

**K**obrahsoft's *Plus Three Diary* is a simple, well-presented Spectrum Plus Three package, which loads from disk in about 10 seconds. It implements a Calendar covering dates from 1910 to 2089. Notes can be attached to any date, up to a maximum of 80K, or 2,559 32-column notes. That's room for seven lines every day for a year. The Address Book can use up to 64K from that 80K, holding up to 512 names, addresses and phone numbers in fixed 128 byte records. Kobrahsoft suggests that it might be used for other filing purposes. The Diary has the calendar at the top, with one day highlighted. Arrows and shifts let you move quickly by day, week, month or year, or you can enter a new eight-digit date. The middle part of the screen is a scrolling window of single-line notes associated with the chosen day.

Individual lines can be inserted, deleted or edited, inserting or over-typing characters. An alternative view fills the screen with the configured note file name, space used, and initial entries for any four consecutive days, but you can't re-order notes without retyping.

The Address Book is similar, showing four entries at a time, in alphabetical order, ignoring case. The Address Book finds any name as soon as you type enough characters to identify it uniquely, much as *DMS* locates files. Addresses and Diary Notes share the same memory, but load and save separately. A warning appears if you try to Quit without saving changes on disk.

### Biorhythm method

The bottom of the Diary screen shows coloured biorhythm curves; you can configure the curves to match four birth-dates of your choice. These sinusoidal curves form a kind of minimalist astrology, said to predict the health of anyone from their age.

Biorhythm means 'rhythm of life'; the term was invented at the turn of the century by William Fleiss, a German doctor, and Herman Svoboda, an Austrian psychologist. They reported regular cycles of behaviour in patients, and proposed that physical symptoms follow a 23-day cycle, while emotional highs and lows recur every 28 days. The doctors said that both cycles follow sine curves which start at birth and continue like clockwork for the rest of every life. This idea fits the reductionist world-view of the time, when simple arithmetic and tabular

calculations had revealed much that was not immediately obvious about the world, and simple answers were in vogue.

Later, a Dr Telscher hopped onto the bandwagon, suggesting that intellectual performance follows a 33-day cycle. A proportion of gullible fatalists have been ticking along, or not, ever since. Research confirms that periodicity is a characteristic feature of life, but does not support the rigid dates and periods of the bio-pioneers. To swallow the whole theory you must believe that all people who share a birth-date keep phase throughout their lives, despite differences of environment and activity.

Alas, opinions differ about whether the most important dates are when the curves coincide, peak, bottom out, or cross the horizontal axis, which the Plus Three does not show. Unlike bespoke Astrology, biorhythm theory does not take account of the exact time or place of birth. Modern living raises awkward questions - do biorhythms jump as people change shift, get jet lag or fly over the dateline? Some might consider the date of conception more relevant than the date of birth. And does re-birthing reset the rhythm?

The arithmetic to produce a biorhythm chart is well-suited to a computer. The tricky part is getting the calendar right, so the biorhythm chart is an obvious, if trivial, extension for a diary program. Kobrahsoft's *Diary* costs £12.95 on Plus Three disk. It's well done, if you like the idea. I'd prefer a paper diary and a Tarot reading.

### Sam assemblers

The fastest language on any micro is machine-code, the language of the microprocessor. Machine-code instructions are very simple, but powerful when used in combination. The Coupe's Z80B can execute one and a half million machine-code instructions every second, versus 665,000 to 888,000 on a Plus Three, which has 64K of slow Ram and 64K faster Ram and Rom.

You could enter machine-code by poking a sequence of instruction

# Sinclair Scene

*Timothy Green takes a wry look at dates and compares Sam assemblers*



*Kobrahsoft's Diary schemes against light fanatics*

and address numbers into memory, but that's a painful process. It's better to write your program in a text editor, and use an assembler to translate lines of mnemonic 'source' instructions into 'object' machine-code which the computer can execute.

Sam owners have a choice of assemblers; Mark Summerfield (ex-MGT) and I have spent recent weeks testing Lerm's *Sam Assembler 2.2* and Steve Nutting's *SC Assembler 1.1*. Both come with a disassembler, which turns the contents of Ram or Rom back into symbolic text. The review machines used Rom 2.2, but both are said to suit all Sam Roms.

Both packages work on 256K or 512K Coupes, but ignore the extra memory. Lerm's program costs £8.99, and offers two entirely separate 32K banks for source. SC costs £10 and has three 32K banks, effectively treated as one 96K area.

Lerm's comes on tape and copies easily to disk. Steve's comes on disk, and lets you customise paper and pen colours, number base, characters and cursor flashing in your copy. Both can be copied normally between disks; Lerm loads a bit faster than SC.

### Editing

Assembler programmers spend much of their time editing source, so a good editor is crucial. Both editors let you move the cursor and over-type or insert on a Mode 3 screen; SC has keys to page back and forth, while Lerm can only LIST required lines by number. You need to be able to read 64-column screens to use these products; SC starts with messages in 85-column CSIZE 6,8!

Steve's editor goes direct to the display memory, for faster screen handling, and gives a visual indication of free memory in a bar at the side of the screen. Lerm uses Coupe Rom display routines, and prints the number of bytes free after each line is entered.

Both editors use line numbers to keep lines in order, with automatic and re-numbering options. Programs refer to lines by 'labels' - names of up to 14 characters, declared in the first column of the program. Numbers or simple sums in binary, decimal or hex can be assigned to labels, and both packages offer a range of base-conversion facilities.

The assemblers use unique tokenised file formats, so they won't load one another's files.

*Lerm* compresses initial groups of spaces, while *SC* tokenises the entire line, for faster assembly and smaller source files. *Lerm* will load *Spectrum Zeus* and *Z80 Toolkit* tapes, but *SC* only works with disk files.

You can delete lines or blocks, and merge files up to 32K with *Lerm*, or 96K with *SC*, and search for particular text, but both lack easy ways to move blocks of lines or replace text automatically.

*Lerm* uses the *Sam Basic* DIR command to show the file directory, while *SC* has its own routine that shows all files and types onscreen simultaneously. Tantalisingly, this includes erased files whose directory entries have not been reused. Contact Coupe Connection (Spectrum Discovery Club) for an unerase program to restore such files.

Both editors are idiosyncratic. *Lerm's* defaults to capital letters, but Shift gives lower case - unless you press Caps Lock, in which case capitals are banned until the next line. Weird! However, *Lerm's* input routine does allow key rollover, so fast typists can press a new key before they release the previous one, as usual on *Sam*.

*SC* makes you release each key before you press the next, or characters may be ignored or duplicated. Plodders used to rubber membrane keys will have no problems, but I found touch-typing impossible. Steve plans to use the *Sam Rom* keyboard routines in his next release.

## Assembly

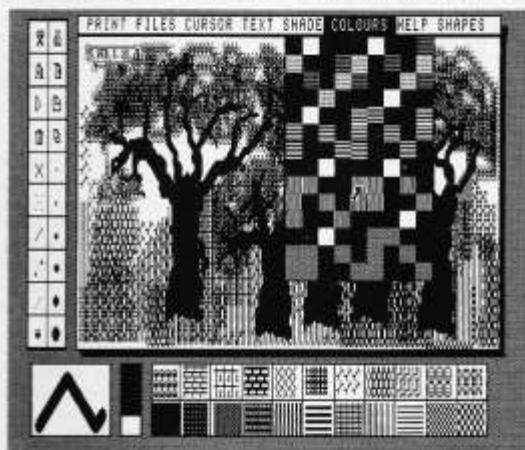
Assembler programs are normally typed in columns. *Lerm* expects you to separate columns with Tab, while *SC* needs nothing but a colon to separate label and instructions. It works out the columns for itself by scanning the line you enter.

*SC's* editor checks the syntax of each line immediately after entry. Mistakes must be fixed before continuing. If you enter source in lower case, labels and comments remain in small letters, but mnemonics are converted to capitals, making listings more legible. However *SC's* editor insists that comments go on a line separate from mnemonics, preceded by ';'. *Lerm* lets you put comments at the end of a code line, or on lines of their own.

Mark caught out *SC's* automatic formatting with `ldc,(ix)` which we expected to expand to `LD C,(IX)`. *Lerm* accepts this, but *SC* sides with the pedants who contend that index registers are always used with an offset, even if it's zero. *SC* makes you enter



*QL Cad Pak is fun, but limited as graphics packages go*



*Text can be incorporated in sizes from tiny to huge*

`ldc,(ix+0)` giving `LD C,(IX+0)`. This does not affect object code length.

Both products assemble fast, from memory to memory. The assemblers recognise all standard Z80 op-codes; *SC* also accepts the undocumented codes, most of which use IX and IY as four slow 8-bit registers, while *Lerm's* manual explains tricks to enter those codes. If an error is found, *Lerm* displays a numeric code, 0-10, while *SC* manages a message in English. Both present you with the line that caused the problem, without surrounding lines for context.

*Lerm* lets you edit the line or continue assembly to find other errors, whereas *SC* stops assembly, forcing you to edit the line or break in and re-run the program. This can be annoying. Suppose the line rejected is: `JR Z,PRINTSTR`. That line may be

correct if the problem is that the label 'PRINTSTR' has been wrongly defined elsewhere as `PRINSTR`. The line that refers to `PRINTSTR` is presented for editing, although the real problem is somewhere else.

## Menu structure

You usually end up popping in and out of an assembler several times while testing a new program. *Lerm's* command structure can make this rather slow. The development cycle looks like this.

Quit the editor with (QUIT) then save your source (S then I). Watch the disk directory, then enter the file name. Return to the assembler/editor (A) and assemble (ASSEM). Quit the editor (QUIT) and the program (Q). CALL your code. After testing press <F4> to return, then (A) to return to the assembler/editor. Modify your

code and repeat all the above until bug-free!

Compare that to *SC*, where you save the completed source with (+s), then enter the file name, or take the default. Now assemble (a). Quit (q) and CALL your object code from *Sam Basic*. After testing, <F4> takes you back to the assembler/editor ready to modify your code and repeat. *SC's* development cycle is quicker and simpler than *Lerm's*.

The main feature missing from both programs is a 'monitor' to let you test your program line by line. Both publishers have a sensible upgrade policy, and plan to remedy this lack.

## Manuals

Both assemblers come with small A5 manuals. *SC's* 10 pages are easy to read, but marred by poor English. *Lerm's* 20 pages are better organised, with small but useful examples, and it includes a supplement covering extensions to *Lerm's* disassembler and tips on customising the program for your printer. Both let you print the source or assembly listing or the 'symbol table' of label names and values via any *Sam* printer interface.

*SC's* manual does not mention saving object code, but all it takes is a SAVE "name" CODE command from *Basic* after assembly. There are other surprising gaps - for instance, neither manual gives information on reading keypresses. Neither is a Z80 code tutorial. If the packages were expanded with examples of how to use common Rom routines they would be suitable for novices, requiring only a keen friend, or Z80 tutorial, as a supplement. Mark recommends *Z80 Assembly Language Programming for Students* by Roger Hutton.

Serious hackers need *Technical Manual 3.0*, with its hardware and Rom details, but that presumes some familiarity with the Spectrum. The current *SamDos* information is hopeless, and Steve reports that some hook codes don't work yet.

## Disassembly

*Lerm's* disassembler offers the choice of lower or upper case, hex or decimal, displaying the address, hex code, mnemonics, and ASCII text. *SC's* option +z gives mnemonics; option +t gives ASCII text. *SC* allows you to examine both 16K Roms as well as Ram.

Neither disassembler can get at memory above address 64K, which is a shame as *Sam Basic* and the Roms support linear addressing up to 528K. If you write a mixed

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Basic and machine code program and some of the object code is above 65535 you will not be able to examine it in context.

Both products allow you to enter, edit, assemble and disassemble machine code competently, so it's hard to decide between them. If you can cope with the keyboard, SC is a pleasure to use, largely thanks to the syntax-checking of input lines, and its development cycle is easier and faster than Lerm's. Lerm's assembler is less innovative and limited to smaller files, but the manual and disassembler are better, the program works with tape as well as disk, and it's a quid cheaper. Both would be greatly improved by extra Rom documentation, examples, debugging facilities, and block operations in the editor. Improvements are already promised in these areas, but the current versions make a good start.

### QL Cad Pak

Back in the QL's distant past, a firm called Medic released a good-looking icon-driven painting program, called *M-Paint*. Medic went bust but the program survived, in Q-Liberated form, as *Cad Pak* from Datalink Software. I've just received a copy, with a small, rather rusty manual! It works on QLs up to 'JS', but won't run on 'MG', owing to old compiler bugs.

*Cad Pak* is a neat but limited graphics package. You can draw pictures with a variety of sprays and brushes over the majority of a QL screen, but pictures cannot extend outside the fixed window. Pictures use Mode 4 only, but you get 24 QD0s stippled colours. Other notable features include text from tiny to huge, polygons, recolouring and serial FX-80 printout options. You can cut and paste rectangular areas, and Undo most actions.

You move the pointer with keys or a joystick; the version I tested does not recognise mouse control. *Cad Pak* is easy to use, attractive and fun if you have nothing like it on your QL, but it's not a patch on Sam's *Flash* or other modern paint packages.

Datalink recently visited the Shopper office, brandishing two QL titles in neat vinyl wallets with colour inlays: *Cad Pak*, and *QL Slime*, a 3D maze game compiled with *Supercharge*. Datalink has decided to sell off its stock, and offers both on disk for a very reasonable £9.95. Cartridge copies are available, but use nasty 'key' protection. Send your own tapes as Datalink has run out. *3D Slime*

### SCREEN FILE CONVERTER

```
100 REMark QLSCREEN to GEM .IMG file converter
110 REMark M.R.V Peterson/Timothy Green/Shopper
120 screen=131072 : REMark Start of display RAM
130 LBYTES "flp1 ql screen",screen : REMark 32K
140 OPEN_NEW #3,"ram1_QL2GEM.IMG"
150 BPUT #3,0,1,0,8,0,2,0,2,1,244,3,13,2,0,1,0
160 FOR row=0 TO 255
170 LET green$="" : red$=""
180 FOR column=screen TO screen+127 STEP 2
190 green$=green$ & CHR$(PEEK(column))
200 red$=red$ & CHR$(PEEK(column+1))
210 END FOR column
220 PRINT #3,CHR$(128);CHR$(64);green$;
230 PRINT #3,CHR$(128);CHR$(64);red$;
240 LET screen=screen+128 : REMark Next line
250 ENDFORrow
260 PRINT#3,CHR$(26) : CLOSE #3 : REMark EOF
```

costs £4.95 on tape; *Cad Pak* is £5.95.

### Sudden Conversion

MRV (if it's dead, I've got one) Peterson sends a small listing to convert a 32K QL screen file into a file in GEM.IMG format. Wow! The listing came on bright anti-copy red paper, but nonetheless MRV earns a *Shopper* Guru mug, even I haven't got one of those. (See the figure *Screen file converter*).

My tweaked version appears here. It uses *Toolkit 2* to write the IMG file header, then separates red and green bytes into 256 pairs of planes, and ends the file with the traditional Control-Z.

The *Cad Pak* screens shown here were read from QL Ram by compiled *SuperBasic*, networked to our Thor XVI and *DiscOver'd* with these words to pseudo-MsDos format, then posted to the editor for conversion - via another PC format - through *Apple File Exchange* and into *PageMaker*.

Richard Alexander of CGH Services offers QL software to transfer images from ST to QL, but not the other way. Can anyone convert Sam and Spectrum screens for Gem, or other standards, or suggest a cheap, accurate reference?

### Quick Posters

This new QL program from Dilwyn Jones makes simple text posters quickly and easily. It supports four text sizes and up to eight character sets, with variations such as italic letters, outlines and shadows. You set the page size, up to 99 lines of 160 columns, but bitmaps are not allowed. Onscreen, the task looks reminiscent of Psion's packages, with prompts in boxes at the top of the screen, work scrolling in the middle, and current settings on a few lines at the bottom.

*Quick Posters* is designed around 24-pin printers, and

configured to suit Star's LC-24-10. It does not suit many 9-pin printers, although the Star LC-10 is suitable; 9-pin Epsoms and many other QL-compatible units, like the Centronics-GLP, are not. *Quick Posters* costs £10 on disk or cartridge, with printed documentation, and fits a 128K QL.

### Spectrum fades?

Amstrad has stopped production of the Spectrum Plus Three. Tens of thousands of machines are still in distribution, so it should remain available for a while. A year ago you could still buy the original 48K Spectrum, compatible with most cheap hardware, unlike recent Amstrad models.

Figures for 1990 show that the Spectrum range still accounts for 20 percent of UK micro sales, and over two million specialist magazine sales each year. The Plus Three model has many keen users, but a justified reputation as a bit of a bodge, with its dodgy sound, incompatible ports, tiddlydisks and frustrating screen editor. The Plus Three missed out on the 'cure-all' third party add-ons for earlier Spectrum models. Few programs, apart from Locomotive's *CP/M Plus* and Kobrahsoft's *Disk Utilities*, show it off well.

The excitement over Sam last Christmas left Amstrad sitting on unsold Plus Three stocks. Amstrad stopped Plus Three production in Taiwan in May, and marketing manager Mike Walton has told Miconet that "The Spectrum Plus Three is no more."

Now SamCo sells the Coupe at £199, with a 780K drive, new Rom and emulator. It's hard to see anyone who appreciates the finer points of the original Spectrum buying a Plus Three this Christmas. The Coupe is almost twice as fast, has twice the Ram, and four times the disk capacity at

a quarter the price per disk. Not forgetting the extra colours, stereo sound and Sam Basic. Or the ST, Amiga or Archimedes...

I still hope Sam can be manufactured abroad, under licence, but for now Miles and Gordon have their hands full trying to pay off MGT's £1.7 million debts. The Coupe remains a good buy for Spectrum devotees - but it seems unlikely that SamCo will colonise the mass market in the way that MGT promised. Perhaps that ambition was too much, but Sam seems assured of continued support. Many talented and keen Spectrum enthusiasts have invested in the Coupe, and the fanzines are buzzing with activity and innovation.

Meanwhile, on the street, Amstrad continues to make and sell the Spectrum Plus Two A, which has the same guts as the Plus Three, but a cassette deck in place of the disk drive. Alan Sugar might prefer to push the CPC/console hybrid in place of the Plus Two A, but even he can't afford to ignore the Spectrum software base.

### Next month

The Spectrum, and innumerable clones, is the home computer in the Eastern Bloc. Next month, *Sinclair Scene* will tell you why. ■

### CONTACTS

#### QL Cad Pak

Datalink Software, 151  
York Way, Camden,  
London N7 9LG.

#### QL Quick Posters

Dilwyn Jones Computing,  
41 Bro Emrys, Tal-y-bont,  
Bangor, Gwynedd  
LL57 3YT.

#### SC Assembler 1.1

Steve Nutting, 7 Narrow  
Close, Histon, Cambridge  
CB4 4XX.

#### Sam Assembler 2.2

Lerm, 11 Beaconsfield  
Close, Whitley Bay, Tyne  
and Wear NE25 9UW.

#### Plus Three Diary

Kobrahsoft, Pleasant View,  
Hulme Lane, Hulme,  
Longton, Stoke-on-Trent,  
Staffs ST3 5BH.