

S I N C L A I R



WORLD

Every month £1.25 January 1988

DENMARK DKR 40.00
GERMANY DM 9.00
NETHERLANDS DFL 9.25
SWITZERLAND SFR 6.50

Flashback
flexible database
Linear lists



BATTLE OF THE KEYBOARDS

Two new replacements



Mastermind



Algorithms for skills



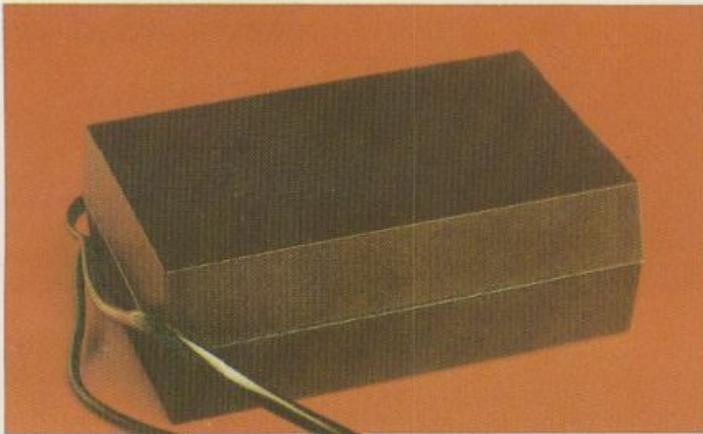
Getting hard copy



Introducing

QTALK

TEXT TO SPEECH IN A FLASH



PRICE	
Qtalk	£75.00
VAT	£11.25
Post/Packaging	£ 2.25
Total	£88.50

Qtalk Applications

- 1) **Health**
 - a viable solution to speech impairment/impediment
 - allows the blind to write documents and programs
- 2) **Education**
 - an excellent tool for teaching the relationship between the written and the spoken word
 - a valuable aid to those assisting the dyslexic or for students with reading problems
 - an amazing new method for teaching or learning the translation of one language to another
 - touch typing made easy with keyboard echo
- 3) **Industry**
 - enables verbal output of readings/warnings from independent peripherals. (BUS, IEEE, RS232 etc)
 - can be used to give instructions to an operator
 - could be set up as an answerphone or entryphone
- 4) **Entertainment**
 - allows the user to verbally list programs while checking them against a hardcopy listing
 - can be made to hum musical tunes
 - provides a whole new dimension to computer games

Hardware Features

- RS232C, Selectable baud rate, DCE or DTE**
- will operate on any computer with an RS232 port
 - at any standard baud rate
 - does not tie up the expansion port

Three adjustable presets:

- allows adjustment of Volume, Pitch and Pitch range (16 levels)

Black Eurocard enclosure, QL plug, power lead, socket and serial cable

- simply plugs in between your power supply and QL
- maintains the integrity of your computer system

(Note. CST Thor version is powered through the serial lead)

Software Features

Full 68000 Text To Speech software incorporating 16 levels of pitch.

- lightning fast conversion of any string into speech
- any multi syllable word may be split, with different syllables spoken at differing levels of pitch, allowing intonation
- 20K of code. Will work on standard (128K) machine and Thor

Built in Exception Table (BET)

- certain words defy all logic and no amount of rules can cater for these. Therefore, their pronunciation has been permanently set in an exception table. eg 'thorough', 'ghoti', 'Lbytes', 'flp1'

Size selectable User Exception Table (UET)

- Users can set up their own table of any size and fill it with their own words/pronunciations. This overrides words in the built in table therefore allowing translation of languages. This table can be saved and reloaded for later use.

Over 400 rules to convert text to speech.

- If the word or string is not found in either table it will be pronounced via a sophisticated set of rules.

Full Device driver implementation.

- a new device called 'QTK' is added to the QL's list of devices. This means that you can use all of the built in basic keywords to send information to QTALK. eg PRINT, LIST, DIR, COPY etc. and also use QTALK with other computer languages (PASCAL, FORTRAN etc)
- a set of clever superbasic extensions is also included to make QTALK a breeze to use
- may be set to pronounce or ignore punctuation

Multitasking screen editor

- can be called up any time to set up and add, alter or delete words from the User exception table. Comprehensive on screen help.
 - Hopefully the last word in QL clocks — talking time and date
- Many more thoroughly documented features

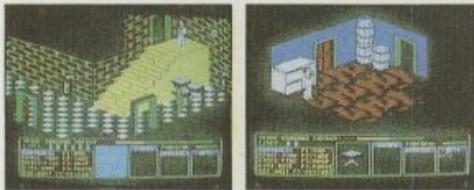
ALIEN HIJACK

The year is 2003 and you are working on the S.P.C. Forward, as ship's engineer. On the 23rd day you are attacked by an alien space ship and all hell breaks loose. You must regain control of your ship, against some mighty tough opposition.

The first TALKING game for the Sinclair QL. Possibly the most amazing QL graphics seen to date

- 3D graphics
- Full 68000 code
- 192 colour screens
- fast, dynamic, challenging
- talking hero and aliens

Note. Alien Hijack does not require QTALK to run but it certainly makes it a lot more fun. Works on a 128K QL.



PRICE	
Alien Hijack	£15.00
VAT	£ 2.25
Post/Packaging	£ 1.00
Total	£18.25

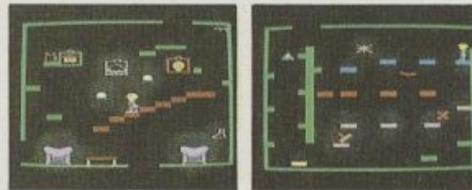
PUZZLE MANIA

Your mission, should you decide to accept, is to journey about the danger ridden cells of Maniaville to retrieve the lost loot of Lawless Lenny. Several obstacles will attempt to thwart your progress and only the smartest gamer will survive.

The second TALKING game for the Sinclair QL

- full 68000 code — 40 colour screens — fast arcade action
- spoken clues to help you win (if you are good enough)
- Truly addictive challenge

Note. Puzzle Mania can operate without QTALK but is much more fun with it



PRICE	
Puzzle Mania	£10.00
VAT	£ 1.50
Post/Packaging	£ 1.00
Total	£12.50

Special Introductory Offer Buy QTALK, PUZZLE MANIA and ALIEN HIJACK and receive £5.00 discount pre VAT total

Name _____ SOLWI

Address _____

Please rush me _____

for my QL/THOR (cross out one which does not apply)
with software on 3 1/2" disc/mdv (cross out one which does not apply)

I enclose a bank cheque for £ _____
or please debit my Access/Visa card (cross out one which does not apply)

Card number

Expiry date _____ Signature _____

I appreciate that no funds will be deposited until despatch of goods. Please allow up to 21 days for delivery (airmail).

Maxtronics R&D Ltd

(New Zealand)

ORDERS TO:

CHI - SOFT: 20 Chandos Way, Wellgarth Road, Hampstead, London NW11 7HF, Great Britain. Telephone (01) 458-7249

or

Maxtronics R&D Ltd: 26A Conway Street, Christchurch 2, New Zealand. Telephone (64-3) 325-546

Editor
Helen Armstrong
Sub Editor
Harold Mayes MBE
Production Manager
Nick Fry
Designer
Chris Winch
Art Editor
Neil Tookey
Advertisement Manager
Perry Trevers
Assistant Advertisement Manager
Jonathon Manning
Magazine Services
Sheila Baker
Advertising Production
Serena Hadley
James Pyle
Managing Editor
Brendon Gore
Publisher
Trish Phillips
Group Publisher
Paul Coster
Financial Director
Brendan McGrath
Chief Executive
Richard Hease
Microdrive Exchange 089 283 4783/2952 (2 lines) TIL
Sinclair QL World
Greencoat House
Francis Street
London SW1P 1DG
Telephone 01-834 1717
Fax 01-828 0270
Telex 9419564 FOCUS G
ISSN 026806X

Unfortunately, we are no longer able to answer enquiries made by telephone. If you have any comments or difficulties, please write to The Editor, Open Channel, Trouble Shooter, or Psion Solutions. We will do our best to deal with your problem in the magazine, though we cannot guarantee individual replies.

Back issues are available from the publisher price £2 U.K., £2.75 Europe. Overseas rates on request. Please telephone 089 283 4783 to check availability.

Published by Focus Magazines Ltd., London

Distributed by Quadrant Publishing Services, Sutton.

Subscription information from: TIL, PO Box 74, Paddock Wood, Tonbridge, Kent TN12 6DW.

£15 U.K. £30 Surface mail Europe and the rest of the world. Add £5 for air mail + £10 overseas.

Typesetting by LSG Graphics, Gainsborough, Tel: (0427) 5323.

Printing by LSG Print Division, Lincoln, Tel: (0522) 513030.

©COPYRIGHT SINCLAIR QL WORLD — 1988

CONTENTS

JANUARY 1988

- 7** QL SCENE ● News from the QL market
- 10** OPEN CHANNEL ● The readers' voice
- 14** TROUBLE SHOOTER ● You are not alone
- 18** THE DIGITAL CONNECTION ● Two new keyboards
- 24** PSION SOLUTIONS ● Getting hard copy
- 27** EDUCATION ● Teaching practical skills
- 32** FLASHBACK ● A database with a difference
- 38** SOFTWARE FILE ● Back to simple shooting
- 42** DIY TOOLKIT ● Editing with the ROM
- 46** FOCUS SALES POINT ● Bargains for the QL
- 48** THE PROGS ● Mastermind strikes again
- 52** MICRODRIVE EXCHANGE ● Ideal for stocking fillers



NEXT MONTH

MICRODRIVES, REGULATORS AND INTERFACES

Preventative medicine for machinery: is it worth fixing things which work? Bryan Davies thinks it is, in selected circumstances, and describes several ways in which a little care now will circumvent a catastrophe later.

OUT OF THE SHELL

Expert systems are expected to take program design power from the hands of specialists and place it in the hands of users. Marcus Jeffrey, SQLW's artificial intelligence specialist, gets to grips with a new expert shell package for the QL.

S E C T O R

SPELLBOUND

REAL TIME spelling checker for Quill or The Editor V1.17 onwards on the expanded Sinclair QL.

Spell Bound checks input by the character against its 30,000+ word dictionary. It has 5 switchable modes of operation to suit a variety of typing styles with the dictionary available at all times. Spell Bound displays example words on request and operates with no discernable reduction in the operating speed of Quill. The dictionary is fully user expandable to memory/media limits.

Available on disc or Microdrive at only £29.95

SOFTWARE 1

Touch Typist	£12.00
Task Master	£25.00
Spellbound	£29.95
Turbo Quill+	£14.00
Turbo Quill	£12.00
Cartridge Doctor	£13.00
Eye Q	£29.00
Turbo	£99.00
The Editor (DP)	£30.00
Project Planner	£30.00
Forth	£34.00

SOFTWARE 2

Toolkit 2 (EPROM)	£34.00
TechniQL	£49.00
Media Manager	£40.00
Front Page	£23.00
Scrabble	£15.00
Keydefine	£10.00
Talent Workbench	£25.00
Supercharge	£49.00
Pson Chess	£17.00
Better Basic (DP)	£20.00
Home Finance	£20.00

FLASHBACK

See opposite for details

TASKMASTER

THE ULTIMATE

- NOT JUST another multi tasking program, but a complete front end memory management system for the expanded Sinclair QL.
- ON SCREEN CALCULATOR with many features including delta percentage mark up.
- POWERFUL FILE MAINTENANCE of discs and Microdrives.
- NOTEPAD with word wrap and 'send note' feature.
- SOFTWARE RESET scans for, and warns of any vulnerable open files at close down.
- SERIAL PRINTER BUFFER user configurable up to 32K
- DUPLICATE CODE SHARING allows multiple copies of the same program without losing memory to additional code space e.g. 12 copies of Abacus with 230K free.
- COMMAND FILE MODULE easily creates files which will operate the machine in your absence. For example it could load quill, fill in your address, type a standard letter and print it. You will, however, have to post it yourself.
- TASKMASTER does not consume vast amounts of memory. If you wish only to use the multi tasking module, that is all you need to load, thus using only a small slice of memory. The choice is always yours
- USER FRIENDLY. It was described as "virtually idiot proof" by a major software reviewer.

Available on disc or Microdrive and still only £25

CAMBRIDGE COMPUTERS Z88

-from Sir Clive Sinclair

£287

- Built in screen
- Full size keyboard
- Built in word processor
- spreadsheet and database
- 32K RAM
- Diary and Calculator
- Comms software
- All Z88 accessories available
- Runs for 20 hrs on 4 AA batteries
- Many more features

QZ

QL-Z88 file transfer software
£15 (QL-Z88 cable - £8)

Allows you to use the QL for storage and editing of files, or to use the Z88 as a portable data terminal. Available on 3.5in. disc or Microdrive

SOFTWARE

**NEW FROM
SECTOR
SOFTWARE**

FLASHBACK

FLASHBACK

An entirely new concept in fast information storage, retrieval and manipulation on the Sinclair QL. Flashback is written by Peter J Jefferies, author of Taskmaster and Spellbound and is designed to be user-friendly, powerful, flexible and very fast.

The master program is memory based and will operate in different forms, dependant on whether running on a standard or expanded machine. Easily build your own reference system from scratch or import existing Quill list files, Archive export files, Editor text files and even Superbasic program listings.

FLASHBACK

Uses infinitely variable non-destructive windows and is designed to overlay the current program when required. Built-in text editing, free-form structure supporting, varied selecting, sorting and location features.

FLASHBACK

ONLY £25

TOUCH TYPIST

Don't even think about buying a replacement keyboard until you know how to use the one you already have.

Why type slowly when you can be typing at professional speeds? Touch Typist is the fastest typing tutor available for the Sinclair QL. It will teach you to type at up to 211 wpm. It is 100% machine code and has:

- 3 teaching modes ● adjustable speed and accuracy targets
- very fast interactive keyboard ● results display graphs

Customise any or all of the 200 lessons which can then be saved to create a library of custom lesson sets. Touch typist will run from disc, Microdrive or ramdisc. Available on disc or Microdrive for only £12.

"Succeeding admirably as a serious course intended for beginners and experienced typists alike...includes the professional polish of good quality software" - QL World

■ QL SPARES

Service Manual - This is the most up to date book for repairing the QL. It contains all circuit diagrams, faultfinding charts and oscilloscope displays to enable you to repair your own QL or understand how it works - **£25.00**

QL Test Software - Including RS232 loopback lead. Tests all major functions of the computer - sound, colour, keys, RS232, Micro-drive etc. Used by repair companies - **£14.00**

Keyboard membrane	£6.00
Bubble mat	£3.00
JS ROM set	£28.00
ZX8301 ULA	£12.00
ZX8302 ULA	£13.00

■ VARIOUS

Trump Card	£195.00
QL dustcover	£5.00
Microdrive labels on tractor feed per 100	£3.50
20 Microdrives in Transform storage box	£39.00
Internal 640K memory upgrade	£99.00
Miracle autodial modem	£45.00
Astracom 1000 modem	£199.00
Microvitec 1451DQ3 dedicated monitor	£280.00
Parallel printer interface	£19.50

**39 WRAY CRESCENT, ULNES WALTON,
LEYLAND, LANCS PR5 3NA**

Tel: 0772 454328, Prestel mailbox 772454328

ALL PRICES INCLUDE VAT AND P & P



COMPUTERS

QL JS 2.3 software	£169
QL640 JS 2.3 software	£260
Psion 2.3 sets	£10
Psion 2.35 sets	£20

PSION ORGANISER

Organiser XP 32K	£138
128K Rampack	£100
32K D Rampack	£55
Harvester Superchip	£99
Data Organiser	£35

Z88 + mains adaptor	£297.50
32K Rampack	£20.00
128K Rampack	£50.00
QL - Z88 link	£23.00
Centronics interface	£30.00

Z 88

TK

COMPUTERWARE

the QL stockist

Tel: 0303-81-2801

DISC SYSTEMS

Dual 3.5 in. + Trump Card	£350.00
Single D/D 3.5in. drive	£125.00
Single D/D 3.5 in. & 0K SQB	£225.00
Dual D/D 3.5 in drive	£209.00
Dual D/D 3.5 in. & iface	£295.00
Dual 3.5 in. & 512K SQB	£350.00
Cumana disc interface	£ 86.25
768K Trump Card	£199.00

SPARES

JS ROM sets	£27.50
Keyboard membrane	£6.25
Keyboard bubble mat	£3.85
ULA ZX 8301	£9.50
ULA ZX 8302	£10.25
MAB 8049	£7.50
CPU 68008	£25.80
M/drive assemblies-complete	£27.50
Voltage regulator (high output)	£4.75
Power supply UK	£23.50
Power supply European	£25.50
QL Test kit	£13.50

SUNDRIES

10 Microdrive cartridges	£17.50
Cartridge storage box	£5.50
QL Dustcover	£5.00
100 Microdrive labels	£3.75
Powerclean filter	£36.00
Eprom Programmer	£129.00
Battery clock kits	£19.50
10 DS/DD discs 3.5" (u/b)	£18.50
Joystick + adaptor	£16.00
512K internal U/G	£94.00
Centronics Interface	£19.50

SOFTWARE

BUSINESS

Flashback (c-d)	£25.00
Cash Trader (PDQL)	£80.00
Cash Trader + Analyser	£105.00
Decision Maker	£35.00
Entrepreneur	£35.00
Finance Manager	£19.00
Home Finance (Buzz)	£22.00
Investment Monitor	£20.00
Project Planner	£29.00
Small Traders Pack	£25.00
Spellbound (c-d)	£30.00
Spellbound + Filebound	£35.00
Touch Typist	£12.00
Paciol	£25.00

UTILITIES

Archivist	£30.00
Cartridge Doctor	£13.00
Copymate	£11.00
CPM Emulator (c-d)	£45.00
Assembly Lang. Toolkit	£25.00
Desktop Publisher	£60.00
Desktop Publisher - S/Edtion (d)	£80.00
Front Page (c-d)	£23.00
Front Page Extra 2 (c-d)	£40.00
ArchRTM	£20.00
ICE Eprom	£27.00
ICE Drawing Office	£15.00
Key Define	£10.00
Locksmith	£11.50
Mailfile (256K)	£20.00
PCB Designer 1	£99.00
OFLASH Ramdisk + toolkit	£19.00
OFLASH Ram Eprom	£25.00
OFLASH Ram utilities (c-d)	£10.00
Reconfigurable toolkit 2	£29.00
4 Matter	£11.50
Recover	£20.00
Sideways	£20.00
Sidewinder	£12.00
Archive Tutor	£21.00
Super Media Manager (d)	£40.00

XRef	£15.00
Compare	£10.00
Super Toolkit 2 (Eprom)	£29.00
QIMI + Giga Mouse	£70.00
QLiberator (c-d)	£60.00
QLiberator (budget)	£30.00
QLoad & Ref	£10.00
Quats	£25.00
QRam (c-d)	£30.00
QWriter 2	£20.00
Task Master (c-d)	£25.00
Speed Screen	£20.00
The Editor	£29.00
The Editor - special edition	£49.00
Turbo (c-d)	£99.00
Turbo Quill (c-d)	£10.00
Turbo Quill + (c-d)	£13.00
Ultra Print	£20.00

CAD

Concept 3D	£40.00
Eye Q	£29.00
Mandelbrot Magic	£15.00
Sign Designer	£17.00
TechnIQ	£50.00
The Designer	£15.00
Viewpoint	£20.00
3-D Designer	£35.00

LANGUAGES

Assembler Workbench	£25.00
Basic-Ally	£20.00
Better Basic	£24.00
BCPL Development Kit	£51.00
C Compiler	£85.00
DevPac Development Kit	£30.00
LISP	£51.00
Macro Assembler	£38.00
MonQL (Eprom)	£30.00
Pascal (Computer One)	£40.00
Pascal (Metacomco)	£75.00
Pro Fortran-77	£92.00
Pro Pascal	£92.00

QMON	£20.00
Super Forth + Reversal	£39.00

LEISURE

Area Radar Controler	£13.00
Chess	£17.00
Cosmos	£14.00
Flight Simulator	£19.00
Matchpoint	£14.00
Bridge Player 2	£20.00
Professional Astrologer	£70.00
Super Astrologer	£25.00
Scrabble	£15.00
Snooker	£13.00
Squadron	£16.00
Super Backgammon 3	£13.00
Strip Poker	£15.00
Type 22	£18.00
War in The East:	
1 Barbarossa	£19.50
2 Stalingrad	£13.50
3 Destr. of Army Group	£13.50
War in the East (set)	£39.95

ADVENTURE (text)

Heart of Gern	£15.50
Horrorday	£15.00

ARCADE

Aquanaught 471	£20.00
Blocklands	£10.00
Archanoid	£15.00
Death Strike	£15.00
Fictionary	£11.50
Hoverzone	£15.00
Hyperdrive	£13.00
Jungle Eddi	£15.00
Karate	£15.00
Knight Flight	£15.00
Mortville Manor	£15.00
Quboids	£9.00
Stone Raider	£13.00
Tank Busters	£15.00

BOOKS

Using the Psion Organiser	£10	QDOS Companion	£7
Assembly lang. Programming	£9	Technical Guide	£20
QL Advanced Programming	£15	QL Service manual	£20

Other QL titles available - phone for details

KEYBOARDS

Schoen replacement	£57
Rainbow remote	£85
Sandy IBM-style	£99
Schoen IBM-style	£99

• ALL PRICES INCLUDE VAT AND UK MAINLAND DELIVERY - WE EXPORT WORLDWIDE •

Phone for details of other QL products OR send SAE for our latest catalogue

Credit card phone orders accepted, or send cheques, postal orders, Eurocheques to:

**TK COMPUTERWARE, STONE STREET,
NORTH STANFORD, ASHFORD, KENT TN25 6DF**

TELEX
966676 PMFAB G



FAX
0303 812892

Widget for Psion

Psion Organiser II users will be interested to know that the new *Widget* software pack is available.

The package allows Organiser users to search and print data more efficiently and to sort the machine Datapaks into alphabetical order. The programs can create and edit more than one file on each pack.

The *Widget* pack is available from **Widget Software Sales, Information Department, 21 Landrock Road, London N8 9HR. Tel: 0438 812320**, priced £39.95 including VAT and carriage. For dealer information telephone Mark Needham on 01-348 7300.

QL expert

Compware is launching an expert shell program for the QL. The *QL Expert System Shell* is a programming tool which makes it possible for users to produce usable knowledge-based systems at low cost. Designed for experienced knowledge engineers and users who want to learn about AI techniques, the *Expert System Shell* includes standard and original features, including Boolean and fuzzy logic, with user-definable probability relationships; intelligent scanning and pre-scanning of the rule base; tokenised

Custom built

SD Microsystems, which specialises in small business software for the QL and Amstrad CPC, is offering a customising service to meet users' exact requirements.

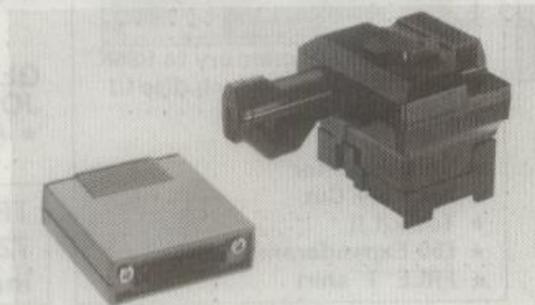
SD Microsystems has experience in modifying programs to run with less common printers, incorporating special features such as a price and product list into its software, and designing special filing systems and spreadsheets.

Prices for adapting existing programs or

developing new ones range from £10 for a simple alteration to £50 and up for a tailored system. Customisation enables business users to computerise their business requirements efficiently, provided, of course, they have a reasonably clear idea of what they need.

For more information or quotations without obligation, **SD Microsystems** can be contacted at **PO Box 24, Hitchin, Herts. Tel: 0462 675106**.

New image



The device in the photograph is a new image scanner from Epson which will retail for less than £200. It is intended for use with the boom in desk-top publishing in mind and is

available as an option on four of the company's printers, the EX800, and EX1000, and the LQ2500 and the 2500+

Epson U.K. Ltd, 388 High Road, Wembley, Middlesex.

rules to save memory — about 100 rules on a 128K QL — syntax-sensitive screen-based rule editor; on-line context-sensitive help; pre-compiled expressions for fast rule evaluation; formatting of input and output plus the ability to construct menus for the user; conditional operators and original constructs;

FIRST OF, MON OF, MAX OF, ALL OF; multiple goal paths, and others.

The expert Shell costs £49.95 including VAT and postage. Dealer and overseas enquiries are welcome. Write to **Compware, 57 Repton Drive, Haslington, Crewe CW1 1SA. Tel: 0270 582301.**

Please send items for inclusion in *QL Scene*, in writing, to *QL Scene*, *QL World*, Greencoat House, Francis Street, London SW1P 1DG. We cannot guarantee to place every item we receive for inclusion in a particular issue but news will, wherever possible, appear in the next available issue, normally the second month after the month of receipt.

Contents index

Reader Ivor Lewis has produced a printed index to the contents of *QL World* from 1984 to September.

The sample copy we have is well-printed on strong, dark red paper, with a matching card cover featuring a photograph of a QL held defiantly against the open sky. It is a well-produced booklet, in A5 format, with 27 pages plus cover.

The index costs £5 payable to **Ivor Lewis, Ashley Court, Chulmleigh, Devon EX18 7EX**. While it is not cheap it represents a considerable saving in time and trouble for anyone who looks up items regularly.

The headings included are Abacus, Archive, announcements — editorial comments — books, communications, games, graphics, joysticks, hardware, languages, names, printers, progs, puzzles, technical help, and utilities. It might be worth enquiring if Lewis has any plans for updates.

MIRACLE SYSTEMS LIMITED

14 day full money back guarantee on all products

12 month warranty on all products

All prices include VAT and P&P

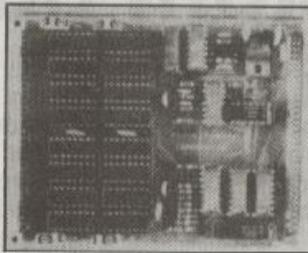
QL MODEM £49

★ New printout software



- ★ 1200/75 e.g. PRESTEL, T/GOLD
- ★ Autodial
- ★ 3 metre cable
- ★ Plugs into SER2
- ★ Includes Viewdata software
- ★ Includes 80 column software
- ★ Not BT approved

QL EXPANDERAM 512K £75



- ★ Increases QL memory to 640K
- ★ Through connector for i/f
- ★ Low power consumption
- ★ Can speed up some programs
- ★ Able to use larger Quill docs etc
- ★ Black cover included

QL CENTRONICS £19.50 PRINTER INTERFACE



- ★ Plugs into SER1 or SER2
- ★ Standard Centronics plug
- ★ Default baud rate 9600
- ★ 3 metre cable

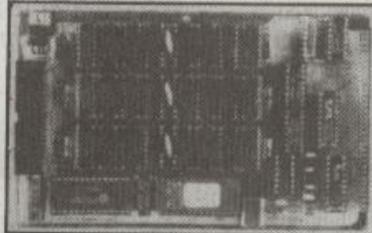
QL MODAPTOR £39

★ New printout software



- ★ Interfaces QL to standard modem
- ★ 300/300, 1200/75, 1200/1200
- ★ Autodials with DTR
- ★ Plugs into SER2
- ★ Terminated by 25 way D
- ★ Includes Viewdata software
- ★ Includes 80 column software

QL TRUMP CARD £199 768K RAM + DISC I/F



- ★ Increases QL memory to 896K
- ★ Standard 3½/5¼ inch disc i/f
- ★ Screen Dump
- ★ RAM Disc
- ★ Printer Buffer
- ★ Memory Cut
- ★ Toolkit II
- ★ £50 Expanderam trade-in
- ★ FREE 'T' shirt

QL QUADRAPRINT £19.50

- ★ 4 QL's to 1 printer
- ★ 5 metre cable £7.50
- ★ 10 metre cable £12.50
- ★ 20 metre cable £19.50

QL SERIAL CABLE £7.50

- ★ 25 way D plug
- ★ 3 metre cable

QL JOYSTICK ADAPTOR £4.99

- ★ Atari/Commodore J/S to QL

**TRUMP CARD Plus twin
720K 3½" Disc drive £349
inclusive**

Tel: (0454) 317772

Orders welcome by telephone or post

MIRACLE SYSTEMS LTD., Northavon Business Centre, Dean Road, Yate, BRISTOL, BS17 5NH, U.K.

West German distributor: Jepssoft KRUPPSTR9, 4040 Weuss 21, Tel: 021078184

Please send me

Please find cheque enclosed to the value of £

or debit my credit card

Expiry date

Signature

Send to: Name

Address

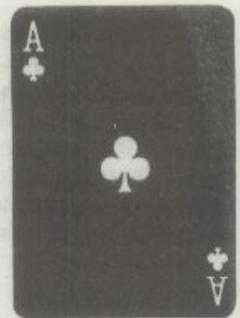
SQLW

MIRACLE SYSTEMS LTD., Northavon Business Centre, Dean Road, Yate, BRISTOL, BS17 5NH, U.K.

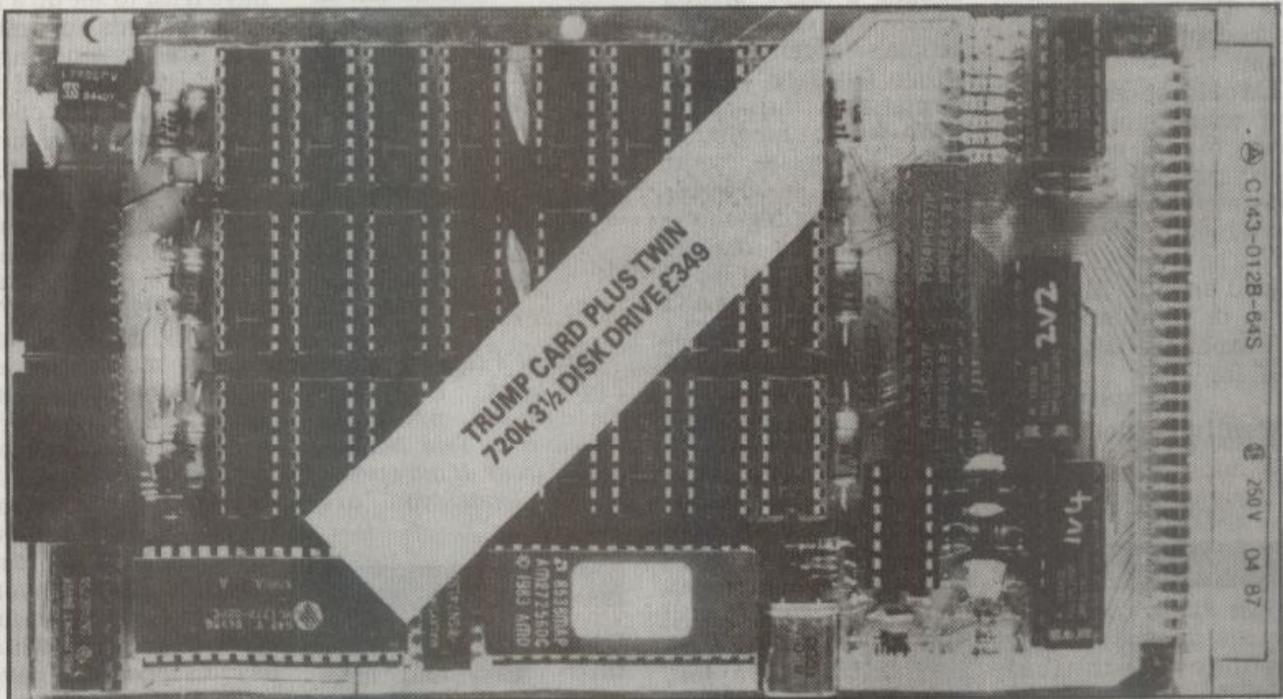
MIRACLE SYSTEMS

Tel. (0454) 317772

TRUMP CARD



- 768K RAM making 896K total
- Disc Interface
- RAM Disc
- Printer Buffer
- Toolkit II
- Screen Dump
- Memory Cut



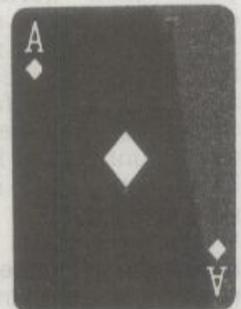
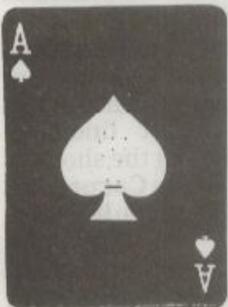
(THE TRUMP CARD IS SUPPLIED COMPLETE WITH COVER)

Price £199.00 inclusive

MIRACLE SYSTEMS LTD., NORTHAVON BUSINESS CENTRE, DEAN ROAD, YATE, BRISTOL, BS17 5NH, U.K.

Plug in the TRUMP CARD and you have a QL expanded to its maximum of **896K**. Its Disc Interface is fully compatible with QDOS, Psion packages, Superbasic, etc., To make maximum use of the **896K** the ROM software includes both static and dynamic RAM discs and a Serial Port printer buffer. The Screen Dump enables the screen to be copied to a dot matrix printer. Memory Cut lets programs that used to run only on an unexpanded QL run with the TRUMP CARD. And Tony Tebby's Toolkit II provides a comprehensive range of Basic extensions.

If you order directly from us then you not only get the 12 month warranty but a 14 day money back guarantee as well. We are also giving away a **FREE MIRACLE SYSTEMS 'T' shirt** with every retail order! For those of you who already have an EXPANDERAM 512K don't despair — we will also give you £50 trade in for it against a TRUMP CARD. So for peace of mind and a 'T' shirt, order direct from us by phone, quoting your ACCESS/VISA number or by post with a cheque, etc. **WE LOOK FORWARD TO HEARING FROM YOU.**



Open Channel is where you have the opportunity to voice your opinions in *Sinclair QL World*. Whether you want to ask for help with a technical problem, provide somebody with the answer, or just sound off about something which bothers you, write to: Open Channel, Sinclair QL World, Greencoat House, Francis Street, London SW1P 1DG.

OPEN

The Pawn

I bought a Sinclair QL last May and since then I have tried unsuccessfully to obtain the original *Pawn* adventure game marketed by Sinclair Research. I have been in touch with Firebird Software which has informed me that Magnetic Scrolls, writer of *The Pawn*, no longer have copies of the program.

I would be grateful if you would publish my letter in the hope that there may be a reader who owns *The Pawn* and is willing to part with it. I would be prepared to pay a good price for the program or alternatively I will exchange *QRAM* or *EyeQ* for it.

G. Williams,
33 Penllwynrhodyn
Road,
Llanelli,
Dyfed SA14 9NL.

Thanks

I must thank Colin Opie for his article in the October Technical Helpline. It showed me how to get my Brother HR5 printer working. I bought it nine months ago and sent to Datalink Computer Systems for a serial cable.

Apart from the self-test, which worked, I could not get a spark from it and spent many fruitless hours checking and trying different things, so for the last eight months or so it had been on the shelf gathering dust.

It took only two minutes to re-solder the connections and you can

imagine my delight when it worked for the first time.

T. Schofield,
Batley,
W. Yorks.

New service

I would like to use your pages to inform readers of a new service I am operating. Recently I bought a laser printer which will accept other people's documents, in either Quill or Abacus format, for printing.

We will be moving to larger premises soon, when I will be advertising and charging more, but until then readers can make use of it for 25 pence per page, plus a £2 handling charge. The print quality is excellent and I hope eventually to be able to provide graphics for printing.

In the meantime, I can accept 3.5in. discs or Microdrives with payment. Anyone who wants more details can apply to us and we will send full information.

Neil Taylor,
Taylor Made Systems
Ltd,
135 Ellerton Road,
Surbiton,
Surrey KT6 7UA.

Patient problem

I wonder if anybody can help me with a problem I am having in making the best use of my QL? I am an osteopath and am attempting to use Archive as the database for my patient information.

The problem is two-fold. I have to obtain background information from the patients con-

cerning their medical history, for which purposes I have designed a simple Archive database.

What I cannot do it to make the file open-ended so that after each treatment I am able to add new information to the files.

Can you offer any advice or information on how I can achieve this, or put me in touch with somebody who may be able to write a program for me?

My system comprises an expanded 640K QL with twin 3.5in discs.

Jon Leigh,
Gillingham,
Kent.

Editor's reply: Look at Flashback, the new database package reviewed by Ron Massey in this issue. It may prove to be what you are seeking.

Tall order

I have had my QL for three years and have done a good deal of work with it. I also like writing simulation-type games. At the moment I am working on a space shuttle simulation. It will probably take me a year or so to complete in my spare time.

I have two problems which I would like some help. I have the Trump Card, a 3.5in. disc drive and a Brother HR5 printer. The Trump Card works well and the directory trees are very useful.

My first problem is that when I run Quill

from the disc it runs well until I call for the HELP menus. I then get a message that they cannot be found. How do I get Quill to read the HELP files from the floppy and not the Microdrive?

Second, I am trying to catalogue my record album collection and I have tried to set up a file with records of more than the screen length. When I try to recall it I get only the fields on the screen. Does this mean that I have to create a different file for each side of a record? Surely you can have more than fields in a record? If so, how do I display them?

Finally, do you or any of your readers have a copy of the Medic Data Systems *M-Paint* program, the one which was supposed to be like *Macpaint* but in colour? If so I would like to buy this program and manuals. Does anyone have this, or is it just another program which has disappeared, never to be heard of again?

Steve Attrill,
Apt. 4,
17th Floor,
Froeling Strasse 7,
6380 Bad Homburg,
W. Germany.

Disc hunt

I am hunting for a QL disc drive and interface. If anybody has one for sale, please contact me, as I cannot find one anywhere in the shops.

Steve Carpenter,
42 Clanrenle Place,
Newport,
Gwent,
S. Wales NP9 3AU.

CHANNEL

Request time

I am a student of architecture but at the same time I am very interested in informatics, so it is not surprising that I try to link them. You could call this computer-aided architectural design, if you limit that concept to graphic problems. Besides CAD I am also interested in artificial intelligence, expert systems, non-declarative languages like Prolog, object-orientated languages, shape grammars and so on.

So I would like to join the requests for a Prolog interpreter and to see all those subjects covered in *QL World*.

**Rudi Stouffs,
Overijse,
Belgium.**

Basic protection

In the November, 1987 issue, the lead letter was about Colin Holmes' method of keeping Basic programs from prying eyes. On a pre-JS Qdos PC, only the first definition of an identifier is used, although if the first version is a Basic definition, a NEW will junk it.

To circumvent the not-so-delightful habit of numberless Basic programs load programs as a means of protection, Copy, WCOPY or SPL to the screen, or even use Forum #2 RENUM—FILE on a numberless program if you can be bothered.

A good point is that it may leave the Basic area intact if MRUN or MERGED or DONE. Consider the ubiquitous text

editor, for example Quill, Talent Editor and Computer One Editor, which make such techniques a little pointless.

Another point; why protect your work? Is the average user such a rabid plundering character that even Basic programs need forts protection? Also, the FLRUN, QLRUN extensions are not unassailable, thanks to Eddy Yeung's Basic-Ally.

**Billboard Bagginz,
Just past the Orc,
Massacre Inn.**

Editor's reply: Are QL programmers such calm, peace-loving characters that they would not arrange a little massacre all of their own if they know where rip-off merchants gather I am in favour of users being able to make back-up copies and have been known not to disapprove entirely of the odd program changing hands in other than its original form but there is no doubt that some people think it smart to stockpile as much software as possible without paying a penny, which is bad for software developers and everyone else.

SOS from Poland

I am Polish. I am 15 years old and I have a big problem. Three years ago I bought a QL. As you know, the QL is not a popular computer in Poland. I do not know any other people who have one. I have only four programs and I cannot buy more in Poland. I subscribe to *QL World* but I cannot order

programs because, first, the Polish bank will not arrange it and second, the price is the same as one month's salary in Poland. My problem is how to capture a game for my computer. Help me and tell me what I can do.

**Dominik Olszewski,
ul. Szczytowa 4/6 m 1,
92-114 tODZ,
Poland.**

Editor's reply: Perhaps some enterprising reader would like to set up an exchange or mutual help arrangement?

Sinclair addict

Through the years, for some inexplicable



reason I have bought every Sinclair device, apart from the C5, ever invented. I tried not to do so but I always convinced myself that each item was of the utmost importance.

My last purchase was, of course, the QL — an excellent machine, a pity about the unhelpful Sinclair at the time. When Sir Clive sold to Alan Sugar, I felt really let down.

Last August I was wandering along London's Oxford Street and, as usual, peered into Dixons window. I

entered, then left the shop clutching a Z-88. Sir Clive is an addiction. There must be an organisation to help people like me.

I now save my Z-88-applicable stuff through my QL on to disc, print through the QL to my printer and, best of all, create programs for the QL while on the train and just download when I get home. I use spreadsheets a good deal, so I will find this machine exceptionally useful.

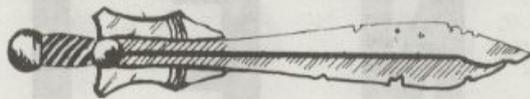
How about *QL User* and *Z-88 User* combined?
**Barry Cornhill,
Aylesbury.**

D-50 to QL

I have recently bought a Roland D-50 synthesiser and I am very interested in connecting my QL to the D-50 via a Midi interface.

I wonder if there are any Midi interfaces manufactured for the QL, or if there are any QL owners who know anything about the QL and possibilities for Midi interfacing?

**Bengt-Ove Fagerhed,
Box 468,
SF-68570 Larsmo,
Finland.**



the talisman — is the new role simulation from PCBS.

Your quest is to discover the Talisman — a small golden periapt which protects its wearer from physical and supernatural damage and lies within an underground complex inhabited by a myriad of terrible adversaries.

The Talisman is not a conventional adventure game nor an arcade game; but a combination of both, with elements of strategy and realism. It is unique since the combination is randomly generated each time the game is played — resulting in the unusual situation where the game's author can play it too — incidentally he has yet to find the Talisman!

Throughout the quest you could be confronted by over one hundred different types of creatures — and use over one hundred different magical aids. This, coupled with the intricate game system and random generation facility, means that it can only be played on expanded machines. The game comes with a comprehensive manual detailing magical items, creatures and information on the four character types available.

Finally we must warn you that this game is completely addictive; our playtesters have indulged in all night sessions, only stopping for calls of nature!

No-one has finished the game yet — will you be the first? The Talisman is THOR compatible, and is available in 3.5 inch disc or on two micro-drives — priced £19.00



ATTENTION ALL QL ADVENTURERS! CAN YOU BECOME THE HERO OF THE 'PRINCELANDS' IN THE ENTHRALLING NEW EPIC

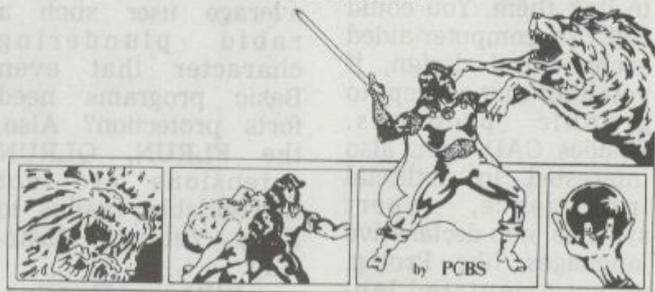
THE HEART OF GERN?

The "Heart of Gern" is the first of a challenging series of adventure games devised to test even the most battle scarred adventurer. Set in the magical fantasy world of the 'Princelands' you Tirac must continue the quest for the black jewel which

imprisons the evil spirit-wolf, Gern. You must reach the Heart before the brotherhood, an evil cult of wolf worshippers whose aim is to release Gern. Hidden away in a secret vault protected by guards, traps and magical deceptions it will

take more than luck to succeed. It will take skill, determination and above all rational thinking. Will this be the dawn of a new dark age or can the evil brotherhood be thwarted? The fate of the 'Princelands' is in your hands.

Now available in four formats:
Microdrive Mode 4 or 8 at £15.50
(Please specify format required) 3 1/2"
Disc Mode 4 or 8 at £17.00



Send your cheques, P/Os to PCBS, Studio 204, Seedhill Offices, Paisley PA1 1JN. Please allow 14 days for delivery.



Q-Liberator 3.2

Liberator The Ultimate SuperBASIC Development System

Now the entire Qlib runtime system, toolkit routines and QLOAD, our unbeatable quick loader comes fully integrated in one compact file ★ Mouse driven (option), resident compiler generates fast EXECutable programs or resident procedures from Quick LOADED SuperBASIC source programs ★ New utility routines for creation of ROM toolkits and auto executable programs ★ Online help ★ Overlays ★ Many compilation options ★ New 16k EPROM cartridge version for fastest possible runtimes ★ 64k EPROM option for completely ROM based compiler ★ QRAM, Thor and RAM disk compatible. (Non-EPROM version needs expanded QL).

"Virtually complete compatibility" — QL World, Sept. 1987

COMPILER PRICE BREAKTHROUGH
Q-LIBERATOR BUDGET VERSION

Not as fast and not as sophisticated as 3.1 but still a powerful tool that anyone can afford. Contains all the original Q-Liberator features like job control, error trapping, channel sharing, PIPES and no codesize limit. For benchmarks see QL World April 1987.

QLOAD & QREF

QLOAD is a universal quick loader for SuperBASIC programs that dramatically cuts loading times. Even a 200K+ program loads in under a minute! The perfect complement to Q-Liberator, QLOAD has no restrictions on portability. Simply indispensable.

QREF is a resident utility for cross referencing SuperBASIC programs with wildcard selection of variables, procedures, functions and machine code routines. Includes FINI facility for the EDIT command.

"An invaluable utility", "certainly not a product to be missed" Q.L. World Aug. 1987

Q-Liberator 3.2 mdv or flp £59.95

— With 16k EPROM cartridge ... £75.00

— With 64k EPROM chip £75.00

Chipcard ROM expansion board with

thru connector. Holds 3 * 64k £35.00

Prices include post, packing and VAT in UK, or airmail postage to Europe.

US distributor: Sharps Inc, Route 10, Box 459, Mechanicsville, VA23111

Please make cheque/PO payable to:

Liberation Software

43 CLIFTON ROAD

KINGSTON UPON THAMES KT2 6PJ

Tel: 01-546 7795

£59.95

£29.95

Together only

£9.95

Upgrade BUDGET QL1B to 3.2 ... £30.00

Upgrade 2.x or 3.x to 3.2 £10.00

QLOAD & QREF mdv £9.95

QLOAD & QREF 3.5 flp £10.95

MAIL
ORDER
ONLY



Computer Services

'COMPUTER CLEANER' Tried and tested mains filters. Full spec — LCR filters + spike suppression. 40 to 80 db noise reduction. 130 joule cut in < 10ns for each spike filter.

"A test rig supports its claims to being an effective and efficient design. Response time to mains variations is somewhat better than advertised"

— Ron Massey QL World (Sep 87)

1-way (5a - LCR + one spike filter) £14

3-way (5a - LCR + 3 spike filters (L/N, L/E, N/E) £18

4-way (13a - spec as 3-way + 1.5m lead) £24

Qualsoft QL TERMINAL EMULATOR - viewdata/ASCII/VT52, phonebook with autodial/logon, XMODEM (CRC or checksum), all on line help and commands via pull-down windows, configurable for Astracom/Tandata Hayes and any other modem, full viewdata pixel editor, full multitasking (QRAM hotkeyable), support on Peacenet. Version now available for Miracle Modem & Modaptor. Many many more features £30

ASTRACOM intelligent modem with text status messages. V21/23

Hayes protocol, parallel printer port (5k buffer), with QL ser2

lead (BT approved) £175

As above with 1200/1200 full duplex (v22) (BT approved) £290

V22 upgrade to existing Astracoms (converts to Hayes - ring for details) £135

QL TELEPEN BARCODER Read and write ASCII barcodes (text,

numbers etc) - for EPSON compatible printers Will print ASCII

text from keyboard or file (Quill print files, Basic programs,

Psion export files etc). Use for archiving, stock control, library

booking etc 8085 processor.

TELEPEN Barcoder (renovated professional model) > £500 QL

program £85

1.5m serial lead (std QL lead with 25 pin plug via ser2) £9.50

1.5m serial lead (25 pin socket via ser1) £9.50

Prices inclusive of VAT, post and packing

12 Bouverie Place, London W2 1RB. Tel: 01-724 9053

Telex: 265451 (quoting BT Gold 72:MAC90645)

A SPECIAL MESSAGE TO ALL THOSE PEOPLE WHO HAD A SINCLAIR COMPUTER FOR CHRISTMAS

(and those who have had one for years)

THE NEW YEAR
MICROFAIR IS ON
FEBRUARY 6th, 1988
AT THE
HORTICULTURAL
HALLS,
LONDON SW1



Looking for great gizmos for your new Spectrum or QL? There's one place you will find everything:
THE MICROFAIR

If it's new it will be on show. If it's original you'll find it on sale. If you need advice you only have to ask the exhibitors. If you want to meet thousands of enthusiasts, just come along and enjoy yourself.

There's everything for Sinclair Computers. Hardware, Software, Books, User Clubs, Programming Aids, Games, many at special 'show' prices — there's even a bring and buy sale.

For a fun day out and a chance to see and buy everything new and exciting... you won't beat the
MICROFAIR

THE NEW YEAR MICROFAIR

FEBRUARY 6th, 1988

AT THE HORTICULTURAL HALL,
GREYCOAT STREET/ELVERTON STREET, LONDON SW1 —
10 am-6 pm

ADMISSION: £2.00 (Adults) £1.50 (Kids under 14 years)

SEND NOW FOR REDUCED PRICE ADVANCE TICKETS

Send to Mike Johnston (Organiser), Dept Q.L.

ZX MICROFAIRS, 71 Park Lane, London N17 0HG

Please send me advance tickets

(Adult @ £1.50

Please send me advance tickets

(Child under 14 @ £1.00

Name

Address

.....

.....



Please include a stamped self-addressed envelope and make cheques/POs payable to ZX Microfair

T



TROUBLE

A

P

R

O

B

L

Do you ever feel you are the only one making a particular complaint? I have lost count of the number of times QL suppliers, authors or designers have told me a complaint of mine was exceptional. Gradually you discover that perhaps one or two other people have the same problem and that helps assure you that a visit to the psychiatrist is not called for but it does not fix the bug which ails your QL system.

I am compiling a list of the problems of which I am aware so that it can be presented to anyone on the supply side of the QL scene who doubts that the problems exist. One point I can accept is that the more jobs you try to multi-task in the QL, the more likely you are to find interactions between programs and between programs and hardware. It pays to keep your system as simple as possible; try not to have several key or icon macro routines loaded together; I have three or four — nor switching routines, I have one or two — nor housekeeping routines. Most of us do not choose to have that many routines running together.

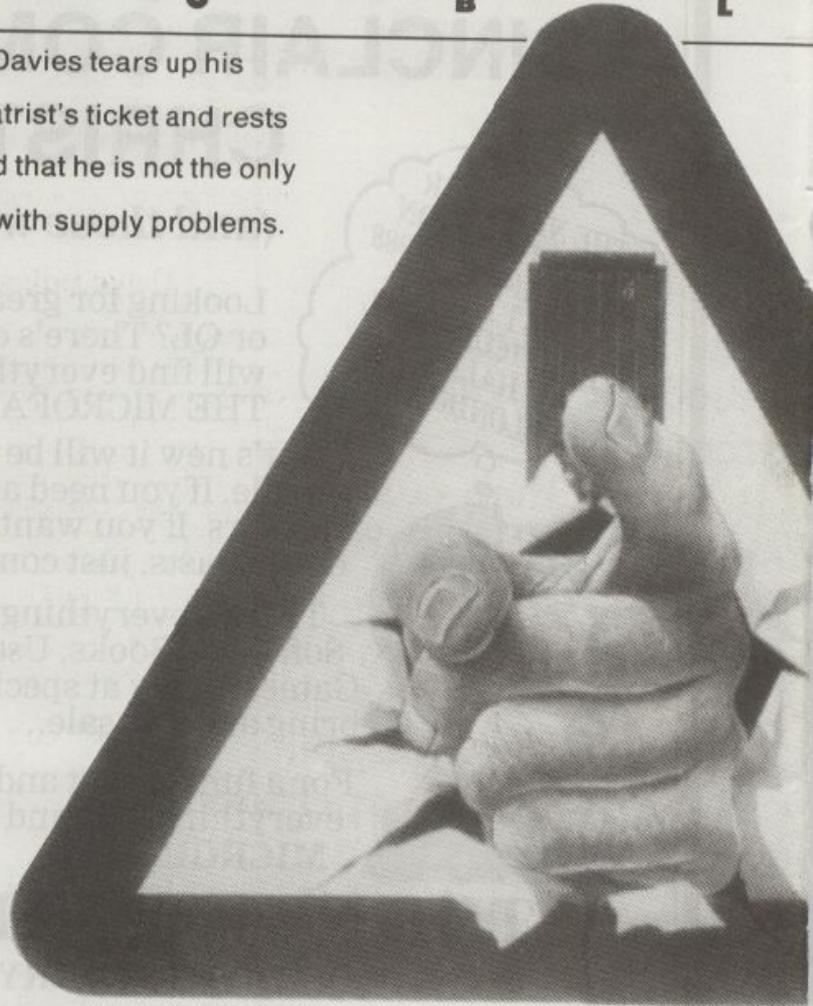
Dumb as a post

In the October issue I commented about bad postal service and was subsequently told that it reflected badly on one supplier; that was not the message I intended to convey. The supplier was admirably prompt in despatching the goods but the Post Office was not so good in delivering. In fact, one package was returned to the supplier as being "not called for," despite the fact that I had not been advised by the Post Office that there was anything for me to collect.

Various other points in that article may have given the wrong impression — the reference to Sinclair collecting a royalty on each cartridge sold should have read 70 pence; the ratio given for the space/cost advantage of discs over cartridges was five-six times and Sandy is returning all deposits given for the Futura, not for the future.

There is some difficulty with memory allocations for Quill when using Turbo B Quill with the Q-Switch switching program; Athene advises using the 2.30 option when

I Bryan Davies tears up his psychiatrist's ticket and rests assured that he is not the only mortal with supply problems.



setting-up Q-Switch, even though the version of Quill used is 2.35. If Quill is used with other programs and a dynamic RAM disc routine is active, it seems best to start the other programs first to avoid difficulty with spare memory being cornered and not released to the other programs.

This problem does not occur when *Taskmaster* is being used. The latest version of *Turbo + Quill* is to be compatible with *QRam*; returning an existing cartridge with an 18 pence stamp to cover postage will enable *QRam* users to get the updated Turbo + from Athene.

Stop press

Another version of *Front Page Extra* is expected to be available now. Version 2 will allow high-resolution text to be typed-in, the character size being variable from the standard CSIZE values. Gap Software also expects to

introduce a new utility program in the next few months, with some features which do not appear to have been offered by similar programs previously.

Desktop Publisher version 2.0 has now been available for some weeks and is a considerable improvement on version 1. From the point of view of the business user, the potential of the desk-top programs is now much greater than it was. *The Editor* should now be known to most users and the praise for it seems to outweigh the criticism heavily. There have been so many additions and improvement to the program this year that it is difficult to find anything to fault in the specification of version 2 but there is a competitor in the chuck out Quill stakes, in the form of *text87*. As yet, I have heard no comments on the latter program but the features listed for it sound well thought out.

SHOOTER

E M S O L V E D

disc drive lights did not come on when discs were accessed — Mitsubishi drives only, I think; a modification made both lights come on and go off together but that can be fixed by removing or cutting a small link on the PCB.

Drive noise

With the same drives there can be appreciable noise during disc access, apparently caused by revised disc driver hardware which works well with NEC drives but not with Mitsubishis, which have a shorter start-up time. Changing to the WD 1770 driver chip, as used in earlier-generation interfaces, from the standard WD 1772 is said to cure this and Miracle hopes to have supplies of the chip shortly. For information on either modification, contact Miracle.

Responses

M. Zavadsky from Belgium has some questions about UGSD-Pascal compared to ISO-Pascal and Prolog, advertised some time ago by **TDI Software**; he has tried telephoning and writing to the company without success. I rang the number I have and there was no connection. Does anyone have information on TDI, or comments on Pascal and Prolog for the QL?

Andrew Clark wants to transfer text files written to cartridges on a Spectrum into his QL. Can anyone suggest programs/methods of achieving this without too much work?

John de Rivaz is having difficulty using the SPEM digitiser with the Sandy SuperQ board. Can any readers give details of problems they have met and overcome with this combination? He mentions incomplete screen dumps in particular.

Valeria Zanon in Italy has been called by the new company **Eidersoft-QL** and I trust she is now satisfied regarding her complaint to the original Eidersoft company. There are, however, still a few complaints on my list which were never dealt with by Eidersoft prior to the change of ownership.

David Owen wrote from Dubai to

complain that three items ordered from **Byteback** in July have not been received. It could be a case where the shipment route is slow but the fact that Byteback has not responded to requests for comment on complaints from four other readers does not give much confidence.

There have been some reports of keyboards not being supplied in a reasonable time and I know of one supplier which had difficulty obtaining sufficient components to assemble enough keyboards to meet the demand, which has been higher than anticipated.

Good service

Anyone requiring service on a **Hantarex** monitor can contact the address given below. The Boxer 12 monitor has been sold by several suppliers, including the original Eidersoft. Having just had to take my monitor to Hantarex for service, I was very pleased with the speedy service and helpful comments.

A frequent complaint is that a cheque has been cashed but no goods have been received. What one thinks of this situation has to depend on the time delay; if the supplier does not have the goods in stock when a cheque is received, it should not bank the cheque and that is how the better suppliers behave. When a supplier expects ordered goods to come into stock within one to two weeks, the cheque will usually be banked, to ensure that it clears by the time the goods are ready for despatch. On this basis, U.K. customers can generally expect delivery within about two or three weeks of the cheque being cleared through their accounts; overseas customers have to add an uncertain number of weeks to the period, because of the greater number of possibilities for delay during shipment.

Information

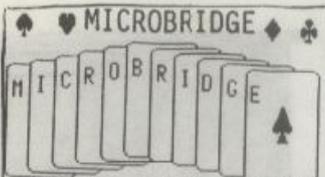
Hantarex (U.K.) Ltd.
Unit 2
243 Kangley Bridge Road
London SE26 5BA
Tel: 01-778 1414.

Sales of Trump Card show how much QL users wanted plenty of memory, together with extra command functions, such as Toolkit II and others, provided in the Trump. Miracle is now using extra manufacturing space, largely because of demand for this unit. It still sells its Expanderam and the parallel/serial printer interface. For Samsung and other overseas QL versions, it is available with a "D" connector.

Coming up Trumps

The Trump has proved a boon in my system and having 896K soon becomes something you accept and scarcely think of. Of course, you find life very difficult if you ever have to revert to a standard QL, without either extra memory or disc drives.

There were two problems with the Trump and solutions have now been found for them. On early PCBs, the



MICROBRIDGE is a superb contract bridge bidding and playing program. Also, it teaches bidding by a series of 16 lessons (each of which has a whole chapter to itself in the large manual that accompanies MICROBRIDGE), and follows this with a virtually unlimited set of hands for further practice in bidding and play.

MICROBRIDGE thus has something to offer all bridge players, from rank beginners to experts. It is strongly recommended by THE TIMES HIGHER EDUCATION SUPPLEMENT and many bridge players.

MICROBRIDGE uses a special technique to deal at lightning speed. You can elect for deals to either be random or for you and your partner to have a bias in your favour. This offsets E/W's non-interventionist policy during bidding.

MICROBRIDGE uses the most popular of all bidding systems, ACOL, supplemented by the Stayman and Blackwood conventions. You do not need to possess any knowledge of ACOL or any other system to use MICROBRIDGE, as the manual provides a full tutorial.

MICROBRIDGE optionally sets out a detailed explanation of every bid, in up to twenty lines of closely-reasoned narrative. It also displays what inferences should be drawn from each bid. These commentaries mirror the thought processes that bridge players should perform; they are breathtaking in their insight and in their ability to sharpen your understanding of the game.

MICROBRIDGE needs expansion RAM and a disk drive and costs just **£34.95**

SUCCESS

THE SUPREME CP/M CODE EMULATION SYSTEM

CP/M is an operating system for single user computers: the name stands for CONTROL PROGRAM FOR MICROPROCESSORS. CP/M has been around for fifteen years, and during this time tens of thousands of applications programs written under CP/M have become available. This tremendous collection of software in CP/M's prime advantage over QDOS and other operating systems. Famous (and infamous) programs like Wordstar, Borland's TurboPascal, MS BASIC, SuperCalc, Superwriter, Symphony, Lotus 1-2-3, dBASE, Smart, Perfect Writer, Zorland C, Microfocus COBOL etc are all available in CP/M. Even more inviting is the huge range of cheap public domain CP/M software: 8000 titles from one source alone.

Why tell you this? Because **SUCCESS** (acronym for SUPREME CP/M Emulation System) runs CP/M programs on any QL, by providing an alternative operating environment to QDOS - exciting stuff. An emulator is a program which permits exact execution on one computer of a program written for another computer, accepting identical data and producing identical results. **SUCCESS** does this by taking each Z80 instruction group from RAM, analyzing it and then executing an appropriate M68000 subroutine. Since **SUCCESS** is written entirely in machine code it is extremely fast - equivalent to a 2.0MHz Z80! Speed is crucial - who wants Wordstar if it runs slower than Quill, or dBASE if it crawls along 4.5 times slower than Archive? **SUCCESS** gives you the acceleration! No more "70% compatibility" or "minor limitations": **SUCCESS** emulates, not imitates, and does so without extra RAM or ROM cartridge.

NOTHING SUCCEEDS LIKE SUCCESS - cost only £49.95

THE COMPANY THAT TAKES

A PRIDE IN ITS LOGIC

PRETTY GOOD AT ANAGRAMS TOO

DIGITAL PRECISION

AND OF CERTAINLY HAS A LOGIC IN ITS PRIDE ABOUT THE TWO BRAND NEW QL/TMOR PRODUCTS: DIGITAL C & SUCCESS!

THE EDITOR V2.05 / V1.17

THE EDITOR is a word-, text-, character- and file-processing system characterised by massive power (over 200 commands), very high speed (often 200X over Quill!) and extreme flexibility and ease-of-use. **EDITOR** can handle text files, Quill files, programs in BASIC and other source languages, data files (it handles the entire character set 0-255), screens, machine code object files (even **EDITOR** itself) the lot. You have complete control over fonts and over all the system defaults we could think of via a comprehensive configurator (to give you an idea of just how comprehensive, not only can you set up defaults for 3 ink & 3 paper colours, screen mode, average line length, screen shape/size/position, character width/height, insert/overwrite, data/program default devices and names and dozens more mundane features, but you also have access to the settings for the **EDITOR**'s definition of a word (ie: what constitutes a word delimiter), the column position at which scrolling to a fresh screen will occur, and so on). Needless to say, **EDITOR** is fully multitasking, and it is not uncommon for the more adventurous user to have 2,3,4,5,6 or more copies all running simultaneously, using varying screen positions (overlapping or distinct), shapes, colours or character sizes

to distinguish them. You can 'teach' **EDITOR** what you want it to do by means of command files (like macros, but much more flexible). Throughout, **EDITOR**'s hallmark is absolute consistency of operation (which makes it very friendly, despite the daunting number of commands!) and its philosophy of placing YOU in the driving seat, leaving it up to YOU to decide how, where and in what sequence you should accomplish your objectives, and unlike Quill one of whose major failings was its pedantic way of imposing its preferred sequence on you.

A LIST OF **EDITOR**'S 200-PLUS COMMANDS APPEARED IN QL WORLD Dec 1987. There are two versions of **EDITOR**: V1.17 that will work on any QL (comes with a 90 page manual) and a SPECIAL EDITION **EDITOR** V2.05 with 400 more commands, much greater power, and a brand new (November 1987) extended manual (now 160 pages!) but which requires at least a 128K RAM expansion in order to run. Owners of the ordinary **EDITOR** who acquire a RAM expansion and wish to upgrade to the SPECIAL **EDITOR** may do so for £25, including an exchange of manuals. The spelling checker **SPELLBOUND** has a 3000+ word dictionary, works with **EDITOR** and **QUILL**, and is available for £29.95.

BOTH SUPPLIED WITH ALL-NEW PRINTER DRIVER EDTPT

EDITOR costs £29.95 **THOR COMPATIBLE**

SPECIAL EDITION EDITOR costs £49.95

- UK delivery costs are all-inclusive. Europe add 5%, elsewhere 10% to cover airmail costs.
 - Program upgrades can be obtained by sending us the original cartridge (NOT the packaging or documentation) plus £10 (£12 Europe, £15 elsewhere).
 - TRUMP-CARD DISK INTERFACE.....£189.95
 - or swap for your 512K SuperBOARD.....£99.95
- Phone for quotes on swaps for other L/E's.

DIGITAL C

COMPACT C COMPILER

"The one you've been waiting for"

C is the best modern applications and systems language available for a micro. It allows the programmer a level of control over the workings of the computer surpassed only by machine code, with a fraction of the effort. By comparison BCPL (C's grandfather) is outdated, Algol ponderous, APL incomprehensible, PASCAL austere, FORTRAN rigid, LISP inflexible, COBOL absurd and SuperBASIC slow (except with TURBO). A really superb C compiler can generate portable code quicker and more concise than code from any other compiler. Such a compiler is **DIGITAL C**.

DIGITAL C is the fastest C compiler available for the QL. Our priorities were speed of execution and compilation, flexibility and compatibility with QDOS. To achieve all our objectives we decided to produce a C more powerful than Small-C (the most popular micro C) but without the speed + size overheads imposed by the big Kernighan and Ritchie implementation (replete with commands terrifying to the tyro) - the result, a sleek and efficient compiler. What better demo of the muscle of **DIGITAL C** than the fact that the entire system itself was written in **DIGITAL C**!

As most people considering **DIGITAL C** are likely to have dabbled in SuperBASIC, we have made this C very SuperBASIC-like. The QDOS library gives a superb degree of QL compatibility, providing the graphics, I/O, display modes, windowing, sound, keyboard-handling, device-independence etc you've become used to. Wherever possible, **DIGITAL C** uses keywords identical to those of SuperBASIC's, with identical parameters in identical sequence too: no confusion or relearning. **DIGITAL C** gives lightning 16-bit integer operation plus a complete floating-point library, arrays (numeric and string), pointers, file inclusion, external/global IDs, macros, conditional compilation and smart error messages.

Most C compilers comprise 3 programs, an analyzer, an assembler and a linker, to be used in sequence. **DIGITAL C** cuts this to 2 programs - an intelligent parser that produces clean, machine independent symbolic code, and a breathtakingly fast codegenerator with linker (painstakingly optimised for the QL) which generates a speedy, hyper-compact, stand-alone, 100% multitasking, executable machine code task and which can link separately compiled modules into one such task. Typically, where the METACOMP assembler takes an hour to process a symbolic code file, and HISOPT's takes 11 minutes, **DIGITAL C**'s codegen takes 45 secs: the ratio is spectacular! Another example of the TLC taken with **DIGITAL C** is in the library manager and generator we've supplied: it allows users to integrate all their proven C functions into one or more library modules for subsequent re-use, when the codegenerator will select only those functions within the module that are specifically referred to in the source program: this kills run-time flab!

The **DIGITAL C** compiler is compact: no need for RAM expansions, ROM add-ons, disk drives or zillions of cartridges. **DIGITAL C** is ideal for beginners while still allowing professionals to get the speed performance they demand. **£39.95**

AMAZING VALUE AT £39.95

What? Haven't you received our 52 page PRODUCT BROCHURE, with details of the prize draw and lots of software data? We can send it to you for £1 - but it's free if you are ordering from us at the same time. Request it with your order (coupon or phone). Hurry up as stocks are very finite.

DIGITAL PRECISION

The Best QL software from

DIGITAL PRECISION

DIGITAL'S L.I.V.E.
You too can find love with DP's super programs

To: DP, 222 THE AVENUE, LONDON E4 9SE (Or use the Credit Card Hotline 01-527 5493)

Please rush me

Name Address

Postcode

Enclosed Cheque Cash P.O. Access/Mastercard Visa/Barclaycard

for the amount of £..... Number..... Expiry date.....

Please indicate if you have 3 1/2" disks 5 1/4" disks Microdrives only

If you have disks, do you get 720 sectors 1440 Sectors

Signature

Serious interest in a good working alternative for the original QL membrane keyboard would appear to be continuing. Enthusiasts who have discovered they need a professional-grade keyboard which is both dependable and includes at least some of the features available with the keyboards of other machines have maintained their faith in the eventual appearance of a product meeting their exacting demands. From the results of extensive testing, it seems as if those demands have, at long last, been satisfied.

A follow-up to the report published in *QL World*, March, 1987, concerning the range of new QL keyboards available then, this report concerns two new top-of-the-range keyboards, both of which are available now.

Original sin

It is a sad fact of economics that the original QL keyboard was built to a price. As such, it is prone to a relatively short working life, with its membrane mechanism requiring frequent replacement. Heavy usage also makes its keyposts prone to binding and touch typing a real nuisance.

Of the four keyboards reviewed earlier this year, only the Schon and the Rainbow are continuing to sustain steady sales. Rather surprisingly, the ABC Elektroniks keyboard, which made its first appearance as a non-working display at a Microfair early last year, appears to have become a non-starter. In spite of popular demand, supplies from Germany were either slow or failed to materialise.

By the time ABC

After a long wait and a few false alarms, Ron Massey finds two QL replacement keyboards.



The Digital Connection

produced a working version of its interface, supplies of other perhaps less well-endowed keyboards became readily available and eager customers readily accepted the fact that they would not be able to obtain an ABC.

I had the opportunity to try a working version of the ABC keyboard in April and discovered that it had one rather interesting property. If you pressed the Sys Req

key you locked out the keyboard and the QL would effectively receive no further input. This "feature" left you with no alternative but to re-set the machine.

Both keyboards presented in this report are remote separates connected to the QL by a multi-core cable; both include a degree of ergonomic styling in the shape of the keycaps and both include more keys than is possible for a

keyboard limited to the constraints of the QL case top.

Sales of Schon's first venture into QL keyboards, reported in *QL World*, March, 1987, well surpassed its originator's expectations. The release of the latest Schon keyboard design will undoubtedly satisfy the demands made by a large number of demanding QL users with perhaps, professional applications.



Nominally a PC-type keyboard, the new 86-key Schon, in a cream-coloured case measuring 467mm. x 212mm., incorporates a number of useful QL-specific features. In common with other keyboards patterned after the IBM standard, a number of compound keys have been provided to make computer operation a little simpler.

The key layout, colour-coded with grey control

keys and white alphanumeric and symbol keys, is in two distinct groups — a 10-key function keypad on the left side of the case and a number pad to the right. Rather than a distinct separation between the number pad and a central key panel, a bridge of control keys joins the two giving a slightly narrower layout.

Both the number lock and caps lock keys have

built-in LEDs, indicating when they are active. Each time the QL is reset, both the LEDs flash, indicating that the electronics inside the keyboard have also been reset.

One of the oddities of the QL is that it is possible to POKE the area of memory controlling the QL character case and set the QL into upper- or lower-case directly, independently of the keyboard. Should that occur in a program or should you insert a POKE deliberately, the caps lock LED will become desynchronised with its normal function until either another POKE restores indicator synchronisation or the QL is re-set.

The Schon may be used either flat on the table or tilted forward by inserting dowels of a suitable length into the two holes in the bottom of the keyboard case, similar to the manner used by some of the Amstrads.

Having a range of keys completely new to the QL has been possible because, like the ABC keyboard installation, the sophisticated Schon interface is programmable and displaces the QL 8049 co-processor. New keys and features, providing functions new to the QL, are:

<Sys Req> — Generates a sequential <CTRL> <C>.

<Break> — Generates a sequential <CTRL> <SPACE>.

<Del Left> — Generates a sequential <CTRL> <LEFT>.

<Del Right> — Generates a sequential <CTRL> <RIGHT>.

Eight cursor keys — Up, Down, Left, Right and 4-way diagonal.

Caps Lock LED — Indicates <CAPS LOCK> status.

<Num Lock> — Enables the number pad

and disables cursor keys.

Num Lock LED — Indicates when the number pad is enabled.

An additional feature of the new Schon, since the QL native keyboard is completely redundant, is a replacement top fitted with a blanking plate and DIN socket — at the original keyboard <F5> position — into which the new keyboard terminal DIN plug is connected. This is included in the conversion kit.

Futura rumour

Reputed to be identical to the keyboard which is to be supplied with the Futura, the Sandy entry into the keyboard market is not unlike the design of the keyboard supplied originally with its QXT 640 conversion upgrade kit.

Measuring 460mm. x 175mm., the Sandy keyboard case is grey with grey and cream-coloured keys and may be tilted by folding out the legs built into the bottom of the case. The keys are in three groups — a 10-key function key pad, <F1> to <F10> in the standard QL layout to the left of the central 60-key main keyboard, and a 19-key number pad positioned on the right-hand end of the keyboard panel.

The home keypads, letters F and J, on the central panel character key group and number five on the number pad, have raised pips for easy location by touch.

A number of features of the Sandy ensure easy tactile adaptation to the new keyboard. Key caps for TAB, CAPS, SHIFT, ALT and CTRL are large and easy to locate by touch. Except for the addition of the five extra function keys and number pad, overall the



key layout is QL standard.

Number pad keys include an additional <ENTER> key, an underscore key which does not require shifting, and the usual range of mathematical function keys. The cable from the keyboard is terminated in a very thin one-piece PCB which is pushed



The Digital Connection

CONTINUED

into the two sockets from which the membrane ribbon cable has been removed.

Inside the QL

Installation of either keyboard requires access to the inside of your QL; both keyboards are simple to install and neither requires soldering. The eight screws around the perimeter of the bottom of the QL case are removed and the top of the case is tilted towards the back of the QL.

The remainder of the installation procedure depends on which of the two keyboards you have acquired. The Sandy conversion retains the original QL top, so the six wires connecting the LED indicators in the top of the QL case must remain connected to the QL printed circuit board.

If you are installing the Schon, open the top, remove the two ribbon keyboard cables, carefully prise up the connector lock into which the six LED wires are positioned, remove the wires and lay the old QL top to one side.

The installation of the Schon also requires the removal of the 8049 co-processor chip, positioned immediately

Command	Orig. keypresses	Quill	Editor
Help	<F1>	<F1>	<F1> (Help from page 1)
	<SHIFT> <F1>	-----	<F6> (Help from page 2)
Prompts	<F2>	<F2>	-----
Repeat Last Cmd.	<F2>	-----	<F2>
Command Input	<F3>	<F3>	<F3>
Edit Last Cmd.	<SHIFT> <F3>	-----	<F9>
Insert/Overwrite	<SHIFT> <F4>	<F9>	-----
	<F5>	-----	<F5>
Screen Re-draw	<SHIFT> <F5>	<F10>	-----
	<F4>	-----	<F4>
Screen Re-size	<SHIFT> <F4>	-----	<F9>
Typeface	<F4>	<F4>	-----

to the left of the Microdrive one near the front of the QL, pushing the interface board carefully into the vacant socket and re-installing the 8049 on to the interface.

Two precautions must be observed while installing the Schon; if you have carpets or clothing which contain man-made fibre, you should refrain from moving round as much as possible to prevent the build-up of static electricity.

The other precaution concerns the removal of the 8049 from its socket. Extracting the 8049 will probably be the most difficult part of the installation because one end of this chip is positioned very close to the front edge of the QL case.

First prize

If you have the QJump *Qimi* internal mouse interface you will also have the small tool supplied by QJump for levering ICs from their sockets and that will save considerable wear and tear on your

patience. Alternatively, you will need a tiny screwdriver to lever the 8049 by twisting the screwdriver — not prising — from each side of the front end of the chip in small increments, alternating with the other end.

Following the instructions supplied, replace six wires connecting the LEDs in the new case top to the motherboard and push the wire lock gently back down on to the QL PCB. After checking that the LED wires are fastened firmly in their socket, plug the ribbon cable from the DIN socket in the new top into the left end of the interface and install the new case top.

As with all electronic devices, be sure the connecting is done with all power switched off. Failure to observe this simple precaution could damage the sensitive electronic components of the interface, the keyboard or both, and may not do you much good either.

Installation of the Sandy is even easier. In sequence, remove the

top of your QL — be careful not to pull the LED wires; they have the interesting characteristic that while you attempt to re-install any of the wires you may have dislodged, another will be working loose.

Remove the two ribbon cables connecting the original keyboard to the main board — tape them to the aluminium plate of the underside of the original keyboard — and insert the cable connector carefully from the new keyboard.

Time to type

The two ribbon cable sockets on the QL PCB are not very robust and the contacts inside them are bent easily. If extreme care is not observed, bad, erratic or non-existent contact will be made with the replacement connector and some or all of the keys will not work.

Although the suppliers of both keyboards make them available as DIY kits, if you are nervous of handling sensitive electronic components both suppliers offer the service of



installing them for you.

The competition between the Schon and Sandy keyboards is likely to be fierce. Both are built to very high standards; both are a joy to use and a considerable improvement on the original. The Schon keyboard is supplied with a new top, with a blanking plate covering the area of the original keyboard; the Sandy keyboard retains the original but disconnected keyboard.

Regarding purely mechanical considerations, the Sandy requires considerably less pressure to activate its keyswitches than the Schon. Whether that is an advantage or not depends largely on personal preference.

Having additional function keys is more a convenience than a real advantage because, in conjunction with combinations of <SHIFT>, <CTRL> and the five function keys, the QL has access to 19 function key combinations. By adding <ALT> the number of function keys available to the user

effectively is doubled.

Although many programs may have different applications tied to the various function keys, two of the better-known programs, *Quill* and *The Editor*, are good examples of the effect of having single key-presses available

Obviously other programs which make more liberal use of the range of simulated function keys, those obtained by various combinations of keys used with <SHIFT> and <CTRL>, will prove more convenient to the user.

No conquerer

Equally obvious is that there will probably be no clear winner in the present round of keyboard wars. Both have features to commend them and potential purchasers would do well to consider their typing preferences.

My single criticism of the Schon keyboard is that the finger contact points of all of the keycap tops are a uniform size. Although <ENTER>, <ALT>, <TAB>, <SHIFT>

● Far top left: The Sandy keyboard is similar to the QXT 640 conversion kit version.

● Far left bottom: A comparison table shows how two WP packages gave the QL more efficient keystrokes.

● Left: The new Schon keyboard is an IBM type with a number of QL-specific features.



<CAPS LOCK> and the new keys <SYS REQ>, <NUM LOCK> and <BREAK> keycaps follow the usual convention of being larger than the character keys, the area for the finger placement is not.

Users who make frequent use of the number pad may find the requirement of toggling the <NUM LOCK> to use the cursor keys for programs such as *Abacus* a little irksome but once you are accustomed to the requirement there is no real inconvenience. In any case, the Thor and IBM keyboard layouts all follow this convention.

Because the Schon follows a similar key convention common to the IBM, ST and Amiga key layouts, <ALT> and <CAPS LOCK> keys are at positions reserved

from the conventional QL layout but one soon adapts. With the exception of the additional function keys and the number pad, the Sandy keyboard is a direct replacement, both in the way it interfaces with the QL and in the layout of the character and control keys, for the standard QL keyboard.

Keybounce is a serious problem which can sometimes arise when mechanical switches are interfaced to high-speed electronic components. Keybounce seems to occur with some QLs more than others. Neither the Sandy nor the Schon indicated any signs of the problem with either of the QLs with which they were tested.

In the final analysis, there is little to choose between the keyboards. If you are considering upgrading, whether you opt for the Schon or the Sandy you will have to make a certain amount of adaptation to the additional keys provided. More to the point, you will have the pleasure of getting used to the smooth feel of positive key contact.

Since they are within 95 pence of each other in price the final choice would seem to rest on whether you prefer the more symmetrical appearance of the Sandy with its feather-light touch or the Schon with its greater number of features but slightly less tidy key layout. They are both built to the same high quality and both are a joy to use.

Product: Schon IBM-type keyboard **Price:** £99.95

Source: Schon Keyboards, 15 Northcote Crescent, West Horsley, Surrey KT24 6LX. Tel: 04865 3836

Product: Sandy Keyboard **Price:** £99

Source: Strong Computer Systems, Bryn Cottage, Carmarthen, Dyfed SA32 7DJ. Tel: 0267 231246.

NEW! S. U. B. LATEST UPDATE

*Genuine independent professional support for all users of the SINGLAI QL 651 11K series, and QLT-640. Call re: Futura! If you own an ICL One Per Desk, or NEWMAN Tonto, call us.

★ Why should I join S.U.B. when I am in another users group?

★ QUANTA members! The two clubs are complementary organisations, not rivals. We provide full time effort that you can't otherwise get.

★ E.S.S. members! If you want up to date information and independent advice, then you need our service. Don't forget our special deals.

I do not want to join S.U.B. yet. Can S.U.B. offer me anything?

★ S.U.B. can supply non members with many advantages too! Contact us for all your QL requirements. We stock the best of QL products, and offer you unbiased advice. Phone us for a quote!

★ Contact us for all your computer supplies. Again, we can offer offer members special discounts, but we'll try to help you find anything.

Are there any more developments planned for S.U.B.?

★ Yes! Keep an eye on our adverts for the latest news about us. For example, we are setting up a companion VIEWDATA style bulletin board, open to both members and non members. (There will be special features available to members for a small surcharge).

★ We are producing a library of public domain software available for the QL and compatibles using QDOS, and the QL using CP/M. We will be looking out for programs in all languages and formats.

★ We are considering working with other organisations to launch a budget software label for the machines we support. Members could benefit from some commercial support in marketing their programs.

What does S.U.B. offer manufacturers and suppliers?

★ If you haven't already made a deal with us, or you are new to the QL market, contact us, enclosing details about your products.

Can S.U.B. be contacted other than by mail?

★ Yes! (At last!) Phone us on (0388) 773737. If we can't answer, (rare) there is an answerphone on which to leave a message (24 hours). FAX on (0325) 467164. Prestel MBX, Telex, Email contacts soon . .

★ Please note that S.U.B. is fully independent of all other companies.

S.U.B., PO BOX 3, SHILDON, DL4 2LW

S. U. B.

*Genuine independent professional support for all users of the SINGLAI QL 651 11K series, and QLT-640. Call re: Futura! If you own an ICL One Per Desk, or NEWMAN Tonto, call us.

What are the benefits of having professional support?

★ Each month you will receive a copy of "QL S.U.B.," a magazine containing at least 40 pages of news, reviews, special offers, help services, and sections for members' views, and sales and wants.

★ "QL S.U.B.," is professionally produced and printed, but has a very fast production schedule. It can keep you up to date better than other publications, and offers more in depth information on features.

★ Excellent discounts on hardware and software to members! We are competitive on pricing for non members. Call us for a quote . . .

★ We offer a comprehensive computer supplies service! Whether it is a printer ribbon, or an office chair contact us. Even if you need something more unusual, then we will try to get it for you.

★ We can arrange service contracts, and various repairs for you.

★ If you need a particular system, or you want to know if something for the QL is available, then we can advise, and try to supply it.

★ Business membership offers specialised extra services. (Developing).

What are the costs of a year's support from S.U.B.?

Membership is by annual subscription to "QL S.U.B." magazine.

★ Home user, in the UK, £15.00, abroad, £20.00 *paid in sterling.*

★ Business user in the UK, £30.00. Enquire for foreign costs.

Would you like to see a copy of "QL S.U.B."?

★ Send 60p for an introductory copy, to the address below.

How do you know that we are committed to the market?

★ Leading QL companies have already pledged their support for us. We are specialists for the QL. We do not just sell QL products as some QL dealers do, *we support them.* We aim to give the best.

We give you good service because our reputation depends on it . . .

★ Please note that S.U.B. is fully independent of all other companies.

S.U.B., PO BOX 3, SHILDON, DL4 2LW

Sinclair QL World

Are you receiving your copy every month? Is your newsagent ever sold out? Take out a subscription to Sinclair QL World and make sure you do not miss any issues of your favourite magazine!

● Each issue of Sinclair QL World offers at least 60 pages of news, reviews, programs, special offers and much, much, more.

● Low-cost software. Our Microdrive Exchange now has over 50 programs for you to choose from — games, utilities, graphics, education and programming tools.

● Problems solved. If you have a problem, write to Trouble Shooter or Technical Helpline where our resident experts will do their best

to provide a solution.

● Save money. We offer special discounts on chips, cartridges, boxes, dust covers, software and hardware.

● Speak out. If you feel strongly about a particular issue, Sinclair QL World letters pages provide the forum for you to air your views.

● Programs to type in. Each month we publish a selection of games and useful programs for you to enter yourself.

Name

Address

I enclose a cheque/postal order for £.....
made payable to Focus Magazines.

Are you a QL addict? We have the cure. Subscribe now to Sinclair QL World.

Subscription rates are as follows:

		Please tick
UK	£15	<input type="checkbox"/>
Europe (surface mail)	£30	<input type="checkbox"/>
(air mail)	£35	<input type="checkbox"/>
Rest of World (surface mail)	£30	<input type="checkbox"/>
(air mail)	£40	<input type="checkbox"/>

Please send form and payment to: QL Subscriptions, PO Box 74, Paddock Wood, Tonbridge, Kent, TN12 6DW.

YOUR CHANCE TO MEET THE EXPERTS

Grand QL Teach-In featuring:

CHAS DILLION (The Editor, Cash Trader, Turbo)

SIMON GOODWIN (Supercharge, Turbo, Speedscreen)

PETER JEFFERIES (Task Master, Spellbound, Flashback)

FREDDY VACCHA (Mr Digital Precision)

Discussion Groups on major systems and programs and further information from:

● Digital Precision —

● Sector Software —

● PDQL —

● Creative Codeworks—

222 The Avenue, London, E4 9SE. Tel: 01-527 5493

39 Wray Crescent, Ulnes, Walton, Leyland, Lancs. PR5 3NA. Tel: 0772 454328

Unit 1, Heaton House, Camden Street, Birmingham, B1 3BZ. Tel: 021-200 2313

PO Box 1095, Birmingham, B17 0EJ. Tel: 021-426 5199

YOU MUSTN'T MISS

QL QUESTION TIME

Many new and loved software products available

Advanced Tickets £3 At the Door £4 Includes Buffet Refreshments

SUNDAY, FEBRUARY 28th, 1988 From 12.30 pm to 8.30 pm

TO BE HELD AT

THE MANAGEMENT CENTRE, UNIVERSITY OF ASTON IN BIRMINGHAM

For your advance ticket(s) send cheque/PO to any of the above and make payable to: QL Advisory Group

NAME

ADDRESS

NO OF TICKETS REQ

*A QL ADVISORY FUNCTION

Ron Massey supplies answers to your psion program problems.

• PSION •

A request for help with the Psion suite has been received from a QL user in Spain and concerns a problem arising when attempting to use Quill from disc. This user has a Micro Peripherals disc interface which, incidentally is not the source of the problem without memory expansion and has transferred his Psion programs to his new system successfully.

Although he can run Archive, Easel and Abacus from disc, attempting to run Quill always produces an error message, despite repeating the backup procedure a number of times. This would appear to be a common problem with users moving to a disc drive for the first time, especially where budget restrictions preclude the possibility of setting-up a fully-upgraded system at the same time.

When I first moved to a disc-based system I was inadvertently sent an interface which did not include memory expansion. In ignorant bliss and after installing my new components, I transferred my Psion programs to my new system and, testing each in turn, failed to notice that Easel and Abacus indicated less memory than was the case when the same programs were loaded from Microdrive.

Valiant attempt

By coincidence, I tested Quill last and, as the Spanish letterwriter found, Quill returned an error message, made a valiant attempt to open a *def tmp* file for its own code space and stopped.

After much head-scratching I removed the new interface and, after a cursory examination, discovered that the IC sockets which should have been filled with RAM chips were vacant. Once the omission was rectified the problem was solved.

The reason is that, when a disc drive is accessed, about 1.6K of code space is allocated to slave blocks and other disc-related purposes. Microdrive access requires roughly one-third of this amount of memory. Quill will not run without additional memory.

Numbering pages in Quill documents is limited by a number of

inter-related considerations — by the upper setting limit of 254 pages from within the Quill "DESIGN" facility, by the amount of paragraph formatting data required for a given document and the amount of memory available.

Checking Quill 2.3 version capacity on a 640K machine by repeated copying of two pages of text, both of which comprised two paragraphs, with no other jobs running and page design set to 20 lines per page — Quill minimum — double-spaced — Quill maximum — and starting from page 254 — Quill maximum — produced the following figures:

- a. Word count continued, as expected, to about 31,000 words.
- b. Counts in excess of about 31,000 words caused the count to become negative and erratic; this was not what was expected.
- c. Maximum page number achieved before filling memory was 1,052 pages.

From this simple demonstration, it would seem that users wishing to use Quill to produce books or other very large manuscripts are limited either to confining their documents to chapters or sections or, where that is unacceptable, using Quill to produce the document and another utility to control the printed output.

Two such utilities immediately brought to mind which will cope admirably with requirements for page numbering beyond the Quill's range are *CuePrint* and *QATS*. *CuePrint* will print only in an NLQ mode from a Quill file but has the advantage that a wide variety of typefaces, character sizes and mathematical and a wide range of user-defined symbols can easily be incorporated. *CuePrint*, however, will work only with the Taxan-Kaga/Canon PW1080A range of dot matrix printers.

QATS has an optional output control module which will enable you to set up all parameters with regard to page formatting and numbering. Although it is supplied with an Epson-compatible printer driver and control codes, altering any of the printer codes takes only a few moments.

Another advantage of the *QATS*

system is that, if very large, page-numbered documents are required frequently, the page formatting information can be saved as a "Stationery Code" for future use.

Another writer asks about a patch to enable him to increase the number of pages he can write with his Quill version 2.00. The patch supplied originally by Psion, prior to the release of version 2.3, corrected a bug which prevented saving a file in excess of 32K. Copyright restrictions, however, prevent the re-printing of the patch which was, at one time, freely available directly from Psion.

Slowed handling

Users will find that version 2.00, for small documents, will save a file faster than later versions of Quill but not so reliably. The Psion patch corrected the 32K upper limit bug and, at the same time, somewhat slowed Quill file handling.

The only means of which I am aware which will allow an increase in the size of a Quill document without producing a *def two* file is to increase the QL memory capacity.

Understandably, the question of the upper limit of the 10 translates available to Psion users keeps recurring. Unfortunately the structure of the Psion printer data file makes the relatively simple matter of altering the *Install bas* program a moot point.

It is possible to use a separate utility such as *CuePrint* or *QATS* to provide additional translate functions. In the case of *QATS* for all practical purposes the number of translates is unlimited; it is possible to re-define all of the QL's characters completely.

A newcomer to the QL scene has written to query a problem encountered with some Microdrive cartridges which, apparently, were intended originally to accompany Spanish MG ROM QLs. This writer assumes correctly that this version of Abacus will not run on his English QL and has attempted unsuccessfully to re-format the cartridges for other use.

New Microdrive cartridges, like most other forms of magnetic media such as audio and video cassettes which can



SOLUTIONS.

be write-protected, have a small tab located on the right-hand side which can be broken off, thereby exposing a shallow recess. When this tab is removed, the cartridges become read only and new data cannot be written to them nor can they be re-formatted.

To convert them back into read/write media, a small strip of tape must be placed over the position where the tab was located originally. Great care should be taken not to touch the tape. Cartridges can be write-protected again, as the term is known, by removing the tape.

Users wishing to print parts of Quill documents, such as addresses on envelopes or small sections of a document, may care to try this procedure:

After completion of a document, print it and save it as a file. When the file is saved, Quill then asks if you wish to continue with the same document. Pressing <SPACE> will perform a

"ZAP" — the page will be cleared and Quill will return to its default values.

Instead, press <ENTER>. That will return you to the top of your document for further editing. Move the cursor to the portion of the page you wish to print selectively. If you have included a header in your document, press <F3> and <H>. Press <SPACE> until the command line reads "Command>Header,None".

Forced break

Press <F3> and <F> (for Footer). Press <SPACE> until the command line reads "Command>Footer,None". Press <F3>, <O> (for Other) and <P> (for Page Break). That will place a forced page break line immediately beneath the current cursor position.

Press the down cursor key until you are on the bottom line of the block of text you wish to print. Again press <P>. If you have completed isolating the blocks of text you wish to print,

press <ENTER>, which would print the entire document, enter the number of the page enclosing the block of text you wish to print. After entering the appropriate page number, press <ENTER>. Up to that point the command line will read "Command>Print,current,from n".

The next option offered is the Quill default of "to end". Type the same page number again and press >ENTER<. The process can be repeated throughout the document as often as required.

If you wish to edit your document further and print it in its entirety you will need to remove the page breaks. Position the cursor directly below the forced page break. Move the cursor upwards by one line. If it stops on a page line the cursor is indicating that it is positioned on a forced page break. Press <CTRL> and the left cursor key — also used to delete left. That will remove the break.

Take the brakes off your QL display!

SPEEDSCREEN

If you're frustrated by slow QL displays, SPEEDSCREEN is the answer. It replaces Sinclair's slothful screen routines with a new code that's up to TWELVE TIMES FASTER. It makes virtually all QL software much friendlier and more responsive.

SPEEDSCREEN speeds up text and user-defined graphics output by up to 12.6 times. Window cleaning and cursor operations are much quicker and scrolling can be 8.2 times faster. As QL WORLD reviewer Mike Lloyd put it last month:

"The speed increase is phenomenal... SPEEDSCREEN does everything Creative CodeWorks claims... the package is well thought-out, thoroughly tested, easy to use and sensibly priced.

"It has the advantage of enhancing almost every piece of software available, and does so without imposing restrictions and without requiring any computer literacy from the user... SPEEDSCREEN will be very popular indeed."

**Creative
CodeWorks**

P.O. BOX 1095, BIRMINGHAM
B17 0EJ, U.K. ☎ 021 426 5199

QL SPEEDSCREEN costs £20 on disk or tape (please state) inc. first class or airmail postage anywhere. PAYMENT MUST BE IN STERLING: UK P.O.'s, Eurocheques, Bank Drafts or cheques drawn on a UK bank. 7 day service.

SPEEDSCREEN is also available NOW, in ROM form only, for users of the CST THOR, price £30. A QL ROM cartridge version will be launched on 27/1/88, priced £30. All versions come with a full manual, new character sets, a design utility and toolkit commands.

ARCHIVE USERS! You need our next product — a very fast, compatible, elegantly simple but flexible 'cardfile' database and report generator with unlimited capacity and a price tag of just £20. Send an SAE for advance information, or await full details next month.

GAP SOFTWARE 17 ST. JOHN'S TERRACE LONDON E7 8BB 01-552-5452

FRONT PAGE 2

All the features of FPx, plus high-resolution fonts in sizes from 9x8 dots to a massive 64x36! Use the whole page — so screen restrictions! FULL 80 character ASCII sets! Fully redefinable! Save your own font sets supplied from 12x8 (like this one) to 32x32!

OFFICE JUNIOR

JOHN AND SHARLINE '.doc' FILES have around 350 in storage space! Great for archiving files!
CONVERT FULL COLOUR SCREENS to monochrome for use with FPx2, bit printers, even EDP!
FONT DESIGNER gives standard QL fonts!
SCREEN TRIM — cut screens down to size!
SAFE FORMAT — checks for files before formatting!
AND MORE! FULLY COMPATIBLE WITH THE ORIGINAL JUNIOR!

SMALL TRADERS!

If you need Purchase and Sales ledgers, Stock Control, Billing list, cash AND credit entry, registered or not for VAT, handling the new cash-accounting VAT method, and you don't have time to learn accounting, could live with a completely non-driven accounts program, and have £25 to spare... (uh... what?) the SMALL TRADERS PACK MAY IMPRESS YOU! The INVOICER module is another £10 if bought at the same time (£15 if not), and integrates with the main package.

***SMALL TRADERS PACK FROM 00 MICROSTATIONS

YOUR TIME IS VALUABLE, SO OUR SOFTWARE IS EASY TO LEARN, EASY TO USE, AND EASY TO AFFORD!

PRICES

FRONT PAGE 1.05	£ 22.50	TASK SWOPPER	£ 19.95	FP 165 PRINTER	£238.00
FRONT PAGE EXTRA/2	£ 39.95	TASKMASTER	£ 25.00	SCREEN KEYBOARD	£ 54.00
OFFICE JUNIOR	£ 30.00	EYE-2	£ 29.95	TRUMP CARD	£200.00
FP to FPx/2	£ 30.00	QUANT	£ 30.00	STILLING MOUSE	£ 40.00
FPx to FPx/2	£ 10.00	QLCAD/QUEST	£ 10.00	10x2.5" (library box)	£ 20.00
FP to FP1.05	£ 4.00	SPELLBINDER	£ 29.95	40x2.5" (locking box)	£ 80.00
OFFICE JUNIOR+HOUSE	£ 60.00	QLIBERATOR	£ 60.00	3.5" library box (10)	£ 7.50
SIGN DESIGNER	£ 17.50	PDF cartridges (10)	£ 16.00	3.5" locking box (40)	£ 12.00
SMALL TRADER'S A/C	£ 25.00	INVOICER	£ 15.00	APT ADVENTURE SYSTEM	£ 8.00
xx RING FOR PRICES FOR PAPER, PRINTER RIBBONS, SCREEN CLEANER, LABELS, ETC. e.g. mdv labels £3/100					

WE WISH YOU A MERRY XMAS
WE WISH YOU A MERRY XMAS
WE WISH YOU A MERRY XMAS
AND A HAPPY NEW YEAR!



By the way, while stocks last, we have our own calendar for 1988 at only £1.25. One month per page with space for appointments and birthdays.

This advertisement was designed, and printed using Front Page Extra/2. Most of the character sets are available in the program as taught. The advert was printed using an AP165 printer. (Only £238 inc. QL interface, VAT, ptp)

The Front Page series and Office Junior have been compiled using QLiberator by Liberation Software.

FRONT PAGE CLUB
Pkg. INTERESTING AND INTERESTING HEADLINES!
20% OFF SMP STUFF! ABOUT 10% OFF OTHER STUFF!
JOIN NOW AND START SAVING! ONLY £15 FOR A YEAR!

EXCLUSIVE DISTRIBUTOR IN USA:
SHARPS INC., RT 10, BOX 459, DECATUR, GA, 30011

EXCLUSIVE DISTRIBUTOR IN SWEDEN:
TH ELECTRONIK, BOX 75, S-701 21 BORLANGE

DISTRIBUTOR IN U. GERMANY:
VEILKREIS, DRUGENSTRASSE 42, 8000 MÜNCHEN 40

QUANTUM COMPUTING PRESENTS

QMONIX CODE SOFTWARE

Item #	Name	Price
# U01	Cloney The Copycat	£10.00
# U17	*Qmonix File Manager	£14.00
# B10	*Qmonix Address Book	£14.00
# B11	Qmonix Checkbook Manager	£19.00
# S01	Qmonix Keyboard Drill Sergeant	£10.00
# S06	*QL Kitchen Aid	£14.00
# S07	*Qmonix Computer Chef	£14.00
# G05	*QL Tabletop Draw Poker	£10.00
# C08	*Qmonix 300 Baud Conference	£15.00
	Multi-Window Terminal Program	

Gridland-Holocaust £9.00
(nuclear war simulation game)

Now you can conduct your very own multi player nuclear war simulation.
Right within the privacy of your own home.

Q-CAL!

Memory resident pop-up background calendar for the QL.

* Means Programs Require Supertoolkit II Commands

To Order Contact:

IN EUROPE:

HB COMPUTER SALES
LITTLETON HOUSE
LITTLETON ROAD ASHFORD
MIDDLESEX TW15 1UQ
TELEPHONE: ASHFORD (MX) 0784 248616

IN AMERICA:

QUANTUM COMPUTING
BOX 1280
DOVER, NEW JERSEY 07801 — USA
TELEPHONE: (201) 328-8846

QL EDUCATION

QL EDUCATION

MONTH FIVE: Practical Skills

Leslie Fahidy examines ways in which the computer can be put to teaching practical skills outside the usual range of computing.

At first sight it might appear that the computer is not particularly suitable for teaching practical skills. There are, of course, certain fields in which it is not but in others computers may be used to good effect. Think of computer-aided design as one example — technical drawing could be taught using a suitable CAD package.

Generally, a computer could be employed in the teaching of practical skills in fields where the practical skill concerned has a theoretical basis such as drawing or navigation; in those instances where the practical skill is based on the repetition of a number of often involved tasks, for example teaching someone how to draw flowcharts and in all cases in which the computer can usefully be employed to replace some of the manual dexterity required in carrying out a certain task. As an example, people who lack the necessary skill may become adept at certain art forms using a drawing package. The same remarks would apply to a music generator program.

In some fields it is imperative that practical skills are learned on a computer and not in real life; think of flight simulators. All dangerous tasks

would fall into this category. Some of them such as war strategies can be learned on a computer. We could not have the blues destroying the reds so that somebody might learn a lesson.

We should also take a broader view of education than merely teaching a subject for a particular examination. So far as I know, chess is not an examinable school subject but the computer is certainly suitable for teaching it and it is arguable that, having learned to play chess, the learner is better-equipped for other tasks in life. Would those same remarks apply not only to first aid, safe driving, or the ability to tell a mushroom from a toadstool?

Wire a plug

At least one program on those lines has been published in Microdrive Exchange, the *Clock* program. Telling the time is a practical skill and it can be argued that the computer is eminently suitable for teaching it.

Instead of quoting examples of various skills which can be taught using the computer, I present some mini algorithms for teaching some of the skills.

An algorithm to teach how to connect a mains plug should be fairly elementary. Connecting wires to a mains plug theoretically is not very demanding but the consequences of an incorrect connection could be disastrous. The program should rely heavily on graphics, including the use of colour and sound.

Draw a picture on the screen of a plug, making its shape as lifelike as possible and showing clearly the lettering for the three terminals. At the bottom of the picture, show the wire to be connected, distinguishing clearly

between its three core colours. Select at random which wire is to be connected. Re-draw the appropriate wire in flashing colours and, in a window separate from that which contains the drawing, invite the user to indicate to which terminal it should be connected.

Well-connected

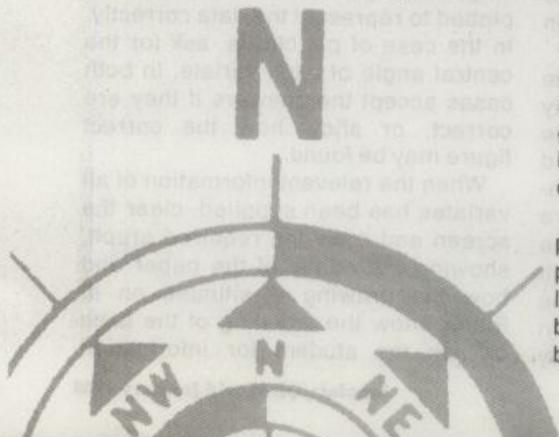
You could supply an evaluation of the response at this stage or, alternatively, leave it for now. If an evaluation was given, and if the suggested connection was incorrect, re-present the problem. Otherwise, choose the next connection which is required and repeat the process for the third connection.

Alternatively, the process may be reversed and the user may be asked to specify the colour of the wire which needs to be connected to a given plug terminal. The process may be repeated either a set number of times or until the learner decides to stop, at which stage a final evaluation of performance may be given.

There are many teaching situations in which an algorithm to teach the recognition of objects, or a similar one, may be used. In nature study, it could be used for the recognition of plants and animals but a very similar method may be employed to teach craft students how to recognise their tools or, for instance, students of buildings how to recognise architectural styles.

Creative colour

By their nature, teaching programs serving such purposes should rely heavily on detailed graphics. This, however, may not be a suitable approach. We must realise that in spite of its



MONTH FIVE: Practical Skills

many advantages the QL does not possess graphics capabilities of sufficiently high resolution to produce a true-to-life drawing of fine detail. It is, in my experience, better to admit defeat in such situations and evolve a different strategy which does not rely heavily on perfectly correct representation of objects.

Similar remarks apply to colour. If it is necessary to distinguish between only a few primary colours they can be represented adequately by the QL. The colours may not be accurate. In fact, 100 percent accurate colour rendering is seemingly possible, as any photographer will confirm.

In many situations where colour merely serves the purpose of recognition, approximate colours are acceptable. Whenever shape, details or colour are of great importance it is better to rely on a written description of the subject, possibly supported by some approximate images, so long as the programmer makes the point that the images are only approximations.

The following algorithm describes one possible approach in this field, for teaching the recognition of trees by the shapes of their leaves. It would be most valuable to supplement this program with high-quality photographs of the appropriate leaves and the trees, to counteract the inadequacy of both the resolution and the colour capabilities of the equipment.

Create a data file containing both graphic image and description of a sufficient number of leaves.

See a tree

Select one leaf at random and produce its image on the screen. Arrange the descriptive statements in such a way that they form a natural progression. By the time the last clue is given the average student is expected to have recognised the tree.

Present the clues in a separate window, one after the other, and at each stage invite the learner to state the name of the tree. Make allowances for the fact that some trees may

have more than one name. Evaluate the answer at each stage. If the response is correct, acknowledge it; otherwise go ahead and present the next description.

Your marking scheme should reflect the stage at which the student supplied the correct solution. So as not to allow the marking scheme to present unreasonable difficulties for the programmer it is necessary to design the structure of the program in such a way that all questions have the same number of clues; the progression in each from the most difficult to the easiest should follow a similar pattern.

A final evaluation may be given when the student decides to finish the exercise.

An algorithm to teach diagnosis is a very general approach and it could mean diagnosis in a large number of situations. For the sake of example, we will discuss the question of finding electrical faults on a malfunctioning radio receiver.

First, present the faulty symptoms. Either of two possible approaches may be used — generate a faulty symptom at random or list a number of possible symptoms and ask the learner to choose. Either way, establish the symptoms to be used.

Fault diagnosis

Present a block diagram of the equipment on the screen and ask relevant questions, dependent on the symptoms, such as is there DC present on the supply line? What is the amount of current drawn from the supply — compare this to the design current? Is there a signal present at the input? What is the shape of the input signal? What is its amplitude? Is an output signal present? What is its amplitude? What is its shape?

There are two possible approaches in asking those questions. The program may supply both the answers and the questions, the student stating the conclusions and stating the required path of the follow-on enquiry. Alternatively, simulation techniques may be used, a set of voltage and current readings being available in the data file.

Once the student had asked the question the program would supply the answer with respect to voltage and/or current amplitudes and shapes, for the student to draw conclusions. Programs of this type are expected to be fairly lengthy but the 128KB of memory would cope with that and the data files would also be large. I would write such a program in the four-colour mode set, preferably

using a monitor rather than a TV set to enable me to use small characters to display permanently on the screen the path of the enquiry so far, together with its results.

An algorithm to teach the drawing of statistical graphs is a border-line case between theory and practical skills. Judging by my experience as a teacher, a large number of students have the necessary theoretical basis in statistics but their drawings leave much to be desired. Few students, particularly in the 12-15 age group, appreciate the importance of accuracy or the necessity of using as much of the available drawing space as possible to draw large, clear graphs. A teaching program of the type described could be used in conjunction with a program to teach simple statistics.

Graphs

Present the data on the screen, which should be graphed. It should not be raw data but prepared suitably for presentation. The preparation of data should be taught separately from the teaching of graphs.

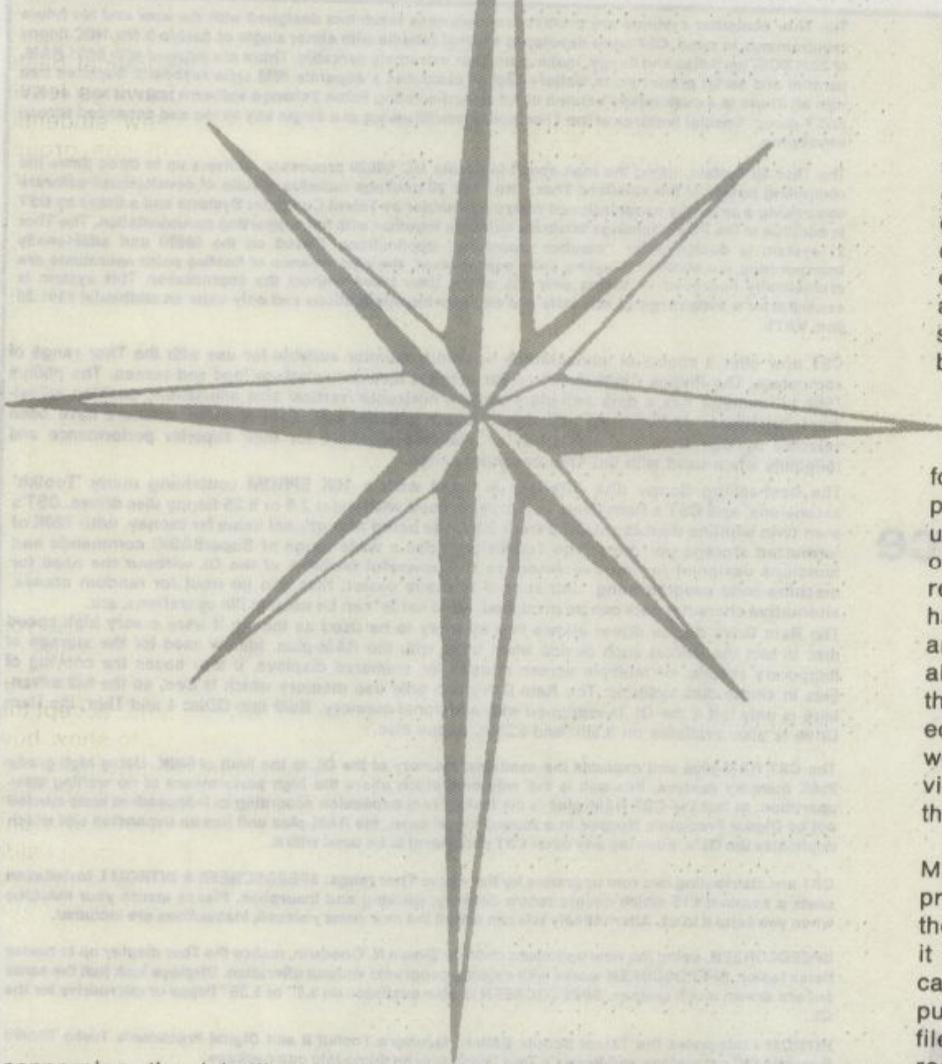
Ask the student to suggest the type of graph. Unless the suggestion is unrealistic, e.g., a pie chart is suggested for 30 items of data, accept the suggestion and proceed to show how to draw the appropriate graph.

Depending on the type of graph, ask questions relating to the dimensions of the paper — length of shortest side for pie charts, number of available divisions in both directions for other types of graph.

Ask the student for suggestions concerning the dimensions and geometry of the graph. If the suggestions are not satisfactory, resulting either in too small a graph or one which would not fit on the paper available, show calculations on-screen to find acceptable dimensions for the proposed chart. Otherwise accept the suggestions made by the user.

In the case of bar and line charts, ask the student to supply the required height of each point or bar to be plotted to represent the data correctly. In the case of pie charts, ask for the central angle of each variate. In both cases accept the answers if they are correct, or show how the correct figure may be found.

When the relevant information of all variates has been supplied, clear the screen and draw the required graph, showing the edges of the paper and how the drawing is situated on it. Either show the labelling of the axes or ask the student for information



protractor, how to obtain the required answer. Return to the plot of random points and repeat the process until the learner signals the intention to stop. At that stage an evaluation of the whole session should be given.

The outline algorithms presented show one possible solution to each problem. It is not implied that they are the only successful methods, nor is it suggested that the reader should not improve or extend them. Mainly they serve the purpose of providing suggestions and possible solutions. In all cases, if the author of the software does not possess the necessary skill or knowledge to cover the subject area it is advisable to seek help from someone who does. Such help should be easily obtainable.

Less obvious

There is a vast area to be explored for using the computer in teaching practical skills. My observation is that until recently only the obvious areas of computer-aided learning have received attention and practical skills have been largely neglected. There are exceptions. Flight simulators have always been very popular. The fact is that would-be software writers of educational programs could do much worse than investigate some less obvious but important areas such as those mentioned.

Last month's supplement in Microdrive Exchange deals with the problems of teaching punctuation at the lower end of the age range, though it is suitable for any age group. The cartridge contains a program to teach punctuation, a demonstration data file, a program to generate more realistic data files of the type which the user finds necessary, and a file called READM—ME. As the name suggests, it gives instructions for using the package. It was written in Quill and you should start by printing it out or reading it on the screen.

Finally, please type-in the following short listing and run it:

```

100 CLS: CLEAR
110 FLASH 1: UNDER 1
120 AT 10,3
130 FOR J = 1 TO 15
140 READ A
150 PRINT CHR(D);
    CHR(32);
160 IF A = 89 THEN PRINT
    CHR(32);
170 END FOR J
180 FLASH 0: UNDER 0
190 DATA 72,65,80,80,89,67,72,82
200 DATA 73,83,84,77,65,83,33
210 STOP

```

concerning the labelling; accept it only if satisfactory.

An algorithm to teach compass reading is a practical skill needed in the study of mathematics and geography. It also appears indirectly in other subjects. The teaching of compass reading provides scope for graphic presentation; the use of graphics is essential.

We should assume that the theoretical aspects of the compass and elementary map reading have already been mastered. If that is not so a separate teaching program is needed to cement that knowledge first. The basis of all teaching programs should be that we teach one aspect of knowledge or skill at any given time, otherwise the program becomes too complicated and the results will be weakened.

Since it is not practicable to ask the

learner to make angle measurements on the screen we must work in conjunction with a drawing on paper. It is, however, possible to request: the student to produce drawings on a dot matrix printer and make measurements on the drawing. The printed copy could be simple, consisting of no more than a few dots or asterisks, with a compass rose produced on the top of the paper.

Draw the compass rose. Plot a number of random points and ask the student to type-in the bearings from several points to several others. The drawing should be presented on the screen and on paper.

Evaluate the input and state whether or not it is correct. If incorrect, show the correct answer, possibly by superimposing a protractor on the drawing — on the screen — and show, by rotating the



CAMBRIDGE SYSTEMS TECHNOLOGY



24 Green Street, Stevenage, Herts SG1 3DS
Telephone: Stevenage (0438) 352150

THE

Thor RANGE

MONITORS

QDisc Interface



NEW
INTROM I
AND

Thor SPEEDSCREEN

The Thor computer systems are professional business machines designed with the user and his future requirements in mind. CST have developed several models with either single or double 3.5in, NEC floppy or 20M SCSI hard disc and floppy, making the Thor extremely versatile. Thors are quipped with 640K RAM, parallel and serial printer ports, battery-backed clock and a separate IBM style keyboard. Supplied free with all Thors is a customised version of the award-winning Palon Xchange software suite as well as ICE and T-dump. Special features of the Thor include multitasking at a single key stroke and enhanced screen windowing.

The Thor 20 system, using the high speed Motorola MC 68020 processor, delivers up to three times the computing power of the standard Thor. The Thor 20 package includes a suite of development software comprising a specially commissioned macro assembler by Talent Computer Systems and a linker by GST in addition to the Palon Xchange business software together with full supporting documentation. The Thor 21 system is designed for "number crunching" applications. Based on the 68020 and additionally incorporating the MC68881 floating point coprocessor, the performance of floating point operations are dramatically improved — taking only 1% of the time taken without the coprocessor. This system is essential for a wide range of scientific and engineering applications and only costs an additional £201.25 (inc. VAT).

CST now offer a choice of monochrome or colour monitor suitable for use with the Thor range of computers. The Philips CM8833 14" colour monitor includes interface lead and screen. The Philips 7502 12" monitor has a dark anti-glare screen, horizontal/vertical size adjustment, position adjustment, brightness and contrast adjustment and a foldable foot. Both of these monitors have been selected by CST from the wide array of available monitors for their superior performance and reliability when used with the Thor computer range.

The best-selling floppy disk interface is fitted with a 16K EPROM containing many 'Toolkit' extensions, and CST's Ram Drive 2. It may be used with most 3.5 or 5.25 floppy disc drives. CST's own twin slimline double sided 80 track 3.5 units being exceptional value for money, with 720K of formatted storage per drive. The Toolkit provides a wide range of SuperBASIC commands and functions designed to improve access to the powerful facilities of the QL without the need for machine-code programming. Job control is made easier, files can be used for random access, alternative character sets can be produced, 'wild cards' can be used in file operations, etc.

The Ram Drive device driver allows free memory to be used as though it were a very high speed disc in fact the fastest such device when used with the RAM-plus. Ideally used for the storage of temporary results, or multiple screen images for animated displays, it also eases the copying of files in single disc systems. The Ram Drive can only use memory which is free, so the full advantage is only felt if the QL is equipped with additional memory. Built into QDisc 4 and Thor, the Ram Drive is also available on 3.5in. and 5.25in. floppy disc.

The CST RAM-plus unit expands the available memory of the QL to the limit of 640K. Using high grade 256K memory devices, this unit is the only one which offers the high performance of no waiting state operation. In fact the CST RAM-plus is the fastest ram expansion according to independent tests carried out by Digital Precision. Housed in a rugged metal case, the RAM-plus unit has an expansion slot which duplicates the QL's, allowing any other CST peripheral to be used with it.

CST are distributing two rom upgrades for the whole Thor range: SPEEDSCREEN & INTROM I. Installation costs a nominal £15 which covers return delivery, packing and insurance. Please insure your machine when you send it to us. Alternatively you can install the new roms yourself, instructions are included.

SPEEDSCREEN, using the new optimised code by Simon N. Goodwin, makes the Thor display up to twelve times faster. SPEEDSCREEN works with existing programs without alteration. Displays look just the same but are drawn much quicker. SPEEDSCREEN is also available on 3.5" or 5.25" floppy or microdrive for the QL.

INTROM I integrates the Talent Screen Editor., QJump's Toolkit II and Digital Precision's Turbo Toolkit SuperBASIC extensions and Buvex's Thor Dump screen dump into one package.

Please supply:-

	UK inc VAT	Overseas
Qdisc Interface 4 (3.5in. util. disc)	£79.95	£72.70
Qdisc Interface 4 (5.25in. util. disc)	£79.95	£72.80
QEP-III Eprom programmer (QL/THOR)	£129.95	£116.00
RAM-plus 512K QL memory	£139.95	£125.20
CST Dual 3.5in. cased floppy discs	£219.95	£200.40
CST Q-488 GPIB instrument interface	£224.25	£198.40
CST QDISC SCSI interface	£230.00	£203.40
Qdisc 4 + dual 3.5in drives	£275.00	£249.40
Qdisc 4, RAM-plus + dual 3.5in. discs	£405.00	£363.60
QL SPEEDSCREEN 3.5 <input type="checkbox"/> 5.25 <input type="checkbox"/> mdv <input type="checkbox"/>	£20.00	£18.00
Thor 1F (Single floppy)	£688.85	£650.00
Thor FF (Dual floppy)	£803.85	£750.00
Thor WF (Winchester + floppy)	£1608.85	£1450.00
Thor 20 1F (Single floppy)	£1292.60	£1179.00
Thor 20 FF (Dual floppy)	£1407.60	£1279.00
Thor 20 WF (Winchester + floppy)	£2212.60	£1979.00
Thor 21 1F (Single floppy)	£1493	£1354.00
Thor 21 FF (Dual Floppy)	£1608.85	£1454.00
Thor 21 WF (Winchester + Floppy)	£2413.85	£2154.00
Thor User Guide	*£20.00	*£23.00
MC68020 User's Manual	*£20.00	*£23.00
MC68881 User's Manual	*£20.00	*£23.00
Talent 68020/68881 Assembler	*£34.50	*£33.00
*refundable on purchase of appropriate Thor		
For the Thor Range:		
Philips Monitor (Monochrome)	£92.95	£111.40
Philips Monitor (Colour)	£295.00	£300.40
Beige Mouse	£74.75	£72.00
Palon Chess	£24.95	£22.70
INTROM I from Interlogic	£49.45	£44.00
SPEEDSCREEN rom for Thor	£29.90	£27.00
ROM Installation on your Thor	£15.00	
Floppy Discs 3.5", pack of 10	£15.00	£14.00
Additional 12m Service contract (1F&FF)	£85.25	
Additional 12m Service contract (WF)	£115.00	
QL Trade-in against Thor		£5.00
Deduct £70 (UK) £60 (O/S)		£10.00
Expert administration		£5.00
Airmail outside Europe		£10.00

Please complete in full

Name

Address

QLW1

Post Code..... Telephone

I enclose a cheque/PO of £

Please deduct my Access/Mastercard/Eurocard/Diners Club/Vector a/c

Card No.

Expiry Date

Signature



Prices are inclusive of carriage
CST reserve the right to alter prices and specifications without prior notice



Ritzaus success story

THE CELEBRATIONS have gone on a little longer this year at Dansoft, the Danish software house. It's the first anniversary of their advanced multi-tasking news handling system going on line. Developed with the Danish news agency, Ritzaus, using CST hardware the system is now linked to the Norwegian and Swedish news services and Thors have been installed at more than 60 major customer sites.



At work: Ritzaus manager Uffe Stagmann

Satisfied customers include Danish Television and Radio, using Thors to keep their news and sports shows up to date and more recently the President of the EEC Commission.

UNSTOPPABLE

Ritzaus receives and sends news items and updates constantly from all over the world. Before the system was computerised the customers could only receive the news continuously by telex. That generated as much as 100 metres of print a day. An impossible amount of paper to deal with efficiently!

Now in newspaper offices the news is collected, edited, typeset and laser printed automatically by networked Thors. From the news coming in to the master copy going out the Thor manages everything.

The Thor was chosen as the only low cost, high quality computer available that can effectively multi task. Another important factor was the proven reliability of the Thor; Ritzaus must be on line around the clock day in day out, so there's no room for system failure. It's a tribute to CST reliable workmanship that the first computers installed have been running continuously for over a year now.

THE NEWS AS IT HAPPENS

Ritzaus Generelle Nyhedstjeneste V2.30 - 1987 Dansoft

Vis artikel=F1 Kommando=F3 Sag=F4 Skriv=F5 Ud=F7

4 Sagte artikler tilhører U/R/FILIP

268988: FILIPPINSK/TYFON	Prest melder on 1600 oekome ved tyfon:
268987: FILIPPINSK/TYFON-NV	Prest erkender fejl i opplyst dedstol:
278428: FILIPPINSK/TYFON-NV	243 drebt af tyfonen >Hina i Filippinerne:

The headline: Philippine typhoon

THE Dansoft news management software allows the user to see all the news as it arrives, at the same time as it is being stored on floppy. Thanks to special encoding and data compression methods developed by Dansoft, the system can store up to 1MB of data on a standard 720KB 3.5" disc.

When the disc is full the system switches from flp1— to flp2— and when both are full (if nobody is on hand to change the discs), it starts

erasing the oldest bulletins making space for incoming data.

The incoming news is put under one or more of fourteen headings — "home industrial" or "EEC news" for example. These items are also "searched" for pre-set names or text strings and important items are highlighted. Stored data can be similarly searched thus cross referencing and the correlation of separate items is always simple and rapid.

Dear Hilde . . . THOR TIMES AGONY AUNT

—DEAR HILDE

I am a German physics student studying in London and my Thor 21 is a great help with my astronomical data analysis but my professor at home seems to have lost interest in my print outs. Should I try the student councillor?

Yours
Misverstanden

Dear Miss Verstanden
You don't need counselling, you need to write home in German! SET—LANGUAGE DEUTSCH gives you the right keyboard layout (CST can supply the keytops). Now just set up your printer and Bob wird dein Onkel sein!

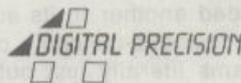
PS: If none of the other nine SET—LANGUAGES work either, hand annotation might give satisfaction.

Hilde

QEP III the finest!

"THIS is the finest EPROM programmer I have used," says Ron Massey, reviewing the QEP-III for QL World. "Even if you have no previous experience with a programmer you will find the QEP-III exceptionally easy to use."

CST claim that it is suitable for the complete range of EPROMs from 16 to 512K. Three programming voltages are provided: 12.7, 21 and 25 volts. In addition to selecting the type of EPROM, the pin layout may be changed allowing easier PCB layout. Eprom pinouts may be saved to a file. To quote Ron Massey: "QEP-III [is] the epitome of state-of-the-art EPROM programmers."



NEW ALL

THOR COMPATIBLE

TURBO V2.0

EYE-Q V2.1

SUPERFORTH V2.0

EDITOR V2.05/V1.17

SUPER GPRINT GENERATOR V4.0

PROFESSIONAL ASTROWOLFER V1.5

The Power Behind The Button

A HAPPY NEW YEAR TO ALL OUR READERS!

FIELDS WITHOUT FENCES

A database with a difference, Flashback uses markers to expand the field capacity of files as the need arises. Ron Massey meets Flashback, and feels welcome.

Product: Flashback

Price: £25

Source: Sector Software, 39 Wray Crescent, Ulnes Walton, Leyland, Lancs PR5 3NA. Tel: 0772 454328.

Sooner or later all computer enthusiasts find they develop a requirement, no matter how humble, for storing and manipulating information in useful ways. For the average user, one of the most common types of record-keeping system is a file for names and addresses.

Sector Software has added another to its suite of "serious-minded" programs literally just out of beta testing quarantine. *Flashback* is a particularly flexible and user-friendly system for manipulating text files without purporting to be yet another database. Even so, because of the various applications for which *Flashback* can be used, a certain amount of terminology relevant to database management is used to describe its attributes.

When describing the

operation of a database the most common simile is a filing cabinet. Individual records can be likened to filing cards. Field names are normally labels common to every card in the file and fields are the items of information identified by the field names.

When a file is ordered you are, in effect, re-arranging the apparent order in which records appear according to the alphabetical sequence of an item within a field common to each card. Selection can be compared to collating a group of cards according to a particular criterion based on the valued indicated by flags/markers which are the equivalent of the database field names.

Nothing

The *Flashback* interactive first module has been designed deliberately for people who know nothing

about programming or text management. Separate modules will provide a wide range of additional facilities to the interactive module for the complex management of information.

The difference between *Flashback* and conventional data management systems is that, unlike the fixed format of an Archive file, a flexible system of inserting markers used as flags indicating the start of a portion of a record is used instead of the traditional static field titles.

A marker, consisting of a white box, is placed at the start of each part of the current record, the field where you wish to indicate to the program that the information following is significant for subsequent searches or for grouping with the same fields from other records.

Labels used as field names, up to 16 characters

in length, can be attached to each marker and the ordering of records using those markers is done by means of the ASCII code. Upper-case characters are followed by the relevant lower-case characters. Unlike an Archive file, labels may be added or altered at any time without destroying the integrity of the file.

User-defined

One of the many features putting *Flashback* well above the average specialised database is that it is user-definable throughout. A single file may contain a mixture of record types and additional fields may be inserted at any time.

The first of a series of modules of what will become a sophisticated system for manipulating information, *Flashback* needs only two commands to get started, READ equivalent to load, and WRITE, equivalent to save.

When *Flashback*, runs it looks initially to the driver for which it is configured for a default filename *dbase—dba*. If that file is not available a window will be opened with the prompt stating that the default filename was not found, followed by the default drive and filename, offering you the option of changing either or both.

Elbow room

Although *Flashback* is supplied with a defined data file expansion space of about 10K, in addition to any files read by the program users optionally may reconfigure the program for either more or less, according to requirements and the elbow room required by the programs which are multi-tasked with it.

Command compatibility for navigation is the same as Archive. FIRST, LAST, NEXT and BACK will take you to the relevant records

anywhere in a file. Cursor commands are used in the same way as the command line in the SuperBasic window #0. Editing a Flashback file is done in the same manner as Quill with a ragged right hand margin.

Three methods have been provided for entering directives into Flashback. By pressing <F3> to gain access to the line command input line; by using <CTRL> and the first letter of the command, or by pressing <CTRL> twice and selecting the required command using <ENTER> or the first letter of the command.

Commands

Commands available to the first module of Flashback — the interactive module — consists of:

Command	Flashback	Archive Equivalent
First record	<CTRL> <F>	First
Next record	<CTRL> <N>	Next
Back record	<CTRL> 	Back
Last record	<CTRL> <L>	Last
Search	<CTRL> <S>	Find, Search, Locate
Group	<CTRL> <G>	Select/Order
View group	<CTRL> <V>	View
Kill group	<CTRL> <K>	Reset
Edit name	<CTRL> <E>	_____ (1)
Execute number	<CTRL> <X>	_____ (2)
Transfer record	<CTRL> <T>	_____
Undo changes	<CTRL> <U>	_____
Adjust window	<CTRL> <A>	_____
Insert marker	<CTRL> <I>	_____ (1)
Create record	<CTRL> <C>	Insert/Append
Delete	<CTRL> <D>	Delete
Read	<CTRL> <R>	Open
Write	<CTRL> <W>	Close
Printer	<CTRL> <P>	Lprint

Notes

1. Once record is created this function is immutable.
2. Must be done with a procedure.

Other hotkeys provide a range of useful program controls.

<SHIFT> <ENTER> returns you to the start of your current file when you are performing a SEARCH. This combination of keys otherwise will insert a record, with the same marker sequence used throughout the file. <SHIFT> <CAPSLOCK> toggles the SEARCH/SELECT option between

case-dependent and independent searches.

The SEARCH option can provide a search for a string of up to 20 characters and may be specified as all or by user-definable field names. Another very important feature is the UNDO option which will remove all alterations made to the current record.

Flashback provides three screens for customising the presentation of your information. Selecting the SIZE option you can set the size and positioning of the window for viewing your data. A window at the bottom of the screen indicates the window position in terms of both X,Y pixel co-ordinates and width and height in characters.

Control is provided by the cursor keys for altering

concerning the records displayed, as well as the user-definable field name and the command line. Information provided in this window includes:

Ref. no: nnnn of nnnn.

Field number: 0 to 59.

Field name: user-definable up to 60 names but theoretically unlimited number of fields per record.

Work space remaining in current file: user definable.

Current file: drive filename.

Two windows are provided for displaying records and the manner in which they are handled. Each window is provided with an information line, consisting of as much information as possible within the limits of the width of the window, about the contents at the start of the current record.

Although there is a limit of a maximum of 60 field names in a Flashback file, the only constraint with regard to the number of possible records a single file can contain is the capacity of the QL RAM. Typically it amounts to about 8,000 name and address records.

View

Selecting the VIEW option in this top level of management displays the first line of each record equivalent to the information line. Pressing the cursor keys moves a menu bar and scrolls through the contents of the entire file. Pressing <SPACE> or <ENTER> selects the entire record for viewing and returns you to the top level.

<F4> opens a second window which can also be re-positioned and re-sized. Information included in this window is closely-related to a "" marker used in the top level of selection as a flag or marker for sub-records. The information line over the second window contains details starting from the position of

the first sub-record marker.

Selecting the VIEW option at this sub-level, records are displayed from the top of the first sub-record at the marker position. If a record is too long to display in the selected window height, using the up/down cursor keys scrolls the record. In common with all of the display modes, a red box indicates the end of the current record. Whenever SELECT and ORDER are chosen you are also taken into the VIEW option.

Input to Flashback may be made directly from the keyboard or with ___exp files from Archive, Abacus or Easel. Other sources of input include *The Editor* or Quill-lis files.

Export files can be processed with the Flashback import utility. The utility menu displays an alphabetical listing of all files generated by Archive, Abacus and Easel with an ___exp extension.

A file may be selected by pressing one of the numbers positioned to the left of the file name or typing characters into the command line. The size of the displayed media directory is reduced as you type-in the name until the specified file is the only one remaining and is then loaded automatically into the utility.

Once the file is loaded, the display consists of two windows. The left window lists the field names from the ___exp file; the right window is blank. The transfer of a file may be converted for use by Flashback and field names may be transferred from one window to the other and in any order. Fields may be merged and two or more fields, requiring separate names in Archive may be given the name in Flashback. After the field names have been transferred, pressing

<ESC> starts the automatic pro-



cess of transferring from one format to the other.

Output from the Flashback interactive module automatically word-wraps for insert or editing within the size of the window. The standard printed format without the Report module consists of an 80-character line. The width of the printed document consists of a maximum of 80 characters.

Combination

The program checks to see if the <ESC> key has been pressed after it completes printing each

Flashback data, such as names and addresses or paragraphs and other text block extracts from contracts or standard letters, into Quill, The Editor or any other program running beneath Flashback.

When considering the obvious Flashback database applications, it is almost impossible not to make some kind of reference to Archive. The bench-test figures were obtained with files formatted to be compatible with their respective programs and were otherwise identical.

control codes and can use the Psion printer—dat file for printer control. Because the majority of users have built their own drivers for use with the various Psion programs, using a printer—dat file eliminates the need to building yet another.

Specific field markers will be used for the range of control codes available to the majority of printers and will be indicated as field markers on the screen version of the finished document.

Further, you will have access to sophisticated

programming tool, Flashback can send variable values into SuperBasic programs.

Looking at the Sector Software range of other products such as *Taskmaster* and *Spellbound*, I am not surprised at the sheer processing power of Flashback. Virtually every conceivable control has been provided for handling text in a wide variety of permutations.

At home

While not a database system in the conventional sense, there is little doubt that the majority of users will find applications for Flashback in the field of data manipulation. It is equally at home with the production of manuals, as an adjunct to word processing for the storage of standard paragraphs, writing and testing SuperBasic programs or sub-routines, think-tank applications, household and business management and many more.

Since Flashback is entirely memory-based, users with standard 128K QLs will be unable to utilise the windowing available with memory expansion. Apart from that limitation, Flashback is compatible with the entire range of QL systems.

There can be little doubt that Flashback is a very exciting product and of real value for applications, whether it is used as a means to retrieve names and addresses, recipes or complex word processing functions for contracts or standard letters from files which may be as constructed in as complex a manner as required for your applications.

Of even more importance the chances of corrupting a file because you forgot to close it are entirely non-existent. File corruption by cockpit error is now a thing of the past.

File Data: 214K in length consisting of 2,063 name and address records.

Operation

Best case:

1. Unordered, case-dependent, search anywhere in file:

Archive	Flashback
(1) 40.89 sec	1.116 sec
	1.79 sec

2. As above but case-independent:

Middle case:

1. Select named county from all records

(2) 9min 10 sec	1.24 sec
5 min 45 sec	2.84 sec

2. Select "Mr." from all records

Worst case:

1 Select all, order by surname — first time:

5min 37 sec	6.41
-------------	------

Second time (3)

4 min 36 sec	
--------------	--

Notes

1. *Archive* FIND is case-independent.

2. *Flashback* performs a combined SEARCH and order; *Archive* requires two separate commands.

3. Reduced time for the second ordering was possible because of the QL slave blocks. The *Archive* RESET command allowed sufficient time to make a cup of coffee.

4. *Flashback* SEARCH is virtually instant when a file is ordered and the SEARCH is on the ordered field. This mode is the same as *Archive* LOCATE, which is also virtually instant.

record. If so, printing is halted with a final printed message "**** ABORTED ESC PRESSED ****".

A typical Flashback application includes combining any number of SuperBasic procedures or routines into a single file and, by selecting the <CTRL> <T> option, — transferring the record containing it into SuperBasic in a similar manner to the *Keydefine* or *Turbo* TYPE-IN command procedure. By heading each routine with a line number and REMark you can identify or SEARCH for specific routine modules.

Other TRANSFER applications include a facility for transferring

Whereas *Archive* provides three forms of looking for a specified field with FIND, SEARCH or LOCATE, *Flashback* requires only one SEARCH.

Two additional Flashback modules are nearing completion. Run in conjunction with Flashback the modules will provide facilities for processing data in very complex ways. The first, *Report Generator*, will provide sophisticated features such as formatting data output to the screen, a printer, a file medium or transferring data to the program underneath it.

Printer output may be formatted with defined left and right margins, at which time you can insert printer

commands for selecting multiple field criteria and full mail-merging options, which will maintain word wrap on unjustified text and be able to generate many different types of report from one set of data.

The Flashback Basic module will have most *Archive* functions, except for screen formatting the *Archive* SEDIT option. In addition you will have delete left and right, as well as move left and right, by character or field.

You will also be able to turn the QL screen graphics, so that Flashback can be used for applications software in a manner similar to the *Archive* RTM module. Used as a pro-

ABCElectronic

Andreas Budde
Högelstr. 10/12
D-4800 Bielefeld
West Germany

tel: 0521/690381
telex: 932974 budde d
telex: 0521/61412

1. POINTER'S TOOLKIT

Pointer's Toolkit is intended to be a complementary toolkit for QJUMP's Super Toolkit II and/or QRAM or for Sandy's SuperQBoard with mouse. Naturally you can use it also without any of this hard software. It contains a background string-exchange command, for example, a command to kill all currently running jobs, a function which works like INPUT, but you may give a pre-defined text to edit (like the input used by PSION), a new RESPR which never returns not complete, even if there are jobs running, a monitor-save-job, and, if you have a command called POINTER or a file called PTR-IMI or PTR-KBD (from QRAM), there are commands which give you access to the pointer and real pull-down-windows from SuperBASIC!

WRITER'S TOOLKIT

Writer's Toolkit gives you new fonts (no normal QL Fonts), which you can use to write anywhere to the screen (with the new command WRITE). The new fonts include Old English, Antiqua, Helvetica, (and more) in different sizes. Fonts with a height of 8, 12, 16, 20, 24, 32 etc. are also possible. Now you can forget the ugly CSIZE 3, 1 QL fonts; Writer's Toolkit gives you beautiful fonts which you can use for example to make overlays for disk-labels. All fonts are defined as proportional, so Writer's Toolkit gives you not only nice looking fonts but also a nice face.

PRICE: 15£

PREIS 45,- DM

2. QL-BUS

Plug in your Q-Bus buffercard and the Expansions Port of your Sinclair QL enlarges from one to five slots with the possibility of an additional power supply. Apart from the Miracel Trump Card it can be used with

- * CST Floppy Disc interface
- * CST SCSI - Floppy interface
- * Sandy Super QBoard
- * Sandy 512k memory expansion
- * Miracel 512k memory expansion
- * QEP III E-Prommer
- * and all interfaces using the QL-Standards

PRICE: 98£

PREIS: 298,- DM

3. DOT SCIENCE + SRENCOPY

This program, which enlarges your QDots, is usable for all scientific and mathematical texts. It can be used with all standard software programs even your own basic programs. You need no special codes to work with it because the BOOT program loads all files and programs after checking the necessary parameters. The possibility of using several characters - for example greek letters, chemical and mathematical formulas is no longer a problem. All additional and of course the normally used characters can be printed on a EPSON compatible printer.

Screncopy enables the screen to be copied in four forms and different grey colours to a dot matrix printer. It is unimportant in which application you work, any pixel of the whole screen (512 256 pixels) is printed without loosing any contents! You have to press CTRL+S only!

PRICE: 29£

PREIS 89,- DM

Order Form Floppy — 3 1/2" 2 X 80 Track

	item	price	floppy	cartridge
1	Pointer's Toolkit Writer's Toolkit	£15 DM 45,-		
2	QL-Bus	£98 DM 298,-		
3	Dot Science Screncopy	£29 DM 89,-		

Name and Address

Cheque, Credit Transfer to Postgirokonto Dortmund Nr. 90283-469.
C.o.D. (only in Europe, not UK, Spain, Greece, Northern Ireland)
Accepted, £ = exportprices

QLW1



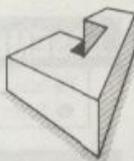
A NEW QL MEGA-TEXT ADVENTURE

During a routine flight to the moon Admiral Cola and Captain Franklin learn that the moonbase and mineral mine have been taken over by hostile aliens. To avoid enemy radar they land their spacecraft some distance from the base and then set off on a dangerous mission to recapture it.

Packed onto two cartridges this big-value mega-text adventure contains over 150 descriptive and imaginative locations and a wide variety of problems, traps, mazes and puzzles with logical solutions.

It includes an extensive vocabulary, over 50 objects and a number of intelligent characters capable of carrying out tasks.

Special offer £10 (including postage and packing) valid until 10th January, 1988. Send your cheque or postal order to the address shown below. Or telephone 041 652 0759 and quote your Access or Barclaycard number.



Javid Systems

15 Duke Street
Glasgow GL2 9JE

Data-Skip presents...Seiko RC-1000, Wrist Terminal



JOE BROWN
213-123-4567

MEETING 335
10/15 A10:30

DANCE LESSON
5 FRI P06:00

FRANKFURT
AM 02:08 42

84 10/14 A
SUN 10: 08 42

Memo Function. Can be used to store telephone numbers, client lists, schedules input from a personal computer. There's no limit to its use. Data entries have a maximum length of 24 characters, and can be output on the watch display whenever, wherever you wish. The Memo function is the heart of the Wrist Terminal.

Schedule Alarm Function. Input the month, day, hour, and minute, for schedule entries and your Wrist Terminal alert you when the date and time come by beeping and displaying a twelve-character message on the screen. Invaluable for the businessman, of course, but the Wrist Terminal can also remind you of special personal days, for example, birthdays or anniversaries, that are so embarrassing to forget.

Weekly Alarm Function. Tuesdays at 0:30 there's a meeting, Thursdays at 7:00 you go to your sports club, Fridays... The Weekly Alarm function is just the thing for today's busy people! Input the day of the week, hour, and minute, and each week at the proper time the Wrist Terminal will beep and display a twelve-character message to remind you.

World Time Function. What time is it now in London? New York? Just input the time difference and afterward you can know the time anywhere in the world, instantly, with this internationally oriented function. Be sure to input the place name, too, in up to twelve characters.

Watch Function. The Wrist Terminal has a full set of Time Keeping functions, including a built-in alarm which will beep at the same time each day and a calendar which will automatically tell you the year, month, and day accurately from now until the year 2020. It has an hourly time signal, too.



QL SER1

The Seiko RC-1000 is a wrist-terminal with 2K of free memory to store addresses, telephone numbers etc. (max. 80).

Also has extensive alarm-facilities. Fully programmable on your QL. Data-transmission via Ser-1 port. Complete package (containing Transmission Software, interconnecting-cable and Watch)

Now only £49.95

(Also Spectrum/Interface I versions available. Please state)

Please add £1 for P & P. Orders: send us a cheque or postal order.

(No Visa or C.O.D. made payable to:

DATA-SKIP, OOST Haven, 58, 2801 PE Gouda, Holland
Tel: 1820-20581

NOW WE'RE GIVING IT AWAY!

★ Up to £39.95 off Pascal, Pro-Monitor, Monitor or Task Swopper ★

QL EXPERT

£49.95

This is a tool enabling professional and novice to produce artificial intelligence based expert systems on a 128K QL. Main features:

- Boolean, Fuzzy and custom probabilities
- Multiple goal paths
- Fast/clever evaluation
- On-line help
- Efficient rule storage
- Formatted output
- Trace, How, Why, What-if



MEGA-TOOLBOX

£29.95

Adds 170+ commands to basic, mostly unique. Demo cartridge only £5 (redeemable on purchase).

- Multi-tasking input, recolour, scroll, tunes, banner
- Window save, hide, zoom, copy, compress
- Mix high/low res. graphics on same screen
- Access to ppes, QDOS/basic variables, traps
- Compatible with Supercharge, Turbo, etc.



QL PASCAL

£25!!

A full featured Pascal compiler that exceeds the ISO standard with many extensions

- Super-fast
- Simple to use
- Efficient
- Professional

TASK SWOPPER

£15!!

Multi-tasking in only 10K. Even on a 128K QL.

- True multitasking of Quill, Archive, Abacus etc
- Access to basic, editors etc
- Printer driver menu
- True job cloning
- Background printing

PRO MONITOR

£39.95 £30!!

The most powerful QL debugger. Features as Monitor, plus built-in single/mult line assembler and symbolic debugging. 18 new commands. No other monitor comes close to this spec. (Return old Monitor cartridge and £20 to upgrade.)



MONITOR

£19.95 £15!!

Powerful, full featured assembly debugger.

- Disassembler
- Memory dump/modify
- Trace/breakpoint ROM/RAM
- Command cloning
- Reg modify/display
- Job control + more

QL FORTH

£25!!

Professional Forth-83 compiler.

- Fast + compact
- Many extensions

ASSEMBLER

£15!!

The fastest QL 68000 assembler.

- Screen editor
- Linker

TYPING

£14.95 £10!!

Professional tuition in easy steps.

- Speed and accuracy measured

COPYCAT

£10.99

Backs-up those protected cartridges in no time.

BOOT 128K

£5.99

Run "128K only" programs in your expanded QL.

1 to 1 DUMP

£5.99!!

Undistorted screen dump for Epson FX80 printer.

MULTI-PRINT

£5.99

Print multiple copies of files with this multitasking program.

MDV TOOLKIT

£9.99

Basic extensions to read/write mdv sectors, headers etc.

ALMDV TOOLKIT

£19.95

1000 lines of 68000 source code for mdv header and sector access.

HARD BARGAINS (Spend over £50 and get up to £39.95 off selected software: See below)

Sinclair QL (JM)	£149.00	Astracom 1000 app. modem	£149.00	4 mdvs in wallet	£7.50
Trump card (768K + disc i/f)	£189.00	Miracle modem	£49.00	10 new mdvs (loose)	£18.00
512K Expanderam	£90.00	Parallel printer i/f	£20.00	10 used mdvs (loose)	£15.00
Cumana disc interface	£79.00	Serial printer cable	£15.00	20 new mdvs in box	£39.00
Single 3.5" disc drive	£139.00	Parallel printer cable	£15.00	20 used mdvs in box	£29.00
Dual 3.5" disc drive	£219.00	QL ROM cartridge	£10.00	Mdv storage box	£5.00
CUB 14" monitor + plynth	£279.00	27128 (16K x 8)	£6.00	Ten 3.5" discs	£29.00
One way mains filter	£14.00			40 disc box (lockable)	£14.00
Four way mains filter	£18.00			80 disc box (lockable)	£18.00

VAT INCLUSIVE

PRICES INCLUDE VAT AND DELIVERY
DEALER AND EXPORT ENQUIRIES WELCOME

**FREE
SOFTWARE**

Give away offers: Spend over £50 and get up to £39.95 off the following: QL Pascal, Pro-Monitor, Monitor or Task Swopper.

Spend £50.00 and get **£5.00 off**

Spend £150.00 and get **£15.00 off**

Spend £100 and get **£10.00 off**

Spend £200 and get **£25.00 off**

... any of Pascal, Pro-Monitor, Monitor or Task Swopper.

e.g. Buy Trump Card and mains filter for £203 and get Pascal FREE (normally £39.95)

(Note: Give away offers and price reductions shown apply for limited period only.)

COMPWARE

Compware, 57 Repton Drive,
Haslington, Crewe CW1 1SA

Tel: (0270) 582301 (Telex: 265871 quoting MAG70076)

Please send
I enclose £
Address
Name
QLW1

THE PERFECT PRESENT FOR ANY QL — OR EVEN ITS OWNER

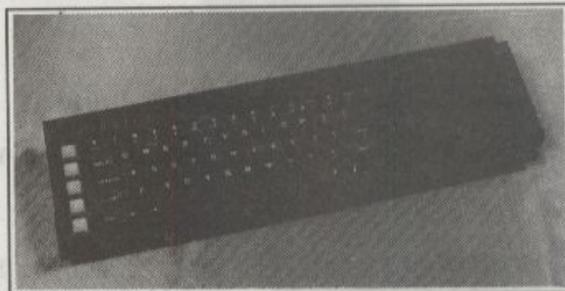
SCHÖN KEYBOARDS



SCHON PC KEYBOARD: This product has been acclaimed as "the best QL add-on for a long time." As shown above, the Schon PC Keyboard is supplied with a housing to cover the QL circuitry. Expansion port and M drives are still accessible. The keyboard interface simply plugs into the 8049 co-processor socket. The keyboard itself has 86 full travel keys and include single key left and right delete, illuminated caps and NUM lock, two enter keys, diagonal cursor keys. This product will certainly change your approach to the QL and is guaranteed to benefit you. Full spec sheet available on request.

SCHON KEYBOARDS NORTHCOTE CRESCENT, WEST HORSLEY, SURREY KT24 6LX (04865) 3836

Please allow 28 days for delivery. Trade enquiries welcome



SCHON STANDARD REPLACEMENT: The most widely sold replacement keyboard for the QL is the basic add-on keyboard. It makes no drastic changes to the QL other than the keys. Expansion port, rear ports and M drives remain unaffected. The 65 keys are all full travel and have two shot plastic symbols. To install - simple screwdriver job, no soldering - 5 minutes. Spec sheet available.

Please send me the following:

- Schon PC Keyboard @ £95.95 inc VAT. £2.50 p&p.
- Schon Standard QL Keyboard @ £54.95 inc VAT. £170 p&p.
- PVC Dustcover for PC Keyboard @ £4.95 inc VAT.

Mr/Mrs/Miss _____

Address _____

P. Code _____

Amount enclosed _____

Overseas: Deduct 15% VAT and add £4.00 for Standard Keyboard, £8.00 for PC Keyboard. U.S.A., U.A.E. & Australia, etc., add extra £12.00 for air mail.

TANDATA COMMUNICATIONS

FOR THE SINCLAIR QL

UNBEATABLE PRICES!

Q-CONNECT Q-MOD AND Q-CALL NOW ONLY

£80.49 INC. VAT & P&P

Q-CONNECT AND Q-MOD ONLY

£47.64 INC. VAT & P&P

APPROVED for use with telecommunications systems run by British Telecom in accordance with the conditions in the instructions for use.



The only communications package for the QL. The modules are available separately but, by using all three as a complete matched system, full advantage can be taken of the integrated features.

Q-CONNECT

Complete RS232 output for general communications from 75-9600 baud with full two way buffering and flow control. Software on a micro drive to support all 3 modules includes Prestel Viewdata/Videotex and VT100 emulation, and many other features.

Q-MOD

Manual dial V23 modem operating at 1200/75 bps and 1200/1200 half duplex.

Q-CALL

Provides traditional pulse/loop disconnect auto-dial and auto answer.

Please send me Q-Connect/Q-Mod/Q-Call at £80.49 inc. VAT & carr. Q-Connect/Q-Mod at £47.64 inc. VAT & carr. (delete as applicable)

I am enclosing a cheque made payable to Tandata Holdings plc OR charge my ACCESS/VISA account

Number _____

Expiry date _____

I'd like to know more about Tandata communications for the QL. (Please tick)

Name _____

Address _____

Tel _____

Send to: Tandata Communications, Albert Road North, Malvern, Worcs. WR14 2TL. JLW1

Tandata

COMMUNICATIONS

Albert Road North, Malvern, Worcs. WR14 2TL
Telephone: (0684) 892421. Telex: 337617
Fax: (0684) 892422. Telecom Gold: 81:TAN001.

A subsidiary of Tandata Holdings plc
Prestel is a registered trade mark of British Telecommunications plc

SOFTWARE

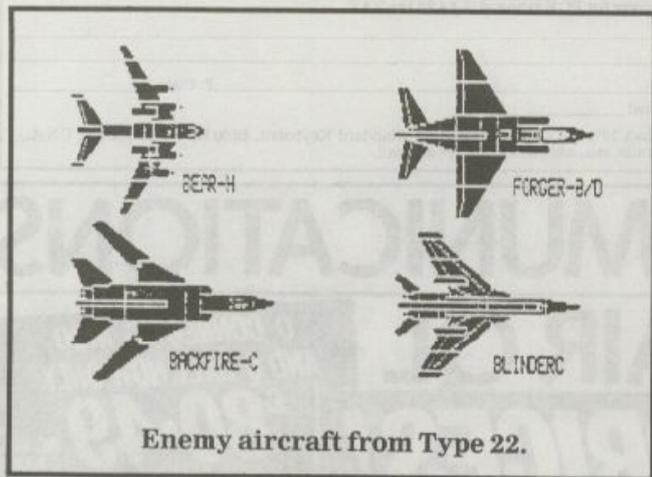
Steve Applebaum tries his hand at keeping the ship afloat and relaxes with a worthy shoot-'em-up.

Type 22 Talent

Type 22, from Talent, is a striking departure from the frenetic zapping of *Hoverzone*. Unlike that game, Type

game unless you have a very vivid imagination.

For a wargame, the Type 22 scenario is extremely uncomplicated. Your objective is to stay afloat for as long as possible, shoot down enemy aircraft and sink enemy shipping. In return, you are bom-



Enemy aircraft from Type 22.

22 is a complex wargame which tests players' mental as opposed to physical reflexes. It is a game of strategy rather than mindless blasting. It is also more down to earth, or at least as down to earth as a computer game can be.

So far as I can gather from the rather obscure instructions, the game puts you at the helm of a Royal Navy Type 22 frigate. If you do not know what that is you are unlikely to find yourself any wiser after playing Type 22, because neither it nor its manual serves to enlighten you. You will not get any information out of the

barded with missiles and plagued by fighter aircraft, submarines and surface ships.

Type 22 is perplexing because too many things happen at the same time. All the action takes place in two adjacent windows, each of which features a radar. The one on the left of the display plots the positions of all surface vessels, submarines and your own Lynx helicopter within a 56km. radius. They are displayed as different-coloured dots which move around the radar scope.

The radar in the right-hand window is used to pick up aircraft and

missiles. It has two modes, normal and zoom, used for early warning and close surveillance respectively.

Below the radars is a blank strip representing a Telex. As the game develops, it flashes messages warning of enemy weapon launches, enemy hits, and general information about the current state of play.

The bottom half of the display is divided into two more windows containing a number of command options and information about those commands. They perform such functions as altering your ship's heading, loading and launching a missile, firing chaff to confuse the enemy radar, and even moving the Lynx helicopter at your disposal.

Exciting as all this sounds, the only indication you have that any of the commands has had an effect is a change in the movement of the dots on the radar display and a few incoming messages. Even then it is difficult to decipher the radar screen, as it fills with increasingly greater numbers of coloured dots until it looks like an optician's test for colour blindness.

Overall, Type 22 is something of an oddity. The action is fast and furious but the confusing display makes it virtually impossible to assimilate what is happening. It is not a game I would recommend to arcade aficionados and I would be equally hard-pressed even to point any but the most battle-

scarred wargamer in its direction. Definitely one for seminal wargame fans only.

Hoverzone Talent

A look at the cassette inlay card for *Hoverzone*, showing an alien arachnid adrift in space, made me think Talent Computer Systems might, uncharacteristically, have an original concept. Talent games are generally very good but often lack imagination, an essential quality in a computer game.

Its record remains intact, because *Hoverzone* is another reworking of the old *Defender* formula, plus a few new ingredients.

Originality aside, I have to concede that *Hoverzone* contains some very good graphics and a number of inspired ideas, which I think improve on the original *Defender*.

In *Hoverzone* you play the pilot of a Delta Class defence ship. For some reason you seem to be the only one with sufficient guts to make a stand against the alien hordes threatening to invade not only your planet but the entire planetary system of which it is a part. Such massive discrepancy in numbers is standard in games of this kind.

There are three alien species with which to contend — Grabbers, Psychocubes and Podules. The former try to grab — hence their name — little figures

FILE

which run along the surface of the planet below you and represent your fellow humans; Psychocubes sound like an hallucinogenic drug and are potentially just as mind-blowing, since they lay space mines which explode on contact; finally, the Podules are flying carriers which, when shot, disgorge a number of zippers which dart around maniacally in an attempt to collide with your Delta Craft.

Anyone who has played Defender will immediately acknowledge the debt R. G. Riley, Hoverzone's programmer, owes to that game's creators. Along the top of the screen is a

scrolling window which acts as a radar and gives advance warning of approaching aliens; below, a larger window, with the undulating surface of your home planet drawn along its base, scrolls horizontally in either direction.

Your Delta Craft looks like an airborne bubble car. It is controlled using all four cursor keys. Pressing the left or right arrow keys accelerates the ship in the respective direction; to stop, you change the direction of the craft.

Being able to stop is important, because when you shoot a Grabber holding a human it releases the latter, who plummets to

the planet and certain death. To save your buddy you must shoot the Grabber and catch the former before he collides with terra firma. The idea is to save as many persons as possible because, for each one remaining at the end of a wave of aliens you are awarded bonus points before moving to the next level.

If, on the other hand, you are lax and let every human be irretrievably grabbed, the Grabbers metamorphose into Muties. There is little worse than having hordes of rabid Muties on your tail.

Hoverzone graphics and sound are excellent. The lateral scrolling is

virtually flicker-free and the animated characters skitter about the screen without the hint of a jerk. Despite the limited QL sound capabilities, Riley has managed to produce an effective engine noise which builds to a crescendo as the gas is turned on; gunfire and explosions are equally good and help to make Hoverzone one of the best QL shoot-'em-ups I have seen in a long time.

Its limited originality notwithstanding, Hoverzone is a good variation on the old Defender theme. If you are looking for a good zap-'em, check Hoverzone — you could do much worse.

text⁸⁷

The Advanced Wordprocessor
for the Sinclair QL

Alpha Block Context Doc File Goto Layout Mode Print Ruler Search Type Zap (esc)
text⁸⁷ Text leaflet Words: 616 Line: 8 Frame: 1

- **text⁸⁷** is a powerful WYSIWYG general-purpose wordprocessor for the Sinclair QL. **text⁸⁷** provides all common editing commands plus block operations, search and replace, file insert, block save and many other commands through quick menus. Auto-word-count, Auto-reformat and Freeze options are available
- **text⁸⁷** uses special video display founts with variable character size up to the size of text window. Many founts can be loaded and mixed on the same line. Characters can be displayed in each of the three colours. Six founts in different sizes are provided with the program. New founts can be designed with **founted⁸⁷**.
- Many rulers can be predefined and inserted freely anywhere in the document. Left, right, centre and decimal tabs are available. Daisywheel and dot-matrix printers are supported. Micro-spacing, micro-justification, proportional spacing, micro-line-spacing can all be used on most printers. Mul-

tle line headers and footers with variable format plus up to 4 columns can be printed on a page.

- **text⁸⁷** operations are extremely fast even with very large texts (e.g. searches whole 100K text in 2 seconds). Screen display is more than twice as fast as the QL's own routines. The program is very compact and can be used on an unexpanded QL with its default proportional fount. Any amount of memory expansion can be utilised. Texts of up to about 480,000 characters can be edited on a 640k QL.
- **text⁸⁷** is a well-behaved executable multi-tasking program with resizable text window. **text⁸⁷** is compatible with **Spellbound** and can import **Quill** Doc files retaining all the tabs and highlights.
- **text⁸⁷** was launched at the ZX Microfair on 12 December and is available exclusively by mail-order from **Software 87**. A free leaflet with full list of commands, features and timings is available on request.
- **founted⁸⁷** is a display fount editor available at extra cost.

Prices inclusive of airmail worldwide: **text⁸⁷** £45, **founted⁸⁷** £10

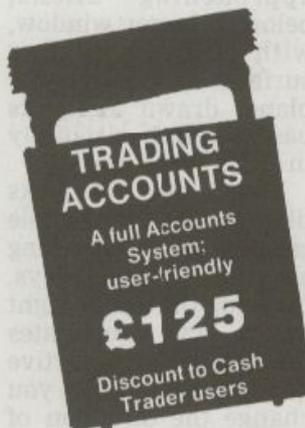
Software 87 33 Savernake Road, London NW3 2JU

PDQL

SOFTWARE — HARDWARE — TAILOR-MADE SYSTEMS YOUR PROBLEMS ARE OUR CONCERN

Systems for Businessmen

CASH TRADER UPGRADE version 2.3	
New Users	£80
Existing Users (send CT boot with order)	£39
SUPPORT SCHEME MEMBERSHIP	
fee per annum	£15
CT ANALYSER (extra memory required)	£25
MAILMERGE de LUXE	£14
PDQ-PAYROLL	£70
SUPPORT SCHEME MEMBERSHIP	
fee per annum	£15
TRADING ACCOUNTS (extra memory required)	
New Users	£125
<i>Special Discounts for Cash Trader Users</i>	
SUPPORT SCHEME MEMBERSHIP	
fee per annum	£15



Programs for Programmers

ARCHIVE DATABASE ANALYSER	£7
ARCHIVE SCREEN FORMAT PRINTER	£7
PDQ-XREF	£15
SEDIT	£15
SuperBASIC MONITOR	£7

Programmes for Everybody

ArchDEV/RTM version 2.38	£20
ARCHIVE TUTORIAL	£21
COMPARE	£10
graFix	£16
IMAGE D	£24
LAZARUS	£20
NAMES & ADDRESSES (extra memory required) ...	£18
(with RTM extension)	£36
PSION PRINTER INSTALLER and Configurator enhanced and TURBOcharged	£6
PDQ-COPY	£8
RECOVER	£20
SPECIAL EDITOR latest edition (extra memory required)	£49.95
SPEEDSCREEN	£20
SPELLBOUND and FILEBOUND (compiled version) (extra memory required)	£35
FILEBOUND (send disc/cartridge and s.a.e.)	£5
TASKMASTER (extra memory required)	£25



Programs for Leisure

DOMINATION	£9
OMEGA (extra memory required)	£14

HARDWARE

All hardware we sell is tested by us before delivery — ask for special terms for TRUMP CARD and NEC drives — 7% PDQL program voucher on hardware purchases. PLUS Unbranded 3.5 discs £20 for 10, Fuji MFDD £32.50 for 10; Fuji MD2DD 5.25 discs £22 for 10. Disc cleaning kits £15. THOR enquiries welcomed.

MANY OTHER General Utility, Archive Utility and Application Systems. NEW Systems or adjustments to existing systems built to order. All PDQL SuperBASIC programs are TURBOcharged. All PDQL built programs are THOR compatible.

PDQL

Computer
Systems and
Software

UNIT 1, HEATON HOUSE
CAMDEN STREET
BIRMINGHAM B1 3BZ



MAKE THE MOST OF YOUR QL AND THOR

for home or business use — Order from lost or write for current catalogue. Prices include VAT and postage within the U.K. Cheques with orders to, and full descriptive list available from PDQL. Please state details of toolkit, extended memory and/or disc

TRADING ACCOUNTS

A brand new flexible Accounts package — Cash Trader Data files easily converted — built at the request of Businessmen with extra book-keeping needs.

At least 256k memory required.

All the advantages of Cash Trader Upgrade plus many new features — navigation by initial letter as well as scrolling; varying size Groups a feature; Analyser included with Bank Reconciliation option, daily summary totals and other features designed to speed up both book-keeping and reporting £125

Special prices to existing cash Trader users as follows:

Quest Cash Trader users	£84
Upgrade customers	£45
Support Scheme Members	£40
Upgrade customers with CT Analyser	£20
Support Scheme members with CT Analyser	£15

PDQ PAYROLL

Takes the aches out of producing the weekly pay-packets. Pre-printed pay-slips available. Handles all aspects and reports for PAYE purposes

Annual Support Scheme

PDQ COPY

Not merely a fast copier; it can compare two volumes displaying file sizes and dates, copied highlighting files of the same name but of different sizes. You can copy all files, by Y/H from the directory, by (up to three) strings, in alpha or arrival sequence, pause before over-writing, format option, all for

PDQ-XREF

Provides a full glossary of user-defined key words in your SuperBASIC program. Every occurrence listed in alphabetical order with line numbers reference and type of user summary gives warnings of names used but not defined, or defined but not used. Typing errors immediately spotted

LAZARUS raises from the dead those text files lost on disc — grieve no more

SPEEDSCREEN speeds up your QL, window handling, scrolling, etc, in Psion and other programs

SPELLBOUND checks as you type

FILEBOUND (Turbo'd) checks old documents in;

SPELLBOUND at three words per second (minimum)

Together

FILEBOUND on its own £5 — send s.a.o. and blank disc/cartridge with remittance.

THE EDITOR SPECIAL EDITION printer driver not included, block-copy by line, character or column, many other improvements

..... £49.95



graFix

The printer driver you have been waiting for; now you can print from Front Page or Desk Top Publisher on any dot-matrix printer compatible with the QL. Very simple to install. Can rescale your graphics horizontally/vertically and it can print sideways

IMAGE D

A brand new three-dimensional drawing system with a difference — moves to any required perspective — displays four perspectives on demand — shaded options — option to combine a number of separate drawings — capable of designing commercial products and domestic items — create own 3D Logo

CASH TRADER UPGRADE

The Accounts program built for the small business. It provides a complete and easy-to-enter Accounting Routine with instant up-to-date Balance sheet, Profit & Loss A/C, Audit Trail, VAT Report and VAT Return as well as a Trial Balance.

Accountants us it — nuff said!

For new users	£80
Existing users (send boot cartridge)	£39
Annual Support Scheme	£15

CT ANALYSER

Compatible with Cash Trader Upgrade — this new module provides the means of producing analyses for management and audit purposes. Needs extra memory

ARCHIVE TUTOR — gives a full explanation of the mysteries of the Archive language

COMPARE — displays in character, HEX or decimal any differences between two supposedly identical files; each sector containing a mismatch shown on screen; reposition by number and magic panel alignment to continue the scan. Program line numbers can be ignored

SEdit is the easy way to create or edit your Archives screen; fast, coherent and with line graphics; full ink and paper colours

SCREENPRINT prints our your Archive Screen in three pages; as displayed, field lengths and co-ordinates; paper and ink colours ..

NAME & ADDRESS (extended memory only) gives a full database system, label printing, insert, amend, short and full listings — can be converted by you to suit your own special needs

(For ArchDEV/RTM users an RTM interface is available at an additional £18)

MAILMERGE de LUXE — The prince of Mailmerge systems designed for mail-shots, Club Membership Lists, etc. Write your Quill letter and use your Archive d/b to personalise both letter and label

RECOVER — Shed no more tears over your lost Archive database records; use RECOVER

ARCHIVE D/B ANALYSER scans your database records and reports full statistics on field usage

ArchDEV/RTM — The developed and run Time Module Archive package — version 2.38

TASKMASTER — Multi-tasking in comfort

DOMINATION — at last, time for leisure. THE game of economic and military strategy

DIY TO

Each month
Simon Goodwin
adds new
commands to
the QL
repertoire. This
time he puts the
line editor
under the
control of
SuperBasic
programmers.

Have you ever wanted to trap the QL INPUT statement to prevent long entries spoiling the rest of the display? Have you ever wished you could supply default text so that the user can edit it or just press Enter to confirm the whole line? That is this month's Toolkit project.

EDLINE\$ is a string function, as its name implies. It takes three parameters — a SuperBasic channel number the maximum length of the input in characters; and the text you want the user to be able to edit:

```
PRINT EDLINE$(channel%,42,  
"flp1—")
```

When you call the function the text appears on the screen with the cursor at the end. The left and right arrow keys can be used to move back and forth in the line and

characters can be deleted or inserted as usual for INPUT.

If the user tries to type more than the maximum number of characters the last one on the line will vanish and the cursor will move to the end of the line to emphasise what is happening. The up and down arrow keys also move the cursor to the end of the line. It is easy to change the code if you want to use them for

in the QL repertoire. In the next few months DIY Toolkit will take you on a practically-oriented tour of the QL system, explaining its philosophy as well as its function.

EDLINE\$ is listed in two ways. Listing one is the assembly code program, assembled using the HiSoft *DevPac*. You can type this text into your assembler if you want to customise the code. Listing two loads

“Sometimes it is difficult to see the wood for the trees.”



some other purpose, say to abort entry or to recall the original text. The code for EDLINE\$ is not much more than 100 lines long but it is fairly intricate. I chose deliberately to start my stint as toolkit tutor with this example because it makes heavy use of the QL ROM and illustrates many techniques I have learned in four years of bending Qdos to my will.

Favourite

QL ROM routines are documented in many books. My favourite is Andy Pennell's *Qdos Companion* but sometimes it is difficult to see the wood for the trees when you are presented with a list of every trick

the equivalent machine code from compact DATA statements — line 620 onwards — and saves it in a file which you can load as a resident procedure like this:

```
x=RESPR(350):LBYTES  
"file name",x:CALL x
```

The first part of listing two is a standard loader, used in every month's DIY Toolkit project. The DATA statements change from month to month.

In principle, EDLINE\$ is simple — a link between SuperBasic and the ROM 10.EDLIN routine which is used normally to edit Basic program lines. As Pennell notes in his book, “10.EDLIN is potentially very useful

but is tricky to use.” EDLINE\$ must do a good deal of work before and after calling 10.EDLIN. It uses no fewer than 10 ROM routines.

The three lines at START and the table labelled DEFINE are used only once. When you first load EDLINE\$ and CALL it these lines add the new function to SuperBasic. From that point the code always starts at the next label, EDLINE. That is the entry point whenever SuperBasic or a compiled task wants to use the new function.

Like most other SuperBasic commands, EDLINE\$ expects parameters. Interpreters and compilers evaluate parameters and build a table describing them before calling the command code. Each command checks its parameters by examining the table. It is very important to have this code correct; bad parameters can cause chaos if they are passed through to the operating system.

Three registers indicate the position of the parameter table. Register A6 points at the base address of all the information held by SuperBasic and can change at any time — SuperBasic moves up and down in RAM as other tasks grab or release memory. All addresses in the SuperBasic area are relative to the value in A6 so that the code still works when Basic moves.

Register A3 points beyond A6 at the start of the parameter table and A5 contains the offset from A6 to the end of the

OLKIT

table. Each entry in the table is eight bytes long and EDLINE needs three parameters, so the code starts by checking that the difference between A3 and A5 is 24.

The first two parameters are of the same type, integers or whole numbers, so EDLINE\$ processes them together, using the ROM routine CA.GTINT which fetches the values and stores them in an area called the Maths Stack, normally pointed to by A6 and A1.

SuperBasic uses simple channel numbers but internally Qdos requires you to identify channels with 32-bit values called 'channel IDs.' The next block of code looks up the channel number in the SuperBasic internal index of 'channel table' which consists of 40 bytes of information for each channel number. The code checks that the table covers that number and extracts the first four bytes of the appropriate entry, the channel ID.

Re-entrant

EDLINE\$ needs somewhere to store text as it is entered and edited. It is not a good idea to include a data area with the code as SuperBasic commands are meant to be re-entrant they should work properly even if several tasks try to use the code at once.

It would be annoying to compile two programs and find them using each other's text if both used EDLINE\$ at the same time. To circumvent this I have stored the text and other task-specific

information in the 'buffer' area which exists at the start of each SuperBasic task.

Room to edit

The current cursor position fits in the first eight bytes of the buffer and the rest of the buffer holds the text. The buffer size may vary; SuperBasic program editing tends to expand it

SuperBasic buffer. Qdos is not worried that the buffer is movable because the TRAP #4 instruction warns it that the next TRAP uses addresses expressed relative to A6.

Before the editor is called, EDLINE\$ sets the cursor position with SD.POS and prints the default text with 10.SSTRG. Finally it positions the cursor over

turning the error code to Basic.

The other likely error is 'buffer full,' code -5. If this happens EDLINE\$ discards the last character in the buffer and starts again with the rest of the text. That explains why I save the cursor position before starting to edit and print a blank at the end of the text.

If 10.EDLIN stops with a positive number in D0, no error can have occurred. EDLINE\$ checks the last character in the buffer to make sure that it was Enter. 10.EDLINE also lets you end a line with up or down arrow for convenience when editing Basic but EDLINE\$ starts again unless it finds Enter.

Before EDLINE\$ has finished it must move the edited text out of the buffer and back to the Maths Stack from whence it came. It is likely that the text has grown longer, so EDLINE\$ cannot assume that there will be room for it. The BV.CHRX routine checks that there is space for another D1 bytes on the maths stack, expanding it if need be.

Finally, EDLINE\$ uses the routine which moved the text into the buffer to move it back again. It returns to Basic with zero in D0, to indicate that everything went well, and one in D4 to show that the result is a string.

Apology: due to circumstances beyond our control, the listing which should accompany this article has been omitted and will appear next month.

"It would be annoying to compile two programs and find them using each other's text."



and it includes all free memory inside Turbo and Supercharge tasks but there is always room to edit at least 118 characters.

EDLINE\$ gives a 'buffer full' error if you specify a maximum input length which would overflow the buffer. It complains 'bad parameter' if the default text is longer than the maximum input allowed.

Before EDLINE\$ can let the ROM edit the text it records the current screen position so that it can move back there if it needs to start again, say if the buffer overflows. The routine labelled WHERE uses the system call SD.CHENQ to read the cursor position into the start of the

a blank character at the end of the line with 10.SBYTE to print the blank and SD.PCOL to move the cursor back a place. That keeps the screen tidy even if the editing operation goes wrong.

Ready to call

At last we are ready to call 10.EDLIN which allows the line to be edited. Several things can stop editing. If the user types Control Space in SuperBasic, 10.EDLIN gives a 'not complete' error, code -1. Early QL ROMs could leave the cursor on at this point, so EDLINE\$ makes sure that it is turned off, with SD.CURS, before re-

The QJUMP Pointer Interface

The QJUMP Pointer Interface is the core of our development plans for the QL. This is the new standard in multi-windowing multi-tasking environments. It gives you mouse, cursor key or single keystroke control of your QL. Only QJUMP brings you a completely new environment for your expanded QL, providing non-destructive windows for any well written program (and most badly written ones too!) no menus to set up, no silly limitations, just CTRL C to switch between programs. This is the way forward for QL users, while most software will work with it, the best of the new software coming will not work without it. The QJUMP Pointer Interface makes your QL really work!!

QJUMP Pointer Interface Products

GRAM is the RAM based utilities package designed to get the best out of any QL with at least 256 kbytes of additional RAM. GRAM is the starting point for any Pointer Interface system. The GRAM menus pop up at the touch of a key to provide instant access control of your QL.

The FILES menu can View, Execute, Copy, Backup, Move and Delete files using directories sorted on Time, Date, Name, Length or Usage. The PRINT menu can SPOOL multiple copies of any number of files, with or without page throws at the end. The JOBS menu gives you control over all the jobs in your QL, while the CHANNELS menu allows you to find which jobs are using which devices or files.

It also includes a comprehensive Window and Screen Dump and a superfast dual mode RAM disk and dynamic printer buffer. English or Deutsch.

GRAM £29.90 (£26.00 export) Available on Mdv/3.5/5.25

QIMI is the Internal Mouse Interface from QJUMP. The QJUMP Pointer Interface automatically detects the Internal Mouse Interface so no changes are needed for any programs which use the QJUMP Pointer Interface. QIMI is the only mouse interface which leaves all of the QL's expansion facilities free for other peripherals. QIMI fits right inside the QL and is supplied with tools. QIMI is ATARI mouse compatible.

Battery backup is now available for the QL's Real Time Clock. Not just the simple battery as supplied by others, that was too unreliable for Sinclair to give away. This incorporates a turn-on glitch suppression circuit which has been shown to improve the reliability of "bad" clocks by more than 50 times. Only available with QIMI or as an upgrade to QIMI.

		+RTC
QIMI	£29.90 (£26.00 export)	£39.90 (£34.70 export)
QIMI+mouse	£69.90 (£60.80 export)	£79.90 (£69.50 export)
GRAM+QIMI	£54.90 (£47.75 export)	£64.90 (£56.50 export)
GRAM+QIMI+mouse	£89.90 (£78.00 export)	£99.90 (£86.35 export)
RTC upgrade for QIMI		£19.95 (£17.35 export)

QTPP is a versatile typing checker for all users of the QJUMP Pointer Interface. Check as you type, or run your (almost) finished document through it as a final check. Pop-up windows advise you of unknown words, suggest correct spellings given partial words, and warn you about difficult words (do they get easier with practise or practice?). You can even use it from within your own programs, for instance to analyse documents for consistent mis-spellings or range of vocabulary.

QTPP is supplied with a 40,000 word English dictionary, which you can extend or edit. Other language and specialist dictionaries can be created to your own requirements using the dictionary editor supplied with QTPP.

QTPP needs the QJUMP Pointer Interface supplied with GRAM.

Until 31 December 1987 Only!		
QTPP	£19.95 (£17.35 export)	Available on Mdv/3.5/5.25
1988 price	£29.90 (£26.00 export)	Available on Mdv/3.5/5.25

QPTR is the complete QJUMP Pointer Interface documentation and Pointer and Window Manager toolkit. It includes SuperBASIC and assembly language interfaces, design tools, examples and the latest Pointer Interface and Window Manager. Now you can join the QJUMP Pointer Interface bandwagon in SuperBASIC or assembly language.

QPTR £29.90 (£26.00 export) Available on Mdv/3.5/5.25

Watch this space for more QJUMP Pointer Interface products from QJUMP.

Other QJUMP Products

QJUMP SuperToolkit II. The "clear market leader" (QL World) in Toolkit ROMs. Why buy separate keydefine programs, job control utilities, default directory utilities etc. when QTK II has them all and more? "Jedem ernsthaften QL-Anwender zu empfehlen" (Computer Kontakt).

QTK II £29.90 (£26.00 export) On ROM/Mdv/3.5/5.25

QMON II Monitor/Debugger with single line assembler/disassembler, normal as well as conditional breakpoints, trace and backtrace, search, macro commands, transient windows and full window memory editor and much much more. "Das absolute Spitzenprodukt" (68000er), can we say more?

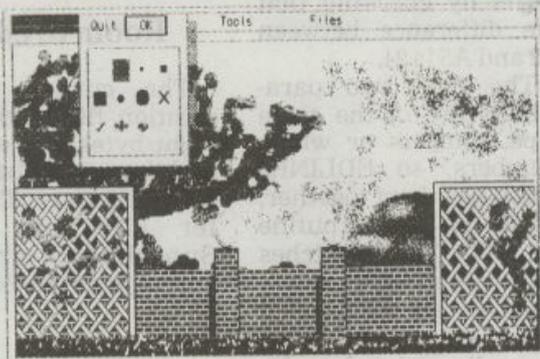
QMON II £19.95 (£17.35 export) Available on Mdv/3.5/5.25

QEP III is the "Rolls Royce" (Sinclair User) of EPROM programmers. Many QLs have been bought just to use QEP III. Programs EPROMs 2716 to 27512, NMOS or CMOS. Features high and low voltage verification. Too many facilities to describe here, it puts £1000 EPROM programmers to shame.

QEP III £129.95 (£113.00 export)

QJUMP can supply floppy disk drivers for those who have been left with unsupported floppy disk systems. Available for Medic (gets round many of the faults on some of the early Medic disk drives) and MicroPeripherals, version 3 or version 5 (provides compatibility with the rest of the QL world and improves performance).

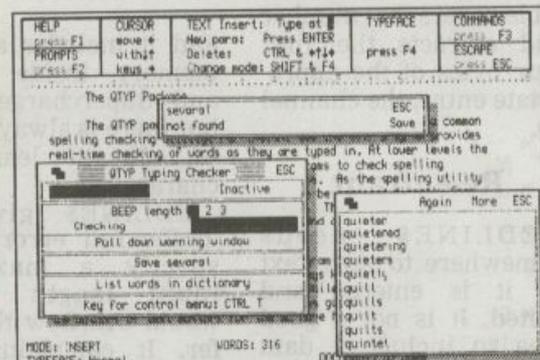
QFLP £14.95 (£13.00 export) for Medic, MP ver3 and ver5



The PAINT demonstration program FREE with QPTR



PAINT and GRAM showing FILES, JOBS and DUMP menus



Quill with QTPP warning, control and list menus

Please add £1.00 post and packing (UK) or £2.00 (Europe). Payment by UK cheque or PO; direct transfer to Barclays Bank, Benet Street, Cambridge. Code 20-17-19, account 30744557; Access / Mastercard / Eurocard / Visa; Eurocheque in Pounds Sterling (£200) with the card number on the reverse; International Girocheque in Pounds Sterling. Personal cheques drawn on a non-UK bank should be in local currency and should include an additional £3 to cover the bank negotiation fee.

QJUMP

24 King Street
Rampton
Cambs
CB4 4QD
Tel 095 4 50800

A MERRY CHRISTMAS FROM SANDY QL SPECIALS

— NEW — NEW — NEW — QL*MULTI — NEW — NEW — NEW —

**A BRILLIANT NEW DESIGN GIVES THE QL USER
MULTI DISK FORMAT CAPABILITY!**

QL*MULTI has a 3.5" double sided double density 1 mbyte disk drive combined with a 5.25" double sided double density 1 mbyte 80/40 track drive in one small casing with integral super smooth power supply, mains fuse and front panel mounted illuminated power switch — comes complete with cables to plug in and run with any disk interface.

Built to the usual sandy disk drive standards of high quality with innovative design and a one year guarantee — and priced at less than many ordinary disk drives!

— NEW — NEW — NEW — QL*MULTI — NEW — NEW — NEW —

— HARDWARE —

SINCLAIR QL 128K	120.00	TATUNG 12" COLOUR MONITOR	159.00
SINCLAIR QL 640K	199.00	MICRO VITEC DQ3 14" COLOUR MONITOR	£254.00
INTERNAL 512K RAM CARD	85.00	MICRO VITEC MQ3 14" COLOUR MONITOR	£263.00
THRU-CON 512K RAM CARD	90.00	PHILIPS 12" GREEN MONITOR	84.00
SUPERDISK INTERFACE	85.00	SCHON KEYBOARD	54.75
SUPERQBOARD OK RAM	110.00	CITIZEN LSP10 PRINTER	170.00
512K RAM	189.00	PARALLEL PRINTER CABLE	8.50
SQB + MOUSE COMPLETE OK	190.00	10 VERBATIM 3.5" DSDD DISKS	19.50
512K	276.00	25 VERBATIM 3.5" DSDD BULK	34.70
SQB RAM UPGRADE 512K	90.00	50 VERBATIM 3.5" DSDD BULK	66.00
QIMI INTERNAL MOUSE I/F	29.50	MICRODRIVE 4 PACK	6.99
QIMI + QRAM	54.50	MICRODRIVES 10 BULK	16.65
QIMI + MOUSE	68.00	QEP III EPROM PROGRAMMER	125.00
QIMI + MOUSE + QRAM	88.00	QEP EPROM CARTRIDGE	5.99
NEC SINGLE 3.5 DISK DRIVE	125.00	MOUSE MAT ANTI/STATIC	8.50
NEC DUAL 3.5 DISK DRIVE	190.00	QL DUST COVER	5.00
MITSUBISHI SINGLE	100.00	MDV STORAGE BOX	5.00
BARE NEC 3.5 DSDD DRIVE	80.00	QL POWER SUPPLY	25.00
BARE MITSUBISHI 3.5 DSDD DRIVE	60.00	QL JOYSTIC	6.99
QLMULTI 3.5/5.25 COMBINED DRIVE	209.00	40 x 3.5 LOCKABLE DISK BOX	12.00
SERIAL PORT CABLES	4.50		
SERIAL PRINTER CABLES		— SOFTWARE —	
JOYSTICK PORT CABLES	5.50	GRAM FROM QJUMP	29.90
MONITOR CABLES		QL : CP-M EMULATOR	44.95
PHILIPS 8833 14" COLOUR MONITOR	276.00	RAM DISK	7.50
		SPEED SCREEN	20.00

★ ★ QL SPARES AND KEYBOARD MEMBRANES ALWAYS IN STOCK ★ ★

SPECIAL OFFER — SUPERDISK INTERFACE + SINGLE DISK DRIVE ONLY £180.00

SANDY (UK) PCP LTD

Unit 33, Murdock Road, Manton Lane, Bedford MK41 7PQ

Tel: (0234) 219814 Fax: (0234) 270133

VISA

Prices include VAT & carriage
Export Enquiries Welcome




TO ALL QL READERS!

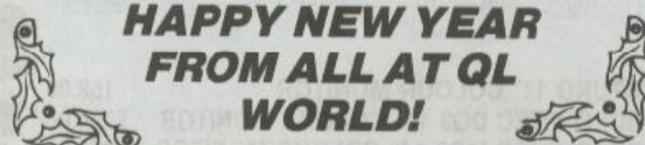
Welcome to our new FOCUS SALESPPOINT where each month we intend to bring you up to date special offers on high quality products for your computer, your office and YOU at the best possible prices.

PRIZE IDEAS

This is YOUR Focus Salespoint, so if you have any ideas about the kind of product you would like to see offered on these pages please let us know! Just pop a note into the envelope with your order form. There's a special prize for the best idea!

QL GOLD MEMBERS

ALL GOLD Members ordering from this month's coupon will be entered into a free draw. The winner will receive a bumper bundle of QL goodies worth £100! Don't forget to fill in your GOLD number. The competition closes 15th January and the winner's name will be published in the next available issue.


**HAPPY NEW YEAR
FROM ALL AT QL
WORLD!**

£6.50

**AT LAST!
THE QL SOFTWARE
DIRECTORY FROM D.J.W.**

In response to hundreds of enquiries from Britain and Overseas, there is now a definitive list of all the QL Software on the market and names and addresses of where you can buy it.

QL World, in conjunction with D.J.W. are offering this list on a microdrive containing quill files. There is also an update service available so that every so often you can send your old microdrive to D.J.W. and swap it for a brand new updated one. The price includes post & packing.

**1.2 KEYBOARD
CONTROLLER
CHIP**

Complete with full instructions, easy to fit, this little chip gets rid of the annoyance caused by "roll over effect" which means that when you accidentally touch an adjacent key, your target letter prints twice. If you have found this a problem in the past, then the keyboard controller chip is just what you need.

£7.50 (including post & packing)

This month we bring you three handy attachments for your QL from A.M.T. All three have attributes in common. They are all simple and all designed to make life easier, which can't be bad!

THE THINGI (rrp £7.95) - creates working space out of thin air!

A scientifically designed copy holder which will take single sheets or bulky documents and is completely adjustable to suit your needs. The THINGI can improve accuracy and typing speed dramatically and virtually eliminates stiff necks and eye strain. Velcro fastenings make it easy to attach and remove and it virtually indestructible in normal use.

Special Readers' Price only £5.95

TRIPLE-S (rrp £19.95) - stops your print-outs getting in a tangle!

A universal device that **STORES** listing paper, **SEPARATES** the incoming and outgoing paper, avoiding those annoying tangles, then **STACKS** the finished print-outs. Especially useful for long print runs which can be undertaken with the minimum of attention **TRIPLE-S** is a totally new invention made of sturdy 3mm perspex.

Special Readers' Price only £15.95

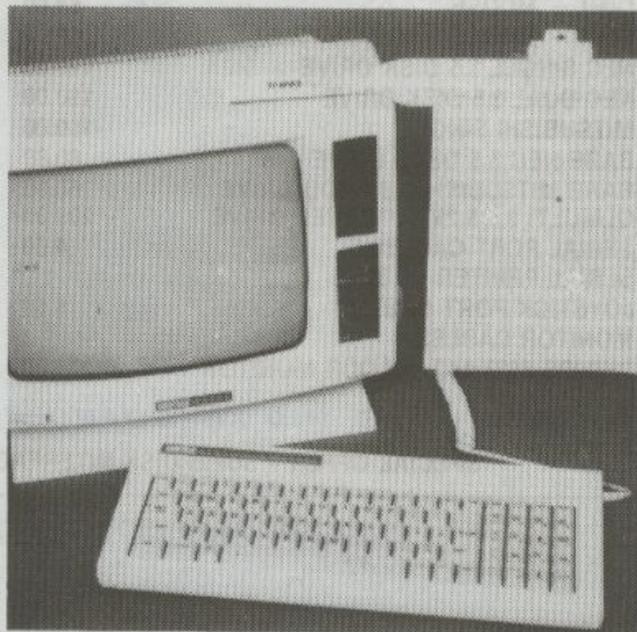
THE PLONKER BOX (rrp £4.99) - holds your working discs while not in use.

This little box will stick anywhere on your computer or wall and holds up to four discs at once so you don't have to scabble around looking for them!

Special Readers' Price only £3.99

OVERSEAS READERS ADD £1.00 extra for postage.

**STRESS FREE
FROM C. P. M.**



PDQL Combinations

Each of the following programs work beautifully together and we are offering readers a chance to buy any TWO at a special price.



PLUS XMAS SPECIAL - DOMINATION the ultimate in Strategy Games - an addictive test of your economic and military skills for up to four players any or all of whom can be the computer. Special price £8 including P&P.

COMPARE scans 2 files displayed one above the other and highlights all differences. The unique magic panel allows you to realign and continue.

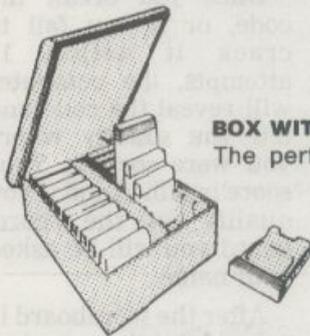
PDQL-COPY the most versatile copying program on the QL scene, provides instant reports to screen or printer on comparative sizes and copy dates from two discs or cartridges as well as other features.

X-REF is indispensable when writing large programs. Provides a full cross reference index of all keywords from your super-basic program and identifies problems caused by mis-typing, undefined assignment or unassigned definition.

COMPARE / COPY £15
COMPARE / X-REF £19
X-REF / COPY £21

ALL PROGRAMS ARE THOR COMPATIBLE.

NEW YEAR OFFERS



BOX WITH TEN CARTRIDGES £20.
 The perfect New Year's Box for QL owners!



GOLDEN OLDIES £10

A compilation of QL games for fun over the holiday. Three games — Meteor Storm, QL Caverns and Diffusion which normally will cost you £24.95.



DUST COVERS £4.60

Fully bound made from high quality silk vinyl.

ORDER FORM QL WORLD (Jan)

Please tick the items you require from the list below and allow 28 days for delivery.

NAME

ADDRESS

.....

Postcode

Keyboard controller	£ 7.50	<input type="checkbox"/>
Software Directory	£ 6.50	<input type="checkbox"/>
Golden Oldies	£10.00	<input type="checkbox"/>
Cartridge Box	£20.00	<input type="checkbox"/>
QL Dust Covers	£ 4.60	<input type="checkbox"/>
Thingi	£ 5.95	<input type="checkbox"/>
Triple-S	£15.95	<input type="checkbox"/>
Plonker Box	£ 3.99	<input type="checkbox"/>
Compare/Copy	£15.00	<input type="checkbox"/>
Compare/X-Ref	£19.00	<input type="checkbox"/>
X-Ref/Copy	£21.00	<input type="checkbox"/>
Domination	£ 8.00	<input type="checkbox"/>
Subscription (U.K.)	£15.00	<input type="checkbox"/>
Overseas	£30.00	<input type="checkbox"/>

TOTAL ORDER £

Payment is by (please tick)

Cheque Postal Access Visa

Made payable to Focus Magazines Ltd

My credit: Card number is

.....

Expiry Date.....

Send this form together with payment to:

Focus Salespoint
Focus Magazines
Greencoat House
Francis Street
London SW1P 1DG

TELEPHONE ORDERS
 01-834 1717
 Anne Arnold

THE

P + R = O G < S

If you have a program that is worthy of consideration, send it to 'The Progs', Sinclair QL World, Greencoat House, Francis Street, London SW1P 1DG. We pay for everything published at the usual page rates — £80 per thousand words.

Program of the month

SPEEDMIND by WILLIAM HENDERSON

Speedmind is based on the old Master Mind game with coloured pegs, where you try to break your opponent's code in the least number of turns. You have only 12 attempts at breaking the code and, if that is not taxing enough, I have incorporated a counter which will enter your guess — whether you are ready or not — after a number of seconds.

The program consists of two screens. The first is a menu for editing the game, so that you can change the number of colours used from three to eight; the maximum number of times a colour could appear in a code, e.g. if this is 1, colours

will not be repeated; the amount of time you have to enter your guess — from five to 120 seconds.

The counter may be turned off by reducing the time to zero. Use the up and down arrows to move around the menu, the left and right arrows to change variables, and the space bar to start a new game.

The layout for the game is: left: a menu of colours from which the code is made; note that not all the colours need be used. Bottom left: the counter. Right: the 12 spaces where you enter your guess. Far right: the corresponding information telling you how close you are to the original code. Again, use the up and down arrows

to select a colour, left and right arrows to position the colour, and ENTER when you are ready to submit your guess. It is possible to change your mind and swap colours so long as you do it before you press ENTER.

The computer will then award you with a number of Ps and Cs — a P for every peg placed which is the same colour and in exactly the same position as one of the code pegs; a C for any other pegs which are the same colour as one of the code pegs but in the incorrect position. If you are awarded PCC you have three pegs which are the correct colour, one of which is in the correct place.

Once you break the code, or if you fail to crack it within 12 attempts, the computer will reveal the code and tell you exactly where you were correct. Your score is tallied and if you qualify for the scoreboard you will be asked your name.

After the scoreboard is printed, hit the spacebar to start again or ESC to edit the game.

There are a possible 32,768 combinations if you use all eight colours and set the maximum number of appearances to five, so you had better get cracking. Type LRUN MDV1 SPEED_MIND. Alternatively — the program will automatically BOOT when the computer is reset.

```

100 REMark **      SPEED MIND      **
110 REMark ** by William Henderson **
120 :
130 set_variables:edit_game:play
140 :
150 DEFine PROCedure play
160 set_clock
170 screen
180 combination
190 REPeat loop1
200 type
210 check
220 alter
230 END REPeat loop1
240 END DEFine play
250 :
260 DEFine PROCedure set_variables
270 MODE B
280 SCALE 100,0,0
290 DIM colour$(8,7),sequ(5),guess(5),temp(8),store$(12,5),board$(8,19),set$(3,1
7),val(3),many(8)

```



PROGS

```
300 RESTORE 2780
310 FOR fu=1 TO 3:READ set*(fu):READ val(fu)
320 FOR a=1 TO 8:board*(a)(1 TO 19)=a & FILL*( " ",17) & 0
330 OPEN #4,con,512:256:0:32:PAPER #4,0:CLS #4
340 WINDOW #2,448,224,33,16
350 PAPER #2,2:CLS #2
360 WINDOW #1,448,209,37,47
370 OPEN #5,scr,448:192:33:42
380 OPEN #6,scr,448:163:33:240
390 shadow=1:last=1
400 wind 4,400,25,56,5,1,6
410 CSIZE #4,1,1:diletter 4,"*4!*? SPEED HIND !?4!*",22,3,6,0
420 END DEFINE
430 :
440 DEFINE PROCEDURE edit_game
450 shadow=1:wind 4,350,74,81,55,3,6
460 CSIZE #4,2,0:diletter 4,"GAME TYPE",115,5,6,0:beem=0
470 FOR fu=1 TO 3
480 diletter 4,set*(fu),32,fu*14+12,7,0
490 diletter 4,val(fu),309-LEN(val(fu))+11,fu*14+12,5,0
500 END FOR fu
510 IF val(3)=0 THEN beem=1:OVER #4,0:CURSOR #4,300-LEN(val(3))+11,54:PRINT #4,F
ILL*( " ",LEN(val(3)))+2:diletter 4,"OFF",278,54,5,0
520 fu=1:OVER #4,1:INK #2:CURSOR #4,32,fu*14+12:PRINT #4,set*(fu)
530 wind 4,300,60,106,150,3,6
540 diletter 4,"AFTER GAME PRESS ",5,5,6,0
550 diletter 4," space for new game",5,26,7,0
560 diletter 4," escape to edit game",5,40,7,0
570 WINDOW #4,350,74,8,55:OVER #4,1
580 INK #4,3:fu=1:ofu=ofu:no=1
590 REPEAT loop2
600 key#=INKEY#(-1)
610 co=CODE(key#)
620 SELECT ON co
630 =209:IF fu=1 THEN fu=fu-1
640 =216:IF fu=3 THEN fu=fu+1
650 =10,32:PAPER #5,2:CLS #5:PAPER #6,0:CLS #6:EXIT loop2
660 =192:val(3)=val(fu)-1:no=0:IF fu=3 THEN val(4)=val(3)+4
670 =200:val(fu)=val(fu)+1:no=0:IF fu=3 THEN val(3)=val(3)+4
680 END SELECT
690 IF ofu=fu THEN GO TO 720
700 OVER #4,1:INK #4,7:CURSOR #4,34,ofu*14+13:PRINT #4,set*(fu)
710 INK #4,2:CURSOR #4,34,fu*14+13:PRINT #4,set*(fu)
720 IF val(2)<1 THEN val(2)=1:no=1
730 IF val(3)=0 AND NOT(beem) THEN beem=1:OVER #4,0:CURSOR #4,300-LEN(val(3))+11
,54:PRINT #4,FILL*( " ",LEN(val(3))+2):diletter 4,"OFF",278,55,5,0:no=1
740 IF val(3)>0 THEN beem=0
750 IF val(3)<0 THEN val(3)=0:no=1
760 IF val(1)>8 THEN val(1)=8:no=1
770 IF val(3)>120 THEN val(3)=120:no=1
780 IF val(2)>5 THEN val(2)=5:no=1
790 IF val(1)<3 THEN val(1)=3:no=1
800 IF no THEN GO TO 830
810 OVER #4,0:CURSOR #4,289-LEN(val(fu))+11,fu*14+12:PRINT #4,FILL*( " ",LEN(val(f
u))+3):no=1
820 diletter 4,val(fu),311-LEN(val(fu))+11,fu*14+13,5,0
830 ofu=fu
840 END REPEAT loop2
850 END DEFINE
860 :
870 DEFINE PROCEDURE set_clock
880 max=5:IF val(1)=val(2)<5 THEN max=val(1)+val(2)
890 time#="1987 Mar 24 00:"IF val(3)>0 THEN time#="anything"
900 min#val(3) DIV 60:sec#val(3) MOD 60
910 min#min:sec#sec
920 IF LEN(min#)=1 THEN min#="0" & min#
930 IF LEN(sec#)=1 THEN sec#="0" & sec#
940 time#time# & min# & min# & " " & sec#
950 RESTORE 2790
960 FOR a=1 TO 12:store*(a)(1 TO 5)=FILL*( "a",a)
970 row=0:place=7:oplace=1:pcnum=0:cnus=0
980 END DEFINE
990 :
1000 DEFINE PROCEDURE screen
1010 shadow=1
1020 col
1030 shadow=0:FOR t=12 TO 1 STEP -1:thing i:END FOR t
1040 END DEFINE
1050 :
1060 DEFINE PROCEDURE col
1070 SCALE 100,0,0
1080 wind 4,47,18,80,40:170,1,6
1090 wind 4,117,150,45,65,1,6
1100 CSIZE #4,0,0
1110 diletter 4,"COLOURS",13,5,6,0
1120 FOR r=1 TO 8:val(1):READ 1#
1130 FOR a=B-val(1) TO 7
1140 INK #4,a:FILL #4,1
1150 CIRCLE #4,5,a*10+10,3,5
1160 INK #4,0:FILL #4,0
1170 CIRCLE #4,5,a*10+10,3,5
1180 READ col#colour*(a):cn1#1:INK #4,7
1190 diletter 4,col#,22,129-a*15,7,0
1200 END FOR a
1210 END DEFINE
1220 :
1230 DEFINE PROCEDURE thing(dfg)
1240 wind 4,36,15,190,29+17,dfg,6
1250 t#13-t:IF t>3 THEN t# " " & t#
1260 diletter 4,t#,3,2,7,0
1270 wind 4,120,15,234,29+17,dfg,6
1280 wind 4,105,15,362,29+17,dfg,6
1290 END DEFINE
1300 :
1310 DEFINE PROCEDURE bead
1320 SCALE 208,0,0
1330 x=column*14,8+164-14,8:y=row*17-2
1340 FILL 1:INK place:CIRCLE x,y,5:FILL 0:INK 0:CIRCLE x,y,5
1350 END DEFINE
1360 :
1370 DEFINE PROCEDURE combination
1380 FOR r=1 TO 8:many(r)=0
1390 FOR count=1 TO max
1400 num=RND(9-val(1) TO 8)
1410 IF many(num)=val(2) THEN GO TO 1400
1420 sequ(count)=num:many(num)=many(num)+1
1430 END FOR count
1440 END DEFINE
1450 :
1460 DEFINE PROCEDURE check
1470 p=0:c=0
1480 FOR count=9-val(1) TO 8:temp(count)=0
1490 FOR count=1 TO max
1500 IF guess(count)=sequ(count) THEN p=p+1:store*(row)(count)=p:temp(guess(co
unt))=1:guess(count)
1510 END FOR count
1520 IF p=max THEN done
1530 FOR count=1 TO 5
1540 FOR iter=1 TO 5
1550 IF guess(count)=sequ(iter) AND temp(guess(count))=0 THEN cnc+1:temp(guess
(count))=1:store*(row)(count)="c"cnus=cnus+1
1560 END FOR iter
1570 END FOR count
1580 END DEFINE
1590 :
1600 DEFINE PROCEDURE alter
1610 CSIZE 0,0
1620 status#="p" & p & " c" & c
1630 INK 7:PAPER 1:diletter 1,status#,340,205-row*17,5,0
1640 END DEFINE
1650 :
1660 DEFINE PROCEDURE done
1670 nscore=(13-row)*100+pnus*5+cnus
1680 INK #0,7
1690 CSIZE 3,0
1700 going#row:IF row=13 THEN going=12
1710 FOR a=1 TO going
1720 FOR h=1 TO max:IF store*(a)(h)=" " THEN store*(a)(h)="a"
1730 CURSOR 332,205-a*17:PRINT " ":CURSOR 332,206-a*17:PRINT*
1740 diletter 1,store*(a)(1 TO max),343,7,205-a*17,5,0
1750 END FOR a
1760 WINDOW #4,117,150,45,65:BORDER #4,1,6:PAPER #4,1
1770 FOR t=1 TO 15:val(1)+22:SCROLL #4,-1
1780 diletter 4,"THE",36,6,6,0
1790 diletter 4,"CODE WAS",7,20,6,0
1800 FOR a=1 TO max
1810 row#1:column=-9,67:oplace=sequ(a)-1
1820 bead
1830 END FOR a
1840 diletter 4,"DU",36,62,6,0
1850 diletter 4,"SCORE",25,76,6,0
1860 diletter 4,nscore,47+5,5-LEN(nscore)+5,5,90,7,0
1870 small=board*(15 TO 19):IF 10*nscore<small THEN score_board
1880 diletter 4,"NAME?",25,118,6,0
1890 INK #4,7:CURSOR 25,118:INPUT #4,name#
1900 IF name#="" THEN name#="ANONYMOUS"
1910 sort:score_board
1920 END DEFINE
1930 :
1940 DEFINE PROCEDURE type
1950 SDATE 1987,1,24,0,0,0
1960 odate#="rubbish"
1970 CSIZE 2,0
1980 IF val(3)=0 THEN diletter 1,"OFF",53,29+160,4,0
1990 FOR q=1 TO 5:guess(q)=B-val(1)
2000 column=1:row=row+1:IF row=13 THEN done
2010 guess(column)=place+1:bead
2020 t=13-row
2030 WINDOW #4,1,17,150,45,65
2040 PAPER 1:OVER #4,1
2050 REPEAT loop
2060 INK #4,7:CURSOR #4,24,130-oplace+15:PRINT #4,colour*(oplace+1)
2070 INK #4,3:CURSOR #4,24,130-oplace+15:PRINT #4,colour*(oplace+1)
2080 oplace=place
2090 REPEAT here
2100 key#=INKEY#(0)
2110 at#DATE#10:ate#(16 TO 17):mi#10:io#ate#(19 TO 20):se#10:il#val(3)-
mi#6:se:il#ate#1
2120 IF val(3)>0 THEN IF at#>odate#CURSOR 55,28+160:OVER 0:PAPER 1:PRINT* "
diletter 1,il#ate#,70-LEN(il#ate#)+6,28+160,4,0:odate#ate#1:IF DATE#time# THEN BEEP
2130 IF DATE#time# THEN OVER 0:il#ate#="0":PAPER 1:CURSOR 55,28+160:PRINT* "di
letter 1,il#ate#,70-LEN(il#ate#)+6,28+160,4,0:odate#ate#1:DEEP 2000,11,33,1,1,6,6,6:
EXIT loop
2140 IF key#="" THEN END REPEAT here
2150 co=CODE(key#)
2160 SELECT ON co
2170 =27:edit_game:play
2180 =21:oplace=place+1
2190 =20:oplace=place+1
2200 =10:EXIT loop
2210 =192:column=column-1:IF column=0 THEN column=max
2220 =200:column=column+1:IF column=max+1 THEN column=1
2230 END SELECT
2240 IF (co=192 OR co=200) AND guess(column)>B-val(1) THEN place=guess(column)-
1
2250 IF place=7-val(1) THEN place=7
2260 IF place=8 THEN place=B-val(1)
2270 guess(column)=place+1:bead
2280 END REPEAT loop
2290 END DEFINE
2300 :
2310 DEFINE PROCEDURE wind(chw,lw,bw,xw,yw,pcw,bcw)
2320 PAPER #chw,0
2330 WINDOW #chw,lw,bw,xw+6,yw+6
2340 IF NOT(shadow) THEN WINDOW #chw,8,bw+2,xw+1,yw+6
2350 CLS #chw
2360 PAPER #chw,0:WINDOW #chw,lw+4,bw+4,xw-2,yw-2:CLS #chw
2370 PAPER #chw,pcw
2380 WINDOW #chw,lw,bw,xw,yw
2390 BORDER #chw,1,bcw
2400 CLS #chw
2410 END DEFINE
2420 :
2430 DEFINE PROCEDURE diletter(ch,pr#,xp1,yp1,cp1,cp2)
2440 OVER #ch,1
2450 FOR count=-1.8 TO 2.4 STEP 2:FOR iter=-1 TO 1 STEP 2:INK #ch,cp2:CURSOR #ch
,xp1+count,yp1+iter:PRINT #ch,pr#END FOR iter:END FOR count
2460 INK #ch,cp1:CURSOR #ch,xp1,yp1:PRINT #ch,pr#
2470 OVER #ch,0
2480 END DEFINE
2490 :
2500 DEFINE PROCEDURE score_board
2510 shadow=1:wind 4,236,140,210,76,3,6
2520 diletter 4,"SCOREBOARD",61,5,6,0
2530 FOR a=1 TO last-1
2540 name#board*(a)(1 TO 18)
2550 diletter 4,name#,7,a*14+10,5,0
2560 END FOR a
2570 REPEAT inp
2580 key#=INKEY#(-1)
2590 IF key#="" THEN play
2600 IF CODE(key#)=27 THEN edit_game:play
2610 END REPEAT inp
2620 END DEFINE
2630 :
2640 DEFINE PROCEDURE sort
2650 FOR a=1 TO last
2660 th=board*(a)(15 TO 19):IF 10*nscore>th THEN
2670 FOR b=7 TO a STEP -1
2680 board*(b)(15 TO 19)=board*(b)(15 TO 19)
2690 END FOR b
2700 GO TO 2740
2710 ELBE
2720 END FOR a
2730 END IF
2740 IF last<9 THEN last=last+1
2750 board*(a)(15 TO 19)=name#board*(a)(19-LEN(nscore) TO 18)+nscore
2760 END DEFINE
2770 :
2780 DATA "No. COLOURS",8,"Max. APPEARANCES",1,"COUNTER (seconds)",60
2790 DATA "Black", "Blue", "Red", "Magenta", "Green", "Cyan", "Yellow", "White"
```

LANSCETAZET

HARDWARE

ABC Electronic
016 49 521 8980881

Care Electronics
0923 67102

Chromagraphica
04012 4699

C.S.T.
0438 352150

Data-Skip (Holland)
1820-20581

Digital Precision
01 527 5493
Disks, interfaces, drives, keyboards, RAM expansions

Tony Firshman Services
01 724 9053

Miracle Systems
0272 603871

QJump
0954 50800

Sandy (U.K.) P.C.P.
0234 219814

Schon Keyboards
04865 3836

Strong Computer Systems
0267 231 246

T.K. Computerware
0303 812052

Tandata
06845 68421

Transform Ltd
089 283 4783

Q.L. World Readers Offers
01 834 1717

Wave
0229 44753/29109

SERVICES

Adman Services
0952 55895

PM Engineering
0480 61394

Suredata
01-902 3218

SOFTWARE

Athene Consultants
0329 263083

Best Malt Ltd
09946 370

Byteback
0636 79097

Complex Data Systems (UK) Ltd
0635 68586

Compware
0270 582301
Task Swapper (Version 2), Computer One Professional Monitor, Mega Toolbox, Expert System Shell and others

CPC
0772 555034

Datanet Systems
PO Box 121 Luton Beds

Digitrix
0326 40529

Digital Precision
01 527 5493
Turbo Basic compiler, desktop publisher, Editor, Eye-Q graphics, Sprite generator, Super forth, Better basic, Professional and super Astrologer, Media Manager, Supercharge, Blocklands, Droidzone, Arcadia, Revers, Backgammon, Master Bridge Tutor, CPM emulator

DJW Software
0256 881701

Eidersoft QL
089 283 2552
The mouse and everything else you need for the QL

Escape Software
01 478 8281

Intek Software
01 500 8534

Gap Software
01 552 5452

Javid Systems
041 552 0759

Liberation Software
01 546 7795

Maxtronics R & D Ltd (New Zealand)
63-3 325-546 or CHI SOFT (London)
01 458 7249

Metacomco
0272 428781

Micro Anvika
01 636 2547/580 6382

Microdeal
0726 68020

MPC Software
0602 520106-455114

Okoloko Engineering Software (USA)
313 485 1926

P.D.Q.L.
021 233 3042
General business and Archive Utilities and applications

Pyramide S/W
089 283 2952
The Best Games and lots more!

Quantum Computing (USA)
201 328 8846

Sector S/W
0772 454328
QL and 288 software and hardware

SD Microsystems
0462 675106
Our range of low cost business and practical programmes includes small traders pack

Smiling Software
061 427 5245

Talent Computer Systems
041 552 2118

TK Computer Systems
093 924 621

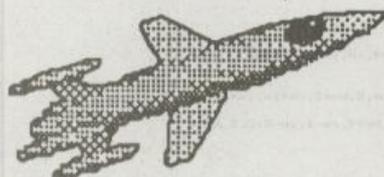
WD Software
0534 81392

Q.L. World Reader Offers
01-834 1717

Zeataline Projects Ltd
0522 792378

DEATHSTRIKE

by Damon Chaplin



An Exciting 'Scramble' game. Your task is to manoeuvre your spaceship through alien territory, gaining points by hitting various targets with bombs or missiles.

Your final objective is to destroy the mothership in level 7 with an accurately placed bomb. Levels 1 - 7 are then repeated, but become more difficult.

Various hazards are encountered during the mission. Rockets fire up from the ground, UFOs bounce up and down and meteors shoot across the screen.

A fast, addictive game with excellent graphics. Runs with joystick or cursor keys.

£14.95 Plus 50p P&P

WHAT'S NEW IN '88 FROM

TALENT

COMPUTER SYSTEMS

Our new 1988 catalogue features all the usual Talent favourites like:

3D CAD	£35.00
Assembler workbench	£24.95
Basic-ally	£19.95
Cartridge Doctor	£14.95
PCB1	£99.95
TechniQL	£49.95
GraphiQL+	£24.95
Strip Poker	£14.95
Lost Pharaoh	£14.95

Plus many new additions. Phone or write for your free copy today!

Talent +

Stone Street, North Stamford Ashford,
Kent. TN25 6DF

Tel.0303 813883 Fax 0303 812892

Telex 966676 PMFAB G



TYPE 22

by J G Burns



An excellent naval simulation program - one of the largest ever written for any machine, which has taken nearly two years to develop.

Type 22 is an accurate real-time simulation of a Royal Navy Type 22 frigate. You will be attacked by enemy aircraft, missiles, submarines and ships and will have to deal with over 20 targets at once.

The program uses a comprehensive and well thought out scoring system which gauges your performance accurately. The military detail is true to life throughout. Supplied with full instructions and guaranteed to give you hours of enjoyment. No two games are the same!

£17.95 Plus 50p P&P

MAIL LIST

£24.95

Allows you to retrieve names & addresses from within ARCHIVE. Other features include single key functions, prints address labels, exports files to Quill also compatible with our stock control.

STOCK CONTROL

£24.95

Keeps records of all stock items including retail price, trade price, minimum order level, items on order & many other features.

QL APPOINTMENT DIARY

£24.95

Records appointments dates & times, can be used as diary, dentist, doctors, hairdressers, service engineers. Program allows 26 users, up to 40 appointments per day plus many other features.

QSPELL

£24.95

Spelling checker for Quill supplied with 25000 words, checks an A4 page in 24 secs.

PAYROLL

£63.25

Calculates weekly, monthly or 4 weekly payroll full tax calculations, coin analysis & payment rounding.

ARCHIVE

Our team of programmers are able to write programs to your requirements, phone for further details.

QL KEY DEFINE

£9.95

For those who use Quill or SUPERbasic this program is a must allowing you to define up to 2k on each key.

QL CALC

£9.95

Enables you to press CTRL & any other key to give you a full calculator. Compatible with Quill, Archive, Abacus & Easel. Many other features.

QL SWITCH

£14.95

Allows users with extra memory to run Quill, Archive, Abacus & Easel at the same time or two Archive programs & Quill.

RAM DISC

£14.95

Enables users with extra memory to set up a ram disc; programs can then be instantly saved & re-loaded. A printer spooler is also included to allow you to print whilst using other programs.

TOOL KIT

£9.95

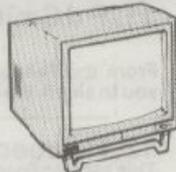
This program will copy all or selected files, delete one or selected files, display file to screen, change file name, format & print multiple copies of Quill files.

INVOICING

£49.95

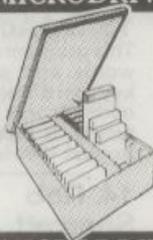
Sales day book, sales ledger & audit trail, for disk only, holds up to 4500 invoices with names & addresses, invoice address, plus multiple delivery addresses, links with stock control, retains invoices, also available Three part paper printed for invoicing.

MONITORS



Philips 7502 **£86.25**
Please add **£5.75** for delivery.

MICRODRIVE STORAGE BOX



MICRODRIVE CARTRIDGES

Single **£1.75**
Box + 10 cartridges **£22.45**
Box + 20 cartridges **£39.95**
Please add **£1.00** p&p on boxes.

PRINTER PAPER

2000 sheets continuous paper **£13.00**
700 sheets 3 part paper **£24.40**
1000 continuous labels **£6.65**
Please add **£3.75** p&p on paper **£1.30** on labels.

QL CHESS

£17.95



PRINTERS

DOT MATRIX

	Ex VAT	Inc VAT
BROTHER M1109	£185.00p	£212.75p
CITIZEN 120D	£170.00p	£195.00p
EPSON LX800	£215.00p	£247.25p
EPSON FX800	£373.91p	£429.99p

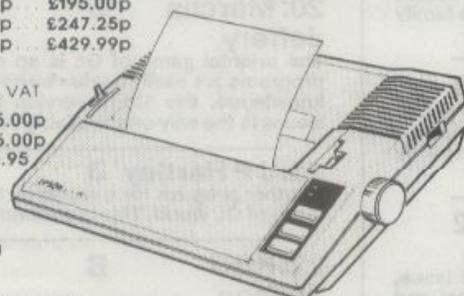
DAISYWHEEL

	Ex VAT	Inc VAT
BROTHER HR20	£386.96p	£445.00p
BROTHER HR25XL	£604.35p	£695.00p
NATIONAL KXP3131	£273.00p	£313.95

ACCESSORIES

LX tractor feed **£20.70**

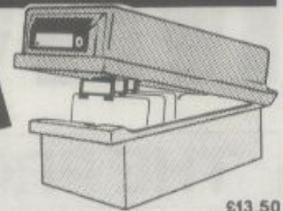
We also stock ribbons for the above printers.
Please add **£5.75** for delivery of printers & monitors.



LX800 215.00+vat

DISK BOXES

£13.50



3 1/2" box holds 40 **£13.50**
3 1/2" jumbo box holds 80 **£17.50**
Please add **£1.30** p&p for disks & boxes.

ACCESSORIES

Monochrome monitor lead **£5.75**
RS 232 lead **£11.50**
Centronics interface **£19.50**

DISK DRIVES & INTERFACES

Miracle System Tramp Card **£179.00**
Cumana disk interface **£79.90**
Sandy disk interface **£215.00**
Single 720k disk drive **£115.00**
Dual 1440k disk drive **£184.00**
Please add **£5.75** p&p.

MEMORY EXTENSIONS

512K **£99.00**

ORGANISER

Psion organiser XP **£139.50**
RS 232 link **£47.95**
64k data pack **£79.95**

← QL to ORGANISER **£39.95** →

← QL to PC **£29.95** →

XCHANGE

£295.00

Xchange is available from Transform Ltd. to run on the following: IBM PC/XT/AT & IBM compatibles, APRICOT PC, F series, XEN, ICL DRS20, DRS300, OPD, LOGICA KENNET, MERLIN 4000, VICTOR SERIUS, TORCH GRADUATE & BT 'ONTO. We offer on site training & database applications to suit your requirements. Network upgrades enables XCHANGE to run up to 10 workstations. Evaluation packs available for **£10.00**.

PC FOUR

£79.95

A cut-down version of Xchange as supplied on the QL but with the added facility of 65,535 entries in Archive, 999 lines in Abacus & mail merge plus key define built into Quill.

PSION XCHANGE

ARCHIVE DATABASE

Multifile relational database. Only memory restricts the number of files in use at one time. Variable length records with a maximum of 255 characters per field. 255 fields per record, 65535 records per file. Command language allows the user to define procedures using a powerful editor. Flexible multifile indices provide fast access and a form designer for screen and printer input and output.

QUILL WORDPROCESSOR

Text and page formatting, underlining, bold, italic, superscript, subscript, justification, tabs, line spacing, page size, page headers, footers and numbering. On screen editing, fast page access, cut and paste, block copy, block move, insert, overwrite modes, search and find, search and replace, key define and mail merge. Document size only restricted by disk capacity, background printing allows the user to print documents while working on others.

£295
INC. VAT

EASEL BUSINESS GRAPHICS

3D Business graphics including bar, line and pie charts, no limit to the number of values or numbers or sets of figures. Automatic rescaling, user define colours, text annotation of graphs at any pixel point. Intelligent evaluation of data formulae or manipulation of existing data. Images stored in internal format, monitor resolution is the only limit on final image quality. Accepts data from spreadsheet, database, etc.

ABACUS SPREADSHEET

Expansive spreadsheet with 999 rows, 255 columns, virtual memory system buffers to disk only when full, facilitating very large spreadsheets. Efficiency memory used only for full cells, each cell only uses 14 bytes. Variable width cells, block copy, block move, insert, delete columns and rows, merge and consolidation of data from different spreadsheets. Accurate to 15 significant figures, full range of mathematical, scientific, date, average, ASCII and DF conversion.

PC FOUR £79.35



TRANSFORM LTD (DEPT. QL) 01-658 6350
Mail order only. 24 West Oak, Beckenham, Kent. BR3 2EZ

VISA

MICRO DRIVE

THE PROGRAMS

Author Language Program Name Price

1. Giles Todd B DIY £5
Assembler

Featured in the March to June 1985 issues of *QL User*, this complete two-pass assembler will assemble all 68008 code and support the assembler directives DRG, END, EQU, DC and DS.

2. Richard A+O Mini Monitor £3
Cross

Using approximately 3K of RAM, this handy utility will multi-task on your QL, leaving plenty of room for other programs. Commands include dumping registers, memory — and ASCII — machine code trace, register store, memory move, memory store — byte, word and long — and jumps. Featured in *QL User*, October 1985.

3. A Didcock B Connect4 £1

A SuperBasic version of the classic four-in-a-row game where counters drop down slots in the vertical board. First printed in *QL User*, September 1985.

4. Shergold B Golf £2
& Tose

With up to 50 courses of varying difficulty, lakes, rivers, bunkers and trees, this is a fine golf simulation. You decide the power and direction of each stroke, striving for a birdie, eagle or even an albatross. Your scorecard may be saved. This program was printed in the May 1985 issue of *QL User*.

5. Williams A+O Paladin £5
& Holliday

Written completely in machine code, this excellent *Space Invaders* game was the basis of our games programming series, started in April 1985.

6. Richard M+B Sprite £2
Cross Animation

This contains two programs from the April 1985 issue. The first is a SuperBasic multi-coloured sprite designer. The second contains machine code routines to animate the sprites on the screen.

7. Steve Deary B Pacman £1

A well-written maze game from the March 1985 issue. Almost 20 screens of increasing difficulty, including an invisible maze, make it a very versatile rendition of the arcade favourite.

8. Andy B Family Tree £3
Carmichael

Based on an article in the August 1985 issue, this is an Archive program and database for setting-up and displaying large family trees.

9. James Lucy L Composer £3

Completed in *QL User*, October 1985 this QLiberated program will allow you to compose, play and amend your own melodies. The program will handle sharps, vary tempo, and even specify staccato and legato playing styles.

10. Matthew B Miners £2
Capp

This interesting simulation, printed in the August 1985 issue, puts you in the role of the NCB, buying and selling coal and mines, hiring and firing miners, and raising or decreasing wages to match economic forces. The object is to be profitable but inexperienced players will find it difficult even to remain solvent.

11. P J Smith B DIY £1
Adventure

From the February 1985 issue, this skeleton program requires you to slot in the details to create your own adventure programs.

12. R Green B Othello £1

This classic board game, printed in *QL User*, August 1985, can be played by one or two players. The display uses a 3D representation of the board. Average response time by the computer opponent is about 15 seconds.

13. S J Ackers S Touch Type £4

This program consists of a 13-lesson course for typing-in letters, words and phrases, a 700-word vocabulary, an interactive keyboard display and a fingering chart inas more than 30K of code. Scores are displayed based on the time and accuracy of typing. A reduced version of the program was printed in the August 1985 issue.

14. Rob A+O Fcopy £4
Sherratt

The first part of this program was printed in the March 1986 issue of *QL World*. The program is an ultra-fast, general-purpose file spooler.

15. Alan Prior B World Map £2

From the March 1986 issue, this program will draw a full-screen, multi-coloured map of the world for geography buffs.

16. J M Dower B Mushyman £2

Printed in the June and July 1986 issues, this provides speedy SuperBasic arcade action as you munch your way round the screen.

17. Tony Quinn S CAD QL £4

CAD design programs are particularly suited to the QL. This version from the September 1986 issue includes features such as rubber-banding and a user-definable symbol library.

18. Stuart M+B Attack of the £3
Campbell Things

Typical science fiction horror arcade action as yet more nasties descend on harmless QL owners. Featured in the October 1986 issue of *QL World*.

19. Karl Jeffery M+B Starport £3
2001

Fast machine code action in this November 1986 version of the *Galaxians* arcade game.

20. Marcus S QL Go £4
Jeffery

The oriental game of Go is so complex that even mainframe programs are easily beaten by novice players. To the best of our knowledge, this 15x15 version from the April and May 1986 issues is the only one available for the QL.

21. J P Hartley B Britain £2

Another program for geography buffs from the November 1986 issue of *QL World*. This is a round-Britain geography quiz.

22. KBG B Darts £2
Judson

Program of the Month from December 1986. This popular pub pastime requires good hand and eye co-ordination to stop a moving cursor on the on-screen board.

EXCHANGE

KEY	B = SuperBasic	A+B+O = Assembler and Basic Loader and Object Code
	A+O = Assembler and Object Code	S = Supercharged
	M+B = Machine Code and Basic Loader	L = QLiberate

23. Neil Taylor S Window Designer £2

This useful routine from the February, 1987 issue allows you to design your SuperBasic windows using the cursor keys. It creates a one-line procedure which, when merged into your program, will re-create that window.

24. JF S Design 3D £4
Tydemán

Published in the March and April 1987 issues, this program will allow you to produce 3D screen designs with the minimum of fuss and aggravation.

25. D Carmona B Stellaris £4

Program of the Month from June 1987. This is an extensive real-time space adventure game against the computer, including economic simulations, lunar landing and superb graphics.

26. Robert A+B+O Video Effects Box1 £3
Noble

These machine code SuperBasic extensions allow you to manipulate your screens, save and recall them from memory and clear them in interesting ways. Program of the Month for July 1987.

27. H R Pendry B Pontoon £3

A graphic version of the classic card game. You play against the computer. Features include changing banker on royal pontoons, accurate betting, five card tricks and so on. Printed in the July 1987 issue of *QL World*.

28. Kenneth B Picture Puzzle £2
Cameron

This short but interesting program from the July 1987 issue sets up an 8 x 8 sliding block puzzle with on-screen graphics. You can select sliding numbers or load your own picture to solve.

29. Peter B Bridge £4
Etheridge

An excellent version of this popular card game. Features include accurate computer bidding, automatic or manual play, replay hands, correct scoring, save and load positions and much more. Essential for card enthusiasts.

30. Charles B Psycho £4
Gerrard

We must apologise but we have had to remove this program temporarily from microdrive exchange. People who have sent orders will have their money refunded and details will appear as soon as the program is again available.

31. B Otridge Crossword £5

Sold originally as a commercial program, this is the perfect aid for crossword fanatics. The program provides access by word length to a dictionary of about 12,500 words, to help solve those elusive crossword clues. Note: This program requires two Microdrive cartridges.

32. Phillip B Advent2 £4
Sproston

SuperBasic arcade adventure with a humorous slant. A variety of rooms, robots and problems will keep you on your toes. Full instructions included.

33. Leslie B Clock £3
Fahidy

This is a complete version of the clock program, described in the June and July 1987 issues of our QL Education series. An on-screen clock can be used to set or read the time.

34. E. Bamber QL Con- version/ Calculator £2

Comprising weights and measures units conventions and reverse Polish calculation, this excellent utility will convert almost anything to anything. Completely menu-driven, it is very easy to use.

35. John B Qwhist £3
Wakefield

Our August 1987 Program of the Month. It is an excellent implementation of the classic card game, Whist. Designed for one player (south) who partners a computer hand (north) against the computerised east and west opponents.

36. Stanley B Mail Merge £1
Sykes

This cartridge contains very handy utilities providing a mail merge and labeller for Quill files. The cartridge includes a simple demonstration.

37. P.G. Ives B The Double £4

A large strategy game in which you manage a football team through the four league divisions. The program features buying and selling, team line-up, morale, and so on, through the full league and F.A. Cup season. The cartridge includes full instructions Quill document showing how to play the game.

38. Leslie B Education £2
Fahidy

As part of our series of educational programs, this is designed to help teach the solution of simple linear equations. It is aimed specifically at the 11-plus age range.

39. JF Tydemán S Design 3D £4

Featured in the March, 1987 issue, this extensive program includes a large suite of graphics and filing utilities for the production of 2D and 3D graphics. It is supplied complete with instructions in the form of a Quill document.

40. Santiago B Roulette £3
Rubio

Our September, 1987 Program of the Month, this is an excellent Spanish/English version of the traditional gambling game. It also includes the Leigh Pattern, a system to break the bank.

41. Leslie Fahidy B Money £2

Continuing with our series of educational programs, this one sends you on a shopping expedition, calculating prices from shopping lists and trying to determine what coins you will receive as change.

42. Neil Davidson A+B+O Life £2

A machine code version of the classic simulation of a colony of living cells which survive, reproduce or die according to mathematical rules. Quill instructions included.

See over page for order form.



43. Alan S Qsquidge £2

Glassbrook
Ian Swinton

An arcade hunt through an 8x8 grid expandable series of rooms for the necessary nine parts of Squidge's rocket. October, 1987 Program of the Month.

44. David Marsh B Compress £2

Compress is a utility to compress SuperBasic program files into a more compact form without losing the structure of the program. That uses less storage space and means slightly faster loading.

45. Ronnie M+B SuperBreak- £2
Davidson out

A fast machine code version of the classic wall game where, using a bat and ball, you must try to break through the wall of bricks. Special features include optional double bats and/or balls.

46. Norman Marks B Navigator £2

To calculate the distance and direction for travel between longitude and latitude positions on the Earth. The program includes an expandable list of cities on points can be input manually. The calculation formulae can be seen from within the program.

47. Richard B 3D Maze £2
Clements

Chase round the generated maze, shown in three dimensions, searching for the key to the next level before going through the exit. Extra points can be gained by passing over Point Squares but do not be carried away because it is all against the clock.

48. Jason B Yahtzee £2

Price

The November, 1987 Program of the Month was this version of the popular dice game. The on-screen graphics make the two-player program particularly enjoyable and easy to use.

49. Charles B FileBound £3
Dillon

A November, 1987 special for *SpellBound* owners. This extension allows users to utilise their *SpellBound* dictionaries on existing files. An additional feature allows new words to be added to the dictionary. A compiled version is available from PDQL.

50. Jay B Bank £4
Lewington

This well-written, menu-driven program will allow you to keep track of a number of bank accounts, including credits and debits, dated standing orders, printed statements and much more.

51. A B Perspective £1
Didcock

Space is big. This program aims to prove it, with a graphical guided tour of the earth, the solar system, neighbouring suns, galaxy and the whole of creation.

52. Simon M+B Space £3
Quinn Pods

This 100 percent machine code arcade game was our December, 1987 Program of the Month. Your lone ship must protect six central energy pods against marauding aliens.

53. S M B Graphic £2
Walker Writer

Featured in our December, 1987 issue, this is a graphic design program with a difference. In addition to all the usual design commands, your completed picture can be saved as a series of SuperBasic commands for use in your programs.

ORDER FORM

No. of programs required

No. of drives required

No. of drives sent

Program ID Numbers

QL GOLD CARD NUMBER
(IF ANY)

Name _____

Address _____

Total cost of programs £

Drive cost (£2 each) £

Sub-total £

Postage & packing £0.75

+ 15% VAT £

TOTAL £

-10% DISCOUNT FOR QL

GOLD CARD HOLDER £

TOTAL TO BE SENT £

Please copy on to Microdrive the programs above which I have indicated by their ID numbers. I enclose a cheque/PO to the value of £..... made payable to *Sinclair QL World*. I understand that *Sinclair QL World* undertakes to supply only these programs - copied onto Microdrive - and accepts no liability for their operation as defined by the author. Neither can *Sinclair QL World* supply

additional information about any of the programs other than that originally printed or supplied. Any article reprints must be ordered and paid for separately at £2 each inclusive of post and packing - £3 overseas.

Please send order form to: Mike McKenzie,
PO Box 74, Tonbridge, TN12 6DW.
Tel: 089 283 4783.

54. L Miles M + B Zapman £3

This fast-action, machine code game is of the classic *Pacman* genre. Variable skill levels and a wide variety of maze formats will keep your interest high.

**55. Alan B Adventure £3
Pemberton Playtime**

An extensive adventure where you must complete tasks for the inhabitants of a strange and unusual land. A Quill document gives details of the possible commands and some help in the form of a series of coded messages.

**56. Paul M Space £3
Mckinnon Invaders**

A very fast, very challenging version of what must be one of the best-known arcade games. Includes Quill instructions, ugly descending aliens and protective shields.

**57. Timo B Spelled £3
Salmi**

A complete spelling checker at a very cheap price. The system works on Quill .lis files, checking them against its dictionary of somewhat more than 7,500 words. The dictionary can be expanded automatically as new words are found. This program requires a 512K expansion and occupies two Microdrive cartridges. Quill instructions are included.

**58. Nigel B Radar £2
Ford**

As Control, you must monitor a radar, watching the skies, acknowledging aircraft, scrambling jets to intercept UFOs and, if necessary, lining your sights on and shooting down enemy aircraft.

**59. Geoffrey B Dungeons £4
Evelyn**

As Wizard, Mega-Hero, Super-Hero or Elf, you must explore the *Dungeons*, fighting monsters and collecting treasure in this expansive one- to four-player game. Requires two Microdrive cartridges.

THE ALL-NEW MICRODRIVE EXCHANGE

Microdrive Exchange has always been a popular feature of *Sinclair QL World* and, in our constant efforts to improve the magazine, we are expanding the Exchange to bring you even more quality programs at budget prices.

To achieve those results we have altered the format of the Exchange. Rather than calculating the number of sectors required by each program and sending the appropriate number of cartridges, we have now made it a one-program, one-cartridge system. So if you would like, say, four programs, then, regardless of length, you will need four cartridges.

There are a number of advantages to the system. First, the service will be much faster, because programs can be copied in advance. Second, rather than having to ensure having the article for documentation, we will be able to supply Quill documents on the Microdrive, if needed, for future programs.

Finally, for all new programs on the Exchange, rather than just receiving the machine code version, the Supercharged version or whatever, we will be able to supply assembly listings, hex loaders and original SuperBasic versions on the same cartridge, so that you can look at and amend programs.

Naturally, this service will require the transfer of more than the usual number of Microdrives but bear in mind that the number of Microdrives you send will be returned with the software. We have reduced the price of Microdrives to £2 per cartridge.

With the new system, we have started to include programs which have not necessarily been featured in the magazine, either because they were too long or because we already had too many listings. Consequently we are now looking for quality programs of any length to feature in Microdrive Exchange. If you have any programs which you feel are good enough, please send them for review. The address and details for program submission is given in The Progs.



THE QL SPECIALIST

QUEST FOR THE DRAGON SWORD

A challenging text adventure with a large vocabulary, hundreds of locations, mazes of original puzzles and several sheep . . .

"Witty, difficult and entertaining! How could anyone wish for more?" . . . *QL World Nov '87*
"I laughed until I stopped!" *B Baggins*

£14.95

Detacad 2 by Datakey

User friendly CAD for plotters **£17.50**

Datakey by Datakey

Stock control and database **£14.00**

GAMES		Only	Only		
Tank Busters	Sellasoft	14.00	Scrabble	L. Genius	12.50
Type-22	Talent	16.00	Spook	Eidersoft	9.00
Hover Zone	Talent	12.50	Karate	Eidersoft	12.50
Farmer	Talent	12.50	BJ the Return	Eidersoft	8.00
Deathstrike	Talent	12.50	BJ in 3D Land	Eidersoft	7.00
Strip Poker	Talent	12.50	Citadel	Eidersoft	7.00
Jungle Eddi	Talent	12.50	Zapper & Eagle	Eidersoft	7.00
Lost Pharaoh	Talent	12.50	Stone Raider 2	Microdeal	12.50
Blocklands	Digital	8.50	Flight Simulator	Microdeal	12.50
Droidzone	Digital	8.50	3D Chess	Psion	17.00
Super Backgammon	Digital	11.00	Match Point	Psion	12.50
Super Croupier	Pyramide	12.50	Caverns	Sinclair	7.00
Mister Smith	Pyramide	8.00	Meteor Storm	Sinclair	7.00
Vroom	Pyramide	13.00	QL Delusion	Realtime	8.50
Wanderer	Pyramide	17.00	3D Slinks	Datalink	11.00
Othello 3D	Pyramide	17.00	Hyperdrive	English	12.50
Bridge Player 2	C.P.Soft	16.00	S. Davis Snooker	CDS	12.50

ADVENTURES		Only	Only		
Horrorday	Talent	12.50	West	Talent	12.50
Nemesis	Talent	12.50	Zkul	Talent	12.50
Dragonhold	Rubicon	12.50	Mortville Manor	Pyramide	17.00

ART & DESIGN		Only	Only		
TechniQL	Talent	43.00	The Designer	Pyramide	17.00
Technikit	Talent	21.00	Nucleon	Pyramide	17.00
PCB Designer 1	Talent	85.00	Graphic Toolkit	Pyramide	12.50
PCB Designer 2	Talent	45.00	Super Sprite Gen	Digital	25.00
GraphiQL +	Talent	21.00	Eye-Q	Digital	25.00
Sign Designer	D.S.Ents	16.00	Viewpoint 3D	Rubicon	17.00

PROGRAMMING		Only	Only		
Supercharge	Digital	42.00	Assembler Dev. Kit	Metacomco	34.00
Turbo + Toolkit	Digital	84.00	C Dev. Kit	Metacomco	79.00
DigitalForth	Digital	34.00	Pascal Dev. Kit	Metacomco	75.00
Better Basic	Digital	21.00	Lisp Dev. Kit	Metacomco	49.00
Assembler W'bench	Talent	21.00	Basic-Ally	Talent	25.00

UTILITIES		Only	Only		
Front Page	Gap	21.00	Front Page Extra	Gap	35.00
Task Master	Sector	24.00	Desktop Publisher	Digital	59.00
Spellbound	Sector	29.00	The Editor	Digital	25.00
Touch Typist	Sector	11.00	Editor Special Ed	Digital	35.00
Ospell (mdv)	Eidersoft	15.00	Super Media Mgr	Digital	34.00
Ospell (disk)	Eidersoft	19.00	Pro Astrologer	Digital	45.00
ICE (Eprom)	Eidersoft	25.00	Super Astrologer	Digital	21.00
Drawing Office	Eidersoft	15.00	Cosmos	Talent	12.50
Idole	Eidersoft	12.50	Wimp Designer	Talent	13.00
ICE Toolkit	Eidersoft	11.00	Qimp	Talent	21.00
*Choice	Eidersoft	14.50	Sideways	Talent	17.00
*ARTICE	Eidersoft	12.50	QL Toolset	Talent	17.00
*ICE Berg	Eidersoft	12.50	Cartridge Doctor	Talent	12.50

HARDWARE		Only	Only		
Joystick Adaptor		4.50	Microdrive Cartridges		1.80
Suncorn joystick		6.50	4 Cartridges in Wallet		7.50
Quickshot 2 joystick		8.00	Transform Storage Box		4.50
Quickshot TURBO joystick		13.00	20 Cartridges in Transform Box		39.00
The ARCADE joystick		17.00	Miracle Expanderam 512		75.00
Miracle Trump Card		189.00	Miracle Centronics Interface		18.00
Miracle QL Modem		45.00	3.5" Disks (10"DS/DD)		12.00
Star NLO Printer		229.00	Atari 520 ST-FM		275.00

SPECIAL OFFERS		Only
4 Game Pack (BJ Returns, Citadel, Zapper and Eagle)		15.00
QL Technical Guide		17.00

ALL PRICES INCLUDE VAT AND FIRST CLASS POST TELEPHONE (0636) 79097 FOR PERSONAL ASSISTANCE

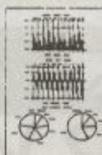
Send Cheque/PO to:

BYTEBACK

6, Mumby Close, Newark, Notts NG24 1JE



PACIOLI



PACIOLI is a money control program for people that wish to take full command of their financial affairs. Once initiated PACIOLI shall return strength and performance ratios and pertinent trends, perpetually.

- ▶ embodies the secrets of double entry book keeping
- ▶ easy to use, supplied with model for quick learning
- ▶ automatic updating of ledgers, profit & loss account and balance sheet for instant viewing.
- ▶ generates monthly, quarterly and annual spreadsheet records automatically.
- ▶ graphical representation of data with histograms and pie charts
- ▶ hardcopy facility.
- ▶ in quick loading, fast running, multitasking code.

Supplied on microdrive, price including vat and p & p.

ONLY £24.95

(PACIOLI uses 95K of RAM)

ZEATLINE PROJECTS LIMITED
3 York Close, Washingborough, LINCOLN LN4 1SQ
Tel. (0522) 792378

PRO CAD 3

A PROFESSIONAL 3D
MODELLING PACKAGE

AS REVIEWED
OCT. 87
QL WORLD.

"PC3 CAN BE HIGHLY RECOMMENDED"
RON MASSEY

VERSION 2 NOW ONLY
AVAILABLE FROM

DATANET SYSTEMS

£35.00 + £1.00 p.p. U.K. OR
£3.00 p.p. OUTSIDE U.K.

FOR FREE DETAILS SEND SAE TO

DATANET SYSTEMS
PO BOX 121
LUTON
BEDS

QL SUPERTOOL KIT II by Tony Tebby THE ULTIMATE QL ENHANCEMENT

Over 118 Commands - Full Screen Editor, Key Define Print Using, Last Line Recall, Altkey, Job Control, File Handling, Default Directories, Extended Network.

16K Eprom Cartridge Version @£ 29.90d
Configurable Version on Microdrive @£ 28.75d

SANDY PRODUCTS

Sandy SuperBoard (512k, TOOLKIT II etc) @£187.45d
Sandy 512k THRU-CARD @£ 77.05d
Sandy 512k THRU-CARD & DRAM Front End @£105.80d
Sandy Disc + Printer Interface + Utilities @£ 80.50d
SUPER MOUSE/SUPERBOARD
Drum Multitasking Front End By Tony Tebby
Quality Mouse, 512K RAM, SUPERTOOLKIT II,
Disc & Printer Interface, Cadpak Graphics
Complete with Utilities @£236.90d

QL HARDWARE

Single 3.5" Disc Drive & (Own PSU) @£115.00a
Dual 3.5" Disc Drives & (Own PSU) @£195.50a
"Multi Drive 5.25" — 3.5" £218.50a
Citizen LST — 10 printer £186.88a
QL keyboard Membrane @£ 13.80d
QL Base Computer @£124.20a
QEPIII ADVANCED EPROM PROGRAMMER @£121.90d
Care Eprom Cartridges each @£ 6.90c
Eprom 27128 250ns 16K @£ 5.75c

MAGNETIC MEDIA

Microdrives (Pkt 4) @£ 7.91c
3.5" (each) @£ 2.30c
3.5" (each) @£ 20.70c

THE Q CONTROL BOARD

As specified in the Colin Oppie connexions Series — Please call for details @£89.95d

CPM EMULATOR for the QL

..... @£ 44.85c

QL GAMES

AMBITION By Way Ahead @£ 19.95c
Business Orientated Strategy "Super Monopoly"
QL YAHTZEE @£ 9.20c

TONY TEBBY Software (QJUMP)

GRAM "new" COMPLETE QL MULTITASKING FRONT END A TRULY AMAZING DEVELOPMENT FROM QJUMP POP UP MENUS, FAST RAM DISC, UTILITIES, HOTKEYS SCREEN/WINDOW DUMPS, PRINT SPOOLER ETC @£ 29.90d

QIMI QL Internal Mouse Interface. Keeps your Rom port free for Toolkit 2 etc. A surface mounted P.C.B. which fits inside your QL.
QIMI @£ 29.90c
QIMI + GRAM @£ 54.97c
QIMI + MOUSE @£ 69.92c
QIMI + MOUSE + DRAM @£ 89.70c
QFLP (Micro/P disc interface upgrade) @£ 14.95c
QMON II Microdrive @£ 19.95c
QMED (Medic disc interface upgrade) @£ 14.95c
QPTR Pointer Interface @£ 29.90c
QTPY Type/Spell Checker @£ 29.90c

ZITASOFT Software By Steve Jones

LOCKSMITH copies M/DRIVE — M/DRIVE @£ 11.50c
4MATTER + LOCKSMITH copies M/DRIVE — DISC @£ 23.00c
SHRIVEL memory shrink prog user defirable ie 128k or 192k or 256k etc @£ 6.90c
TOOLCHEST utilities to allow the creation of customised mdv doctor prog. @£ 11.50c
SIDEWINDER amazing PRINT utilities Screen dumps to any size from postage stamp to 20ft banners Prints sideways, inverts & scales @£13.80c

MONITORS 85 Characters (Price including lead)

Philips BM7502 Green Hi-Res @£ 89.70a
Philips BM7522 Amber Hi-Res @£ 92.00a
Philips CM8833 "new" Colour Med-Res @£289.80a
Philips AV7300 Tv/Tuner for above @£ 74.75b
Philips Tv/Monitor 1010 @£262.20a
Remote Tv/Monitor 1210 @£279.45a

READYMADE LEADS

RGB QL DIN to Phono @£ 5.29c
RGB 8-6 pin DIN @£ 5.29c
RGB 8-7 pin DIN (Hitachi) @£ 6.90c
RGB 8-7 pin DIN (Ferguson) @£ 6.90c
RGB 8 pin to SCART (Euro) @£ 9.20c
6way PCC-25way 'D' (Printer-Ser1) @£ 9.20c

PSION ORGANISER

P.O.A.

HOW TO ORDER:

ALL PRICES INCLUDE VAT

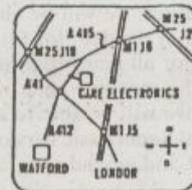
By Post. Enclose your Cheque/P.O. made payable to CARE Electronics. Or use ACCESS/VISA. Allow 7 days for delivery.

Please add carriage. a-£10.35 b-£5.75 c-£ 15 d-£2.30



OPEN
9am-5pm Mon-Thu
9am-4pm Fri-Sat

800 ST ALBANS ROAD,
GARSTON, WATFORD,
HERTS. WD2-6NL.
Tel: 0923-672102



ALL NEW
PRICES



MICRO ADS



QL REPAIRS

ANY FAULT £27.95 INCLUSIVE OF P&P, VAT INSURANCE AND 3 MONTHS GUARANTEE. FOR REPAIRS ON OTHER MICROS PHONE FOR DETAILS.

SUREDATA

UNIT 6, STANLEY HOUSE
STANLEY AVENUE, WEMBLEY
MIDD. HA0 4JBQ

Telephone: 01-802 5218

ESCAPE Software

ATTENTION ALL MUSIC LOVERS!
SCORE — The Complete Composer's Package

At last you can use your QL to write and play your own music in whatever style you wish! SCORE is specially written for use with Mirac System's new MIDI interface. Control up to 16 MIDI instruments (synthesizers, drum machines etc.) using up to 64 independent voices. Alternatively, play music or your synthesiser, record it on your QL, edit it and then replay. Your finished compositions can be used from within your own programs. Features include: automatic harmonisation, automatic arpeggio, large library of rhythms and arpeggio patterns, and much much more! You don't even have to read music to use SCORE, but if you wish to learn, SCORE is your ideal teacher!

SCORE	£29.95
MIDI Interface (Miracle)	£49.95

(Plugs into the ROM port and requires fast external memory - e.g. Expanderam or Trump Card - to operate correctly.)

Our Range of Educational Software:

Wendy's Garden: For pre-school children	£13.95
QL Spelling Tutor: Our best selling program!	£14.95
QL Maths Tutor: Includes Nim and 19-100 games	£14.95
QL Revolver (Digital): Indispensable	£14.95

We also supply memory expansion (Expanderam - 512K at £39, Trump Card - 768K at £199) and other hardware and software. Please write or phone for details. Wendy's Garden, and our Tutor programs were compiled with Q Liberator.

Send cheques or P.O.'s to:

In the UK
ESCAPE SOFTWARE
(Freepost), Ilford, Essex, IG1 1BR
Tel: 01-478 8281

Overseas orders to:
ESCAPE SOFTWARE (Dept QL W)
2 Henley Road, Ilford, Essex, IG1 2TT

QL SMALL TRADER'S PACK 2

Accounts, VAT, Stock Control, Mailing List, Label Printer plus utilities. All for £24.95 on two disks. "Simple to use, a good deal for the money." (QJ WORLD). "Fully menu driven & Epson-compatible" (QJ INVENTOR). Prints smart "invoices & statements on plain/headed paper. Only £14.95 (£9.95 with pack)." (QJ BANK ACCOUNT £9.95, QJ FILER (4 pages) £8.95. Programs Customised/Designed at reasonable cost. Add £2 pp (abroad) Cheques, POs or SAE for details.

SD MICROSYSTEMS (DEPT QL)
PO BOX 24, HITCHIN, HERTS, U.K.
U.K. Tel: (0462) 675106

STARBURST

A challenging new space game for the QL. Written in 100% machine code. Send cheque/postal order for £12.50 to:

Chris Skellern,
c/o BLUE CRYSTAL SOFTWARE,
3 BLENHEIM ROAD, ST ALBANS,
HERTS AL1 4NS

THE MEEK SHALL INHERIT

an explosive spy story
by **A. H. Hart**

"Thank God it's fiction!"

Printed and published by QL power! Mark your order "QL" for details.

CHRISTMAS/NEW YEAR OFFER:
First 200 copies, numbered, to be signed by the author, with any greeting asked for on your order.

Soft cover	£4.95
Leather bound	£25.00
Large print	£6.50

inc. p&p. Allow 7 days. UK only from:
New Publishing
93, The Grove, W5 5LL

Assorted Computer Equipment: Three Sinclair QL computers, each equipped with PCML memory expansion to 640K, twin 3 1/2" disc drive, MICE, cables and monochrome monitors. One Sinclair QL computer, equipped with MEDIC memory expansion to 384K, twin 3 1/2" disc drives. One Brother HR-15 daisywheel printer with Cut Sheet Feeder. Assorted QL software, many business and utility applications, 3 1/2" discs, microdrives etc. Offers considered for above equipment, either for complete systems or individual items.

Telephone (0224) 642680 daytime or evening, and ask for Jason Reid

QL TURBOQUILL +

QL Turboquill described as 'absolutely essential' by QL World now has a new ever faster version, QL Turboquill+ for expanded memory QL's only. TQ+ drastically improves screen handling by over 100%, this plus the added features of a glossary (keydefine) and capslock indicator turns quill into a slick, fast professional word processor. QL TURBOQUILL+ now compatible with GRAM.

QL Turboquill+ £13.50 inc. VAT pp
QL Turboquill £11.50
Taskmaster £26.00
Spellbound £29.95
QL Turboquill+ and Spellbound £41.50
QL Turboquill+ and Taskmaster £37.00

New product flashback the RAM, based on information storage system, ten times faster than the ARCHIVE only £25.00 INC.

Please state required on MDV or 35 disk. Also your quill version (ie 2.3 or 2.35). Prices include VAT, postage labels.

Cheque/PO to: Athene Consultants,
33 Holly Grove, Fareham, Hants PO16 7UP.
Credit Card Hot Line No. Tel: 0329 282063

"DISKS DISKS DISKS"

Quantity	3.5 DS/DD	3.5SS/DC	5.25 DS/DD
10	£11.50	£10.95	£6
30	£32.00	£31.40	£13.80
50	£52.90	£49.90	£21.80
100	£100.05	£94.30	£39.50

Call for the lowest priced quality Discs in the UK. Lifetime guarantee.

Plus a 14 day money back guarantee.
Express same day dispatch 1/15 disks storage box (10disks) £1.50 inc.

S P Y

- Very Fast - Cheap - £14.95
- MULTIPLE-FILE, Multi-tasking
- Universal QL/THOR file editor
- Will read and write any file types
- Latest lazy screen technology
- Block transfer between files
- Professionally written in assembler
- Just one exec code file under 20K
- Loads in under 5 seconds (disk)
- Ideal code size for standard QL's
- Can load itself for configuration!
- Fully GRAM and THOR compatible

OTHER SYSTEMS: Cardfile, Mailfile, Archivist, Librarian, Mailmerge.



POSTAGE: UK £0, Europe £2, World £4
CHEQUES: UK, Euro, London Sterling

ARK DISTRIBUTION

(Tel: 0963 79 496)
Corve Farmhouse, Chale Green
VENTNOR, PO382LA, U.K.

EXPAND YOUR QL to 640K with the MZ512K, throughputed, low power, zero wait-state, one-half megabyte RAM expansion. 5-year warranty, 30-day money-back guarantee. Black-anodized cover. £82.50 to:

**Matthew Zerker, POB 12534,
Rochester, NY 14612-0534, USA**

Allow six weeks for delivery. Sorry, no COD orders accepted. VISA/MC

QL Cross Assemblers

Assemble codes for 280, 6502/CMDS and 28 processors, including simple editor. Only £12 per processor. Cheque/PO. — C. Lang, 403 Chapter Road, Collis Hill, London NW2 5NG.

ALADDINK

FABRIC RIBBON CASSETTE RE-INKING
Price £2 per ribbon

Post used cassette(s) with payment to:
ALLADINK (Dept QL 10), 4 Hurker Crescent,
Eyemouth, Berwickshire, TD14 5AP
Tel: (0907) 50965

PROBLEMS WITH YOUR QL!

FOR FAST, RELIABLE AND PROFESSIONAL REPAIRS AT COMPETITIVE PRICES

Contact:

P M ENGINEERING

UNIT 8, NEW ROAD, ST IVES,
CAMBRIDGESHIRE PE17 4BG

ST IVES (0480) 61394

QUANTA

The independent QL users group

- monthly newsletter (36/40 pages)
- tutors (Archive etc.)
- free advice
- massive software library (mostly free)
- supports for local groups
- workshops
- printer hotline

Further details from Brian Poin, 24 Oxford St, Stony Stratford, Milton Keynes, MK11 1JU Tel: (0800) 564271

FOR A PERMANENT SOLUTION TO POWER CUTS AND MAINS INTERFERENCE FIT AN UNINTERRUPTIBLE BATTERY BACKUP TO THE QL

BACKUP INCORPORATES FLOAT CHARGED NICAD BATTERIES PERMANENTLY CONNECTED TO PRESERVE DATA IN THE QL PROCESSOR, MICRODRIVES AND RAM DURING MAINS INTERFERENCE. SUPPLIES THE QL DURING POWER CUTS FOR UP TO AN HOUR. NO SOLDERING OR OPENING UP NECESSARY AND REGULATOR REDUCES QL OVERHEATING.

£54 inc. to FREQUENCY PRECISION LTD
Hillsview, Ailer Rd, Dalton, Devon EX19 5GP. Tel 0805 4381

LISP INTERPRETER

Expandable and Fast, only—
£12
(35dm) inc. p&p

For details send sae to:
Wilfrid Soeker, Postfach 800711
5230, Frankfurt 80, West Germany



QL GAMES

ALL PROGRAMMES FULL MACHINE LANGUAGE

NOW JUST **£9.95 EACH**

FLIGHT SIMULATOR - Full feature flight simulator of a light aircraft.

LANDS OF MAVOC - 2000 Screen arcade adventure described as the first mega game for QL.

CRAZY PAINTER - Zany slapstick for painting the floor.

HOPPER - Frogger style game for the QL.

AQUANAUT 471 - Graphic adventure with over 100 screens.

THE KING - Just like Donkey Kong.

STONE RAIDER II - Dig your way through screen after screen of boulders and treasures.

CUTHBERTS IN SPACE - Real time space shoot 'em up for the QL.

ORDER — By Phone - 0726 68220
By Post - Box 68, St Austell, Cornwall PL23 1ET

MICE

THE COMPATABLE MOUSE SYSTEM

Yes thanks to some thoughtful design and some clever software, this mouse kills those compatability problems that plague the others on the market and cause them to rely on expensive specially written software. Ours does not!! The smiling mouse is already compatible with literally *hundreds* of programs, including many of the popular commercial ones and even the ever fussy Psion ones work with it!!!

The mouse simply plugs into the ROM port on the back of your QL and the software, which gives full control over the mouse with just a few simple basic commands, can be provided on either microdrive cartridge or 3.5" disk. Or you could even buy it with one of our bundles - the choice is yours!!!

TOOLS

THE ULTIMATE BASIC EXTENSION

No toolkit has ever before ventured so far to bring out the super computer abilities of your QL. There now follows a brief description, if you want more details please do not hesitate to write.

First of all the toolkit contains all of the mouse commands that are detailed above together with new ones that provide on screen pointers controllable from either the mouse or the keyboard.

A 32 Icon fully definable enviroment is provided to be from within your own programs making them simple to use and even more user friendly than you thought could ever be possible.

User definable function keys are at last brought to your QL, these can help make your QL a joy to use.

The character set is made fully definable and simple routines are provided to allow use from within both your own and other peoples programs.

A complete sprite system is provided giving you 32 super smooth fully controllable sprites each of which may have up to 16 frames of animation and they can even outstrip the QL when it comes to speed!!!

There are also lots of new graphics commands - many of them are duplicates of the existing graphics commands in all but one important aspect - patterns, instead of them drawing in solid colours or stipples, the new ones draw in one of 32 user definable patterns. There's even a paint command that will fill any shape with any user definable pattern!!!

There are four screen dump routines provided in the toolkit. One of the most amazing aspects of this toolkit are the new desk top publisher style character routines. The four basic sizes of character each of which may be expanded to any size you want, you'll find no rough edges on our characters, unless you want them there.

All these features are easily used from basic or where appropriate machine code. A full set of designer programs are included as is full documentation.

The complete toolkit is available on MOV or 3.5" disk.

GOODIES

Front Page	£20	Front Page Extra II	£39
Office Junior	£20	QLiberator VI.3	£55
QLOAD and QREF	£9	Turbo and Toolkit	£90
Supercharge	£45	Super Media Manager	£35
The Editor	£28	The Editor Special	£35
Eye-Q	£28	Turbo Toolkit	£28
Better Basic System	£24	Super Monitor	£18
Trump Card	£190	Dual 3.5" Disk Drives	£190
Trmp Card and Drives	£345	Centronics Interface	£18
10 Blank Cartridges	£18	10 Black 3.5" disks	£17

Lots more goodies available - please write for full list

PRICES

Smiling Mouse	£40
Complete Toolkit II	£30
Mouse and Toolkit	£60
Mouse and Eye-Q	£65
Mouse and Office Junior	£60

ORDERS

All prices included U.K. postage - Please add £1 for Europe or £2 for anywhere else in the World

U.S. Distributor:

Quantum Computing, Box 1280, Dover, New Jersey 07801

Please send your orders and enquiries to:

Smiling Software

8 Croxton Close, Marple, Stockport SK6 7RQ

Tel: 061 427 5245

MPC SOFTWARE

SOFTWARE

GAMES

Arkanoid.....	£14.00
Chess.....	£17.00
Deathstrike.....	£13.00
Eldersoft 3 Pack.....	£15.00
Flight.....	£17.00
Lord Pharaoh.....	£13.00
Scrabble.....	£13.00
Strip Poker.....	£13.50
Tank Busters.....	£12.00
Vroom.....	£13.50
Wanderer.....	£17.00

BUSINESS

Cash Trader (mdv-disc).....	£40.00
Concept 3D.....	£28.00
Front Page.....	£21.00
Project Planner.....	£25.00
Spellbound (disc-mdv).....	£29.00
Taskmaster.....	£23.00
Qwriter II.....	£17.00

LANGUAGES

Assembler Workbench.....	£36.00
Assembler (GST).....	£20.00
Macro Assembler (GST).....	£27.00

UTILITIES

Bag of Tricks 1 & 2.....	£10.00
Cartridge Doctor.....	£13.50
Copier.....	£ 7.00
Font Designer.....	£ 5.00
Graphic Toolkit.....	£13.00
QFlash & Toolkit.....	£19.00
QFlash ROM.....	£23.00
QL Paint (GraphicQL+).....	£18.00
RAM Disc.....	£14.00
Shrink.....	£ 5.00
QL Peindre.....	£11.00
Speed Screen.....	£17.00

We have a large range of reduced priced software

TELEPHONE

for further details

BOOKS

QL Book of Games.....	£ 4.00
Sinclair QL Adventures.....	£ 2.50
Artificial Intelligence on the Sinclair QL.....	£ 3.00
Quill, Archive, Easel & Abacus on the QL.....	£ 4.00
Inside the Sinclair QL (Hardware).....	£ 5.00
Desktop Computing with the Sinclair QL.....	£ 3.00
Word Processing with the Sinclair QL.....	£ 3.00
Database Management on the Sinclair QL.....	£ 3.00
Advanced Programming with the Sinclair QL.....	£ 4.00
Making the most of the Sinclair QL.....	£ 4.00
Using Graphics on the Sinclair QL.....	£ 3.95
Introduction to Superbasic on the Sinclair QL.....	£ 3.00
Introducing the Sinclair QL.....	£ 3.50
Profiting from the QL (Abacus).....	£ 3.50
QL Computing.....	£ 4.00
QL Advanced User Guide (QDOS).....	£15.00
Quatum Theory.....	£ 4.00
QL Quill.....	£ 4.50
QL Easel.....	PHONE
Assembly Language Programming on the Sinclair QL.....	£ 7.95
QL Service Manual.....	£19.95
Hackers Handbook.....	£ 4.00
Creating Adventure Programmes on your Computer.....	£ 2.50
QL Handbook.....	£ 5.95
QL Companion.....	£ 5.95
Exploring Artificial Intelligence on the QL.....	£ 3.50
Computer Art & Graphics.....	£ 4.00
Xenix Users Guide.....	£ 5.00
How to computerise your business successfully.....	£ 3.00

QL Computers

New: £150.00 "Shop Soiled": £100.00

Special Offers

Tankbusters & Deathstrike.....	£20.00
Macro Assembler, QDOS Companion & Assembly Language Book.....	£35.00
7 Hutchinson Books (Worth over £50.00).....	£10.00
Mr Smith & Quboids.....	£15.00

While stocks last only.

TECHNI QL

Techni QL is a two dimensional CAD package available for all general and engineering applications. It allows the user to create accurate and finely detailed plans, diagrams and designs. These can then be printed out to any width on any epsom or eprom compatible printers.

FEATURES INCLUDED:

Fast multi width printer output
Menu or mouse driven
Windows any drawings much larger than the screen
Multiple zooms (in or out)
Compressed storage of designs
Two screen modes
Up to 75 cells can be created
Cells can be edited, mirrored, rotated, scaled and positioned accurately on top of other cells
Grid and grid snap
Up to eight grids per design
Text can be mixed freely
Relocatable code (compatible with disks/extra ram)

SUITABLE FOR:

Flow charting, electrical design, mechanical drawing, letterheads/logos, PERT charts, architectural drawing and much more.

SPECIAL LOW PRICE OF **£30.00**

7 QL Books for only **£10.00**

Introduction to Superbasic on the Sinclair QL
Make the most of the QL
Database Management on the QL
Introducing the Sinclair QL
Profiting from the QL
Word Processing on the QL
Desk Top Computing with the Sinclair QL

RRP over **£50.00**

Postage UK - Free, Europe - £8.00,
R.O.T.W. - Write

HARDWARE

DISC PRODUCTS

Disc Interface.....	£ 85.00
Interface & Single Drive.....	£185.00
Interface & Dual Drive.....	£275.00
Trump Card & Dual Drive.....	£345.00
90 x 3.5 Lockable Storage Box.....	£ 18.00
3.5" Disc Head Cleaner.....	£ 8.00

MEMORY PRODUCTS

Miracle Expanderam.....	£ 75.00
QFlash RAM Disc.....	£ 18.00
QFlash RAM Disc (ROM).....	£ 25.00
Trump Card.....	£185.00
Memory 'Shrink' Program.....	£ 5.00

PERIPHERALS

Centronics Printer Interface.....	£20.00
Serial Cable.....	£ 8.00
Keyboard Membrane.....	£ 8.00
Microdrive Cartridges.....	£ 1.80
4 Microdrives in Wallet.....	£ 7.60
Joystick Adapter.....	£ 4.60
Miracle Modern.....	£40.00
Schon Keyboard.....	£54.00
New Schon Keyboard.....	£99.00

POSTAGE TERMS

UK: FREE on orders over £10.00 - £1.00 or order under £10.00
Europe: £1.00 plus £1.00 per book - Outside Europe write

PRINTERS

	RRP	OUR
CITIZEN 120D.....	£240.00	£200.00
CITIZEN LSP10.....	£320.00	£220.00
CITIZEN LSP100.....	£400.00	£280.00
PANASONIC KXP1081.....	£300.00	£260.00

2 YEAR GUARANTEE on all CITIZEN PRINTERS

PLEASE PHONE FOR DETAILS ON OTHER PRINTERS

QL spare & repairs phone for more details

MPC Software 72 Julian Road, West Bridgeford, Nottingham, NG2 5AN
Telephone: (0602) 820106/455114

Mail Order only

STRONG COMPUTER SYSTEMS

BRYN COTTAGE, PENIEL, CARMARTHEN, DYFED SA32 7DJ. TEL: 0267-231246

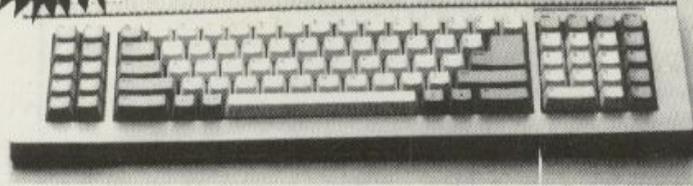


ALL PRICES
INCLUDE
VAT & CARR.

SUPERIOR REPLACEMENT QL KEYBOARD

£99

THIS HAS BEEN DESIGNED
FOR THE FUTURA MEETING
THE HIGHEST SPECIFICATIONS



FEATURES

- ERGONOMIC DESIGN
- NUMERIC KEYPAD
- FULL TRAVEL KEYS
- 10 FUNCTION KEYS
- ANTI BOUNCE
- EASY FITTING

LOWEST PRICES ON QL DISK SYSTEMS

TRUMPCARD + QRAM	£199
TRUMPCARD + QRAM + DUAL 3.5"	
NEC DRIVES + 10 DS/DD DISKS	£379
SUPERBOARD OK INC. TK1 & TK2 ..	£ 89
SQB + SINGLE DRIVE + 10 DISKS	£199
MOUSE FOR SUPERBOARD	£ 39
DUAL NEC DRIVES + 10 DISKS	£189
SINGLE NEC DRIVE + 10 DISKS.....	£119
NEC MECHANISM	£ 79

BEST PRINTER BUY

SEIKOSHA SL80A1 LQ PRINTER £379

FEATURES

- 24 PIN HEAD GIVING LETTER QUALITY
- PERFECT LETTER QUALITY 50 CPS
- DRAFT QUALITY 150 CPS
- INCLUDES PARALLEL INTERFACE

SPECIAL OFFER: SILVER REED EB50 PLOTTER WITH TALENT TECHNIKIT....	£199
THE ASTRACOM 1000 MULTISTANDARD INTELLIGENT MODEM.....	£198
Complete with Communicaions Software •• BT APPROVED ••	
QUALITY PRINTER STAND Suitable for any 80 Col Printer ONLY	£ 59
SET OF 6 BOOKS	£ 19
128K QL COMPUTER	£149
10 DS/DD 3.5" DISKS IN CASE	£ 16
SPECIAL OFFER: 20 3.5" DISKS + FREE STORAGE BOX FOR 40 DISKS	£29
MCS MULTIROM	£59
640K QL COMPUTER	£239
SCHON KEYBOARD	£ 57

QL REPAIRS 7 DAY SERVICE ..	£28
EMERGENCY SERVICE.....	£38
QL KEYBOARD MEMBRANE....	£ 6
ULA ZX8301	£10
ULA ZX8302	£10
2 AMP 5 VOLT REGULATOR ..	£ 3
68008 CPU.....	£25
PLEASE CALL FOR OTHER SPARES	

PRINTER PRICES INCLUDE MIRACLE SYSTEMS INTERFACE

SEIKOSHA 1300A1 300 CPS (colour option £100 extra)	£399
MP135 (135 CPS) FRICTION & TRACTOR	£199
CANON PW1080	£289
KAGA TAXAN KP910	£350
DAISYWHEEL MP26 (26 CPS) GUME COMPATIBLE	£299
2000 Sheets Fanfold Paper Micro Perf	£ 19
2000 Sheets Fanfold Paper (Supplied with printer).....	£ 16
MIRACLE SYSTEMS PARALLELL INTERFACE.....	£ 20

ACCESSORIES

3250 WATT MAINS FILTER	£ 36
MIRACLE SYSTEMS MODAPTOR	£ 39
MICROSTICK JOYSTICK WITH ADAPTOR	£ 16
20 CARTRIDGES WITH TRANSFORM BOX	£ 40
10 CARTRIDGES WITH TRANSFORM BOX	£ 23
4 Microdrive Cartridges	£ 8
Joystick Adaptor	£ 5
Serial Printer Cable.....	£ 8
Transform Box	£ 5
Para Cable for SQB	£10
10 DS/DD 5.25" Disks ...	£19

MONITORS (Cables Included)

Microvitic Cub 1451/DQ3 Colour	£249
Microvitic Cub 1451/DQ13 with Swivel Stand	£269
Swivel Stand for Microvitic	£ 25
Phillips BM7502 20MHZ Green (RECOMMENDED FOR THE QL)	£ 99

RIBBONS

BROTHER M1009	£5
GUEN DATA	£6
TAXAN/CANON	£8
EPSON 1 X80	£5
MT80 or Shinwa	£ 6
SP1000A (Sinclair)	£ 7
EPSON RX/MX/FX	£ 6
CITIZEN 1200	£ 6

BUSINESS

INVESTMENT MONITOR	£19
FRONT PAGE	£22
FRONT PAGE EXTRA 2	£39
TALENT TECHNIQL	£44
CONCEPT 3D CAD	£34
RUBICON VIEWPOINT CART/DISK	£19
DIGITAL EYE Q	£24
QDRAW	£14
SIGN DESIGNER	£19
SPEEDSCREEN	£20
PRO ASTROLOGER CART/DISK	£49
PRO ASTROLOGER + ASTONOMER	£59
QL SERVICE MANUAL.....	£19
DESK TOP PUBLISHER CART/DISK	£69

LEISURE

TALENT WEST	£ 12
TALENT ZKUL	£ 12
TALENT COSMOS	£ 12
TALENT THE LOST PHAROH	£ 13
TALENT JUNGLE EDDI	£ 13
TALENT NEMESIS.....	£ 13
TALENT OXFORD TRIVIA	£ 16
TALENT STRIP POKER	£ 13
DIGITAL SUPERBACKGAMMON	£ 11
DIGITAL BLOCKLANDS	£ 9
TALENT HOVERZONE	£ 14

Software

LANGUAGES

METACOMCO ASSEMBLER	£ 29
METACOMCO BCPL	£ 49
METACOMCO LISP	£ 49
METACOMCO PASCAL	£ 59
METACOMCO 'C'	£ 79
PRO FORTRAN	£ 39
PRO PASCAL	£ 39
DIGITAL TURBO	£ 39
TALENT WORKBENCH	£ 19
QL LIBERATOR	£ 39
FORTH + REVERSI	£ 35

BRIDGE PLAYER II	£ 17
WAR IN THE EAST COMPLETE	£ 39
WAR IN THE EAST (SCEN. 1)	£ 20
WAR IN THE EAST (SCEN. 2 OR 3)	£ 13
PSION CHESS	£ 16
PSION MATCHPOINT	£ 12
RUBICON DRAGONHOLD	£ 14
LEISURE GENIUS SCRABBLE	£ 12
HYPERDRIVE	£ 12
DIGITAL DROIDZONE	£ 9
THE "ALISMAN (NEW ADVENTURE)	£19
TALENT DEATHSTRIKE.....	£ 14

UTILITIES

DIGITAL MEDIA MANAGER	£35
THE EDITOR ON CART (128K VER.).....	£24
THE EDITOR ON DISK (640 VER.).....	£39
TALENT TECHNIKIT	£24
GRAM CART/DISK.....	£29
QTP SPELLING CHECKER	£29
DISK & PRINT SPOOLER.....	£ 9
TALENT SIDEWAYS	£19
DIGITAL SPRITE GENERATOR	£29
LOCKSMITH	£12
4 MATTER	£12
QMOM MONITOR/DEBUGGER	£18
TALENT CARTRIDGE DOCTOR	£13
TASKMASTER	£25

TALENT HORRODAY	£14
TALENT FARMER.....	£14
STEVE DAVIS SNOOKER	£ 12
SELLASOFT TANKBUSTERS	£ 14
TALENT HOVERZONE	£ 14
STONE RAIDER II	£ 13
SQUADRON	£ 13
TOUCH TYPIST	£ 12
DATALINK 3D SLIME	£ 11
HEART OF GERN (NEW ADVENTURE)	£ 15
DIGITAL SUPER ASTROLOGER	£ 22
TALENT TYPE 22 (TACTICAL).....	£ 17

EXPORT AND TRADE ENQUIRIES PLEASE CALL.