

# Sinclair Scene

*A festive Timothy Green surveys add-on disk systems, a Spectrum database, and a QL emulator for the Amiga*

**T**his month we test disk drives, interfaces and formatting programs on the Spectrum and QL. Amstrad's Plus Three is the only Spectrum to feature a built-in disk, but tens of thousands of Sinclair users have expanded their machines with drives and interfaces from a dozen or more add-on firms.

Current suppliers use 'double density' control chips and standard interfaces, but the range of speed and capacity is still wide. It's interesting to compare the performance of Spectrum, QL and Thor - especially if you'd like to quadruple the disk capacity of your Plus Three, or speed up QDos floppies by up to 85 percent.

## Lifetime

MGT's Lifetime Drive is meant to out last your computer. It comes in electrically-compatible 3.5" and 5.25" versions which work with the QL, any Spectrum, BBC, Amstrad CPC, Amiga, Atari ST, PCs, and most other computers with a double density interface.

The idea is that you only need one Lifetime Drive, even if you change your micro. Most drives use a standard mechanism, but this is customised for each computer to keep production costs down. Electronics buffs convert drives from one machine to another, but they often have to add parts and tweak the works en route.

The Lifetime Drive is over-engineered to run on most micros without internal changes. Thus it costs more, but should outlast your computer, unless writeable CD drives come down to pocket-money prices fast.

The main limitation is that the Lifetime Drive will not work with the latest 'RLL' formats, which pack 1440K on a 3.5" disk, or 1200K on 5.25" media. 'Run Length Limited' drives are most

common at the top end of the PC market. They use a dense data format developed for hard disks, and need a new breed of drive, controller and disk.

MGT offers an 80-track double-sided double density drive, capable of storing from 360 to 880K depending on your formatting program. The price is a bit

use it as drive B with the Plus Three's built-in interface. We seized the chance to compare Amstrad's disk controller with the Plus D.

The port for drive B at the back of a Plus Three was intended to soak up stocks of Amstrad's FD-1 - an external 173K drive like the Plus Three's A drive, first made for the CPC computer. MGT

It's slower than Amstrad's format routine, but more reliable as it checks every sector after writing it.

Utilities let you change file attributes and transfer unprotected tape files to disk. Other short Basic programs let you assign files to any of 10 user-areas and print or display a catalogue of any or all of them. A 706K disk can hold up to 128 files, versus 64 on a 173K disk.

The big drive works OK from Basic, but you must reset with a formatted disk in the drive, or references to 'B' will expect an alternative disk in drive A. Drive B comes into its own in CP/M Plus, but you still have to use the ZX Basic program to format big disks. Standard CP/M utilities work fine, but Plus Three disk zappers don't - *Dice 2.0* just supports drive A, while *Zipzap* can only access the first 40 tracks of one side in drive B.

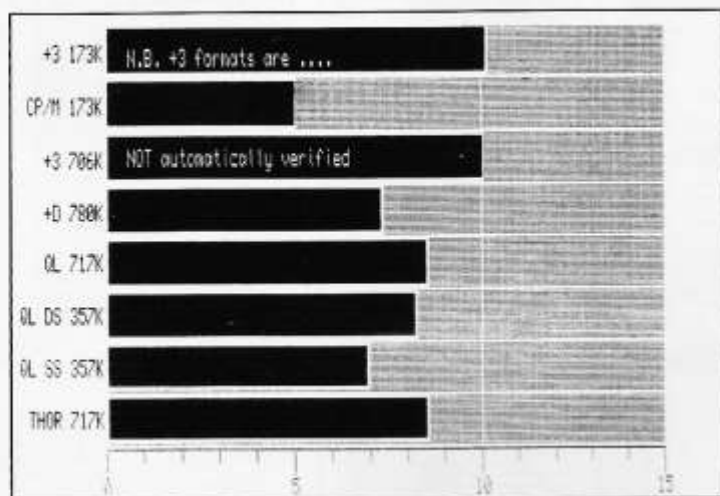
We connected a Plus D interface via MGT's 'fixer' which reconciles Sinclair-standard peripherals to the Plus Three. Amstrad changes to 128 Basic baffle the Plus D, so you must select 48K Basic; you can't use the internal drive and the Plus D at the same time.

The *QL Easel* bar charts show that the Plus D is much faster than Plus Three Dos. The Basic test program saved and loaded a succession of 30K CODE files, so the interpretation overhead was negligible.

The Lifetime Drive has a formatted capacity of 780K on the Plus D. MGT packs 10 sectors onto each side of each track, rather than the standard nine. This leaves very little gap between sectors to allow for drive speed variations.

Common drives run at 300 RPM, plus or minus 2.5 percent. With 10 sectors per track, it's dangerous to write to a disk formatted on any other drive unless you know it runs within one percent of the speed of yours. ▶ 193

## Lifetime Drive



Formatting speeds compared - all except +3 Dos verify after formatting. The sizes shown are free space after formatting

steep, at £129.95, but that includes your choice of cable, and special software for the Spectrum Plus Three version.

There's a big socket on the back of the drive, so cables can be changed easily. Six small switches let you configure the drive for most types of computer. A power supply is built in, unlike some cheap units, along with lashings of flex and a mains plug.

The 18-page manual devotes a page to most common micros, along with diagrams of switch settings. Cables for new computers, such as Miles Gordon's own SAM Coupe, are promised.

The Spectrum version is normally used with a Plus D or Discipline disk interface, but you can

uses the port for the Lifetime Drive, which has twice as many tracks and two heads, giving a formatted capacity of 706K.

We were supplied with a PC cable, and had to unplug two bits before it would fit the Plus Three, but you should have no problems if you ask MGT for a Plus Three cable. The necessary switch settings were not in our edition of the manual, but Gareth at MGT Technical Support, (0792) 791100, sorted us out.

The commands ERASE, COPY and MOVE work with the big disk, but the Plus Three doesn't know how to format 706K, so we used *BFORMAT*, a short program written mostly in *ZX Basic* by Micronet maestro Brian Gaffe.

The Plus D supports two drives, and can print or save 'snapshots' of screens or memory at any time. The main snag is that the Plus D gets steadily slower as its catalogue of up to 80 files fills up. The charts show both extremes.

The first four tracks of a Plus D disk hold directory information. Sectors are not interleaved, but follow one another in strict sequence. Once a file has been found, it can be read at close to the theoretical maximum speed of 25K a second (10 0.5K sectors at 300 RPM).

But the 20K catalogue is read and processed a sector at a time. The processing delay means that the 'next' sector is missed, and the disk must go through a complete turn before it reappears. The user group INDUG is working on an interleaved format for the first two tracks, which should speed up directory access by a factor of 3-5 times.

The CP/M utility *DISCKIT* uses a different interleave from Plus 3 Dos. Disks are interchangeable, but the *DISCKIT* format can be 50 percent faster!

### New life for QL

The Lifetime Drive performed impeccably on the QL, along with a new program from Ultrasoft, distributed by Schoen, which claims to speed up QL disk access by 'up to' 30 percent. 'Up to' is a much maligned phrase in the world of advertising, even before Duracell contracted it to 'upta'.

Even so, we found *Quickdisk* impressive. It comes at a *Shopper-friendly* price of £7.95, on disk with instructions in a 20-line text file, and spare copies of all the files.

The 16K task takes an empty formatted disk, with one or two sides and any number of tracks, and rewrites the directory so that sectors are used in a different order thereafter. It only takes a couple of seconds. Press 1 or 2 to specify the drive, or ESC when you've run out of blank formatted disks. Reports appear if the disk is not empty, or write-protected, or the wrong format.

Another task lets you configure the position of the six-line window used by the main pro-

gram, and indicate the disk controller chip you use: FDC 2793 or the more popular WD 1770 or 1772. The default version worked at once on a Thor and QL interfaces from CST, PCML and Sandy.

We found the promised 30 percent speed-up on both QL and Thor, using EXEC, LBYTES and PRINT. Saving with SBYTES and SEXEC was a stunning 85 percent faster on long files. This makes quite a difference with programs that load and save data in one big block, like *The Editor*, *Page Designer* and *Devpac*.

Programs that read data and process it as they go along may actually be slower with a 'Quick' disk. The new format assumes that the computer will be ready to process every sector in order, whereas the standard format leaves a gap of two sectors before the consecutive one. If a program can process a sector in around 2/45 second (two sectors from nine, at 300 RPM) it may read the standard format faster.

We found that a *SuperBasic* INPUT loop, reading 1K lines, was 30 percent slower when reading a 'Quick' format. That's not to say that *Quickdisk* is useless - but it's worth having disks in both formats in your collection.

*Quickdisk* is useful, simple, compatible and cheap. The boost is not as dramatic as with compilers or screen accelerators, but *Quickdisk* is well worth £7.95 if you spend a lot of time loading tasks from disk or loading and

saving large blocks of memory; however, it won't speed up programs that hog the processor while the disk turns.

If you really want to load and save fast, you need a hard disk. Sadly we have not heard of a production model for the Spectrum, though some hackers have built and programmed their own, but the QL scene is a hive of activity.

### QL hard disks

Miracle Systems came first, with a £400, 30 megabyte unit. This has been superseded by a new model with higher capacity, higher speed and a higher price. It costs £449 and can store a little over 39 megabytes.

The demo program loads screen images at around 96K a second. Saving is significantly slower because the interface works through the QL Rom socket, designed for input only.

Miracle's bulky unit houses a PC-standard Western Digital file card, with a clever QL interface that snakes control signals through the Rom cartridge socket. Only one drive is supported.

We hear reports of a new cheap hard disk interface from ABC Electronic. This interface exists in prototype form, but was far from production quality in mid-October. It plugs into the main QL expansion port, clashing with the extra 256K of memory on Miracle's Trump Card.

ABC's interface is more gen-

eral than Miracle's. It supports a single PC slot, on trailing wires, with a buffered 'through port' for QL disk and Ram expansion. It's up to you to provide a PC disk card; ABC supplies QL software which can run two common models. In theory you can use other PC cards, as long as you write your own QL control software. That's likely to be a big job.

ABC learnt about hard drives a year ago, when it licensed CST's SCSI interface. This was the original QL hard disk interface, now only available on the Thor XVI. At £130, the new interface seems cheap, but ABC has often had problems getting products to the market - from its early key-boards, through the rickety megabyte Ram expansion unit, to the still-unavailable *Enigma* super-QL. The good news is that it offers COD delivery in the UK, so you don't have to pay till the goods arrive.

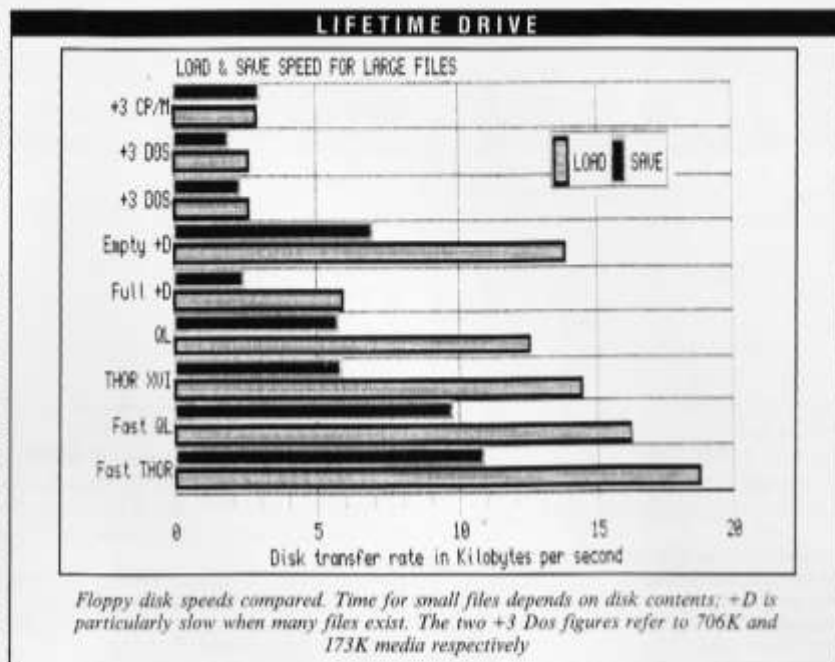
Rebel's twin-drive interface has been shipped to a few customers, but bulk sales are hampered by delays in shipping the 'buffered backplane'. The four-port backplane works in prototype, but PCB design problems have led to the scrapping of the first production run.

Quanta luminary Dennis Briggs has written in to reveal that several members are running the Rebel interface from a home made backplane, which he sells for under £20. Contact Quanta for more details.

Rebel's prices have gone up, like Miracle's, but interfaces are now shipped with 32K of fast static Ram buffering, rather than the original 8K. Support for the Trump Card has been abandoned, for the time being.

Former Quanta boss Leon Heller has announced plans for a SCSI interface, which should be faster than ST-506 based designs. To keep the price down it will be sold as a bare board, ready for DIY soldering.

SCSI stands for 'Small Computer Systems Interface', a fast parallel interface often used for Winchester disks and CD Rom players. The Thor hard disk system uses a SCSI interface. This allows up to 16 drives, but ▶195



requires decoding hardware in each drive, so SCSI drives tend to be more expensive than ST-506 units.

Leon's board will not be compatible with the Trump Card, but it will have a single fully-buffered expansion port for floppy disk and 512K memory expansion. Software should be available from Tony Tebby, who is working on a SCSI driver for the Atari ST QL emulator.

### Amiga QL emulator

An enterprising Berlin hacker has boiled up a QL emulator which runs on the Commodore Amiga! The author is a QL enthusiast studying for a doctorate in Physics. He likes the QL's concise multitasking operating system, and serious software support, but not Sinclair's keyboard or 68008 processor.

Leon Heller reports that the PD emulator works 'fairly well', running packages like Psion's *Quill* without problems. It can read QL disks, but has trouble writing to them; another bug prevents the use of QL Ram disks, which is a shame as Leon's A500 has a megabyte of Ram.

It runs on any Amiga with a real-time clock. You can use the Amiga 2000's hardware PC emulator with the QL emulator, as the

'bridgeboard' is accessible from QDOS.

The screen display uses Amiga hardware like the 'blitter', giving 4,096 colours, new modes, and speed improvements – but programs that write directly to display memory, like most 'paint' packages, will not run on the emulator as the video Ram has a different organisation.

*SuperBasic* graphics are said to work OK, but the scaling factor does not match the shape of QL pixels, so circles are lopsided. The emulator window does not use the whole Amiga screen, but confines the display to a QL format 'window' of 512 by 256 pixels.

The keyboard driver has been rewritten, in the absence of the QL's 8049 coprocessor, but it assumes a German Amiga keyboard layout, so some keys can be hard to find on a British Amiga. The emulator costs just £3 from sole UK distributor Softville. We've been promised a copy and hope to test it soon.

► Club Contact on page 197.

*Timothy Green would like a SAM Coupe and a Rebel hard disk for Christmas, but he is trying not to hold his breath waiting...*

### CONTACTS

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**Quickdisk**  
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Computer Products,  
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Horsley, Surrey KT24  
6LX. (04865) 3836

**File Master**  
BetterBytes Software,  
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**Gosforth,**  
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(091) 285 6185

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Miracle Systems,  
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LS1 2DS.  
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## In Brief

### Xmas presents

■ Despite its vintage, and Amstrad's apparent disinterest, the Spectrum is well-represented in the shops this winter. You should be able to find it across the UK in notorious chain stores like Comet, Currys, Dixons, Menzies, Rumbelows, Tandy, Toys R Us and Woolworths.

MGT has decided to sell initial production of SAM machines through mail order and independent dealers. Our review computer has not yet arrived, with the 'next' launch a few days away. We hear that a handful of beta-test machines have been produced, but the Rom and disk system are still being debugged.

### SAMzine

■ Undaunted by the protracted birth of the computer, one enthusiast launched a magazine dedicated to the SAM Coupe. The first issue of the uninspiringly named *Turbo* should arrive in the middle of December, if all goes to plan. We found details on a dot matrix handout given away at the Alternative Micro Show in Stafford, early in November.

The handout says that *Turbo* will be a monthly magazine, available on subscription only, priced at around a quid an issue. It will be 100 percent dedicated to the SAM, and produced using DTP software on the machine – presumably Cardex's package.

Besides the usual computer magazine topics, editor/publisher Delmont Betts promises 'a statement from MGT about their plans and hopes for the future of the brilliant SAM Coupe'. This came as news to MGT demi-boss Alan Miles.

If interested, we suggest you send Delmont an SAE and ask him to send full details when the first issue is ready. His address is *Turbo*, 8 Healey Lakeside, Tamworth, Staffs B77 2RF.

### File Master

■ Newcastle software house BetterBytes has launched a disk-based filing system for Spectrum users. *File Master* is writ-

ten for the Disciple and Plus D interfaces, and incorporates a machine-code alphabetical sort routine. Data is held in Ram, but a large file can be made up of several 'sub files' loaded consecutively.

Each file record can contain up to 15 fields, with a maximum length of 20 characters each. Files can be protected by passwords. The program is supplied on a copy-protected disk, with a 20-page A5 manual, priced at £8.95.

### Alternative Micro Show

■ The Alternative Micro Show should have been a hit, but it was poorly publicised and held somewhere between Valhalla and Oblivion, Staffs. This is a shame, particularly for Sinclair users, as there was a lot of Spectrum and QL support – with no less than 10 stalls specialising in the QL – but little new software and very few customers. *Sinclair Scene* received tickets, but not until a few weeks before the show, and too late for a preview.

Other machines supported at the show ranged from the original Pet to the IBM PC – hardly very alternative. Stalls were selling electronic components and other 'consumer durables', but the bulk of the show was computer-related, with add-ons for Jupiter Ace, Archimedes, Atari 8-bit, BBC, Dragon, Einstein, Enterprise, Lynx, MSX, plus Uncle Clive's ZX-81 and Z88.

Despite this hall of fame – or notoriety – the crowds stayed away. Bingley Hall, Stafford may have played host to Seventies stars like Pink Floyd and Genesis, but it is well off the beaten track today. Still, at least it had a bar...

### What's new?

Got any news that you think Sinclair buffs should know about? Drop a line to:  
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