:-"
280 PRINT:PRINT:PRINT" 1. Adjust Speed, Tone & Volume."
290 PRINT:PRINT" 2. Random Letters."
300 PRINT:PRINT" 3. Random Numbers."
310 PRINT:PRINT" 4. Random Punctuation/Proc."
320 PRINT:PRINT" 5. Mixed Groups."
330 PRINT:PRINT" 6. Keyboard Output."
340 PRINT:PRINT" 7. Transmission Interface."
350 PRINT:PRINT" 8. Instructions and Codes."
360 PRINT:PRINT" 9. Exit Program."
370 LOCATE 9,25:PRINT"Select option..."
380 A$=INKEY$:IF A$="" THEN 380
390 IF ASC(A$)<49 OR ASC(A$)>57 THEN 270
400 OPT=ASC(A$)-48:RETURN
410 REM
420 REM * ADJUSTMENT ROUTINE 3. *
430 REM
440 WHILE OPT<4
450 CLS:PRINT"Volume, Speed & Tone Menu:-":PRINT
460 PRINT:PRINT"1. Alter Volume."
470 PRINT:PRINT"2. Alter Speed."
480 PRINT:PRINT"3. Alter Tone."
490 PRINT:PRINT"4. Main Menu."
500 LOCATE 9,25:PRINT"Select Option...";
510 A$=INKEY$:IF A$="" THEN 510
520 IF ASC(A$)<49 OR ASC(A$)>52 THEN 450
530 OPT=ASC(A$)-48:ON OPT GOSUB 590,700,790
540 WEND
550 RETURN
560 REM
570 REM * VOLUME CONTROL 4. *
580 REM
590 CLS:PRINT:PRINT"Current volume level:-"VOL
600 PRINT:PRINT"Input a value 1 - 15":PRINT
610 INPUT VOL:VOL=INT(VOL)
620 IF VOL<1 OR VOL>15 THEN 590
630 SOUND 1,TN,DUR,VOL:PRINT:PRINT"Okay ? (Y/N) ?"
640 A$=INKEY$:IF A$="" THEN 640
650 IF A$="Y" THEN RETURN
660 IF A$="N" THEN 590 ELSE 640
670 REM
680 REM * SPEED CONTROL 5. *
690 REM
700 CLS:PRINT:PRINT"The speed is "SP" words per min.":P
RINT
710 PRINT"Enter a new speed between 2 and 36 words"
720 PRINT"per minute.":PRINT
730 INPUT SP:SP=INT(SP)
740 IF SP<2 OR SP>36 THEN 730
750 RETURN
760 REM
770 REM * TONE CONTROL 6. *
780 REM
790 CLS:PRINT:PRINT"The Tone is "TN
800 PRINT: PRINT"Enter a value between 20 - 100 to alte
r the tone.":PRINT
810 PRINT"A higher number = lower tone.":PRINT
820 INPUT TN:TN=INT(TN)
830 IF TN<20 OR TN>100 THEN 790
840 SOUND 1,TN,DUR,VOL
850 PRINT:PRINT"Okay! (Y/N) ?"
860 A$=INKEY$:IF A$="" THEN 860
870 IF A$="Y" THEN RETURN
880 IF A$="N" THEN 790 ELSE 860
890 RETURN
900 REM
910 REM * TONE SOUNDER 7. *
920 REM
930 P=60/(SP*5)*I:N$=M$(CV):IF N$="2" THEN RETURN
940 FOR N=1 TO LEN(N$):S$=MID$(N$,N,1):IF S$="1" THEN L
TH=3*P:GOTO 960
950 LTH=P
960 SOUND 1,TN,6,VOL:D=LTH:GOSUB 1000:D=P:GOSUB 1000:NE
XT:D=P:GOSUB 1000:RETURN
970 REM
980 REM * TIME DELAY ROUTINE 8. *
990 REM
1000 T=TIME
1010 IF TIME<T+D THEN 1010
1020 RETURN
1030 REM
1040 REM * SELECTION & PRINTOUT 9. *
1050 REM
1060 GOSUB 1560
1070 PRINT:PRINT:PRINT:PRINT CHR$(32);
1080 FOR GRP=1 TO 36:FOR CHAR=1 TO 5: GOSUB 1140:GOSUB
930:PRINT CHR$(CV+33);
1090 NEXT:D=2*P:GOSUB 1000
1100 GOSUB 1150:NEXT
1110 INK 1,12:LOCATE 9,25:PRINT"Press any key for Menu.
."
1120 A$=INKEY$:IF INKEY$="" THEN 1120
1130 RETURN
1140 CV=INT(DC+RND(1)+DS):RETURN
1150 IF INT(GRP/6)=GRP/6 THEN PRINT CHR$(10)
1160 PRINT CHR$(32);:RETURN
1170 GOSUB 1560
1180 PRINT:PRINT:PRINT:PRINT CHR$(32);
1190 FOR GRP=1 TO 36:FOR CHAR=1 TO 5
1200 GOSUB 1140:IF CV>13 AND CV<21 THEN 1200
1210 GOSUB 930:PRINT CHR$(CV+33);:NEXT :D=2*P:GOSUB 100
0:GOSUB 1150
1220 NEXT
1230 INK 1,12:LOCATE 9,24:PRINT"Press any key for Menu.
."
1240 A$=INKEY$:IF INKEY$="" THEN 1240
1250 RETURN
1260 REM
1270 REM * RANDOM LETTERS 10. *
1280 REM
1290 CLS:PRINT:PRINT"Random Letters...36 groups of 5.":
PRINT
1300 DC=26:DS=32:GOSUB 1060:RETURN
1310 REM
1320 REM * RANDOM NUMBERS 11. *
1330 REM
1340 CLS: PRINT:PRINT"Random Numbers...36 groups of 5."
:PRINT
1350 DC=10:DS=15:GOSUB 1060:RETURN
1360 REM
1370 REM * RANDOM PUNCTUTAION & PROC 12. *
```

```
1380 REM
1390 CLS:PRINT:PRINT"Random Punctuation/Proceedure...":
PRINT
1400 DC=11:DS=0:GOSUB 1060:RETURN
1410 REM
1420 REM * MIXED GROUPS 13. *
1430 REM
1440 CLS:PRINT:PRINT"Random Mixed Groups...":PRINT
1450 DC=43:DS=15:GOSUB 1170:RETURN
1460 REM
1470 REM * KEYBOARD OUTPUT 14. *
1480 REM
1490 CLS:PRINT:PRINT"Type '^' to return to Menu.":PRINT

1500 A$=INKEY$:IF A$="" THEN 1500
1510 IF A$="^" THEN RETURN
1520 IF A$=" " THEN PRINT A$:GOTO 1500
1530 IF ASC(A$)<33 OR ASC(A$)>90 THEN 1500
1540 CV=ASC(A$)-33: GOSUB 930:PRINT A$;:GOTO 1500
1550 REM
1560 PRINT"Speed is:-"SP
1570 PRINT:PRINT"Hidden Display (Y/N) ?"
1580 A$=INKEY$:IF A$="" THEN 1580
1590 IF A$="Y" THEN INK 1,1:RETURN
1600 IF A$="N" THEN RETURN ELSE 1580
1610 REM
1620 REM * TRANSMISSION INTERFACE SPACE 15. *
1630 RETURN
1640 REM
1650 REM * INSTRUCTIONS 16. *
1660 REM
1670 CLS:LOCATE 8,1:PRINT"* PROGRAM INSTRUCTIONS *":PRI
NT
1680 PRINT:PRINT"This Morse routine has been designed t
o output a standard 36 groups of 5 chars. The optimum s
peed is 12 groups per min  as required to pass the Mors
e test.."
1690 PRINT:PRINT"Facilites include variable volume & to
necontrol together with variable speed.."
1700 PRINT:PRINT"Further options include keyboard outpu
t which permits characters to be typed in directly and
echoed on the screen at thesame time as the Morse.."
1710 LOCATE 9,25:PRINT"Press any key to continue.."
1720 A$=INKEY$:IF A$="" THEN 1720
1730 REM
1740 REM * MORSE TABLE 17. *
1750 REM
1760 CLS:PRINT"A ._      H ....    O ___     U ..._   "
1770 PRINT:PRINT"B _...    I ..      P .__.    V ..._"
1780 PRINT:PRINT"C _._.    J .___    Q __._    W .__"
1790 PRINT:PRINT"D _..     K _._    R ._.     X _.._"
1800 PRINT:PRINT"E .       L ._..   S ...     Y _.__"
1810 PRINT:PRINT"F ..._    M __     T _       Z __..
1820 PRINT:PRINT"G __.     N _."
1830 PRINT:PRINT"          1 .____    6 _...."
1840 PRINT:PRINT"          2 ..___    7 __..."
1850 PRINT:PRINT"          3 ...__    8 ___.."
1860 PRINT:PRINT"          4 ...._    9 ____."
1870 PRINT:PRINT"          5 .....    10 _____"
1880 LOCATE 9,25:PRINT"Press any key to continue.."
1890 A$=INKEY$:IF A$="" THEN 1890
1900 CLS:PRINT:PRINT"Punctuation & Procedures:-":PRINT:
PRINT
1910 PRINT"(.) Full Stop      ._._._"
1920 PRINT"(,) Comma          __._.__"
1930 PRINT"(:) Colan          ___..."
1940 PRINT"(-) Dash           _...._"
1950 PRINT"(?) Query          .._.._"
1960 PRINT"(/) Fraction Bar   _.._."
1970 PRINT"(') Apostrophe     .____."
1980 PRINT"(() Left Bracket   _.__."
1990 PRINT"()) R/Bracket      _.__._"
2000 PRINT"(=) Break Sign     _..._"
2010 PRINT"( ) Quotes         ._.._."
2020 PRINT"(@) Starting Sig   ._._."
2030 PRINT"(@) (I) Ending Sig ._._."
2040 PRINT"(I) Wait           ._..."
2050 PRINT"(!) Error          ........"
2060 PRINT"(&) End of Work    ..._._"
2070 PRINT"(K) Invite Trans   _._"
2080 PRINT:PRINT"* Note the use of computer symbols.."
2090 LOCATE 9,25:PRINT"Press any key for Menu.."
2100 A$=INKEY$:IF A$="" THEN 2100
2110 RETURN
2120 REM
2130 REM * CHARACTER DATA STORE 18. *
2140 REM
2150 DATA 00000000,010010,01010,10101,01000,000101,0111
10,10110,101101,2,2
2160 DATA 110011,100001,010101,10010,11111,01111,00111,
00011,00001,00000,10000
2170 DATA 11000,11100,11110,111000,2,2,10001,2,001100,2
,01,1000,1010,100,0,0010
2180 DATA 110,0000,00,0111,101,0100,11,10,111,0110,1101
,010,000,1,001,0001,011
2190 DATA 1001,1011,1100
```


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Arcade Avenue

Mouse + cheese

Here's an intruiging little story for those of you struggling to finish *Finders Keepers*. John Watson of Rochdale writes: "My young son has been playing the game for weeks but try as he may he was unable to finish with more than 88% . In an effort to help I used this small program that reveals the alphanumeric characters hidden in the code.

```
10 CLEAR 24200
20 LOAD ""CODE 24201
30 FOR F=24201 TO 65367
40 IF PEEK F 32 THEN GO TO 70
50 IF PEEK F 127 THEN GO TO 70
60 PRINT CHR$ PEEK F;
70 NEXT F
80 STOP
```

"To our surprise we came across a mouse and later on a very fat mouse. We already had the cheese and as you know in this game certain objects combine to form other objects. 1 mouse + 1 cheese = 1 very fat mouse, or so logic would suggest. But after looking very hard we never found the fabled mouse! A letter to Mastertronic was required. They replied promptly but sadness befell the assembled throng. . . No mouse. According to Mastertronic 88% is the maximum score and not even a skinny mouse exists.

"However, it states in the instructions that the Knight has two options:
1) Collect as much as possible and then escape; and
2) Return to the King and join the Knights of the Polygon Table (with hints of the hand of a fair princess).

"But as it stands only the options to escape with the loot exists. Not only no mouse, but no fame and even worse no princess! It looks like a case of the 'Faulty End' or even the 'Forgotten End'.

"Anyway here are some hints:
1) Philosophers stone + iron bar = gold bar;
2) Cutty Sark + empty bottle = ship in bottle;
3) Spark of life + pile of mud = mud monster;
4) Broken sword + blacksmith = excalibur; and
5) Drop charcoal, sulphur and saltpetre at the feet of the puss without boots – it forms gunpowder which can be used to remove the cat if you light it with the magic flame."

Well, thanks for the letter John, even if it is bad news to players looking for that elusive final 12%. Nevertheless it is one of the best cheap games available, in fact exceptional value for money, and the economics of the thing must make it impossible for them to get involved in prolonged efforts to correct a major bug. Such problems can take an age to solve, for instance it's taken nearly a year for *Swords and Sorcery* from PSS to be sorted out after the first adverts appeared.

Now then lets get on with some more of your hints and tips left over from the arcade special. Graham Robinson of Durham has sent this. "After reading your column for many months I decided to try and find a game which nobody had reported tampering with (an awesome task) but finally I found it, Quicksilva's *Astro Blaster*. I found a neat way of returning to Basic was built in. Load the tape as usual – play game to get a high score. After the writing inviting you to enter your name has finished press 'T'. then type either *Poke* 27422,0 for infinite lives or *Poke* 26396, × for × lives. Then *Goto* 40 to start program."

Graeme Foster has a tip for the ancient *Orbiter* by Silversoft – after game-over appears press *Caps Shift* then *Break*. Then type *Edit* and change *a*=26712 to *a*=26716 to give you 256 lives and 256 smart bombs.

Here are some tips that arrived without a name for the Commodore. Unfortunately no details are given on how to get them in. I have to repeat that I don't possibly have the time, or the software come to that, to test out every one of these things and fill in the gaps. Despite that, I know that a lot of you have no trouble getting these Pokes in and they're therefore worth printing. Can I ask that anyone who has details on how to get into these games to send them in so that using the pokes will be easier for beginners. Anyway, you can always use the dodge of resetting the computer by touching Pins 6 and 2 of the user port, or buy a breaker switch which is a small plug-in utility that does the same thing.

Here are the pokes. *Manic Miner: Poke* 16419, screen and *Poke* 16424, lives; *Attack of the Mutant Camels: Poke* 11639,255 and *Sys* 4096 to start; *Motor Mania; Poke* 8646,255 and *Sys* 8000; *Guardian; Poke* 21050,169 *Poke* 21051,0 *Poke 21052,234 Poke* 21053,234 *Poke* 21054,234 and *Sys* 24765; *Ancipital; Poke* 22743,57 *Poke* 22744,57 and *Sys* 16384; *Gryphon: Poke* 7313,169 *Poke* 7314,0 *Poke* 7314,234 and *Sys* 5200 then press *Run/Stop* – also try *Sys* 5000.

Andrew Donaldson of Walton-on-Thames has written with a plea for help, prompted by the abilities of the hackers who write in to the column – "Can anyone help me to get into Artic Computing's *Voice Chess* so that I can get it to print out moves on a printer other than the ZX. With my Manneson Tally and ZXL print interface I can get screen dumps of the board and piece positions but the program crashes when I try to print the table of moves." I know this isn't the usual area we deal with, but if any hacker fancies a challenge to their abilities then I can put you in contact with Andrew.

I've also had several pleas for help with Micropower's *Castle Quest* on the BBC – such as this from Waseem Asghar of Leyton. "What do you do with the wand after you've killed off the witch?"

I know that some of our readers finished this program ages ago, and I would greatly appreciate it if any of you could let me have a complete run down of the solution to answer these specific questions.

Finally this week, Robin Williams of Blackheath wonders if he is the first to finish Superior Software's *Repton* (a sort of enhanced *Boulderdash)* on June 8. He recommends it as an excellent game for any Beeb owner and has given us the screen passwords: *A* Screen One; *B* Chameleon; *C* Terrapin; *D* Sidewinder; *E* Gecko; *F* Python; *G* Salamander; *H* Iguana; *I* Cuttlefish; *J* Octopus; *K* Giant Clam; *L* The Kraken. Thanks, Robin.

Tony Kendle

We are searching for the top UK computer games player – the best there is!

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Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then, in September, the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play our 'top secret' games.

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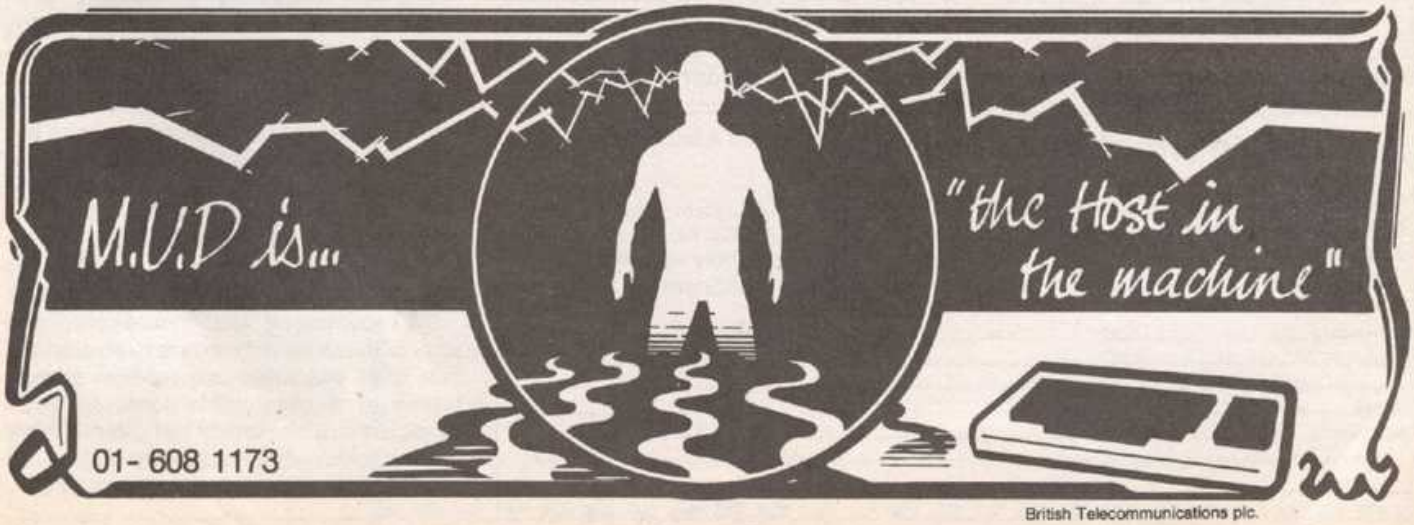

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Tony Bridge's Adventure Corner

MUD adventuring

Continuing our look at overseas adventurers and their problems, let's hear this week from James Bonello of Malta. He's written to me several times over the months, and I feel that I should mention him before he gets too angry!

He's the owner of a Commodore 64, and is particularly interested in corresponding with others who are working their way, like him, through *Eureka!*. Write to: 161 Old College Road, Sliema, Malta.

On now to a couple of Infocom adventures, and some help for players stuck in *Planetfall* and *Starcross*. D R Coomber, from Staffordshire is working through the former on his Einstein. He asks: "How do I kill the Microbe at Station 326 and get back to normal? How do I get into and out of the Radiation Lock? Where is the Radiation Suit?" To deal with the Microbe, you'll need the Laser – turn it up to the maximum setting *(before* you meet the Microbe) and then fire repeatedly. Now, here's a surprise, which may well throw many players off the scent!

This is *not* a zapping exercise – the laser has no effect on the Microbe, but it *does* love warm things, and now your laser will be red-hot. Just throw it into the cavern and the Microbe will follow. As for the Radiation Lock, you can't get into it (it's there for a bit of colour), and so you can also forget about the Radiation Suit. Mr Coomber is happy to help anyone currently working through the adventure, and his address is 14 Francis Green Lane, Penkridge, Staffs ST19 5HF.

Starcross is also giving trouble, to Mr B Walker for one, whose cry from the heart is: "Help! I'm stuck and would be grateful for any help that you can offer," He's at 38 Roman Way, Edgbaston, Birmingham B15 2SJ.

Geoff Phillips is stuck in the game too. "In particular, extracting the red rod from the rat-ant nest, trying to get down from the control bubble and understanding the 3-slot machine."

To get the rod, throw something at the nest – anything will do except another rod! To get down from the control bubble, jump off and then fire the gun at the drive bubble. There are, as you know, several slot machines around – try inserting the ceramic disc to get a result.

And while I'm talking of Infocom adventures, let me report news of a most profound and shocking nature which has momentarily shaken my previously rock-like faith in the company – on idly messing around with *Deadline* the other day, I actually found two *spelling mistakes* in close succession! No, I couldn't believe it either, but there you have it. . .

Geoff also asked me to pass along a few hints. "In Beyond's *Shadowfire*, you'll find lots of interesting things to be found around the ship. For example, the captain's cabin has a key-card that gets you in through the door, and there is also a strange device in the science area. It would have been nice if the game awarded a bonus score for collecting souvenirs (there are hundreds of weapons all over the place). To stop Zoff escaping get Manto to drop the transporter over the doorway, then retire back to the ship.

"Once there, Manto can monitor who is passing the transporter and beam up a surprised-looking criminal. In fact, using Manto to beam people up and down seems to be the main tactic for surviving the attack outside the room where the Ambassador is kept.

"A problem with Infocom games is that, when you come to the end you often have to switch off and reload. An improvement, on the C64 anyway, is to type *Poke* 792, 0:*Poke* 793,12 *before* loading the game. You are then able to restart by typing Restore."

Most of you, I imagine, will have heard or read about *MUD*. It's short for *Multi-User Dungeon,* and until now was only available to Essex University students and lucky Commodore owners with modems (used to tap in to the main computer, in the same way as user tap into Prestel or Micronet).

Richard Bartle and Roy Trubshaw, a pair of former Essex University students, set up the first Dungeon, which is still running, back in 1980 on the University's main-frame. I've had only a very brief exposure to *MUD,* but it's absolutely fascinating. Imagine a *Zork*-like scenario, with lots of gold, treasures, combat and most important, lots of difficult, complex puzzling and detective work – and then share the adventure with lots of other players, all trying to out do each other (and you!) in scoring points. Apart from collecting treasure to gain points, they are also won by killing off other players (and lost, of course, by being killed), which is why proceedings can get heated! Points are important, as your rating goes up according to how well you have played, the ultimate accolade being promotion to Wizard. Attaining this much contended position renders you pretty well invincible, but also allows you to actually change the parameters of the game itself. This means that the more humble player can be getting along quite well in working through a particular problem, and then find that he has been led up a long garden path by a sniggering Wizard. This, rather than putting anyone off, is all part of the fun, and indeed an incentive to keep slogging away at amassing points for your own apotheosis.

I could go into far more detail, but why not try it for yourself? Soon, *MUD* will become available to *any* computer-owner with a modem. The compunet version is apparently opening up to non-C64 owners this month (see News July 25 issue) and an enhanced version from British Telecom, which will be available for a trial period in September, is scheduled to come on-stream in November.

In order to play the BT version, the user must first purchase a *MUD*-pack for £20 (and early purchasers will be able to play free for that trial month), after which an hourly charge is made while on-line to the *MUD* computer.

I find all these charges (BT and Compunet have different scales, with Compunet requiring a monthly subscription, the level of which decides your hourly charge) rather high at the moment.

Knowing how addictive *MUD* can become, I shudder to think of my phone bill – imagine two or three hours of play a night for three or four nights a week! Do they have soup kitchens for adventurers? I'm sure, though, that if the project becomes a success, that these charges will come down.

I'd recommend *MUD* unreservedly to any millionaire adventurer, and if the rest of us can keep our modem adventuring to a reasonable level (difficult though it will obviously be!), then I think multi-player adventures like this could become very important in the future.

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BBC B 1.20/s Acorn DNFS, Disc Drive, Acorn cassette recorder, 2 joysticks, s/w including Elite on disc + Aliens on cassette, leads and manuals, nine months old, excellent condition, £450. Tel: 01-485 1827 evenings.

BBC B plus tool kit, Rom, Voltmace joystick plus leads, TV adaptor, dust cover, plus books plus approx £250 of original s/w, music, graphics, utilities. £325 ono. Tel: 01-693 9951.

BBC DOUBLE DENSITY DFS double sided 40 track drive 320K storage, Wordwise + graphics Rom, twin joystick, s/w, books, etc, £500 ono. Daisywheel printer £150. Tel: 0254 29043.

BBC B 1.2 o/s, Basic II, Disc Doc, DFS, new 40T drives, recorder, leads, s/w, joystick, light pen, £400. Tel: London 01-521 0077.

BBC SOFTWARE must go! BBC tool kit £15, PassGo £6, Space Shuttle £6, ATC £6, DACC Flight Simulator £5, White Knight Mk12 £10, Scrabble £10, all new, Tel: 0788 812940 evening.

BBC MODEL B 1.2 o/s, Disk interface, Basic I, ATPL sideways Rom board with 16K sideways Ram, Manuals, leads, etc. Excellent cond. £225. Roms: Wordwise £20, Commstar £18, Daytime 01-583 6666, ext 4157, Mr Cardy.

ACORN ELECTRON + Data recorder + 11 games £80. 297 Blackwell Road, Carlisle, Cumbria CA24RW or Tel Carlisle 33694.

BBC B Acorn DFS, Cumana Twin 200K disk drive, + PSU, cassette recorder, 14in Decca Colour monitor, Epson RX80 printer, £850. Flat 2, 34 Demesne Road, Whalley Range, Manchester.

WANTED Disc based Word Pro for BBC/Consider WordWise + or any disc based software. Write: Dawson, 41 Union Court, Otley, W. Yorks LS21 3AS.

BBC Printmaster Rom £20. Computer books (Cryer on Graphics and Latham on disc drives £3 each) inc postage. Ring Cardiff 485684.

BBC OS 1.2 400K 40/80T drive Solidisk 32K green screen Sanyo monitor view ISO-Pascal and lots of software. Total value £2600+ Sell £1000 ono. Tel: 0895 449722 after 8pm.

ACORN ELECTRON With Plus 1, joystick, lots of magazines and s/w inc. Elite. Good condition. Worth £320, sell for £120 ono. Tel: (01) 204 5066.

ELECTRON Computer + Tatung colour monitor (brand new) + lots of software (inc. Forth Snooker, etc.) All for £220. Tel: 01-567 4351. (Ask for Patricia) Evenings and weekends only.

WANTED BBC-B, data recorder, with or without software. Contact Mathew Dowse, Market place, Stainforth, Nr Doncaster, South Yorkshire.

BBC Rom software. Connect your modem to Prestel tyupe boards, £25. Includes instruction booklet, unused. Tel: 0273 779295 after 7.30pm. Ask for Steve. N.B. one only so hurry!

DISC DOCTOR BBC Rom £22. Acorn DFS Chip £10: Brother EP22 Typewriter Printer, RS232 inteerface with cable for BBC/Spectrum with interface one. £80. John. 061-434 6251 after 6pm.

ACORN ELECTRON Magazines books v.g.c. one month old. Swap for commodore 64. Telephone: (0375) 73683.

BBC B Cassette recorder, £130 of software, light pen, joystick and Rom. Worth £620. Sell for £325. Tel: Tothington 5933.

DOUBLE DENSITY Discdrive interface for BBC computer. Cost £100. Unused (never fitted) so gift at £40. Tel: Mendlesham 7130.

ACORN Network printer server software and network file-server. New and still in sealed wrapper. Gift at £25. Tel: Mendlesham 7130.

SWOP BBC B. All leads, 2 joysticks s/w, manuals, tech books, for spectrum with discs interface I & II, modem, s/w or TRS80II. All letters answered. Mr H

Elvin, 214 Horninglow Road, Sheffield S5 6SG.

BBC Model B 1.2 OS with cassette unit, three different joysticks, books and mags, plus £250 original software including many recent releases. Immac condition with dust cover. Accept £250. Tel: 061-707 2417.

BBC B Still in box, hardly used, with over £120 of original software inc. Revs, Castle Quest etc. With manual, leads etc. Perfect condition, only £329 ono. Tel: 2268790.

BBC BD Epson RX80F/T printer, disc drive view '2' fitted. All manuals etc. £700. Ex cond, hardly used. Phone 01-393 9853 evs.

Ataris for Sale

ATARI Data Recorder, under guarantee, 2 months old, £25 ono. Tel: Basildon 556507.

ATARI 400 48K, Data Recorder vgc, s/w including basic, Dropzone, Decathlon, Pole Position, over 50 titles, will swap for CBM64, data recorder + s/w. Tel: Martin on Oxford 246490, after 4pm.

SALE ATARI magazines and books, Page 6, Analog, Antic, send SAE for list to Mr H. Field, The Chimes, Bells Lane, Hoo, Nr Rochester, Kent ME3 9HT.

ATARI 800 48k With Data Recorder, Assembler Editor Cartridge, Quickshot 2 Joystick and loads of software only £98. Tel: Purfleet 866625 evenings.

ATARI 800XL, 1010 program recorder, joystick, introduction to Basic, Pole Position, 15 other games, £150 ono. Tel: 021 554 7014.

ATARI 400, 1010 data recorder, Basic cartridge, users manual, Quickshot j/s, over £100 of original s/w inc Defender and manymore £70. Tel: Milton 01-558 13;65.

ATARI 2000/600 joystick, 2 paddles, 2 games, quite new! £65. Tel: 01-272 5054.

ATARI 1064 memory expansion module for 600XL, expand your 600XL memory ;to 64K for only £50 plus original games for sale, cassette and cartridge. Tel: Dave, after 6pm 0935 841010.

SWAP ATARI 800XL, recorder, joystick, games (four) and books vgc, wanted Spectrum + Plus joystick books, WHY Prefer local unless collect. Tel: Ron Bristol (0272) 712675 from 4pm to 8.30pm.

ATARI 800, 1010 data recorder, XL basic, Microsoft Basic, Assembler Editor, Cartridge copier and ;assorted software, £160 ono. Tel: 0904 791067.

ATARI 800 48K tape recorder for quick sale, Atari software also wanted on disk, tape or Rom. Send list to 85 Walter Road, Ammanford, Dyfed, S. Wales or Tel: 0269 3266.

SWAP ATARI VCS + 9 carts, + joysticks vgc for Spectrum 48K vgc, no extras wanted, boxed + posted + cash extra considered or sell for £50. Tel 0652 34557 after 6pm ask for Julian.

ATARI VCS Roms wanted Star Wars, Star Raiders, Gyruss etc, must be cheap. Also will pay £30 for Vectrex machine and Roms. Tel: Gordon on 0674 76678 at weekends.

ATARI 800XL 1010 recorder joystick, and 12 original games including Bruce Lee, Blue Max, Zaxxon, Nato Commander and Fort Apocalypse. Sell lot for £105 ono. Tel: Wendover 0296 623423.

ATARI 800XL, Datasette, s/w wanted. Exchange for Spectrum, recorder, £150 s/w. Also £90 of hardware (joystick, printer etc) plus £25 cash if disk drive included. Tel: Gordon 0674 76678, weekends.

ATARI 400 48K, 410 recorder, dust cover, cartridge and tape copiers, books and manuals and software. Excellent condition. Bought for £370. Will accept £80. Tel: Upminster 24268. (MS 4 SD).

ATARI Basic programmers kit including basic cartridge, reference manual and basic guide only £10. Phone Mold 58941. Ask for Martin.

ATARI 800 130XE 1050 850 410 Touch Tablet Trackball for sale. Also TV monitor manuals books and lots of software large SAE to Chris Bone 10 Garston Drive, Watford, Herts.

ATARI 800 With 1010 program recorder, joystick dust cover cartridgecopier and assorted games. £160 ono Tel: 0904 791067.

ATARI 130XE For sale, mint condition. Plus three cartridges, joystick and two three hour video tapes. Worth over £200. Sell for £150 ono. Tel: 01-421 1108 (Simon).

ATARI Original games for sale. Tapes £5. Phone Wrexham 753238.

Commodores for Sale

VIC 20 £70, Super Expander £20, 16K £15 cassette deck £20, Programmers Reference Guide £6. £150 worth of games £20. Quickshot 2 joystick £5. All for £150. Good condition. Tel: Mansfield 792911.

PRINTER Plotter Vic 1520 never been used, £50 ono. Commodore Games Ureka, Sherlock, Solo Flight, lots of others, allhalf price, will swap for Modem suitable for Amstrad or WHY. Tel: 061-707 2373.

FOR SALE Vic 20, complete pack + p.rinter, 32K Ram, 3 slot motherboard, super expander, super screen, cartridges, tapes, manuals, total cost £450. Will sell for £199. Tel: 061 653 2314 after 6pm.

CBM 64, disk drive, cassette, joystick, 1520 printer/plotter, software including Pascal, White Lightning, Basic Lightning, + cash, for your BBC B with disk drive. Tel: Sheffield (0742) 584214 before July 20th.

OWN A CBM 64? Want to know how to speed up Basic. Send 50p and SAE to P. Watkins, 67 Saxonhurst Road, Northbourne, Bournemouth, Dorset BH10 6JE.

COMMODORE 64, cassette recorder, joystick, £170 worth of software including Simons Basic and Games Creator, some books, cost £420, sell for £270. Tel: 0227 272763 (Whitstable).

BARGAIN Commodore 64 and cassette unit, two joysticks, a book and £400 worth of original software (most of it new), only £150.

CBM 1525 for sale, boxed in Good condition, £100 ono. including 500 sheets paper. Tel: Steve, 01-889 9779.

COMMODORE C16 and game and games book £60. ZX81 with 16K ram and game £25 or swap for disc drive plus cash difference or printer. Tel: 01-942 1580, evenings.

CBM64 originals Motor Mania, TLL, Hunchback, Siren City, Monty Mole, £3.50. Raid over Moscow £6. Summer Games £7.50. Excellent condition. 10 Linford House, Linford, Ringwood, Hants BH24 3HY. (P&P inc).

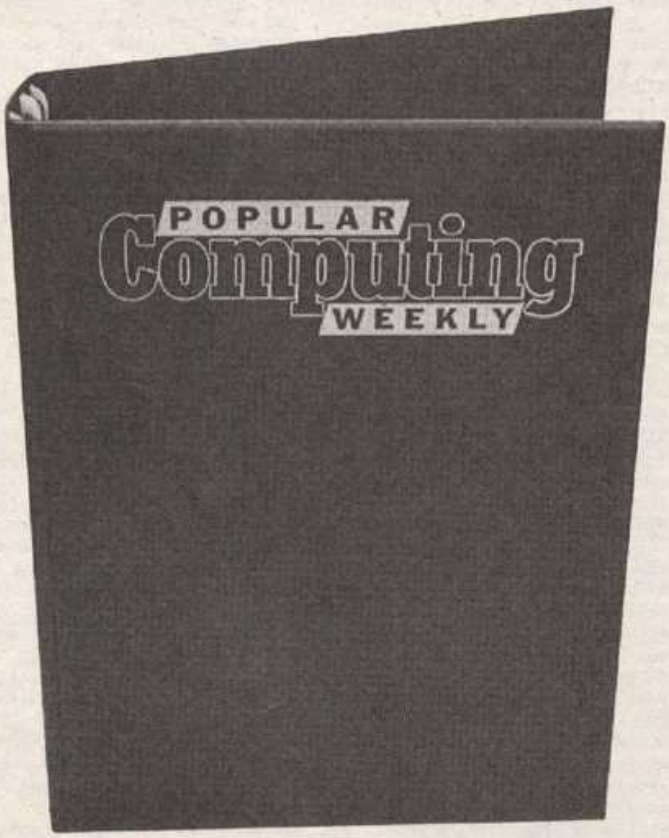
CBM64 with Quickshot II C2N cassette and over £220 of top software, cost over £470 will accept £310 ovno. Tel: 01-723 6107 between 9am and 6pm, ask for Kaz.

COMMODORE Vic 20 starter pack, joystick and s/w, good as new, will sell for £80. Tel: Halesworth 3699 (after 5pm) ask for Gary.

COMMODORE 64 + C2N data cassette + two Quickshot joysticks + £200 of original s/w, excellent condition, under guarantee £250 ono. Tel: Corby (0536) 63700.

SWAP CBM64 software 60 original titles, Fighter Pilot, W/Rhymeland, Valhalla, Hobbit, Lazy Jones etc for ptiner MPS801 or Centronics Printer. Tel: Northampton 413064 (0604).

C64 books for sale including The Working 64 and Basic 64, hardly used, + White Lightning cost nearly £150 offers. Tel: Corby (0536) 63700.



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VIC 20 C2N needs slight attention, 32K Ram 3 slot motherboard, 16K Ram pack, super expander Eprom Burner 18 cassettes, books, mags, listings, quick sale, £360. Tel: Shoebury 4476 evenings/ weekends.

C64 Magic Voice £35, 1520 Plotter £50, Currah Speech £15, Shadowfire £5, Amazon £10, Dallas Quest £8, Quill £5, Flight Simulator 2 £25. Tel: Graham, Wakefield 252046 after 6pm.

VIC penpal wanted to swap games and listings unexpanded games only £??? J. Hadlow, 10 Roman Camps, Broxburn, Scotland, Phone 853060.

VIC 20 +C2N +16K switchable Ram, over £150 worth of software. All the latest hits including Football Manager and Devils of Willy. 0506 56194. After 4pm (West Lothian).

SWAP Prism 1000 modem including Commodore 64 conversion pack for £80 cash Tel. Scunthorpe 853188.

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COMMODORE 64 software, Quo Vadis, £450, Suicide Express, Hunchback £2.50 each and Falcon Patrol £2 or all 4 for £7, Phone (0539) 21503 after 4pm please ask for Nick.

VIC 20 C2N data recorder, 32k Ram pack, 16K Ram pack, 8K Ram pack, plus intodut to basic part 1 best games software on VIC very good condition £145. W. Straker, 29 Elm Park Avenue, Tottenham N15 6AR.

CBM 64 +cassette unit + software £140 ono Tel. Leigh (0942) 673627.

CBM 8050 dual dick drive + IEEE interface for CBM 64 £350 Tel. Stroud 5506.

COMMODORE VIC 20 for sale worth £140. Sell for £99, also C2N datassette worth £45 sell for £30. Both a year old na din excellent condition, Tel. Mold (0852) 57942.

COMMODORE VIC 20 cartridge software for sale, includes Sargon II chess, Omega Race, and Avenger all in excellent condtion sell for £5.99 each, Tel. Mold (0352) 57942 for details.

COMMODORE VIC 20 software, CBM m/c monitor cartridge £20, tape software Arcadia, Wacky Waiters, Jetpac, Star Defence and tape backup, sell for £3.50 each Tel. Mold (0352) 57942 for details.

VIC20 with cassette recorder, printer 3, 8, 16K Rampack £400 or software, joystick and magazines including intro to basic part 1 and home computer course, £170 ono, Tel. (0632) 557587 after 6pm.

C 64 software, Easyscript disk, cost £75 new, sell for £30, including manual, Strip Poker (disk £7) Sentinel (disk £7), ghostbusters (tape £5), Brak Dance (tape £5). All originals, call Steve on (0474) 67326 (after 6pm)

CBM MPS801 printer excellent condition £100 ono or exchange for 1541 disk drive. Sublogic Flight simulator disk package (original) £15, Phone (0753) 26159 (Slough).

CBM 64 disks, CBM/Infocom adventures, Zork One, Zork Two, Zork Three and Star Cross, Cost £48 sell £20 or swap. Phone 0371 86 668 after 5pm. Ask for Norman Parker.

COMMODORE 64k, £70 software £25 Books, all leads etc. £140 ono also cassette recorder £5 needs attention Tel Amersham (02403) 4735.

CBM 64 software, Blue Max, Scrabble, Wing Commander, plus more all half price + disk drive (1541) with many disks and games, Flight Simulator II, Solo Flight £165. Phone Manchester 061 434 5539.

CBM 64 swap anything for Every Ones A Wally, Dummy run and Way of the Exploding Fist. Tel. Heath Hayes 75929, after 5.30pm.

COMMODORE C16 starter pack, brand new 11 months guarantee unwanted gift. cost £139.99. Will sell for £55 ono, also C16 exposed (book) £6.95 for £4 plus software. Tel. 01-723 9855.

COMMODORE 4 slot switchable motherboard, (stack0. Why pay over 230? Mine is only £14! Z80 workshop manual, only £2. Phone Steve on Strathaven (0357) 21221 anytime. Free picture of Churchill with each!

VIC 20 starter pack plus 16K RAM pack, joystick, light pen, Introduction to Basic 1 & 2, lots of software, books and magazines, worth £350 new, open to offers. Tel: Carlisle (0228) 33632.

VIC 20 plus C2N cassette, super expander and machine code, monitor, cartridges, manuals, power supply, TV modulator, three years old, very good condition, £35. No offers. Tel: York (0904) 32762 after 6pm.

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WANTED VIC 20 utilities (ROM compiler, tape to disc etc) and business software. Buy or swap for cartridges. Write with details to: 45 Fairfax Road, London NW6. Please include tel. No.

SWAP your modem and software (Commodore 64)(for my new speech synthesiser 'Speech 64' on cartridge. Write: James, Corinth House, Broad Highway, Cobham, Surrey.

CBM 64 + C2N cassette, Simons Basic, books and software, hardly used. £210. Tel: 0584 5595 during day or 0584 77206 after 6pm.

Dragon

DRAGON software collection. 140+ Assorted titles 1982-84, mainly games from 99p – £3.99p plus few cartridges. Send S.A.E. for full list. 120 Auriel avenue, Dagenham, Essex RM10 8BV. (Sprint Compiler wanted).

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FOR SALE: Dragon 32/64 software.Top titles including Back Track, Rommel's Revenge, Mr. Dig, 747, Dungeon Raid, Speed Racer, Syzgy, etc. All original. Tel Chesterfield 826400 (Dave).

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SOFT options handbook and artist (big letters, paint it, magic pen, the artist symbol 464 etc Amstrads, swap for Myrddin flight simuition or simular money's either way Stan 593 8522.

APPLE system 48K computer ITT-2020 with all manuals including Apple II basic manual, also twin games paddles and T.V. interface. Accept any reasonable offer of swap for BBC B (0244) 675717.

ALPHACOM 32 printer hardly used still guaranteed £50. Saga emperor keyboard brand new £35. 48K Spectrum v.g.c. £70 some software Tel. Tranent (0875) 611 563.

AMSTRAD utility, ASX toolkit 1 for CPC 464, adds 16 commands to basic, includes demo and instructions only £395 inc p&p sens cq, po, to C. Newcombe, 2 Woodhall Farm, Acton Lane, Sudbury, Suffolk, C010 6QR.

AMSTRAD CPC 464 colour 4 months old still guaranteed for 8 months, loads of boots and games worth £200 including joysticks 19 clank tapes, basic 1 also included all original software mags only £375.

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AMSTRAD CPC464 colour monitor, only 6 months old, inc 7 computer books user mags and s/w worth £60. Cost £430 will accept £280 ono. Tel Upminster 27322 aks for Ben (Hi Paul).

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DIARY

Event	Dates	Venue	Admission	Organisers
Computer Show	August 10 10.30am-5.00pm	Percy Boys Club New King Street Bath	50p	CJS/Northleach 04516 609
The Micro Trend 85	Aug 11	Burnley General Hospital	60p adults 30p children	Patons Computer Services 0282 53241
Computer Show	August 17 10.30am-5.00pm	Library Hall Homer Road Solihull West Midlands	50p	CJS/Northleach 04516 609
Computer Show	August 18 10.30am-5.00pm	YMCA Hall Severt Street Gloucester	50p	CJS/Northleach 04516 609
Small Business and Home Computer Exhibition	Aug 19-20 10.00am-9.00pm	"Goldiggers" Timber St Chippenham Wiltshire	£1.50 adults £1.00 children	Kevin Angell/ Simon Main 0249 656444
Personal Computer World Show	September 4-8	Olympia London	£2.00	Montbuild 01-486 1951

magazines £270 ono Tel Steve 0803 213862 after 7pm.

SINCLAIR RADIONICS LTD. 1974 Scientific calculator twelve functions, inverse Poliosh notation. New, unused, boxed with manual, Collector's item. Highest offer secures. Ioannis Georgiades, P.O. Box 11433, GR-541 10 Thessaloniki, GREECE.

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16K ZX81 £60 software filesixty keyboard £6 of mags £50 or swap for working progress with NI-CO Tel, 0625 827514.

FOR SALE Atmos original games casesettes £2.50 each, Hobbit and author £5.00 each, Also ORIC-1 tapes £1.50 each, Program books half price Tel 0206 562187.

COMMODORE VIC 20 16K Ram packs for sale. Vixen switchable 16K Ram and CBM 16K Ram sell for £20 each. Also two slot motherboard, sell for £3 Tel Mold (0352) 57942.

FOR SALE Acorn Electron, plus 2 over £60 software, lisp, view Rom, Electron user's. manuals etc, all as new, sell £230 ono or swap BBC 'B' Tel 0604 410721.

BARGAIN offer 5 tapes for £7 Jumping Jack, Super Spy, Flippet, Super spy, Winged Warlords originals, good condition phone 031-661 4297 Spectrum versions.

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ORIC software games compendium (Salamander) £3. Digger (Mercury) £2. Welcome to Oric, £1. Also MTX draughts, 10 levels £3 Tel 01-427 7396.

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AMSTRAD CPC464 colour monitor for sale mint condition some software included. ONly £270 phone 061 881 3651 Tony.

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AMSRAD CPC464 (colour) in box, one month old. Complete with manual, or logo and system utilities. Over 11 months guarantee £400 ono. Tel 0783 (Sunderland) 42788 after 6 pm.

WANTED – BBC Penpal, preferably with disc drive, to swap programs, hints, tips, etc. Write to – Paul Phillips, 13 Mountain Rd, Conwy, Gwynedd.

48K SPECTRUM plus, 6 month's guarantee, ZX printer, Kempston Interface, over £100 of software, £50 worth of books, whole system worth over £330! Quick sale, bargain only £145 ono phone now! Mark 907 5396.

ATARI XE130 128K plus disc drive and discs, and Dos 2.5. Six weeks old £320 ono. Phone Steve 0268 727066 daytime or 0268 729139 nights.

ELECTRIC software's new graphic adventure, "The Wreck", for 49K MSX micros, for sale, one only, R.R.P. £14.95, my price £10 ono. Tel. Neil on 0532 672723.

AMSTRAD software for sale, all titles, original as new. Combat, Lynx, Galactic, Plague, Hunter, Killer, Roland, Caves, 3D, Star Strike. £4.95 each. Phone 01-743 3931 ask for John.

ADVENTURE HELPLINE

Twin Kingdom Valley on Electron. How do I get the giant to follow me to Watersmeet? Alan McGregor, 6 Marchmont Gardens, Strathaven, Strathclyde. (Tel: 0357 22082.)

Aztec on Spectrum. I cannot get into the temple or across the river in the river valley. D. Kisby, 59 The Vineyard, Richmond, Surrey.

The Hulk on Spectrum. How do you kill bees? What does the fuzzy area mean? How do you kill ants? What do the scratch marks on the wall mean? Any help at all. Graeme Cloughley, 36 Mungalhead Road, Bainsford, Falkirk, Scotland.

Valkyrie 17 on Spectrum. I have got out of the hotel, got the skis and book on skiing, but I cannot get down the slop because the voice stops me. Do I have to do this? What do you do with the grille in the hotel? Mark Bell, 98 Grange Avenue, Wickford, Essex.

Message from Andromeda on Amstrad. How do I get past the alien commander's chamber? How do I gain access to the teleport and how and where do I use the explosives, the coin, the metal bar and the detonator? R Wilson, 7 Gawthorpe, off Dukes Brow, Blackburn, Lancs.

Gremlins on Spectrum. How do I stop the snowplough from running me down and how do I create an explosion? Any help gratefully received. Symon Kendall, 50 Tower Street, Treforest, Pontypridd, Mid-Glamorgan.

Curse of the Werewolf on Vic20. How do I get into the castle if I don't have the staff? How do I make silver and what use is the telescope, sword and scroll? S Macgowan, 47 Hallgarth Circle, Kendle, Cumbria.

Tower of Despair on Spectrum. How can I escape the statue in the woods. I ahve all the magic items, gauntlet and staff, but keep returning to the same place. K M Thorpe, 96 Woodlands Avenue, West Byfleet, Weybridge, Surrey.

Eureka on Spectrum/C64. Is anyone willing to swap the solution to adventure 3, 4 or 5 in exchange for the answer to adventures 1 and 2. Colin Langley, 5 Clare Crescent, Bottesford, Scunthorpe, S Humberside.

Sherlock on Spectrum. How do I prove that Ffoulkes is innocent? Any other hints. Sara King, 41 Boxley Close, Penenden Heath, Maidstone, Kent ME14 2DP.

Catacombs on Commodore 64. How do you get past the harpy in the statue room? Chris Waite, 16 Sussex Close, Boreham, Chelmsford, Essex CM3 3ED.

Crystal Theft on Amstrad. I can't get started! I can offer help in exchange on Message from Andromeda, Jewels of Babylon and Snowball. David carr, 'Thronlea', Oak Road, Mottram Saint Andrew, Macclesfield, Cheshire SK10 4RA.

Twin Kingdom Valley on Spectrum. How do I get the desert's king treasure chest? Also any other help please. Christopher Hallam, 43 Duke Street, Cotmanhay, Ilkeston, Derbyshire.

System 15000 on Spectrum. Any help please. Suzi yann, 3 Grainger Street, Dudley, West Midlands.

Zim Zala Bim on Commodore 64. How do you get out jof the dungeon and what is the plank for? Clive Ditton, Church End House, Lynn road, Middleton, Kings Lynn, Norfolk.

Castle of Riddles on BBC. How do I get out jof Ithe black maze? How do I get past the bear? kenneth Tracy, 5 Dennet Close, Mashull, Merseyside L31 5PD.

Eureka – Roman Times on Commodore 64. How do you get in the army camp? I've tried everything! Simon Talbot, 53 Fortis Green, East Finchley, London.

Castle Quest on BBC. What do you do with the wand? David Bonehill, 131 Donnington Close, Church Hill, Redditch, Worcs.

Jewels of babylon on Commodore 64. How do you cross the bridge? Where is the slab of rock? Where is the key? Chris Waite, 16 Sussex Close, Boreham, Chemsiford, Essex.

Knight's Quest on Spectrum. How can I climb out of the valley by the river? I have found the dwarf, rope, metal bar and magic compass. K M Thorpe, 96 Woodlands Avenue, West Byfleet, Weybridge, Surrey.

Urban Upstart on Spectrum. I have found the airport and I have got the book on flying and all the other objects, but I can't find the plane. What next? Marc Bell, 98 Grange Avenue, Wickford, Essex.

Rendezvous with Rama on Commodore 64. Any help from inside Rama, please. J H Picford, 5 Poplar Grove, Bollington, Macclesfield, Chesire.

System 15000 on BBC. Could someone please send me all the telephone numbers and codes to beat the game. Paul Tang, 21 Main Street, Brtanston, Burton-on-Trent, Staffs (Tel: 0283 65635).

Zkul on QL. What do the tongs and the green tank do? How do you read the message in the pentangle. E Penman, 7 Kenneth Court, 173 Kennington Road, Kennington, London SE11.

Lords of Time on Commodore 64. I can't find the frozen lake on level 2. Michael Carroll, 3 Tuskar View, Wexford, Ireland.

Sherlock on Commodore 64. I can't do anything! Ian Faddes, 14 Mull Place, Broomlands, Irvine, Ayrshire KA11 1HP.

Dungeon Adventure on Atari. This is the first adventure game I've tried. I can get almost everywhere in the game but I don't know how to solve it! Mike de Cock, Primeur Straat 11, 21000 Deurne, Antwerp, Belgium.

Fantasia Diamond on Amstrad. How do you break the black windows or cross the river? Sean Lambert, 44 Dunlin Road, Grovehill West, Hemel Hempstead, Herts HP2 6LY.

Eric the Viking on BBC. I've managed to set sail, but I seem to be getting nowhere from there. R Dawson, 41 Union Court, Otley, W Yorks LS21 3AS.

Charts

Amstrad

1	(1)	Dun Darach	(Gargoyle)	£9.95
2	(2)	Beach-head	(Access/US Gold)	£9.95
3	(6)	Red Moon	(Level 9)	£6.95
4	(3)	Alien 8	(Ultimate)	£9.95
5	(5)	Knight Lore	(Ultimate)	£9.95
6	(7)	Mini Office	(Database Publications)	£5.95
7	(5)	Rocky Horror Show	(CRL)	£8.95
8	(–)	Combat Lynx	(Durrell)	£8.95
9	(10)	Snooker	(Amsoft)	£8.95
10	(9)	Sorcery	(Virgin)	£9.95

Bubblers:

Danger Mouse	(Thorn/EMI)	£8.95
Gremlins	(Adventure International)	£9.95

Atari

1	(2)	Bounty Bob Strikes Back	(US Gold)	£9.95
2	(1)	Airwolf	(Elite)	£6.95
3	(3)	Drop Zone	(Microprose/US Gold)	£9.95
4	(4)	Archon	(Ariolasoft)	£11.99
5	(6)	Hard Hat Mack	(Ariolasoft)	£9.95
6	(5)	Miner 2049'er	(Big 5)	£9.95
7	(7)	Bruce Lee	(Datasoft/US Gold)	£7.95
8	(8)	Colour Space	(Llamasoft)	£7.50
9	(–)	Ghostbusters	(Activision)	£14.99
10	(9)	MULE	(Ariolasoft)	£14.95

Bubblers:

Kissin Cousins	(English Software)	£6.95
Smash Hits 3	(English Software)	£14.95

BBC

1	(1)	Revs	(Acornsoft)	£14.95
2	(2)	Alien 8	(Ultimate)	£9.95
3	(3)	Repton	(Superior)	£9.95
4	(4)	Magic Mushrooms	(Acornsoft)	£12.95
5	(5)	Atic Atac	(Ultimate)	£7.95
6	(–)	Combat Lynx	(Durrell)	£8.95
7	(–)	Hobbit	(Melbourne House)	£17.95
8	(8)	Elite	(Acornsoft)	£12.95
9	(–)	Mini Office	(Database)	£5.95
10	(9)	Wizardore	(Imagine)	£7.95

Bubblers:

Football Manager	(Addictive)	£7.95
Lode Runner	(Software Projects)	£7.95

Commodore 64

1	(1)	Way of the Exploding Fist	(Melbourne House)	£9.95
2	(3)	Hypersports	(Imagine)	£7.95
3	(2)	Elite	(Firebird/Acornsoft)	£14.95
4	(7)	Nick Faldo Plays the Open	(Mind Games)	£9.95
5	(4)	Shadowfire	(Beyond)	£9.95
6	(6)	Soft Aid	(Various Artists)	£4.99
7	(–)	Rockford's Riot/Boulderdash	(Monolith)	£9.95
8	(–)	Forth Protocol	(Hutchinson)	£12.95
9	(5)	Dambusters	(Sydney/US Gold)	£9.95
10	(–)	Frankie goes to Hollywood	(Ocean)	£9.95

Bubblers:

Red Moon	(Level 9)	£6.99
Great American Road Race	(Activision)	£9.99

Spectrum

1	(2)	Frank Bruno's Boxing	(Elite)	£6.95
2	(1)	Hypersports	(Imagine)	£7.95
3	(4)	Glass	(Quicksilva)	£7.99
4	(–)	Nick Faldo Plays the Open	(Mind Games)	£9.99
5	(3)	Jet Set Willy 2	(Software Projects)	£7.95
6	(5)	Shadowfire	(Beyond)	£9.95
7	(7)	Soft Aid	(Various Artists)	£4.99
8	(8)	Spy vs Spy	(Beyond)	£9.95
9	(–)	Forth Protocol	(Hutchinson)	£6.95
10	(6)	Rocco	(Gremlin Graphics)	£7.95

Bubblers:

Highway Encounter	(Vortex)	£9.95
Red Moon	(Level 9)	£6.99

All figures compiled by Ram/C

Top Twenty

1	(2)	Hypersports *(Spectrum/C64)*	**Imagine**
2	(1)	Way of the Exploding Fist *(C64)*	**Melbourne House**
3	(4)	Frank Bruno's Boxing *(Spectrum)*	**Elite**
4	(3)	Elite *(C64/BBC/Electron)*	**Firebird/Acornsoft**
5	(5)	Soft Aid *(Spectrum/C64)*	**Various Artists**
6	(–)	Nick Faldo Plays the Open *(Spectrum/C64)*	**Mind Games**
7	(6)	Jet Set Willy 2 *(Spectrum/C64)*	**Software Projects**
8	(7)	Glass *(Spectrum)*	**Quicksilva**
9	(9)	Spy vs Spy *(Spectrum/C64)*	**Beyond**
10	(10)	Cauldron *(Spectrum/C64)*	**Palace**
11	(–)	Fourth Protocol *(Spectrum/C64)*	**Hutchinson**
12	(12)	Shadowfire *(Spectrum/C64)*	**Beyond**
13	(13)	Rocco *(Spectrum)*	**Gremlin**
14	(8)	View to a Kill *(Spectrum/C64/Enterprise)*	**Domark**
15	(14)	Dun Darach *(Spectrum/Amstrad)*	**Gargoyle**
16	(15)	Alien 8 *(Spectrum/BBC/Amstrad)*	**Ultimate**
17	(17)	Nodes of Yesod *(Spectrum)*	**Odin**
18	(–)	Rockford's Riot/Boulderdash *(C64)*	**Monolith**
19	(18)	Herbert's Dummy Run *(Spectrum/C64/Amstrad)*	**Mikro-Gen**
20	(–)	Frankie Goes to Hollywood *(C64)*	**Ocean**

Figures compiled by Ram/C

Readers' Chart No 36

1	(2)	Elite (C64/BBC/Electron)	**Firebird/Acornsoft**
2	(3)	Dun Darach (Spectrum/Amstrad)	**Gargoyle**
3	(1)	Soft Aid (Spectrum/C64)	**Various Artists**
4	(4)	Shadowfire (Spectrum/C64)	**Beyond**
5	(7)	Hypersports (Spectrum)	**Imagine**
6	(10)	Revs (BBC)	**Acornsoft**
7	(–)	Way of the Exploding Fist (C64)	**Melbourne House**
8	(6)	Confuzion (Spectrum/Amstrad/C64/BBC/Electron)	**Incentive**
9	(8)	Knight Lore (Spectrum/BBC/Amstrad)	**Ultimate**
10	(5)	Spy vs Spy (Spectrum/C64)	**Beyond**

Winning phrase No 36: "Tasty spiv does life" from Terry Flood, Leclair House, Ferrier Estate, Kidbrooke, London, who receives £25. Others who came close include (mainly yetis):"Pope lifts sad yeti" from Alan Crawford, from Penicuik and "Yetis tipple soda" from G P Craig of Dundee.

Now voting on week 37 – £25 to win

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

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

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

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

Voting for Week 37 closes at 2pm on Wednesday August 7 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .....

Address .....

.....

.....

My top 3: Voting Week 37

1.....

2.....

3.....

My phrase is: .....

New Releases

HARD-CORE

Elite's computer game based on *Airwolf* the TV program has now been converted to the Amstrad.

Consensus of opinion of

Airwolf in its earlier versions for the Spectrum and Commodore was probably 'pretty good but horrendously difficult' and I think that's the case here.

The vague plot had you plotting your super high powered mega copter through a series of heavily defended caves down to where (as ever) a bunch of scientists are held captive.

This involves shooting away defensive barriers, destroying missile control boxes and, more important than anything else, carefully piloting your helicopter through what are often very narrow gaps indeed.

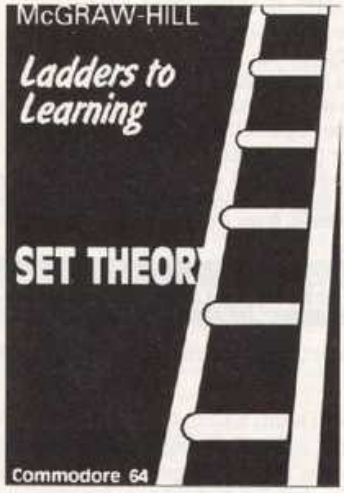
It's the helicopter control that poses the real headaches – the damn thing refuses to hover in one position. It's impossible to make it stop moving completely, consequently, doing this whilst also firing lazers and dodging baddies is amazingly difficult. Definitely for hard-core addicts – ordinary mortals may give up pretty quickly.

Program *Airwolf*
Price *£7.95*
Micro *Amstrad*
Supplier *Amsoft*
Brentwood House
169 Kings Road
Brentwood
Essex
CM14 4EF

SIMPLE LOGIC

McGraw-Hill's Ladders to Learning series of educational titles covers some topics for kids under 13 that I was never taught – this new fangled new maths stuff. So I suppose you can say where the program *Set Theory* is concerned, I represent an under 13 year old at least as well as a real under 13 year old, more so probably.

So it has to be said that the program works very well indeed.



Based around grouping basic geometric shapes into different sets and asking simple questions, *Set Theory* teaches simple logic, which is what most new maths turns out to be all about. It shows that Socrates isn't a fish after all. Nor are all men small blue oblongs.

Program *Set Theory*
Price *£7.95*
Micro *Commodore 64*
Supplier *McGraw-Hill*
Shoppenhangers
Road
Maidenhead
Berkshire
SL6 2QL

Pick of the week

ON THE TRACK

Racing Destruction Set is one of the more original racing programs I've seen, one of the few that owes little to *Pole Position*. In fact, it owes a lot more to slot car racing.

The screen is split into two sections which shows the current racing area since pretty soon the computer car outpaces you and ends up on a later section of track. The display is a kind of 3D in that the cars are displayed at an angle and you can see their sides as they turn corners.

The real skill of the game is judging speed – just like Scaletrix, if you leave the cars alone they will steer themselves along the right path but hopelessly slowly. It's up to you to use acceleration and braking to make a fight of it with the other car.

There are jumps and chicanes to make life difficult and, a major feature of the game, you can customise your own track layout using a menu driven command system.

Again it reminds me of nothing so much as the car racing games of old – no bad thing. I much prefer this game to the alternative track disappearing into the middle distance style and the design makes for a greater competitiveness as a two player game – you get a much clearer sense of how your rival is doing.

Program *Racing Destruction Set*
Price *£14.95*
Micro *Commodore 64 (disc)*
Supplier *Ariolasoft*
Asphalte House
Palace Street
London SW1E 5HS

TRUCKING

All together now: "I like trucking, I like trucking, I like trucking and I like to truck!"

Well, it had to happen – at last someone has brought out a truck driving simulation – the someone being CRL, and the program *Juggernaut*. Did I say simulation? As they say, show me a 40 tonner that can do 0-40 in under six seconds and I'll show you a cast iron hedgehog.

But really, it's not all that bad. Despite having graphics only marginally better than the Paris section of *View to a*

This Week

Program	Type	Micro	Price	Supplier
The Covenant	Arc	Amstrad	**£6.95**	PSS
Traffic	S	Amstrad	**£8.95**	Amsoft
War Zone	S	Amstrad	**£6.95**	Cases Comp Sim
Fig Forth	Ut	Amstrad	**£24.95**	Amsoft
Banana Man/Secret	Arc	BBC	**£2.50**	Blue Ribbon
Castle Assault	Arc	BBC	**£2.50**	Blue Ribbon
Games Disk	Arc	BBC	**£9.95**	Blue Ribbon
Munchy/Hangman	Arc	BBC	**£2.50**	Blue
Qman	Arc	BBC	**£2.50**	Blue Ribbon
Adventure Con Set	Ad	Commodore 64	**£14.95**	Ariolasoft
Pinball Construct.	Arc	Commodore 64	**£14.95**	Ariolasoft
Seven Cities of Gold	Arc	Commodore 64	**£14.95**	Ariolasoft
Wizard	Arc	Commodore 64	**£9.95**	Ariolasoft
Comm 64 Mach. Code as	Ut	Commodore 64	**£16.95**	McGraw Hill
Music Construct. Set	Ut	Commodore 64	**£14.95**	Ariolasoft
Shaax	Arc	MSX	**£6.95**	Kuma
Nightmare Maze	Arc	QL	**£12.95**	Shadow Games
Quazimodo	Arc	QL	**£12.95**	Shadow Games
Cavern	Ut	QL	**£12.95**	Sinclair
Decision Maker	Ut	QL	**£12.95**	Sinclair
Entrepreneur	Ut	QL	**£39.95**	Sinclair
Integrated Accounts	Ut	QL	**£89.95**	Sinclair
Monitor	Ut	QL	**£24.95**	Sinclair
Project Planner	Ut	QL	**£39.95**	Sinclair
Touch n Go	Ut	QL	**£24.95**	Sinclair

Kill, it really is quite fun as you manoeuvre your rig around town, picking up various loads. No other traffic here (perhaps it's a Sunday) but there are traffic lights and stuff.

If there's a lorry driver in the family, then it's highly recommended. Otherwise, strictly for Yorkie fans.

Program *Juggernaut*
Price *£7.95*
Micro *Spectrum 48K*
Supplier *CRL*
9 Kings Yard
Carpenters Road
Stratford
London E15

TEDIOUS

Mayday really is dreadful. The title may deceive, but what we have here is a version of boring old *Lunar Rescue*. For those too young to remember it, the game involves piloting a space shuttle down the screen dodging meteors, landing on a suitable landing pad and returning to the mothership at the top of screen by blasting one's way back up the screen.

So it goes, different screens have more difficult landing sites which involve negotiating your way down winding channels.

It's OK as a game but then it has been for centuries and there are zillions of other versions at least as good as this one. Utterly tedious and should be on a cheap label if anywhere. £7.95 is just silly.

Program *Mayday*
Price *£7.95*
Micro *BBC*
Supplier *Beavan Technology*
Gresham Chambers
14 Lichfield Street
Wolverhampton
West Midlands
WV1 1DG

SINGLE STEP

Assembly Language Programming on your Commodore 64 is a combined Assembler package – one of several dozen.

There's nothing really all that special about this package except that it's just been released and it's relatively cheap at £16.95.

The Assembler accepts source code written in Basic lines which can be edited using the normal text and screen facilities. Labels may be up to 75 characters long and the program is not fussy about hexadecimal or decimal numbers and how many spaces you leave between mnemonic and value.

The Disassembler also accepts hex or decimal and will function continuously in pages or single steps.

Both parts of the package are about as easy to use as they can be and the Pseudo instructions acceptable to the Assembler may prove to be a godsend; for example, DFS lets you enter a character string at the current assembly address and could therefore save you hours on titles and headings.

Program *Machine Code Assembler/ Disassembler*
Price *£16.95*
Micro *Commodore 64*
Supplier *McGraw Hill Book Company*
Maidenhead
Berks

EXPLOSIVE

Grand Prix Rally II is a racing game for the Amstrad in the classic style – the rear view of the car and a road that is drawn into a point in the far horizon, giving an illusion of distance.

It's a standard computer trick and how well it works depends on the effectiveness of the 3D scrolling effect – on the Amstrad it looks good, although the car is slightly wonky when turning sharp corners.

The car is operated simply by joystick left, right, forward makes you go faster – no gears to worry about. There are other cars on the track, so, as ever, the game is all about quick reactions: there's a fairly effective explosion when things go wrong.

Interest in the game is maintained by a variety of driving conditions which affect the handling of the car and various sections of road where miscalculations on corners are fatal.

Program *Grand Prix Rally II*
Price *£7.95*
Micro *Amstrad*
Supplier *Amsoft*
Brentwood House
169 Kings Road
Essex
CM14 4EF

A Tangled Tale	Ad	Spectrum	**£2.99**	Central Sols.
Crystal Quest	Ad	Spectrum	**£2.99**	Central Sols.
Devils Descent	Arc	Spectrum	**£2.99**	Central Sols.
Mount Challenge	Arc	Spectrum	**£2.40**	Aasvoquelle
Talos	Arc	Spectrum	**£7.95**	Silversoft
Valley of the Dead	Arc	Spectrum	**£2.99**	Central Sols.
Macadam Bumper	S	Spectrum	**£7.95**	PSS

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

Aasvoquelle, Blakemoor, Marshbrook, Church Stretton, Shropshire SY6 6QA, 06964 345. **Amsoft**, Brentwood House, 169 Kings Road, Brentwood, Essex, 0277 230222. **Ariolasoft**, Retail. **Blue Ribbon**, Silver House, Silver Street, Doncaster, South Yorkshire DN1 1HL, 0302 21137. **Cases Comp Sim**, 14 langton Way, Blackheath, London SE3 7TL, 01-858 0763. **Central Solutions**, 500 Chesham House, 150 regent St, London W1R 5FA, 01-624 1389. **Kuma**, Kuma Computers, 12 Horseshoe park, pangbourne, RG8 7JW, 07357 4335. **McGraw Hill**, McGraw Hill Book Company, Maidenhead, Berks. **PSS**, 452 Stoney Stanton Road, Coventry, CV6 5DG, 0203 667556. **Shadow Games**, 70 Gooseacre, Cheddington, NEar Leighton Buzzard, Beds, 0296 668740. **Silversoft**, Studio 7D, Kings Yard, Carpenters Road, London E15 2HD, 01-985 5614. **Sinclair**, Stanhope Road, Camberley, Surrey, GU15 3PS, 0276 686100.

Monster creation

The story of Dr Weizenbaum has became fairly famous. He's the man who back in the mid-seventies put together some clever programming tricks to produce *Eliza*, the almost-human computer program which – like her namesake in George Bernard Shaw's *Pygmalion* – learnt to talk so well that you could hardly tell she wasn't the real thing.

Slightly disguised as *Doctor*, *Eliza* became a brilliant parody of a psychotherapist, responding to a patient's confessions with gently probing questions.

Dr Weizenbaum was immensely pleased with what he'd done – until he realised that everyone else was taking the program seriously. Learned journals were predicting the total computerisation of the psychiatric industry; students were secretly plugging in for hours of late-night conversation about their favourite topic – themselves. The last straw for Weizenbaum was when his secretary, who actually knew many of the little tricks that went into the program, asked him one day if he would leave the room so that she could consult the computer in private.

"But it's only a trick! I didn't mean this to happen!" howled the unhappy Weizenbaum to anyone who would listen, while the public (and some computer specialists who should have known better) continued to hail his program as a breakthrough in Artificial Intelligence.

Dr Weizenbaum's pain and remorse are amply apparent in his book *Computer Power and Human Reason*, published by Pelican (a reprint of the 1976 American edition, but with a new preface expressing disquiet about the moral values of video games). It's a striking book, with many interesting things to say about computers and their limitations. The Weizenbaum conclusion is that computers can do almost anything – except the things that are actually important.

The main point he makes is about the enormous difference between the calculating powers of a computer and real intelligence, the human quality that comes not from electric currents activating logic gates but from the human experience – physical, moral, emotional, that machines can never know. Machine intelligence will never be more than a pale copy of limited aspects of human thought.

But some of Dr Weizenbaum's comments made me wonder. For example, he writes, "I had thought it essential, as a prerequisite to the very possibility that one person might help another to cope with his emotional problems, that the helper himself participate in the other's experience of those problems." This brought me up short as I thought of all those people who have been helped to cope with their problems by people they have never met – by authors of books and poems, for instance, that, sometimes very indirectly and in ways quite unintended, speak to their own condition.

Perhaps when writing was first invented, there were people as distrustful of the new medium as Dr Weizenbaum is of computer software. They could have pointed out all the subtleties that any written account must, by its nature, leave out. They would have worried that the relationship or author and reader could never quite be that of man meeting man in the flesh. Remote influence is nothing new. It's the basic condition of literature.

Perhaps computer awareness will have grown up when we realise that there is nothing magically different about a piece of computer software. It's just like a book, in that it has an author, who may be right or may be wrong, but either way is *responsible*, whether he likes it or not.

As for people misunderstanding you – that happens to authors all the time. And when were a writer's intentions a guide to the value of his work?

I'm afraid I can't resist a smile when I read of Dr Weizenbaum's horror when he glimpsed his creation reflected in the eyes of others.

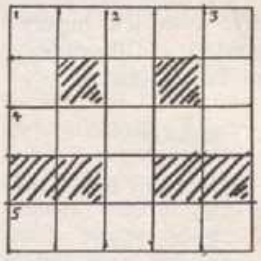
But his creation it was – every byte of it determined by him. It's Baron Frankenstein who's the real monster, after all.

George Simmers

Four across

Puzzle No 169

In this crossnumber puzzle, numbers have to be filled in rather than words. Can you complete the puzzle and also determine the values of A, B, and C.



Across	*Down*
1 B^2	1 $(A-B)^3$
4 A*B	2 $(A-B)^3$
5 C^2	3 C

Solution to Puzzle No 165

Of the 2197 different possible combinations of cards, 343 of them will win and 1854 will lose.

```
10 LET MULT=0:LET NONMULT=0
20 FOR A=1 TO 13
30 FOR B=1 TO 13
40 FOR C=1 TO 13
50 LET S=A+B+C
60 LET P=A*B*C
70 IF P/S=INT(P/S) THEN MULT=MULT+1 ELSE
NONMULT=NONMULT+1
80 NEXT C
90 NEXT B
100 NEXT A
110 CLS:PRINT "WIN=";MULT,"LOSE=";NONMULT
120 END
```

The program uses three *For/Next* loops to generate each of the possible combinations of cards in turn. The sums and products of these cards are then calculated and if the product is an exact multiple of the sum, then the *Mult* variable is incremented by 1. Otherwise, the *Nonmult* variable is incremented.

After all combinations have been assessed, the result is displayed.

Winner of Puzzle No 165

The winner is Keith Simpson of Poole, Dorset, who receives £10.

Rules

The closing date for Puzzle No 169 is September 4.

The Hackers

ATARI ST

520ST

POWER WITHOUT THE PRICE

THE NEW ATARI 520ST

Under the new leadership of Jack Tramiel (former boss and founder of Commodore Business Machines), Atari Corporation have marked their entry into the world of business/personal computers with a machine which leaves the competition standing. Tramiel's slogan 'Power Without the Price' has been implemented in the manufacture of the new 512K Atari 520ST colour computer which offers the user amazingly high performance at an incredibly low price. Launched as a work-station, this new system incorporates seven software packages as well as the 520ST computer with 512K RAM, mouse controller, high resolution monochrome monitor (640x400), 95 key keyboard (with 18 key numeric keypad), MIDI interface, GEM and a 500K 3½ inch disk drive, all for the package price of only £651.30 (+VAT = £749). Dubbed the 'Mac beater' and the 'Jackintosh' (after Atari's Chief, Jack Tramiel), Atari's new machine has been directly compared with the Apple Macintosh RRP £2595 (+VAT = £2985) which offers similar features and capabilities but at a much higher price. Favourably reviewed by the UK's highly critical specialist computer press, the 520ST is likely to make a great impact in this country as a sophisticated alternative to an IBM PC, APRICOT or APPLE MACINTOSH. Unlike its overpriced competitors, the Atari 520ST can be linked up to a colour monitor to unleash a choice of up to 512 colours. The addition of colour brings out the full potential of graphics packages such as GEM.

USER FRIENDLY GEM OPERATING SYSTEM

The power of the ST is harnessed and made user friendly by the new operating system 'GEM' from Digital Research. GEM stands for Graphics Environment Manager and allows a user friendly colour or B/W graphics interface which closely resembles that of the Macintosh. This similarity extends to the use of moveable resizeable windows, icons to represent objects such as disks and disk drives, and the use of pull down menus and a mouse. The advantage of all this is that the computer becomes extremely easy to use. GEM has now been implemented for the Acorn, ACT, Atari, IBM, ICL, and Olivetti. Software written for GEM on one computer should also run under GEM on another computer. This will enable the market to quickly produce a large library of standard interchangeable software.

FREE SOFTWARE AND FUTURE EXPANSION

The Atari 520ST comes supplied with seven free software packages as listed below: 1) TOS -Tramiel Operating System based on CPM 68K. 2) GEM Graphics Environment Manager by Digital Research (DRI) giving a WIMP (Window, Icon, Mouse, Pull down menu) environment. 3) DR GEM Paint for creating graphics masterpieces. 4) DR GEM Write for word processing. 5) Logo learning language to enable you to write your own programs easily using turtle graphics. 6) DR Personal Basic a powerful user friendly version of the Basic programming language. 7) BOS operating system giving you access to dozens of business applications packages already available on the market. Designed with future expansion in mind, the ST also features a host of different interfaces to the outside world and an impressive list of accessories is planned. Atari will soon be releasing a 1000K (1MB) 3½ inch disk drive, and a 15MB hard disk storage system as well as a mass storage compact disk (CD) player capable of storing an entire 20 volume encyclopedia on one disk. A full range of inexpensive printers are planned including dot matrix, daisywheel and thermal colour printers. With its unbeatable graphics, speed and software at a price which is far below that of any comparable personal computer currently on the market, the ST is all set to do battle with the competition. To receive further details of the ST from Silica Shop, just fill in the coupon below with your name and address details and post it to us.

Silica Shop Price: £651.30 + £97.70 VAT = £749.00 This price includes:

- ★512K RAM
- ★B/W MONITOR
- ★MOUSE
- ★500K 3.5" DISK DRIVE
- ★GEM
- ★KEYBOARD (95 KEYS)

£749

ATARI 520ST SPECIFICATION

MEMORY
512K RAM (524,288 bytes)
16K ROM expandable to 32K
Port for added 128K plug-in ROM cartridge
256K TOS operating system

GRAPHICS
Individually addressable 32K bit-mapped screen with 3 screen graphics modes:
320x200 pixels in 16 colours (low resolution)
640x200 pixels in 4 colours (med resolution)
640x400 pixels in monochrome (high res)
16 shades of grey in low res mode
512 colours available in low/medium res
8 levels of each in red, green and blue

ARCHITECTURE
4 custom designed chips:
GLUE Chip - MMU Memory Mapped Unit
DMA Controller - Graphics Processing Unit
16/32 bit Motorola 68000 processor at 8MHz
eight 32 bit data registers
eight 32 bit address registers
16 bit data bus/24 bit address bus
7 levels of interrupts/56 instructions
14 addressing modes/8 data types

DATA STORAGE
High speed hard disk interface
Direct memory access 1.33 Mbytes per second
CD (Compact Disc) interface
Built in cartridge slot/s
Dedicated floppy disk controller

DISK DRIVE
500K (unformatted) sided 3½" Floppy drive
340K (formatted) storage capacity

SOUND AND MUSIC
Sound Generator
Frequency control from 30Hz to above audible
3 voices (channels) in wave shaping sound in addition to a noise generator
Separate frequency and volume controls
Dynamic envelope control
ADSR (Attack, Decay, Sustain, Release)
Noise generator
MIDI interface for external music synthesisers

KEYBOARD
Separate keyboard microprocessor
Standard QWERTY typewriter styling
Ergonomic angle and height
95 keys including 10 function keys
Numeric keypad — 18 keys including ENTER
One touch cursor control keypad

MONITOR
12" screen - high res monochrome monitor
640x400 monochrome resolution

VIDEO PORTS
Display - Low Resolution - 40 columns
Med/High Res - 40/80 plus cols
Medium res RGB (Red/Green/Blue) output
High resolution monochrome (Black & White)

COMMUNICATIONS
Bidirectional centronics parallel interface for printers, or modems (capable of input/output)
RS232C serial modem/printer interface
VT52 Terminal Emulation Software
Maximum Baud Rate up to 19,200
High speed hard disk interface
Floppy disk controller (Western Digital)
2 joystick ports (one for 2 button mouse)
MIDI interface for external music synthesisers

GEM WIMP ENVIRONMENT
WIMP - Window Icon Mouse Pop-down menus
Two button mouse controller
Icons/Pull down menus/Windows
GEM VDI - Virtual Device Interface
GEM AES - Application Environment services
GEM BBT - Bit Block Transfer
Real time clock & calendar

SOFTWARE
GEM environment
with user friendly Macintosh style operation
TOS - Tramiel Operating System
Atari's own system based on CP/M 68K with hierarchical directory & file structure plus a host of MS DOS & UNIX command structures
BOS - Business Operating System
to run any standard BOS business programs
GEM desktop
with GEM PAINT graphics mgmt system and GEM WRITE word processor
Personal BASIC and DR Logo
(originally written by Digital Research (DR) very much like those on other machines except for the extensive use of pull down menus, mouse control and windows)

VARIOUS
Dimensions: 40/50mm/240mm/460mm
Replaceable external power supplies
Expansion 3½" floppy disk drives 500K/1,000K (two drives can be connected)
3½" 10Mb hard disk
CD (compact laser disc)
Dot matrix 9 (or laser) printer (black)
Thermal dot matrix (colour)
RGB & monochrome monitors

LANGUAGES
BASIC & LOGO supplied
Many others will soon be available, including Assembler, BCPL, C, Cobol, Compiled Basic, Lisp, Modula-2 and Pascal

Note: Some of the above specifications are pre-release and may therefore be subject to change

MACINTOSH v F1e v 520ST

"Imagine a Fat Mac - the 512K Apple Macintosh - but with a bigger screen, a far bigger keyboard with numeric keypad, cursor and function keys, and colour. That gives you some idea of what the Atari 520ST is like, except for two important things. First the Atari seems faster. Second the Atari system is about one third of the price."
June 1985 - Jack Schofield - **PRACTICAL COMPUTING**

FEATURES OF BASIC SYSTEM	APPLE MACINTOSH	APRICOT F1e	ATARI 520ST
Price Includes B/W Monitor	YES	NO - extra £300	YES
Keyboard size mm (LxDxH)	330x147x50	450x167x29	470x240x55
Keyboard size ins (LxDxH)	13x5¾x2	17¾x6½x1	18½x9½x2½
3½" D/Drive (Unformatted)	500K	500K	500K
3½" D/Drive (Formatted)	399K	315K	349K
WIMP (Window, Icon, Mouse ...)	Apple	ACT - Activity	GEM
Real-time Clock	YES	YES	YES
Polyphonic Sound Generator	YES	NO	YES
Centronics Parallel Printer Port	NO	YES	YES
Dedicated Floppy Disk Controller	NO	YES	YES
Hard Disk DMA Interface	NO	YES	YES
Full stroke keyboard	YES	YES	YES
Number of keys on keyboard	59	92	95
Numeric Keypad	NO	YES (16 Keys)	YES (18 keys)
Cursor Control Keypad	NO	YES	YES
Function keys	NO	10	10
16-bit processor	68000	Intel 8086	68000
Processor running speed	8MHz	4.77MHz	8MHz
RAM size	512K	256K	512K
Number of graphics modes	1	4	3
Number of colours	Monochrome	16	512
Max Screen Resolution (pixels)	512 x 342	640 x 256	640 x 400
Mouse included	Single Button	NO - extra £95	Two Button
Replaceable External Power Pack	NO	NO	YES
Cartridge Socket	NO	NO	YES
Joystick Ports	NO	NO	YES (two)
MIDI Synthesiser Interface	NO	NO	YES
Monitor Size	9"	9" - extra £200	12"
RGB Video Output	NO	YES	YES
System Cost with: Mouse - Monochrome Monitor - 512K RAM - 500K Disk Drive			
Price of basic system (exc. VAT)	£2595+VAT	£1595+VAT	£652+VAT
+ Mouse	Included	£95+VAT	Included
+ Monochrome Monitor	Included	£200+VAT	Included
+ Expansion to 512K RAM	Included	£295+VAT	Included
Price of complete system (exc VAT)	£2595+VAT	£1185+VAT	£652+VAT
PRICE rounded down including VAT	**£2,984**	**£1,362**	**£749**

PRESS COMMENT

"Atari's new corporate image as an aggressive low cost computer maker is likely to mirror that of Commodore where Mr. Tramiel established the maxim that 'Business is war'."
August 21st 1984 **FINANCIAL TIMES**

"This is the only personal computer I knew of that comes with a Midi interface as standard."
Peter Bright - March 1985 **PERSONAL COMPUTER WORLD**

"The (GEM) version running on the Atari 68000 machines will have the additional advantage of leaving the PC version standing."
April 6th 1985 **PERSONAL COMPUTER NEWS**

"It would seem that GEM offers the ideal operating system."
March 7th 1985 **POPULAR COMPUTING WEEKLY**

"I found it (GEM) extremely easy to use and was very impressed with the way in which it disguises the unfriendly hardware and operating systems lurking under the surface."
Peter Bright - Feb 1985 **PERSONAL COMPUTER WORLD**

"The electronics in the machine are a work of art ... The heart of the 520ST is a Motorola 68000, one of the most powerful 16-bit processors around and in many respects it is close to being a 32-bit chip ... when the machines appears in the shops, I'll be at the front end of the queue to buy one."
Peter Bright - June 1985 **PERSONAL COMPUTER WORLD**

"This machine is significantly more powerful than an IBM PC ... If it's possible to design a sure-fire winning machine, this is it."
May 11th 1985 **PERSONAL COMPUTER NEWS**

"... the use of GEM makes the new range of Atari computers so similar to the Macintosh (with the added attraction of colour), that they are already being called 'Jackintoshes'."
May 2nd 1985 **COMPUTING**

"The new Atari ST computers truly represent to the consumer what Jack Tramiel is saying — easy-to-use computing power without the price."
March 1985 **ANALOG COMPUTING**

"It (the ST) uses the most modern technology that is affordable, in a package that gives a professional impression."
May 23rd 1985 **POPULAR COMPUTING WEEKLY**

"The Atari ST is one of the most elegant designs I have seen. Atari has used an original and elegant method of memory management which should make the ST faster than any other PC on the market - in any price bracket ... The 64K dollar question: a) would I go out and spend money for one? To which the only answer is 'Try and stop me!'"
John Lambert - July 1985 **ELECTRONICS & COMPUTING**

"The 520ST is technically excellent ... The 520ST hardware is the new standard by which others will be judged."
July 1985 **YOUR COMPUTER**

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At Silica we have been successfully dedicated to Atari ever since their products first appeared on the UK market. We can attribute our success largely to the Atari specialisation which we practice and to the user back-up we provide. Rest assured that when you buy a piece of Atari hardware at Silica you will be fully supported. Our mailings giving news of software releases and developments will keep you up to date with the Atari market and our technical support team and sales staff are at the end of the telephone line to deal with your problems and supply your every need. With our specialist bias, we aim to keep stocks of all the available Atari hardware, software, peripherals and accessories. We also stock a wide range of Atari dedicated books and through us, the owners on our list can subscribe to several American Atari dedicated magazines. We can provide a full service to all Atari owners and are now firmly established as the UK's NUMBER ONE Atari specialists. Here are just some of the things we can offer to our customers:

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ON THE NEW ATARI 520ST COMPUTER

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If so, which one do you own?

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

"Hyperbrill"
Crash 'Smash' 93% rating. Mar. 1985

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

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

DEMONS OF TOPAZ · Commodore 64
"Its addictiveness grows from strength to strength"
Commodore Computing Int.
Game of the Month. May 1985

£5.95

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Elite is a Trade Mark of Acornsoft Ltd.
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