Sinclair Scene

Timothy Green takes Quantum Leaps in all directions, with a ZX-81 emulator for the ST and compact disc games for the Spectrum and SAM

Sinclair Scene this month crosses the formats boundary with a review of a ZX-81 emulator for the Atari ST. There's also rumour of an imminent Spectrum emulator for Commodore's Amiga. But first let's dissect the ZX Power ST.

ZX Power ST

After the awesome Public Domain QL emulator for the Amiga, another keen German team has implemented an impressive ZX-81 emulator for Atari's ST. Our copy came from Leif Mortensen of *Sinclair Freakeren*. In the UK the emulator costs £3 from Public Domain library Softville. It comes with bundled software including games, simulations, a Basic compiler, Z80 assembler and disassembler.

Eight years ago the ZX-81, and its US cousin the TS-1000, became the most common computer on earth. It sold millions, thanks to Timex mass-production, Ferranti gate arrays and Jim Westwood's ingenious four-chip design. The kit was launched in the UK at under £50, and the US model ended up shrink-wrapped at supermarket checkouts, priced $19.95!

Despite its price, the ZX-81 was a real computer, with flexible array and string handling, TV and tape interfaces, syntax checking on entry and accurate decimal maths. The basic model had just 1K of memory, and used a dynamic display. The screen window would slowly shrink as you entered new lines. 16K Ram expansion was near-vital, but tended to wobble and provoke over-heating.

ST power

The ZX Power ST emulator allows up to 48K, and stores programs on disk rather than cassette, so it's relatively reliable. It loads from *Gem* in about six seconds. The 60K code file comes with a 3K document in German. You need to know roughly how to drive a ZX-81 or 48K Spectrum, but apart

Atari ST emulation with ZX Power ST

from that the emulation is so accurate that detailed instructions are not necessary.

Keyboard handling is well thought-out. The ST editing keys and numeric pad are translated, so you don't need to press Shift to delete or move the cursor. Ctrl stands in for Sinclair's FN key, and Shift Space stops the program, as usual.

At all times the Help key will reveal a neat colour picture of the ZX-81 keyboard, so you can check the position of keyword and function legends, which are entered as single keystrokes.

Undo calls up a configuration menu, allowing you to choose 1K, 16K or 48K system emulation. You can assign the ST joystick to any five keys and then use the stick with programs that expect keyboard control. Other options include Continue, Break into Basic or machine code, Reset to an empty ZX-81 or Quit back to *Gem*.

The emulator includes a comprehensive Z80 interpreter written in 68000 code. This runs Z80 machine code at roughly the speed of the ZX-81 in Slow mode, when the ST display is flicker-free monochrome and looks exactly like a ZX-81. Fast mode blanks the screen

unless the machine is waiting for a keypress, but does not increase the speed of the emulator. The ZX-81 used software to generate the display, so it went faster with the screen off.

Normally the ZX-81 command LOAD "" would blank the screen and load the next tape file, but the ST has no cassette interface, so it displays a file requester instead. You pick the required name from the directory and it loads in a second or so. Alternatively, you can load a file directly by specifying the name after LOAD.

Some 50K of examples are provided, including fast graphics demonstrations like *3D Labyrinth* and *Gasmodel*, which gives an animated display of gas molecule diffusion. There are 10 games on the disk; the graphics are poor, but those with machine-code routines run impressively quickly. Even in Slow mode the ZX-81 boasts a ratio of CPU power to screen Ram that has rarely been matched since.

The compiler is ZX-GT, around 2.5K of code which started life in the July 1983 issue of *Your Computer* magazine. It compiles an integer subset of *ZX Basic*, and works well as long as you stick to single-letter variable names A to Y, plus one array Z(), and add

extra brackets around calculations.

Unless you enjoy retyping listings you'll need an RS-232 interface to transfer more files to the ST. If you convert any new programs for the emulator you should send them to Softville so other users can share the benefit of your efforts.

Millions of ZX-81s were sold, all over the world, and many ingenious programs exist, although you may have trouble finding them these days. Hi-res graphics routines and other hardware tweakers are unlikely to run, but anything that uses *ZX Basic* and the standard display routines should work fine.

I'm not sure how useful the emulator is, but it's certainly an easier way to learn Basic than anything Atari has offered. The Z80 interpreter works well and could be used for code testing.

The ZX Power ST emulator is a remarkable achievement, almost unbelievably compatible with the quirky ZX-81. It shows that accurate emulation is possible, even across processor families, if the emulated machine is well-documented and relatively puny.

Amiga to come

The latest rumour is that an Italian firm has boiled up a Spectrum emulator for the Amiga, complete with cassette interface. I have yet to see a copy, and do not believe that the Amiga will be able to emulate the Spectrum attribute display at a credible speed – indeed, first reports suggest that the emulator works best with a mono display. Maybe Italian readers can tell us more...

In brief

Codemasters CD

I've splashed out £20 on Codemasters' CD compilation – 32 games on one compact disc, with a two-metre cable to link the CD headphone socket to the Spectrum joystick port. I tested it on a Plus Three and SAM Coupe. The lead plugs straight into an Amstrad Spectrum, but 48K users ▶175

MINERVA LIBRE!

QLiberator has been upgraded to version 3.3, to suit *Minerva*. The new commands and parameters are supported, along with *Minerva's* second screen. *QLib* now recognises WHEN variable, so you can divert execution to a matching WHEN block if a variable is set to a particular value – for instance:

WHEN x<0 OR x>255
PRINT #0;"Margin overflow."
X=255 * (X>255)
END WHEN

Once execution has passed this block any attempt to set X to a value outside the range 0 to 255 will cause a message to appear on channel #0, then the main program will continue with X set to 0 or 255. This is close to the classic 'April fool' command COME FRom; it's a useful feature when testing, but arguably bad style in a finished program!

The WHEN keywords first appeared in Sinclair's 'JS' Rom, but those were undocumented and bug-ridden. QLiberated programs that use WHEN will run on any QL version, but you need *Minerva* to test them reliably under the *SuperBasic* interpreter.

The new *QLib* includes a rather limited implementation of WHEN ERROR. The syntax is the same as *Minerva* – and fully explained in the eight pages of new documentation for version 3.3 – but the code only traps errors detected during calls to machine code 'resident' procedures. *Minerva* traps all errors (apart from Bad Line) properly, but JS and MG Roms often crash after trapping errors in calculations.

QLiberator 3.3 does not intercept errors in expressions, functions and Basic procedures. This is an improvement over earlier versions, which only trapped errors in resident procedure-calls followed by an explicit IF test, but it may still miss some common cases of 'drive full', 'end of file' and 'overflow' errors.

need a Kempston joystick adaptor.

Coupe owners need a simple adaptor to unscramble Amstrad's joystick connections. Get two 9-pin D-type sockets – one with pins, to fit the end of Codemaster's lead, and another with holes, to fit SAM's joystick port. These cost about a quid, or £2.98 from Tandy. Solder two wires between the sockets: one joins pin 1 of each socket, the other links pin 9 at the Coupe end to pin 8 from the CD. Pin numbers are usually embossed on the sockets.

It takes 40 seconds to load the 'bootstrap' program from cassette. Then you adjust the headphone output level till the Plus Three border is green all over. SAM users must set the level by trial and error, but the loader is quite tolerant. You need a headphone output that works with speakers disconnected. My CD player has no headphone socket, so I used the headphone output of my tape deck, set to record.

The 25-minute CD recording contains 66 file;. 32 separate 48K games are each recorded twice, plus a calibration track and a 'slide show'. You select a CD track as usual; it loads in 30-45 seconds, displaying a title screen about halfway through. Later you

can load another game by pressing Quit, to restart the CD loader. The border shows narrow stripes during loading, as if the CD was a very fast tape file. I had to unplug the CD lead soon after loading to avoid interference with the Plus Three keyboard scan.

The games are simple but very playable – all were previously hits as budget tapes. Most worked fine on the Coupe emulator, but *Dizzy* would not load and the *Fruit Machine Simulator* crashed during use. Results depend on the emulator; I had most success with the original tape, and could not get disk emulator 3.9 to load CD files. Codemasters CD Games Pack is a neat idea that works well, and it's cheap at £19.95.

Midi and music

Sean Sanderson of the Spectrum Music Machine Group has written in after the absence of *Club Call* in recent issues – we ran out of space. Sean has a Coupe and is extending his club to cover Midi and music on the SAM. He plans to set up an Advanced Coupe Programmers' Network to act as a 'fast access' clearing house for technical information about the Coupe. The details are yet to be finalised, but if you're interested call Sean on (05242) 62258.

SAM clubs

Last year we mentioned *Turbo*, the specialist SAM Coupe fanzine. Issue 3 has now reached us, in the form of 22 dot matrix-printed pages, including game previews, a couple of graphics listings, and an interview with Bruce Gordon. Joint Editor Delmont Betts reports that over 100 people joined in the first three months, and he's buying a photocopier. Bob Brenchley reports that over 350 new Coupe owners have joined his group, INDUG.

Quanta AGM

The Annual General Meeting of the QL user group Quanta was the scene of some satisfaction. The group has had its most successful year yet, largely thanks to profits on modem sales and the reprint of Jan Jones' *Definitive SuperBasic* handbook.

Last year, Quanta made £14,625 on a turnover of £47,088, leaving reserves at a record £25,210. The meeting rejected the idea of paying committee members, although Quanta will continue to refund expenses.

Most of the committee were re-elected; last year's treasurer, Sydney Humphries, takes the Chair, replacing Alex Tegg; Michael L Jackson takes charge of the accounts. The reserves should ensure the continuation of the group into the next century!

QL World

The last QL specialist newsstand magazine, *QL World*, almost died in March, but hopefully it will be refloated once the receivers have sorted things out. The April and May issues are still in production

as I write, and staff working on the profitable computer titles expect a management buy-out. Publication should continue, but may be erratic (so what's new?).

Plus Three Contact

Issue 8 of *Plus Three Contact* is desktop published throughout, and much easier to read than previous issues, although the staples are rather close to the margin. The issue reviews Lerm's *Plus Three Mate*, and discusses the phenomenon of cover-mounted cassettes. Editor Daniel Garner has stopped distributing the *Enigma* magazine on disk, and has started his own monthly, *Genesis*. The 15-page newsletter includes a set of 'toolkit' routines to tame the display in *Mallard Basic*. The Plus Three Users' Group has added a range of Public Domain CP/M software to its library, including a C compiler and an assembler.

ZAT magazine

The latest fanzine to reach us is called *Advanced ZAT Programming*, but that's a misnomer. It's not about programming the Zed 80, but it is aimed at Spectrum and SAM Coupe owners. Issue 1 costs 60p and runs to 32 A5 pages, including three game reviews, an interview with Mike Gerrard, and CB radio and comic information, as well as a violent but well-drawn cartoon strip.

Microdrives?

It is rumoured that microdrive cartridges will soon return to the shops, after a much-reported production hiccup that saw prices double to £4 in a couple of months. I called Sinclair Research in April,

Club moves

The *Club Contact* section has been renamed and moved away from *Sinclair Scene*, but we shall still mention the best Sinclair clubs there, along with clubs for other enthusiasts. Sinclair fanzine updates will continue to appear here.

The latest titles to reach us include the second issue of *QL Technical Review*, and *QL Adventurer's Forum* issue 9. In future, *QLAF* will be renamed *QL Leisure Review*, reflecting the coverage of strategy and arcade games, but adventures will remain a major feature. Both titles come from CGH Services, and cost £5 for four issues – usually 36 A4 pages each – with a page or two of 'stop press' updates.

CGH factotum Richard Alexander enthuses about Di-Ren's networked naval game, *Fleet Tactical Command*. He also reports that QL SUB appears to have SUBmerged, and says he's dropped the PC totally: "I've sold it, it's a load of rubbish. Now I've got an ST, and I welcome stuff for semi-professional publication."

At last, Alan Pemberton's long-awaited QL adventure *Voyage of the Beano* has arrived. It costs £10 on disk, and I hope to review it in the August issue.

and heard that it was waiting for a response from the old tape supplier: "We are doing everything we can, and we're very hopeful that BASF will be able to continue supply."

Village people

The Third All Formats Computer Fair will include specialist villages for the minority Sinclair tribes. These will concentrate the stalls of QL, Z88 and SAM Coupe suppliers in their own areas. Other machines to get the 'village' treatment at the June fair include MSX and Acorn's Archimedes.

Elsewhere in the hall, the organisers promise that mainstream micro fans should find hardware and software bargains to suit the PC, ST, Amiga, Spectrum, C64 and CPC. The electronic magazine *Micronet* will be online at the fair, and *Shopper* has booked a stand.

As usual, the venue is the New Horticultural Halls, near Victoria in London. Tickets cost £3, and the doors open at 10am on Saturday 9th and Sunday 10th June.

Gordon lauded

MGT hardware man Bruce Gordon won the Award for Individual Achievement in Hardware Innovation at the annual Computer Arena in Malta, organised by ELSPA, the European Leisure Software Publishers' Association. Bruce and his sidekick Alan Miles scooped the Individual Newcomer of the Year Award, which is odd as there are two of them and they've both been active in the Spectrum market for most of the last decade.

Plus D sold

Miles Gordon Technology has sold off the rights to the Plus D disk interface for the Spectrum, to concentrate on its 'all in one' alternative, the SAM Coupe. The purchaser is Datel Electronics, which already licenses Spectrum add-ons from DkTronics and Ram Electronics. Price and availability were not clear as *Shopper* went to press.

SAM SDI interface

Meanwhile, MGT has launched an equivalent interface for the SAM Coupe, priced at £29.95. The SDI Interface lets you connect any standard disk drive and Centronics printer to the Coupe. You no longer have to splash out £80 or £90 on MGT's slimline drives.

The package includes software and two documents: a four-page

leaflet listing the connections and explaining how to set up the SDI, plus the 30-page SAMDos manual. SAMDos comes on a cassette, so it can be configured for any drive. You set the number of tracks, sides and stepping speed, then the program transfers a custom Dos to your first disk.

The tape also holds the *ZX Basic* translator, foreign character set, and a new release of the Spectrum emulator. The graphics package *Flash* is not included as the version supplied with every Coupe includes a disk transfer routine.

The SDI Centronics printer port suits any parallel printer. However, you need an FX-80 compatible model to print screendumps from *Flash*. You can open a binary "B" stream to the printer and send any control codes, so it's possible to get other printers working if you know which codes to send.

You can plug in any drive with a standard BBC connector, so QL and Plus D drives work at once. The capacity depends on the drive – a 3.5" 80-track double-sided drive gives 780K, matching an internal Coupe drive. Alternatively you can fit 380K on a PC-style double-sided 40-track 5.25"drive, or an old ST 80-track single-sider. Taiwanese hardware fans with plenty of spare cash for disks can use a 3" drive; the 40-track units used in Amstrad's CPC 6128, PCW 8256 and Plus Three give a formatted capacity of 180K.

Cables are not included in the price, but should be easy to obtain if you have not got them already. Like the Plus D, the SDI expects a 34-way IDC plug for the drive, and a 26-way IDC for the printer.

At £29.95 the SDI is a cheap upgrade that transforms the performance of a basic Coupe. It should appeal most to those who already own a drive. It brings the price of a disk Coupe under £200, and adds a printer port which serious users may consider essential.

Sam and Spain

The first batch of Spanish models of MGT's SAM Coupe were shipped at the end of March. They feature a new Rom and keyboard, and pave the way for a range of 'export' models. The Spectrum 128 was financed and launched in Spain, where the new Coupe variant should find many converts.

Changes

Some of you may find problems when using the *Change* listing presented last month, to alter SAM

Basic. The version listed assumed that you have selected the default LIST FORMAT 0. If you select LIST FORMAT 1 or 2 and *Change* alters a multistatement line, you may find extra characters inserted between statements (typically the bogus line number 8224, which is 32 + 32 * 256).

The problem is that the extra spaces and new line characters in a formatted listing can confuse KEYIN. The quick fix is to reload the original and select LIST FORMAT 0, then make the changes.

Alternatively, you can make the program check the current format, select FORMAT 0 while scanning, and restore the previous format when it has finished. Just add these lines:

**LET LAYOUT=PEEK SVAR 184
LIST FORMAT 0**

at the end of PROC DIVERT, then add LIST FORMAT LAYOUT, to restore the old format setting, at the end of PROC REVERT.

Next month

In the next *Sinclair Scene* I shall give the lowdown on *QPac-2*, the latest package from QL designer Tony Tebby. *QPac-2* is a replacement for the system control parts of QRam, which many QL fans use to control memory, files and tasks. *QPac* could appeal to all QL owners, as it is an 'extended environment' which adds many new features to QDos.

Timothy Green will not be turned to stone by Medusa

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SAM Coupe SDI Interface
Miles Gordon Technology
plc, Lakeside, Phoenix
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Turbo SAM Coupe fanzine
Unit 1, 8 Healey,
Tamworth, Staffs
B77 2RF.

ZX-81 Emulator
Softville, Unit 5, Stratfield
Park, Eletra Avenue,
Waterlooville, Hampshire
PO7 7XN.

CD Games Pack
Codemasters, PO Box 6,
Southam, Warkwickshire
CV33 0SH.

Punters seek bargains at the All Formats Computer Fair