

Vol 3 No 2 UK £1

COMMODORE

COMPUTING INTERNATIONAL
The Independent Commodore Magazine

FREE
Games
supplement

What's new?
— Commodore 16
— Plus/4

Show review



PLUS
* News
* Reviews
* Listings

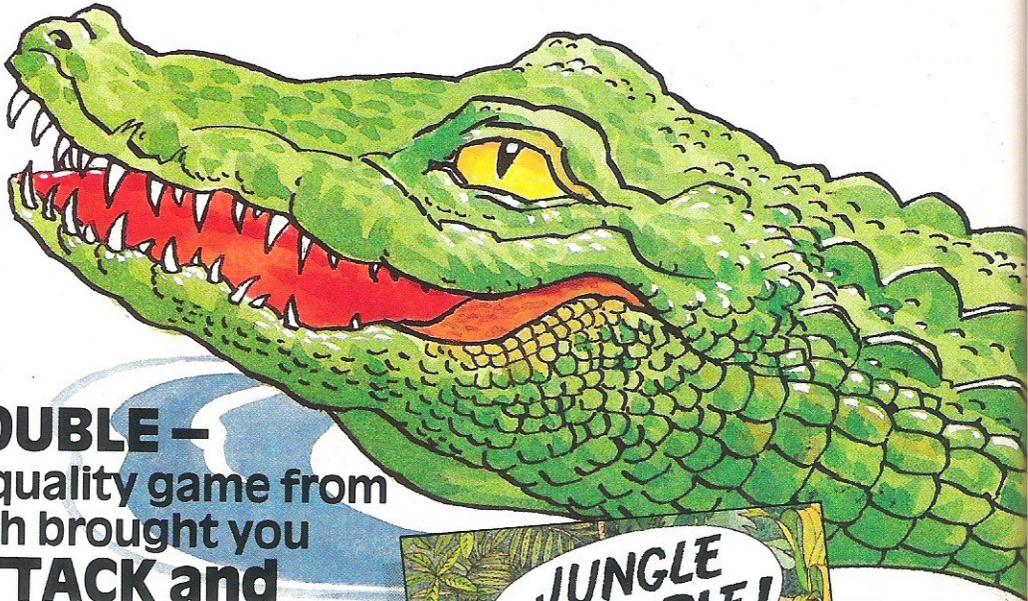
BELGIUM FR130 FRANCE FR18.5 GERMANY 6DM
CANADA \$4.50 USA \$3.25



If the apes don't get you the crocodiles will!

Our intrepid explorer is forced to leap across rivers on stepping-stones, cut his way through trees, swing over a fire-pit and by-pass a flame-throwing dragon ...

... all the time harassed by falling coconuts, rampaging apes and ravenous crocodiles!



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1)

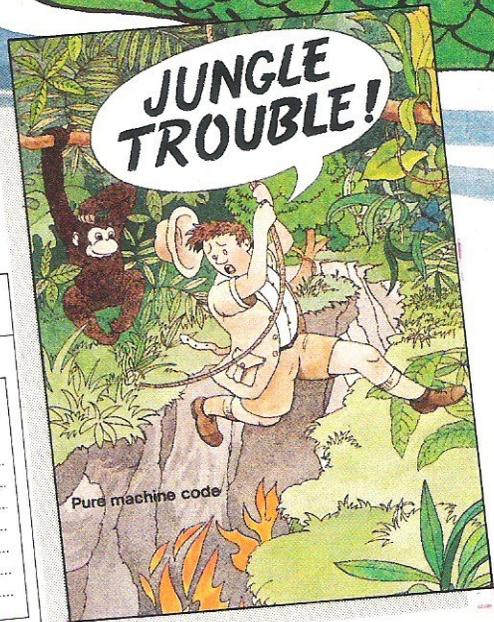
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3)

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Overseas customers please allow £1.00 extra

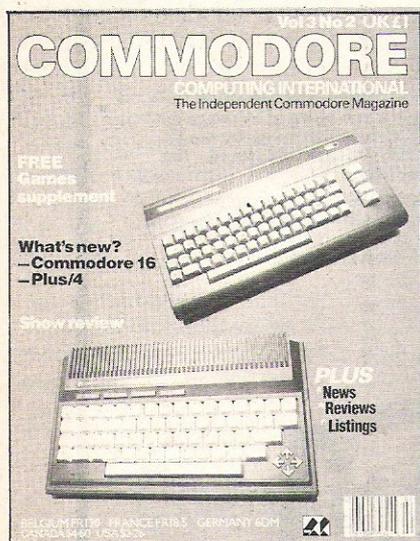


COMMODORE

COMPUTING INTERNATIONAL

JULY/AUGUST 1984

COVER STORY



See our Show Report for news of the two new Commodore machines – the C16 and the Plus/4 – launched at the 5th International Commodore Show

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You moan and groan and we do our best to help

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COMMODORE 64 BASIC BEGINNER'S PACK . . .

A subtle blend of software and book to enliven the duller of Commodore 64's.

The Software

Honey Aid 1: a complete utility that adds 28 new commands to Commodore 64 BASIC, in three groups.

- **Toolkit:** these commands help you to create your own programs in BASIC. One day you'll wonder how you did without them.
- **Graphics:** use colour and hires graphics with ease - decorate and colour your 64.
- **Synthesizer:** build all the SID chip's features into your program. No need for POKEs, just use Honey Aid's BASIC-like commands.

In addition - on the tape:

- **Char Gen:** a full-featured character generator that will redefine any or all of the standard 64 characters, even the ones used by Char Gen - while it runs.
- **Sprite Gen:** a sprite generator to define sprites - normal or enlarged, single colour or multicolour. Displays the sprite as it's defined. Transforms the design into DATA statements.
- **Composatune:** explores the SID chip. Allows you to type in a tune and to store this in DATA statements. Later, you can recover this to re-create the tune. **Buildasound:** lets you explore all the features of SID and hear them in action.
- **Guesser:** a unique computer-aided-simulation (CAL) of a number-guessing game. Demonstrates how each statement works and shows it all in action.
- **Hangman:** a full hangman game to provide entertainment and education.
- **Breakout:** a video ball game, break down the wall to score.
- **Blockade:** a two-player game, trap your opponent, they're trapped - you win.
- **Balltrap:** get the ball in the net to win - frustrating but fun!
- plus, plus . . .

The Book

A 360-page text that guides you step-by-step, through the 64's BASIC - learning as you go! Each piece of software on the tape (and many more) is developed stage-by-stage. Once the fundamentals of BASIC are mastered, the specialities of the 64 are introduced.

From a simple number-guessing game via a reaction-tester, a hangman game and three video games to character and sprite generators, the projects increase gradually in complexity. This unique approach ensures that you learn - and that learning is fun!

The Package



**TOTAL
PACK
PRICE**

£10.50

INC VAT
P & P
UK & EIRE

MAIL ORDER ONLY To: CMOS B1
291 CRICKLEWOOD LANE
LONDON NW2

ALSO AVAILABLE:

BASIC Packs @ £10.50

**SPECTRUM: DRAGON: BBC BEGINNERS:
BBC ADVANCED**

Assembly Language Packs @ £12.50

**COMMODORE 64: VIC 20: ORIC 1: PET:
BBC: ELECTRON: APPLE (£14.50)**

Children's BASIC Packs @ £9.95

COMMODORE 64: VIC 20: BBC



Dr Watson is a trademark of
Glentop Publishers Ltd

Please supply the following:

Qty	Name of Pack	Price
	Commodore 64 BASIC Pack @ £10.50	
TOTAL		£

Name _____

Address _____

Signature _____

Access Number _____

Micronet 800 for 64 users

Commodore 64 users will soon be able to subscribe to Micronet 800, the award-winning 30,000 page magazine service on Prestel. Micronet have prepared a dedicated database for the 64 to be launched in August. The Micronet modem Communication Cartridge, available nationwide for £43 (excluding VAT), is required to download software from this database.

As a member of Micronet, the 64 user will have access to downloadable software 24 hours a day – some of it free of

charge.

In addition to this, software from software houses such as Llamasoft, Anirog and Bubble Bus will be on sale for up to 20 per cent less than the retail price.

Other attractions include the Micronet electronic 'Mailbox', daily microcomputer news, the electronic bulletin board for swapping hardware and software and a 24-hour technical advice service. Also Micronet's new 'Open-University' style home education service, armchair shopping, 'Starnet' –

the interactive strategy game for hundreds of players, programming courses and ICPUG's own pages for Commodore enthusiasts.

The Micronet and Prestel subscription charges amount to £1 a week, plus the cost of a local telephone call which is 38 pence an hour, evenings and weekends.

Only Micronet will be supplying the unique communications cartridge for downloading software, together with modem, although any standard V21 or V23 modem can be used.

Oxfam appeal

Oxfam are appealing for computer software through their chain of shops in the London area. They would appreciate software, especially games cassettes, for personal and home computers of any make.

The appeal is being staged in London, although any of Oxfam's 650 shops all over the country would welcome donations.

Many of you may have games that you have tired of through excessive play, or that are no longer a challenge to your skills, so why not donate them to a worthy cause?

Oxfam are also appealing to manufacturers and retailers for any items which could be spared.

Take your donations to any of Oxfam's shops in the London area, or contact Bernie McDermott or Liz Shannon at Oxfam, 172 Archway Road, London N6. Tel: 01-348 4225 or 01-341 3087.

Commodore to rival IBM

Commodore could well become IBM's major PC plug-compatible rival according to sources quoted in the independent IBM magazine, PC.

American analysts and software houses say that Commodore's position is strengthened significantly by the recent deal with Bytec-Comtern for the rights to IBM

compatible technology used in the Hyperion, together with the agreement with Intel to second source the 8088 chip.

The article concludes with a prediction that Commodore will undercut IBM's prices by 40-50 per cent.

In response to this article Commodore's marketing manager, John Baxter, comments:

"The industry is increasingly recognising that Commodore's competitive strength lies in its policy of being totally self-sufficient in manufacturing.

"We have demonstrated our ability to outstrip all competitors in other segments of the market and it's clear that independent observers now see us as poised to repeat that process in the PC sector."

Education offer extended

Demand for Commodore's special discount scheme for schools and colleges has resulted in the extension of the scheme to the end of this school term.

Over 1,000 Commodore computer systems have been purchased by schools and colleges under the scheme which has been in operation for three months. The system costs £299.99 (excluding VAT) and comprises a 64, floppy disk drive, LOGO software and Simon's BASIC 1. This presents

a saving of £170 over normal retail prices.

Commodore's marketing manager, John Baxter, says: "The Commodore 64 has already proved throughout Canada, USA and Europe that it is the ideal classroom computer – it has, for example, over 80 per cent of the educational computer market in Germany.

"Our system is half the price of other comparable systems and hopefully this is enabling more schools to introduce computers."

Record sales for Commodore

Worldwide sales of Commodore are currently totalling over \$100 million a month (that's about £67 million).

Sales in the education sector are making an increasing contribution to worldwide sales, while Commodore's biggest sales success is the 64, of which nearly 500,000 have been sold in the last year in the UK alone.

CBM's parent company, Commodore International, more than doubled its sales in the nine months ended March 31 1984. Sales rose from \$469 million in the same period last

year to a record \$967 million, ensuring sales exceeding \$1 billion by the end of the company's financial year on June 30.

Chairman Irvine Gould comments: "The primary contributor to Commodore's record results in the third quarter and nine month period was continuing strong sales of Commodore's microcomputer systems to the business, educational and home markets.

"The current final quarter's results are expected to benefit from a continuing strong demand for the Commodore 64."

It's Magic Voice

Commodore's speech module, the Magic Voice for the 64 is due for release shortly.

The module gives the 64 a voice which can imitate the voice of a male, female or child. Because the speech is digitised, inflections are preserved. The module fits into the cartridge port and has a port of its own permitting other cartridges to be 'stacked' on top. This enables it to give a voice to cartridges utilising its features, but will also allow other cartridges to work normally.

The module contains the data for the 26 letters of the alphabet, plus numbers and vocabulary of 187 commonly used words. Commodore also intend to produce a disk with extra vocabulary.

In addition, the module enables both speech and music and voice and graphics to be generated simultaneously and it is programmable from Commodore Basic or machine code.

To utilise Magic Voice, Commodore are developing a

range of 'talking' software. The first programs will be educational - helping children to read, write and count.

The first in the series is Talking books which comprise two packages entitled Magic Garden and Magic Toolbox. Each one contains five stories intended to teach children how to read and write.

The first four programs in BJ the Bear series (The second in the series): Get Ready to Think, Get Ready to Read, Get Ready to Write and Get Ready for Numbers will be dealt with at a more advanced level in programs with titles such as Start to Read and Continue to Read.

Manuals for parents and teachers accompanying the programs will explain how to get the best from the software.

Even further in the future, Commodore plan to release an educational cartridge entitled A bee C's, adventures and foreign language software.

Contact: Commodore, 675 Ajax Avenue, Slough, Berkshire SL1 4BG. Tel: 0753 79292.

Home Office

Audiogenic have launched Home Office for the 64 on cassette and claim that it combines the functions of a wordprocessor with a data base system for £12.95.

It is intended to be used both in the home or in a small office. Letters, documents and reports can be edited and filed for future reference and the system provides functions such as text manipulation, formatting commands - centering, underlining, double-spacing, variable margins and a sorting routine.

The program also includes an integral machine code centronics type interface routine for parallel printers. A manual accompanies the program.

Contact: Audiogenic, PO Box 88, Reading. Tel: 0734 595647.

DIY alarm

If you live in fear of things going bump in the night, the DIY burglar alarm system from Micro-Security may be just the thing you need.

The complete kit costs £99 excluding VAT and P&P and operates with either a VIC-20 or 64. It contains the I/O interface, security program on tape or disk, control unit, external alarm bell, internal buzzer, panic button, ten sets of magnetic reed contacts for windows and doors, cabling and cable clips.

The alarm can be set to ring for any length of time during the day or night and a timed exit/entry delay ensures that the alarms are not sounded during normal exit and entry. Micro-Security claim that the kit is easy to install and operate. It comes complete with installation and operation instructions.

Contact: Micro-Security, P.O. Box 18, Havant, Hants PO9 3LB.

Dust free

Inmac have extended their range of dust covers for computers and peripherals. Covers for the Commodore range cost £8.50 each and give protection against damage caused by spills, food and dust. They contain anti-static additives which prevent static build-up, can be wiped clean and are made with heavy duty six layer vinyl.

Inmac advise that some insurance companies are now insisting on anti-static covers for equipment not in use.

Inmac are also selling packs of twenty standard floppy disks at prices starting from £36, which they claim is a 15% saving on their previous disk prices.

There are five types of 1/4 inch disks shrink wrapped in boxes. Prices range from £36 for a single side, single density soft sector disks to £58 for dual side, quad density, soft sector disks.

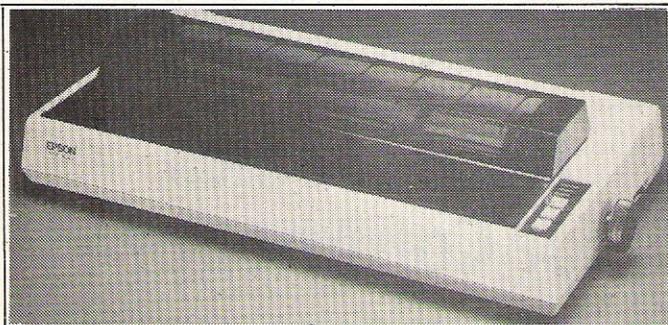
Contact: Inmac (UK) Ltd, Davy Road, Astmoor, Runcorn, Cheshire WA7 1PZ. Tel: 09285 67551.

Griffin

Griffin Software have recently released three educational programs for the 64, each costing £8.99.

Wordspell is a spelling aid for children aged from five years upwards. It provides an introduction to the key rules of English spelling. Numberfun is made up of two programs for children aged six and upwards. Colourful graphics are used to teach traditional methods of addition and subtraction. The multiplication tables are taught in Tablesums. This program is divided into two parts and is aimed at six year olds.

Contact: Griffin Software, Frederick Street, Birmingham B1 3HT. Tel: 021 236 2552.



Printer

Epson's new wide 15 inch carriage dot matrix printer, the RX-100 is now available in the UK for £450+VAT. The printer is provided with an IEEE-488 interface and is compatible with the Commodore Pet.

The RX-100 is a replacement for the MX-100 and Epson claim that it is an improved version - more versatile, with a higher print quality. It prints at 100 characters per second and can halve the speed for applications

requiring reduced noise. Other features include a tractor and friction feed, two full 96 ASCII character sets, 11 International character sets and 32 graphic characters. The 9x9 dot matrix head has a graphic capability and improvements include proportional spacing and Elite and Pica type sizes.

Contact: Epson (UK) Ltd, Dorland House, 388 High Road, Wembley, Middlesex HA9 6UH. Tel: 01 902 8892

Scope

ISP Marketing Ltd claim that their new program, Scope 64 will "revolutionise programming".

Scope 64 is full structurable language intended to handle graphics, sprites, colour, sound, music and animation. It contains 46 command words written in BASIC Rem statements. As far as possible the SCOPE words resemble their BASIC counterparts and all the instructions are compiled in machine code.

The program can be used by both inexperienced and competent programmers on the 64 and is accompanied by manual. It costs £17.95 on cassette or £19.95 on disk.

Purchasers of ISP utilities will be eligible to free membership of the "Scope Users Club". Its purpose is to keep members up-to-date with the latest news in programming and the provision of a telephone "Hot-line" will enable members to get help on programming problems.

Contact: ISP Marketing Ltd, Ryman House, Markham Street, London SW3. Tel: 01-351 5867.

Learning is fun

Intelligent Quest Software, a new division of the Avalon Hill Game Company, have released two new educational programs: Divex and ABC Caterpillar.

They are an American firm and at present neither of these programs are available in Britain.

Divex tests a child's knowledge of multiplication and division within the framework of a arcade game. Answering the questions correctly is the only way to play the game successfully. A cassette version priced at \$16 (£10.60 approximately) will be available soon.

The ABC caterpillar will help children aged three to eight with their spelling. The child controls a bright green caterpillar and gobbles letters up in alphabetical order. The program is available for the VIC-20 priced at \$16 and will soon be on cassette for the 64.

Contact: Intelligence Quest Software, 4517 Harford Road, Baltimore, MD 21214, USA. Tel: (301) 254 5300.

Bright Green

New company Bright Green Software have made their debut with Go Sprite, a sprite editor for the 64.

Managing Director, Stuart Bishop, creates his software with the principle of a "Rolls-Royce rather than a steam-roller" and believes that programs should be "user friendly" if they are to be successful.

Go Sprite, the company claim, can be used by both beginners and experienced 64 users to control sprites and generate animation sequences. The program requires a joystick and costs £10.

Bright Green are currently developing a software "Lego" idea, enhancing several programs and will be releasing two games in the near future.

Contact: Bright Green Software, c/o Tigress Marketing Ltd, 127 Fawe Road, Putney, London SW15 2EG. Tel: 01 871 1136.

Music Writer

Music Writer from Commodore will enable any aspiring Andrew Lloyd Webbers to compose their own musicals on the VIC-20 (with 8K or 16K expansion). It retails at £4.99

The program converts the VIC-20 keyboard into a piano keyboard and up to three different voices can be used in composition - separately or together. The tempo and composition of completed tunes can be played back with additional special effects such as legato mode.

Music Writer is complemented by Music Composer, available on ROM cartridge for the 64, priced at £9.99.

Music can be composed using the computer keyboard and then played back. The tunes can be changed and manipulated to give a wide variety of different effects. Special effects include waveform, filtering and vibrato.

Basic

Clive Prigmore's Beginners Basic's has just been released and costs £9.95. It is intended to teach beginners the principles of programming in Basic and can be used with the 74.

Techniques and ideas are introduced with worked examples and exercises. Advanced concepts are also tackled and instructions are included on how to program for business, games and home education.

Contact: WHS Distributors, St John's House, East Street, Leicester.

The key to security

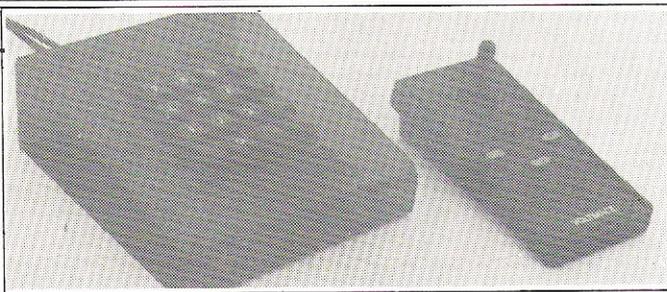
Microdeal claim to have designed the perfect solution to foil software pirates - the Microdeal Software Key.

Chas Robertson of Northern Software Consultants, after months of research, finally produced a dongle which has circuits embedded in rock-hard plastic resin. It is claimed to be virtually uncopyable and when plugged into the joystick port will generate a combination of signals specific to each game from Microdeal's range of Tom Mix games.

The dongle does not prevent back-up copies of the game being made, but does prevent them being played without it. Microdeal are incorporating each of the keys in their Tom Mix games (both cassette and disk versions) with no increase in price. Snackman for the VIC-20 is part of the new Tom Mix labels and costs £8 on cassette and £9.95 on disk.

Other recently released games from Microdeal include Arena 300, Cuthbert in Space, Cuthbert goes Walkabout, Cuthbert in the Jungle, Danger Ranger, Grabber and Pengon.

Contact: Microdeal Ltd, 41 Truro Road, St Austell, Cornwall PL25 5JE. Tel: 0726 3456.



Datapad

Voltmace recently produced the Datapad 16, a 16-way programmable keypad for the 64 and the Delta 3SC joystick.

The keypad plugs into the two nine-way joystick sockets of the 64. A program on cassette accompanies the keypad, enabling the alphanumeric values of the keys to be selected. The keycaps supplied are numbered zero to nine. The datapad is set in a dark smoked acrylic frame and

will cost £29.95.

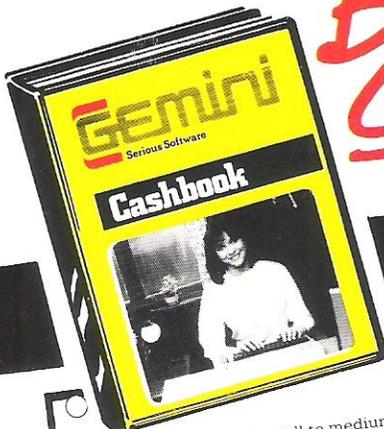
Voltmace have also launched the Delta 3SC joystick, which is intended to be used while sitting in a chair rather than hunched over a table. It costs £10. The joystick has a ball and socket joint, rotary slide switches and offers a choice of three fire buttons.

Contact: Voltmace, Park Drive, Baldock, Herts. Tel: 0462 894410.

Gemini

More Programs

THE COMPLETE CASH



BUSINESS SOFTWARE

VAT FILE

Whilst this program will benefit most VAT registered businesses, it is also designed for those users who are on one of the special retailers schemes for VAT, which requires them to analyse their expenditure invoices over the various rates of VAT, in order to calculate their VAT output tax. The program will provide the following:

1. A means of recording invoices.
2. A printed copy of all invoice details.
3. Accumulated totals of different types of transactions.
4. The facility for coping with a multi-rated VAT system.
5. Information needed for the preparation of VAT returns.
6. The facility to sort and print transactions by date, invoice reference or customer/supplier name.

The package is capable of dealing with up to 100 transactions in a single batch and the different transaction types are processed in separate batches, which are then printed out as a permanent record. Cumulative totals for gross takings, VAT at standard rate etc. are stored in a data file on disk or tape which can be loaded at the start of every session to provide 'brought forward' totals for the program.

Cassette C.0813 £19.95
Disk D.0813 £24.95

INTRODUCTION

Designed for the small to medium sized business, whether a sole trader, partnership, or limited company these programs need a Commodore 64 Microcomputer (CBM 64), an 80 or 132 column printer, and cassette or disk storage.

Each has been specially written to use the computer's huge memory and is a 'stand alone' program. However the Cash Book and Final Accounts programs also interface, to produce a superb combination pack for really serious business users, as well as practising accountants.

Each program is supported by a comprehensive, easily followed manual, and 'user friendly' screen prompts with error trapping routines, which make a specialised knowledge of accountancy unnecessary for the average user. The software is, however, capable of advanced accounting use, and in order to fully appreciate and interpret the Balance Sheet a discussion with your professional adviser or Bank Manager may be advisable.

We confidently recommend these programs to serious commercial owners of the CBM64, and hope they will enable you to operate your business on a more effective, efficient and profitable basis.

David A. Perkins David A. Perkins BA, ACA, ATII
Director of Gemini Marketing Ltd. and partner in Perkins & Gingell, Chartered Accountants.

David J. Gingell David J. Gingell MA (Oxon), ACA
Director of Gemini Marketing Ltd. and partner in Perkins & Gingell, Chartered Accountants.

Malcolm Brook Malcolm Brook FCA
Chairman of Gemini Marketing Ltd., Business Consultant and Underwriting Member of Lloyds

Peter S. Meherne Peter S. Meherne MIAP
Associate Director of Gemini Marketing Ltd. In charge of Programming

Combination Packs

Designed to offer maximum value and convenience to serious business users, by combining several programs in one handy pack, together with their appropriate manuals.

Combination Business Pack No. 1

Contains: Cash Book (including VAT file), and Final Accounts

	Normal List Price of Programs in Pack	Combination Pack Price	SAVING...
C.0818 Cassette	£119.90	£89.95	£29.95
D.0818 Disk	£129.90	£99.95	£29.95

Combination Business Pack No. 2 Contains: Cash Book (including VAT file), Final Accounts, Database, Stock Control and Mailist.

C.0819 Cassette	£179.75	£139.95	£39.80
D.0819 Disk	£204.75	£159.95	£44.80

Jones of Plymouth

BALANCE SHEET AT 12/12/84

NOTE	1984 £	1983 £
Fixed Assets	891	738
CURRENT ASSETS	5075	2194
Stock & WIP	3704	4513
Debtors & Prepayments	8779	6707
CURRENT LIABILITIES	1742	1495
Creditors & Accruals	6661	7093
Bank (1)	8403	8588
NET CURRENT ASSETS/(LIABILITIES)	376	(1881)
NET ASSETS/(LIABILITIES)	£ 1267	(1143)
REPRESENTED BY:		
CAPITAL ACCOUNTS	2	
Capital Account (1)	(1020)	(2195)
Capital Account (2)	2287	1052
	£ 1267	(1143)

Just a few of the many reports produced by the Cash Book Accounting System

...More Programs...More Programs...

BOOK ACCOUNTING SYSTEM FOR YOUR COMMODORE 64!

CASH BOOK (includes VAT file program 0813)

This is a program of enormous scope which allows the CBM64 to be used as a powerful business tool, taking the drudgery out of book keeping, and producing accurate and comprehensive management information.

In its simplest form the program will replace your Cash and Petty Cash books BUT Gemini's program, in effect, does much more. In addition to recording cash and bank transactions, the program will allow you to enter credit sales and purchases, and for all of these entries it will automatically complete the double entry routines, to ensure that your records are always in balance.

Sales and Purchase ledger control accounts are included, which makes the program ideal for integration with an existing manual sales or purchase ledger system.

The program also includes the following features:

1. Balance at Bank for up to 5 separate Bank Accounts.
2. Petty Cash in hand for up to 3 separate Cash Accounts.
3. A listing of all nominal account titles (maximum 199), most of which are user definable).
4. Monthly transaction summaries and departmental analyses of sales and purchases.
5. VAT memo account balances (sales/net purchases), and VAT accounts
6. Batch printouts of all transactions entered in current program run.
7. Total debtors and creditors, sales, overheads and Trial Balance.

The program is therefore a complete 'stand alone' accounting software package, ideal for both business users, and practising Chartered Accountants, since an infinite number of different Cash Books may be kept on a single CBM64.

A full audit trail of all data entered in the program is produced and a journal entry routine is incorporated to facilitate adjustments to individual nominal accounts, prior to producing a final Trial Balance. The latter interfaces automatically with Final Accounts program C.0806, so that a Profit and Loss Account and Balance Sheet can be prepared from data held in the Cash Book program.

Cassette C.0805 £59.95
Disk D.0805 £64.95

FINAL ACCOUNTS

This program is designed to produce a Trading and Profit & Loss Account and Balance Sheet, either from the final Trial Balance produced by Cash Book program 0813 or from any other Trial Balance making it a truly stand alone 'Final Accounts' program.

The facility to produce these documents quickly, accurately, and regularly is of enormous help in running any business, large or small, since one shows the true profitability achieved, and the other the exact strength of the business in terms of assets and liabilities.

The program also allows insertion of budget or comparative figures which can be shown alongside the actual figures, together with notes to the accounts, and the opening Trial Balance for the following period.

Whether used by businessman or practising Accountants, this program allows the CBM64 to be used as a real business computer producing vital information for decision makers with enormous ease and accuracy.

Cassette C.0806 £59.95 Disk D.0806 £64.95

Jones of Plymouth

TRADING AND PROFIT/LOSS ACCOUNT FOR THE 12 MONTHS ENDED 12 12 84

	NOTE	1984 £	1983 £
Sales (1)		28782	23491
Opening Stock & WIP		2194	2085
Purchases		20325	17140
Closing Stock & WIP		(5085)	(2194)
COST OF SALES		17434	17031
GROSS PROFIT (GP%)		11348 (39%)	6460 (27%)
LESS EXPENSES			
Wages		1150	1050
Use of Home as Office		175	175
General Expenses	1	3666	2214
Bank Interest & Charges		830	795
Depreciation	2	240	240
		6061	4474
NET PROFIT/(LOSS)		£5287	£1986

NOTES TO THE TRADING AND PROFIT/LOSS ACCOUNT

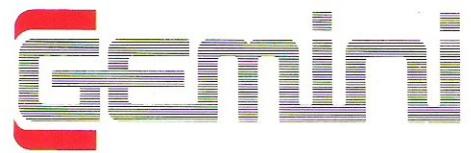
	1984 £	1983 £
1 GENERAL EXPENSES	2327	1423
Motor Expenses	73	119
Sundry Expenses	260	105
Telephone	145	214
Postage & Stationery	256	105
Accountancy	220	248
Commission	385	
Printing	3666	2214
	1984 £	1983 £
2 DEPRECIATION	233	233
Vehicles-Dep'n	7	7
Plant & Equip-Dep'n	240	240

Jones of Plymouth

NOTES TO THE BALANCE SHEET AT 12 12 84

	Cost or Valuation £	Acc. Dep'n £	Nbv 1984 £	Nbv 1983 £					
1. FIXED ASSETS									
Vehicles	1200	399	801	683					
Plant & Equipment	109	19	90	55					
	1309	418	891	738					
2. CAPITAL ACCOUNTS									
Opening Capital	£	Capital Intro	£	Drawings	£	Net Pft (Loss)	£	Total	£
Capital Account (1)	(2195)	2617	(4442)	3000					
Capital Account (2)	1052		(1052)	2287		(1020)	2287		
	(1143)	2617	(5494)	5287		1267			

...More Programs from



...FOR YOUR COMMODORE 64.

STOCK CONTROL

A superb program which makes extensive use of machine code to optimise the use of the computer's memory and greatly improve speed. Up to 220 stock records may be held on each file with details including stock reference code, description, supplier name, quantity in stock, cost price, sale price, etc.

The program includes the facility to add/modify/delete records, sort, search, enter stock in or out, or produce a stock summary. Several printout routines are available, and a financial summary may be produced giving the total of your stock holding (cost and sale value), the gross profit margin and the replacement cost of bringing understocked items up to minimum stock levels.

This program will take much of the tedium out of stock control and save time and money.

Cassette C.0802 £19.95 Disk D.0802 £24.95

TYPICAL STOCK CONTROL REPORTS

REC	STOCK NO	DESCRIPTION	UNIT QTY	NO IN	COST	SELL
1	62-117	CALCULATOR (TI 84)	SINGLE	5.00	13.02	26.04
2	20-237	CALCULATOR (TI 59)	SINGLE	0.00	70.00	130.39
3	54-827	CODING CARDS	3	10.00	0.75	1.51
4	19-957	PRINTER CRADLE	SINGLE	1.00	82.56	165.17
5	67-374	MEMORY MODULE	SINGLE	5.00	9.56	18.77
6	12-967	SOLVENT CLEANER	30ML	10.00	0.73	1.94

RECORD NO 1			RECORD NO 2		
STOCK NUMBER	62-117	STOCK NUMBER	20-237		
DESCRIPTION	CALCULATOR (TI 84)	DESCRIPTION	CALCULATOR (TI 59)		
UNIT QUANTITY	SINGLE	UNIT QUANTITY	SINGLE		
QTY IN STOCK	5.00	QTY IN STOCK	0.00		
COST PER UNIT	13.02	COST PER UNIT	70.00		
SELL PER UNIT	26.04	SELL PER UNIT	130.39		
MINIMUM STOCK	2.00	MINIMUM STOCK	1.00		
RE ORDER QTY	5.00	RE ORDER QTY	2.00		
SUPPLIER NAME	TEXAS INSTRUMENTS	SUPPLIER NAME	TEXAS INSTRUMENTS		

MAILIST

A dedicated database to allow for manipulations of names and addresses and other data. Gemini's unique 'searchkey' system gives you a further ten 'user-defined parameters' to make your own selections. Features include the facility to find a name or detail when only part of the detail is known, and to print labels in a variety of user specified formats.

Cassette C.0811 £19.95 Disk D.0811 £24.95

Gemini products are distributed by:
 Computer Bookshop, Micro Dealer UK Ltd, Diamond Stylus PLC, Tiger Distribution, Wonderbridge Ltd, Ferranti & Davenport, Everyman Computers (NI), Websters Ltd, Lightning Records and Pionmist Ltd.

AVAILABLE FROM:

Larger branches of Boots and W.H. Smith and most good software dealers... or phone Gemini for immediate despatch quoting your Access, Visa or American Express card number. Telephone (0395) 265165/265832. Alternatively make your cheque or Postal Order payable to Gemini Marketing Ltd., and send to Gemini Marketing Ltd., 18a Littleham Road, Exmouth, Devon EX8 2QG.

Please send urgently Cassette(s)/Disk(s) (please delete) **CCI**

Prices stated include VAT and Post and Packing (UK only).

Name

Address

Signature

Credit Card No. Access/Visa/American Express (delete)

DATABASE

The No.1 menu driven, user friendly multi purpose Data Management system with the following features: Dynamic Memory management which allows the huge potential of the 64's memory to be fully used... Search and calculate facility which permits numeric field calculations to be updated by any common arithmetic factor... Searches on multiple selection criteria and high precision sorting... Professional standard record verification prior to entry for greater accuracy.

Cassette C.0801 £19.95 Disk D.0807 £24.95

HOME ACCOUNTS

A really excellent rewrite for the 64 of Gemini's famous program for the BBC Micro — now enhanced with extra features... Budget for all aspects of household and personal expenditure for each month of the year, and then record and compare actual expenditure as it happens... Complete interactive bank account database with the ability to automate standing order debits... Credit cards supported... Full printer options... Graphic plotting facility to display levels and trends of expenses, at a glance... Highly recommended for putting your 64 to serious work!

Cassette C.0807 £19.95 Disk D.0807 £24.95

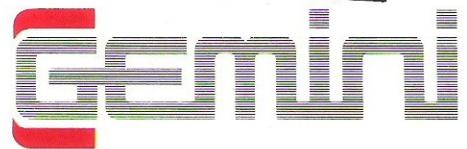
Coming later in 1984: Spreadsheet Analysis and Graph Plot programs.

Three Reasons for Choosing Gemini

1. Our serious software for the BBC Micro was developed in 1982/83 and has earned an enviable reputation... see the independent press comments below.
2. All Gemini's knowledge and experience have been used to produce their 1984 Commodore 64 programs... which in certain cases are superior to their BBC Micro counterparts, due to the CBM 64's greater memory.
3. Invaluable software support is available... normally this service is offered only with software costing many times the Gemini price.

Independent Press Comments on Gemini's BBC Micro Programs.

- "Stocktaking is made easy with a program like this" *Gemini Stock Control* 'Jersey Evening Post', 17 January 1984
- "Remarkable Software, friendly and well designed, a pleasure to use" *Gemini Cash Book*, 'The Scotsman', 12 October 1983
- "Well documented, easy to load, excellent screen display" *Gemini Spreadsheet Analysis*, 'Home Computing Weekly' 27 September 1983
- "A very professional piece of software" *Gemini Mailist* 'Which Micro' February 1983
- "Will enable business people with a moderate grasp of accounting principles to produce a set of figures that will satisfy both the Bank Manager and the Tax man" *Gemini Cash Book* 'Micro User' August 1983



Gemini Marketing Limited

18a Littleham Road Exmouth Devon EX8 2QG England
 Telephone (0395) 265165/265832 Telex 42956 Attn Gemini

CBM – new models

The new Commodore 16 and Plus/4 computers were the major attraction at the 5th International Commodore Show held in June at London's Novotel. Over the three days of the exhibition 15,200 people viewed new products and games and took part in competitions. For those of you who couldn't attend, here is a round-up of new products launched at the show

Commodore 16

The Commodore 16, designed for the first-time user, is offered as a starter pack comprising the computer, cassette unit, Introduction to BASIC Part 1 and four recreational programs – all for £129.99.

Featuring the full-size keyboard of the 64, the Commodore 16 is finished in charcoal grey.

Technical Specifications:

Memory

16K RAM Standard – 12K RAM user accessible for BASIC programs

ROM

32K ROM Standard (includes operating system and BASIC interpreter)

Microprocessor

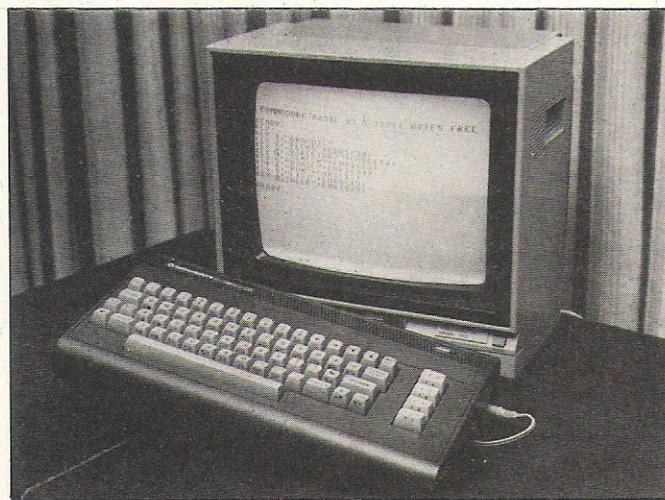
7501 Microprocessor
.89 to 1.76 MHz clock

Display

40 columns × 25 lines of text

Colours

121 colours (15 colours: 8 luminance levels + black



Characters

Upper and lower case letters, numerals and symbols. Reverse and flashing characters. All PET graphic characters.

Display modes

Text characters. High resolution graphics/multi-colour graphics. Split screen text/high

resolution graphics or multi-colour.

Resolution

320 × 200 Pixels

Sound

2 Tone generators or 1 Tone and 1 white noise generator

Volume

9 volume levels

Keyboard

Full size/full stroke design

Keys

66 keys total. 4 cursor control keys. 4 programmed (reprogrammable) function keys (up to 8 user defined functions possible). Colour control keys. HELP key. Upper and lower case character set. Graphics character set.

Inputs/outputs

Commodore 16 user port. Commodore serial port. ROM cartridge and parallel disk drive port. 2 joystick ports. Commodore 1531 cassette unit interface port. Monitor output – composite/chrominance/luminance. Audio input/output. Power supply input.

Features

Built-in BASIC 3.5 – over 75 commands including built-in graphics and sound commands. Built-in Machine Language Monitor with 12 commands. Screen Window capability.

Commodore Plus/4

Until recently known as the 264, the Plus/4 takes its name from the four integral applications software packages: a word processor, an electronic spreadsheet, a database and a business graphics package.

All four packages can share and exchange information and the Plus/4's screen window facility allows two packages to be viewed simultaneously. The

Plus/4 costs £249

Technical specifications:

Memory

64K RAM Standard – 60K RAM user accessible for BASIC programs

ROM

32K ROM Standard (includes operating system and BASIC interpreter)

Microprocessor

7501 microprocessor
.89 to 1.76 MHz clock

Display

40 columns × 25 lines of text

Colours

121 colours (15 colours: 8 luminance levels + black)

Characters

Upper and lower case letters, numerals and symbols. Reverse and flashing characters. All PET graphic characters.

Display modes

Text characters. High resolution graphics/multi-colour

graphics. Split screen text/high resolution graphics or multi-colour

Resolution

320 × 200 Pixels

Sound

2 tone generators or 1 tone and 1 white noise generator

Volume

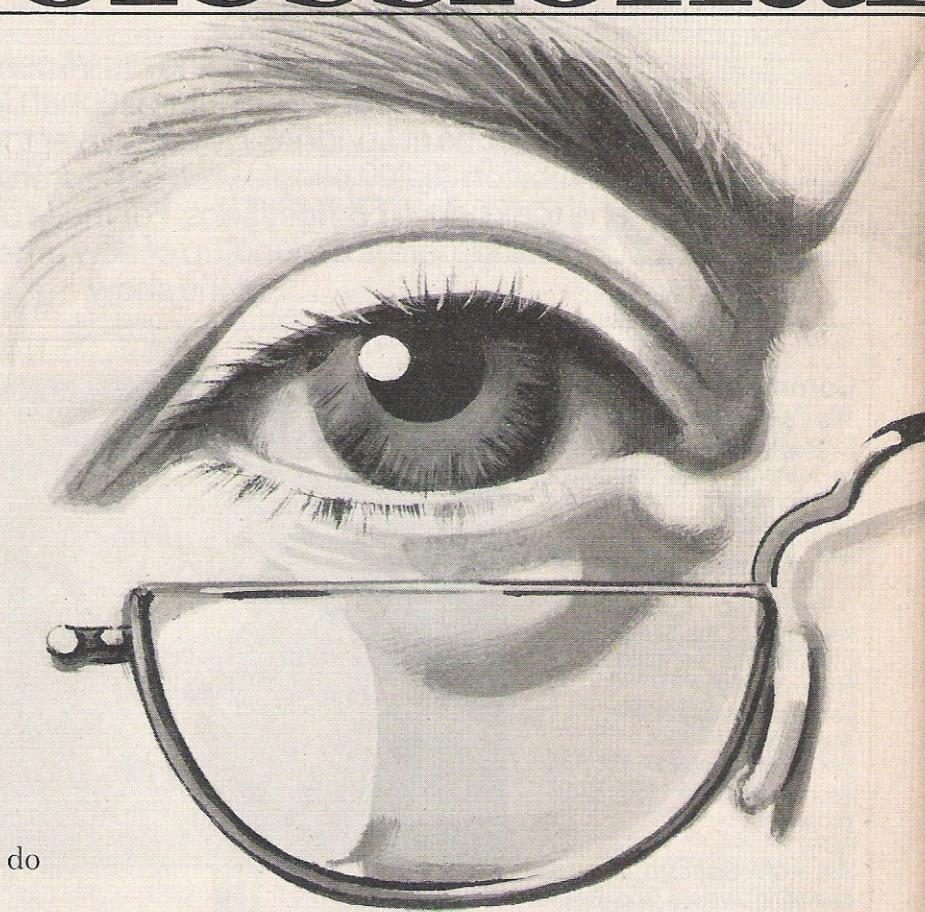
9 volume levels

Keyboard

Full size/full stroke design

Keys

Consider our s professional



If you ever have to bring work home from the office you can now tackle it in a fraction of the time, thanks to our range of software.

With these inexpensive new programs you can turn a Commodore 64 personal computer into a fully-fledged business tool to improve the smooth operation of your calculations, filing and ordering or information storage.

All the programs are easy to learn and use, and all cost less than £50.

There's no more cost effective way to turn your home computer to practical use.

Practicalc 64. The complete spreadsheet for Commodore 64.

With this program your cashflow will do just that.

Flow.

Practicalc 64 accepts both numerical and alphabetical entries and allows you to work out sales forecasts, long-term budgets, sales models or long term cash plans.

All in a fraction of the time they normally take.

Practicalc 64 has 2000 cells, more than 20 mathematical functions, (including logarithms and roots), can insert or delete rows or columns, can 'SORT' information alpha-numerically and has a 'SEEK' function to search for specific information.

It can even display the information in graph form to allow a quick visual appraisal of the situation. Disc £44.50 (Tape £39.95).

Over 20 mathematical functions.
Column width up to 38 characters
2000 cells.
Graph function.

PRACTICALC 64			
BUDGET	MONTHLY	YEARLY	YEARLY %
INCOME	12000.00	144000.00	1200.00
RENTS	4000.00	48000.00	400.00
EXPENSES	8000.00	96000.00	800.00
TOTAL	20000.00	240000.00	2000.00
*** END OF BUDGET ***			
MORTGAGE	1000.00	12000.00	100.00
UTILITIES	100.00	1200.00	10.00
INSURANCE	50.00	600.00	5.00
WATER	10.00	120.00	1.00
FOOD	500.00	6000.00	50.00
PHONE	50.00	600.00	5.00
TRAVEL & BEN	100.00	1200.00	10.00
TOTAL	3600.00	43200.00	360.00
DISPOSABLE	6400.00	76800.00	640.00

Practifile 64. The database for Commodore 64.

Practifile means an end to bulky and time-consuming storage of files, client or patient information or names and addresses.

And it means you'll no longer have to spend minutes or hours searching through piles of paper for a specific piece of information.

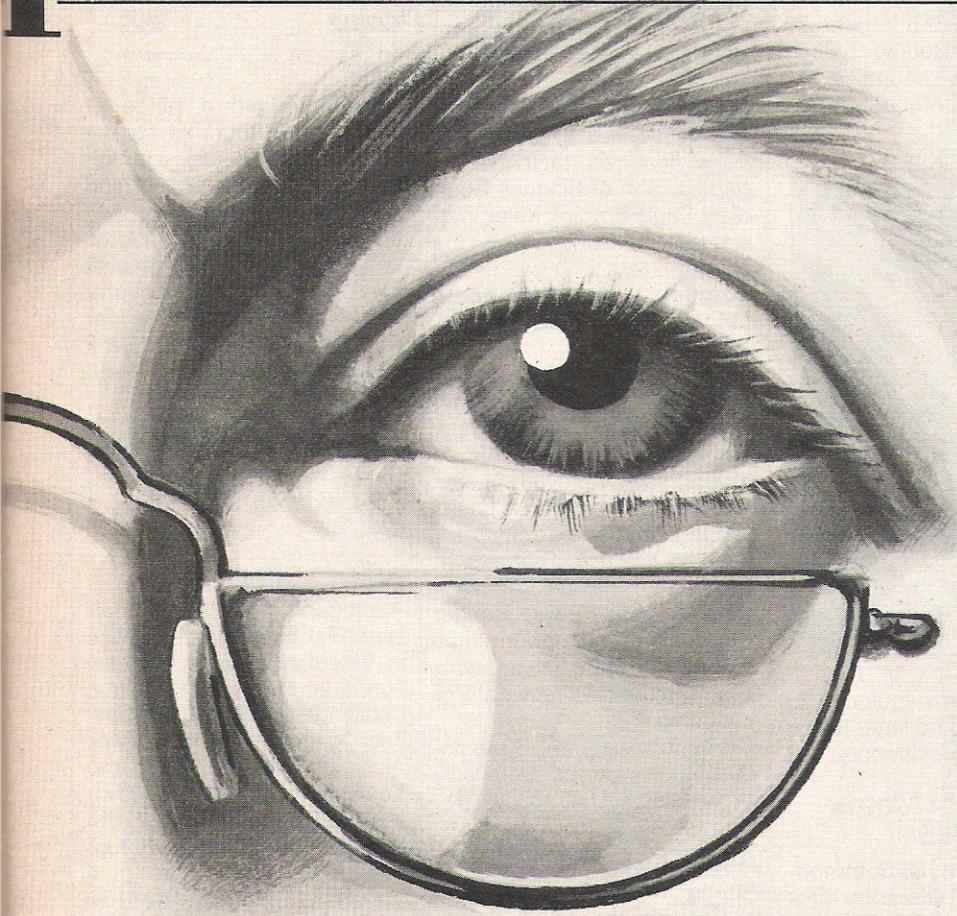
Each file on the program is able to handle 3,800 record entries, and Practifile can sort the files it contains by number or letter in less than a second.

The system is so flexible that you can add, subtract, multiply or divide within individual files, while its use with a word-processing system means that you

Sorts files by number or letter in less than one second. Fully compatible with Practicalc 64.

FILE MENU
VIEW DIRECTORY
DIRECT FILE MAINTENANCE
BATCH ENTRY
GAIL LABELS
REPORT WRITER
CREATE SEQ FILE
LOAD FROM SEQ FILE
ALPHABETICAL REORDERING
FILE CALCULATIONS
RETURN TO DISK MENU

Software from a point of view.



can have instant 'hard-copies' in a matter of minutes.

While Practifile means instant access to mailing lists.

At just £44.50 you won't find a more versatile, flexible and professionally useful data-base.

Inventory 64. The quick, reliable inventory system.

With its capacity of 650 items, Inventory 64 is ideal for the average small business, and means a vast improvement in the efficiency of good stock control.

All you have to do is to enter each item, followed by the information which the program will prompt.

That means things like part number, description,

Handles up to
650 parts.
The quick answer
to stock control
problems.

ADD PART NUMBER	
PART NUMBER	END ? 200
UNIT OF MEAS	? 100
DESCRIPTION	? APPLES
IN STOCK	? 1000
REORDER PT	? 100
MIN ORD QTY	? 5043
SALES YTD	? 45066
LIST PRICE	? 12
NET COST	? 25
LOCATION	? BIN 5
VENDOR	? FRUIT COMPANY

location, stock, year-to-date sales, re-order date, minimum quantity, vendor, list price and other important facts.

From this information your personal computer, with the help of Inventory 64, will be able to collate and assess the major points of an efficient system and be able to present you with a complete and instantaneous view of current stock situations.

And ensure that stock control problems really are a thing of the past.

Pretty good value at just £29.95.

You'll find our superb range of Commodore 64 software for professional and business use in all good computer stores including selected branches of Boots, W. H. Smith, Menzies and Laskys.

If you'd like more information about our software or require any technical help fill in the coupon or phone us on 0473 462721.



Name _____

Address _____

CCI7/84

 PRACTICORP

SHOW REPORT

67 keys total. 4 cursor control keys. 4 programmed (reprogrammable) function keys (up to 8 user defined functions possible). Colour control keys. HELP key. Upper and lower case character set. Graphics character set. Reset button. Escape key

Inputs/outputs

User port. Commodore serial port. ROM cartridge and parallel disk drive port. 2 joystick

ports. Commodore 1531 cassette unit interface port. monitor output – composit/chrominance/luminance. Audio input/output. Power supply input

Features

Built-in BASIC 3.5 – over 75 commands including built-in graphics and sound commands. Screen Window capability



With the launch of the two new Commodore computers comes a new range of compatible peripherals, most of which are also compatible with the VIC-20, CBM 64 and SX-64:

MC8 801 Dot Matrix Colour Printer – £399.99

Ideal for the production of graphs and charts, this 38cps model is capable of printing up to seven colours.

DPS 1101 Daisy Wheel Printer – £399.99

A bi-directional letter quality daisy wheel model with a print speed of 18cps. A full range of alternative typefaces are

offered and it is equipped to use both standard letter heads and continuous stationery.

MPS 802 Dot Matrix printer – £345

Compatible with all Commodore home computers, the MPS 802 has a print speed of 60cps.

Commodore 1542 Single Disk Drive – £229

Replaces the Commodore 1541.

Commodore 1531 Cassette Unit – £44.95

Designed for use with the Commodore 16 and Plus/4.

ADCOMP

Adcomp's latest product, the X100S intelligent plotter has built-in plot routines, two Z80 processors, a large 20 Kbyte memory and can print extremely precise drawings and curves in four different colours – black, red, green and blue. It

retails at £1,060.

Other features include an operating system, bi-directional printing and automatic output of linear and logarithmic axis.

Contact: Adcomp UK Ltd, 56 Long Street, Dursley, Glos. Tel: 0453 46065.

ADMAN

'Hello' said the 64 on Adman's stand – the new 64 speech synthesiser was going through its paces. Adman also revealed that they are no longer producing the VIC-20 version.

Contact: Adman Electronics Ltd., Ripon Way, Harrogate HG1 2UA. Tel: 0423 62642.

ALLIGATA

Arcade facilities on the Alligata stand featured their newest games: Son of Bagger, Guardian, Eagle Empire, Killer Watt and Loco, launched at the show.

Contact: Alligata Software Ltd., 178 West Street, Sheffield. Tel: 0742 61318.

ANAGRAM SYSTEMS

Anagram launched their new Cash Book 64 program. Aimed at the self-employed or the small business man, it is based on standard double entry book keeping practice. Features of the system include VAT summaries, Audit Trails, Budget Summaries and performance as well as Trial Balance and a cash/bank book. It retails at £75 including VAT.

Contact: Anagram Systems, 60a Queen Street, Horsham, W. Sussex. Tel: 0403 59551.

ANIROG SOFTWARE

Anirog released three new games for the 64 – Petch, House of Usher and Ice Hunter the latter of which we featured in our games competition. Each one has the Anirog Turbo-loader and is available on either cassette at £6.95 or disk for £9.95. In the future they will be launching Gas-Kit, a package combining graphics and sound facilities for £14.95.

Contact: Anirog Software, 29 West Hill, Dartford, Kent. Tel: 0322 92518.

APSTOR

Apstor introduced two hard disk systems at the show: the Alpha 10 removable cartridge mass-storage subsystem on the 8000 and 700 series which retails at £3,600, and the Beta 5 with 5+5 Mb of storage for £2,995.

APS are also planning to introduce two other systems, the Gamma 20+20 and the Delta 5+5, costing £3,600 and £1,400 respectively.

Contact: APS Microsystems Ltd, 2-8 Foredown Drive, Portslade, Sussex. Tel: 0273 422512.

ASK

ASK previewed a range of educational programs for the 64 which will be released later this year. Number Chaser and Number Painter are on cartridge for £9.99; Words Words Words on three cassettes at £11.99; Facemaker and Number Puzzler on cassette for £4.99 and finally Hide and Seek and Lets Count on two cassettes for 9.99.

Contact: Applied Systems Knowledge Ltd, London House, 68 Upper Richmond Road, London SW15. Tel: 01-874 6046.

AUDIOGENIC

Audiogenic displayed their latest disk based games – Alice in Videoland, Frantic Freddie, Forbidden Forest and Aztec Challenge on arcade stands. Each game retails at £12.95. Also on display was the Koalapid touch tablet which costs £79.95 together with the Koalapid graphics program on disk.

Future plans include Caverns of Khafka – a graphics adventure game, the Gibson light pen with accompanying software and a range of Koalaware Software.

Contact: Audiogenic Ltd, PO Box 88, Reading, Berks. Tel: 0734 664646.

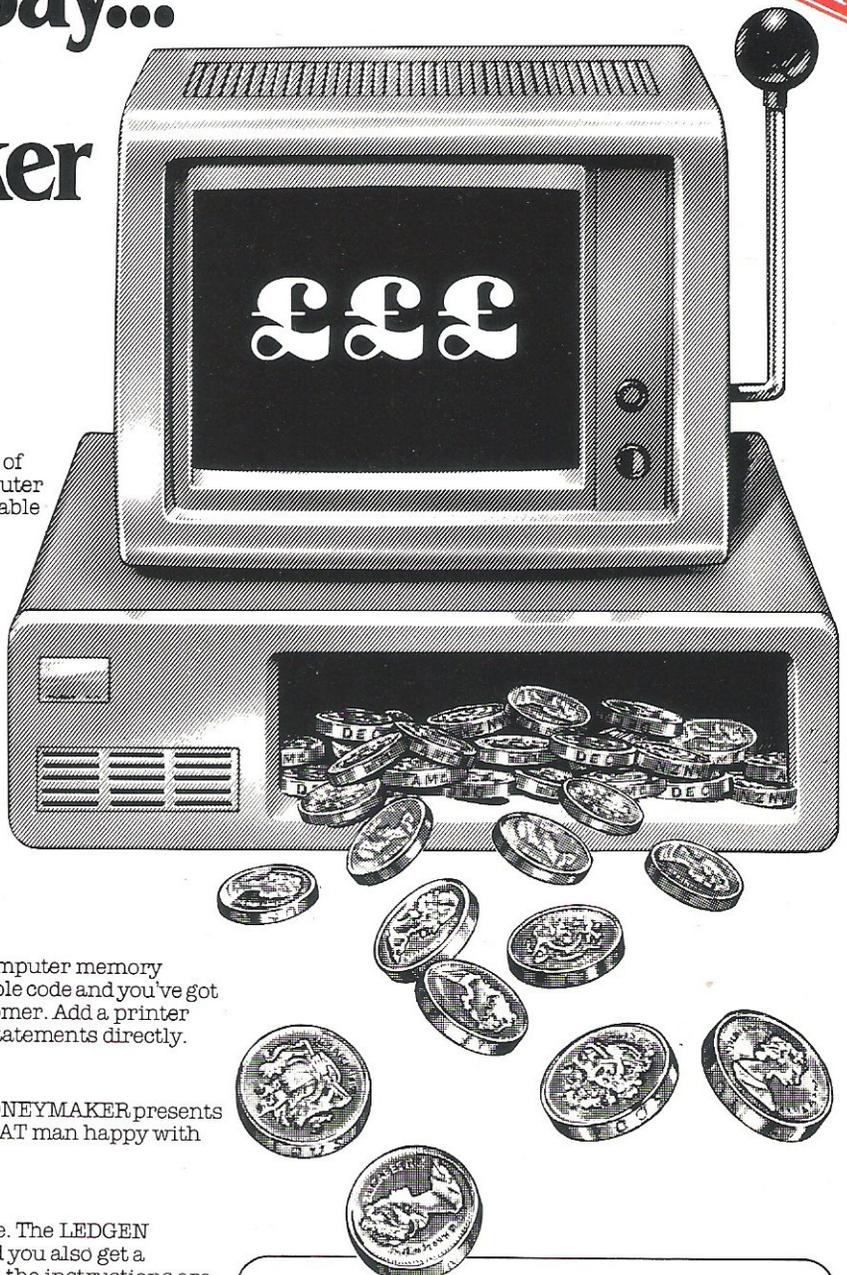
BUBBLE BUS

The now familiar red double-decker bus housed the latest range of games from Bubble Bus. They previewed several games – Easydesign 64, a program designed to teach the Sign language and Strike Force featuring a powerful laser cannon, helicopters and fighter jets.

Future plans include an adventure graphics game and Quadrillon, a disk incorporat-

AVAILABLE ON CASSETTE FOR
COMMODORE 64 & ZX SPECTRUM

How to make your home computer pay... the Ledger Moneymaker program only £25 +P&P



The games are over! With one piece of software LEDGEN have turned the home computer from an entertaining toy into the most profitable asset a small business could have.

KEEPS YOU IN CONTROL OF YOUR CASHFLOW

A few moments spent with your computer keeps the cash flowing in, and control of your business in your own hands.

PINPOINTS YOUR DEBTORS

Why are payments drying up? Who are the customers who are dragging their feet? No more hunting through stacks of invoices to find the answers. The LEDGEN MONEYMAKER puts the complete debtor picture on your screen.

PREPARES YOUR STATEMENTS

You can commit your records to computer memory with LEDGEN MONEYMAKER. Tap out a simple code and you've got a complete up-to-date statement for any customer. Add a printer to your set-up, and you can produce printed statements directly.

SIMPLIFIES YOUR VAT

The immediate picture LEDGEN MONEYMAKER presents of your trading position, helps you keep the VAT man happy with detailed and easily printed returns.

MORE GOOD NEWS

We're offering a lot, and asking little. The LEDGEN MONEYMAKER program costs only £25. And you also get a Purchase Ledger with our compliments. Even the instructions are designed to make your business-life easy. A simple booklet (no 'buzz' words, no technical waffle!) shows you briefly and clearly how to get LEDGEN MONEYMAKER working full time for you.

Incidentally, there's an extra in the package — the proven success and experience of a team of software specialists and accountants who really understand the demands of your business.

Start making your computer pay by posting this coupon now.

LEDGEN
BUSINESS SOFTWARE
MONEYMAKER, McIntyre House, Canning Place, Liverpool

Please send £25 per program plus £1.50 post & packaging to:
"MONEYMAKER"
McIntyre House, Canning Place, Liverpool L1 8HY.

Name

Address

..... Post Code

Nature of Business

Make of Computer ZX Spectrum Commodore 64

Access/Visa/ Card No.

24 Hour Telephone ordering service for credit card holders
051-708 8202
Please allow up to 28 days for delivery — monies held in trust
account until date of despatch.

CC1.1

SHOW REPORT

ing four of their most successful programs – Word Wizard, Advertiser, Poster Printer and Label Printer for £14.95.

Contact: Bubble Bus Software, 87 High Street, Tonbridge, Kent. Tel: 0732 355962.

GRANADA PUBLISHING

A number of books for both the 64 and VIC-20 were introduced including 'Get more from the VIC-20' by Owen Bishop and 'Business Systems' on the Commodore 64.

Contact: Granada Publishing, 8 Grafton Street, London W1. Tel: 01-493 7070.

HANDIC SOFTWARE

Two new software products and a new expansion unit were launched by Handic. Word Result for the 700 series is a companion to Calo Result and is retailing at £250 and Real Estate 64, a monopoly-type game with 3D graphics, costs

£14.95 on disk.

The Superbox 64, has a built-in IEEE interface with three cartridge slots and hardware slot switches and is priced at £94.95.

Contact: Handic Software, 5 Albert Road, Crowthorne, Berks. Tel: 0344 778800.

INTERCEPTOR MICROS

Two new games for the 64 – Tales of the Arabian Nights and Where's my bones, both with ultra load were launched at the show together with Pulse an extended version of Interceptor's original assembler.

Cassette versions cost £7 and disks retails at £9 each.

Contact: Interceptor Micros, Lindon House, The Green, Tadley, Hants. Tel: 07356 71145.

INFORMATION TECHNOLOGY EXCHANGE

This exchange provides a centre for members of the

business community to obtain information about new technologies and services include training, consultancy and workshop facilities.

Contact: Milton Keynes Information Technology Exchange, Midsummer House, 429 Midsummer Boulevard, Saxon Gate West, Milton Keynes. Tel: 0908 668866.

JCL SOFTWARE

The 64 assembler, a new assembler for the 64 was introduced at the show. Features include toolkit and a text editor and it will be available on cartridge for about £45.

Contact: JCL Software Ltd., 47 London Road, Southborough, Tonbridge Wells, Kent. Tel: 0892 27454.

LCL

Francis Drake Adventure Game for the 64 on cassette priced at £7.95 and 'Brainteasers for the Commodore 64' by G Ludinski retailing at £5.95 are the two newest releases from LCL, specialists in Educational products.

Contact: Ludinski Computer-Assisted Learning, 26 Avondale Avenue, Staines, Middlesex. Tel: 0784 58771.

MATOR

Mator launched a number of products: the Sharkette hard disk with an integral tape streamer for the 8296 and 700, prices range from £4,567; Squid, a network for 64's which allows the sharing of eight peripherals between users, retailing at £80 per part, and PERCH, a communications emulation package costing £600 which will connect the Commodore PC (due for release in 1985) to either the ICL mainframe or the IBM 278073780.

Contact: Mator, Willett House, 12 Grand Avenue, Hove, Sussex. Tel: 0273 726464.

MC2

The new Safetrack suspension filing system for floppy disks stores 5.25 and 8 inch disks in existing filing cabinets or can be used as a free-standing unit.

Contact: MC2 Ltd, 235 The Broadway, Wimbledon, London SW19. Tel: 01-540 9370.

MELBOURNE HOUSE

Melbourne are planning the release of a range of adventure games specialising in either graphics or text. Arabian Nights and Castle of Terror were previewed at the show and future adventure games such as Hampstead, Sherlock Holmes, Motor Bike and Mugsy are promised for future release.

Contact: Melbourne House, Castleyard House, Castleyard, Richmond. Tel: 0438 316561.

MICRO POWER

Cybertron Mission, Ghouls, Swoop and Felix in the Factory were released by Micro Power on cassette for the 64 at £6.95 each.

Also on display was the Questprose Incredible Hulk game from Adventure International which, according to a company spokesman, is a "step backwards in adventure games"! It is available on cassette for £9.95. Versions featuring Dr Strange and Spiderman are also planned.

Contact: Micro Power Ltd, Northwood House, North Street, Leeds. Tel: 0532 458800.

MILLS ASSOCIATES

Two mannequins – a secretary fed up with her faulty compu-

ter and an engineer in overalls – illustrated the company's function. They provide maintenance contracts for Commodore's Business computers.

Contact: Mills Associates Ltd, Wonastow Road, Monmouth, Gwent. Tel: 0600 4611.

MIRRORSOFT

Count with Oliver and Look Sharp were featured on Mirrorsoft's stand and are the first in their early learning series for the 64.

Both are available on cassette for £7.95. Two utility programs, also for the 64, were previewed: Go Sprite – a sprite generator and animator which can be controlled with joysticks, keyboard and light pen, and Game Creator.

Contact: Mirrorsoft, Holborn Circus, London EC1. Tel: 01-822 3947.

OXFORD COMPUTING SYSTEMS

OCS previewed Turbo, a three dimensional racing game. It pushes graphics and sound to the limits and will cost £7.95 on cassette.

OCS plan to add more compilers to their existing range with the help of an inhouse system known as the Metacompiler. In addition, tools such as the graphics, screen editors and a 'design your own racing circuit' used to design Turbo will be marketed.

Contact: Oxford Computer Systems, Hensington Road, Woodstock, Oxford. Tel: 0993 812700.

PERSONAL PERIPHERALS

Personal Peripherals launched the Super Sketch II tablet together with Master Illustrator software for £59. Four software

SHOW REPORT

packages – the Master Home Planner, Business Presenter, Super Music Box and Super Sketch are being developed.

They also introduced the SuperStik joystick.

Contact: Personal Peripherals Inc, 930 N. Beltline Road, Suite 120, Irvine, Texas 75061, USA. Tel: 0101 214 901440.

PRECISION SOFTWARE

Four home applications to be used with Superbase 64 were released at the show. Each Homebase can be bought for £17.95. Programs include birthdays, shopping, address books and diet plans.

Additional new programs include Stepping Stones. Costing £9.99 each, the programs can be altered to suit business requirements such as travel agencies and estate accounts. Two other programs, insurance broking and pharmacy labelling, are retailing at £52.

Contact: Precision Software, 6 Park Terrace, Worcester Park, Surrey. Tel: 01-330 7166.

QUICKSILVA

Trashman, Escape and 3D Tunnel for the 64 were previewed at the show and are available on cassette for £7.95. Traffic, a Hungarian program will be released later this year.

Contact: Quicksilva, 92 Northam Road, Southampton. Tel: 0703 201169.

ROMIK SOFTWARE

Romik introduced Fig Forth, a version of Forth, at the show. Available on disk it costs £14.99.

Plans for future releases include a disassembler package, and two games for the 64 – Anter-Planter and the Great Nordic War.

Contact: Romik Software, 272 Argyll Avenue, Slough. Tel: 0753 71535.

SMALL SYSTEMS ENGINEERING

Small Systems exhibited their new range of high speed single and multi-user hard disk systems which allow 64 users to share a single drive. Features include an integral on-line tape back-up and a built-in error correction code. The 14Mb size costs £4,295 and the 92Mb size costs £6,645.

Contact: Small Systems Engineering Ltd, 24 Canfield Place, London NW6. Tel: 01-328 7145.

STACK 100

Stack previewed a drawing software program for the 64 which will cost £5 on cassette. It is designed for technical applications and has two screens. The templates contain flowcharts and electronic diagrams which can be used to design circuit diagrams.

Contact: Stack Computer Services, 290-298 Derby Road, Bootle, Liverpool. Tel: 051 933 5511.

STONECHIP ELECTRONICS

Stonechip previewed two new software programs – Draw program for £9.99 and Breakthrough for £4.99 both on cassette. They also introduced Sketch Shutter another software program.

Stonechip will be marketing Supersketch II from Personal Peripherals.

Contact: Stonechip Electronics, Brook Trading Estate, Deadbrook Lane, Aldershot, Hants. Tel: 0252 318260.

SULIS SOFTWARE

Sulis introduced a range of educational software on cassette for £9.95 – Just a Mot, Starter Word Splits, Word

Power, Junior Word Splits, Beseiged and Open Sesame. Future plans include software for the Commodore 16.

Contact: Sulis Software, 4 Church Street, Abbey Green, Bath. Tel: 0225 61929.

SUPERSOFT

Supersoft launched two new games Pesky Painter and Star Command on cassette for £6.95. They also introduced Interdictor Pilot, a space flight combat simulator, Music Master which plays and composes music for £17.95 and a Graphics Design program for £9.95.

Contact: Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex. Tel: 01-861 1166.

TADIRAN ISRAEL

ESL launched a number of products for the Commodore business machines: ED-NET, an IEEE-433 transparent network solution for educational use; a hard disk Host adaptor system with a removable 5Mb hard disk which can be used on either the 64 or 700 with ED-NET; MAGIC, Manager of Animation Graphics in CAI; ED-WORD, a high calibre bilingual word processor for use on the 8032, 8296, 700 and 64; ED-GRAPHICA a high resolution graphic system for the 64 and 700; an Application Generator based on the B+TREE Data Retrieval System and B+TREE, a Data Base Management System.

Contact: E.S.L. Software Systems, 115 Dizengoff Street, Tel-Aviv 64397, Israel. Tel: 03 234059/03 233130.

3D DIGITAL DESIGN

3D introduced the General Purpose Interface System

which can operate with the 64. It combines analogue and digital inputs and outputs and is designed to be used in laboratory and research environments.

Contact: 3D Digital Design and Development Ltd, 18/19 Warren Street, London W1. Tel: 01-387 7388.

TANDATA

Tandata launched a number of products: the TM100 operating on 1200/75bps V23 full duplex mode; the TM120 includes a 300/300 capability and costs £165 and software which allows the micros to act as a viewdata terminal which will work with the entire Commodore range. 64 software costs £32 on disk and £42 on ROM and for both the VIC-20 and Pet, software costs £27.

Contact: Tandata Marketing, Albert Road North, Malvern, Worcs. Tel: 06845 86421.

VALIENT DESIGNS

The Valient Turtle, a remote-controlled Robot with rechargeable batteries was introduced at the show. Designed for educational applications, the turtle is supplied with a remote-control communicator box and with a disk or cassette containing LOGO interface and/or a Turtle graphics package. It retails at £228.85.

Contact: Valient Designs, Park House, 140 Battersea Road, London SW11. Tel: 01-720 3947/627 0470.

VIZA SOFTWARE

Viza launched Vizastar, a fully integrated spreadsheet, database and graphics package for the 64, priced at £60.84.

Contact: Viza Software, 9 Mansion Row, Brompton, Gillingham, Kent. Tel: 0634 813780.

Electronic lady

Dutch computer experts Chriet Titulaer demonstrate future possibilities of the computer with their model to show the effect of oral contraception on women

For Dutch computer experts Chriet Titulaer Productions the question from the Wyeth Company sounded very simple: can you construct a model through which the female monthly cycle can be explained and with which the effect of oral contraception (pill usage) can be visualised? EVE became the answer to the question.

The model to be built, should on the basis of a model of the female body, perform the following functions: make the normal menstruation cycle visible and beside this visualise the hormone level in the blood; to show the effect of hormones on some organs; to visualise the effect of two different sorts of hormonal contraceptives.

A stream of hormones in the blood was to be depicted in the model (a 'run effect' of lights or LED's) and a glow effect in some organs. The hormone level in the blood should be made visible by means of differences in intensity of the lights. The hormone level should

also be visible on a monitor. The client supplied a detailed list of organs to be visualised in the model and a graph with the lapse of the hormone levels during the monthly cycle.

The heart of the design became a Commodore 64 microcomputer. It is nice to realise that this application fully exploits the possibilities of the computer and its operational memory to the last bit. The software, developed by Henk Weteling, occupied the whole operational memory of the computer. The loading of the program using a (Commodore) cassette recorder takes about 10 minutes.

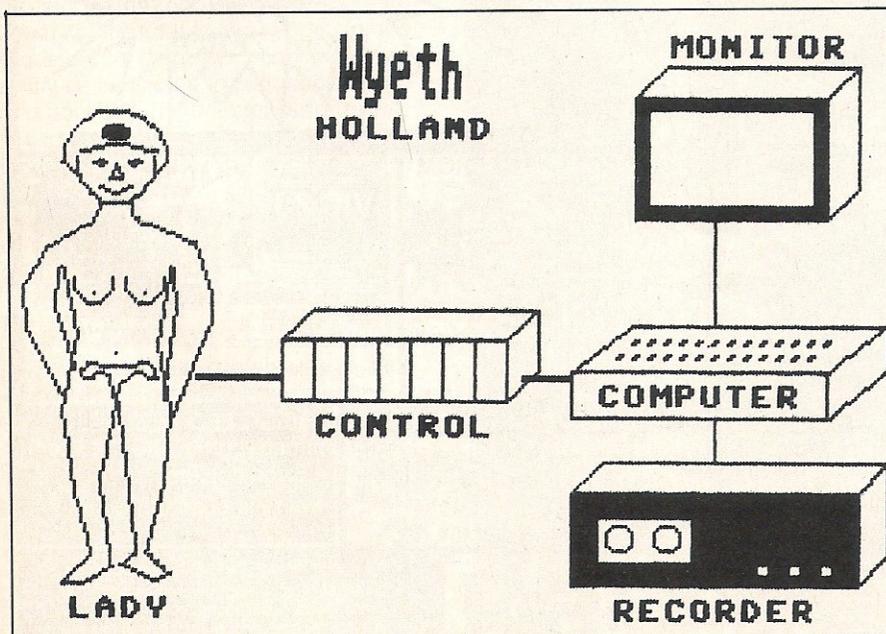
The program is controlled by sound pulses which are on an audio cassette. The audio cassette is played in a Philips stereo cassette recorder. The explanation about the monthly cycle and the working of the pill is recorded on one track of the tape and the control pulses are on the other. The model has been constructed in such a way that a new

audio cassette can be recorded at any time. A control pulse is recorded on tape by a button. The same model can therefore be used with different groups (specialists, G.P.'s laymen) who can have explanations on their own levels. The pulses of the audio cassette reach the 64 through the input/output port. The computer in its turn can give the cassette recorder a command ("rewind the tape"). The computer also recognises the authentic control tapes. If by accident the cassette containing the computer program is inserted into the Philips recorder the program will not start.

The complete EVE demonstration model consists of the following parts: Commodore 64 computer; a rack with control electronics; an audio cassette recorder; a cassette recorder functioning as input for the Commodore; a monitor; and a photograph of a female body with about 350 lights.

The control buttons have been removed from the audio cassette recorder and have been replaced by an interface, ie a cable running from the control electronics to and from this recorder. The connection between the model with the lights and the control electronics is made by a 63 core cable.

A demonstration of EVE starts with the loading of the program. When this is done the run command can be started. The computer asks the user whether he wants manual operation or not. When manual operation is not chosen (eg for trade show) the number of cycles can be adjusted. A text containing 4 lines of 29 characters at most can be put in. This option creates the possibility to welcome special visitors via the program on the screen or to add an appropriate text for a certain exhibition. The various parts have been built into an Akai cube, which has been supplied with a small glass door with a lock, a backwall with a vent grating and a drawer for the Commodore. The start button has been adjusted on top of the cube to make the operation easier.



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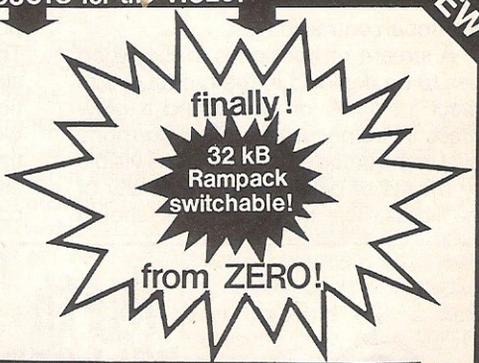
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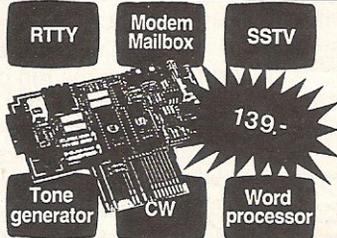
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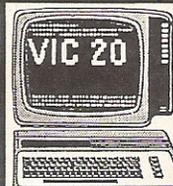
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APPLICATIONS

The software packet can undoubtedly be called a clever composition. In the graph which is being composed, the concentrations of four different substances (LH, FSH, progesterone and oestrogen) is reflected.

The vertical axis changes constantly so that the four substances are dealt with alternatively. In the graph on the monitor these four substances have a different symbol indication, in the model with the lightbulbs they are differently coloured. Different colours are not chosen for use on the monitor because the graphic possibilities of the Commodore 64 are much greater if just one colour is used. The uniqueness of this computer application is on the one side represented in its hardware and on the other in its software.

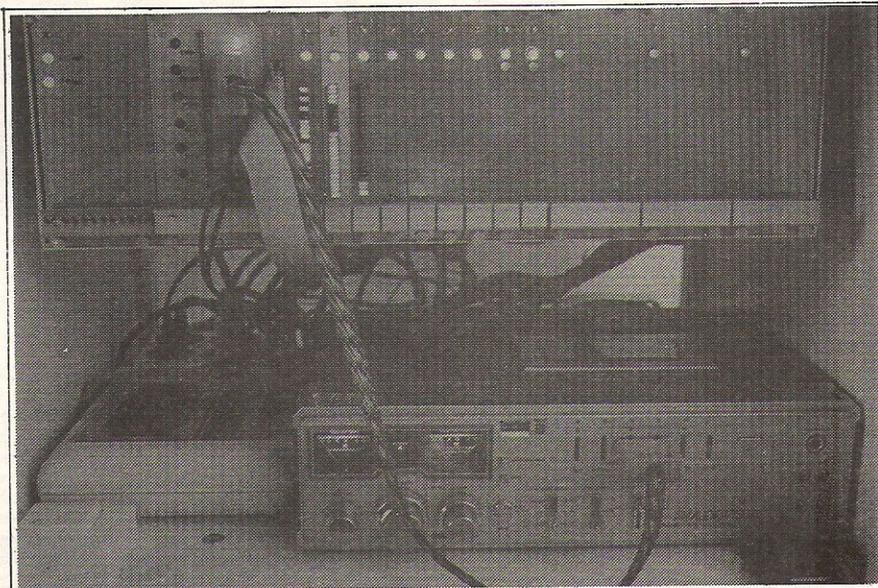
Jac Swillens, who only recently passed his exam at a technical school, has developed the control electronics, ie a rack with 15 printed circuits for the hardware. Jac made the design for the eight different printed circuits (some of them are used more than once in the rack) and had them manufactured in Belgium. The complicated control electronics actually consist of only one example. The model now is much more universally applicable because you can also depict the refining process in the petrochemical industry or traffic control in a city, with minor alterations. For controlling the lights in the model only 2

bits in the Commodore I/O userport are used. 72 bits output were needed for the model. The applied technology can easily be expanded to control hundreds of output bits. The uniqueness does also concern the software which not only is ingenious and easy to handle but also full of nice surprises:

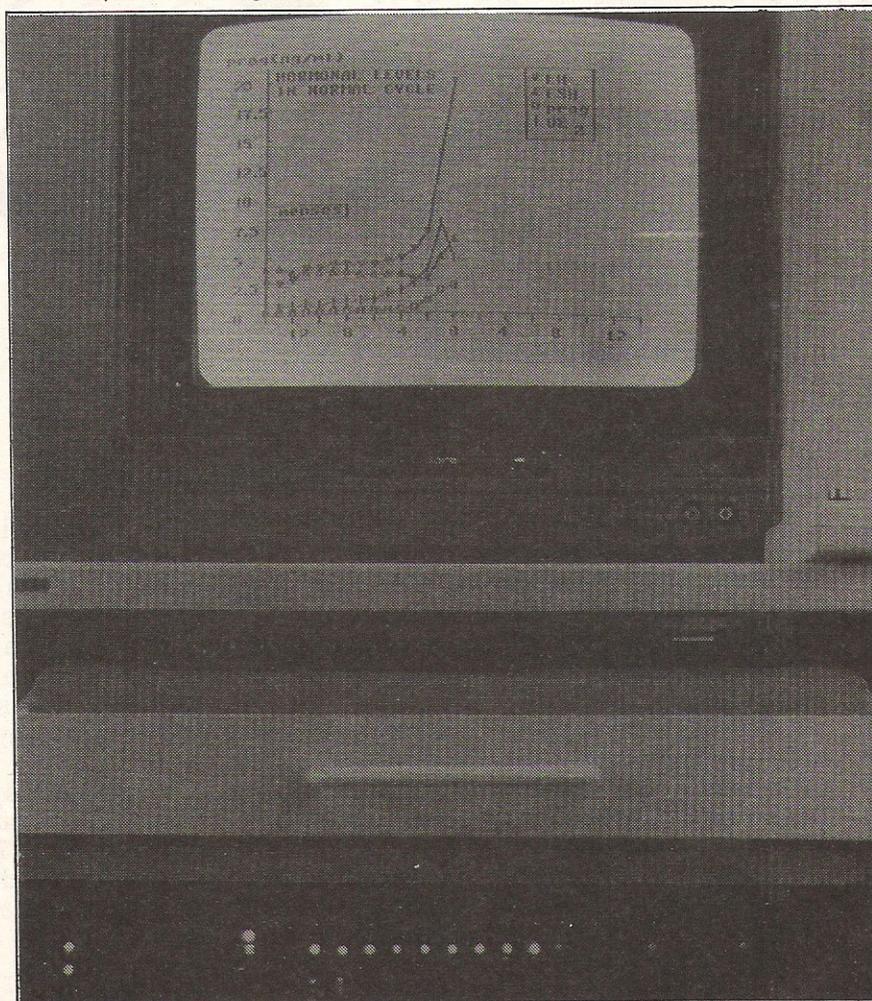
- the program tests the correct working of the model and indicates possible mistakes;
- the program asks questions and informs the user;

- the program even contains the moving logo of the client Wyeth.

The software is written in BASIC together with the (Simon's Basic) option of Commodore. EVE is a 'live' demonstration of the possibilities we have with a computer in the year 1984. Wyeth undoubtedly will draw much attention with this model. In the first place because with this, useful and impressive information about the pill usage can be given, but also because EVE radiates a smart sample of technical ingenuity.



The controlling electronics (above) consist of a rack with 15 (of which eight are different) quick interchangeable and specially developed print plates



The monitor showing the hormone levels and beneath this, the computer and controlling electronics

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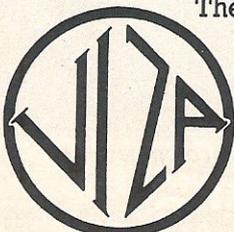
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LETTERS

Dear Sir

I bought a 64 in February of this year and have had to take it back three times to be exchanged. They all displayed the same fault and I am beginning to wonder whether all of the latest 64's are faulty or if I am doing something wrong!

The problem appears to be in the SID chip, in the volume control register (address 54296). Every time I reduce the volume under program control by POKEing decreasing values [(16)] into address 54296 this produces an unpleasant 'click' from the speaker, ruining many special sound effects. This occurs when using my TV receiver and my hi-fi system (through the output jack) and also occurs if the VOLUME command of SIMON'S BASIC is used to reduce the volume (whether or not the waveform has been set).

I would normally assume I was doing something wrong except that the same problem doesn't occur when I use the school 64 in the same configuration.

The school 64 is one of the earlier models, manufactured in West Germany with mustard colour keys whereas mine is a recent model. Is there any difference and what am I doing wrong?

**W P Conway,
London.**

There are differences between the SID chip of the older and newer models of the 64. The main changes are in the filters. To eliminate the clicking sound, try reducing the volume by setting the 'release values' rather than POKEing to change the volume directly. By doing this the volume will die slowly, rather than POKEing the volume directly during a sound thus causing the click sound.

It is unlikely that Commodore intended the SID chip to make the clicking sound, so there may be a small fault in your machine.

Dear Sir

I am 14 years old and live in Portugal. I have a VIC-20 and am very interested in music synthesisers especially as I play the organ.

I would like to know if my synthesiser can be plugged into the VIC-20 and if it can, what accessories are necessary.

I would also like a booklet that shows all the things I can plug into the VIC.

**John De Lousa
Portugal**

The Vic-20's sound capacity is not as good as the 64 and we have not heard of any synthesisers that it can be used with.

Commodore produce a booklet which lists a variety of products - games, utilities, educational programs which are VIC-20 compatible. Write to Vicsoft, 675 Ajax Avenue, Slough, Berks.

Dear Sir

I recently saw a program featuring a development rack. Printed circuit boards with extra chips and Eproms slot into the rack and it connects them to a computer system. The rack can be used in the development stages of a program. What I would like to know is whether there is a rack available for the 64?

**Antonio Windas
Hull**

The simple answer is that there isn't! The 64 has a large enough memory for most programming purposes and so there isn't a market for memory expanders.

Dear Sir

I have not had much success with the auto-run program in the April issue.

I have checked it several times, but every time I run it, I get a "number of data value error." When I try to save something with it using the SYS command, the tape recorder just keeps winding on and on! When I type RUN/STOP RESTORE, the screen just goes blank. Can you help?

Is there any information for a disk version of the auto-run program?

**A Conlan
N Ireland**

Accidently typing commas at the end of

a line is one of the most common mistakes and by your description it sounds as if you have added one comma too many! Re-check your program.

We haven't developed an auto-run program for disks yet, but we have had a number of enquiries about a disk version and so we will probably be publishing one in the near future.

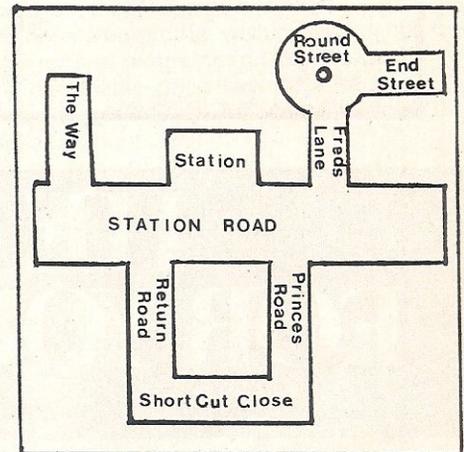
Dear Sir

Please could you HELP!

I am having trouble with the Adventure Game in the November 1983 issue. I have been locked in a station, blown up and run over by buses and I'm still going in circles! I can't get past the locations shown in the enclosed sketch. Am I making a mistake?

**JA Quintin
Norwich
Norfolk**

JA Quintin's diagram illustrates his predicament



We assume that you included the line that we omitted from the published program because you wouldn't have got of the tube station otherwise! Judging from the diagram it looks like you missed line 10060 because you haven't included End Road. If not, just check the listings again because there are no errors in the program. Happy adventuring!

THE ADDRESS TO WRITE TO IS:

QUERIES, Commodore Computing International,
167-169 Great Portland Street, London W1.

THE TELEPHONE NUMBER TO CALL IS:

01-636 6531 (remember - Thursday afternoons, 2 pm till 5 pm)

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Oxford Pascal

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From Oxford Computer Systems (Software) Ltd, 'Oxford Pascal is a complete implementation of the popular programming language PASCAL running on the 64.'

That is what they claim. How true is this? Read on:

First we will explain what PASCAL is. PASCAL is a high level 'structured' programming language that is taught as a first language at most universities (they don't like Basic). The advantage of PASCAL over BASIC is that PASCAL is structured - that is to say PASCAL programs are much easier to read and understand, which makes the debugging of the program much easier as well.

A PASCAL program can be separated into three different sections:

1. Variable declarations consist of constants, data types, and variable as in lines 1030-1100 of the example PASCAL program at the end.
2. The functions and procedures can be multi-line and are like small programs in themselves, being possible to split them into the same three sections. In the example there are three procedures being used, these are lines 1110-1230, 1240-1350, and 1360-1460.
3. The Main Program. Although the procedures come in the listing before the main program, when it is run control is sent directly to the main program. In the example line 1470.

One other thing to note is that on examination of the PASCAL example,

there is not a single reference to a line number (in fact line numbers are not used and if GOTO's are required, they are labelled with numbers) but in the equivalent BASIC version, there are quite a few GOTO's and GOSUB's.

The data TYPES mentioned in (1) are very complex and would take up too much time to explain in this review but when mastered can be used to great effect as they are very powerful.

Another major advantage of PASCAL over BASIC is the execution time. PASCAL programs run much faster than BASIC because they are compiled first. This means that the PASCAL source program (example listing) is compiled to P-CODE which is a pseudo-machine code program which is run on the system's P-CODE interpreter. An example of the increase of speed would be to compare the PASCAL and the BASIC program examples. The PASCAL program took about 2 minutes to run and the BASIC version took just under 7½ minutes.

Does Oxford PASCAL measure up to standard PASCAL? Yes, and more. Oxford PASCAL is a full implementation of Standard PASCAL and also gives some added commands. These are for High Resolution graphics and sound.

The manual is detailed and understandable, not only giving explanations of the commands and what they do but also explaining the rudimentaries of PASCAL programming.

Oxford PASCAL is compiled to

P-CODE with the resident compiler but it can be compiled on disk to load in as a program with a SYS call.

Oxford PASCAL comes on tape for £14.95 or disk for £49.95. The disk version is compatible with a 1541 disk drive or a 4040, 8050, 8250 via interpod (another product from Oxford Computer Systems Ltd.).

We reviewed Oxford PASCAL on the latter of the two systems using a 4040 disk drive.

Conclusions

At a price of nearly £50 for the disk version, this program is a must for the serious programmer wishing to expand his (or her) programming knowledge at a reasonable price (we have seen a version of PASCAL for another micro retail at about £250).

Further Reading

QUICK PASCAL by David L. Matuszek, John Wiley & Sons.

INTRODUCTION TO PASCAL by Rodney Zaks, Sybex inc.

Product: Oxford PASCAL

Company: Oxford Computer Systems (Software) Ltd., Hensington Road, Woodstock, Oxford OX7 1JR. Tel: 0993 812700.

Description: Programming language

Computer Requirements: CBM 64+ Tape or Disk drive.

Price: £14.95 (tape) or £49.95 (disk).

```

1000 program e(output);
1010 (* This program calculates the value of the mathematical
1020 constant 'e' to 100 decimal places *)
1030 const
1040     max = 105;
1050 type
1060     digit = 0..9;
1070     longint = array [1..max] of digit;
1080 var
1090     term,sum: longint;
1100     i,n,count: integer;
1110 procedure divide(var num: longint;
1120                 den: integer);
1130 var
1140     i,carry,top: integer;

```

REVIEWS

```

1150 begin
1160   carry:=0;
1170   for i:=1 to max do
1180     begin
1190       top:=10*carry+num[i];
1200       num[i]:=top div den;
1210       carry:=top mod den;
1220     end
1230 end;
1240 procedure add(var num,plus:longint);
1250 var
1260   i,carry,temp:integer;
1270 begin
1280   carry:=0;
1290   for i:=max downto 1 do
1300     begin
1310       temp:=num[i]+plus[i]+carry;
1320       carry:=temp div 10;
1330       num[i]:=temp mod 10;
1340     end
1350 end;
1360 procedure zero(var count:integer;
1370                 term:longint);
1380 var
1390   i:integer;
1400 begin
1410   i:=max;
1420   repeat
1430     count:=term[i]+count;
1440     i:=i-1
1450   until (count>0) or (i<=1)
1460 end;
1470 begin
1480   n:=3;
1490   term[1]:=5;
1500   for i:=2 to max do
1510     term[i]:=0;
1520   sum:=term;
1530   sum[101]:=5;
1540   begin
1550     repeat
1560       count:=0;
1570       divide(term,n);
1580       add(sum,term);
1590       n:=n+1;
1600       zero(count,term)
1610     until count=0;
1615     page;
1620     write('Exp(1)=2. ');
1630     for i:=1 to 100 do
1640       write(sum[i]:1)
1650     end
1660 end.

```

```

10 REM BASIC PROGRAM TO CALCULATE THE
20 REM MATHEMATICAL CONSTANT 'E' TO
30 REM 100 DECIMAL PLACES.
40 DIM TEX(105),SUZ(105)
50 N=3
60 TEX(1)=5
70 SUZ(1)=5:SUZ(101)=5
80 CO=0
90 GOSUB1000
100 GOSUB2000
110 N=N+1
120 GOSUB3000
130 IF CO<>0 THEN 80
140 PRINT"EXP(1)=2.";
150 FOR I=1 TO 100
160 PRINTMID$(STR$(SUZ(I)),2,1):NEXT
170 END
1000 REM
1010 REM EQUIVALENT OF PROCEDURE DIVIDE
1020 REM
1030 CA=0
1040 FOR I=1 TO 105
1050 TP=10*CA+TEX(I)

```

```

1060 TEX(I)=INT(TP/N)
1070 CA=TP-TEX(I)*N
1080 NEXT
1090 RETURN
2000 REM
2010 REM EQUIVALENT OF PROCEDURE ADD
2020 REM
2030 CA=0
2040 FOR I=105 TO 1 STEP -1
2050 TM=SUZ(I)+TEX(I)+CA
2060 CA=INT(TM/10)
2070 SUZ(I)=TM-CA*10
2080 NEXT
2090 RETURN
3000 REM
3010 REM EQUIVALENT OF PROCEDURE ZERO
3020 REM
3030 I=105
3040 CO=TEX(I)+CO
3050 I=I-1
3060 IF NOT((CO>0)OR(I<=1)) THEN 3040
3070 RETURN
READY.

```

The above is an example of a PASCAL program and the BASIC equivalent (which do you prefer?)

REVIEWS

SWITCHABLE 16K RAM

Fox Electronics' Vixen Switchable 16K RAM expansion cartridge expands the VIC-20 memory quickly and efficiently.

The VIC-20's memory map can be divided into four 16K memory blocks and, by setting the switches in certain combinations, these blocks can be utilised to give four different memory configurations: in Mode 1, there is 8K of memory in blocks 1 and 2 giving 16K RAM; in Mode 2, 3K of memory is put in RAM 1-3 and 8K in block 1 producing a total of 11K altogether; in Mode 3, 3K of memory is in RAM 1-3 and the 8K in block 3 is not seen by the computer. Finally in Mode 4, the 16K can be used with a standard 8K cartridge to give a total of 24K.

With the cartridge fitted, modes one to four will have the following bytes free; 19967, 11775, 6655 and 3583.

The switch presented no problems and the cartridge worked extremely well.

Product Name:

Vixen Switchable 16K RAM

Product:

16K memory expansion board for VIC-20

Company:

Fox Electronics Ltd, Fox House, 35 Martham Road, Hemsby, Nr Great Yarmouth, Norfolk. Tel: 0493 732420

Features:

Cartridge with attachment for expansion port.

Switches can be set to give four memory combinations: 16K, 8K and 3K, 3K only and 16K (for use with 8K cartridge)

Documentation:

Adequate leaflet

Warranty:

1 year

Price:

£34.95 inc VAT.

LONGMAN EDUCATIONAL SOFTWARE

Longman have produced a set of programs for the 64 designed to reinforce classroom learning for six to ten year olds. The three programs in this early learning series - BMX Number Jump, 3D Hypermaths and Word Wobbler - incorporate the basic skills of reading, spelling and arithmetic into colourful and exciting games.

The games are only intended to supplement skills children have already acquired at school. They are not complex arcade games requiring light-

ning reflexes, the only requirement besides some arcade competence (using a joystick for example) is answering the questions speedily and accurately. Even a child who regularly tots up ten thousand on Space Invaders will have trouble with these games if he can't add 17 and 9 or subtract 5 from 13 quickly.

Of course children's abilities vary and so there are a range of levels to allow for the variations. In Word Wobbler there are five levels of difficulty. For example, children can be asked to spell 'pup' in the lowest level or 'unicorn' in the highest. Similarly in both maths programs the easier levels deal with simple addition, whereas the harder ones ask multiplication questions.

The maze in BMX Number Jump consists of bright green bushes, water jumps, gates and boxes containing various numbers. Seven levels of difficulty incorporate the three basic maths skills using numbers 0 to 99. An example is the multiplication tables. The player controls a BMX bike, a familiar theme for most children, and a pink kangaroo lurks in the corner ready to knock the bike over on contact. A sum appears on one side and the answer lies somewhere in the maze. If the player can get to the correct answer box before the kangaroo the next question is posed. After getting five questions right the player goes onto the next level and the kangaroo gets faster.

It's an amusing game and the bike does some great wheelies. There is no time for mistakes as the kangaroo moves fast and once you've mastered the bike controls it gets to be quite an exciting game.

In 3D Hypermaths the action takes place in space as the player dodges meteors en route to the black hole. The difficulty levels are similar to those in BMX Number Jump.

On one side of the screen, the score, the question and the answer board are shown and to successfully attain the heights of Galactic Commander, the player has to push the ship forward using the joystick until the answer flashes on screen. Once five questions have been answered correctly and the twisting tunnel is negotiated without sustaining too many knocks, the player moves up the ranks.

To attain success, the player has to keep the ship under control and get the answer right encouraging the development of speed and skill in maths as well as developing dexterity and coordination.

Spelling words correctly is the primary aim in Word Wobbler. More than

1500 words are divided into difficulty levels. Letters are arranged haphazardly on a grid and a word pops up on the edge of the screen. It then disappears and by guiding the letter getter along conveyor belts the player goes from one letter to another avoiding yellow word wobbling aliens. If the wrong letter is chosen or the player overstays he is zapped into the sky and descends by parachute losing one of his five lives. There is also an option for the kids to participate by inserting their own words.

As the games continues alien appearances increase and the letters change places on the grid in mid-game.

All three programs are excellently designed. The game formats are fairly simple and the use of colourful imaginative graphics will help to stimulate a child's interest. We found some of the questions and game situations quite testing so even the most advanced child will find a level to suit them.

Product:

Educational Software

Titles:

BMX Number Jump, 3D Hypermaths and Word Wobbler

Company:

Longman Software, Longman House, Burnt Mill, Harlow, Essex, CM20 2JE. Tel: 0279 26721

Applications:

Educational aids for 6-10 year olds

Documentation:

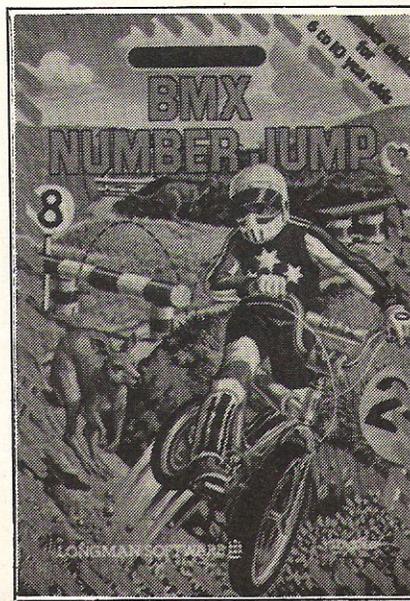
Adequate explanatory leaflets

Hardware:

64, cassette recorder, joystick essential

Price:

£7.95



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Telephone enquiries to Software Support Manager on 01-801 5132.

Mini monitor

This month we have a useful program for the 64 that we have called mini-mon (for want of a better name), which allows you to access the computer's memory directly.

Mini-Mon

This program has five commands: M (Memory display), X (exit), L (Load), S (Save), and : (Alter memory).

The reason for the command : is that the memory display command puts a ':' at the front of the line and you can alter the memory just by moving the cursor to the required byte, change it and press return.

Memory Display

The Syntax for memory display is: MADR1ADR2

Where ADR1 and ADR2 are the start and end addresses of the memory to be displayed in hex, eg M9000 9281 will display the memory that this program

occupies.

The memory display format is the address followed by eight bytes of memory all displayed in hex:

```
..9000 A2 FF 9A A9 0D 20 D2 FF
```

Hence the command ':'. To change a byte in memory, use the cursor keys to position the cursor over the required, change it (remember in hex), and press the return key. Any alterations to the line will be made.

Load

This routine loads a block of memory from any input device (tape or disk). The format for this is:

```
L"filename",01 for tape or
L"filename",08 for disk.
```

Be careful that the program being loaded does not overwrite mini-mon.

Save

This routine allows you to save a specified block of memory again to tape or disk. It is called by:

```
S"filename",01,ADR1,ADR2 for tape or:
S"filename",08,ADR1,ADR2 for disk.
```

Where ADR1 is the start of the block of memory and ADR2 is the end address plus one.

Exit

This routine just returns you to Basic. X

Note: Mini-mon will work with the Basic ROM switched out but if you take it out, make sure it is in before using the X command.

```
10 I=36800:T=0
20 READA:IFA=-1THEN50
30 POKEI,A:I=I+1
40 T=T+A:GOTO20
50 IFT<87409THENPRINT"CHECKSUM ERROR":END
60 IFI<37509THENPRINT"NO. OF DATA ERROR":END
70 PRINT"ENTER MINI-MON WITH SYS36800."
80 PRINT"X TO SAVE MINI-MON, ENTER MINI-MON AND"
90 PRINT"TYPE S"CHR$(34)"MINI-MON"CHR$(34)",01,8FC0,9286"
100 DATA169,192,133,51,133,53,133
110 DATA55,169,143,133,52,133,54
120 DATA133,56,76,0,144,0,0
130 DATA0,0,0,0,0,0,0
140 DATA0,0,0,0,0,0,0
150 DATA0,0,0,0,0,0,0
160 DATA0,0,0,0,0,0,0
170 DATA0,0,0,0,0,0,0
180 DATA0,0,0,0,0,0,0
190 DATA0,162,255,154,169,13,32
200 DATA210,255,169,46,32,210,255
210 DATA32,184,144,32,207,144,32
220 DATA218,144,189,133,146,160,0
230 DATA217,118,146,240,8,200,192
240 DATA5,208,246,76,234,144,232
250 DATA152,10,168,185,124,146,72
260 DATA185,123,146,72,96,189,133
270 DATA146,201,32,240,3,76,234
280 DATA144,32,218,144,32,29,145
290 DATA165,253,133,251,165,254,133
300 DATA252,189,133,146,201,32,208
310 DATA14,32,218,144,32,29,145
320 DATA32,218,144,189,133,146,240
330 DATA3,76,234,144,169,13,32
340 DATA210,255,169,46,32,210,255
350 DATA169,58,32,210,255,32,104
360 DATA145,32,252,144,160,0,177
370 DATA251,32,2,145,169,32,32
380 DATA210,255,200,192,8,208,241
390 DATA32,234,255,32,225,255,208
400 DATA3,76,0,144,165,251,24
410 DATA105,8,133,251,165,252,105
420 DATA0,133,252,197,254,144,190
430 DATA240,3,76,0,144,165,251
440 DATA197,253,144,179,76,0,144
450 DATA76,116,164,160,0,32,18
460 DATA225,201,13,240,8,153,133
470 DATA146,200,192,89,208,241,169
480 DATA0,153,133,146,96,162,0
```

HINTS AND TIPS

490 DATA189,133,146,201,46,208,1
 500 DATA232,96,189,133,146,201,32
 510 DATA208,8,232,224,89,208,244
 520 DATA76,234,144,96,169,13,32
 530 DATA210,255,169,63,32,210,255
 540 DATA76,0,144,169,32,32,210
 550 DATA255,169,32,32,210,255,96
 560 DATA141,116,146,74,74,74,74
 570 DATA170,189,100,146,32,210,255
 580 DATA173,116,146,41,15,170,189
 590 DATA100,146,32,210,255,96,32
 600 DATA42,145,133,254,232,32,42
 610 DATA145,133,253,232,96,189,133
 620 DATA146,141,116,146,160,0,185
 630 DATA100,146,205,116,146,240,8
 640 DATA200,192,16,208,243,76,234
 650 DATA144,152,10,10,10,10,141
 660 DATA117,146,232,189,133,146,141
 670 DATA116,146,160,0,185,100,146
 680 DATA205,116,146,240,8,200,192
 690 DATA16,208,243,76,63,145,152
 700 DATA13,117,146,96,165,252,32
 710 DATA2,145,165,251,32,2,145
 720 DATA96,32,29,145,160,0,132
 730 DATA2,189,133,146,201,32,240
 740 DATA3,76,234,144,32,218,144
 750 DATA32,42,145,164,2,145,253
 760 DATA200,192,8,240,6,132,2
 770 DATA232,76,122,145,76,0,144
 780 DATA32,218,144,189,133,146,201
 790 DATA34,240,3,76,234,144,32
 800 DATA70,146,32,218,144,189,133

810 DATA146,240,17,201,44,240,3
 820 DATA76,234,144,232,32,218,144
 830 DATA32,42,145,76,199,145,169
 840 DATA1,133,184,133,185,133,186
 850 DATA169,1,133,188,169,0,133
 860 DATA187,32,213,255,76,0,144
 870 DATA32,218,144,189,133,146,201
 880 DATA34,240,3,76,234,144,32
 890 DATA70,146,32,218,144,189,133
 900 DATA146,201,44,208,108,232,32
 910 DATA218,144,32,42,145,133,185
 920 DATA133,184,133,186,169,0,133
 930 DATA187,169,1,133,188,232,32
 940 DATA218,144,189,133,146,201,44
 950 DATA208,76,232,32,218,144,32
 960 DATA29,145,165,254,133,252,165
 970 DATA253,133,251,32,218,144,189
 980 DATA133,146,201,44,208,51,232
 990 DATA32,218,144,32,29,145,169
 1000 DATA13,32,210,255,166,253,164
 1010 DATA254,169,251,32,216,255,76
 1020 DATA0,144,232,169,0,133,183
 1030 DATA189,133,146,240,17,201,34
 1040 DATA240,11,232,164,183,153,0
 1050 DATA1,230,183,76,75,146,232
 1060 DATA96,76,234,144,48,49,50
 1070 DATA51,52,53,54,55,56,57
 1080 DATA65,66,67,68,69,70,77
 1090 DATA128,77,88,58,76,83,52
 1100 DATA144,180,144,114,145,155,145
 1110 DATA218,145,-1
 READY.

10 ! MINI-MON SOURCE CODE FOR THE 64
 20 ! FOR VIC, CHANGE JMP #A474 AT EXIT
 30 ! TO JMP #C474.
 40 !
 1000 *=\$9000
 1001 ! MAIN INPUT AND COMMAND PARSER
 1002 ! ROUTINE.
 1003 !
 1010 START LDX #FF
 1015 TXS
 1019 LDA #0D
 1020 JSR \$FFD2
 1030 LDA #\$2E
 1040 JSR \$FFD2
 1050 JSR INPUT
 1060 JSR SCDDT
 1070 JSR SCSP
 1080 LDA BUFFER,X
 1090 LDY #00
 1100 LOOP1 CMP CLIST,Y
 1110 BEQ FOUND
 1120 INY
 1130 CPY #05
 1140 BNE LOOP1
 1150 JMP QUESTION
 1180 FOUND INX
 1185 TYA
 1190 ASL A
 1200 TAY
 1210 LDA CADDR+1,Y
 1220 PHA
 1230 LDA CADDR,Y

1240 PHA
 1250 RTS
 1251 ! ROUTINE TO DISPLAY MEMORY
 1252 !
 1260 MEM LDA BUFFER,X
 1270 CMP #20
 1280 BEQ MEM1
 1290 JMP QUESTION
 1300 MEM1 JSR SCSP
 1310 JSR GETADDR
 1320 LDA #FD
 1330 STA #FB
 1340 LDA #FE
 1350 STA #FC
 1360 LDA BUFFER,X
 1370 CMP #20
 1380 BNE MEM2
 1390 JSR SCSP
 1400 JSR GETADDR
 1410 JSR SCSP
 1420 LDA BUFFER,X
 1430 BEQ MEM3
 1440 MEM2 JMP QUESTION
 1450 MEM3 LDA #0D
 1455 JSR \$FFD2
 1459 LDA #\$2E
 1460 JSR \$FFD2
 1470 LDA #\$3A
 1480 JSR \$FFD2
 1490 JSR DISPADDR
 1500 JSR SPACE
 1510 LDY #00

HINTS AND TIPS

```

1520 LOOP8      LDA ($FB),Y
1530           JSR DISPLAY
1535           LDA #$20
1536           JSR $FFD2
1540           INY
1550           CPY #$08
1560           BNE LOOP8
1565           JSR $FFEA
1566           JSR $FFE1
1567           BNE MEM31
1568           JMP START
1570 MEM31      LDA $FB
1580           CLC
1590           ADC #$08
1600           STA $FB
1610           LDA $FC
1620           ADC #$00
1630           STA $FC
1650           CMP $FE
1660           BCC MEM3
1670           BEQ MEM4
1675           JMP START
1680 MEM4       LDA $FB
1690           CMP $FD
1700           BCC MEM3
1710           JMP START
1711 ! EXITROUTINE
1712 !
1720 EXIT       JMP $A474
1721 ! ROUTINE TO INPUT A LINE AND STORE
1722 ! IN THE BUFFER
1723 !
1730 INPUT      LDY #$00
1740 INPUT1     JSR $E112
1750           CMP #$0D
1760           BEQ RETCHAR
1770           STA BUFFER,Y
1780           INY
1790           CPY #$59
1800           BNE INPUT1
1810 RETCHAR    LDA #$00
1820           STA BUFFER,Y
1830           RTS
1831 ! ROUTINE TO SCAN PAST A DOT ON
1832 ! THE INPUT LINE.
1833 !
1840 SCDOT      LDX #$00
1850           LDA BUFFER,X
1860           CMP #$2E
1870           BNE NODOT
1880           INX
1890 NODOT      RTS
1891 ! ROUTINE TO SCAN PAST ANY
1892 ! UNWANTED SPACES ON INPUT LINE
1893 !
1900 SCSP       LDA BUFFER,X
1910           CMP #$20
1920           BNE NOSP
1930           INX
1940           CPY #$59
1950           BNE SCSP
1960           JMP QUESTION
1970 NOSP       RTS
1971 ! ROUTINE TO PRINT ? WHEN AN INPUT
1972 ! ERROR IS ENCOUNTERED.
1973 !
1980 QUESTION   LDA #$0D
1990           JSR $FFD2
2000           LDA #$3F
2010           JSR $FFD2
2020           JMP START
2021 ! ROUTINE TO PRINT 1 OR 2 SPACES
2022 !
2030 SPACE2     LDA #$20
2040           JSR $FFD2
2050 SPACE      LDA #$20
2060           JSR $FFD2
2070           RTS
2071 ! ROUTINE TO DISPLAY A BYTE STORED
2072 ! IN .A OUT AS A 2 DIGIT HEX NO.
2073 !
2080 DISPLAY    STA BYTE
2090           LSR A
2100           LSR A
2110           LSR A
2120           LSR A
2130           TAX
2140           LDA TABLE,X
2150           JSR $FFD2
2160           LDA BYTE
2170           AND #$0F
2180           TAX
2190           LDA TABLE,X
2200           JSR $FFD2
2210           RTS
2211 ! ROUTINE TO GET A 2 BYTE ADDRESS
2212 ! FROM THE INPUT LINE AND STORE
2213 ! IT IN ($FD)
2214 !
2220 GETADDR    JSR GETBYTE
2230           STA $FE
2235           INX
2240           JSR GETBYTE
2250           STA $FD
2255           INX
2260           RTS
2261 ! ROUTINE TO GET A SINGLE BYTE
2262 ! FROM THE INPUT LINE
2263 !
2270 GETBYTE    LDA BUFFER,X
2280           STA BYTE
2290           LDY #$00
2300 GBYTE1     LDA TABLE,Y
2310           CMP BYTE
2320           BEQ HIGOT
2330           INY
2340           CPY #$10
2350           BNE GBYTE1
2360 GBERROR    JMP QUESTION
2410 HIGOT      TYA
2415           ASL A
2420           ASL A
2430           ASL A
2440           ASL A
2450           STA BYTE+1
2460           INX
2470           LDA BUFFER,X
2480           STA BYTE
2490           LDY #$00
2500 GBYTE2     LDA TABLE,Y
2510           CMP BYTE
2520           BEQ LOGOT
2530           INY
2540           CPY #$10
2550           BNE GBYTE2
2560           JMP GBERROR
2570 LOGOT      TYA
2580           ORA BYTE+1

```

HINTS AND TIPS

```

2590          RTS
2591 ! ROUTINE TO DISPLAY AN ADDRESS
2592 !
2600 DISPADDR LDA #FC
2610          JSR DISPLAY
2620          LDA #FB
2630          JSR DISPLAY
2640          RTS
2641 ! ROUTINE TO ALTER MEMORY ON THE
2642 ! COMMAND.
2643 !
2650 CHANGE   JSR GETADDR
2659          LDY #00
2660          STY #02
2670 CH1      LDA BUFFER,X
2680          CMP #20
2690          BEQ CH2
2700          JMP QUESTION
2710 CH2      JSR SCSP
2720          JSR GETBYTE
2730          LDY #02
2740          STA ($FD),Y
2750          INY
2760          CPY #08
2770          BEQ CHFIN
2780          STY #02
2785          INX
2790          JMP CH1
2800 CHFIN    JMP START
2801 ! ROUTINE TO LOAD A FILE
2802 !
2810 LOAD     JSR SCSP
2820          LDA BUFFER,X
2830          CMP #22
2840          BEQ LOAD1
2850          JMP QUESTION
2860 LOAD1    JSR GETFNAME
2980          JSR SCSP
2990          LDA BUFFER,X
3000          BEQ TAPE
3010          CMP #2C
3020          BEQ GETDEV
3030          JMP QUESTION
3040 GETDEV   INX
3045          JSR SCSP
3050          JSR GETBYTE
3060          JMP SETUP
3070 TAPE    LDA #01
3080 SETUP    STA $B8
3090          STA $B9
3100          STA $BA
3110          LDA #01
3120          STA $BC
3130          LDA #00
3140          STA $BB
3150          JSR $FFD5
3160          JMP START
3161 ! ROUTINE TO SAVE AN AREA OF
3162 ! MEMORY
3163 !
3170 SAVE     JSR SCSP
3180          LDA BUFFER,X
3190          CMP #22
3200          BEQ SAVE1
3210          JMP QUESTION
3220 SAVE1    JSR GETFNAME
3230          JSR SCSP
3240          LDA BUFFER,X
3250          CMP #2C
3260          BNE FNAMER
3265          INX
3270          JSR SCSP
3280          JSR GETBYTE
3290          STA $B9
3300          STA $B8
3310          STA $BA
3320          LDA #00
3330          STA $BB
3340          LDA #01
3350          STA $BC
3355          INX
3360          JSR SCSP
3370          LDA BUFFER,X
3380          CMP #2C
3390          BNE FNAMER
3395          INX
3400          JSR SCSP
3410          JSR GETADDR
3420          LDA $FE
3430          STA $FC
3440          LDA $FD
3450          STA $FB
3460          JSR SCSP
3470          LDA BUFFER,X
3480          CMP #2C
3490          BNE FNAMER
3495          INX
3500          JSR SCSP
3510          JSR GETADDR
3515          LDA #00
3516          JSR $FFD2
3520          LDX $FD
3530          LDY $FE
3540          LDA #FB
3550          JSR $FFD8
3560          JMP START
3570 ! ROUTINE TO GET FILENAME FROM
3580 ! INPUT LINE FOR LOAD AND SAVE
3590 !
5000 GETFNAME INX
5010          LDA #00
5020          STA $B7
5030 FNAME1   LDA BUFFER,X
5035          BEQ FNAMER
5040          CMP #22
5050          BEQ ENDFOUND
5060          INX
5070          LDY $B7
5080          STA $0100,Y
5090          INC $B7
5100          JMP FNAME1
5110 ENDFOUND INX
5115          RTS
5120 FNAMER   JMP QUESTION
10000 TABLE TXT "0123456789ABCDEF"
10010 BYTE   WOR 0
10020 CLIST  TXT "MX:LS"
10030 CADDR  WOR MEM-1
10040        WOR EXIT-1
10045        WOR CHANGE-1
10046        WOR LOAD-1
10047        WOR SAVE-1
10050 BUFFER BYT 0
READY.

```

Roll the dice

This month we have two useful programs for the 64 and one for the unexpanded VIC-20.

```

1 REM *****
2 REM *
3 REM * ANIMATED DICE ROLLER *
4 REM *
5 REM *****
6 REM
7 REM C.G & E.J.BULL FEB.1984
8 REM =====
9 REM
10 PRINT"J":POKE52,48:POKE56,48:CLR:V=53248:
   S=54272:D=12800
15 PRINT"XXXXXXXXXXPLEASE WAIT - SETTING UP!"
19 REM SET SOUND
20 POKES,247:POKES+1,53:POKES+5,0:POKES+6,1
25 REM SET VIC CHIP
30 FORP=0TO15STEP4:POKEV+P,120:POKEV+P+1,125:POKEV+P+2,200:POKEV+P+3,125:NEXT
40 POKEV+16,0:POKEV+23,255:POKEV+29,255
45 REM SET COLOUR
50 FORC=39TO46:POKEV+C,1:NEXT
55 REM FILL DATA FOR SPRITES
60 READQ:IFQ=-99THEN80
70 POKED,Q:D=D+1:GOTO60
80 REM SET SPRITE POINTERS
90 FORP=0TO6STEP2:POKE2040+P,206+P/2:POKE2041+P,206+P/2:NEXT
95 PRINT"J"
99 REM ROLL THE DICE
100 FORROLL=1TO5+INT(RND(1)*10):POKES+4,129:POKES+24,15
110 POKEV+21,2+(INT(RND(1)*4)*2)OR2+(INT(RND(1)*4)*2+1):POKES+4,0:NEXT
120 POKES+24,0:POKE2040,200+INT(RND(1)*6):POKE2041,200+INT(RND(1)*6):POKEV+21,3
125 FORL=1TO10:PRINT"X":NEXT:PRINTTAB(7)"HIT ANY KEY TO ROLL AGAIN"
130 GETA$:IFA$=""THEN130
140 POKE2040,206:POKE2041,206:GOTO95
599 REM DATA FOR 10 SPRITES
600 DATA 0,0,0,0,0,0,0,0
601 DATA 0,15,255,240,15,255,240,15
602 DATA 255,240,15,255,240,15,255,240
603 DATA 15,255,240,15,255,240,15,231
604 DATA 240,15,231,240,15,255,240,15
605 DATA 255,240,15,255,240,15,255,240
606 DATA 15,255,240,15,255,240,15,255
607 DATA 240,0,0,0,0,0,0,0
608 DATA 0,0,0,0,0,0,0,0
609 DATA 0,15,255,240,15,255,240,15
610 DATA 255,48,15,255,48,15,255,240
611 DATA 15,255,240,15,255,240,15,255
612 DATA 240,15,255,240,15,255,240,15
613 DATA 255,240,15,255,240,12,255,240
614 DATA 12,255,240,15,255,240,15,255

```

This program could be used as a subroutine for a larger program or just used when playing board games. It simulates the rolling of two dice on the screen using Sprites that give a 3D effect. The dice are not weighted towards any number and just use the random number generator in the 64.

The program was written by CG and EJ Bull

BASIC PROGRAMMING

```
615 DATA 240,0,0,0,0,0,0
616 DATA 0,0,0,0,0,0,0
617 DATA 0,15,255,240,15,255,240,15
618 DATA 255,48,15,255,48,15,255,240
619 DATA 15,255,240,15,255,240,15,231
620 DATA 240,15,231,240,15,255,240,15
621 DATA 255,240,15,255,240,12,255,240
622 DATA 12,255,240,15,255,240,15,255
623 DATA 240,0,0,0,0,0,0,0
624 DATA 0,0,0,0,0,0,0,0
625 DATA 0,15,255,240,15,255,240,12
626 DATA 255,48,12,255,48,15,255,240
627 DATA 15,255,240,15,255,240,15,255
628 DATA 240,15,255,240,15,255,240,15
629 DATA 255,240,15,255,240,12,255,48
630 DATA 12,255,48,15,255,240,15,255
631 DATA 240,0,0,0,0,0,0,0
632 DATA 0,0,0,0,0,0,0,0
633 DATA 0,15,255,240,15,255,240,12
634 DATA 255,48,12,255,48,15,255,240
635 DATA 15,255,240,15,255,240,15,231
636 DATA 240,15,231,240,15,255,240,15
637 DATA 255,240,15,255,240,12,255,48
638 DATA 12,255,48,15,255,240,15,255
639 DATA 240,0,0,0,0,0,0,0
640 DATA 0,0,0,0,0,0,0,0
641 DATA 0,15,255,240,15,255,240,12
642 DATA 255,48,12,255,48,15,255,240
643 DATA 15,255,240,15,255,240,12,255
644 DATA 48,12,255,48,15,255,240,15
645 DATA 255,240,15,255,240,12,255,48
646 DATA 12,255,48,15,255,240,15,255
647 DATA 240,0,0,0,0,0,0,0
648 DATA 0,32,0,0,112,0,0,248
649 DATA 0,1,156,0,3,158,0,7
650 DATA 255,0,15,255,128,31,255,192
651 DATA 63,255,224,127,159,240,255,159
652 DATA 240,255,255,224,127,255,192,63
653 DATA 255,128,31,255,0,15,254,0
654 DATA 7,156,0,3,152,0,1,240
655 DATA 0,0,224,0,0,64,0,255
656 DATA 31,255,248,25,231,152,31,255
657 DATA 248,31,255,248,25,231,152,31
658 DATA 255,248,0,0,0,31,255,248
659 DATA 31,255,248,31,255,152,31,255
660 DATA 152,31,255,248,31,255,248,31
661 DATA 255,248,31,255,248,31,255,248
662 DATA 31,255,248,25,255,248,25,255
663 DATA 248,31,255,248,31,255,248,0
664 DATA 0,0,0,0,0,0,0,127
665 DATA 0,1,191,128,3,223,192,6
666 DATA 110,96,14,118,112,31,251,248
667 DATA 63,253,252,79,254,254,207,243
668 DATA 0,127,242,254,63,253,228,31
669 DATA 251,232,14,119,240,6,111,224
670 DATA 3,215,192,1,167,128,0,127
671 DATA 0,0,0,0,0,0,0,0
672 DATA 0,1,0,0,7,128,0,28
673 DATA 192,0,124,192,1,255,224,7
674 DATA 255,224,25,255,240,25,255,240
675 DATA 15,243,248,15,243,200,7,255
676 DATA 204,7,255,252,3,255,242,3
677 DATA 255,206,1,159,63,1,156,252
678 DATA 0,243,240,0,207,192,0,63
679 DATA 0,0,124,0,0,48,0,0
680 DATA -99
READY.
```


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Machine	BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8	Average
CBM with PETX2	0.87	5.1	9.4	10.3	11.2	16.5	26.0	6.0	17.5
IBM PC	1.5	5.2	12.1	12.6	13.6	23.5	37.4	3.5	17.6
Osborne 01	1.4	4.4	11.7	11.6	12.4	21.9	34.9	6.1	19.9
Apple 111	1.7	7.2	13.5	14.5	16.0	27.0	42.5	7.5	24.7
ACT Sirius 1	2.0	7.4	17.0	17.5	19.8	35.4	55.9	4.3	24.8
Apple 2	1.3	8.5	16.0	17.8	19.1	28.6	44.8	10.7	30.4
Commodore CBM 8032	1.7	10.0	18.4	20.3	21.9	32.4	51.0	11.9	34.3

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Program lister

This month we have a routine for the 64 which could be useful in the Basic Aids. It scrolls the listing by use of the cursor keys. The routine was written by K.K.Loke and all that we have done is to select a new location so that it does not conflict with previous routines.

The routine wedges into the Basic warm start vector and can be used to scroll the listing giving a bi-directional lister.

This is obtained by moving the cursor to the bottom of the screen and pressing cursor down, or moving the cursor to the top and pressing cursor up. When listing up, three blank lines are inserted and the line is listed at the top.

To exit the lister, press the CLR/HOME key. To re-enable, press the return key.

Note that this routine will be permanently disabled by the RUN/STOP

RESTORE keys or the previously published merge routine and can be re-initialised by SYS(50928).

The suggested modifications to the ROM routine calls to enable the routine to work on the VIC-20 are:

*EA13:E5B4:E716:E9F0:ECEF:E9C8:E9FF:
E9A9:A637:A613:A474:A6C9:A483

+EAA1:E5CF:E742:EA7E:EDFC:EA56:
EA8D:EA32:CD37:C613:C474:C6C9:C483

Where * are the values for the 64 and + should replace them for the VIC.

The other change would be the values stored into \$0300/1 for resetting then 'error' vector the values for the VIC are:

Lo byte (1st) Hi byte (2nd)
2390 LDA #\$4F 2410 LDA #\$E4

The program is presented in the usual two ways. First is the assembler source file (MIKRO) and then the program that you are more likely to use, the Basic Loader. With the loader, just type it in and then run (save it before running). If there are no errors in the data, your lister is now running.

```

1000 C6F0      *=#C6F0
1010 C6F0      !=====
1020 C6F0      !   PROGRAM   LISTER
1030 C6F0      !
1040 C6F0      !   BY K. K. LOKE 1984
1050 C6F0      !=====
1060 C6F0      !
1070 C6F0      !---- NEW VECTORS ----
1080 C6F0 A9FB      LDA #<IMAIN          ! PUT NEW 'WARMSTART' V
ECTORS
1090 C6F2 A0C6      LDY #>IMAIN
1100 C6F4 8D0203    STA $0302
1110 C6F7 8C0303    STY $0303
1120 C6FA 60        RTS
1130 C6FB          !
1140 C6FB A905     IMAIN      LDA #<CTOG          ! PUT NEW 'IERROR' VECT
ORS
1150 C6FD 8D0003    STA $0300
1160 C700 A9C7      LDA #>CTOG
1170 C702 8D0103    STA $0301
1180 C705          !
1190 C705          !---- WAIT & TOGGLE CURSOR ----
1200 C705 A5C6     CTOG       LDA #C6          ! TEST FOR INPUT FROM K
EYBOARD
1210 C707 850C      STA #C6          ! NO INPUT, KEEP CURSOR
FLASHING
1220 C709 F0FA      BEQ CTOG         ! REPEAT IF NO INPUT
1230 C70B 78        SEI
    
```

MACHINE CODE

```

1240 C70C A5CF          LDA #CF          ! TEST CURSOR BLINK PHA
SE
1250 C70E F00C          BEQ KPRESS       ! 'OFF' ?
1260 C710 A5CE          LDA #CE          ! ON, GET CHAR UNDER CU
RSOR
1270 C712 AE8702        LDX #0287        ! GET COLOUR UNDER CURS
OR
1280 C715 A000          LDY #00          !
1290 C717 84CF          STY #CF          ! SWITCH 'OFF' CURSOR
1300 C719 2013EA        JSR #EA13        ! REPLACE ORIGINAL CHAR
ACTER
1310 C71C                ! & COLOUR TO SCREEN
1320 C71C                !
1330 C71C                !---- CHECK WHAT KEYPRESS ----
1340 C71C 20B4E5        KPRESS          JSR #E5B4        ! INPUT FROM KEYBOARD
1350 C71F C911          CMP #11          ! CURSOR UP ?
1360 C721 F007          BEQ CPUT         ! YES
1370 C723 C991          CMP #91          ! CURSOR DOWN ?
1380 C725 F003          BEQ CPUT         ! YES
1390 C727 4CD1C7        JMP IPUT         ! CLOSENOT CURSOR
1400 C72A 2016E7        CPUT           JSR #E716        ! PRINT CURSOR AND SET
$D6
1410 C72D A5D6          LDA #D6          ! GET POSITION OF CURSO
R
1420 C72F C918          CMP #18          ! CLOSEBOTTOM OF SCREEN
?
1430 C731 F07B          BEQ ULIST        ! YES
1440 C733 C900          CMP #00          ! TOP OF SCREEN ?
1450 C735 D0CE          BNE CTOG        ! NO, GET NEXT CHAR
!
1460 C737                !
1470 C737                !---- SCROLL SCREEN DOWN ----
1480 C737 A903          LDA #03          !
1490 C739 85D6          STA #D6          ! $D6 AS COUNTER
1500 C73B A218          LDX #18          ! .X AS POINTER
SCOPLY2
1510 C73D 20F0E9        SCOPLY          JSR #E9F0        ! SET SCREEN POINTERS
1520 C740 E000          CPX #00          ! CHECK IF ALL DONE
1530 C742 F00D          BEQ CLINE        ! ALL DONE
1540 C744 BDEFEC        LDA #ECEF,X     ! GET SCREEN LINE ADDR.
LOW
1550 C747 85AC          STA #AC          !
1560 C749 B5D8          LDA #D8,X       ! GET SCREEN LINK ADDR.
1570 C74B 20C8E9        JSR #E9C8        ! COPY ONE LINE TO ANOT
HER
1580 C74E CA           DEX              !
1590 C74F 10EC          BPL SCOPLY      ! IF .X ISN'T 0, DO NEX
T LINE
1600 C751 20FFE9        CLINE          JSR #E9FF        ! CLEAR 1ST SCREEN LINE
1610 C754 A9C7          LDA #>RETURN    ! REPLACE RTS ADDR. PUL
LED BY
1620 C756 48           PHA              ! #E9A9. SAVE HI BYTE
1630 C757 A963          LDA #<RETURN-1  !
1640 C759 48           PHA              ! SAVE LO BYTE ON STACK
1650 C75A 48           PHA              ! DUMMY ADDRESSES FOR E
9A9 PLA'S
1660 C75B 48           PHA              !
1670 C75C A201          LDX #01         ! SET SCREEN LINE INDEX
TO 1
1680 C75E 8DA502        STA #02A5       !
1690 C761 20A9E9        JSR #E9A9       ! CLOSERE-SET SCREEN LIN

```

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If you own a PET system with disks or printer and have added a COMMODORE 64 then why not use your PET as an interface for the 64?

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MACHINE CODE

K TABLE

1700	C764	C6D6	RETURN	DEC #D6	
1710	C766	D0D3		BNE SCOPY2	! SCROLL SCREEN DOWN 3X
1720	C768		!		
1730	C768		!---- (-) LINE NO. SEARCH ----		
1740	C768	A52B	BSTART	LDA #2B	! START SEARCH FROM
1750	C76A	A62C		LDX #2C	
1760	C76C	A62C		LDX #2C	! BEGINNING OF BASIC
1770	C76E	A001	SADDR	LDY #01	! POINT TO HI BYTE OF L
INK ADDR.					
1780	C770	855F		STA #5F	
1790	C772	8660		STX #60	
1800	C774	48		PHA	
1810	C775	B15F		LDA (#5F),Y	! CHECK FOR END OF BASI
C					
1820	C777	F029		BEQ LADDR	! YES
1830	C779	38		SEC	! PREPARE C FOR SUBTRAC
TION					
1840	C77A	C8		INY	! POINT TO LO BYTE OF L
INE NO.					
1850	C77B	B15F		LDA (#5F),Y	! LOAD IT
1860	C77D	E514		SBC #14	! SAME AS CURRENT LINE
NO LO ?					
1870	C77F	C8		INY	! POINT TO HI BYTE OF L
INE NO.CLOSE					
1880	C780	B15F		LDA (#5F),Y	! LOAD IT
1890	C782	E515		SBC #15	! SAME AS CURRENT LINE
NO HI ?					
1900	C784	B00B		BCS LADDR1	! YES
1910	C786	86FC		STX #FC	! HI BYTE OF LINE ADDR.
1920	C788	68		PLA	
1930	C789	85FB		STA #FB	! LO BYTE OF LINE ADDR.
1940	C78B	88		DEY	
1950	C78C	2037A6		JSR #A637	! GET ADDR. OF NEXT LIN
E					
1960	C78F	90DD		BCC SADDR	! CONTINUE SEARCH
1970	C791	68	LADDR1	PLA	
1980	C792	C52B		CMP #2B	! LINE FOUND=1ST LINE I
N MEM ?					
1990	C794	D00D		BNE LADDR+1	
2000	C796	E42C		CPX #2C	
2010	C798	D009		BNE LADDR+1	! NOT EQUAL
2020	C79A	A9FF		LDA #FF	! EQUAL
2030	C79C	8514		STA #14	! STORE MAX LINE NO
2040	C79E	8515		STA #15	! IN 14 & 15
2050	C7A0	B0C6		BCS BSTART	! GET LAST LINE
2060	C7A2	68	LADDR	PLA	! FOUND, TIDY STACK
2070	C7A3	A5FB		LDA #FB	! GET LO BYTE ADDR.
2080	C7A5	855F		STA #5F	! STORE IT
2090	C7A7	A5FC		LDA #FC	! GET HI BYTE ADDR.
2100	C7A9	8560		STA #60	! STORE IT
2110	C7AB	18		CLC	
2120	C7AC	9009		BCC LIST	! FORCED
2130	C7AE		!		
2140	C7AE		!---- (+) LINE NO. SEARCH ----		
2150	C7AE	E614	ULIST	INC #14	! INCREMENT CURRENT LIN
E NO.					
2160	C7B0	D002		BNE LLADDR	
2170	C7B2	E615		INC #15	
2180	C7B4	2013A6	LLADDR	JSR #A613	! FIND ITS ADDR.

MACHINE CODE

```

2190 C7B7      !
2200 C7B7      !---- LIST LINE.----
2210 C7B7 A001 LIST      LDY #01      ! POINT TO HI-BYTE OF L
INK ADDR.
2220 C7B9 B15F      LDA (#5F),Y      ! END OF BASIC ?
2230 C7BB D007      BNE LIST1      ! NO
2240 C7BD 8514      STA #14      ! YES SET 0 IN
2250 C7BF 8515      STA #15      ! 14 & 15
2260 C7C1 4C74A4    JMP #A474      ! PRINT 'READY'
2270 C7C4 C8      LIST1      INY      ! POINT TO LO BYTE
2280 C7C5 B15F      LDA (#5F),Y      ! LOAD IT
2290 C7C7 8514      STA #14      ! STORE IT
2300 C7C9 C8      INY      ! POINT TO HI BYTE
2310 C7CA B15F      LDA (#5F),Y      ! LOAD IT
2320 C7CC 8515      STA #15      ! STORE IT
2330 C7CE 4CC9A6    JMP #A6C9      ! LIST LINE
2340 C7D1      !
2350 C7D1      !---- RESTORE IERROR VECTORS ----
2360 C7D1      !      & EXIT TO WARM START
2370 C7D1 8D7702    IPUT      STA #0277      ! REPLACE BYTE INTO BUF
FER
2380 C7D4 E6C6      INC #06      ! NO. OF CHAR. IN BUFFE
R=1
2390 C7D6 A98B      LDA #08B      ! RESET 'IERROR' VECTOR
S
2400 C7D8 8D0003    STA #0300
2410 C7DB A9E3      LDA #0E3
2420 C7DD 8D0103    STA #0301
2430 C7E0      !
2440 C7E0 4C83A4    JMP #A483
2450 C7E3      !

```

```

10 I=50928:T=0
20 READA:IFA=-1THEN50
30 POKEI,A:I=I+1
40 T=T+A:GOTO20
50 IFT<>31298THENPRINT"NO CHECKSUM ERROR."END
60 IFI<>51171THENPRINT"NO NO. OF DATA ERROR"END
70 SYS50928:PRINT"NOH+/- LISTER INITIALISED"
80 END
100 DATA169,251,160,198,141,2,3
110 DATA140,3,3,96,169,5,141
120 DATA0,3,169,199,141,1,3
130 DATA165,198,133,204,240,250,120
140 DATA165,207,240,12,165,206,174
150 DATA135,2,160,0,132,207,32
160 DATA19,234,32,180,229,201,17
170 DATA240,7,201,145,240,3,76
180 DATA209,199,32,22,231,165,214
190 DATA201,24,240,123,201,0,208
200 DATA206,169,3,133,214,162,24
210 DATA32,240,233,224,0,240,13
220 DATA189,239,236,133,172,181,216
230 DATA32,200,233,202,16,236,32
240 DATA255,233,169,199,72,169,99
250 DATA72,72,72,162,1,141,165
260 DATA2,32,169,233,198,214,208
270 DATA211,165,43,166,44,166,44
280 DATA160,1,133,95,134,96,72
290 DATA177,95,240,41,56,200,177
300 DATA95,229,20,200,177,95,229
310 DATA21,176,11,134,252,104,133
320 DATA251,136,32,55,166,144,221
330 DATA104,197,43,208,13,228,44
340 DATA208,9,169,255,133,20,133
350 DATA21,176,198,104,165,251,133
360 DATA95,165,252,133,96,24,144
370 DATA9,230,20,208,2,230,21
380 DATA32,19,166,160,1,177,95
390 DATA208,7,133,20,133,21,76
400 DATA116,164,200,177,95,133,20
410 DATA200,177,95,133,21,76,201
420 DATA166,141,119,2,230,198,169
430 DATA139,141,0,3,169,227,141
440 DATA1,3,76,131,164,-1
READY.

```

Sprite routines

This month we are publishing seven Sprite manipulation routines for the 64, written in machine code

The main routine is to display the Sprite in large on the right hand side of the screen. The Sprite is represented by a large dot (point on) and a small dot (point off). There are five routines to reverse, invert, mirror, transfer, and rotate a certain Sprite, and also a routine to save off the Sprites to tape or disk.

Display

This routine is called by SYS49152, spno. It will display a large version of the Sprite spno (0-255) on the screen. Note the values passed through on all of the routines are the actual block location of the Sprite in bank 0.

Reverse

This routine is called by SYS49239, spno and will reverse each point (eg if on, turn off and vice-versa).

Invert

This routine is called by SYS49254, spno. It will turn Sprite spno upside down.

Mirror

This routine is called by SYS40306, spno. It mirrors the Sprite down the center axis so that the Sprite is facing the other way.

Transfer

This routine is called by SYS49379, no1, no2 and will copy the Sprite in no2 into the area for Sprite no1.

Rotate

Called by STS49403, no, this routine will rotate Sprite no 90 degrees anti-clockwise. Note that due to the non-square shape of the Sprite, the right hand 3 points all the way down will be lost.

Save

When all of your Sprites are completed, you can save them off using SYS49533, no1, no2, "filename", dev. This will save the memory between and including no1 and no2. The Sprites may then be loaded in with LOAD "filename", dev, 1. Note dev is the device number (1 for tape and 8 for disk).

Note: The routines are presented in MIKRO 64 source code and can be entered using MIKRO, or by using mini-mon in hints and tips and changing the bytes shown in the third column of numbers on the source.

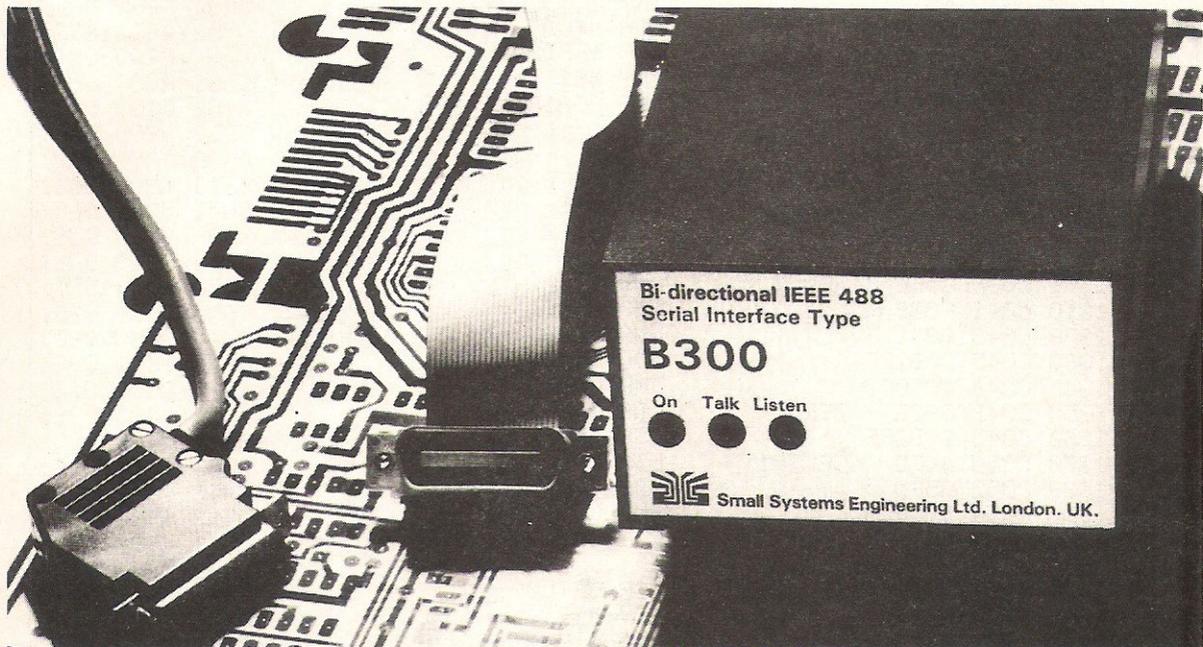
To save the routines off, using any monitor enter .S"SPRDISP", dev, C000.C1E0

```

10 033C      II          =  #02C0
20 033C      JJ          =  #02C1
30 033C      IIDIIV8     =  #02C2
40 033C      UI          =  #02C3
50 033C      BIT         =  #02C4
60 033C      TEMP        =  #02C5
1000 C000     *=$C000
1010 C000 2067C1 DISPLAY JSR GETLOC          !SYS49152.NO
1020 C003 2066E5 JSR #E566
1030 C006 A911 LDA #17
1040 C008 20D2FF JSR #FFD2
1050 C00B A911 LDA #17
1060 C00D 20D2FF JSR #FFD2
1070 C010 A000 LDY #00
1080 C012 A20F AGAIN LDX #0F
1090 C014 06FE STX #FE
1100 C016 A91D POSITION LDA #29
1110 C018 20D2FF JSR #FFD2
1120 C01B 06FE DEC #FE
1130 C01D A6FE LDX #FE
1140 C01F D0F5 BNE POSITION
1150 C021 2037C0 JSR DISP
1160 C024 C8 INY
1170 C025 2037C0 JSR DISP
1180 C028 C8 INY
1190 C029 2037C0 JSR DISP

```

TYPE B300 IEEE-488 SERIAL INTERFACE



The B300 interface is a bidirectional unit which enables IEEE-488 controllers to communicate with serial devices such as KSR terminals, modems, laboratory instruments and other computer systems. The B300 replaces the SSE type B and B200 bidirectional interfaces. It is fully compatible with both earlier units in that it incorporates both software selectable and switch selectable Baud rate control. This flexibility has been achieved by designing the unit around an 8748 single chip microprocessor. The 8784 also provides a 40 character input buffer which provides flexibility in handling high speed data input.

Specification

IEEE-488 functions: Source Handshake (SH), Acceptor Handshake (AH), Talker (T), Listener (L) and Extended Listener (LE).

Switch selectable options

Parity—ODD/EVEN
Parity—Enable/Disable
Baud Rates—110, 300, 1200, 9600
Talk Addresses—4, 5, 6, 7
Listen addresses—4, 5, 6, 7
Code Conversion—Mode A/B
No. of Data Bits—7/8

Software selectable options

Baud Rate selection using a secondary listen address followed by a configuring byte which sets input baud rates. 16 different baud rates in the range 50-19,200 baud can be selected. Input and output baud rates can be set to different values.

RS232C signals

Transmitted Data, Receive Data, Request to Send, Clear to Send, Data Terminal Ready.

Connectors

IEEE-488 lead—24 way male ribbon connector. Female 24 way ribbon and an edge connector to fit PETs IEEE port supplied as options.
RS232 lead—25 way D-Type connector (male or female).

Packaging

The B300 is housed in a small instrument case with integral power supplies. ON, LISTEN and Talk indicators are provided on the front panel.

Options

20mA opto-isolated current loop adapter mounted in a D-type connector shell which provides active or passive current loop 10.
Communications PROM—designed to optimise the B300's performance with the INTERCOMM general purpose asynchronous communications package.

Warranty

90 days against defective workmanship or component failure under normal operating conditions.

Prices

B300..... £186.00
Current Loop Adaptor £25.00



small systems engineering limited

2-4 Canfield Place, London NW6 3BT. Telephone: 328 7145 Telex 264538

MACHINE CODE

```

1200 C02C C8                INY
1210 C02D A90D             LDA #0D
1220 C02F 20D2FF          JSR $FFD2
1230 C032 C03F            CPY #63
1240 C034 D0DC            BNE AGAIN
1250 C036 60              RTS
1255 C037                !
1260 C037 B1FB          DISP  LDA ($FB),Y
1270 C039 85FE          STA #FE
1280 C03B A980          LDA #80
1290 C03D 85FD          STA #FD
1300 C03F 25FE          LOOP2  AND #FE
1310 C041 F008          BEQ ZERO
1320 C043 A2D1          LDA #209
1330 C045 20D2FF          JSR $FFD2
1340 C048 4C50C0        JMP NEXTBIT
1350 C04B A92E          ZERO   LDA #46
1360 C04D 20D2FF          JSR $FFD2
1370 C050 46FD          NEXTBIT LSR #FD
1380 C052 A5FD          LDA #FD
1390 C054 D0E9          BNE LOOP2
1400 C056 60              RTS
1410 C057                !
1420 C057 2067C1        REVERSE JSR GETLOC          !SYS49239.NO
1430 C05A A03E          LDY #62
1440 C05C B1FB          REV   LDA ($FB),Y
1450 C05E 49FF          EOR #FF
1460 C060 91FB          STA ($FB),Y
1470 C062 88              DEY
1480 C063 10F7          BPL REV
1490 C065 60              RTS
1500 C066                !
1510 C066 2067C1        INVERT  JSR GETLOC          !SYS49254.NO
1520 C069 A5FC          LDA #FC
1530 C06B 85FE          STA #FE
1540 C06D A5FB          LDA #FB
1550 C06F 18              CLC
1560 C070 693C          ADC #60
1570 C072 85FD          STA #FD
1580 C074 A000          LOOP3  LDY #00
1590 C076 B1FB          LOOP4  LDA ($FB),Y
1600 C078 8502          STA #02
1610 C07A B1FD          LDA ($FD),Y
1620 C07C 91FB          STA ($FB),Y
1630 C07E A502          LDA #02
1640 C080 91FD          STA ($FD),Y
1650 C082 C8                INY
1660 C083 C003            CPY #03
1670 C085 D0EF          BNE LOOP4
1680 C087 C6FD          DEC #FD
1690 C089 C6FD          DEC #FD
1700 C08B C6FD          DEC #FD
1710 C08D E6FB          INC #FB
1720 C08F E6FB          INC #FB
1730 C091 E6FB          INC #FB
1740 C093 A5FB          LDA #FB
1750 C095 C5FD          CMP #FD

```

MACHINE CODE

```

1760 C097 D0DB          BNE LOOP3
1770 C099 60           RTS
1780 C09A                !
1790 C09A 2067C1 MIRROR JSR GETLOC          !SYS40306.NO
1800 C09D A214          LDX #20
1810 C09F 8657          STX #57
1820 C0A1 A000          LDY #00
1830 C0A3 B1FB          LDA ($FB),Y
1840 C0A5 8502          STA #02
1850 C0A7 A002          LDY #02
1860 C0A9 B1FB          LDA ($FB),Y
1870 C0AB 8558          STA #58
1880 C0AD A207          LDX #07
1890 C0AF 2658          ROL #58
1900 C0B1 A000          LDY #00
1910 C0B3 6A           ROR A
1920 C0B4 CA           DEX
1930 C0B5 10F8          BPL LOOP6
1940 C0B7 A000          LDY #00
1950 C0B9 91FB          STA ($FB),Y
1960 C0BB A207          LDX #07
1970 C0BD 2602          ROL #02
1980 C0BF 6A           ROR A
1990 C0C0 CA           DEX
2000 C0C1 10FA          BPL LOOP7
2010 C0C3 A002          LDY #02
2020 C0C5 91FB          STA ($FB),Y
2030 C0C7 A001          LDY #01
2040 C0C9 B1FB          LDA ($FB),Y
2050 C0CB 8502          STA #02
2060 C0CD A207          LDX #07
2070 C0CF 2602          ROL #02
2080 C0D1 6A           ROR A
2090 C0D2 CA           DEX
2100 C0D3 10FA          BPL LOOP8
2110 C0D5 91FB          STA ($FB),Y
2120 C0D7 E6FB          INC #FB
2130 C0D9 E6FB          INC #FB
2140 C0DB E6FB          INC #FB
2150 C0DD A657          LDX #57
2160 C0DF CA           DEX
2170 C0E0 10BD          BPL LOOP5
2180 C0E2 60           RTS
2190 C0E3                !
2200 C0E3 2067C1 TRANSFER JSR GETLOC          !SYS49379.NO1.NO2
2210 C0E6 A5FB          LDA #FB
2220 C0E8 85FD          STA #FD
2230 C0EA A5FC          LDA #FC
2240 C0EC 85FE          STA #FE
2250 C0EE 2067C1          JSR GETLOC
2260 C0F1 A03E          LDY #62
2270 C0F3 B1FB          LDA ($FB),Y
2280 C0F5 91FD          STA ($FD),Y
2290 C0F7 88           DEY
2300 C0F8 10F9          BPL LOOP9
2310 C0FA 60           RTS
2320 C0FB                !

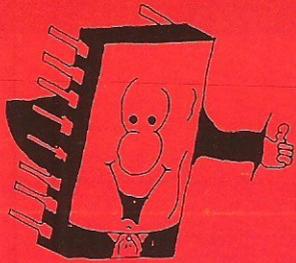
```

MACHINE CODE

```

2350 C0FB 2067C1 ROTATE      JSR GETLOC                !SYS49403.NO
2360 C0FE A03E              LDY #62
2370 C100 B1FB ROT1        LDA (#FB),Y
2380 C102 994003          STA #0340,Y
2390 C105 A900            LDA #00
2400 C107 91FB          STA (#FB),Y
2410 C109 88            DEY
2420 C10A 10F4          BPL ROT1
2430 C10C 8DC002        STA II
2435 C10F A914            LDA #20
2440 C111 8DC102        STA JJ
2450 C114 A200            LDX #00
2460 C116 BD4003 ROT2      LDA #0340,X
2470 C119 8DC302        STA UI
2480 C11C A000            LDY #00
2490 C11E 20A2C1 ROT3      JSR CALCP
2750 C121 20C6C1        JSR CALCB
2890 C124 0EC302        ASL UI
2900 C127 900F          BCC ROT4
2905 C129 8CC702        STY TEMP+2
2906 C12C A000            LDY #00
2910 C12E B1FD          LDA (#FD),Y
2920 C130 0DC402        ORA BIT
2930 C133 91FD          STA (#FD),Y
2940 C135 ACC702        LDY TEMP+2
2980 C138 CEC102 ROT4      DEC JJ
2990 C13B ADC102        LDA JJ
3010 C13E 100A          BPL ROT5
3020 C140 A914            LDA #20
3030 C142 8DC102        STA JJ
3040 C145 EEC002        INC II
3050 C148 A007            LDY #07
3060 C14A C8 ROT5         INY
3070 C14B C008          CPY #08
3080 C14D D0CF          BNE ROT3
3090 C14F E8            INX
3100 C150 E03F          CPX #63
3110 C152 D0C2          BNE ROT2
3120 C154 60            RTS
3400 C155 !
3410 C155 8EC502 TOP2     STX TEMP
3420 C158 AA            TAX
3430 C159 A901            LDA #01
3440 C15B E000          CPX #00
3450 C15D F004          BEQ TOP2DONE
3460 C15F 0A TOP21       ASL A
3470 C160 CA            DEX
3480 C161 D0FC          BNE TOP21
3490 C163 AEC502 TOP2DONE LDX TEMP
3500 C166 60            RTS
3510 C167 !
3520 C167 20FDAE GETLOC   JSR #AEFD
3530 C16A 209EB7        JSR #B79E
3540 C16D 86FB          STX #FB
3550 C16F A900            LDA #00
3560 C171 85FC          STA #FC
3570 C173 A005            LDY #05

```

Mr. Chip

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This series of programs is intended to provide the small to medium size business with a total accountancy package for use with the Commodore 64.

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MACHINE CODE

```

3580 C175 06FB LOOP1 ASL #FB
3590 C177 26FC ROL #FC
3600 C179 88 DEY
3610 C17A 10F9 BPL LOOP1
3620 C17C 60 RTS
3680 C17D !
3690 C17D 2067C1 SAVE JSR GETLOC !SYS49533,N01,N02
3700 C180 A5FB LDA #FB
3710 C182 85FD STA #FD
3720 C184 A5FC LDA #FC
3730 C186 85FE STA #FE
3740 C188 20FDAE JSR #AEFD
3750 C18B 209EB7 JSR #B79E
3760 C18E E8 INX
3770 C18F 206DC1 JSR GETLOC+6
3775 C192 20FDAE JSR #AEFD
3780 C195 20D4E1 JSR #E1D4
3790 C198 A9FD LDA ##FD
3800 C19A A6FB LDX #FB
3810 C19C A4FC LDY #FC
3820 C19E 20D8FF JSR #FFD8
3830 C1A1 60 RTS
3840 C1A2 !
10000 C1A2 A5FB CALCP LDA #FB
10010 C1A4 85FD STA #FD
10020 C1A6 A5FC LDA #FC
10030 C1A8 85FE STA #FE
10040 C1AA ADC102 LDA JJ
10050 C1AD 0A ASL A
10060 C1AE 18 CLC
10070 C1AF 6DC102 ADC JJ
10080 C1B2 18 CLC
10090 C1B3 65FD ADC #FD
10095 C1B5 85FD STA #FD
10100 C1B7 ADC002 LDA II
10110 C1BA 4A LSR A
10120 C1BB 4A LSR A
10130 C1BC 4A LSR A
10140 C1BD 8DC202 STA IIDIV8
10150 C1C0 18 CLC
10160 C1C1 65FD ADC #FD
10165 C1C3 85FD STA #FD
10170 C1C5 60 RTS
10260 C1C6 !
11000 C1C6 ADC202 CALCP LDA IIDIV8
11010 C1C9 0A ASL A
11020 C1CA 0A ASL A
11030 C1CB 0A ASL A
11040 C1CC 8DC402 STA BIT
11050 C1CF A907 LDA ##07
11060 C1D1 38 SEC
11070 C1D2 EDC002 SBC II
11080 C1D5 18 CLC
11090 C1D6 6DC402 ADC BIT
11100 C1D9 2055C1 JSR TOP2
11110 C1DC 8DC402 STA BIT
11120 C1DF 60 RTS

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Floppy range

Esselte have launched their own brand of floppy disks. The 51/4 disks range in price from £2.75 for single-sided double-density soft sector to £4.20 for double-sided double-density with 77-18 per side.

Two booklets entitled "All you need to know about floppy disks" and "Caring for your computer or Word Processor" are both available from Esselte free of charge.

A computer care kit priced at £8.69 + VAT has been designed by Esselte specifically for the home computers with cassette recorders. The kit comprises a cassette head cleaner, anti-static foam, screen cleaner and 25 lint free wipes.

Contact: Esselte Dynamo Ltd, Spur Road, Feltham, Middlesex TW14 0SL. Tel: 01-890 1388.

Catalogue

The second free issue of "Supercat" Electronics' Catalogue is now available.

The Summer issue contains test and Measuring Instruments, Kits, Connectors, Leads and Accessories. The aim of the catalogue is to offer the reader a choice of prices, specifications and Ergonomics for all applications.

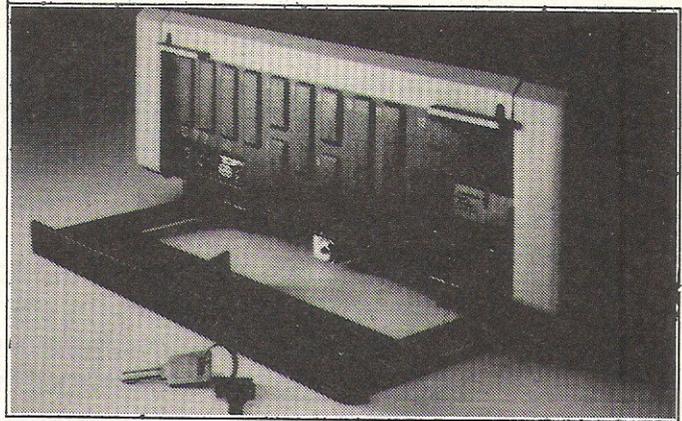
Contact: Supercat Electronics Ltd, PO Box 201, St Albans, Herts. AL1 4EN. Tel: 0727 62171.

Improved package

FCG Computer Systems have revised their Integrated Accounting, Job Costing and Payroll packages for the building industry. New facilities have been added and the operating speed has been increased ten times the previous rate. These additional facilities do not alter the price of £5000 for the whole system.

A balance sheet can be set up with the new profit and loss facility providing facilities for budgetary control and comparison with last year's performance. More control over printing is offered enabling remittance advice notes, interim applications and interim statements to be printed.

Contact: FCG Computer Systems, Hamilton House, Mabledon Place, London WC1 9BD. Tel: 01 388 7345.



Lock it

Inmac have designed a Micro Security Lock for the Commodore 4000/8000 series which will totally immobilise them unless the key is used. The complete kit costs £39 and additional base frames cost £19.

The lock comes in two pieces and the base frame can be either screwed or bonded with strong glue to work surface. Extra base frames are

available if the computer has to be moved around. The computer frame is glued to the frame and the two bits fit together with a lock to secure them. Potential thieves would have to move the whole table.

Contact: Inmac (UK) Ltd., Davy Road, Astmoor, Runcorn, Cheshire WA7 1PZ. Tel: 09285 67551.

Safe storage

Fire can destroy entire offices records in minutes. EA Rosengrens of Sweden offer five sizes of fire-proof storage cabinets.

The DC range consists of the DC64, DC40, DC2.10, DC2.20 and the DC5 which is the smallest and newest in the range. They are available in ivory white, blue, brown or silver colours. Each fire and

fall-proof cabinet contains a safe within a safe with double doors.

All types of software can be accommodated and separate lockable compartments provide space for classified data.

Contact: EA Rosengrens AB, Molndalsvagen 85, 412 85 Goteborg, Sweden. Tel: 46 31 81 39 50.

Digitiser

Rapid Terminals recently released a new series of Summagraphic digitisers - the Microgrid digitiser tablets.

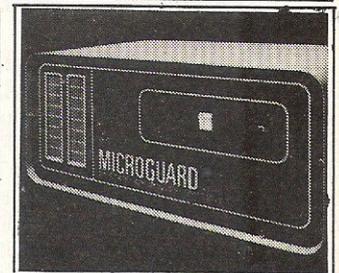
There are six tablet sizes and they range in price from £1,528 for a 12 x 12 inch active area to £5,232 for a tablet with an active area of 42 x 60 inches. A IEEE 488 interface, costing £284, will be needed for the Pet.

The digitiser pads can be used in applications such as Cartography and Computer Aided Design (CAD) where drawings have to be transfer-

red into the computer system very accurately.

The tablets utilise electromagnetic induction technology and on all the units the resolution can be set to 40 lines per mm. A choice between a single button stylus or three to sixteen button cursor is offered. Other features include four operating modes, six data collection modes and seven programmable functions.

Contact: Rapid Recall Ltd, Rapid House, Denmark Street, High Wycombe, Bucks HP11 2ER. Tel: 0494 26271.



Back-up

Ever spent two days on the computer working out the company's accounts only to lose everything with a sudden power failure? Microguard's UPS500 Emergency Power System will prevent it ever happening again.

The UPS500 is a 500 VA uninterruptible power supply priced at £1,395 excluding the car battery it uses. It will provide at least one hour's back-up power supply for any Commodore computer and will maintain a constant voltage output of 240 V. The UPS500 is quartz crystal controlled.

Contact: Microguard, 24 Foregate Street, Worcester WR1 1DN. Tel: 0905 21541.

Words, words, words

Last month we looked at wordprocessors in general and two wordprocessors for the Commodore 64 in particular. This month we continue our product survey with more general information about wordprocessors and a look at some more for the 64.

The most important aspect of a wordprocessor is compatibility. Not just compatibility in the sense in which the word is usually used in computing circles but compatibility at the man-machine interface – in other words how easy is it for you to use!

All Commodore 64's are the same but all human beings are different. This means that a wordprocessor that I enjoy using might drive you up the wall with irritation.

In some cases, where a great deal of wordprocessing needs to be done, people find themselves using more than one wordprocessing package. To those who are new to wordprocessing or have only ever used one package or even none at all this might sound a little too much like masochism. After all, learning how to use one package is difficult enough without complicating life by having to learn how to use any more. And then to switch back between one and another... sheer lunacy!

But it's not half as difficult – or stupid – as it may sound.

As we pointed out last month, the built-in editing features of the 64 are so good that writing a wordprocessing package is easier than it might be. It also means that most wordprocessing packages are the same in most respects. There may be a few differences which mean you have to be careful. CLR usually clears the screen but in many wordprocessors it simply takes you back to the beginning of the text. You have to be careful to remember which wordprocessor you're working on in case you lose all your text with a CLR!

On the whole there really is no problem switching from one wordprocessor to another.

There are packages that are suited to churning out thousands of words of copy which need to be printed out in fairly basic form and there are packages which need to be formatted before a word is typed in. In the latter instance this means that you decide on things like the page width, length spacing and justification beforehand and the words appear on the screen almost as they will appear on the printed page. This is obviously enormously useful if your main use of a wordprocessor is producing complicated business forms and tables. The formatting commands can, of course, be changed at any time.

You can never really see on the screen exactly what you will get on the printed page unless you're using one of the less sophisticated printers. This is because the better printers give proportionally spaced letters. This means that the 'i' or 'l' will take up less space than the 'm' or 'w'. On the screen, of course, each character takes up exactly the same amount of space.

Another obstacle in the way of letting you see exactly what you will get as you are typing is that the 64 screen is a 40 column screen – it can usually only type 40 characters per line. It is possible to 'upgrade' the 64 so that it has an 80 column screen and there is at least one wordprocessing package which I have heard of, but not seen, which gives you an 80 column screen.

The size of the screen is almost always a disincentive to buying the 64 to use as a wordprocessor. But it takes surprisingly little time to get used to it. As long as the wordprocessing package enables you to move quickly throughout the text there is usually little problem in

using a 40 column screen rather than the 80 column screen which most people seem to prefer. With an 80 column screen one can't help wondering what the resolution of the characters is like – especially if you're using a television set and not a monitor.

In fact, a monitor is always better for word processing than a television set. This is because the signals fed to a TV set from a computer need to be converted into the sort of broadcast signals that the TV normally receives from TV transmitters. Most monitors can receive a composite video signal which gives a better result than the broadcast signal.

Even better for normal use is an RGB monitor. This is capable of receiving separate signals for red, green and blue – the three primary colours which are needed to make up any other colour. If you intend using your 64 almost exclusively for wordprocessing you won't need to worry about colour so your best bet would probably be a monochrome monitor. We will be covering monitors in much more detail in a forthcoming issue.

These two features will help you but once you've made a shortlist of one or two software packages you should try to talk to someone who is using it, preferably putting it to the same sort of use that you envisage.

Simplywrite

Writing: ***** Because of the built in capabilities of the 64 there really shouldn't be a wordprocessor that doesn't get five stars here. Like Vizawrite this is a menu driven program and like

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c Commodore 64 Machine Code Master	£6.95
c Commodore 64 Adventures	£5.95
c Commodore 64 - Getting the most from it (Tim Onosko)	£7.95
c Commodore 64 User's Guide	£11.00
c Computer Playground	
Commodore 64/Vic 20	£12.70

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FX80 (Friction & pin feed) Dot matrix	£399.95	BBC to Centronics cable	£11.95
FX100 (Friction & pin feed) Dot matrix	£545.95	64/VIC to Centronics cable	£19.95
		Software for above	£7.95

MONITORS

(Price code (F) except Turntable (D))

Commodore 1701 Colour and Sound	£195.95
Microvitec 14" Colour	£247.25
BMC 12" Green screen	£113.85
Turntable stand for BMC	£19.55
Phillips Green screen	£79.00
Fidelity RGB, RGBY, Composite and Sound	£228.85

MEDIA SUPPLIES

Diskettes by Verbatim (supplied in boxes of 10)

S S D D 40Tr	£17.95	D S D D 80Tr	£32.75		
S S D D 80Tr	£24.75	Plastic library case	£1.35		
C15 cassettes 50p each or 10 for £4.50					
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11 x 8	£13.80	11 x 9 1/2	£12.95	11 x 15 1/2	£15.52
Sorry p&p paper £3.00 a box (Postage Code A)					
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		1526	£3.95	Dragon	£2.95
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PRODUCT SURVEY

Easy Script it does not format the text as it is typed in. Before you can get into the writing you must choose printer options and then select the write mode from the menu.

Printing: **** Fairly standard printing commands and facilities. Perfectly adequate for most purposes but nothing really exceptional.

Documentation: ***** Excellent manual that goes into great detail. Perhaps the best touch is the section by the programmer who explains the thinking behind his programming. It also gives you an insight into the capabilities of the program that might otherwise take months to discover.

General comments: The package as a whole is oddly inconsistent. But then that's a characteristic of just about all wordprocessors. It seems that every word processor has some aspects which are so good that you wonder why no one else has copied them. The splitting up of the Main Text and Extra Text is one of those good ideas which ought to have been copied many times over! Wordpro is at least partly menu driven with a menu line consisting of a group of letters at the top of the screen. Most people who have used a number of wordprocessors must have realised how similar Easy Script is to Wordpro – or should it be the other way round?

Wordcraft

Writing: ***** The first point to note about Wordcraft is that you can't change background or type colours. You're stuck with black type on an off white background. Most people will undoubtedly find this no problem at all, but it would be nice to have a choice. The beep noise as you type is interesting since it changes depending on which key you press. If you don't like it you can switch it off. Wordcraft does not format as you type and it stores text in its own memory in pages. Each screenful constitutes a page so you can only see a page at a time. This can be confusing because you can't really see the bottom of one page and the top of the next together on the same screen.

Editing: *** You can move around the page you're on fairly easily but in order to jump to another page you must specify the page number. This seems to be an unnecessary restriction. It's fairly easy to get used to after a while but at first it can be frustrating hopping around trying to find the right page if you've been used to scrolls and pans. Wordcraft is markedly different from other word-

processors as far as editing is concerned. Information storage and retrieval: **** A good package as far as storing and retrieving information is concerned. Has all the usual facilities such as Merge and Fill.

Printing: ***** This is where Wordcraft seems to be at its best. There seems to be more in the manual about printing than anything else, for one thing, which helps to strengthen the feeling that the strongest part of the package is its printing.

Documentation: ** How can 51 pages possibly be enough for a word-processing program of any power? And the 51 pages include the contents, introduction and index.

General comments: In spite of the shortcomings of the manual Wordcraft is easy to use. Because it's menu driven the manual is not quite as important as it might otherwise be. Would suit either the office or the home.

Script 64

Writing: ***** Any program that has a section headed 'Load and start typing' must start off with an advantage. Thankfully, it's not just hype. You really can load and start typing straight away. Like some of the other programs Script 64 is saved in the computers memory a screen at a time. It does not format text as you type. This program allows you to specify how big the screen should be – as long as it's less than a full screen. One problem is that as you're typing you don't always know when the next paragraph will occur and yet Script 64 treats each new screen as the beginning of a new paragraph. It's quite easy to get round this but even the program writers recommend that you don't completely fill each screen with text.

Editing: *** Comforting to know that in some cases of accidental deletions you can still recover text! Unfortunately the fact that Script 64 saves text in screens does pose problems. It means, for instance, that moving around large pieces of text can be slower. Information storage and retrieval **** One big difference between this and many other wordprocessors is that it saves in screens and in files of 40 screens. The memory of the 64 can hold a maximum of 40 screens at a time – that's well over 800 lines which compares favourably to most other wordprocessors. 999 screens can be saved on each disk.

Printing: **** Script 64 seems to be perfectly satisfactory in all respects. Formatting text for the printer appears to be fairly easy.

General comments: A very neat package with some distinct advantages over some of the others. The big drawback for many users may be the method of saving by screen. Other users, of course, may find it an advantage!

Paperclip

Problems beyond our control prevented Paperclip from reaching us in time for this feature. It has been recommended but we will reserve judgement until we have had an opportunity to use it.

Product: Easy Script
Company: Commodore, 675 Ajax Avenue, Slough SL1 4BG. Tel: 0753 73638.
Price: £75 (disk)

Product: Paperclip
Company: Kobra Micro Marketing, Unit 8, 1/7 Broomfield Road, London W3 9AP. Tel: 01-997 6666.
Price: £78.22 (disk)

Product: Script 64
Company: Impex Designs (UK) Ltd, Metro House, Second Way, Wembley, Middx. HA9 0TY. Tel: 01-900 0999.
Price: £60.80 (disk)

Product: Simply Write
Company: Simple Software Ltd, 15 Havelock Road, Brighton, Sussex. Tel: 0273 504879.
Price: £40 + VAT (disk) and £35 + VAT (cassette)

Product: Vizawrite
Company: Viza Software, 9 Mansion Row, Brompton, Gillingham, Kent ME7 5SE. Tel: 0634 813780.
Price: £79.95 (disk) and £89.95 (cartridge)

Product: Wordcraft 40
Company: Audiogenic, PO Box 88, Reading, Berks. Tel: 0734 586334.
Price: £89.95 (cartridge)

Product: Word Pro 3+
Company: Wego Computing, 22A High Street, Caterham, Surrey SR3 5UA. Tel: 0883 49235.
Price: £80 (disk)

Product: Word Wizard
Company: Bubble Bus, 87 High Street, Tonbridge, Kent TN9 1RX. Tel: 0732 355962.
Price: £6.99 (cassette)

Take-a-guide

How does someone who has a working knowledge of computers choose a system to suit his business. Perhaps Fred Pearson's experience has lessons for other businesses. He ended up with a system, based on a PET, that cost as little as some companies were quoting for the software alone!

"What sort of system will work best for me? Does anyone supply a software program to fit my exact need? How do I go about installing it? Who can I trust for after sales service, support and advice," these are the prime questions put by businessmen considering computerisation.

As one London businessman recently discovered finding the right computer system can be just as difficult for experienced computer users as for newcomers to the field of high technology.

Fred Pearson has been running his unique, highly personalised touring and sightseeing business – Take-A-Guide – for 24 years. Operating in the highly competitive American marketplace means that he must be constantly updating and improving the service in order to keep attracting top clients such as Saudi Arabian princes and film stars like Robert Redford, Lauren Bacall and Anne Bancroft.

Fred had been operating a computerised accounts system on punched cards, using a mainframe on a bureau basis, since 1969. The advent of fast, affordable micros convinced him that it was the time to review computerisation at Take-A-Guide.

The decision making process he employed to find the best solution is a model which could well be followed by other potential systems buyers.

First Fred Pearson experimented. He perused the computer magazines, went to exhibitions and fairs and put hypothetical questions to suppliers and programmers. It didn't take long to realise that he had a relatively up to date picture of what technology could achieve, but that it would take a very long time to explain his requirements to all possible suppliers in order to weigh up the

alternatives.

Because Fred recognised that he was likely to need specially written software, to cope with the unique needs of Take-A-Guide and handle the various management reports he required for VAT and Inland Revenue purposes, he decided to write a detailed specification report, which would answer any question likely to be put by a would-be supplier.

Fred took himself away from his busy office for a full six months to write the report and to allow himself time to consider in detail how a computerised system would affect his business and exactly how its power could best be utilised.

Fred then mailed 100 copies of his specification report to dealers and suppliers whose names he had collected over a two year period. "This response was quite astonishing," he recalls. "The top quote was £24,000 with no guarantee of success and most estimated around £7,000 just for writing the software. I got the distinct impression that most dealers quoted on the most expensive system rather than on the most effective for my needs. It took a little time to sort out the sensible proposals".

It came as a pleasant, though not unexpected, surprise to find that one company clearly stood out from the pack. The dealers were Merchant Systems Ltd., under the chairmanship of Neil Hiscox who had written Pearson's original program back in the late 60's.

"Merchant Systems had obviously considered my specification from my point of view. They recommended a Commodore 8096 as the basis of my system because it was a rugged, tried and tested machine which could easily cope with my needs. They got my

system up and running for the same amount others were quoting for software alone".

"They sold me an off-the-shelf program – Silicon Office – to cater for my business needs in general and wrote a special program for my more detailed accounting requirements. I use Silicon Office for a variety of ordinary word-processing jobs but it really comes into its own when we are writing itineraries for our clients. We can now select appropriate sentences from our coded descriptions for each area, personalise and print the itinerary in just half an hour where it used to take four!"

A third program, Super Clerk, handles day to day jobs such as bank statements reconciliation and so forth.

The complicated accounting suite of programs was written by Merchant Systems' expert programmer – Simon Hiscox, the 17-year-old son of Take-A-Guide's first system programmer, now Managing Director, who spent four months at Take-A-Guide's Belgravia headquarters perfecting the system.

Three Take-A-Guide staff have been trained by Merchant Systems and Pearson appreciates the thorough and patient help offered even with 'silly' problems. The dealership is big enough to have someone always available to assist yet is small enough to retain the personal touch.

Take-A-Guide's offices in New York and Los Angeles are already using Commodore machines, as will the Spanish office to be opened this year. Fred Pearson anticipates adding to his system by introducing more automation for bookings and other functions.

This time though he won't be putting the business out to tender. He knows that Merchant Systems can provide ideas, equipment and service to meet his high international expectations.

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VIC 20 + C2N + 16K; Programmers Aid, mother board, printer, intro to Basic I & II, games tapes, data base tapes, books etc, £400. Tel: 0784 58948 (evenings).

WHO WILL SWAP CBM 64 software. I have lots, Zaxxon, Sunnergames etc. Write to: F. Buys, Fahrenheitlaan 14, 4532 JR, Terneuzen, Holland.

ADMAN SPEECH SYNTHESIZER for the Vic, 4 months old, £30. Dr Watsons Beginners Assembly Language Course (book and cassette) £8. Vic software - Amok (Audiogenic), Destroyer (Sumlock) £1 each. All as new. Mr S Law, 36 Church Street, Littleborough, Manchester OL15 8AA.

TODDLERS! Play with your parents' CBM64. Animated, musical flashcard and spelling program from Toddlersoft, developed in consultation with school and educational psychologist. Suitable 1½-7 years. Cassette £4.50, disk £7.00 from: Toddlersoft, 1 Cat Lane Cottage, Ewelme, Oxon OX9 6HX.

EASYSRIPT COMPLETE WORD PROCESSOR PACK, with Fill File, for CBM 64, on DISC, with full manual/tutor. Unused. £40. J. Gathercole, 182 Birchfield Road, Redditch, Worcs., B97 4NA. Tel: 0527-45656.

VIC 20 WITH CASSETTE DECK (C2N), 16K switchable RAM pack, light pen (stack), joystick, programmers reference guide and cassette and cartridge software, £180 ono. Tel: (0727) 25207.

CBM 8032 + CBM 2040 dual floppy disc drive, Qume Sprint 5 daisy wheel printer needs slight attention, 'Wordcraft' processor floppy disc, 8 other discs and 'Wordcraft' training cards, £850 ono. D. Taylor (0843) 20202.

CBM 3032 upgraded to Basic 4 (with old ROMs + toolkit) + CBM 4040 disk drives + CBM 4022 printer + C2N cassette unit with EPROM programmes, ROM expander board and 8 programmes EPROMS, reset button, sound box, 4K "Instant" ROM, + over 70 disks of software + cables + dustcovers + manuals. All v.g.c., £850. Tel: L Faulkner (0533) 704676.

SPORTING FORECASTS programs by PROFESSOR Frank George for Commodore 64. Horse Race Forecast, Football Forecast and Poolperm now available. Details from Poringware, PO Box 161, Brundall, Norwich.

COMMODORE 64, Mathematics 2, GCE 'O' level and CSE revision program, arithmetic equations, progressions, functions, calculus, trigonometry. Brand new, used twice, £7 ono. Tel: (061) 796 9223.

TOOLKIT AND SUPERCHIP will fit Pet 2001 (small keyboard). Offers please - Tel: (0272) 616879.

EASYSRIPT WORDPROCESSOR for CBM 64, unwanted extra, will accept £35 ono. K Wadcock, Tel: 02575 2001.

COMMODORE VIC 20 computer, 2 cassettes, cassette unit, books, sell all for only £140 ono. Tel. Oxted 3741.

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VIC 20 COMPUTER, 4-slot motherboard, 3K/8K/16K/32K/RAM pack, Vicmon, tape deck, many books, bargain £120. Tel: 01-699 7854 (evening).

COMMODORE 64 - Practical disk and manual. Original, slightly used - cost £45.00. Will accept £35. Tel: David Bolton 09603 69129.

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COMMODORE 64 looks for other CBM 64's to exchange tips and programs (already 700 excellent softwares). A Gerrard, PO Box 116, Leige X, Belgium.

COMMODORE 64, C2N, 1541 disk drive + £1000 worth of imported software, £450 the lot! Will consider selling separately. Tel: 021-440 2124 (Amier)

UNWANTED PRIZE (cos I've already got one) Commodore 64 and recorder plus joystick "Quickshot Type" plus over £100 worth of tapes and one floppy disk with about 60 games on it - the lot £250. Mr D. Schrader 0493 781450.

VIC 20 starter pack, 16K switchable RAM, chess cartridge, some software, 10 tapes, couple of books, £165 ovno. Tel: 061-789-3303 (evenings). Buyer collects.

COMMODORE 64. Protect Manic Miner lives. Send 99p + s.a.e. to Mark Rogers, 43 Coldstream, Ouston, Co. Durham DH2 1LH.

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HELP! In CCI Aug'83 there was an article called "A Complete Nominal Ledger System for Accountants" (part 5). Can anyone send me copies of the previous articles? I look forward to reciprocating at your request. Jim Clefstad, PO Box 154 Mackenzie, BC - Canada Voj 2 Co. Tel: (604) 997-6096

WANTED - Modem software for the CBM 64 with minor miracles WS2000 world standard modem compatible with following standards: CCITT V21, V23. 300 full duplex, 1200 half duplex, 1200/75, 75/1200 full duplex and American Bell 103/113/108 and Bell 202. Tel: (01) 337 3183 evenings and weekends.

SIMONS BASIC - 2 weeks old (shop price £50), £35 ono. Easyscript + 6 games on disk, almost new (shop price £105), £75 ono. 45 Montgomery Road, London W4. Tel: Niki 01-995 7481.

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DISK DRIVE FOR PET 2001-8 WANTED. Contact: Trevor Burton, Bunbury, Cheshire CW6 9SX. Tel: (0829) 260868.

THERE IS A LARGE SELECTION of quality public domain software available for the Commodore 64 but importing it from North America is costly. I hope to greatly reduce the cost by setting up a public domain users' group. If you are interested please contact B. Conroy, 85 Upper Drumcondra Road, Dublin 9, Ireland.

COMMODORE 64 owner wishes to hear from other users throughout the world so that we may exchange public domain software. If you are interested please write to L. Murphy, 3 Woodlands Drive, Stillorgan, Blackrock, County Dublin, Ireland.

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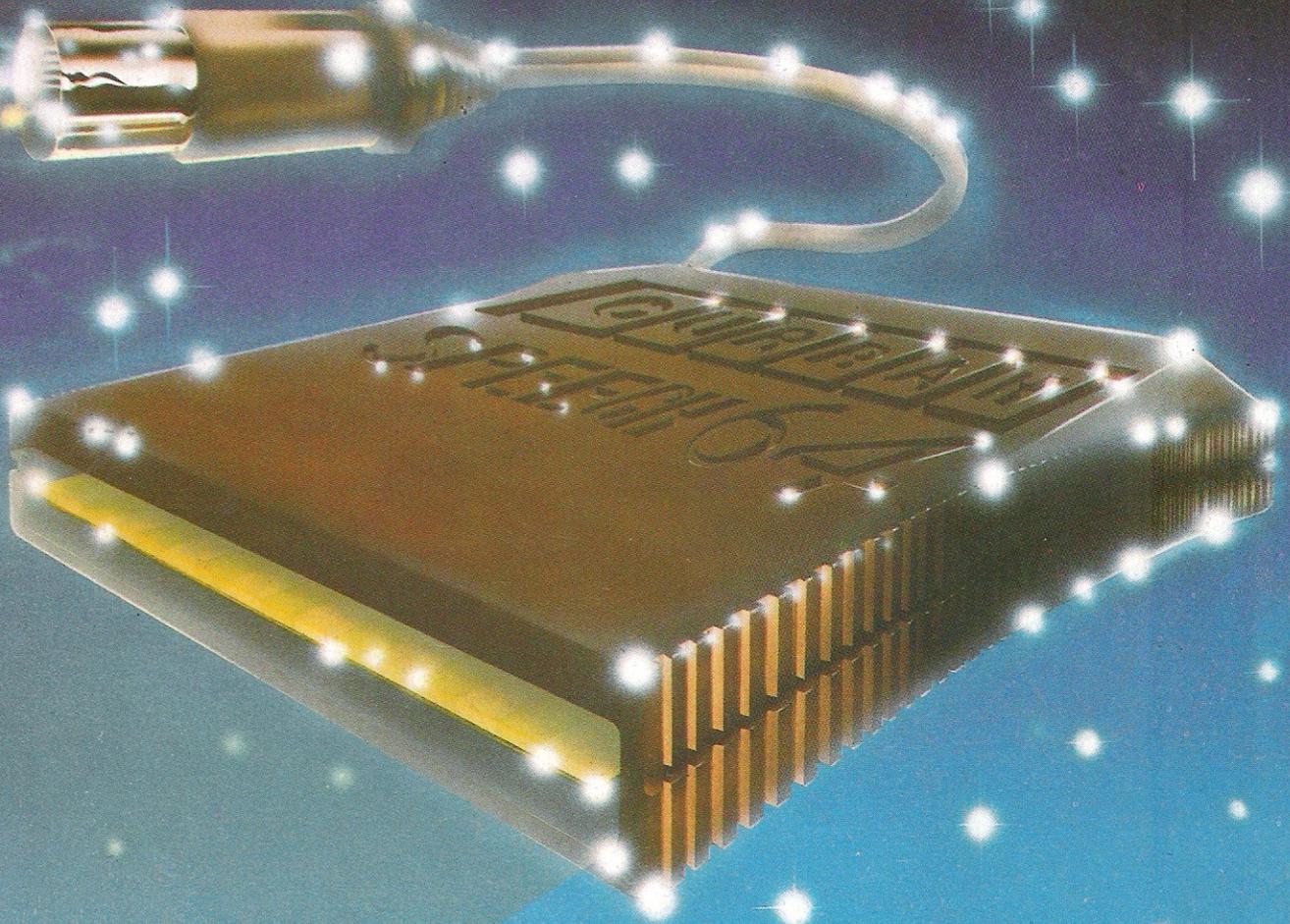
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