

Sinclair Scene

Timothy Green unwraps more treats for Sinclair fans

Hobbits are Russian Sinclair-compatible computers designed in Leningrad by Mickel Ossemniski, who provided these details after my Soviet Spectra report in October's *Shopper*. The maker, Inter Compex, claims 'absolute program compatibility' with ZX Spectrum issue 6A, and that's not all.

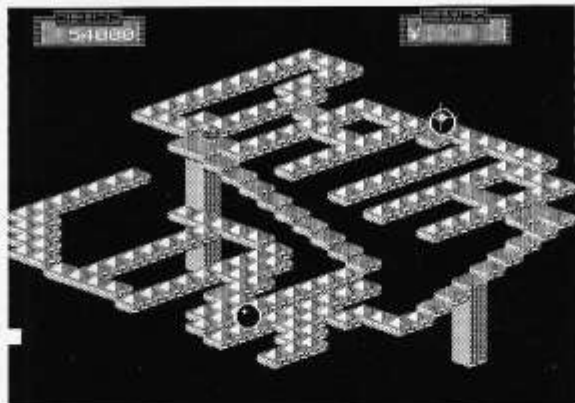
The basic Hobbit is a network station with 64K of Russian K573 RF6 Ram chips and 24K of paged Rom. The main board uses 69 chips, as ASICs are not available. Over 15,000 Hobbits have been made, but production is limited by shortages of parts and hard currency. The American Z80A processor and three low-density Programmed Logic Arrays link a web of Eastern standard logic gates, gobbling 1.5 amps from a lone five volt supply.

Mickel has ironed out one quirk of Amstrad, Timex and Sinclair; Hobbits run all 64K at 3.5MHz, whereas the official Spectrum family slows display memory to three-quarters the speed of the Rom and the uncontended 32K. Only Hobbits access addresses 16,384 to 32,767 without contention.

The disk model is designed as a file server and network controller. The extra interface comprises a K181VG93 LSI controller, plus 14 TTL equivalents and a 16K Eprom. The controller probably mimics a US design, as Hobbit Dos uses Spectrum code from the Technology Research Beta system that has been obsolete for a long time here. Inter Compex fit 80 track 5.25" drives - Japanese 3.5" disks are rare over there. Like QLs, disk Hobbits automatically configure themselves to suit any four drives.

Standard interfaces include a bus expansion port, parallel port, software RS-232, Kempston and two Sinclair joystick ports. The Sinclair-style network transfers messages, screens and 48K snapshots between up to 32 Hobbits or PCs at around 7K per second. Most types of TV and monitor can be connected.

Two keys call up Shadow mode, saving the current screen and giving options to configure



3D Slime is fun on the QL - slither around lots of Pacman-style puzzles and avoid the infuriating sparkly cannonballs

the keyboard, net or interrupts, save a 48K snapshot, or print the screen. Graphics use the 15-colour 6.75K Spectrum attribute scheme, for a pixel resolution of 256x192.

Hobbits have three different screen buffers: two underneath the 16K Rom and one in the Spectrum place thereafter. Shadow operations can use the display without corrupting the previous screen; Mickel fits a machine-code monitor alongside a full 48K Spectrum program by loading the monitor into screen memory, swapping into shadow mode, and calling the code in the screen buffer, paged under the Rom.

The main 16K Rom is reputedly an exact copy of the Spectrum's. The 8K Shadow Rom holds network code, Russian characters and other system utilities; 76 extra letters can be entered, using two more special key-modes. Russian characters are allowed in strings and REMS, but you can't give variables Cyrillic names.

Hobbits add 34 extra keys to the basic 40-key Spectrum grid, but some programs only scan the early Spectrum's 8x5 matrix, as Sam users have also found. Most programs recognise the Hobbit's extra 34 keys - the design allows up to 104 keys, with an 8x8 grid of extras.

Few in the West will wish to buy a Hobbit when more powerful computers are cheaper and more easily available, but Soviet soft-

ware could turn a few heads. *Hobbit Logo* is said to be three to five times faster than the Logo interpreter Sinclair licensed from LCSI in 1984, with extra loop commands, disk and net support, and much superior editing, error trapping and memory management. This interpreter is becoming a multi-machine standard in Soviet schools - let's hope it's the start of a new wave of Spectrum software from the USSR.

SamDos rewrite

Dr Andy Wright has taken over development of SamDos, hopefully leaving Bruce Gordon time to work on hardware requested in SamCo's survey, like the 'real-time clock' and expansion memory. Let's hope the three-slot expander and battery-backed clock surface one day, or we shall continue to need one computer for each peripheral.

The new Dos has speed and reliability enhancements from BetaDos, including reliable Open-type random-access files, which Andy has had working on Sam for most of the year. The main bonus features in the Sam version are fast Ram disks, and subdirectories.

Normally, all 80 files on a Sam disk appear in a single directory. Thus, file names are limited to 10 characters, at most, and you see the whole lot when you type 'DIR'. The new Dos lets you create subdirectories, so that files may be

considered to be 'inside' another file. You need not see the whole directory at once, but can confine yourself to a 'branch' of the 'directory tree'.

Therefore, OPEN DIR "FUN" makes a subdirectory called FUN at the current directory level, and SAVE "FUN/GAME" puts the file GAME in sub-directory FUN. Subdirectories can apparently be nested to any level. You can't delete a subdirectory unless you first delete all the files inside it. The Unidos Rom for Disciple and Plus D promises to give the Spectrum similar features.

Files are specified by a 'path' - a list of names leading to the final program or data file. LOAD "D1:TIM/TEST" loads the file TEST from subdirectory TIM in drive 1. Some computers use / to separate parts of the name, others expect \. The new Dos accepts both, and lets you change the defaults to any two characters you like. It keeps a default path for each drive, which programs can check with the PATHS function, included but not implemented in MGT's SamDos.

The new Dos supports floppy drives 1 and 2 (as before), plus up to five Ram drives (D3 to D7) using internal or expansion memory. Ram drives use the directory structure of 780K floppies, but they're faster and lose their contents when the machine is turned off. The Dos allows almost four million bytes of Ram drive, to suit the promised expansion.

Files are marked with the date and time from the battery-backed clock, if fitted. Andy reports that the new Dos code is working, but SamCo has yet to sort out the hardware, price or availability.

Sam sequencer

At last, there is a standard music sequencer for the Coupe. Sam Midi Sequencer stores around 11,000 notes on a 256K Coupe, and more than 30,000 on a 512K machine. It can record, store or playback any Midi stream - thanks to its own interrupt priority scheme, which pages into memory in place of Sam's Rom, grabbing bytes as they arrive.

The event editor supports pitch wheels, key velocity and Midi song

pointers on an eight-track Mode 3 display, with code to handle 16 tracks internally. A score editor is planned for a later release. Timing resolution is 1/256th of a beat; the display and setup routines require an upgrade to Rom 2.0 or later.

Tim Humphries has, at last, done what Steve Turner and others declared impossible, and tamed the Coupe's Midi hardware. Sam Midi Sequencer is being tested as I write, in late October, and the price has not been decided. Contact Tim directly to find out about the first release.

Much nonsense has been written about Midi and networking on the Coupe. The system Rom uses the Midi ports to implement a simple network, which can be used to transfer screens, programs, variables and code between machines. The original Rom 1.0 had a paging bug that prevented it receiving long Basic programs correctly, but later Roms seem happy with all file-sizes.

The data transfer rate works out at about 2.5K per second, or Amstrad Plus Three disk speed, but the net is much faster and more reliable than cassette. You can use five-pin Midi leads to connect two Coupes, but you need seven-pin DIN cables to link groups of machines, or the net will not work unless all the machines are switched on.

Child's Play

The Spectrum 128 includes a simple Midi port driven by software timing loops, so it can transmit but not receive. *Child's Play* is a music utility that lets you enter musical notation and replay it through the TV or the Plus Three Midi port. It can output three channels through the Spectrum sound chip, or four note Midi voices.

The display shows notes from dotted semibreves to 'triplate' semiquavers on the treble and bass clefs, with bars automatically calculated and ties allowed. Editing is rudimentary - all you can do on each page is delete notes to the left.

Child's Play is written in Basic, using the Play command. This means that it is simpler and slower than Gary Rowland's *Music Writer*. However, it does allow output to Midi instruments. This means that it is capable of much better sounds than any program tied to the Plus Three sound chip, via a Midi synth and Spectrum Midi cable from New Aspects (0582) 472067.

Child's Play costs £8 on disk, or £7 to members of the Plus Three Users' Group, including a photo-

copied manual of 10 small pages. A tape version for Spectrum +2A sells for £6.

ZX-81 disk

I have checked out the ZX-81 support disk sent by Scottish ST enthusiasts, Floppyshop. It contains 33 more PD programs for the ZX-81 emulator reviewed in *Shopper* 28, plus LLIST3.PRG - an ST program that prints ZX-81 files to the ST printer, converting Sinclair tokens and character codes into ASCII. The ZX-81 Support Disk costs £2.75 from Floppyshop, 45 Provost Graham Avenue, Hazlehead, Aberdeen AB1 8HB.

Conversions

Reader Danny Hartley claims this month's *Shopper* Guru mug for an Amiga-based Spectrum screen converter. We have not been able to try it because it introduces several new problems for us, but others may find his work useful.

Danny's technique involves *ZXmit*, a program to transfer Spectrum screens to and from Amiga, via a serial link to Interface 1 at the Spectrum end. Apparently, this works if you link corresponding TX, RX, CTS and GND pins at each end, and join Interface 1's DTR line to RTS at the Amiga. Danny makes no mention of baud rate or protocol.

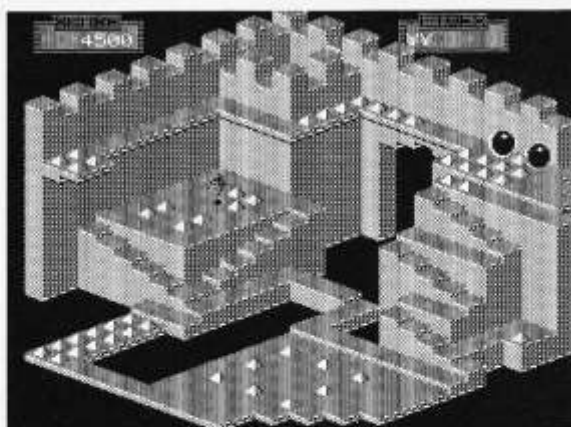
The next step is to convert the Spectrum screen file into a 320x200 pixel, 16-colour Amiga screen with another undocumented program called *ZXscreen*, before using the PD *IFFconv* to convert the Amiga screen into an .ILBM format. We lack an Amiga and Interface 1 in the same place, and further conversion software to get the Amiga data into a form acceptable to PC, Mac or QL.

Adam Boocock and John Legon kindly suggested serial and parallel methods to transfer Spectrum screens to the ST, which we have passed on to Paul King (*Reader's Writes*, *Shopper* issue 32). That's three mugs in a month, and still I hope for a Sinclair-based solution.

Sinclair Sweden

Oerjan Larsson writes from Karlskoga, Sweden. After eight years' hacking, he runs three Sinclair machines: an original ZX-81, plus a Spectrum and a QL network. He writes Z80 machine code on the QL, and downloads it to the Spectrum with code from *Shopper's* July 1989 network feature.

His cross-assembler is slow and simple, but it multitasks. Versions for 6502, 64180, Z8 and Z80 are



3D Slime is available for all QLs

available from CL Lang of 403 Chapter Road, Dollis Hill, London NW2 5NG. Oerjan is keen to hear of other Z80 assemblers that run on the QL - a *SuperBasic* Z80 disk assembler is on the support disk that comes with Softville's Amiga QDOS Emulator, but I have not come across another native QL assembler for Z80. PD assemblers should work at reasonable speed under the QL's CP/Mulator.

The Swedish QL Club has some 300 members, with regular meetings in Gothenburg and a journal in Swedish that is printed four or five times a year. For details write to: Svenska QLgruppen, Toftöasgatan 73, S-421 74 Vastra Frolunda, Sweden.

3D Slime

The screenshots on page 291 and this page show Datalink Software's *3D Slime* for the QL, converted with QL2GEM_BAS. The game has at least 30 isometric 3D screens. I know that because I pressed F4 then SPACE "O" "K" SPACE to cheat. You play an animated lump of green sludge and aim to dissolve mazes of purple pyramids before sparkling cannonballs catch you. The animation is pretty good and the puzzles are fun. A bogus spreadsheet appears if you press F5. *3D Slime* suits all QLs and costs just £4.95 on your cartridge.

QL releases

CGH Services has expanded its range of QL games, utilities and advice. Issue 4 of its newsletter, *QL Technical Review*, includes 37 pages of PD, software and book news, some dodgy advice and yet more tedious tales of disk and printer configuration. Like Quanta, there's good stuff there - but re-

ports are often too anecdotal to be useful.

It is ironic, given the Soviet ignorance of copyright, that the latest game from CGH should be a derivative of *Tetris*, virtually the only Russian computer game to catch on in the West. *Doubleblock* is a QL game for one or two players, and the aim is to build an even wall by guiding coloured blocks of various shapes as they tumble down the screen. It's a classically simple idea, but addictive. The QL version comes from a French author and suits all Roms and memory sizes. It costs £9.90 including Vat.

Polytext is a utility which lets *Quill* users print text in multiple columns and mix graphic images into printouts. Such tricks have long been possible with other editors, but now you can manage them on a 128K QL with the bundled wordprocessor. CGH charges £17.60 for *Polytext*, and it is available on disk or cartridge.

Orbiting is an interesting package for astronomers. It simulates and displays the orbit of planets and suns in complex systems like binary stars. You set up the objects, Newton and Einstein do the rest. Initial conditions may turn out to be unstable, sending planets hurtling off into the void. *Orbiting* costs £8.80 on disk or cartridge for any QL.

DIY Toolkit is a budget library of system extensions aimed at budding QDOS or *SuperBasic* programmers. The whole lot comprises 150 files divided into a dozen modules of machine code, *Quill* documentation and demo programs.

DIY goodies include source and assembled or compiled code

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for disk checkers and accelerators, a task to display the new job name whenever you press Control C, MultiBasics that swap screens, and better graphics for QL and Thor XVI. CGH distributes modules at £3 each, plus a £4 cover charge on each order, including disks.

CGH also distributes excellent Public Domain software from continental Europe, like Ralf Biederman's QDos tasks. He writes small code files which you can either install as *SuperBasic* extensions with LRESPR, or EXEC as tasks. The tasks pop-up questions and menus unless you pass adequate parameter strings.

QL ARC

I was excited to hear that Ralf has written a QL ARC utility that can compress tasks, including their headers, as easily as any other type of file. In *Shopper 30*, I tested *QL ARC*. It compresses text and binary files well, but needs a slow, clumsy Basic program to process the 'header' of QDos task files.

Ralf's *ARCE* is a lone 3.5K code file, plus a short introduction in *Quill DOC* format. I tested the *RB ARC* command, reading and writing files on QL Ram disk, and found that *ARCE* could squash the test task to 33,714 bytes, where *QL ARC* managed 33,310.

QL ARC is twice as fast at restoring the original 41K file. *ARCE* took just over a minute, but saves and restores task headers automatically. 2,026 bytes of text was squashed to 1,409 by *ARCE* in under five seconds, and restored in just over three seconds.

ARCE's special mode for screens compressed three 27K QL displays down to 43K. The most complex picture took 21K after compression—the simplest needed only 8.5K. The more files you compress into an archive, the better the compression ratio. *ARCE* took almost 100 seconds to restore these screens from archive.

ARCE is much easier to use and understand than *QL ARC*. Results are similar on large files, but *QL ARC* squashes files a bit more and expands them faster.

Disk copying

Ralf's other programs include *Tcoopy*, a disk copier which works with one or two drives. The fastest option works directly on the disk controller registers, using two drives and 450K of buffer memory. I believe that it can copy 720K to an empty disk in 128 seconds, and it takes an extra 32 seconds to verify all it writes. Drives run continuously, without clacking for each file.

The configuration file includes controller data for Trump Card, Sandy and CST interfaces. In theory, others with 1770 and 1772 controllers can supply alternative port addresses. Who knows the port addresses for the Thor XVI? Slower *Tcoopy* options use QDos direct sector access, so they work on most systems and they can convert between 360K formats and save time by ignoring unused tracks.

Ralf's work is PD. A compilation disk costs £3.30 from CGH Services. The pop-up menus,

inspector.

I had a preview copy of *Home Budget* over a month ago but since then, Dilwyn has sent an improved version that is compatible with Minerva 1.82 and TV displays.

Conversion package

DJC has also taken over *DiscOver* and *Multi-DiscOver*, disk conversion packages formerly published by PDQL. The price has been reduced to £20 and £30 respectively. I use *DiscOver* to convert *Sinclair Scene* from QL to PC format each month. It works well and handles

The demos don't multitask, as they borrow QDos system space for the second screen, but you can press Esc and return safely to *SuperBasic* at any time. Each consists of a tiny code file, a little over 8K long, holding all the code and detailed 3D data for a dozen or more objects.

So far, *Dreamscape* and *Power 3D* are just demonstrations, albeit pretty stunning ones. You can't enter your own shapes or pursue existing ones, but we should see some graphically amazing games in due course. My spy at a recent Quanta meeting reports that the development team has now turned its attention to fast filling and circle routines!

Timothy Green is a computer whizz kid and Sinclair compatible specialist

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background task and keyword modes are an example to other programmers.

QL budget wrangle

Dilwyn Jones Computing has snapped up *QL Home Budget* following the collapse of Birmingham publisher PDQL and the non-arrival of the advertised Compiler. JJ Hafke assigned rights for *Home Budget* to PDQL long ago, but it was not ready until this summer, when PDQL defaulted on trade debts and stopped advertising.

Meanwhile, the *Home Budget* program has reached version 2.1. Dilwyn's version is two multitasking Qliberated programs which handle bills and income independently, sharing drives and a printer. It costs £20, with example files and a 20-page A5 manual. My 'provisional' copy has a table of contents disconcertingly buried on page 14.

One task handles budgeting for main household bills like gas and electricity. The other enables you to calculate UK personal tax liability for any year from 1983-84 to 1990-91, and thereafter if you feed in the new details, as long as the rules remain the same in principle. Couples can try separate taxation, and capitalists index their gains, but results are not guaranteed to match those of the tax

subdirectories, unlike other QL file converters, but won't format disks in PC format.

3D dreams

I have just seen an amazing 3D graphics demo for the QL that comfortably outpaces anything I have ever seen on QDos. *Dreamscape* is a system that continuously animates, calculates and draws smooth 3D wireframe graphics. It uses 32-bit maths and both QL screens on any version of QL via customised vector and stripe text output routines.

The graphics use eight colours and three dimensions with clipping and adjustable perspective at stunning speed. You swoop around and through the wireframe objects under joystick or cursor control, rotating the image around X, Y or Z, or setting the object to tumble in various directions. The previously-unknown developers, Robert Nash and Dave Barker, call this 'continuous annulation'.

Because *Dreamscape* uses wireframe graphics, you can see the edges of objects from any direction. But the latest demo, *Power 3D*, handles hidden plane removal, showing solid objects at even greater speed. Some images involve over 100 vectors in various colours, like a guitar, dagger, symbols and space ships.

CONTACTS

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