

POPULAR ^{to Rock} Only 50p.

Computing

WEEKLY

with Home Computing Weekly

7-13 November 1985

It's the best selling weekly

Vol 4 No 45



OXFORD COMPUTER Publishing's Spectrum program Art Studio has been snapped up by British Telecom. It will be released on a new label set up by BT - story inside.



Find out if you have won an Amstrad 6128 this week or at least some special Popular Computing Weekly cassette labels. Enter your personal Micro Magic number into our special computer program on page 6.

MICRO MAGIC

THIS WEEK'S NEWS

- BBC B production ceased
- Atari ST moves on up
- New Sinclair biography out

Clive's New Year micros

IT IS now clear that Sinclair has two new micros lined up for launch early next year - the expanded memory version of the Spectrum, and an up-market, professional successor to the QL.

The company apparently fully intends to continue with two distinct types of micro using the two different pro-

cessors - Z80 and 68000 family.

Both machines are likely to offer full upward software compatibility with their respective predecessors - the Spectrum Plus and QL.

The British version of the Spanish Spectrum 128K launched in Barcelona on September 23, will be the first

to appear, probably in January 1986. It is not entirely clear, however, whether Sinclair simply intends to release a UK translation of the Spectrum 128, or a modified version - perhaps with better graphic facilities.

However, the new machine will look very similar to the Plus with a Plus-style key-

board - and may well appear in the same casing.

The new QL is likely to replace the 68008 processor with a full 68000 and a built-in 3½ inch disc unit in preference to microdrives. The package - unlikely to appear until the spring - will probably include a built-in monitor.

continued on page 4 ▶

TWO NEW TITLES from Mikro-Gen (left) and Mastertronic (right).

Mikro-Gen's Sir Fred (£9.95 on the Spectrum) has been licensed from a Spanish software company and is an old fashioned tale of knights rescuing imprisoned princesses.

The Last V8 from Mastertronic (£2.50 on the Commodore 64) is a hectic car race which features sophisticated music.

Both are due out next week.



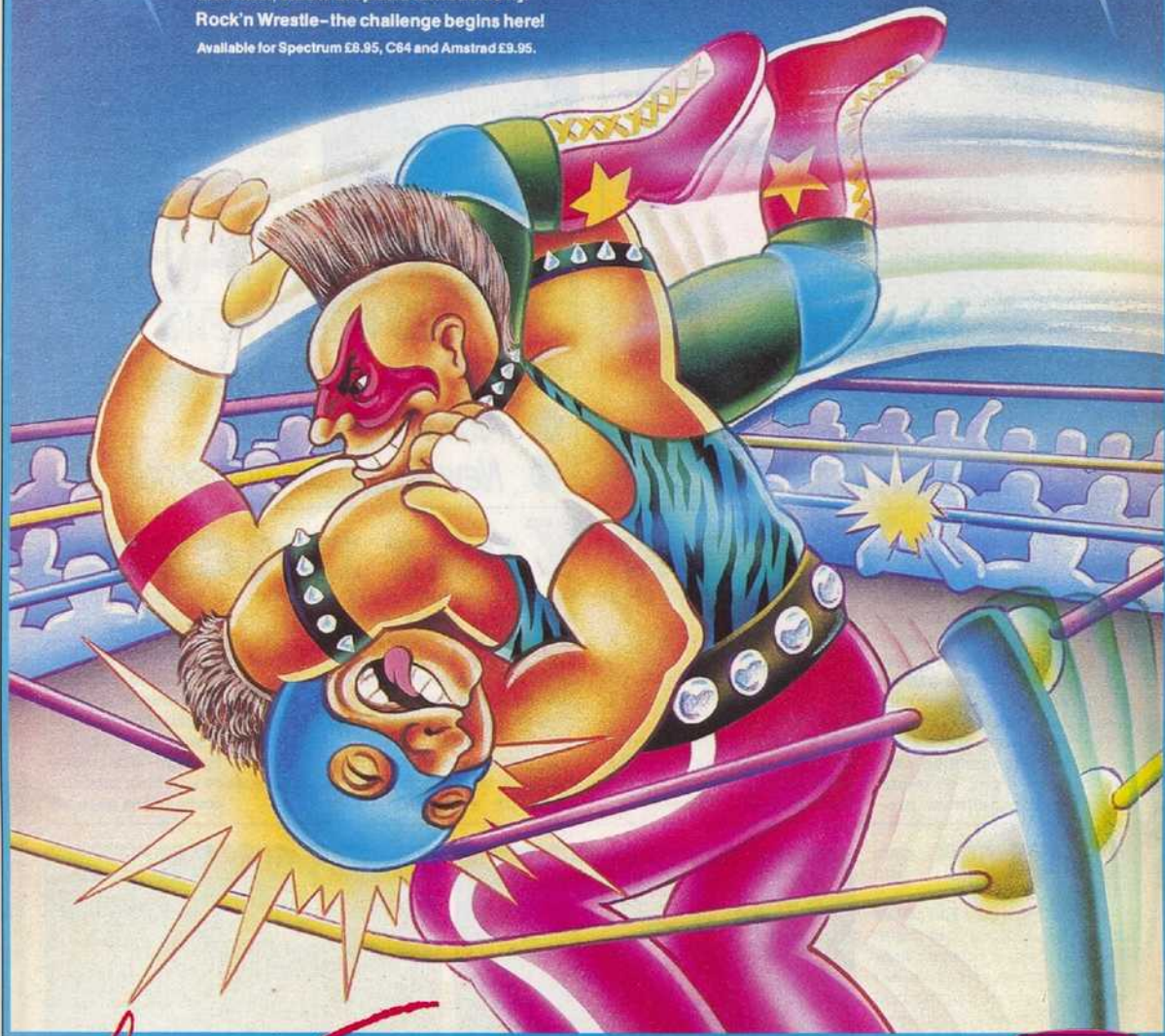
INSIDE } SPECTRUM DISC INTERFACE } QL MODEM } C64 SAMPLER }

ROCK'N WRESTLE

Rock'n Wrestle—the first truly 3 dimensional combat sports simulation game. Dynamic graphics, state-of-the-art animation, 1 and 2 player mode, brilliant gameplay, 10 different opponents and complete rock sound track. More joystick moves than you imagined possible—over 25—including the atomic drop, aeroplane spin, piledriver, body slam, back breaker, arm twist, elbow drop and tumbuckle fly.

Rock'n Wrestle—the challenge begins here!

Available for Spectrum £9.95, C64 and Amstrad £9.95.



from

MELBOURNE HOUSE



Melbourne House (Publishers) Ltd., Castle Yard House, Castle Yard, Richmond, TW10 6TF.

Trade enquiries call 01-940 6064

Available from selected branches of WHSMITH, John Menzies, WOOLWORTH, LASKYS, Rumbelows, Greens, Spectrum Shops, and all good software dealers

4 NEWS

BBC B ceases production

9 STREETLIFE

Surf city here we come... John Minson investigates New Concepts

11 SOFTWARE REVIEWS

Question on Spectrum - Crusading on Commodore

14 HARDWARE REVIEWS

The Sampling 64 - the Talking QL - and more

18 STAR GAME

Ahoy, avast and heave to - Galleons on Amstrad

20 SPECTRUM

Pixel scrolling routines in machine code

22 COMMODORE 64

Construct yourself a Centronics interface

24 BBC AND ELECTRON

All I want is loving you and...

26 THE QL PAGE

New Boots for old for your Psion programs



- | | |
|-----------------------|------------------------------|
| 6 Letters | 41 Top Ten Charts |
| 6 Micro Magic | 43 New Releases |
| 28 Arcade Avenue | 44 This Week |
| 30 Adventure Corner | 46 Puzzle, Ziggurat, Hackers |
| 41 Adventure Helpline | |

EDITORIAL

Software piracy is probably not something which is of great concern to the average computer program buyer. After all, software piracy is just as widespread and 'acceptable' as copying a friend's music cassette. The music industry lives with the problem, so why can't the software industry?

Indeed, micro companies like Amstrad could be said to give tacit acceptance of software piracy through manufacture and marketing of twin-cassette players which can be used to copy from tape-to-tape.

Before long, though, the industry will evolve a sure-fire way of halting piracy through technological means.

In the long run that means following the music industry into CD Rom storage. Until then some form of cassette software protection will be used. A number of different systems are already being tested and most are highly unsatisfactory. From the software houses' point of

view they all look great - they deter piracy. From the software buyer's angle they can introduce an unacceptable level of hassle into loading a program - for example the colour-coded cards. Even more confusing to use is the increasingly popular Lenslok system.

At present, the only system which gives something to the buyer as well as taking away ease-of-use is Mikro-Plus from Mikro-Gen. Its hardware add-on unit contains extra memory meaning more sophisticated games can be marketed.

People actually want Mikro-Plus - not as a protection device - but as a technological advance. And that means it will sell. It should please everyone from owners to programmers to retail chains like Boots and WH Smith.

The other systems are a convenience for the industry - to curb a very real problem - and a source of frustration for everyone else.

Editor David Kelly News editor Christina Erskine Features editor Graham Taylor Software editor John Cook Production editor Lynne Constable Editorial secretary Lucinda Lee Advertisement manager Jeff Raggett Advertisement Executive Diane Holyoak Classified executive David Osen Administration Geraldine Smyth Managing editor Duncan Scot Publishing director Jenny Ireland. Published by Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 286275 Typeset by Publishers Reprographics Services Ltd, 4 Roger Street, London WC1. Printed by Greenaway Harrison, Sutton Road, Southend-on-sea, Essex. Distributed by S M Distribution, London SW9. Tel 01-274 8811, Telex 281643 © Sunshine Publications Ltd 1988.

ABC

56,052 copies sold every week (Jan-June 1984 ABC).

Popular Computing Weekly. Tel: 01-437 4343.

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here - so please do not be tempted. **Accuracy** Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year

ADVERTISEMENT

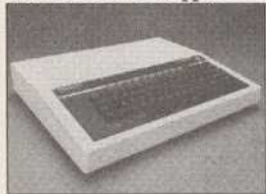
'The Enterprise has got the most versatile graphics around' -
Steve Bak, Microdeal

BBC 32K axed

ACORN HAS finally admitted that it has ceased manufacture of the 32K BBC model B, but claims that the Electron is still being produced.

"We have stopped selling the 32K BBC in this country," said Bob Coates, the BBC mi-

Acorn's first BBC dropped



cro system's product manager. "We decided that the 128K version of the B Plus is what people want. We feel that the B Plus offers good value for money and that we cannot really be offering a BBC machine with just 32K this Christmas."

The BBC B Plus 64K costs £469; the B Plus 128K is priced at £499.

He admitted too that Acorn had moved distribution away from the high street - none of the major chain stores are stocking the BBC machines and only Dixons/Currys offers the Electron.

Sinclair's New Year plans

◀ continued from page 1

THE NEW Spectrum will preserve upwards compatibility by operating in two modes, like the mode switching in Commodore's 128 machine. In Spectrum Plus mode, none of the superior features of the 128, such as the Midi compatible RS232 interface, 8912 sound generator or the separate numeric keypad will operate. Some British software companies are already working on the 128K machine for programs to use the extra features in 128 mode. The 8912 sound chip is one of the features where the new Spectrum scores heavily over the current model with three-channel sound played through the television or monitor.

The Basic Rom is increased from 16K to 32K with additional Basic commands to address the new features, including Play to access its sound facilities. The 128K of memory is paged in 16K blocks. In 128K mode Basic the traditional Sinclair single-keyword entry is dispensed with - Basic commands must be typed in full, letter by letter.

The Spanish Spectrum 128 has a screen display and graphic capabilities unchanged from the Spectrum Plus. Sinclair may well wish to improve graphic display for

the model that eventually appears here.

While the new Spectrum will eventually supersede the Spectrum Plus as an entertainment home machine, the new QL model is intended for more serious application.

Sir Clive last week said that he hopes to launch a machine for the professional market next year, which would incorporate the strength of QDos, the QL's operating system and software.

The follow-up for the QL will almost certainly switch from the 68008 processor to a full 68000, with built-in single 3½ inch disc drive and monitor. The memory will also be increased, though probably only to 256K or 512K.

Again upwards compatibility from the QL will be an important feature, as will some built-in software in Rom. The current plan appears to be to offer the new machine in a package - and follow Amstrad and Atari down the 'one plug' route.

While Sinclair hopes that it can offer a system using windows, icons etc, and has been in discussion with Digital Research over Gem, it would like to be able to produce a similar system through QDos.

The QL successor is likely to be launched in late spring to early summer next year at around £500.

For Sinclair, a spokesman said, "I really cannot comment. There is so much speculation about what Sinclair may or may not be producing next year."

"We have deliberately narrowed the number of outlets to ensure that the machine is adequately supported," Bob Coates continued. "The Electron is now available only from Dixons/Currys and appointed Acorn dealers. The 64K B Plus is also available from Acorn dealers as is the £30 kit which up-grades the 64K Plus to a 128K Plus."

His comments contrasted strongly with those of an official Acorn statement early last week that the 32K Ram model B was still being produced for the UK market and that it "would be surprising" if major high street retailers did not stock both the BBC and Electron machines this Christmas (see *Popular Computing Weekly*, October 31).

PCW 8256 mania hits high street

AMSTRAD'S new PCW 8256 micro is now available in a number of high street stores other than Dixons, although Dixons was originally intended to be the sole high-street stockist until Christmas.

Both WH Smith and John Lewis stores have received the 8256 in the last week. John Menzies also hopes to stock the machine before Christmas.

"At the time of the launch of the 8256, it was announced that Dixons would hold exclusivity until Christmas," said a spokeswoman for Amstrad. "During the months that it has been available, other chain stores have seen the machine and have wanted to stock it."

"Consequently, a limited number have been made available so that stores can evaluate their stocks for the New Year."

"The PCW 8256 has gone into 140 of our outlets," said WH Smith's merchandise controller John Rowland. "The 8256 fits in very well with both our typewriter and computer range."

The PCW 8256 costs £458.85 at WH Smith and £460 at John Lewis.

BT forms new label

BRITISH TELECOM'S two software divisions, Firebird and Beyond, are shortly to become three - Firebird is to split into two factions to separate its entertainment range from more serious titles.

Firebird will remain the brand name for titles currently in its Silver range, Super Silver or Hot range, and will be run by Herbert Wright.

Tony Rainbird will develop the new and as yet unnamed section. "We are sectioning off certain programs - for instance, utilities or titles for sophisticated machine like the Atari ST," said Mike Anderiesz, of British Telecom's New Information Services.

One of the new division's first titles will be *Art Studio* (see cover).

New 800XL deal

DIXONS is to sell off remaining stocks of Atari's 800XL micro in two special value packs.

The first costs £99.99 and includes the 800XL with five software titles, joystick and cassette recorder. The second, at £169.99 is the same as the first but with three more software titles and a disc unit included.

Clive booked!

THE SINCLAIR Story is the first full-length book of the fortunes and misfortunes of Sir Clive Sinclair's various business enterprises.

Written by Rodney Dale, the account covers Sir Clive's early career as a technical journalist, and the founding of Sinclair Radionics in 1982, right up to summer 1985.

The Sinclair Story is published by Duckworth at £9.95.



Atari goes slow on 260ST

FIRMWARE up-grades for the Atari 520ST are now in sight and will be offered to current ST owners in Eprom form within the next month.

Completion of the firmware and the settlement of the dispute between Gem author Digital Research and Apple (see *Popular Computing Weekly*, October 10), means that work on putting the programs into Rom can now begin.

"The operating system, Logo and Basic are now complete, so our intention now is to build them in chip form," said Atari UK's sales and marketing manager Rob Harding. "The dealers will fit the upgrades for a nominal cost."

The nominal cost is £25, but customers who bought their 520STs at leading Atari dealer Silica Shop will get their upgrades free.

"We felt strongly that early

buyers of the ST shouldn't be penalised," said Silica Shop's marketing director Tony Deane.

However, progress does not seem to have been made on the 260ST. "We are still looking at the end of this year or the beginning of next to launch the 260ST," said Rob Harding. "It is the modulator that is holding things up, though, rather than the firmware."

Amstrad in 'copier' row

AMSTRAD has failed to gain a formal declaration from the Court of Appeal that the marketing of its twin cassette recorder does not incite infringements of the Copyright Act 1956 (see *Popular Computing Weekly*, July 4).

The High Court had earlier

ruled that Amstrad's, TS 39, TS 87 and SM 104 twin high-speed audio cassette machines encouraged members of the public to breach copyright in an action brought against Amstrad by the British Phonographic Institute (BPI).

However, the Appeal Court did also rule that there was no substance in BPI's allegations that Amstrad had incurred civil liability in its marketing of the machines, which re-

versed the High Court judgements.

The Appeal Court judge expressed the view that it was very unlikely that anyone would attack Amstrad's marketing through the 1956 Copyright Act.

Amstrad's Malcolm Miller asserted that there was no question of Amstrad either withdrawing the twin cassette decks or changing its advertising.

Virgin set to hit with Now! Games 2

FOLLOWING the success of the compilation tape *Now! Games* - which Virgin claims has sold more than 50,000 copies - the company is set to release *Now! Games 2*.

Now! Games 2 will comprise *Airwolf (Elite)*, *Tir Na*



Elite from Now! Games 2

Nog (Gargoyle), *Chuckie Egg (A'n'F)*, *Cauldron (Palace)* and *World Cup Soccer (Arctic)*.

It will be available in early December for the Spectrum and Commodore 64, price £8.95.

TOUCHMASTER

NOW £49.50

★★ The revolutionary concept in computer peripherals - a touch sensitive surface which plugs simply into the computer and effectively bypasses the keyboard!

- ★ FREE introductory 5 program software pack!
- ★ A4 work surface - 256 x 256 resolution
- ★ No special pen attachment use your finger or a stylus on the touch sensitive surface
- ★ Makes Graphics easy - Freehand draw capability
- ★ Circle, Box and other geometric functions
- ★ Easy to write your own programs for
- ★ Available for BBC, CBM64, Spectrum & Dragon
- ★ The ideal Christmas present for all ages at £49.50 + £3 p&p

Simply complete the coupon below and send with payment to: Touchmaster, Baglan Industrial Park, Baglan, Port Talbot, West Glam. SA12 7DJ



Please send me.....TOUCHMASTER pack(s) for BBC/CBM64/SPECTRUM/DAGON (please indicate computer). Also, please send me my Free pack of five Touchware programs I wish to pay by Cheque made payable to Touchmaster

or Access/Visa/Diners/American Express Card No.

Expiry Date..... Signature.....

Name.....

Address.....

Letters

DIY destruction

Monitoring alien life forms (*Letters*, September 19) is an amusing if thankless task.

I must take issue with Mr Seldon's comments, though. It is a common belief among my colleagues at the Galactic Geography Survey that the human race is more likely to eat a non-earthling than to blast it. Of the thousands of different life forms on your planet we can only identify a handful that have never been eaten by humans.

Mr Seldon's main point - that there is something inherently wrong with games that involve zapping aliens - also looks somewhat strange from our viewpoint. The frightening fact is that these games

merely reflect the human's inability to form peaceful relationships with anyone - even other humans. There was an interesting contradiction in the letter when Mr Seldon suggested that the xenophobic nature of some of your software would cause an otherwise peaceful alien race to vaporise your planet.

That, we feel, is a job you will do yourselves, given time.

*The Alien
Name and Co-ordinates
withheld by request*

128K drawback?

I was pleased to see that after months of the usual Sinclair denies the new 128K Spectrum has been unveiled

- even if it is only in Spain. As a very satisfied owner of an Issue One Spectrum I am eagerly awaiting the extra memory.

But I, for one, will not be buying if the new machine in this country is launched with the same kind of keyboard as the Spectrum Plus. I want a real keyboard that can be used for something other than zapping aliens.

*David Evans
Tottenham
North London*

The keyboard on the Spanish 128K, at least, looks identical to that on the Spectrum Plus.

Fawly logic

I trust that, when the 128K Spectrum is launched in Spain, it will come complete with an operating manual?

*Frank Lewis
24 Argyle Road
Sevenoaks
Kent*



"All the adjectives will be available soon in a separate booklet."

Addict's delay

Why hasn't my Arcade Addict's Handbook arrived yet?

*James Powell
23 Beaumont Close
Romford
Essex*

Apologies to anyone who is still waiting for their free Arcade Addict's Handbook - we have been overwhelmed by the response. We hope to send them all out before the end of this month.

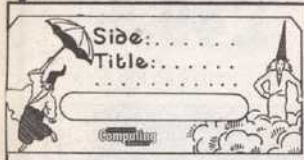
THAMES TV TELETHON

Popular Computing Weekly has now raised over £750 in donations from readers to be donated to the Thames TV Telethon Charity Appeal.

It has been a tremendous effort and thank you very much from all at Popular to those who gave money to such a deserving cause.

Micro Magic

Popular Computing Weekly Micro Magic



Popular cassette labels



The Amstrad CPC6128

We are giving away an Amstrad CPC6128 128K micro - worth £399 - every seven days until Christmas. Not only that, but every Micro Magic card is a winner - every card wins a run-up prize of free Special Popular Computing Weekly cassette labels

How to find out if you win this week

To find out if you are a prize winner this week this is what you must do:

- 1) Key in the computer program listing printed here into your micro and Run the program.
- 2) Input your special Micro Magic number as data in the program when requested and press Enter.
- 3) The program will tell you if you have won a prize this week and what it is.
- 4) If you have won a prize you can claim it by filling in the coupon on the back of your special Micro Magic card. Then send

```

5 PRINT "Input your personal Micro
  MAGIC number"
10 INPUT X
15 FOR J=1 TO 3
20 LET A=2 * (X-27)
30 LET A%= 27
40 LET Y=2 * X + 1050
45 NEXT J
50 IF Y=1326328 THEN GOTO 60
55 IF Y=12840 THEN GOTO 70
60 PRINT "Your matching Micro Magic
  number is"Y
A1 PRINT "Better luck next week!"
65 GOTO 80
68 STOP
70 PRINT "Your matching Micro Magic
  number is"Y
71 PRINT "You have won an Amstrad 6
  128!"
75 GOTO 70
78 STOP
80 PRINT "Your matching Micro Magic
  number is"Y
81 PRINT "You have won cassette lab
  els!"
85 GOTO 80
  
```

Micro Magic: Week 5 Program listing

the completed card off to: Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.

Don't forget to fill in both your name and address, and also both your winning Micro Magic answer from this week and your special Micro Magic number.

5) If you haven't won this week, don't give up hope. Keep your Micro Magic card and use it to find out if you win with next week's Micro Magic computer program. The same card will last you right through to Christmas, so don't throw it away - you could miss the opportunity to win.

This week's winning Micro Magic Numbers: 1326328 and 12840

If you think you've won complete the form on the back of your Micro Magic card and send it to: Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.

Micro Magic cards can only be obtained in line with the criteria outlined by Scot Press. Participants are entitled to only one card each. Cards and accompanying documentation can be obtained free of charge by writing to Scot Press, 12-13 Little Newport Street, London WC2H 7PP.



This boy is a fugitive.



This girl is dangerous.



This lady is deadly.



This man is harmless.



Sir Fred



A severe attack of Chivalry
on a Moonlit Knight

The Olde 48K Spectrum £9.95

MIKRO-GEN

Unit 15, The Western Centre, Bracknell, Berks. 0344 427317

On the crest of a wave

Surf's up! John Minson goes paddling with New Concepts

Of all adjectives in the computing world, new has to be one of the most common. Heralding from the old world charms of Ireland, however, is New Concepts, a company which believes it lives up to that overworked epithet.

The promise of yet another sports simulation may seem less than novel but when the program is called *Surf Champ* you have to admit that it's hardly a national pastime. But its originality lies in the method of control: not the keyboard, not a joystick but a seven inch surf board that sits over the keys. Even more strange to relate, we're talking about the rubber-keyed Spectrum here.

While it could have been a mere gimmick, New Concepts has ensured that this overlay behaves just like a real board, depending on where you apply pressure. It takes 20 keys to read that input - rather too many for the average hand! And the company has protected its idea by obtaining a patent for the overlay concept.

"The profit is in new ideas," says Norman McMillan, the man behind New Concepts, and he isn't talking about mere financial income. When he's not teaching instrumentation at Carlow Technical College, he's likely to be organising touring exhibitions or conferences about the great Irish scientist, Tyndall as well as somehow finding time to run the company.

Like Tyndall, Norman is a born educator, but that doesn't mean dry book learning. He considers sport to be leisure education and at the heart of *Surf Champ* is some hard core physics, ranging from wave behaviour to the surfer's energy expenditure under various conditions. The accuracy of the simulation is endorsed by Reg Prytherch, President of the International Surfing Federation and Rod Brooks, President of the Australian Surfing Association.

"If surfers think these things are important then kids will learn they're important. Why pander to what they already know? It's a waste of time and the kids are no richer when they play the game." Norman tells of one occasion when sprite flicker was causing prob-

lems. "I got a phone call saying, 'I can take out all the physics and get the sprites to move smoothly.' I said, 'Don't you touch it, mate.'"

One bow to the high score freaks is that while the scoring closely follows that of competitions, with the more spectacular manoeuvres rating proportionately higher, it is out of 100,000 rather than a paltry ten. But it must be admitted that graphically the pre-production copy of the program that I saw was well behind the sophistication of many games; a trade off for the vast amounts of code necessary to read the keys and calculate the equations.

Doubts about lack of surface gloss fade as you play. Norman demonstrates how you paddle out, ducking under the waves, your hand flat on the board alternately pressing *Caps Shift* and *I* on the rubber-keyed Spectrum.

Next wait for the right wave and, judging your timing carefully, catch it by pressing *2*. The screen changes to show a larger sprite surfer riding the wave, in the same sort of perspective seen in photographs of the sport, Norman explains. You move your hand to the back of the board, just as in reality the surfer balances there to keep the board's nose out of the water. Pressure on either side makes you turn, the angle determined by how far up the board you are. The whole range of surf stunts are available from merely gliding along the length of the waves to hairpinning up to its top and flying into the air before twisting back on to it.

Norman says, "The paddle gives the tactile simulation - it gets as close as possible to the real thing." After a little practice I fully agree. And I can believe in the educational side of *Surf Champ* because the player is constantly learning from the physical experience, from the initial choices and from the personal details which determine how well you can hope to perform.

The idea of combining surf and micros came from Norman's teenage son, Doug, a surfer of two years vintage. A more overtly educational program, *Three Miles High* was put to one side when Anthony Kelly, a brilliant young electronic design student, said he could see a way of doing this.

That was back in summer '84. A long period followed, until May this year, when more and more people were brought in but proved unable to get the program working. At Easter Norman

himself took charge and wrote the physics algorithms which were coded in Pascal because it runs 20 to 40 times faster than Basic but is easier to debug. However it's costly in terms of memory.

Meanwhile Anthony worked on the sprites and at last things began to come together. The other members of the team included Des, a pure science student, Kieran and Rocky. But Norman was still learning from harsh experience. "Programmers always underestimate. It always takes a hundred times longer." The proposed July completion date passed and their landlord began to ask questions about squatters, there were so many all night programming sessions. "In a country town they don't expect guys to be doing these things anyhow."

With the program itself near to completion, though with advertising and other marketing expenses still to come, the involvement of Irish government aid, in the shape of the Industrial Development Authority, became necessary.

The launch of *Surf Champ* came at the European Surf Championships in County Donegal. Some details of the game were still incomplete: alternative music had to be added; plans to make keyboard response sluggish as your surfer grows

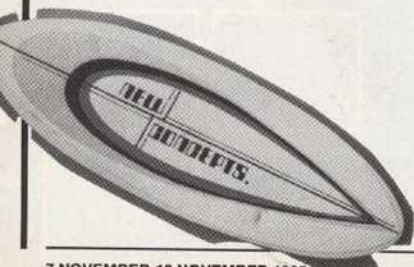


tired had to be dropped from the Spectrum version, though should reappear on the Amstrad. And there was still the problem of designing a surf board for the Spectrum Plus.

But at last Norman McMillan's dream was close to realisation, and the response from the surfers was excellent. Despite the still present financial risk, Norman was happy to talk about further New Concepts projects.

These include conversions of *Surf Champ* and new beaches with different types of wave, including a 'tube' - when you take your board and surf along the hollow as the water curls above you. Future simulations include one for skiers, and while it will initially use two plastic skis, New Concepts is looking at a yet more realistic method of user interface.

Once again Norman's enthusiasm grows. "This program is a generation ahead of anything else. It isn't just men jumping over barrels." It remains to be seen whether his faith is misplaced. "If it fails the money's lost. It's back to a cottage industry." But I wish Norman McMillan and his dream well. A lot of hard work has gone into it... and spectral surfing is a whole lot of fun too.



Toolkit

Program *Utopia* **Micro**
Amstrad **Price** £29.95 (Rom)
Supplier Arnor, The Studio,
Ledbury Place, Croydon,
Surrey CR0 1ET.

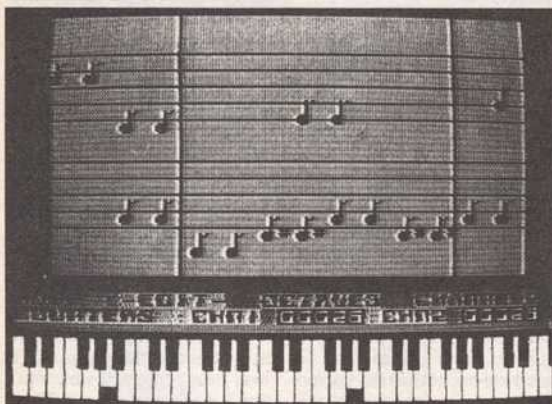
Of the Rom software releases for the BBC, Beebug's *Toolkit* is amongst the most respected. *Utopia* is credited to the same author and provides CPC owners with a similar range of utilities.

Disc commands include *Format*, *Discopy*, *Disctest*, etc., - normally available only by loading a CP/M disc. There is also an *Access* command similar to the BBC for making files Read Only and there is a disc sector editor useful for recovering erased files. *Info* provides the length, start and execution address of files on tape or disc. *Copy* transfers files from disc to disc (1 or 2 drives), disc to tape, or tape to disc. *Verify* has been provided for programs or Ascii text. *List*, *Type* or *Dump* put file contents on

screen in various formats. *Spool* echoes any screen output to a file whilst *Printon* echoes it to printer. New *Load* and *Save* commands give more options over file type and position in memory.

Programming aids include *Search/Replace* for Basic tokens or Ascii text *Move* lines of Basic, *List* all functions, arrays, variables, function key definitions (including several that are programmed at power up such as a function that restores all screen parameters to their original state - useful if you get lost in a mishmash of inks and windows), memory dump and memory edit, and a status display of program start address, length, free memory etc. Finally come the Rom control commands for switching Roms on and off (vital to run long programs such as *3D Grand Prix*), listing and selecting commands from specified Roms even if several use the same words. A powerful range of commands at a bargain price for a Rom.

Tony Kendle



Wah!

Program *Wham - The Music Box* **Micro** Spectrum **Price** £7.95 **Supplier** Melbourne House, Castle Yard House, Castle Yard, Richmond TW10 6TF.

Of all criticisms of the Spectrum its meagre sound ability takes most flak and until now the only way to make Sir Clive's

machine sing has been to buy a peripheral device. But anybody who has heard the opening music of *Fairlight* will have asked, could that really be two channels?

The emulator that was used to such great effect there is now about to be made publicly available, courtesy of Melbourne House, and I've been fortunate enough to have an early version to play with. It comes with the *Wham* name because the finished product will include a selection of

Circuits

Program *Qcad* **Micro** QL **Price** £29.95 **Supplier** Stonelink Trading Ltd, Heckenrosenweg 6 3170 Githorn, West Germany.

This is a computer aided electronic circuit and PCB layout design package for the QL, consisting of the main design program *Qcad* itself, *Qcomp* a component symbol set designer and a predefined symbol set.

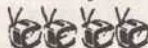
Qcad is quite friendly to use and provides such features as: freehand sketching (using cursor keys/joystick), automatic joining of points on the circuit, placing of circles, arcs etc, text labelling and a screen to printer dump routine for most dot matrix printers with graphic capabilities. The most powerful feature of all though is the use of predefined component symbols which are the solid state equivalent of a component stencil. The symbol set provided is a standard general purpose set, which should serve most requirements, in BS3939 format rather than the American style component symbols. If you require unusual component symbols then you can define your own sets using *Qcomp*.

Qcomp is an intriguing program since the component symbols you design with it are compiled as actual Superbasic procedures... an unorthodox system perhaps, but very effective. The only drawback is that the procedures are merged into *Qcad* as required which is a slow process compared with loading in a similar size data file. For those familiar with Basic this system is a clear advantage, enabling you to write complex symbols directly in Basic or even use the procedures easily created by *Qcomp* in your own programs. I found *Qcomp* easy to use, designing a small symbol set without even reading the manual.

Although *Qcad* is written in Basic this doesn't make the software too slow, though you can get the occasional problem where *Qcad* falls over on microdrive errors; no microdrive when *Qcad* tries to access it for instance.

Qcad has most features that an electronics Cader requires. Radio hams, electrohobbyists, professional designers of small circuits, and perhaps most of all electronic students who have to design a project as part of their course, will find this package of great value.

Jonathan Prestidge



their hits but don't let that put you off - you can easily erase them from memory.

That leaves it clear for your own composition, which is achieved one channel at a time using that barely satisfactory compromise, the bottom two rows of the keyboard as a piano. Luckily there's a simple back space to correct duff notes. The whole process is geared to playing by ear and there are single step and continuous play preview facilities.

If you think percussion would liven up the track there's a controllable white noise generator with which to synthesise drums, though adding these to the finished music removes other notes at that point. There's room in memory to store six tunes, and these can be saved to tape or drive or compiled and used in your own pro-

grams. Alternatively you can output an audio signal direct from the Mic socket on to tape.

I must admit that I was disappointed that the utility wasn't more musically standard. In this prototype the notes weren't even correctly registered on the upper staff, though this should be corrected soon. All notes are entered as quavers in common time, and though you could write in other time schemes the bar lines would be in the wrong place. There's no way of differentiating consecutive notes of the same pitch.

That said, I found the program fun to use, though somewhat limited, and with slight problems as to the keyboard and control keys.

John Minson

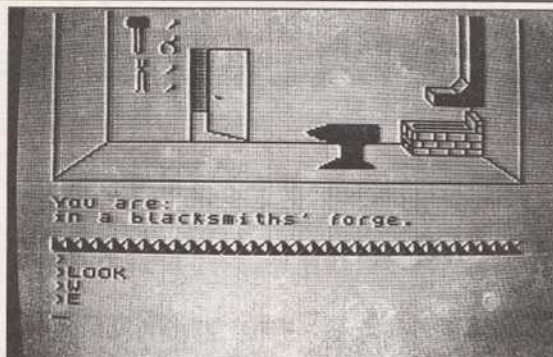


M. goes gaga

Program *The Quest for the Holy Grail* **Micro Spectrum**
Price £1.99 **Supplier**
 Mastertronic, 8-10 Paul Street,
 London EC2A 4JH.

Allo there, silly English person. What do you want? A 'Oly Grail, you say? Pah! Well, we will not help you, pile of wombat droppings. I unblock my nasal cavities in your direction and your aunty smells like a goat. We 'ave an 'Oly Grail of our own and no, you cannot see it. Eet is complete with 16K Ram pack, so there. Now hither away before I get nasty and twirl my bottom at you.

"What? You are still here? Then I will give you this adventure game for your silly



Spectrum computer which I loathe more than those bits of fluff which you find in your novel. Somewhere there is an 'Oly Grail in it, I suppose, your ridiculous English k-nicht!"

And now for something completely different. . .

"Hallo. You look like a man

of the world. Ever played any. . . computer games? May be a bit more adult than *Jet Set Willy* (knowing wink). Adventure games about grails? Great big grails? Well. . . what's it like?

"Right. Pay attention. I'll tell you what it's like. It's silly.

Very silly. And I don't like it, though I'm sure some of you out there. . . Yes, you, and stop that immediately. You'll like it. But as an adventure with lots of manly things like maiming and killing and tearing the heads off gerbils while wearing women's clothing - well, it's just a non-starter. Still, if you like that sort of thing you'll have a laugh or two. Or three. Perhaps even four. Right - back to the review, and let's have no more silliness."

(Note: What our writer's trying to say is that if you're a *Monty Python* fan you'll endure the slow response time and uninspired graphics for the Pythonesque tone of this game. Ed.)

John Minson
 (Silly Candidate)



D Day

Program *Crusade in Europe* **Micro Commodore 64** **Price** £14.95 **Supplier** US Gold, Unit 10, The Parkway Ind. Centre, Ueneage Street, Birmingham B7 4LY.

Wargaming is a minority taste, but the devotion of that minority to their hobby and their continuing willingness to pay over £10 and sometimes a great deal more for sheets of papers and fiddly bits of cardboard has made them a fascinating target for software houses.

Crusade in Europe is based on the Allied campaign in Northern Europe from D-Day up to December 1944. Within that massive sweep the player can choose five scenarios. Each scenario is subdivided into sub-scenarios offering the player plenty of choice. This choice is increased by two features which the computer adds to traditional board gaming. The player need not have an opponent, but can play against the machine - a real godsend for all gamers - and the player can alter the balance of the play to favour one side or the other.

The ultimate test of any historical recreation is how well the players are encouraged to duplicate history. Here

Crusade comes up trumps. On a tactical level the player learns to handle the various elements of the army as the better generals did and the campaigns follow either the real course of history or suggested plausible alternatives.

The game is not perfect. The first fault occurs during loading when the computer asks you for a codeword (16 are listed in the rulebook); if you type in the wrong one the game will let you play for two 'days' and then end.

The second fault is in the way information about units is communicated to the player. When they are in combat they periodically flash messages on the board, these can be quite important if a unit is taking a hammering, the messages are there and gone in just that, a flash, and there is no way of recalling ones a player has missed. In order to keep checking on a unit's status the player has to keep moving the cursor around and asking questions; this slows the computer and, consequently, the game.

Similarly the computer has a habit of issuing unilateral orders so that a player will imagine that a unit is doing one thing when it is in fact doing something totally different (which, according to the program, he would have ordered if he'd had any sense).

Supply is crucial to units

Injuns!

Program *Seventh Cavalry* **Micro Spectrum** **Price** £3.50 **Supplier** Black Knight Computers, PO Box 132, Chislehurst, Kent.

Howdy, y'all. Here is *Black Knight*, a long long way from home in the John Wayne country of the 1870s with a strategic war game in which you command 600 cavalry troopers on a mission to destroy 15 Indian settlements and force 4000 braves off mining territory.

Ignoring the morality of this exercise (ever see *Soldier Blue*, pardner?) you have one week to complete the mission, with each day passing in quarter hour segments. So you ride out across the varied landscape to encounter the noble and brave Indian warriors. . . sorry, redskin varmints.

Beneath you are 12 troops,

identified by letter, and you command them one by one via nested menus, the main options being movement at various rates or rest, this being very much a game of military resource management. Delay gives the Indians, who move simultaneously with you, the advantage. As the screen only presents a small area of the map you'll have to split up to locate their teepees.

Congratulations to *Black Knight* for avoiding the usual grid, but sadly their alternative is almost as dull. Specifying movement option, with its slow response, then speed and direction time after time had become a dry round of key pressing even before noon on the first day.

There's a reasonable idea at the heart of this game and it may pass at the price but did I find it lively or engaging? The hell I did!

John Minson



and the supply phase is whizzed through so quickly that it is often difficult to tell which units are in or out of supply.

Finally the map is much more difficult to read than the hexagon decorated board most wargame players will be familiar with.

In spite of these quibbles

Microsoft have produced a game that satisfies the games players' demand for playability, historical accuracy and balance, and has added to that a whole new dimension of feel and, best of all, a game that can be played solo.

Peter Berlin



Fancy yourself as a

FLEET STREET

CITY OF LONDON EC4

Editor

Forget the rest, wait for the best from



Mirrorsoft Ltd, Tel: 01-377 4837

By Order of the Joint Receivers and Managers:
J. A. Talbot Esq, FCA and T. J. Stanley Esq FCA of Messrs Arthur Anderson & Co.

Re: L.V.L. ROCOM by v. MAARSEN, NETHERLANDS

Offers are invited for the following:

20 "ACORN" ELECTRONIC PERSONAL COMPUTERS

3 "BBC" PERSONAL COMPUTERS

4 PRINTERS ("EPSON", "SMITH-CORONA" and "SILVER-REED")

5 V.D.U.'s (VARIOUS)

ESTIMATED £20,000 ORIGINAL COST OF VARIOUS SOFTWARE

CASSETTE PACKAGES

ELECTRONIC SPARES

ANCILLARY EQUIPMENT

OFFICE FURNITURE & EQUIPMENT

Viewing: By appointment

Further details, Tender Forms & inspection arrangements from:

Mr R. COHEN



HENRY BUTCHER

50/51 High Holborn, London WC1V 6EG
Tel: 01-405 8411 Telex: 897377

FD285A

SOFT INSIGHT DISCOUNT SOFTWARE

RRP	OUR PRICE	AMSTRAD	RRP	OUR PRICE	COMMODORE	RRP	OUR PRICE
9.95	7.45	WORLD SERIES BASEBALL	8.95	6.71	ANY OF US GOLD	9.95	7.45
7.95	5.95	ANY LEVEL 8 GAMES	9.95	7.45	ANY ACTIVISION	9.95	7.45
7.95	5.95	ANY AMSOFT GAMES	8.95	6.71	ANY LEVEL 5	9.95	7.45
9.95	7.45	ANY LEVEL 6 GAMES	9.95	7.45	MERCURY	9.95	7.45
9.95	7.45	ALIBI	9.95	7.45	NEVER ENDING STORY	9.95	7.45
9.95	7.45	EXPLODING FIST	9.95	7.45	SKYFOX	9.95	7.45
9.95	7.45	30 GRAND PRIZ	9.95	7.45	WIZARDY	9.95	7.45
9.95	7.45	KNOXTLORE	9.95	7.45	WINTER GAMES	9.95	7.45
9.95	7.45	COMPUS	34.95	26.95	SUMMER GAMES II	9.95	7.45
9.95	7.45	GRAND PRIZ II	8.95	6.71	SLACKYCH	9.95	7.45
9.95	7.45	WORM IN PARADISE	8.95	6.71	BEACH HEAD II	9.95	7.45
9.95	7.45	HELL HAWK	9.95	7.45	FIGHTING WARRIOR	9.95	7.45
9.95	7.45	MASTERFILE	34.95	18.95	B. MCGUIGAN'S BOXING	9.95	7.45
9.95	7.45	STARBU	8.95	6.71	WORM IN PARADISE	9.95	7.45
9.95	7.45	NEVER ENDING STORY	9.95	7.45	UNDISCOVERED	9.95	7.45
9.95	7.45	RAID	9.95	7.45	ZAXXON II	9.95	7.45
9.95	7.45	MATCHDAY	9.95	7.45	ZAXXON II	9.95	7.45
9.95	7.45	FORMULA 1	8.95	6.71	TERRAFORNINGS	9.95	7.45
9.95	7.45	HIGHWAY ENCOUNTER	9.95	7.45	ATARI	9.95	7.45
12.95	10.00	SOUTHERN BELLE	8.95	7.00	THEATRE EUROPE	9.95	7.45
14.95	11.21	LOPUS OF MOONLIGHT	9.95	7.45	BALL SLICER	9.95	7.45
7.99	5.94	KNIGHTLORE	9.95	7.45	FRACTALS	9.95	7.45
8.95	6.50	MONOPOLY	9.95	7.45	WHEELIN' ROUND	9.95	7.45
7.95	5.90	PHANTOM	9.95	7.45	ALL prices include free hat delivery		
7.95	5.90	RED MOON	9.95	7.45	PLEASE make cheques payable to Soft Insight and send to SOFT INSIGHT, 17 Angus Grove, Greenwell, London SE16. Access orders enquiries 01-265 0790		
7.95	5.90	MATCHDAY	9.95	7.45			
7.95	5.90	WORLD SERIES BASEBALL	9.95	7.45			
9.95	7.45	WORM IN PARADISE	9.95	7.45			

AMSTRAD INTERFACES

THIS IS NOT JUST A MODEM, BUT A COMPLETE SYSTEM. NOTHING ELSE TO BUY

★★ MODEM ★★
★ £153.00 ★

Incorporating serial and parallel interfaces, to allow software control of all functions, each feature controlled from basic with the bar commands. Call from mic or on entering bar modem all controls are menu driven for ease of use, bell/ocit standards 300/300 1200/1200/75 75/1200 full and half duplex. Auto dial and auto answer connect bulletin boards, present compatible, software bulletin on its own sideways Rom. Unique panel display, it displays what the modem is doing, mode of operation, and digits when auto dialing, standard B.T. plug connector. Note this modem is not B.T. approved.

★★ SIDEWAYS ROM ★★

★ £26.05 ★

The unit holds 4 Roms. Each can be 2, 4, 8 or 16K in size incorporating a device to allow slower Roms to be used less than Amstrad suggested 200, that means cheaper Roms, free utility Rom with every unit.

RS232

Communicate with your modem
Talk to other computers
Use serial printers
Split baud rates
Standard 25 way 'D' connector
£39.96

PARALLEL PORT

Make that Robot move
Control electrical appliances
Twain 8 bit ports
Operates direct from basic
2 x 14 way speedlock connectors
£22.57

8 BIT PRINTER PORT

Make use of that 8 bit printer
Allows character codes
Above 127 (ie 0 to 255)
Plugs in between centronics
Port and printer cable
£17.35

All units are cased and have through connectors

★ Please add VAT ★

15 Hill Street, Hunstanton, Norfolk PE36 5BS
Tel: (04853) 2076

FD482

COMPUTER HARDWARE & SOFTWARE

C & F ASSOCIATES

RRP	OUR PRICE	SPECTRUM	RRP	OUR PRICE	AMSTRAD	RRP	OUR PRICE
16.95	14.95	Abc Simbel	9.95	5.95	Red Arrows (Disc)	12.95	10.95
9.95	7.50	Notes of Wood	9.95	7.25	Red Arrows	8.95	6.75
9.95	7.50	Disc 2 (40 TR)	10.95	7.25	Light Lone	8.95	6.75
8.95	6.75	Herberts Dummy Run	9.95	7.25	Wizards Lair	8.95	6.75
7.95	7.25	View to the Hill	9.95	7.25	Project Future	8.95	6.75
12.95	10.40	Gyron	9.95	7.25	Control Lynx	8.95	6.75
7.95	7.25	Evergreen A Wally	9.95	7.25	9-A-Side	9.95	7.45
9.95	7.50	Antics	9.95	7.25	Red Moon	8.95	6.75
7.95	7.25	Rock Strikes Back	9.95	7.25	Dun Darach	9.95	7.25
7.95	7.25	Beach-Head	7.95	6.50	Black Sabbath	9.95	7.25
7.95	7.25	Arrows	7.95	6.50	Wanted: Monty Mole	8.95	6.75
9.95	7.50	Kosmic Kings	9.95	7.25	Tasword (USA Coast)	19.95	14.95
9.95	7.50	Wanted: Monty Mole	9.95	7.25	Tasword 404/864 (UK)	24.95	19.95
9.95	7.50	Brink & Egg Scaoters	9.95	7.25	Tasword 6128 (UK)	24.95	19.95
9.95	7.25	Monty Is Innocent	9.95	7.25			
7.95	7.25	Jump Jet	9.95	7.25	COMMODORE C64		
9.95	7.25	Fairlight	9.95	7.25	Inchobots	6.95	5.95
9.95	7.25	Red Arrows	9.95	7.25	Red Arrows	8.95	6.75
9.95	7.25	Red Arrows	10.40	7.25	Wizards Lair	8.95	6.75
9.95	7.25	Starquake	7.95	6.50	Wanted: Monty Mole	7.95	6.50
7.95	7.25	Groupy	9.95	7.25	HARRIER ATTACK	9.95	7.25
7.95	7.25	HARRIER ATTACK	9.95	7.25	Entombed	9.95	7.25
2.50	2.25	That's The Spirit	7.95	6.50	Ching Ch A Spring	7.95	6.50
9.95	7.25	Red Moon	9.95	7.25	Combat Lynx	9.95	7.25
9.95	7.25	Alc Alac	9.95	7.25	Shadowfire	9.95	7.25
2.50	2.25	Underworld	9.95	7.25	Red Moon	8.95	6.75
9.95	7.25	The Pyramid	9.95	7.25	Knives of Wood	9.95	7.25
9.95	7.25	Nightshade	9.95	7.25	Dora's Dilemma	8.95	6.50
9.95	7.25	Knights Lone	9.95	7.25	Sword Of Destiny	9.95	7.25
9.95	7.25	Sam Sleet Saboteur	8.95	6.50			

Please note: BBC One Software guaranteed for Access DPE only. All prices include VAT and postage & packing (Overseas orders add £1 per item) Cheques/PO payable to: C & F Associates and send to C & F ASSOCIATES (PCW) PG BOX 2 BIGNOR XEN SH

PO657

CUT PRICE SOFTWARE

Spectrum	RRP	OUR PRICE	Commadore	RRP	OUR PRICE	Amstrad	RRP	OUR PRICE
Gyroscope	7.95	5.90	Ellie	14.95	10.00	Southern Belle	7.95	6.25
Nightshade	9.95	6.85	Now Games	8.95	6.95	Wizards Baseball	8.95	6.95
Spy V Spy	9.95	6.85	Int. Karate	8.50	5.90	Codenams Mat II	8.95	6.95
Fairlight	9.95	7.25	Wizardy	9.95	7.25	Raid over Moscow	9.95	7.25
Shadow of the Unicorn	9.95	7.25	30 Grand Prix	9.95	7.50	Matchday	9.95	7.25
Monty on the Run	7.95	6.50	Gutsie Minus 1	9.95	7.50	30 Grand Prix	9.95	7.25
Ellie	14.95	11.00	Mercenary	9.95	7.25	Transact	29.95	9.99
Vol of the Mask	9.95	7.25	Kenney Approach	14.95	10.90	Expanding Fist	9.95	7.25
Int. Karate	6.50	5.00	Neverending Story	9.95	7.25	Starion	9.95	7.25
Daley & Super-Test	6.90	5.00	Inhobots (Ultimate)	9.95	7.25	Expanding Fist	9.95	7.25
Critical Mass	8.95	6.80	Daley's Super-Test	7.90	6.90	Starion	29.95	9.99
Expanding Fist	8.95	6.95	Fighting Warrior	8.95	7.25	Transact	29.95	9.99
Starquake	7.95	6.50	H. Smiths Showjumping	9.95	7.25	Frank Bruno's Boxing	8.95	6.95
F. Bruno's Boxing	6.95	5.25	Battle of Britain	9.95	7.25	Cyrus II (Chess Disk)	13.95	12.95
Scubby Doo	6.95	5.25	Monty on the Run	9.95	7.25	Sorcery II (Disk only)	14.95	10.95
Popeye	6.95	5.25	Winter Games	9.95	7.25	Marsport	9.95	7.25
Marsport	9.95	7.25	Frank Bruno's Boxing	7.95	6.25	Hacker	9.95	7.40
Southern Belle	7.95	5.90	Sabre Wulf	9.95	7.25	30 Grand Prix	9.95	7.25
Fighting Warrior	7.95	6.25	Summer Games II	9.95	7.25	Battle of Britain	9.95	7.25
Astrosports	9.95	7.25	Starion	9.95	7.25	Hypersports	8.95	6.50
Impossible Mission	7.95	6.25	Hacker	9.95	7.25	Lord of Midnight	9.95	7.40
Neverending Story	9.95	7.25	Paradroid	7.95	6.25	Syria's Chess	13.95	12.95
World Series Basketball	9.95	7.25	Spy V Spy II	9.95	7.25	AMSTRAD DISK SOFTWARE NOW		
Rambo	9.95	7.25	Commadore order £20 or more			Special Offer - Amstrad order, £20 or more		
Special offer - Spectrum order, £20 or more								

P&P included. Overseas orders add 75p per tape. For Mail Order please send Cheques/PO payable to: CPS Visual Access Card orders by phone welcome. It

CUT PRICE SOFTWARE, 4 Stacksbury Hatch, Harlow, Essex CM19 4ET
Tel: (0278) 24433 (24hr ansaphone)

PO626

Disc system

Product Spectrum Disc Interface
Price £85 Micro Spectrum Plus Sup-
plier Kempston, Bedford.

Choosing a disc system for the Spectrum has always been a difficult task, thanks to Sinclair's lack of support for disc in favour of the Microdrive.

Kempston's offering is disc interface – and incidentally, the smallest I have ever seen – which will operate with any size drive – 3 inch, 3½ inch or 5 inch, so long as it is suitable for use with the BBC, and has a power supply.

Quite simply the unit performed all savings and loading of a variety of files without any problem. I was pleased to see that sequential files were provided although in practice I have never missed them from my system. Savings an array as \$(2000,20) as both Data and as a file took three times as long in sequential form and 2K extra disc space.

Once opened a file can only be written to if it is a new file or read from if it is an old file.

My biggest hope was for the tape to disc copy. This is where all Spectrum drive systems suffer as no-one is producing software on disc for the Spectrum but my hopes were dashed. The soft-

ware suffers from a couple of problems, first I found that the input was much more sensitive, and tape volumes had to be very precise. Secondly, the transfer works fine but is done in block. It is left to you to try and break into the loader programs and convert all this *Save/load* commands to disc syntax. As the program is transferred in block, all the protection is also transferred making it just as difficult to modify as with my old system.

To end a transfer session you have to Break out of the program. Often the program would refuse to do so and repeatedly dump 64K of garbage onto the disc before crashing with a disc full message.

Instructions

It is accompanied by a small, 18-age booklet, and the print is tiny so you'll need good eyesight to read it.

There are plenty of sections which offer practical advice but they seem to be thrown in ad hoc. Competent programmers can find the information they need but it could have been clearer.

Os Commands

In the software all the normal *Save* and *Load* options are provided plus most of the microdrive functions: *Format*, *Cat*, *Erase*, *Move*, *Open*, *Close#*, *Print#*, *In-put#* and *Inkey#*. All commands except



the last three are called by preceding them with *Print n1*, *n2*, etc.

It does not take long to become familiar with this system and the operating system is reasonably friendly.

What really excited me was some of the additional commands supplied. *Clear 0* will compress a program by changing all numbers into *Val "no"* form. This seems longer but be assured it does save space due to the Spectrum's floating point number system.

Clear: Print no1, *no2* will perform a block delete from line *no1* to line *no2* inclusive.

This interface is a good unit which unfortunately promises more than it effectively delivers. It would have helped if instead of a condensing routine they had provided a routine to check through the programs being transferred, and modified the *Save/Load* syntax.

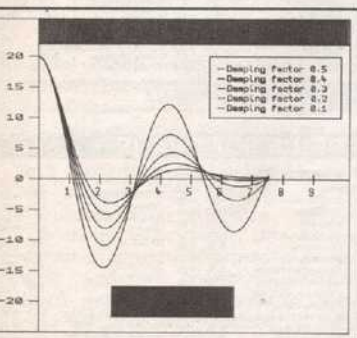
Ray Elder

Plot commands

Hardware Plotmate plus *Lincad*,
Linchart and *Lintronic* Micro BBC
Price £85
Supplier Linear Graphics,
 28 Purdeys Way, Rochford,
 Essex.

The dot matrix printer is an excellent device for producing good quality text printouts. With suit-

able software it can even produce screen dumps, but these are far from being high quality.



Graphics is one such device which has been designed to be used in conjunction with the BBC computer – plugging into the BBC's user port.

As well as the plotter itself, you get a system disc with the software needed to drive the unit and several excellent demonstration programs, six pens, some sheets of coated plotting paper and a 72-page ring-bound manual.

The felt tip pens merely push into the pen holder and lock home with a quick twist. Once the pen is in place one of the glossy sheets of A4 size paper can be laid on the plotter bed and held in place using two magnetic strips.

The software supplied with the plotter came in two forms, the first was the 'low' form which sat low enough in memory to allow the use of the Mode 4 graphics screen. This meant that plotting could be carried out on the screen and plotter simultaneously. The second copy of the software was the 'high' version. This locates itself high in memory allowing more space for the program but output is directed to the plotter only.

All of the commands to the plotter are assigned to seven of the BBC's function keys. These commands consist of *On/Off*, *Move Pen* (using cursor keys), *pen Up/Down*, *pen Home* and *pen Park*. All of these commands can also be issued from within your programs.

There is very little to beat the standard of hard copy produced by a good quality X-Y plotter.

The Plotmate plotter from Linear

automatically select a new colour from a rack of pens and continue with the drawing, the BBC's *Gcol* statement can be used within a program causing execution to be halted whilst you change pens.

Using Plotmate is a dream, if you can draw a picture on the screen using the BBC's graphics commands then you can use Plotmate. It acts exactly as you would expect when using *Move* and *Draw* statements, moving with pen up and pen down, respectively. It even responds to the *Plot 85* statement by filling a triangle. Text can be printed at any point on the drawing via the *VDUS* statement. The graphics cursor being moved to any point on the drawing and the text output using the *Print* statement.

Linear Graphics has also developed a suite of software packages for use with the Plotmate.

The first, *Lincad*, is a crude computer-aided design system. The drawing facilities provided are extremely limited. The second program, *Linchart*, was much more useful. It enables you to produce both bar and pie charts with the minimum of fuss. Finally, *Lintronic*, is a system which allows the user to design, edit, and store electronic circuit diagrams.

I felt that the Plotmate and system disc plus the *Linchart* software would be the combination with facilities to deal with the graphical requirements of most users.

John Revis

Trivia

At last! A game the whole family can enjoy. A game in which mum stands as much chance of scoring as her teenage son!

Over 1400 questions on six subjects: Sports and Leisure - Entertainment - Art and Literature - Science and Nature - Geography - History. You can even make up your own questions. TRIVIA is FUN!

Keyboard or Joystick

TRIVIA UK

VIC 20 + 16K

SPECTRUM
ATARI

C16+16K

AMSTRAD, BBC
CBM 64, PLUS 4

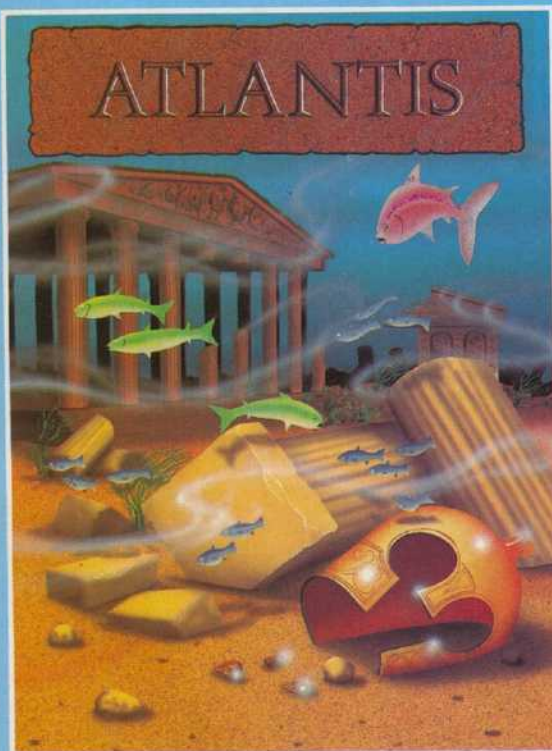
£7.95

TRIVIA DEUTSCH

CBM 64
AMSTRAD
SPECTRUM 48K
ATARI

TRIVIA

FRANCAIS
CBM 64
AMSTRAD
ATARI
SPECTRUM 48K



Oceans of the world are the treasure houses of King Neptune, whose priceless riches are guarded by armies of sharks, octopi, crabs and other inhabitants of his watery world.

Skip, a treasure-hunting diver is searching for the treasures prized by Neptune above all others: perfect pearls and beautiful mermaids. His search is fraught with danger: the bite of a shark is fatal, and Neptune is omnipotent: but the lure of immeasurable wealth is irresistible.

A multi-screen, arcade-action game.

Keyboard or Joystick

£6.95 CBM 64, C16,
Spectrum 48K
£7.95 Amstrad



CBM 64 - AMSTRAD - SPECTRUM 48K - C16 £6.95

TRADE ENQUIRIES: Anirog Software Ltd. Unit 10 Victoria Industrial Park Victoria Road Dartford Kent (0322) 92513/8

MAIL ORDER: 8 High Street Horley Surrey Horley (02934) 6083 (0322) 91649/92518
Payment By: ACCESS BARCLAYCARD CHEQUE or P.O.

ANIROG

CRL PRESENTS

THE GREATEST COMPUTER GAME EVER WRITTEN

TAU CETI

SPECTRUM 48K
£9.95

CRL Group P.L.C.
CRL House
9 Kings Yard
Carpenter's Road
London E15 2HD
01-533 2918

Electro-music

Hardware *Microvox Digital Sound Sampler* **Micro** Commodore 64
Price £230 **Supplier** Supersoft, Winchester House, Canning Road, Wealdstone, Middlesex (01-690 1166).

Since Paul Hardcastle's "N-N-N-Nineteen", there can't be many people unaware of the possibilities of sampling real sounds for musical purposes. What some may not realise is that with the introduction of digital drum machines and ever-cheaper samplers, it's now almost the rule rather than the exception for a record to be made using samplers.

Home computers are ideal for putting to use as sampling musical instruments; they contain the same sort of hardware as the dedicated devices such as the £8,000 Emulator or £20,000 Fairlight. The first affordable, professional standard sampler (fitted with the now compulsory Midi interface) available for home computers is Supersoft's Microvox digital sound sampler.

The Microvox is a neat metal box half the size of the Commodore 64, with a power supply, decent manual and software on disc. Sockets on the back are Audio In and Out; Midi In and Out; and there's also a ribbon cable connecting to the 64's cartridge port. On the front panel is the *Gain* control for adjusting the sound input level. *Mix* for balancing the original sound and the sample, *Output* level and *Repeat* for use in the "echo unit" mode.

So what can you do with the software? Sampling, which is monophonic (polyphony at this price is still some way off) is



done through the first page. Just feed in your sound source (microphone, tape, record or whatever), set the gain control and sample threshold using the bar displays, choose the sampling rate, and go. Samples can be from 0.8 to 17 seconds; for the best quality, 1.6 seconds at 10 KHz is ideal. The compander and filter sections help you to preserve the quality of your sample, which, if carefully done, can be almost indistinguishable from reality!

The waveform editor page draws pretty diagrams and allows you to loop, invert, edit, and fade in or out the sound. Imagine a whole orchestral Whoomp! sampled from compact disc, fading in, looping over and over again (backwards) then fading out - at any pitch! The range of possible effects is mind-boggling.

Samples can be made until the available memory is used up. This is likely to be to record each instrument of a drum kit, which can then be played by the sequencer section, or live from the 64's keys. Although there are other digital drum machines available for the 64, notably the excellent Syntron digidrum, they don't allow you to play from the keyboard.

You can also layer sounds together for

a multi-voice effect, though as yet it isn't possible to play polyphonically. Supersoft say that C128 version of the sampler may well be duophonic, however, so that will be worth waiting for.

Most musicians will be interested in using the sampler with other Midi instruments. This recently-developed Musical Instrument Digital Interface system allows all sorts of electronic instruments by different manufacturers to be interconnected. In the case of the Microvox, control can be assigned to any of 16 channels, and the sampler played from your Midi synth.

With a full range of disc save routines to enable you to keep your best samples and re-use them at any time, and new developments on the way which will enable it to be used as a harmoniser, digital delay, phaser, flanger and so on, the Microvox is an impressive product.

For the price, you will be getting a user-friendly, high-quality add-on which once again demonstrates the importance of the Commodore 64 in electronic music and home recording. Highly recommended for budget-conscious electro-musicians, new hardware fans and n-n-n-nineteen-year-olds everywhere.

Chris Jenkins

Versatile

Hardware *Bright Star Modem* **Price** £179.95 **Micro QL** **Supplier** Modem House, Iolanthe Drive, Exeter, Devon EX4 9EA.

The Bright Star modem, at a tempting price of £179.95, is fully controlled via software (supplied on microdrive with the modem) which is very easy to operate and includes a help file and self-test mode to ensure correct operation. Another useful feature is a centronics interface to link the modem to a printer with a 2K buffer back-up. Switching Bright Star on (the modem carries its own internal power supply, comes with a plugged cable and carries an off-on switch at the rear) gives the printer control mode as the default.

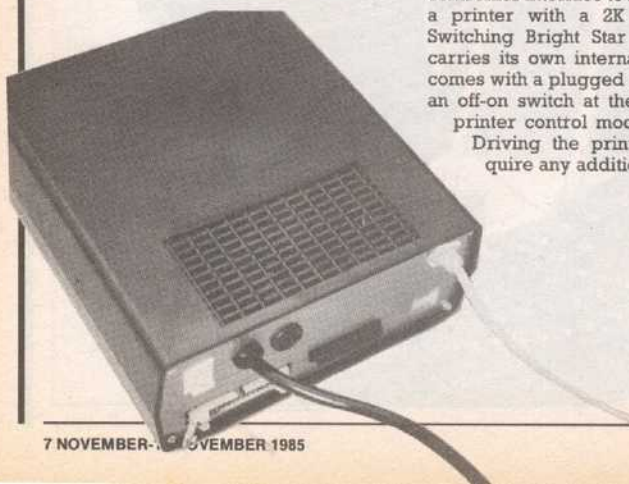
Driving the printer does not require any additional software and

can normally be handled via the QL's keyboard.

The Bright Star has an auto-scan feature which enables the modem to sort out the communication protocols after establishing contact with a remote computer. As working out the correct protocols can be a frustrating business for those inexperienced in going on-line, this is a very useful addition to a generally well-designed product.

Bright Star's operating baud rates are 300/300, 1200/75, 75/1200 and 1200/1200. At the moment Bright Star lacks an auto-answer/auto-dial facility but models selling at £209.95 with this feature are in the pipe-line. My review Bright Star is clearly a prototype and isn't much to look at but - having seen the real thing at the PCW show - the finished product is much better, even if it still isn't the most attractive piece of computer add-on equipment I've ever run across. Bright Star is a versatile communicator that is both well-designed and offered at a competitive price.

Brian Beckett



Man O' War

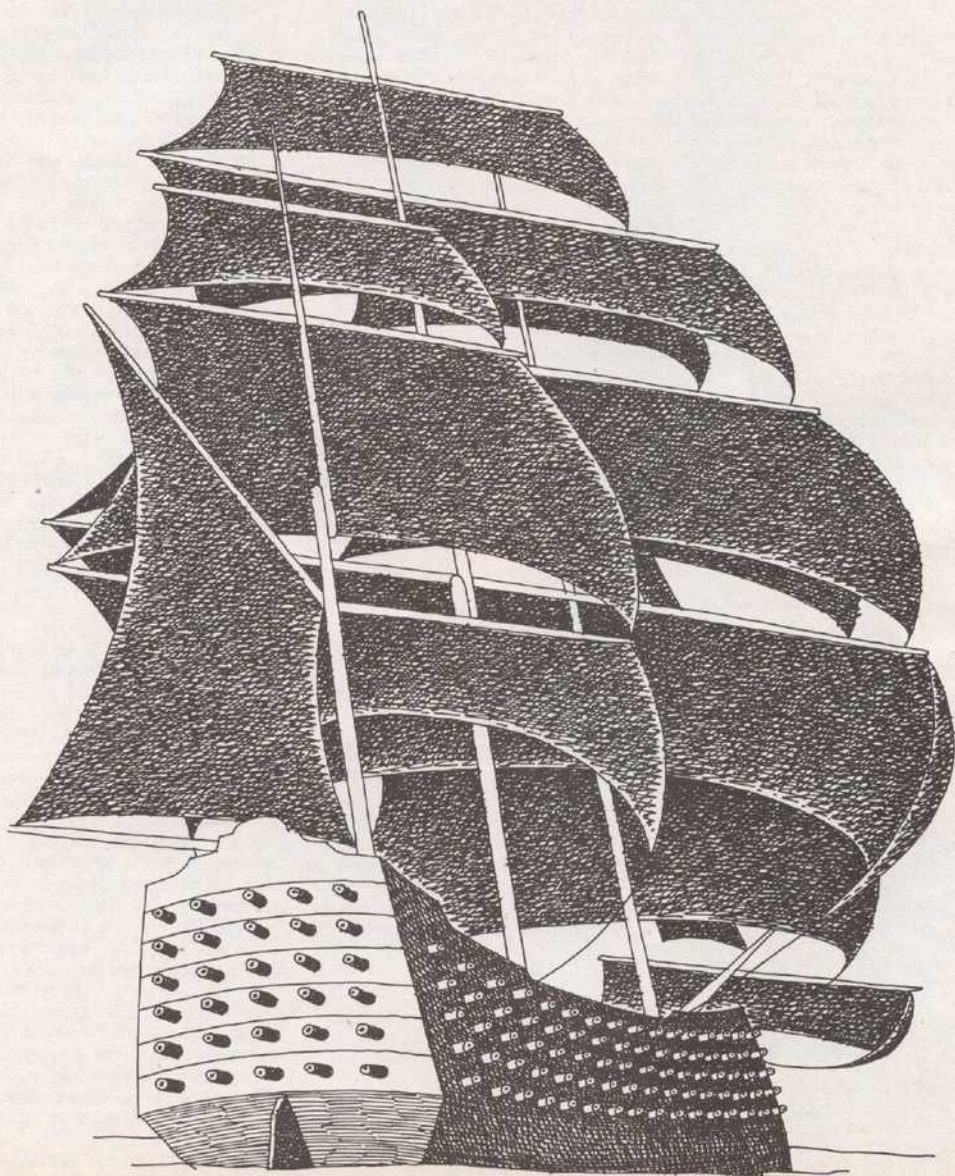
Heave to and splice those mainbraces as David Muir shivers your timbers on the Amstrad

This game is a simple simulation of old style naval warfare between galleons on the high seas. You play against the computer using cursor and copy keys, or joystick. Eye patches,

wooden legs and parrots can be considered as purely optional.

The listing is well punctuated with Rem statements and when run produces a title screen and full playing instruc-

tions. *Man O' War* uses many Amstrad specific features, such as windows and interrupt driven subroutines, so it would not be easy to transport to another machine.



```

10
20 'MAN O'WAR by D.MUIR '84
30
40 GOTO 1000
50
60 'update scoreboards
70
80 CLS #1:IF chits>2 THEN chits=0:sh=sh+1:scrc=100:cff=-1:IF pl<
3 THEN IF sh>0 THEN IF sh/5=INT(sh/5) THEN pl=pl+1
90 PRINT #1,chits;SOUND 7,1000,20,5,2,2,7:RETURN
100 CLS #2:PRINT #2,sh;:RETURN
110 CLS #3:PRINT #3,sc;:RETURN
120 CLS #4:IF phits>2 THEN phits=0:pl=pl-1:pf=-1:GOSUB 140
130 PRINT #4,phits;:RETURN
140 CLS #5:PRINT #5,LEFT$(tpl,pl+1):IF pl=0 THEN lft=-1
150 RETURN
160
170 'move player shell/computer shell
180
190 DI:IF NOT pk THEN 240
200 LOCATE pfx,py:PRINT " ";
210 IF pty<5 OR (pty=14 AND Fmp) AND Fmp(8) THEN pk=0:GOTO 240
220 pty=pty-1:LOCATE pfx,py:PRINT CHR$(145);
230 IF ABS(cx+2-pfx)<2 THEN IF pty=7 THEN LOCATE pfx,py:PEN 2:PR
INT CHR$(238):chits=chits+1:scrc=100:pk=0:GOSUB 80:GOSUB 110
240 IF NOT ck THEN RETURN
250 LOCATE cfx,cfy:PRINT " ";
260 IF cfy>21 THEN ck=0:RETURN
270 cfy=cfy+1:LOCATE cfx,cfy:PEN 1:PRINT CHR$(146);
280 IF ABS(px+2-cfx)<2 THEN IF cfy=21 THEN LOCATE cfx,cfy:PEN 2:P
RINT CHR$(239):phits=phits+1:ck=0:SOUND 7,1000,20,5,2,2,7:GOSUB
120
290 RETURN
300
310 'move computer boat
320
330 DI:c=cw+1:IF c=cl THEN c=0:c=0-cdccc-3-cccl+10+5*INT(RND#
51):RETURN
340 IF c=c+d/36 OR c=c+d\1 THEN c=d-cdccc-3-c
350 c=c+c+d:LOCATE cx,cy:PRINT CHR$(238);:RETURN
360
370 'raise computer gun
380
390 DI:IF cff OR pff THEN RETURN
400 IF ck THEN RETURN ELSE ck=-1:cx=cx+1:cfy=cfy+4:IF ABS(px-cx)>
10 OR (Fnc)>3 AND Fnc(8) THEN ck=0:RETURN
410 PEN 2:LOCATE cfx,cfy:PRINT CHR$(238):SOUND 7,2000,10,4,1,1,1:R
ETURN
420
430 'player move
440
450 EVERY 20,2 GOSUB 330
460 EVERY 60,7 GOSUB 390
470 EVERY 4,0 GOSUB 190
480 IF lft THEN 1010 ELSE IF pff OR cff THEN s=REMAIN(01):s=REMAIN
(21):s=REMAIN(31):bai=bai-5:GOTO 540
490 IF INKEY(0)=0 OR INKEY(74)=0 THEN pd=-1:pc=2:GOTO 530
500 IF INKEY(1)=0 OR INKEY(75)=0 THEN pd=-1:pc=1:GOTO 530
510 IF INKEY(9)=0 OR INKEY(76)=0 THEN S20 ELSE S30
520 IF pk THEN S30 ELSE pk=-1:px=px+1:py=py-1:LOCATE pfx,py:PE
N 2:SOUND 7,2000,10,4,1,1:PRINT CHR$(238);
530 IF px>pd/36 OR px>pd\1 THEN pd=-pd:pc=3-c
540 px=px+pd:LOCATE px,py:PRINT USING "X";t:pc;
550 E1=1:GOTO 480
560 IF cff THEN cff=0:SOUND 7,3000,40,7,0,0,3:LOCATE cx,cy:PRINT
USING "X";t;:FOR j=1 TO 20:NEXT:LOCATE px,py:PRINT USING "X";t;:6
870 910
570 IF pff THEN pff=0:SOUND 7,3000,40,7,0,0,3:LOCATE px,py:PRINT
USING "X";t;:FOR j=1 TO 20:NEXT:LOCATE cx,cy:PRINT USING "X";t;:6
870 910
580
590 'set up
600
610 MODE 1:BORDER 12
620 INK 0,20:INK 1,1:INK 2,26:INK 3,7
630 DEFINT a-r:DEFREAL s:DEFSTR t-z
640 DEF Fmp=VAL(ORIG$(STR$(pfx),1)):DEF Fnc=VAL(ORIG$(STR$(cfx)
,-1))
650 SYMBOL AFTER 200
660 ENV 1,5,-1,2
670 ENT 1,2,100,2,3,0,2
680 ENV 2,1,5,2,5,0,2,4,-1,2
690 ENT 2,2,100,4,3,0,4
700 RESTORE #50:FOR i=200 TO 223:READ a1,a2,a3,a4,a5,a6,a7,a8:SYM
BOL i,a1,a2,a3,a4,a5,a6,a7,a8:NEXT
710 DIM I(2)
720 t(1)=CHR$(15)+CHR$(2)+CHR$(32)+CHR$(201)+CHR$(210)+CHR$(211)+
CHR$(32)+STRING$(5,8)+CHR$(10)+CHR$(32)+CHR$(212)+CHR$(213)+CHR$(
214)+CHR$(32)+STRING$(5,8)+CHR$(10)+CHR$(15)+CHR$(3)+CHR$(32)+CHR
$(206)+CHR$(207)+CHR$(208)+CHR$(32)
730 t(2)=CHR$(15)+CHR$(12)+CHR$(32)+CHR$(200)+CHR$(201)+CHR$(202)+
CHR$(32)+STRING$(5,8)+CHR$(10)+CHR$(32)+CHR$(203)+CHR$(204)+CHR$(

```

In different directions

Machine code scrolling on the Spectrum - with some help from Henry Burek

This program demonstrates the use of machine code routines to smoothly scroll the screen display in two different directions. The routines are Poked in from Data statements into

the Print buffer (the left scroll starts at 23296 and the right scroll starts at 23327). However both routines are fully relocatable.

Both routines can be modified to scroll

any number of columns from one column only to the whole screen. They can also be modified so that there is no wrap-around effect and the display disappears when it has scrolled off.

In the demonstration program a pattern of circles is first drawn and then right and left halves of the pattern continuously move towards the middle. To demonstrate the opposite effect, change the 255 in Line 220 to 239 and change the zero in Line 280 to 16.

Left Pixel scroll

	LD HL,22527	33,255*	,87	Poke with 224+c, where c is the rightmost column.
top	LD D,H	84		
	LD E,L	93		
	XOR A	175		
	LD B,16	6,16*		Poke with n, where n is the number of columns to be scrolled.
loop	RL (HL)	203,22		
	DEC HL	43		
	DJNZ loop	16,251		
	JRNC jump	48*,4		Poke with 24 to cancel wrap-around.
	EX DE,HL	235		
	SET 0,(HL)	203,198		
	EX DE,HL	235		
jump	LD BC,16	1,16*	,0	Poke with 32-n, where n is the number of columns to be scrolled.
	XOR A	175		
	SBC HL,BC	237,66		
	LD A,H	124		
	CP 63	254,63		
	JRNZ top	32,229		
	RET	201		

Right Pixel scroll

	LD HL,16384	33,0*	,64	Poke with c, where c is the leftmost column.
top	LD D,H	84		
	LD E,L	93		
	XOR A	175		
	LD B,16	6,16*		Poke with n, where n is the number of columns to be scrolled.
loop	RR (HL)	203,30		
	INC HL	35		
	DJNZ loop	16,251		
	JRNC jump	48*,4		Poke with 24 to cancel wrap-around.
	EX DE,HL	235		
	SET 7,(HL)	203,254		
	EX DE,HL	235		
jump	LD BC,16	1,16*	,0	Poke with 32-n, where n is the number of columns.
	XOR A	175		
	ADD HL,BC	9		
	NOP	0		
	LD A,H	124		
	CP 88	254,88		
	JRNZ top	32,229		
	RET	201		

```

5 CLS
10 LET st=23296
20 FOR n=st TO st+61: READ a:
POKE n,a: NEXT n
60 PLOT 0,175: DRAW 255,0
70 PLOT 0,157: DRAW 255,0
80 PLOT 0,18: DRAW 255,0
90 PLOT 0,0: DRAW 255,0
100 FOR m=63 TO 191 STEP 128: F
OR n=16 TO 64 STEP 16: CIRCLE m,
87,n: NEXT n: NEXT m
110 FOR n=1 TO 64
120 RANDOMIZE USR 23296
130 RANDOMIZE USR 23327
140 NEXT n
150 FOR m=63 TO 191 STEP 128: F
OR n=16 TO 64 STEP 16: CIRCLE m,
87,n: NEXT n: NEXT m
160 RANDOMIZE USR 23296
170 RANDOMIZE USR 23327
180 GO TO 160
190 REM
200 REM Scroll left
210 REM
220 DATA 33,255,87,84,93,175,6
230 DATA 16,203,22,43,16,251,48
,4,235,203,198,235,1
240 DATA 16,0,175,237,66,124,25
4,63,32,229,201
250 REM
260 REM Scroll right
270 REM
280 DATA 33,0,64,84,93,175,6
290 DATA 16,203,30,35,16,251,48
,4,235,203,254,235,1
300 DATA 16,0,175,9,0,124,254,8
8,32,229,201
9900 SAVE " CIRCLE MERGE EXAMPL
E" LINE 1

```

It's on its way... the BIGGEST show of all!

- ★ Your first chance to see the exciting programs and peripherals now being planned for 1986.
- ★ Hundreds of Christmas hardware and software bargains from leading BBC Micro and Electron suppliers.
- ★ Free software - bring your own blank cassette and download programs directly from Micronet.
- ★ Use our satellite link to a giant American database and send messages to micro users in the USA.
- ★ Meet the experts - programmers and writers will be on hand to answer all your queries.

**£1
OFF!** PCW readers: Hand this ad
in at the door and save £1 off
the normal admission price of
£3 (adults) and £2 (children).
Maximum of 4 people per ad.

Thursday to Sunday, November 14 to 17
New Horticultural Hall, Westminster, London SW1

Parallel lines

Connecting your 64 up to a Centronics printer – the second and final part by Eric Deghaye

Now you've typed in the listing, all you have to do is make up the cable to connect your Commodore to the printer.

The cable

All we need is some wire, the plugs, and a box for the user port plug as it is unprotected.

Parts (Maplin code)
 Centronics Fk61R
 2 x 12way edge connector BK74R?

Multicore box 10 x 50 x 25mm WYO3D

First make a small hole in the box and push the cable through, then strip the tip of 11 of the wires from the cable at both ends. Now cut a hole in the box to fit the 2 x 12 connector. Do not solder it yet, instead solder the connections as shown in fig 1. The detail of the plugs is shown in fig 2.

When all the soldering is done, secure the 2 x 12 connector in the box any which way but loose (I bolted mine), then after

checking for solder splashes, close the lid of the box and assemble the case of the centronics plug. It is a wise decision to put a label on the box saying which side is up.

The use

Now the cable is ready, and you can plug it into your Commodore and printer and run the software. Whenever you type '%' followed by return, the printer should spring into life by writing 'Ready'. If it doesn't, check your connections in the cable, and if the computer hangs up when you type '%' and doesn't come back to life after Run/Restore, check your software for a mistake. If Run/Restore brings things back to normal, then the fault is possibly just a bad connection.

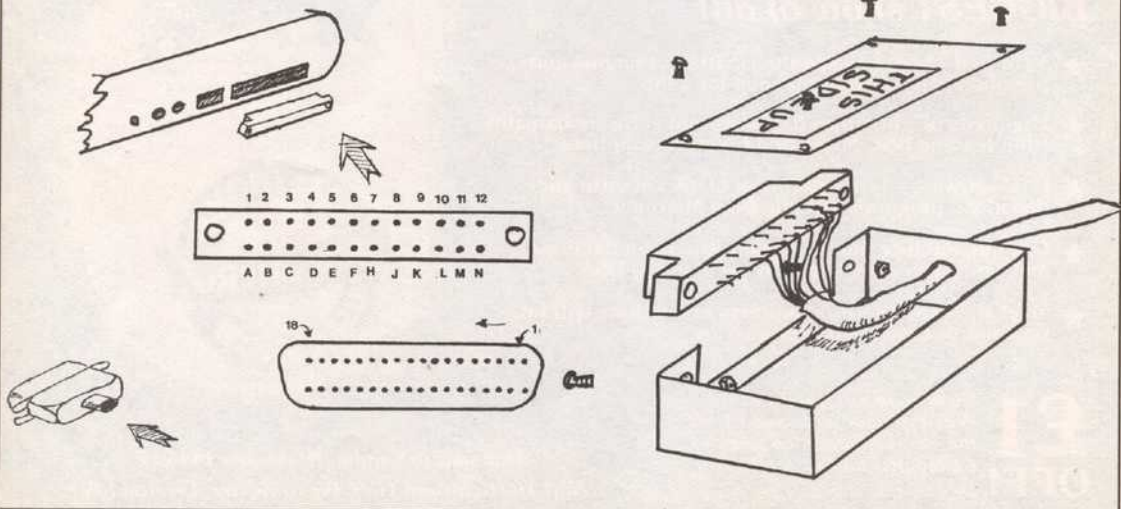
CONNECTIONS

Pin parallel	- connect to - Centronics	Function
B	1	STROBE
C	2	data 0
D	3	data 1
E	4	data 2
F	5	data 3
H	6	data 4
J	7	data 5
K	8	data 6
L	9	data 7
B	10	AKNLG
A	16	Logic ground level

Fig 1.

Fig 2

Fig 3



PPC

*****SPECTRUM*****

GAME	RRP	OUR PRICE
SHADOW OF THE UNICORN	14.95	11.00
SPY vs SPY	9.95	7.00
THEY SOLD A MILLION	9.95	7.00
EVIL CROWN	9.95	7.00
COENNAME MAT II	9.95	6.25
MONTY ON THE RUN	7.95	5.45
I OF THE MASK	9.95	7.00
INTERNAT BASKETBALL	7.95	5.45
INTERNAT KARATE	5.50	3.75
IMPOSSIBLE MISSION	7.95	5.45
F. BRUNO'S BOXING	6.95	4.75
DALEY'S SUPERTEST	6.95	4.75
SOUTHERN BELLE	7.95	5.45
NOW GAMES	6.95	6.25
ADRIAN MOLE	9.95	7.00
ASTROCLONE	7.95	5.45
ROBIN OF THE WOOD	9.95	7.00
CRITICAL MASS	6.95	6.25
HYPERSPORTS	7.95	5.45
BATTLE OF THE BULGE	9.95	7.00
BACK TO SCHOOL	6.95	4.75
WATERLOO	9.95	7.00
THAT'S THE SPIRIT	6.95	4.75
FARLIGHT	9.95	7.00
ROBIN OF SHERWOOD	9.95	7.00
SABOTEUR	6.95	6.25
RED MOON	6.95	4.75
HIGHWAY ENCOUNTER	7.95	5.45
HACKER	7.95	5.45
FIGHTING WARRIOR	7.95	5.45
MARSPORT	9.95	7.00
CYROSCOPE	7.95	5.45
ELITE	14.95	10.50
POKEY	6.95	4.75
ROCKFORD'S RIOT	9.95	7.00
BORED OF THE RINGS	6.95	4.75
ROBIN OF SHERLOCK	7.95	5.45
TAUCETI	9.95	7.00

GAME	RRP	OUR PRICE
WHO DARES WINS II	7.95	5.45
CRAZY COMETS	7.95	5.45
SCHOOLDAZE	6.95	4.75
MICKY MOUSE	9.95	7.00
ADRIAN MOLE	9.95	7.00
FIGHTING WARRIOR	9.95	7.00
ROBIN OF THE WOOD	9.95	7.00
SUMMER GAMES II	9.95	7.00
PARAFROID	7.95	6.00
ELITE	14.95	10.50
BLACKWYCHE	9.95	6.75
IMNHOTEP	9.95	7.00
SPY vs SPY II	9.95	6.75
NODES OF YESOD	9.95	7.00
INTERNAT KARATE	6.50	3.75
WIZARDS LAIR	8.95	6.25
BEACH HEAD II	9.95	7.00
HYPERSPORTS	8.95	6.25
ROBIN OF SHERWOOD	9.95	7.00
THEATRE EUROPE	9.95	7.00
BATTLE OF THE BULGE	9.95	7.00
TERROMOLINOS	6.95	4.75
RED MOON	6.95	4.75
SKYFOX	9.95	7.00
COENNAME MAT II	8.95	6.25
BALATX	9.95	7.00
WINTER GAMES	9.95	7.00
SPACE PILOT II	7.95	5.45

*****AMSTRAD*****

GAME	RRP	OUR PRICE
3D BOXING	9.95	7.00
3D BOXING (disk)	13.95	10.50
GRAND PRIX	9.95	7.00
GRAND PRIX (disk)	13.95	10.50
SOULS OF DARKON	8.90	6.00
SOUTHERN BELLE	8.95	6.00
BRUNO BOXING	8.95	6.00
BRUNO BOXING (disk)	13.95	10.50
BATTLE FOR BRITAIN	9.95	7.00
HYPERSPORTS	8.95	6.25
SPY vs SPY I	9.95	7.00
ADRIAN MOLE	9.95	7.00
SORCERY	8.95	6.25
QUILL	16.95	12.50
ILLUSTRATOR	16.95	12.50

ALL AMSTRAD DISKS & UTILITIES ARE IN STOCK
BOX OF TEN DISKS 35.00

ALL PRICES INCLUDE P&P

ANY TITLES NOT SHOWN CAN BE SUPPLIED AT 25% OFF RRP. PLEASE MAKE CHEQUES/POs PAYABLE TO: PPC AND SEND TO:

PPC MAIL ORDER
9 BENNECK HOUSE, 100 TOLPITS LANE
WATFORD, HERTS WD1 8PZ
(0923 33530)

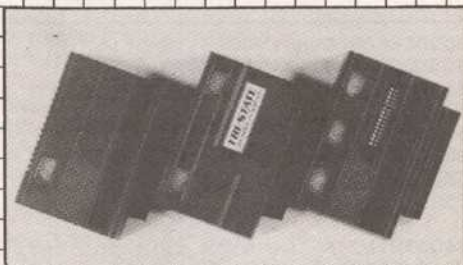
PPC Guarantee that all products will be delivered within 7 days of receiving order or cheques will not be cashed until products are despatched

PC025a

*****COMMODORE*****

GAME	RRP	OUR PRICE
THEY SOLD A MILLION	9.95	7.00
HALL OF FAME	6.95	7.00
KENNEDY APPROACH	14.95	11.00
BATTLE FOR BRITAIN	9.95	7.00
SCHIZOPHRENIA	7.95	6.00
SUPER ZAXXON	9.95	7.00
FRANK BRUNO	7.95	6.00
FRANK BRUNO (disk)	14.95	10.00
STARION	9.95	7.00

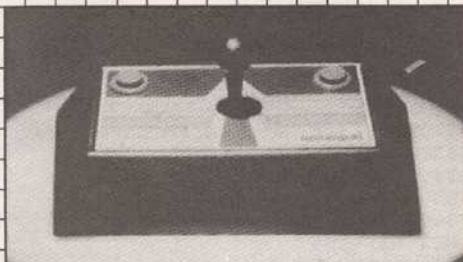
KEMPSTON MICRO ELECTRONICS LTD



JOYSTICK INTERFACE. TRI-STATE + PRO JOYSTICK INTERFACES



FORMULA 1-2 JOYSTICKS



SCOREBOARD JOYSTICK

POPULAR Computing WEEKLY

BINDER £3.50 + p&p

Keep your issues in order with a specially designed Popular Computing Weekly binder holding up to 13 copies for quick reference back to that program listing or article.

Send me Popular Computing Weekly binders at **£3.50 each** plus postage (**£1 U.K., £1.50 Europe, £2.50 Rest of World**)

I enclose a cheque/postal order for made payable to Sunshine Publications Ltd.

Please charge my Access/Visa Card No: _____

Name _____

Address _____

Postcode _____ Country _____

Which computer do you use? _____

Return this coupon together with payment to:

PCW BINDER
12-13 Little Newport Street
London WC2H 7PP, UK

HA10

ORDER FORM

Available direct from Kempston Micro Electronics Fast mail order service Please send me the following

<input type="checkbox"/> Formula One Joystick	£16.95	<input type="checkbox"/> Joystick Interface	£9.95
<input type="checkbox"/> Formula Two Joystick	£11.95	<input type="checkbox"/> TRI-STATE Joystick Interface	£12.95
<input type="checkbox"/> SCOREBOARD Joystick	£19.95	<input type="checkbox"/> Pro Joystick Interface	£16.95

SPECIAL COMBINATION OFFER

<input type="checkbox"/> Formula One Joystick + Joystick Interface	£19.95
<input type="checkbox"/> Formula Two Joystick + Joystick Interface	£17.50

Name _____
Address _____
All prices include VAT and Postage and Packing Overseas order add £4.00 p.p. Please allow up to 14 days for delivery
I enclose a cheque for £ _____
Access/Barclaycard

Kempston Micro Electronics Ltd, 1-3 Singer Way Kempston Bedford
Tel (0234) 856633

Music, music, music

More musical goings-on for the BBC B by Cy Noble

This week the final part of the music creation program for the BBC B. Next week, we'll be printing a program to take the tune data (written by this one) and write a Basic program version of the tune. Lastly there will be a

program to play your composition via machine code interrupts so you can use them in your own games, etc.

If you don't feel up to all that typing, write to Cy Noble at 323 North Circular Road, London N13, enclosing £10 for the entire suite of programs on cassette, £11.50 for a five inch disc and £15 for a three inch disc.

```

3520DEFPROCenv:VDU26,12
3530LOCAL I,A%,B%,C%,P%
3540PROCtitle("ENVELOPE DEFINER")
3550VDU26,28,0,24,39,2
3560PRINT"Do you want to"
3570PRINT"1> Load envelopes"
3580PRINT"2> Save envelopes"
3590PRINT"3> Change or Define envelopes"
"
3600PRINT"4> Go back to Input option"
3610*FX21,0
3620G%=0:REPEAT:G%=GET-48
3630UNTILG%>0 AND G%<5
3640IF G%=1 PROCloadenv:PROCenv
3650IF G%=2 PROCsaveenv:PROCenv
3660IF G%=3 THEN 3690
3670IF G%=4 ENDPROC
3680GOTO3610
3690CLS
3700A%=&BC0:C%=1:E%(0)=C%
3710REPEAT:IF ?A%=0 THEN 3780
3720PRINT"Envelope ";C%;
3730FORB%=1TO13
3740E%(B%)=B%?(A%-1):IF E%(B%)>127 E%(B%)=E%(B%)-256
3750PRINT";";E%(B%);
3760NEXT:PRINT
3770C%=C%+1:A%=A%+16
3780UNTILC%>16 OR ?A%=0
3790E%(14)=1:E%(15)=101:E%(16)=10
3800REM Chan,      freq,      length
3810INPUT"Envelope number ";E%
3820IF E%>16 OR E%<0 PROCboob:PROCenv
3830E%(0)=E%
3840A%=&BC0+(16*(E%-1)):E%(0)=E%
3850FOR B%=1TO13
3860E%(B%)=B%?(A%-1):IF E%(B%)>127 E%(B%)=E%(B%)-256
3870NEXT
3880CLS:FOR B%=0TO6:PRINTCHR#134:NEXT
3890VDU26,28,1,8,39,2
3900PRINT"Select parameter to change then"
3910PRINT"hold down arrow keys to change it."
3920PRINT"Up/down arrows for fast change"
3930PRINT"Left/right arrows for slower"
3940VDU131:PRINT"Parameters of Envelope";CHR#133:E%(0)
3950PRINT"<SPACE> to hear note <DEL> stop it"
3960VDU26,28,0,24,39,8:CLS
3970FORB%=1TO13:PRINT;CHR$(B%+64);CHR#134:NEXT
3980FORB%=14TO16:PRINT;CHR$(B%+64);CHR#133:NEXT
3990VDU26,28,2,24,39,8,12
4000PRINT"Step length"
4010FORB%=1TO3:PRINT"Pitch chg ";B%:NEXT
T
4020FORB%=1TO3:PRINT"Steps in ";B%:NEXT
4030PRINT"Amp attack"
4040PRINT"Amp decay"
4050PRINT"Amp sustain"
4060PRINT"Amp release"
4070PRINT"Attack targ"
4080PRINT"Rel. targ"
4090PRINT"Channel";CHR#134
4100PRINT"Note val";CHR#134
4110PRINT"Duration";CHR#134
4120VDU26,28,14,24,39,8
4130FORB%=1TO13:PRINTCHR#131:NEXT
4140VDU26,28,14,24,39,8
4150PROCprintenv(0,E%)
4160*FX21,0
4170VDU26,28,22,24,39,10:CLS
4180REPEAT:*FX21,0
4190P%=INSTR(PROMPT$,GET$)
4200IF P%>17 P%=P%-17
4210UNTIL P%>0
4220IF P%=17 THEN 4370
4230VDU23,1,0;0;0;26,28,25,24,39,12:P
RINT"Select from "'A to P''"'(S=Stop)"
4240PROCprintenv(P%,E%):*FX4,1
4250REPEAT
4260I$=INKEY$(10000)
4270I=INSTR(PROMPT$,I$)
4280IF I>17 I=I-17
4290IF I>0 P%=I:PROCprintenv(P%,E%)
4300IF INKEY(-90):A%=21:X%=4+E%(14):CAL
L&FFF4
4310IF INKEY(-99):PROCsoundnote(E%)
4320IF INKEY(-58):E%(P%)=E%(P%)+4:PROCp
rintenv(P%,E%)
4330IF INKEY(-42):E%(P%)=E%(P%)-4:PROCp
rintenv(P%,E%)
4340IF INKEY(-26):E%(P%)=E%(P%)-1:PROCp
rintenv(P%,E%)
4350IF INKEY(-122):E%(P%)=E%(P%)+1:PROC
printenv(P%,E%)
4360UNTIL INKEY(-82)
4370VDU23,1,1;0;0;0;0:*FX4,0
4380ENDPROC
4390:
4400DEFPROCprintenv(A,E%)
4410IFA>16 A=0
4420VDU26,28,15,24,22,8:CLS
4430IF A=1 E%(A)=E%(A) MOD 128
4440IF A=2 AND ABS(E%(A))>127 E%(A)=0
4450IF A=3 AND ABS(E%(A))>127 E%(A)=0
4460IF A=4 AND ABS(E%(A))>127 E%(A)=0
4470IF A=5 E%(A)=ABS(E%(A)) MOD 256
4480IF A=6 E%(A)=ABS(E%(A)) MOD 256
4490IF A=7 E%(A)=ABS(E%(A)) MOD 256
4500IF A=8 AND E%(A)<-127 E%(A)=-127

```



```

4510IF A=8 AND E%(A)>127 E%(A)=127
4520IF A=9 AND E%(A)<-127 E%(A)=-127
4530IF A=9 AND E%(A)>127 E%(A)=127
4540IF A=10 AND E%(A)>0 E%(A)=0
4550IF A=10 AND E%(A)<-127 E%(A)=-127
4560IF A=11 AND E%(A)>0 E%(A)=0
4570IF A=11 AND E%(A)<-127 E%(A)=-127
4580IF A=12 AND E%(A)<0 E%(A)=0
4590IF A=12 AND E%(A)>126 E%(A)=126
4600IF A=13 AND E%(A)<0 E%(A)=0
4610IF A=13 AND E%(A)>126 E%(A)=126
4620IF A=14 E%(A)=ABS(E%(A)) MOD 4
4630IF A=15 E%(A)=ABS(E%(A)) MOD 256
4640IF A=16 E%(A)=ABS(E%(A)) MOD 256
4650FOR B=1TO16:IFA=B PRINTCHR#134;CHR#
136; ELSE PRINTCHR#131;
4660PRINT;E%(B);CHR#134
4670NEXT
4680A%=&8CO:FOR B%=0TO12:B%?(A%+(16*(E%
-1)))=E%(B%+1):NEXT
4690ENDPROC
4700:
4710DEFPROCsoundnote(e%)
4720 ENVELOPE e%,E%(1),E%(2),E%(3),E%(4
),E%(5),E%(6),E%(7),E%(8),E%(9),E%(10),E
%(11),E%(12),E%(13)
4730 SOUND E%(14),e%,E%(15),E%(16)
4740*FX21,0
4750ENDPROC
4760:
4770DEFPROCtitle(T%):LOCAL T%:T%=(32-LE
N(T%))/2
4780FOR A=0TO1
4790PRINTTAB(T%,A);CHR#141;CHR#129;CHR#
157;CHR#135;T%" ";CHR#156
4800NEXT
4810ENDPROC
4820:
4830DEFPROCerrline
4840CLOSE#0
4850*FX4,0
4860VDU26,28,0,24,39,0,12,14
4870REPORT
4880PRINT" Error no. ";ERR;" at line ";E
RL''
4890*FX138,0,76
4900*FX138,0,73
4910*FX138,0,83
4920*FX138,0,84
4930A$=STR$(ERL)+" ,"
4940FORK%=1TOLEN(A$)
4950A%Z=138
4960X%=0
4970Y%=ASC(MID$(A$,K%,1))
4980CALL&FFF4
4990NEXT
5000*FX138,0,13
5010ENDPROC
5020:
5030DEFPROCnotes(a,b,c,d)
5040LOCAL A,X,Y:X=0:Y=0
5050VDU26,28,0,5,39,0,12,15
5060FORA=0TO5:VDU132,157,135:IFA<>5 PRI
NT
5070NEXT:VDU26,28,3,5,39,0,12,15
5080FORA=5TO255 STEP48
5090PRINTTAB(X,Y)"C=";A;
5100Y=Y+1:IF Y>5 Y=0
5110NEXT:X=X+5:Y=0
5120FORA=13TO255 STEP48
5130PRINTTAB(X,Y)"D=";A;
5140Y=Y+1:IF Y>5 Y=0
5150NEXT:X=X+5:Y=0
5160FORA=21TO255 STEP48
5170PRINTTAB(X,Y)"E=";A;
5180Y=Y+1:IF Y>5 Y=0
5190NEXT:X=X+5:Y=0
5200FORA=25TO255 STEP48
5210PRINTTAB(X,Y)"F=";A;
5220Y=Y+1:IF Y>5 Y=0
5230NEXT:X=X+5:Y=0
5240FORA=33TO255 STEP48
5250PRINTTAB(X,Y)"G=";A;
5260Y=Y+1:IF Y>5 Y=0
5270NEXT:X=X+5:Y=0
5280FORA=41TO255 STEP48
5290PRINTTAB(X,Y)"A=";A;
5300Y=Y+1:IF Y>5 Y=0
5310NEXT:X=X+5:Y=0
5320FORA=49TO255 STEP48
5330PRINTTAB(X,Y)"B=";A;
5340Y=Y+1:IF Y>5 Y=0
5350NEXT
5360PRINTTAB(11,5)CHR#131"+4 = sharp: -
4 = flat";
5370VDU26,28,a,b,c,d
5380ENDPROC
5390:
5400DEFPROCchelp(a,b,c,d)
5410LOCAL t%
5420VDU26,28,0,6,39,0:CLS
5430FOR t%=0TO4:VDU132,157,135
5440PRINT:NEXT
5450VDU26,28,3,24,39,0:CLS
5460PRINTTAB(10)"MUSIC DATA INPUT"
5470PRINT"E<N>=Edit D<N>=Delete(note) X
=Sync"
5480PRINT"P<N>=P/back(from) I<N>=Insert
(Note)"
5490PRINT"R=Repeat section C=Define Env
S=Save"
5500PRINT"N=Display note values H=This
page"
5510VDU26,28,0,24,39,5:CLS
5520PRINT"No. ";TAB(5)"Chan";TAB(10)"En/
V";TAB(15)"Note";TAB(20)"Len"CHR#136"B"C
HR#137"Stops p/back"
5530VDU26,28,a,b,c,d
5540ENDPROC
5550:
5560DEFPROCcassette(C$)
5570*MOTOR 1
5580PRINT"Insert disc/cassette & press
"CHR#129;C$
5590PRINT"CHR#136"cassette motor on if
rewind required"
5600PROCyesno
5610IF Y%=0 THEN 5600
5620ENDPROC

```

New boots for old

New Boots for your old Psion programs courtesy of Mike Lloyd

The 'boot' files on the bundled Psion software microdrives are straightforward SuperBasic programs, each about a dozen lines long. They produce the rather boring red header screen before clearing the memory, closing the default windows and loading the machine code programs which actually do the work. Because they are so easily amended QL owners can use their imagination to create personalised header screens to look at for the 20 seconds or so that it takes to load the machine code.

To start with, load any of the 'boot' programs without, of course, running it. List it and identify the lines which are essential for loading the machine code. These contain the *Clear*, *Close*, *Lbytes* and *Call* commands. Be careful, there are slight variations in the boot programs on each Psion microdrive. Delete all the lines which go to produce the header screen and renumber the remaining lines from Line 200. To allow for tests of the screen commands, temporarily add a *Stop* command immediately prior to Line 200. This is now the basis for your own 'boot'.

Although the opportunities for designing an intricate and outlandish screen are very tempting, it should be remembered that the 'boot' programs are retained in memory throughout the operation of the main code. A very long 'boot' takes up room which would otherwise be available for data, and so is not very desirable.

Nevertheless, if you are tempted to write a long program, consider erasing the 'help' file from the cartridge if more sectors are required in order to save the routine.

It is possible to add to your 'boot' extra facilities such as a *Baud* command (if your printer needs it), an *Input* line to allow a choice between setting a printer to NLQ or normal dot matrix mode, or an output from the system clock.

If you feel artistic then background graphics of, for example, a quill pen could be included. The final result is bound to be better than the boring Psion original, and it can reflect your individual computing style.

When you have produced a satisfactory screen, delete the *Stop* command, erase the previous 'boot' on the microdrive (covering the protection tab area with sticky tape if the tab has been broken off) and then save the new version of 'boot'.

To give you some ideas, new boot programs for *Quill* and *Chess* are reproduced below, together with a screen dump of one of them in action.

Listing for 'chess' boot

```
100 CLOSE#1:CLOSE#2:1screen
110 addr=184064
120 a = RESPR(0):a = RESPR(a-addr)
130 LBYTES mdv1_chessc,addr
140 CLOSE#0:CALL addr
150 STOP

200 DEFine PROCedure 1screen
210 MODE 4
220 OPEN #1,con_512x256a0x0_32:INK 4:
PAPER 0:CLS:CSIZE 2,0
230 AT 3,6:PRINT 'Loading...'
240 INK 7:CSIZE 3,0:FOR x=5 TO 12:AT
x,13-(x MOD 2):PRINT FILL$(CHR$(200)&
CHR$(32),8)
250 CSIZE 3,1:INK 7:PAPER 2:AT 4,11:P
RINT" QL CHESS "
260 INK 4:PAPER 0:CSIZE 2,0:AT 17,8:P
RINT"by PSION with Richard Lang"
270 AT 19,9:PRINT"Copyright 1984 PSIO
N LTD"
280 AT 21,6:PRINT 'This copy belongs
to Mike Lloyd'
290 END DEFine 1screen
```

Listing for 'Quill' boot

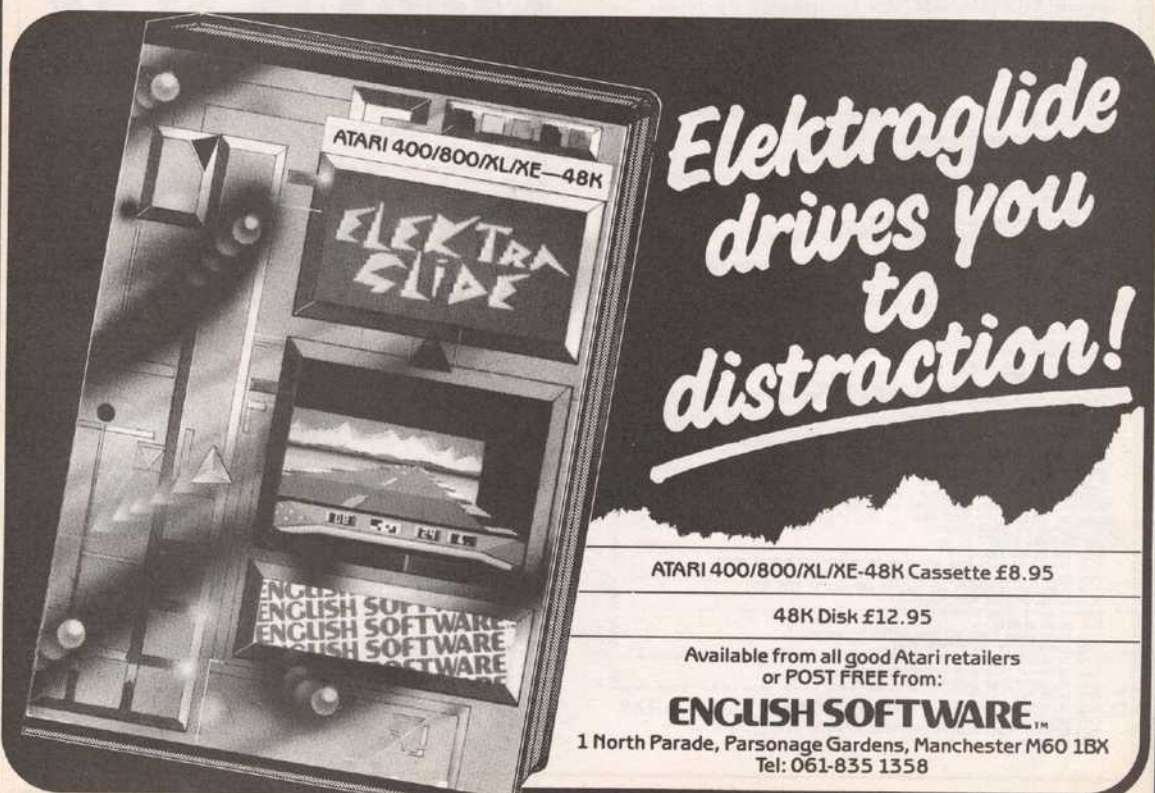
```
100 WINDOW 512,256,0,0:PAPER 0:CLS:CS
IZE 2,0
110 AT 4,4:PRINT"Loading ... "
120 CSIZE 3,1:STRIP 0,2,1:AT 2,13:PRI
NT ' QUILL '
130 PAPER 0:CSIZE 2,0:AT 4,28:PRINT'w
ordprocessor'
140 AT 16,9:PRINT"Copyright PSION Ltd
1984"
150 AT 18,12:PRINT'This copy belongs
to'
160 AT 20,15:CSIZE 3,1:STRIP 0,2,1:PR
INT 'MIKE LLOYD'
170 BAUD 4800
180 CLOSE #1:CLOSE #2:WINDOW #0,400,2
0,35,215:CLEAR
190 EXEC_W mdv1_quill
```

Loading . . . **QUILL** wordprocessor

Copyright PSION Ltd © 1984

This copy belongs to

MIKE LLOYD



Elektraglide drives you to distraction!

ATARI 400/800/XL/XE-48K Cassette £8.95

48K Disk £12.95

Available from all good Atari retailers
or POST FREE from:

ENGLISH SOFTWARE..
1 North Parade, Parsonage Gardens, Manchester M60 1BX
Tel: 061-835 1358

GOODE BYTE

SPECTRUM

GAME	RRP	OUR PRICE
FRANKIE G. T. HOLLYWOOD	9.95	7.50
GRAHAM GOOCH'S CRICKET	9.95	7.50
SPY vs SPY	9.95	7.50
DUN DURACH	9.95	7.50
EXPLODING FIST	8.95	6.75
NEVER ENDING STORY	9.95	7.45
HYPERSPORTS	7.95	5.95
FIGHTING WARRIOR	7.95	5.95
BATTLE FOR MIDWAY	9.95	7.50
TAJU GET!	9.95	7.45
CALLDRON	7.99	5.99
GYROSCOPE	7.95	5.95
AZMATE 3000	4.99	1.95
FAIRLIGHT	9.95	7.50
SC QUEST TYRES	7.95	5.95
HACKER	7.95	5.95
MARS PORT	9.95	7.50
BORED OF THE RINGS	6.95	5.25
MONTY ON THE RUN	7.95	5.95
HIGHWAY ENCOUNTER	7.95	5.95
RED MOON	6.95	5.25
NICK FALDO'S OPEN	9.95	7.50
BATTLE OF BULGE	9.95	7.50
JUGGERNAUT	7.95	5.95
IMPOSSIBLE MISSION	7.95	5.95
DYNAMITE DAN	6.95	5.25
THAT'S THE SPIRIT	6.95	5.25
FAIRLIGHT	9.95	7.50
ROBIN OF SHERWOOD	9.95	7.50
SOUTHERN BELLE	7.95	5.95
55 COMPILATIONS (PSS)	4.99	3.75
INTERNATIONAL KARATE	6.50	4.25
CYLU	2.50	1.75
FRANK BRUNO'S BOXING	6.95	5.25
DALLY'S SUPERSTRETCH	6.95	5.25
PROPINATION	7.95	5.95
CODENAME MAT II	8.95	6.75
TRIVIA	7.95	5.95
TERREMOLINS	6.95	5.25
DOOMARK'S REVENGE	9.95	7.50
KARATEKA	9.95	7.50
SHADOW OF UNICORN	14.95	11.70

COMMODORE

FRANKIE G. T. HOLLYWOOD	9.95	7.50
WAY OF EXPLODING FIST	9.95	7.50
WINTER GAMES	9.95	7.45
FIGHTING WARRIOR	6.95	6.70
RACING DESTRUCTION (cassette)	12.95	9.70
BATALIX	9.95	7.45

GAME	RRP	OUR PRICE
GRAHAM GOOCH'S CRICKET	9.95	7.50
HYPERSPORTS	6.95	6.75
THEATRE EUROPE	9.95	7.50
BATTLE OF BRITAIN	9.95	7.45
SPY vs SPY	9.95	7.50
TERREMOLINS	6.95	5.25
SKYFOX (cassette)	9.95	7.50
WIZARDRY	9.95	7.50
IMHOTEP	9.95	7.45
CODENAME MAT II	8.95	6.75
JOURNEY	7.95	5.95
HACKER	9.95	7.50
WORLD SERIES BASEBALL	7.95	5.95
NEVER ENDING STORY	6.95	7.45
RED MOON	6.95	5.25
NICK FALDO'S OPEN	9.95	7.50
BATTLE OF THE BULGE	9.95	7.50
THING ON A SPRING	7.95	5.95
ROBIN OF SHERWOOD	9.95	7.50
55 COMPILATION (PSS)	4.99	3.75
BEACH HEAD II	9.95	7.50
PARADROID	7.95	5.95
WIZARDS AIR	8.95	6.75
MONTY ON THE RUN	9.95	7.45
FRANK BRUNO'S BOXING	7.95	5.95
NODES OF YESOD	9.95	7.50
PSI WARRIOR	9.95	7.50

AMSTRAD

COMBAT LYNX	8.95	6.75
SABREWULF	9.95	7.45
EXPLODING FIST	9.95	7.50
MURPHY RUN	9.95	7.45
VIEW TO A KILL	10.95	8.99
SURGERY	8.95	6.75
DARK STAR	7.95	5.95
MATCHDAY	8.95	6.70
DUN DURACH	9.95	7.50
TANK BUSTERS	7.95	5.95
FRAGMENTS	7.95	5.95
RED ARROWS	9.95	7.50
AIR WOLF	8.95	6.75
FRANK BRUNO'S BOXING	8.95	6.75
W.S. BASEBALL	8.95	6.70
ALL AMSOFT DISKS	12.95	9.95

SPECIAL OFFER QUICKSHOT II £5.50

ALL PRICES INCLUDE P&P

PLEASE NOTE IF OUR ORDER EXCEEDS £50
YOU GET 10% FURTHER DISCOUNT
SEND CHEQUES/PO. TO

GOODBYTE PCW/ID

UNIT 10-11, IMPERIAL STUDIOS,

IMPERIAL LONDON SW6

(TEL: 01-721 4667)

THIS IS JUST A SMALL SELECTION FROM OUR
STOCK—PHONE FOR ALL YOUR SOFTWARE NEEDS

PD056A

CHRISTMAS MICROFAIR



Looking forward to a high-tech Christmas?
Then come along to the CHRISTMAS MICROFAIR at the
Horticultural Hall, London SW1 on the 14th December.

It's enough to make even Santa Claus's eyes light up.

Everything you ever wanted for the ZX Spectrum, Spectrum +
and the QL under one roof, in one day of non-stop computer
entertainment.

Software, hardware, books, add-ons, printers, monitors, user
clubs, magazines, computers, and a fantastic range of gizmos that
are not generally available in the shops.

There's all those 'just released' programs for the Spectrum and
QL, and more than one opportunity of getting something at special
"show" prices.

Send for reduced-price advance tickets now.

CHRISTMAS MICROFAIR
DECEMBER 14TH 1985, HORTICULTURAL HALL
GREYCOAT STREET / ELVERTON STREET LONDON SW1
10am-6pm
ADMISSION: £1.75 (ADULTS); £1.25 (KIDS UNDER 14yrs)

SEND FOR REDUCED PRICE ADVANCE TICKETS TODAY

Send to Mike Johnston (Organiser), Dept PCW ZX MICROFAIRS,

71 Park Lane, London N17 0HG.

Please send me _____ advance tickets

(Adult @ £1.25)

Please send me _____ advance tickets

(Child under 14 @ £1.00)

Name: _____

Address: _____

17th
ZX MICROFAIR

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

EXHIBITORS. CALL MIKE JOHNSTON ON 01-801 9172
FOR DETAILS OF STAND AVAILABILITY.

1541 FLASH!

Do you get bored waiting for your disk drive to load
your favourite programs?
Thinking of reverting to 'turbo' tape routines because
they're quicker?
WAIT!!!

From SUPERSOFT comes a great NEW product which
you can fit in minutes to upgrade your Commodore 64
and 1541 Disk Drive. All disk operations are speeded
up as much as THREE times (for example, programs
which normally take a minute to load will load in twenty
seconds or less using FLASH!)

1541 FLASH! is 100% compatible with Commodore
BASIC. However, if you really want to you can easily
revert to the normal slow mode at any time - but we
don't think you will!

If you take your programming seriously you can speed
DATA transfers by up to 10 times normal speed (in your
own programs), and can also make use of 11 screen
editing functions, as well as 17 disk commands.

Pressing SHIFT and RUN/STOP becomes the same as
LOAD "*", 8, 1 so you can start work about five seconds
earlier each day!

Supersoft have 1541 FLASH! in stock NOW, so send
your cheque for £89.95 or 'phone 01-861 1166 to order
by Access.

P.S. Unlike some add-ons we could mention, 1541
FLASH! leaves you all your memory and the cartridge
port available!

SUPERSOFT

Winchester House, Canning Road, Wealdstone,
Harrow, HA3 7SJ

Tel: 01-861 1166 for further details and our free
catalogue

PD404

Tony Bridge's Adventure Corner



Original atmosphere

Colossal Cave, the original adventure, has a lot to answer for – it was after seeing this classic that Scott Adams got the bug (no pun intended) to write his own brainteasers. But this first adventure required a huge mainframe to run on; who would have dreamed, as they say, that the same program would one day be seen on the lonely Spectrum with its vast 48K memory?

Spectrum, Commodore and Amstrad versions abound, most coded by the author. It's no surprise, though, that several authors should get the idea to use *The Quill* when writing their version (I'm not even going to attempt to unravel the copyright situation, except to say that Crowther and Woods, the original authors, should surely be millionaires now if they had received those royalties surely due to them!).

The first *Quill'd Colossal* was sent to me 18 months ago. It was mentioned in *The Corner* then, but to recap: author G L Watson has used all but four bytes of the Spectrum's memory in faithfully recreating the classic, and the layout is standard *Quill*. The tape I received was Version 1.0, so there may be more recent versions now. There's little to complain about here, though it's a pity that you have to *Get* objects piece by piece, rather than *Get All*. This is a criticism that can be levelled at all early *Quill'd* efforts – newer versions of Watson's *Cave* may be more interesting, but the version I have is rather dull. If you're interested in seeing the program that started it all, this has the advantage of being cheap – just £2.50 for the tape. *Zork* was being

worked on by the writer back then, but I imagine that even if all the text of that monster could somehow be squeezed into the Spectrum (multi-parts, possibly?), Infocom would be more assiduous at protecting their copyright. Contact: G L Watson, 38 Cumbria Close, Houghton Regis, Dunstable, Beds LU5 5RY.

Another program mentioned in *The Corner* last year was *The Dunshalt Donut*. Ross Harris was one of the first writers of a *Quill'd* adventure that offered rather more than a program on a tape. He didn't too well with it, which was a pity, as the little booklet that came with the tape was a gem, and the game itself was quite tough and atmospheric – the Thing in the bed, even though I was always careful not to disturb it, was quite spine-chilling. Harris has a special way with a title screen, and the screen of his version of *Colossal* is a beautiful picture, capturing exactly the atmosphere of the original. Once into the game, you'll find that this is version 2.0, so again we may see newer versions in time; there is also a copyright notice in favour of Anubis Software, Ross Harris' company – I'm sure DEC and Crowther/Woods would be interested in that information!

Before getting into the adventure proper, information is available, and this is typed teletext-style in a colourful re-designed character set. Though this is helpful, particularly to newcomers to the art, the old Spelling Monster rears its unnecessary head again, which is a great pity so early in the game.

A well-worn path

The game itself follows the same very well-worn path as the original, although I'm glad to see that the demand of two years experience has been answered and the location descriptions are rather more complete than usual – there's even a stab at an explanation for the snake being so scared of the bird. Harris uses *The Quill* well, but almost disguises the fact. At just £1.50, it's obviously good value, and the tape includes a bonus program called *Satirical*. This is a parody of the parody from Delta 4, *Spectacle*, an hilarious voyage through an imaginary Micronet-like database. One of these is quite enough, though, and while *Satirical* is thrown in with *Colossal*, it's rather inconsequential and frankly

time-wasting. Ross has many good ideas though, and I look forward to his next program. Ross Harris, 30 The Riggs, Auchtermuchty, Cupar, Fife KY14 7DX.

I've gone on at some length about these two programs, but I find it incredible that, while there are many programmers willing to use the original Crowther/Woods scenario, there don't appear to be any eager to tackle a graphic version. Ross Harris has created a marvellous picture as a title to his program – how I'd love to see some of those old familiar locations illustrated in this fashion!

One of the programs that featured in *Gilsoft's Gold Collection* was *Barsak The Dwarf*, by P and V Napolitano. I felt at the time of its release that it was a competent yet rather dull game, with lots of locations but nothing much to do and no sense of urgency about the problems – the player didn't seem to be involved to any degree. The authors have recently sent me an updated version which they have written using *The Illustrator*.

Terse descriptions

Eagerly loading it in, I assumed that this new version would be substantially different from the original – but I was very disappointed. Yes, some rather nice pictures were there, each one signed by PV, but the location descriptions are extremely terse. The major change is a RMC, or Random Mobile Character: this sounds very grand, but is in fact something called Frododo, which wanders on to the stage every so often and utters some inanity.

The locations are quite coherent; that is, the player has the sense of wandering around a real building, in this case a castle, but although the descriptions sometimes include lines like "there is a table here", you cannot always *Examine* those items. Maybe you can *Get* or *Put* something under the table, but I have not been able to do this.

The playing area is easy to explore, though there are obviously certain places which remain secret until problems are solved – I was glad to see that the Draconian measure of the first version (death within a few moves from hunger) has been substantially altered here. Now the player has quite a number of moves before he succumbs, plenty of time in which to find a source of food. Now, though, there is the problem of finding water – I haven't solved this one yet, thus proving that there must be more locations than at first appears.

The graphics really add nothing to the adventure, and if you have already have a copy of *Barsak*, then remain content – if not, it's an intriguing little adventure that is certainly worth the new asking price of £1.99. Contact P & V Napolitano, 48 Ledger's Road, Slough SL1 2RL. Next week, more *Quill'd* adventures, including the very first *Patch'd* game.

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair – help is at hand.

Fill in the coupon, explaining your prob-

lem, send it to us, and a fellow adventurer may be able to help.

Remember – the system only works if those adventurers who have solved the puzzles get in touch. Every week is Save An Adventurer Today (SAAT) week!

Adventure..... on (Micro).....
 Problem.....
 Name.....
 Address.....



llamasoft

YAK'S PROGRESS



Steinar

YAK'S PROGRESS FOR THE CBM 64

'Let there be sprites ...' a collection of eight of Jeff Minter's hairy classics for the '64;

* ATTACK OF THE MUTANT CAMELS * MATRIX * LASER ZONE * HOVER BOVVER * REVENGE OF THE MUTANT CAMELS * SHEEP IN SPACE * METAGALACTIC LLAMAS * BATTLE AT THE EDGE OF TIME * ANCIPITAL

IN PRESENTATION BOX WITH J.M.'s HISTORICAL NOTES! — ON DISK £11.95 ON 2 TAPES £9.45

COLOURSPACE FOR THE BBC 'B'

A great version of this unique software, for BBC owners. COLOURSPACE and its predecessor PSYCHEDELIA have been described as INTERACTIVE FIREWORKS, the player readily producing fantastic lightshows, a wonderful accompaniment to favourite music. We've caught the rainbow... ON TAPE £7.95

GAMES AVAILABLE FROM ALL GOOD COMPUTER RETAILERS OR FROM LLAMASOFT LTD, 49 MOUNT PLEASANT, TADLEY, HANTS TEL: (07356 4478) S.A.E. FOR CATALOGUE & NEWSLETTER 'THE NATURE OF THE BEAST'



NEW FUTURE SOFTWARE

BUY DIRECT AND SAVE £££££

ON THESE BACK CATALOGUE BARGAINS

SPECTRUM		COMMODORE 64	
RPP PRICE	OUR PRICE	GAME	OUR PRICE
BRISTLES	7.95	FRANTIC FREDDIE	9.95
BEAR BOVVER	6.95	HOVVVER BOVVER	7.95
MR WONG'S LOOPY LAUNDRY	6.95	FLIP & FLOP	9.95
MANIC MINER	5.95	DRELS	9.95
BRAXX BLUFF	5.95	ASTROCHASE	8.95
BACKPACKERS 1	6.95	GRYPHON	7.95
DEATHCHASE	5.95	SNOKIE	9.95
PROTEK HUNTER KILLER	8.95	EUREKA	14.95
SYSTEM 15000	14.95	POSTER PASTER DISC	9.95
FIRE ON WATER	9.95	BRISTLES	9.95
FLIGHT FROM DARK	9.95	CATAGOOMBS	7.95
SUPERGRAN	9.95	ZAGA MISSION	7.95
BRISTLES	7.95	BATTLE THRU TIME	7.95
ATARI			
CARTRIDGES FOR 26000			
SPACE INVADERS	NOW ONLY 3.99		
VANGUARD	NOW ONLY 3.99		
DIG DUG	NOW ONLY 3.99		
UTILITIES			
SPECTRUM FORTH	14.95		
SPECTRUM ASSEMBLER	14.95		
ACOS + CBM 64	14.95		
SPECGRAPH 48K	9.95		
JOYSTICKS ETC			
SPECTRUM SPORTS 4-PACK (SNOOKER, DARTS, GOLF + WORLD CUP FOOTBALL)	NOW ONLY 24.95		
		QUICKSHOT 2	4.95
		QUICKSHOT 1	2.95
		PROTEK SWITCHABLE INTERFACE	9.99
		DOSHIGA DATA RECORDER FOR CBM 64/C16/VIC 20	24.95
		PROTEK AIRLINER	6.95
		CAOCAM WARRIOR	9.95

PD630

ALL PRICES INC VAT & P&P.
CHEQUES POSTAL ORDERS TO:
NEW FUTURE SOFTWARE
 and send to:
30 Wilson Street, Carlisle, Cumbria
S.A.E. FOR CATALOGUE

COMPUTER REPAIRS BY THE SPECIALISTS



SPECTRUM and SPECTRUM + £18 + p&p
INTERFACE 1 £15 + p&p
COMMODORE 64 and VIC 20
ATARI 400/800 600/800XL
Ti and BBC

Phone for the cheapest prices!
 A few Spectrum Disc Drive Interfaces still available at £65 inclusive p&p
 All orders CWO (postage & packing £1.50)

Electronic Maintenance Services Ltd
 1397 Lincoln Road
 Werrington
 Peterborough PE4 6LT
 (0733) 75025

PD654

C & F ASSOCIATES

SPECTRUM		COMMODORE 64	
RPP PRICE	OUR PRICE	GAME	OUR PRICE
BBC			
Enrifer 7 (80 TR)	16.95	Ado Simbel	7.95
Blue Ribbon Games		Notes of Yesod	8.95
Disk 1 (40 TR)	9.95	A View to a Kill	10.99
Disk 2 (40 TR)	9.95	Dun Darach	9.95
Combi Lynx	8.95	Herberta Dummy Run	9.95
Buffer	9.95	Yoon	7.95
Castle Quest	12.95	Gyron	9.95
Felix & F Monsters	7.50	Everyone A Wally	8.95
Reel Moon	7.95	Kong Strikes Back	8.95
Swamp		Artica	6.90
Fella & The Evil	6.95	Beach-Head	7.95
Weevils	7.95	Airwell	8.95
Wizardo	7.95	Kasme Kanga	5.95
Diec Alac	7.95	Warrior Monty Mole	8.95
Tempest	9.95	Bank & Egg Stratchers	6.50
Killer Sorilla	7.95	Monty is Innocent	8.95
Alien-8	9.95	Mersport	8.95
Rubble Trouble	7.95	Red Arrows	8.95
Repton	9.95	The Artist	12.95
Bumble Bee	7.95	Harrier Attack	7.95
Alic Alac	8.95	Napuslane	6.95
Sabra Wolf	9.95	That's The Spirit	7.95
Football Manager	7.95	Red Moon	6.95
Obolus	7.95	Alic Alac	5.50
ELECTRON			
Nightmare Maze	2.50	Factory Breakout	5.50
Bofin	2.50	Underside	8.95
Combat Lynx	8.95	The Pyramid	5.50
Castle Assault	7.50	Nightshade	8.95
SPECTRUM			
Combat Lynx	8.95	Knights	9.95
Wizards Liar	6.99	Knights Lore	9.95
Alien-8	9.95	Sarn Shoot Saboteur	6.95
COMMODORE C18			
		Imhoep	9.95
		Blackwythe	8.95
		Wizards Lair	9.95
		Warrior Monty Mole	7.95
		Harrier Attack	5.95
		Entombed	9.95
		Thing On A Spring	7.95
		Shadowire	8.95
		Warrior	9.95
		Reel Moon	6.95
		Nodes Of Yesod	9.95
		COMMODORE C16	
		Dork's Dilemma	6.95
		Sword Of Destiny	5.95

Please note: BBC Disc Software guaranteed for Arrow UK only. All prices include VAT and postage & packing (Overseas orders add £1 per item). Cheques/PO payable to C & F Associates and send to C & F ASSOCIATES (PO BOX 2 BIDEFORD EX38 3RE)

PD657

COMMODORE HORIZONS

Subscribe to **Commodore Horizons** for one year and receive your choice of Sunshine Book listed below, free of charge. Write with your name, address and choice of book enclosing your subscription fee of £10.00 (£16.00 overseas), to:

CH subs. 12-13 Little Newport Street, London WC2H 7PP

- Beginning Machine Code on the C64
- Commodore Disc Companion
- The Working Commodore C16

PD655



ONLY £13.00 FOR TEN

Due to our bulk purchase of disks we can now offer them to you at very low prices, all disks are Genuine Memorex grade A1, no rejects and all complete with sleeves.

We can also supply Memorex disks notched on both sides, this enables you to fit the disk over and the B side to be used, thus your disks can hold twice as many programmes.

SAVE ££££ ON YOUR DISKS WITH OUR LOW PRICES.

MEMOREX 5S/DD DISKS SINGLE NOTCH ONLY £13.00 FOR TEN

MEMOREX 5S/DD DISKS DOUBLE NOTCH ONLY £14.00 FOR TEN

ALL PRICES INC. POST & PACKING, ORDERS SENT BY RETURN OF POST (min order 10 disk)

Please make all cheques payable to Arrow Micro Services

ARROW MICRO SERVICES
 20 Portmeadow Walk, London SE2

CLASSIFIED

Semi-display — £7 per single cc (inc. VAT)

Lineage — 30p per word (inc. VAT)

CALL DAVID OSEN ON 01-437 4343 FOR SEMI/DISPLAY ADVERTISING

SOFTWARE

POOLS AID BY TAMASSY FOR THE COMMODORE 64

● CONSIDER THESE FACTS:

1. Teams are both promoted and relegated each season.
 2. In 1871/72 Wanderers beat Royal Engineers 1-0.
 3. The venue for the 1986 World Cup is the Aztec Stadium, Mexico City.
- All very interesting, but they won't help you win the pools.

● **POOLS AID** is different — although fun and easy to use (with on-screen prompts and menu driven selection), it cuts through the jargon and concentrates on TODAY'S RESULTS.

● Using up-to-date statistics and the authors' experience, **IT WILL GUIDE YOU TOWARDS CERTAIN VICTORY** — The sky's your limit with **POOLS AID**

- So cut out the guesswork and do it the easy way with **POOLS AID**
- **NOW THAT'S A FACT**

£14.50 tape, £15.50 disk version. Cheques or POs to:
**TAMASSY, 33 MATHER STREET, BLACKPOOL,
LANCS FY3 8RA**

PL675

THE CONCERT PIANIST on BBC micro

ENJOY CLASSICAL MUSIC, pieces include: Chopin, Drinking Song, Humourage, Silvery moon, Edelweiss and others. (NO7 single notes, but direct transpositions. Some pieces have words on the screen). DISK: 401, 58.20 or details from **Blunley & St Acolight Crescent, Hayes, Middlesex UB8 3NA**. PL712

AMSTRAD and **BBC** software for hire latest games. £1 per fortnight. Details M. Ryall, 1569 Stratford Road, Hall Green, Birmingham B26 9JKA.

XMAS GIFT TO SPECTRUM OWNERS

Assembler	RRP	Our
Computer Pencil	14.95	9.95
Break Dancer	11.95	7.95
Red Attack	6.00	1.99

Send Cheque/PO to
**Games and Utility Programming, Suite 19,
47-51 Wharfedale Rd, London N1 9ST** PL707

SPECTRUM 48K

AN ADVENTURE
WITH A DIFFERENCE!
'MASTERCLASS'
NO FANTASY
NO RANDOM ELEMENTS
STRICTLY LOGICAL AND
ROOTED IN REALITY

Please send cheque or P.O. for £4.95 to

TRINITY SOFTWARE

177 BIRCHFIELD ROAD, PERRY BARR
BIRMINGHAM B19 1LL

SAPPHIRE ISLAND Ultimate text adventure for Commodore 64. Over 100 locations with rewards suited to only £5 in p&p. Lang, 7 Lyle Street, Greenock PA16 4QQ

WIN THE POOLS?



- Supplied with Database containing data on over 12,000 matches since 1980
- You update the Database each week — but no tedious typing as team and division names already in program!
- Errors easily corrected — the program even checks your entries!
- Comprehensive instruction manual and menu driven program easy to use, even for a newcomer to computing!
- Will forecast the least likely draws for those who prefer to bet on hard odds!
- Built in perm generator — complete your coupon direct from the screen!
- Compatible with the UK's best speech synthesizer — the only pools prediction program to need you its predictions!
- Each copy is individually updated with all results up to the date of dispatch — no typing in erroneous lists of previous matches before using the program!
- Full after sales service, including Database updates and end of season updates!

AMSTRA-DRAW 2 (ON DISK ONLY) £12.95
ORIGINAL AMSTRA-DRAW ON TAPE (NO SPEECH) £19.95
Cheques/POs payable to B. S. HALLIDAY
AMSTRA-DRAW (Dept D 1) Cavellise, Chichester, Oxford OX9 4TD
(Tel: 0484 52420)

HINTS — POKES — MAPS

Monthly handbooks packed with hundreds of tips, pokes, maps, competitions and software offers.

Amstrad Handbook	£1
BBC Handbook	£1
Commodore Arcade Handbook	£1
Commodore Games Review Handbook	£0.75
Spectrum Arcade Handbook	£1
Spectrum Games Review Handbook	£0.75
The Adventures Handbook (Spec/CBM)	£1

Send cheque or P.O. to:
**H & D SERVICES (PCW)
1335 Ashton Old Road
Higher Openshaw
Manchester M11 1JG**

'THE DIAMOND'. Play this exciting game and try to get the diamond. Spectrum 48k £4.70 from T. Coulson, 13 Bankside, Retford, Notts DN22 7UW.

SOFTWARE CONVERSIONS

If you require to convert your games, utilities & educational programs written in Basic or Machine Code to RUN on BBC B, Spectrum or Commodore 64, then phone 01-833 4896, or write to **Suite 19, 47-51 Wharfedale Road, London N1 9SE**. PL623

WDS Software

FOR THE QL

WD Utilities (3rd ed) (base £5.50)

PRINT 60-file D/Directory or view it on one screen, one-key LOAD, COPY or PRINT 60 files with one key (allows for namesakes). Multiple FORMATTing to prevent corruption by stretching of tape. TOOL kit to give date, numbered modules in program development. PRUNE old files to release space (one key DELETES a file). Full instructions in QLL file. Use up to 8 EXTRA MICRODRIVES (add on your Spectrum model)

WD Utilities for CST G-Discs (2nd ed) (base £8)

As above, with extra utilities, 100-file capacity, for CST/CompuMate disc systems AND up to 4 extra microdrives. User-friendly timesavers. Update 1st ed for 25p (£1.25 outside Europe).

ReQL (5th ed) (base £5)

900 useful QL references in an ARCHIVE file (too long to share cartridge with other software). Also ARCHIVE 2 search program.

FOR SPECTRUM/QL/BBC/ELECTRON

WD Morse Tutor (base £4)

From absolute beginner to beyond RYA and Amateur Radio receiving. Adjust pitch. Set speed to your least level (4-18 wpm). Learn from single characters, via groups with wide spaces to random sentences. Decrease spacing to normal. Write down what you hear, then CHECK on Screen or Printer (or speech for Spectrum with Currah Microspeech). Also one message, random figures, letters or mixed.

FOR SPECTRUM 48K

Wordfinder (microdrive/disc only) (base £8)

For CHEATING at crossword. Finds 18- or 9-letter, solves anagrams of thing/E words. 12,000 word vocabulary. 10-letter word ending in ATE? No problem! Too long to share a cartridge with anything else.

Tradewind (base £4)

Selling/trading strategy game with graphics surprises.

Jersey Quest (base £4)

Text adventure with Berenger and the Dragon. Based on genuine folklore of the island of Jersey. (Not on SPDS). Prices (incl Europe postage — elsewhere add £1). Cassettes — base price only. QL or Spectrum Microdrives — £2/cartridge plus base price; 5.25" floppies £2, 3.5" floppies £4 plus base (SPDS/Beta/OPUS discs for Spectrum). State required format when ordering. ACCESS/MasterCard welcome (over £4).

Two or more programs on one medium — pay medium 1 base. E.g. WD Utilities and Morse on microdrive for £11.50, but IMPOSSIBLE to mix QL/BBC/Spectrum programmes on one medium. Send YOUR cartridge and base price. But FORMAT if FIRST 6 times like us for reliability.

WDS Software, Hilltop, St Mary, Jersey.
Tel: 0534 81392

PL480

CLASSIFIED ADVERTISING RATES:

Line by line: 30p per word,
minimum 20 words.

Semi-display: £7 per single column
centimetre, minimum length 2 cm.
(Please supply A/W as PMT. Or
supply rough setting instructions.)

These rates include VAT.

Conditions: All copy for Classified
section must be pre-paid. Copy
date 7 days before publication.

If you wish to discuss your ad,
PLEASE RING David Osen 01-437
4343.

Here's my classified ad.

(Please write your copy in capital letters on the lines below.)

Please continue on a separate sheet of paper

I make this words, at per word so I owe you £

Name

Address

Telephone

Please cut out and send this form to: Classified Department, Popular Computing Weekly,
12-13 Little Newport Street, London WC2H 7PP

FAST COMPUTER REPAIRS

VIDEO VAULT INTERNATIONAL

10★ REPAIR SERVICE



ACCESS WELCOME

THE NO. 1 REPAIR CENTRE IN THE U.K.

24 HOUR TURNAROUND



HOW TO SEND YOUR COMPUTER

Just parcel your computer in suitable wrapping enclosing £19.95 for Spectrum repairs. please do not send power supplies. Commodore computers. Just send £1.75 (U.K. Eire, I.O.M. C.I.) or £6.50 (Europe/Scandinavia) with your address or phone number and we will contact you same day by phone or letter with quote, if you prefer, please call us and we will give you a quote over the phone, we aim to please. That's what made us the most reliable service centre.

SPECTRUMS REPAIRED for only £19.95

including PARTS - INSURANCE and P & P. NO HIDDEN EXTRAS

We don't give you a between price and let you guess the bill, we give you a 100% fixed price NO extras. We don't need to boast about our service, we have 1000's of customers from all over the world highly delighted with our service and help. Only 20 minutes from Manchester Centre. BBC, Commodore 64, Vic 20, also repaired call us for details.

Don't wait weeks for your repair, we turn around all computers in 24 hrs. All repairs carry a full 3 month guarantee, plus on every Spectrum we repair, we send you a free game worth £5.95 for your enjoyment and pleasure.

- While you wait service by Professional Computer Engineers.
- 3 month written guarantee on all repairs.
- International Repair Company. We repair computers from all over the world.
- All computers sent by Mail Order turned around in 24 hrs.
- Most Spectrums repaired within 45 minutes.
- All micros insured for return journey.
- Keyboard faults only £8.95
- School repairs undertaken - discount available.
- Free software with each Spectrum repaired.
- Over 8 years experience working with computers. All computers fully tested.

TRADE REPAIRS most welcome

BEST SERVICE - BEST PRICES!

COMMODORE 64

* NOW REPAIRED *

Call us for details or purchase the I.C.'s from our D.I.Y. section

WE ONLY USE SINCLAIR SPARES. FITTED BY OUR QUALIFIED STAFF!

* SPECIAL KEYBOARD UPGRADE



Why not upgrade your Spectrum into a new keyboard, we can upgrade your old Spectrum into a new D.K. Tronics keyboard

for only £31.50

Normal retail price £39.95 without fitting

ORDER NOW!

SPECIAL OFFER!

YOU CAN'T REFUSE

16K to 48K Upgrade

Upgrade your 16K Spectrum to 48K Spectrum for only £19.95 fitted including V.A.T. and P. & P.

(Limited offers while Stocks Last.)

Makes a great Christmas present.

To order the Upgrade Kit, (only £17.95.)



P.S. We would like to wish all our customers past and present a very Merry Christmas and a Happy New Year.

THE LOGICAL CHOICE
THERE'S NOBODY QUICKER IN THE BUSINESS AT PRICES THAT CANNOT BE BEATEN

VideoVault D.I.Y. CORNER

We regret we cannot show all the components available. Just give us a call and we can quote you over the phone, delivery by return.

Spectrum Parts

780A CPU	3.00
4116 Rams	0.95
ZTX 650	0.60
Service Manuals	20.00
LIJA 60001	9.50
Transistor ZTX 213	0.30
Transistor ZTX 315	0.50
Keyboard Membrane	3.00
Keyboard Template	3.00
Keyboard Mat	5.00
Power Supply Units	7.95
Feet (each)	0.25

Commodore 64 Chips

6526	25.00
6510	23.00
6581	23.00
901227-03	23.00
901226-01	23.00
901225-01	23.00
6569	25.00
4164 Rams	3.00
Power Supply Units	29.00
All prices + P. & P. £1.50	
But include V.A.T.	

TRADE ORDERS WELCOME

VIDEOVAULT HEALTH WARNING!!!

Sending your computer to any other Repair Centre can seriously Damage its Health

STOP PRESS

VIDEOVAULT LTD will shortly be opening their New Branch in Manchester City Centre for while you wait computer repairs, watch this space for details of special opening offers

OPEN 7 DAYS A WEEK

VideoVault Ltd.

Telephone: Glossop (STD 04574) 66555/67761
140 High St. West, Glossop, Derbyshire, England.

FREE GAME WORTH £5.95 WITH EACH SPECTRUM REPAIR.

SERVICES

SPECIAL XMAS OFFER!

2 GAMES (WORTH £10) WITH EVERY REPAIR

REPAIRS BETWEEN £9 AND £20

EXPRESS SPECTRUM & BBC REPAIRS!

In all U.K. with While-u-Wait repairs! with INTERNATIONAL repair service!

to charge **LOW PRICES** for the smaller repairs! (e.g. £9 for keyboard faults)

FOR SPEED - "One firm at least can effect any necessary repairs over the counter in 45 minutes. Based in Manchester, MANCOMP can offer what is arguably the FASTEST turnaround in the business to personal callers" CRASH Magazine JUNE 1985.

FOR LOW PRICES - "My Spectrum blew recently. I took it to MANCOMP, who fixed it in 8 minutes! and for less than £10! They are local, 'clued up', and blindingly efficient!" 4 HEATONS DIGEST.

FOR REPUTATION & HELPFULNESS - "I have come across a firm that will be more than willing to advise you as to how to remedy your problems. They are called MANCOMP and as well as repairing faulty Spectrums, are also quite willing to discuss your problems with you and offer reasonably cheap and more importantly CORRECT CURES" Phil Rogers POPULAR COMPUTING WEEKLY JAN 85.

FOR PROFESSIONALISM - "Of all the repair companies 'Sinclair User' spoke to, MANCOMP seemed the MOST PROFESSIONAL when it came

to advice and a helpful attitude" AUG 85.

FOR HONESTY - We let you watch your computer being repaired and if there is nothing wrong with it, we will tell you!!

THIS IS WHY Spectrum users from London, Cornwall, Scotland, Birmingham, Liverpool, Coventry, Leicester, Glossop, I.O.M., etc. AUSTRALIA, AUSTRIA, BELGIUM, EGYPT, EIRE, GERMANY, HOLLAND, KUWAIT, NORWAY, PAKISTAN, PAPUA NEW GUINEA, SAUDI ARABIA, SWEDEN, SWITZERLAND and ZIMBABWE - send their Spectrums to MANCOMP for repair!

● 24 TURNAROUND ● NO-QUIBBLE GUARANTEE ● NO HIDDEN COSTS.

EXTRA-SPECIAL DISCOUNTS FOR EDUC INST., H.M. FORCES, CHARITIES, HOSPITALS, ETC!

WHY DELAY? For FREE no-obligation estimate PHONE OR

SEND YOUR SPECTRUM TO MANCOMP FOR THE FASTEST AND CHEAPEST REPAIR SERVICE AROUND!

MANCOMP LTD
(Dept. PL43)

Printworks Lane, Levenshulme, Manchester M19 3JP
Phone 061-224 9888.
OPEN MON - SAT 9am to 7pm
WE ALSO REPAIR APPLES, I.B.M., APC/OTCS and EPSON & OLIVETTI PRINTERS!!!



OTHERS FOLLOW THE LEADER

SCOTLAND'S No 1

For home and personal computer repairs

- Specialist fast Spectrum service!
 - * Same day for most faults
 - * 1 hour if delivered personally
 - * Free estimates
 - * Upgrades, Membranes and P.S.U.'s
 - * 3 mth warranty on work done
- Also BBC/CMORIC and PERIPHERALS
Call, write or phone:

MICRO-SERV

Unit 4, Denny Workspace, Denny, Scotland FK9 5DW (0524) 822466
Trade, schools and club discount given. PL442

CHILTERN COMPUTER SERVICE

FOR FAST RELIABLE SERVICE
SPECTRUM £18.00
WE ALSO REPAIR IBM 64 & BBC, VIC 20, DRIC, DRAGON, AMSTRAD, PRINTERS & DISC DRIVES
Ask for details.
We give 3 months warranty on replaced parts
Send computer with details of fault and cheque made out to: New Crown Computers Ltd.
CHILTERN COMPUTER CENTRE
76B DALLAW ROAD, LUTON, BEDS
TEL: 0582 455684
Overseas enquiries welcome. PL281

HOME ACCOUNTS Put your house in order! Comprehensive coverage of bank accounts, credit cards, HP etc. Inbuilt accuracy check. Projects cash flow for any period. Available for Commodore, Amstrad and Spectrum £8.45. Free details from: Discus Software, Freeport, Beach Approach, Brixham Q2S 8BR. Tel: 0806 455532.

Computer Repairs in Southend

Spectrum/Plus	£19.95
Spectrum K/B faults	£12.95
Interface 1/2	£14.95
New Spectrum power supply	£3.95
64A/Vic 20	from £12.95

Above prices include parts, post & packing. All repairs are guaranteed 3 months. Call in or phone for more details.

MINNIE MICRO ELECTRONICS
12 EASTERN ESPLANADE,
SOUTHEND, ESSEX.
Tel: (0702) 62033/615809
OPEN 7 DAYS A WEEK PL473

The 1st choice

BBC SPECTRUM REPAIRS
* Spectrum repairs £18.50 inc. parts insurance and p.p.
* BBC B repairs £18.50 + parts, insurance and p.p.
Send your computer with cheque or P.O. for £18.50 and description of fault to:
SUREDATA (PCW)
Computer Service
45 Wychwood Avenue, Edgeware, Middx.
Tel: 01-951 0124 PL53

COMPUTER REPAIRS
We are the experts, having serviced Sinclair computers since the introduction of the Z80.
Don't waste money on estimates - we repair Sinclair computers of price quoted (exclusive parts, labour, postage, VAT, irrespective of fault. No hidden charges. Repairs guaranteed for 3 months.
Spectrum £18.75 inc parts
Z80 £11.50 inc parts
16 Kium £9.95 inc parts
Microdrive £15.95 inc parts
Interface 1-11 £18.75 inc parts
also
BBC £22.00 + parts
Expansion £19.95 + parts
XX Memory Expansion Kit £15.95
Computer Repairs please phone for Special Trade Prices.
Call or send with cheque or P.O. T.V. Services of Cambridge Ltd.
French's Road, Cambridge, CB4 3NP
Tel: 0223 31371

COMMODORE 1541 head alignment problems fast reliable service. Ring for more details 051-423 5493, Comput Courier BM4 Prestel Mail Box 514235493.

TELEX YOUR CLASSIFIED COPY TO:
296275 SUNRGY HA5

SINCLAIR REPAIR SPECIALIST in Birmingham

Spectrum £20 inc. parts
Interface 1 £15
Also C64, VIC20, BBC's and others.
Spectrum keyboard/memory upgrades.
D. G. Micro-Tek Electronics
190B Dudley Road
Winstan Green
Birmingham B18 4DZ
Tel: 021-454-4697 PL678

COMMODORE REPAIRS by Commodore approved engineers. Vic 20 Modulators £8.50. Vic 20 from £14.50, CBM64 etc. for more details write or tel: G. C. Bunce & Son, 36 Burlington Road, Burnham, Bucks SL1 7BQ. Tel: 06286 61896.

Computer Repair Centre
Have you got problems with your computer? Then call us for:
Commodore, BBC, Spectrum, Dragon
Mail order or call in
Enfield Communications
135 High Street, Ponders End, Middx.
Tel: 01-805 7772 PL143

SPECTRUM REPAIRS
£16.85 inc. labour, parts, P&P.
Fast, reliable service by qualified engs. Ave. repairs 24 hrs, 3 months guarantee. For help/advice ring.
H. S. COMPUTER SERVICES (1685)
Unit 2, The Orchard, Warton, Preston, Lancs PR4 1BE.
Tel: (0772) 632886 PL721

BBC SURGERY!!!
* STILL NOT FIXED PROPERLY?
* FRUSTRATING CRASHES?
* INTERMITTENT FAULTS?
Microlife fix what other repair centers dread! At fast speed and low repair cost.
T & P £18-£25.
* We can also fix your disc drives on the same terms.
For a free estimate, advise, or just a chat give our engineer Alan a ring.
MICROLIFE COMPUTER SERVICES
21 MIDDLE FURLONG,
BUSHEY, HERTS
TEL: 01-950 5173 PL708

TO HIRE A COMPUTER and/or peripherals by the week or month, please ring 01-607 0157 or 01-997 6457. We specialise in BBC and Amstrad computers. Computer Hire Services, 294a Caledonian Rd, London N1 1BA.
SPECTRUM REPAIRS
We expertly repair Spectrums for £17 inclusive of parts, labour and return postage. Spectrums upgraded to 48K for £34 including post.
R. A. ELECTRONICS,
50 Kimberley Road, Lowestoft, Suffolk.
Tel: (0502) 66289 PL45

VIDEOVAULT LTD

NO. 1 in HOME COMPUTER REPAIRS
Are now interviewing for
1st CLASS COMPUTER ENGINEERS
for their **NEW BRANCH** shortly opening in **MANCHESTER CENTRE**, must have knowledge of **MAJOR HOME COMPUTER CIRCUIT BOARDS**
• Please send C.V. for the attention of The Managing Director:-

Video Vault
Telephone: Glossop (STD 04574) 66555/67761
140 High St. West, Glossop, Derbyshire, England.

GAMES SOFTWARE

★ ★ KNIGHT LORE 2 ★ ★

(The Conquest of Fairlight)
For 48K Spectrum & Spectrum +

Join Sabre man in his latest quest as he battles against all odds to save the castle of Fairlight. Knight Lore 2 features 3D Graphics, Amazing Animation, Filmmation and all the favourite features of the original game.
(Note this software needs a copy of Knight Lore for protection of copyright reasons)

"More playable than the original Knight Lore" M. Whitting
All this for only:
£3.95

HIGH VOLTAGE AND P&M SOFTWARE PRESENT

★ ★ THE DESIGNERS COLLECTION ★ ★

For 16K or 48K Spectrum and Spectrum +

Now with this amazing program you can completely redesign Knight Lore, Jet Set Willy, Manic Miner, Chuckie Egg and Hungry Horace so that you can create your own unique games not recognisable with the original game. No programming skill necessary.

"Very useful utility... Very easy to Use." P.C.W.
"Excellent!" N.J. Shelley.

"Each one is worth the price paid for all eight" C. Bedford.
The Designers Collection is supplied on a C30 tape and costs only:
£4.95

CHALLENGE 'MANDY' TO THE No. 1 SMASH HIT GAME

★ ★ STRIP PONTOON ★ ★

For BBC 'B', Electron, Spectrum 48K and Spectrum +

(State which version you require when ordering)

If you win enough she strips off item by item in superb hi-res. graphics with her favourite tune playing in the background. Now in its 10th month this cult game is still selling well.

"Excellent!" Mr P. Kieser
Each version still costs only:
£2.99

Group For Research Into Paranormal Experiences
Present:

★ ★ WITCHCRAFT REVEALED ★ ★

For BBC 'B', Electron, 16K or 48K Spectrum, Spectrum +

(State which version you require when ordering)

Now you can practice this ancient craft in your own home and become your own budding warlock/witch. Perform many different rituals and spells which have been collected together after much research from authentic witches and warlocks. This program includes the binding sex spell, the romany love spell, the spell for extremely good luck and fortune and the ultimate ritual for Astral projection. Over twenty five spells and rituals are in this great package.

An incredible investment at only:
£4.95

Send your cheque/cash/postal order to:

HIGH VOLTAGE

Dept. PCW, 16 Bridge Road, Park Gate, Hants, SO3 7AE

Or enclose a S.a.e. for further details on our products and competition details.
(Details also supplied with an order)

AMSTRAD/ORIC/Atmos software club gives better value for money. Send s.a.e. for details stating computer. 26 Beechley Drive, Cardiff.

AMSTRAD and BBC software for hire keen prices, extensive lists, further details M. Ryall, 1569 Stratford Road, Hall Green, Birmingham B28 9JA.

SOFTWARE CITY MAIL ORDER SCOOP PURCHASE

Choose any 5 for £5.95

A SELECTION OF SOFTWARE PROJECTS
AND BUG BYTE BEST SELLERS

code	B.B.C.	r.r.p.	code	VIC 20	r.r.p.
A	Crypt Capers	7.95	K	Do Do Lair	5.95
B	Ledgeman	7.95	L	Fatty Henry	5.95
C	Karls Kavern	7.95	M	Space Swarm	5.95
D	Ewgeebez	7.95	N	Space Joust	5.95
E	Legion	7.95	O	Backgammon	5.95
F	Nutrakra	5.95	P	Chess	7.95
G	Space Pirates	7.95	HOW TO ORDER Fill In The Coupon With Your Selection And Enclose (£5.95 + £1 P&P) - Total £6.95 Access & Visa Accepted		
H	Twin Kingdom Valley	9.50			
I	Oblivion	7.50			
J	Graphics Package	9.50			

Name.....
Address.....
.....
.....

Send £6.95

To: Software City
78 Victoria Road WIDNES
CHESHIRE WA8 7RA
CALL 051 423 6666

WANTED

WANTED

M/C PROGRAMMERS FOR AMSTRAD 464/128/256
- CBM64/128 - ATARI

High royalties paid.

Cash advances will be backed by a full advertising campaign.

We are also currently looking for Business S/W for Amstrad 128/256 and CBM 128.

For the details please enquire.

Write to: PLATINUM GOLD
28 College Street
Worcester

PL716

WANTED URGENTLY

Due our new releases for Christmas we urgently require a software representative, a software agent and a telephone sales agent. Call Nigel on 01-833 4896.

PL706

MAKE YOUR PROGRAMS MAKE MONEY!

If you have a game, utility or application to sell, with a view to publishing (particularly CBM64 or BBC B) phone JOHN COOK at: Popular Computing Weekly on: 01-437 4343

PL43



is seeking authors for new titles to add to its highly original and successful book range. Experienced and first time authors are invited to submit manuscript, ideas or fields of interest. Write to: The Book Editor, Sunshine, 12-13 Little Newport Street, London WC2H 7PP.

Sunshine Publishers of Popular Computing and Dragon User.

PL31

PENPALS wanted! I have CBM4, Atari 800XL, BBC(B), Spectrum +, Amstrad 464, also wanted: MPS801 and 1541, £100 for both. Tel: 061-795 3581/061-795 2165 any time.

FOR SALE

BBC B 1.2 O/S DNFS, 100K disc drive, Acron cassette recorder, b/w 14" TV, 2 joysticks, software, excellent condition, all boxed, £450 ono. Tel: 01-485 1827 after 4 pm.

ATARI 1050 disk drive, Atari 850 interface and Epson cable, all brand new, only £200 ono. Tel: 01-727 5036 (late afternoon).

MAKE money with your microcomputer full or part time from home. Quality A4 size, 84-page guide, explains how to provide a much needed micro service for non-owners. Includes how to start, finance, book-keeping, advertising, providing accounts, database, spreadsheet and word processing services and more, £10 post paid (refundable if not satisfied) to: S. G. Crowther (Mailorder), 26 Millcroft, Soham, Ely, Cambs CB7 5AP. Orders dispatched promptly.

BBC B 1.20S Acron DFS Opus double-sided disc drive, joysticks, books and software to value of over £150, including Elite & Aviator, £435. Tel: 0442 41863.

CBM64, disc/CAS drives, joys, paddies, t/ball, m/board, softchip cartridge, AIWA twin cassette unit. 1525 printer, 150 d/d discs + more. 01-577 3875 highest offer.

DRAGON 32, cassette recorder, Phillips TV, Microlite 80 printer, joysticks, games, leads, hardly used, £175 ono. Tel: Reigate 44215 (evenings).

ATARI 800 XL plus 10/10 recorder plus 8 games £120. Tel: 0923 22578.

CUSTOM build/small business/homeuser. We can custom build cables and connectors, T-switches, ????? changes etc. Printer, stands etc. Send your designs/wiring/diagrams or enquiries to: 48 Fairwater Ave, Welling, Kent.

BBC B + Acron DFS + graphics ROM, Pace L10/80 T% DS twin disc drive, Star S400 (NLQ) printer, BBC data recorder £400 worth of books, software, mags plus many extras. Contact W. McKenzie (023) 67 23369.

BBC B, perfect condition, hardly used. £270. Call Wendie 385 5817 or Tony 437 6858.

SEIKOSHA GP100A + manual + spare ribbon + paper only £100 ono. Tel: 01-542 7567 after 6pm.

MEMOTECH MTX 512 with Newword ROM and RS232 coms board 10 games inc EDASM. Printer, intrface, books. As new giveaway price £120. Tel: Pershore (0386) 554358 after 6pm.

NEWTRENDS TECHNOLOGY

EX-DEMONSTRATION STOCK

SANYO 55N, 256K RAM, 2 x 360 drives, RS232, Sage Chitchat and modem, Wordstar, Calcstar, Infostar, MS DOS 2.11, 12" Green Monitor.
£1,000 + VAT

SANYO 55S, 256K RAM, 2 x 800 drives, Wordstar, Calcstar, Infostar, MS DOS, 12" Green Monitor.
£750 + VAT

SANYO 55T, 256K RAM, 10MB Winchester, 1 x 800 drives, 12" Green Monitor.
£1,500 + VAT

All orders + VAT and carriage
Newtrends Technology
16-14 Holly Bush Gdns
London E2 9QT
Tel: 01-729 4995

PL718

There's a Dealer near you . . .

AVON

SOFTWARE PLUS COMPUTERS
12 YORK STREET
BATH
Tel: (0225) 61676

PL626

HUMBERSIDE

THE COMPUTER CENTRE
(HUMBERSIDE)
26 ANLABY ROAD
HULL
NORTH HUMBERSIDE
0482 26297

PL493

LIVERPOOL

BLUE CHIP
77 ALLERTON ROAD
LIVERPOOL L18 2DA
Tel: (051) 722 3037

PL517

OXFORDSHIRE

CLUB COMPUTERS
6 EVANS YARD
BICESTER
OXFORDSHIRE
Tel: (0869) 248600

PL605

BIRMINGHAM

D.G. MICROTEK ELECTRONICS
190B DUDLEY ROAD
WINSON GREEN
BIRMINGHAM
Tel: (021) 454 4697

PL544

KENT

ANIROG COMPUTERS
29 West Hill
Dartford
Kent
Tel: (0322) 91649

PL494

LONDON

SILICASHOP
1-4 THE MEWS
HATHERLEY ROAD
SIDCUP, KENT
Tel: 01-309 1111

PL533

ESSEX

MINNIE MICRO COMPUTER STORE
12 EASTERN ESPLANADE
SOUTHEND, ESSEX
Tel: (0702) 615809

PL483

dgh
software centre

10 NORTH STREET,
ASHFORD, KENT
Tel: (0233) 32597

PL508

VIC ODDENS
6 LONDON BRIDGE WALK
LONDON SE1
Tel: 01-403 1988

PL488

S. WALES

MAPPLE MICRO ASSOCIATES
FREEPOST
PO BOX 17
CWMBRAN
GWENT NP44 3YT

PL548

WARWICKSHIRE

FAST FORWARD COMPUTER STORE
29 SMITH STREET
WARWICK
Tel: (0926) 492004

PL645

YORKSHIRE

THE COMPUTER STORE

18 CLEVELAND STREET
DONCASTER
Tel: (0302) 25260

PL816A

THE COMPUTER STORE

26 TEALL STREET
WAKEFIELD
Tel: (0924) 384983

PL817

THE COMPUTER STORE

8 BRIDGE STREET
YORK
Tel: (0904) 646934

PL818

THE COMPUTER STORE

40 TRINITY STREET ARCADE
LEEDS
Tel: (0532) 429284
(open now)

PL819

YORK COMPUTER CENTRE

7 STONEGATE ARCADE
YORK
Tel: (0904) 641862

PL819

GLASGOW

THE COMPUTER DEPOT
205 BUCHANAN STREET
GLASGOW G1 2JZ
Tel: (041) 332 3944

PL785

LANCASHIRE

SOUND AND VISION
11 SILK STREET
LEIGH, LANCs WN7 1AW
Tel: (0942) 673689

PL602

SOFTWARE STORE LTD
35 LONDON ROAD
LONDON SW17
Tel: 01-685 1476

PL589

HEREFORDSHIRE

HONEYSETT COMPUTERS
17 UNION STREET
HEREFORD HR1 2BT
Tel: (0432) 279404

PL624

LEEDS

MICROPOWER

NORTHWOOD HOUSE
NORTH STREET
LEEDS LS7 2AM
Tel: (0532) 458800

PL693

LOGIC SALES
19 THE BROADWAY
THE BOURNE, SOUTHGATE
LONDON N14
Tel: 01-882 4942

PL686

HERTFORDSHIRE

BROADWAY COMPUTER CENTRE
75 QUEENS ROAD
WATFORD, HERTS
Tel: (0923) 43301

PL636

LEICESTERSHIRE

DIMENSION COMPUTERS LTD
27-29 HIGH STREET
LEICESTER
Tel: (0533) 57479

PL540

NOTTINGHAM

MPC SOFTWARE
72 JULIAN ROAD
WEST BRIDGFORD
NOTTINGHAM NG2 5AN
Tel: (0602) 820106

PL629

ACCESSORIES



SPECIAL

FROM **85p** EACH
5 1/4" DS/DD FUJIFILM DISKS

- LIFETIME GUARANTEE
 - HUB RINGS
 - FREE SEE-10 CASE
 - NT BRANDED - FUJI FILM
- PRICE PER BOX
- | | | |
|-------|-------|-------|
| 1-4 | 5-9 | 10+ |
| £9.50 | £8.90 | £8.50 |

8" DD diskettes: 100 each min order 50
AUTHORISED: Sanyo - Philips - Alternative - Sage - Easylink - Mannasman - Juki - Dealers

HOW TO ORDER: To total add 50 per box of 10 then add 15% VAT and send cheques or postal orders to:

Newtrends Technology Ltd
10/14 Hollybush Gardens
London E2 9QT
Tel: 01-729 4999

PL717

FROM **80p** EACH

5 1/4" DS/DD UNBRANDED FUJI floppy DISKETTES
with envelopes and write protect tabs
For single and double sided drives 80p each
Minimum order 50 each

3.5in memorex (10 per box)
Price per box

1-4	5-9	10+
£28.00	£27.00	£26.00

UTILITIES

QL DEPROTECTION PROGRAM

COPYER from MPC Software will enable you to FORMAT a blank microdrive cartridge with the same characteristics as the original for most of the currently available QL software. This makes most of the current copy-protection routines useless. This program is only available from MPC Software at just £13 including postage and VAT.

MPC Software, Dept. PCW1,
77 Julian Rd. West Brompton,
Winnon W82 2AN. Tel: (0822) 820168 (7/709)

NEW! SD2 ADVANCED TAPE TO MICRODRIVE UTILITY

Now you can transfer virtually ANY of your programs to microdrive, with this advanced but user friendly utility.

- FEATURES:
- Uses the semi-automatic method for best results.
 - A large collection of support programs to help you.
 - Many hints and tips/information on transfer techniques.
 - FULL Technical Section to help you understand more easily the best way to approach each transfer.
 - LARGE number of examples of programs being transferred to microdrive - all fully explained.
 - FREE Reader Reader and Readertless Block Length Reader. Essential feature on 5.25 inch disks (P=1).
 - FULL documented user friendly instructions.
- IF YOU ARE REALLY SERIOUS ABOUT TAPE TO MICRODRIVE TRANSFER - THIS IS THE UTILITY YOU MUST HAVE!
Special Value at only £5.99 (Inc. P & V)

NEW! \$L1 SUPER SPEEDLOADER

Tired of waiting for your tapes to load? Then get our NEW \$L1 SUPER SPEEDLOADER. This useful utility speeds up your tape loads by up to THREE times! It features:

- A large number of examples of conversions to speedloaders - fully explained.
- A LARGE collection of programs to help you.
- Even complex programs can be converted.
- FULL instructions with large Technical Section.
- FREE Reader Reader and Readertless Block Length Reader. Essential feature on 5.25 inch disks (P=1).

Send cheque/P.O. to: "KOBARSOFT", "Pleasant View", Home Lane, Hales, Nr Longton, Stoke on Trent, Staffs ST13 5SH.
(Overseas - Sample add £11 + P&V ITEMS add £2)
UPDATES: SEND OLD CASSETTE - LARGE SIZE FOR £2 SAVING ON ABOVE PRICES - PLEASE MARK ENVELOPE UPDATE!
Send S.A.E. for FULL CATALOGUE of all our Spectrum utilities - please mark envelope "UTILITY".
PL 713

QL DEPROTECTION PROGRAM

Reproduce BYTE by BYTE any program written on micro-drive. It removes any protection device (random number, password on formatting, invisible algorithms etc.)
Enter QL SECRET - it is a machine code program included.

QL DEPROTECTION PROGRAM
SPOILER (MULTI TASKING)
ENGLISH MANUAL £13.95
SEND PAYMENT (EUROCHEQUE, BIRECHQUE) TO
PERSOFT SOFTWARE
187 RUE DU PROGRES BP 159
1000 BRUSSEL, BELGIUM PL632

MZ80A integrated monitor cassette software manuals £25. Also Vic-20 +18k switchable + C2N cassette leads joystick manual books magazines loads of software + cartridges. Bargain £100. Telephone Letchworth (0462) 674198.

FAST reliable service of DATA DUPLICATION for most computers. Comprehensive facilities include: master / re-recording, blank discs/cassettes, blank or printed labels, return. COMPETITIVE PRICE LIST from:

SIMON STABLE PROMOTIONS CASSETTE DUPLICATION

The Newington Station, 25 West End, Loughton, Essex. Tel: 0828 25 7331
91 N. 116 7331 F.
PL395

the records
COMPUTER PROGRAMS
REAL-TIME or (Slow) HIGH SPEED professional Cassette Duplication and Blanks 1 to 1000+ Computer printed cassette labels, BBC Disk Copying 1 to 500 + Fast Security Delivery Service.
the records - a division of FILTERBOND LTD.
19 Seaford Way, Harford SG14 2DZ.
0952 951186 PL397

BLANK CASSETTES

WITH LIBRARY CASES

	C10	C15	C20	C30
10	3.80	4.00	4.15	4.15
20	7.00	7.20	7.35	7.50
50	15.00	15.20	15.35	15.50
100	27.00	28.00	29.00	29.00

Fully Included (COD 85p extra)
Superior Tapes. Don't Settle for Less!

5 1/4" DS/DD DISKS
10 for £14.00 inc plastic case
RING US NOW (0783) 692634
UK HOME COMPUTERS, 82 CHURCHWARD AVE,
SWINDON, WILTS SN2 1NH PL613

SPECTRUM CABINET

To House
Computer, Interface 1 and Microdrives



Repackage your Spectrum or Spectrum + with interface 1 and microdrives. A choice of cabinets available at prices from £15.95. Please send S.A.E. for details to:
S.R.A. Developments Ltd.,
Bremridge Farm, Ashburton,
S. Devon TQ13 7JX. PL700

!!! DISC BONANZA !!!

Maxell 3" DF (Amstrad/Einstein)
£39 for 10
£160 for 50
5 1/4" SSDD only £80 for 100
Why pay more?? These are quality, guaranteed discs and prices are fully inclusive. Order now from:

SOFTWARE CLASSICS,
2 Connie St, Manchester M11 2JT
(Tel: 061 223 3849) PL685

TYPE HEBREW ON STAR PRINTERS using AMSTRAD CPCs

Intermix Hebrew and English on the same lines at will. Save: Load: Print NLO: mode 2 screen of text. Sorry: no vowel marks. Send S.A.E. for sample print-out. TAPE: £11.00 DISC £15.00 includes p&p in U.K. Europe add £1 each. Outside Europe add £2 each.
A. ASHURST 60, KENWOOD ROAD, STRET福德, MANCHESTER, M32 8PT. PL711

ALSO AVAILABLE ON ROM

AMSTRAD CPC MODELS SYSTEM X

The software utility that offers a massive 30+ extra. Basic commands for your Amstrad. Whether you are a serious programmer requiring the flexibility and time saving afforded by this excellent utility, or a novice requiring an obvious programming advantage with the fun of the very versatile graphics commands - SYSTEMS X is an essential addition to your software collection. Due to the compact nature of the machine code the program takes only approx 3k bytes of RAM, still leaving a generous amount of program area. The program is suitable for all CPC models and is available on ROM as well as disc and cassette all at excellent value for money.

A brief summary of new commands

- CAPOFF Turn off caps shift within program
- CAPON Turn on caps shift within program
- CIRCLE Draw circle or oval
- CUIROFF Turn off text cursor
- CUIRON Turn on text cursor
- DEPRO Deprotect a BASIC program
- DPEEK Two byte peek
- DPOKE Two byte poke
- DSCREEN Move whole screen down one line
- FILL Fill any area with a colour
- FRAME Clear input buffer
- FRAME Wait for frame flyback pulse
- GETCHAR Get a character from the screen
- GETKEY Get a character from the keyboard
- GPEN Set the graphic pen to an ink
- GOVER Turn on the graphics XOR function
- HELP List the SYSTEM X commands
- INVIS Make the screen invisible
- INVERSE Swap pen and paper
- LSCREEN Move whole screen left
- MOTOR Turn cassette relay on/off
- PRON Echo screen printing to printer
- PROFF Turn off echo to printer
- PROTEC Protect a BASIC program
- RPEEK Peek into a ROM
- R Reset pens, inks, border and mode to default
- RSET Reset pens, inks, border and mode to default
- RSCREEN Move whole screen right
- SHIFT Shift a block of memory
- USCREEN Move whole screen up one line
- VIS Make screen visible after -INVIS
- ZIP 1000-4000 baud, cassette saving speeds

Instructions include more detail plus examples for you to type in.

Price £9.95 on tape or £13.45 on disc

*** NOW AVAILABLE ON "ROM" for only £19.95 in ***

Europe please add £1, Australasia £1.75, Rest of World £1.50

PRIDE UTILITIES LTD (DEPT PCW),
7 Chalton Heights, Chalton, Luton, Beds LU4 9UF

PL720

Self Adhesive Cassette & Disk Labels

CASSETTE LABELS - On A4 sheets, 12 labels per sheet 100 labels = £2.50, 1000 = £21.85. Rolls of 500 labels, on tractor feed backing paper for overprinting by computer printer.
White = £1.66, Tints available - Blue, Yellow, Pink, Green, Orange or Grey = £16.90.
DISK LABELS - Rolls of 500 labels, on tractor feed paper. White = £12.75, Tinted = £15.

The above prices are VAT & carriage inclusive. For our full price list and sample brochure Telephone (0783) 28425 (24 hrs)

INDUSTRIAL PROCESS
Self Adhesive labels - SUPERFAST
Unit A4, Smead-Dean Centre, Eurolink Way, Sittingbourne, Kent ME10 3RK PL83

SPECIAL OFFER FOR ATARI 400/600/800 OWNERS

Hire first 2 games FREE from our extensive range of software. Latest releases! Apply now! Also, Atari hardware & modems for sale at discount prices.
For further details send SAE to CHARNWOOD GAMES, 30A WARWICK AVENUE, QUORN, LOUGHBOROUGH LE1CS.
TEL: 0509 412604

AMSTRAD

- 1) AMSTRAD SOFTWARE LIBRARY
- 2) BI-MONTHLY MAGAZINE
- 3) DISCOUNT SOFTWARE, HARDWARE, BOOKS. JOIN NOW IN TIME FOR CHRISTMAS

1) Any title supplied, if we don't stock it we'll get it. Hire charge from only £1 per week, inc. P & V 1st selection free. Free refunded if you buy the title.
2) Mag. containing latest SW & HW reviews, special offers, readers hints, comments, Q/A's, listings, COMPETITIONS, adventure tips, pen pals. SW swags, for sale price + lots more.
3) Min. discount on SW = 15%, plus discounts on HW & Books. New titles, etc., coming in everyday.
FIRST "100" APPLICANTS MEMBERSHIP FEE REFUNDED IN FULL

Annual membership fee £14.95/flat year membership fee £8.95. Or send your name add address + £1 p.p. for free details.

PICCOLO MICRO SERVICES (PRINTERS)
1 WENTWORTH CRESCENT, BRAINTREE, ESSEX CM7 5DD PL710

AMSTAT = Amstrad Statistics Package (CPC 464/664/6128).

Amstat1 - means, s.devs, t-tests, 1-way-AOV, 2-way-AOV, correlations, regressions, histograms, scattergrams, file storage and retrieval, manual. £14.99 cass. £19.50 disc. Cheque to S. C. Colman, 33 Leicester Road, Ashby-de-la-Zouch, Leics. LE6 5DA. Telephone: 0530 451919. Technical Enquiries after 6.00 pm or Weekends. Coming soon AMSTAT2: a "Complete Siegel".

£200 for Amstrad 464 - colour 2 joysticks - 13 books top titles include expxtelisi Rockyhorse, Starion Beechhead mkII also Basic 1 (Tuband). All the lot worth £720 roughly 38-40 titles. Urgent sale Tel: 796 6425.

FOR HIRE

MIDLAND COMPUTER LIBRARY

A SUBSIDIARY OF PLATINUM GOLD

- * OVER 4,000 different titles available for hire for the COMMODORE, SPECTRUM, BBC, AMSTRAD, ATARI and MSX computers.
- * ARCADE, ADVENTURE, EDUCATIONAL and BUSINESS software too.
- * HIRE PRICES from only 75p INC P & P.
- * 20% DISCOUNT off all purchase software.
- * FREE CATALOGUES.
- * FREE HINTS AND TIPS.
- * FAST RETURN OF POST SERVICE (if reserves are given).
- * ALL GAMES manufactures ORIGINALS with full documentation.
- * OVER 6,000 satisfied members.
- * EUROPEAN members welcome.
- * LIMITED PERIOD ONLY FREE MEMBERSHIP.
- * Fully computerised system keeps track of your order. We pride ourselves in being the most professional Hire Library in the United Kingdom, with staff of 14 who know what the word service means. Backed by our own software company and programmers.



VISA

MIDLAND COMPUTER LIBRARY: 28 COLLEGE STREET, WORCESTER, WR1 2LS. TEL: 0905 611072.

Please rush me my free catalogue stating machine.

Name:

Address:

PL715

Computer Swap 01-437 4343

Amstrad for Sale

COLOUR Amstrad CPC464, disk drive, joystick, £300 of software, vic-20 16k RAM, Vic-1515 printer speech synth, Motyboard machine code monitor 5 games cartridges. All for only £380 - 01-310 4031 after 6pm.

AMSTRAD CPC 464 computer with colour monitor and built in tape recorder. As new. Joystick software and computer desk. £199. Lot. Birmingham area. Phone: 021 358 1010. Buyer to collect.

AMSTRAD SOFTWARE. Masterfile, Tasword, Taspaint, Tascopy, Screen Designer, Hobbit, Ghostbusters, Airwolf, Mini office, Strip Poker, Confusion, 3D Grand Prix, Amsofts 12 pack, and many more. Also **SILVER REED** Colour Pengraph, Cable, Extras. Writes? Draws in four colours. Pie Charts etc. 07072 17529 anytime.

AMSTRAD SOFTWARE. All original and immaculate: exploding list, Brian Jacks, Knight Lore, Dun Darach, Star-strike, Ghost Busters, Decathlon, Jetset Willy Pjajmarama, chess plus many more. £3.45 each. Telephone: 01-593 6497.

BBC for Sale

BBC Plus 640K disc drive, ADFS, 32KSWR, speech system, green screen

monitor, joystick, light pen, books, leads and manuals, £600 ono. Phone: Wickford (03744) 4838 ask for Alan.

BBC B to Opus DDOS and 5401 drive, Epsom look-a-life Friction/tractor feed printer, magazines, spare discs, delivery within 100 miles of home. £599 ono (can split). 01-869 0622.

BBC B tape deck, over £150 software, magazines, manuals and m/c book, excellent condition, £270 ono. Tel: (0442) 58200.

COMMODORE for Sale

COMMODORE 64 flash fast loader, 1541 disk drive, 1701 monitor, 4 colour printer, CP/M cartridge, joystick, easyscript and lots of games £450 ono also Oric Atmos £50 ono Tel: St. Albans 34566 evenings.

VIC-20 computer, 16k ram cartridge, 23 games cassettes plus 4 games cartridge incl. Sargon 20 chess. Intro to basic - Part 1. Perfect working order. Boxed £65. Phone Terry Luton (0582) 23750.

CBM 64 Easyscript £15, future finance £10, Commodore utilities disk £5, also strategy game based on ancient Chinese dice game, new and exciting only £3.50. Phone 021-777 6756 for details.

COMMODORE 64 + disc drive on disc and cassette plus Androgenic Spreadsheet on disc and books £350 ono. Tel: 061-653 0246.

COMMODORE 64 C2N Recorder, disk drive, MPS801 printer, joystick, paddles, 400+ games and utilities, many mags, all excellent condition, worth £800.00 + sell for £480.00. Phone 0782 279722 after 4.00pm.

Sick of all your listings and those loose sheets of info getting lost?!

DATA BINDERS

Heavy duty, large capacity A4 binder with front and side pockets. Printed insert cards for easy identification. Comes complete with contents page and divider sheets. Colours - Black or cream to suit Micro.



£5.95

QuickShot II

£6-99

QL £10.95



KEMPSTON INTERFACES

Standard: £9.75

Tri-state: £12.45

Professional: £16.45

on-off switch

for spectrum

and spectrum



£4.95

Please send me:

..... Qty. £.....

..... Qty. £.....

..... Qty. £.....

My Computer is a Total: £.....



All prices include post & packing

Please make cheques payable to TEC Publications, 24 Victoria Rd, Bromsgrove, Worcs. B61 0DW.

Name:

Address:

Dealer Enquiries Welcome Tel (0527) 74567

Dragon

Dragon 32 with cassette recorder, 2 joysticks RS232 interface, s/ware, books mags, free Acetronic chess competition worth £40; all for £140. Tel: 01-402 9787.

Dragon software for sale many new titles like Screaming Abdabs, J. S. Willy Chambers, Dark Star and many more, send s&w to 17 Headington Close, Brighton Hill, Basingstoke, Hants or phone (0256) 56956.

Dragon 64K wanted. Will exchange for Spectrum 48K with Kempston centronics printer interface. Phone Geoff Davies Watford (0923) 27154 after 6pm.

Dragon 64, Dragonods, dual disk drive, software, incl. 039. flex. £250 ono, may consider split or swap, also dual 40 track drive for BBC £100. Tel: York 20994.

DRAGON 64, three months old, perfect working order, two joysticks, lightpen and over 50 software titles, complete kit, only £100 a bargain! No offers, will split. Phone Thanet 597659 evenings.

DRAGON S 64 & 32 both complete, Mannesman printer, Sanyo Datacorder, Rom Wordprocessor. Lots of utility, games, software. Phone for full list, over £950 for sale £350. Canvey 0268 684682.

For Sale

48K Spectrum with interface 1 and microdrive and 1 cartridge, no software hence £100 ono. Tel: 0602 306030.

Electron plus 3 disc interface and drive. As new. £130 s/w Rom expansion with view and graphics Rom £45. Tel: 061 223 3849 (after 1.00 pm).

520-ST I am looking for tips and advice on all aspects of ST programming. Please contact, Paul Taylor, 97 Shelley Street, Kingsley, Northampton NN2 7HZ or phone (0604) 71780.

ADVENTURE

HELPLINE

Upper Gumtree on Commodore 64. I can't get past the bull without being followed and killed. Neil Archer, 2 Most Green Avenue, Wednesfield, Wolverhampton WV11 30F.

Spideman on Spectrum. Where is Dr Octopus and where is Electro. Andrew D Angus, 39 South Road, Lierwick, Shetland, Scotland.

Fourth Protocol on Spectrum. I need help with Thorn in connection with medical security. J Rogers, 26 Harry Price House, Hartlebury Road, Oldbury, Warley, B69 1FO.

Return to Eden on Amstrad. How do I get into the city? I can offer help on Jewels of Babylon, Message from Andromeda and Snowball in return. David Carr, 'Thornlea', Oak Road, Mottram Saint Andrew, Macclesfield, Cheshire.

Magic Mountain on Spectrum. I asked for the Scroll as my one wish from the geni in the bottle but he didn't grant my wish and disappeared in a puff of smoke! What can I wish for he will grant? A R McDowall, 7 Third Avenue, Wellingtonborow, Northants.

The Adventurers Club Ltd



WE OFFER
The Master Adventurer
Trophy Competition



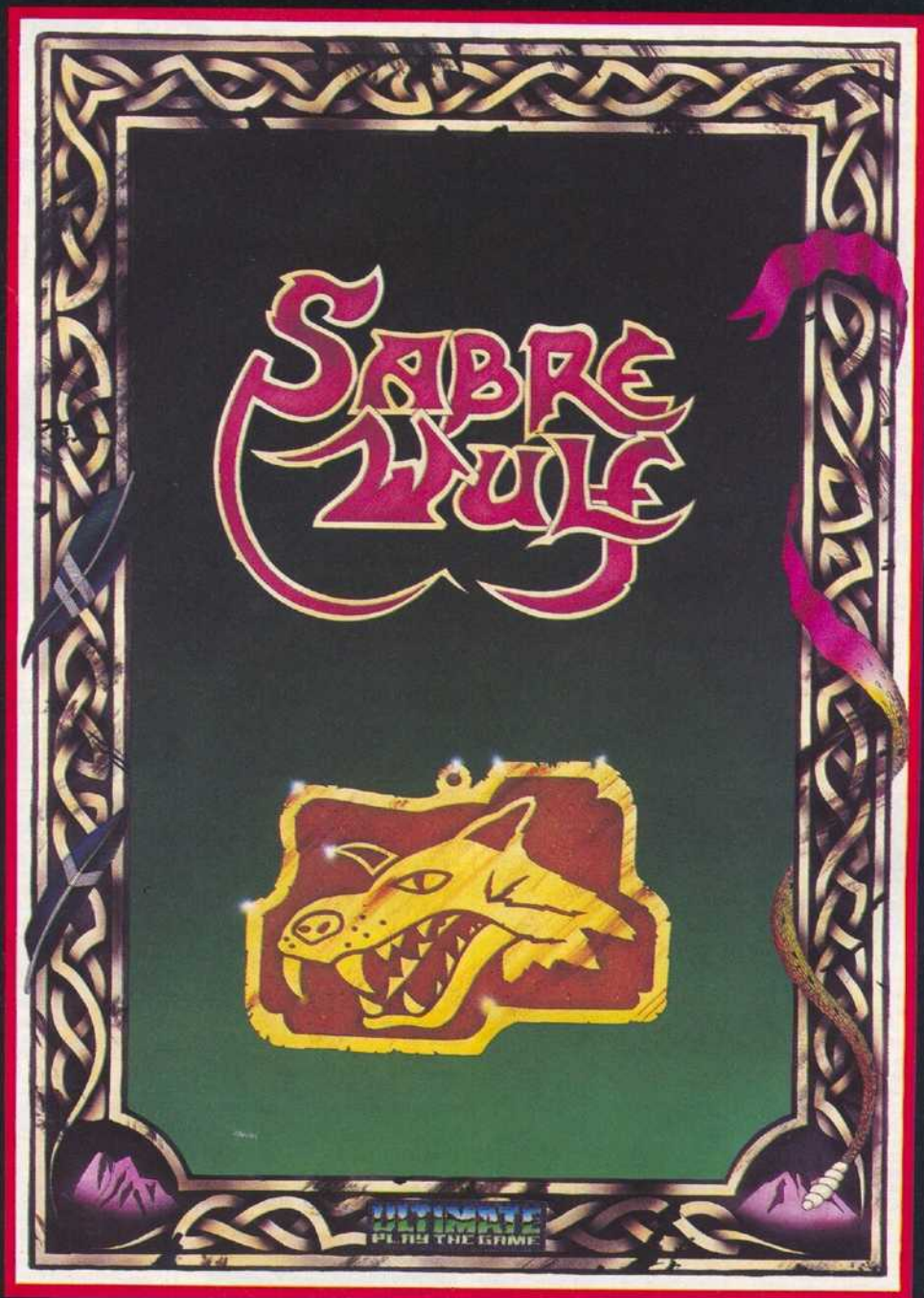
- * Monthly 20-pages Member's Dossier with reviews, tips, solutions, new releases etc
- * Unlimited help through our phone-in helpline
- * Discounted software
- * Contact colour, free swap/sell facilities
- * AND MANY OTHER SERVICES

£10.95
(UK ONLY)

SPECIAL OFFER
JOIN NOW TO GET £1
ACL CREDIT VOUCHER

Ring for our FREE leaflet or further information
64C Menelik Road, London NW2 3RH
Telephone 01-794 1261 PL458

AMSTRAD CPC 464



"SABRE WULF" recommended retail price £7.95 inc VAT.
Available from **ULTIMATE PLAY THE GAME**,
The Green, Ashby-de-la-Zouch, Leicestershire LE6 5JU
(P&P are included) Tel: 0530 411485



Charts

Amstrad

1	(4)	Finders Keepers	(Mastertronic)	£1.99
2	(-)	Raid!!	(US Gold)	£9.95
3	(10)	Frank Bruno's Boxing	(Elite)	£8.95
4	(8)	Soul of a Robot	(Mastertronic)	£1.99
5	(2)	Way Of The Exploding Fist	(Melbourne House)	£8.95
6	(7)	Nonteraqueous	(Mastertronic)	£1.99
7	(1)	Formula One Simulator	(Mastertronic)	£1.99
8	(3)	Grand Prix	(Software Invasion)	£8.95
9	(9)	Chiller	(Mastertronic)	£1.99
10	(6)	Locomotion	(Mastertronic)	£1.99

Atari

1	(-)	Super Zaxxon	(Datasoft/US Gold)	£9.95
2	(3)	Ballblazer	(Lucas/Activision)	£9.95
3	(1)	Chop Suey	(English Software)	£9.95
4	(5)	Blue Max 2001	(Datasoft/US Gold)	£9.95
5	(6)	Bouty Bob Strikes Back	(Big 5/US Gold)	£9.95
6	(-)	Ghost Chaser	(US Gold)	£8.95
7	(7)	Red Moon	(Level 9)	£9.95
8	(2)	Rescue On Fractalus	(Activision)	£9.95
9	(-)	Summer Games	(Epyx/US Gold)	£9.95
10	(-)	Theatre Europe	(PSS)	£9.95

BBC

1	(2)	Bored of the Rings	(Silversoft)	£6.95
2	(1)	Match Day	(Ocean)	£9.95
3	(-)	Strike Force Harrier	(Mirrorsoft)	£9.95
4	(4)	Revs	(Acornsoft)	£14.95
5	(3)	Beach-head	(Access/US Gold)	£9.95
6	(6)	Combat Lynx	(Durell)	£8.95
7	(2)	Jump Jet	(Anirag)	£9.95
8	(-)	Monopoly	(Leisure Genius)	£12.95
9	(7)	Elite	(Acornsoft)	£12.95
10	(-)	Knight Lore	(Ultimate)	£9.95

Commodore 64

1	(-)	Monty on the Run	(Gremlin Graphics)	£8.95
2	(1)	Who Dares Wins II	(Alligata)	£7.95
3	(2)	Summer Games II	(Epyx/US Gold)	£9.95
4	(6)	Paradroid	(Hewson Consultants)	£7.95
5	(4)	Frank Bruno's Boxing	(Elite)	£7.95
6	(5)	Way Of The Exploding Fist	(Melbourne House)	£8.95
7	(-)	Kix Start	(Mastertronic)	£1.99
8	(3)	Spy Vs Spy	(Beyond)	£9.95
9	(9)	Barry McGuigan's World Championship Boxing	(Activision)	£8.95
10	(-)	Beach-head II	(Access/US Gold)	£9.95

Spectrum

1	(-)	Monty on the Run	(Gremlin Graphics)	£8.95
2	(1)	Impossible Mission	(Epyx/US Gold)	£9.95
3	(2)	Way Of The Exploding Fist	(Melbourne House)	£8.95
4	(3)	Daley Thompson's Super test	(Ocean)	£6.95
5	(-)	Starquake	(Bubble Bus)	£9.95
6	(4)	Fighting Warrior	(Melbourne House)	£8.95
7	(6)	Fairlight	(The Edge)	£9.95
8	(8)	Graham Gooch's Test Cricket	(Audiogenic)	£8.95
9	(-)	World Series Basketball	(Imagine)	£8.95
10	(-)	Action Biker	(Mastertronic)	£1.99

Bubbling Under

ACE/Spectrum/C64/C16 (Cascade); Kennedy Approach/C64 (Microprose/US Gold); Monty On The Run/C64/Spectrum (Gremlin Graphics); One Man and His Droid/Spectrum (Mastertronic); Quest For the Holy Grail/Spectrum (Mastertronic); Soul of a Robot/Amstrad (Mastertronic); Robin of Sherwood/Various (Adventure International).

All figures compiled by Gallup/LeisureScope

Top Twenty

1	(-)	Monty on the Run	(Spectrum/C64)	Gremlin Graphics
2	(1)	Way of the Exploding Fist	(Spectrum/C64/Amstrad)	Melbourne House
3	(3)	Frank Bruno's Boxing	(Spectrum/C64/Amstrad)	Elite
4	(4)	Impossible Mission	(Spectrum/C64)	Epyx/US Gold
5	(7)	Formula One Simulator	(Spectrum/C64/C16)	Mastertronic
6	(6)	Finders Keepers	(Spectrum/C64/Amstrad/MSX)	Mastertronic
7	(8)	Daley Thompson's Supertest	(Spectrum)	Ocean
8	(13)	Action Biker	(Spectrum/C64)	Mastertronic
9	(-)	Starquake	(Spectrum)	Bubble Bus
10	(4)	Hacker	(Spectrum/C64/Amstrad/Atari)	Activision
11	(9)	Fighting Warrior	(Spectrum/C64)	Melbourne House
12	(14)	BMX Racers	(Spectrum/C64/C16)	Mastertronic
13	(6)	Who Dares Wins II	(C64)	Alligata
14	(15)	Graham Gooch's Test Cricket	(Spectrum/C64)	Audiogenic
15	(11)	Fairlight	(Spectrum)	The Edge
16	(-)	Chiller	(Spectrum/C64/Amstrad/MSX)	Mastertronic
17	(18)	Beach-Head	(Various)	Access/US Gold
18	(19)	Bored Of The Rings	(Spectrum/C64/BBC)	Silversoft
19	(-)	Nonteraqueous	(Spectrum/Amstrad)	Mastertronic
20	(5)	Now Games	(Spectrum/C64)	Virgin

Figures compiled by Gallup/LeisureScope

Readers' Chart No 49

1	(1)	Way of the Exploding Fist	(Spectrum/C64/Amstrad/Melbourne House)	The Edge
2	(2)	Fairlight	(Spectrum)	Ocean
3	(4)	Daley Thompson's Supertest	(Spectrum)	Imagine
4	(6)	Hypersports	(Spectrum/C64)	Beyond
5	(-)	Spy Vs Spy	(Spectrum/C64)	Virgin
6	(3)	Now Games	(Spectrum/C64)	Silversoft
7	(-)	Bored of the Rings	(Spectrum/C64/BBC)	Elite
8	(9)	Frank Bruno's Boxing	(Spectrum/C64/Amstrad)	Epyx/US Gold
9	(5)	Summer Games II	(C64)	Level 9
10	(7)	Red Moon	(Spectrum/C64/Amstrad)	Sublogic
	(-)	Flight Simulator II	(C64)	Ultimate
	(-)	Nightshade	(Spectrum)	

Winning Phrase No 49: "Willy shoots the tax man" From Craig Bono of Selby, N. Yorks.

Now voting on week 51 - £25 to win

Each week *Popular* is compiling its own special software top ten chart - compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever - but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above.

You can still vote in the chart without making up a slogan - but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 51 closes at 2pm on Wednesday November 13 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name	My top 3: Voting Week 51
Address	1
.....	2
.....	3
My phrase is:	



THE PROGRAM THAT PRINTS ITS OWN ADVERTS.....

POWERPRINT
NOTICES
LETTERS
BADGES
BANNERS
FLYERS
POSTERS
WINDSTICKERS
INSTANT TYPESETTING
IN DOZENS OF EXCITING STYLES.
POWERPRINT UP TO 10FT. X 6FT.
...EVEN ON ZX PRINTER.

FOR: * ZX PRINTER
 * ALPHACOM 32
 * FLOYD 40 *
 * TIMEX 2040

*LPRINT IZZ *RASHAN A B C *KEMPSTON 'E' WITH: *EPSON RX80 *STAR DP510
 *SHINUA JP-80 *SEIKOSHA GP80
 *QUEN-DATA DP 100 *IRGALINE 80
 *PRINT-THINK SUPPORTS
 *H-Z-RES SCREEN COPY.
 AND ONLY JOYSTICK THAT SUPPORTS
 *H-Z-RES SCREEN COPY USING EITHER
 *COPY' OR A USER *XXXX* COMMAND.
 (PLEASE STATE INTERFACE)

48K CASSETTE £7.99
48K MICRODRIVE £10.99
48K MICRODRIVE £10.99

BUTTERCRAFT
SOFTWARE
 10, WILSON AVE, WOODLEIGH, KENNELLY, YORKS, ENGLAND.

PRINTER OFFERS

Look at these deals on Centronics Printers. All prices are inclusive of receipted delivery, VAT and lead (please specify Amstrad, BBC, CBM 64, Oric, Dragon, Einstein or Memotech) for Spectrum or QL users we can supply with a suitable interface for an additional £20.00.

SMITH CORONA FASTEXT 80

Another **scope** purchase allows us to offer these **high quality** fully fledged **80 column, 80 cps dot matrix printers** at a stunning price. These printers were intended to sell for around the £250 mark. Our offer allows you to buy a **proper printer** for less than the cost of many thermal printers. **Friction feed** is standard and an optional tractor unit is available.

£129.95

Price includes Centronics lead to suit your micro.
 Or to suit Spectrum with Kempston "E" interface £149.95

TATUNG TP100

Bulk purchase allows us to offer this **highly popular, high specification printer** at an **unheard of price**. It is from the same manufacturer and of very similar specification to the Mannesman Tally M180+ and Shinwa CP480. This style of printer reputed to be the most popular in its class boasts many superb features. It uses square pins which avoids that "doty" look and gives a nicely formed up "near letter quality" print at 100cps. Friction and tractor feed are standard. It has full graphics ability. Take a look at these unretouched, actual size print samples.

Standard PICA text (100cps)
 PICA text emphasised
 True descenders on jpg etc.
 ELITE mode gives 96 columns
 CONDENSED mode gives 142 columns
 ENLARGED mode
 SUBSCRIPTS and SUPERSCRIPTS
 underlines nicely
Italics available in all modes

We are convinced that this printer offers the **best performance and value** in its class and at our unheard of price is a **BARGAIN.**

ONLY £189.95

Price includes Centronics lead to suit your micro.
 Or to suit Spectrum with Kempston "E" interface £209.95.

MICRO P MP165

This printer is a **very high specification** at an **unbelievable price**. It boasts 165 cps in draft mode and 70 cps in **near letter quality** mode, which is switch or software selectable. It is friction and tractor feed as standard has a **2K buffer** and is EPSON compatible (it even uses an EPSON ribbon). It can print in standard PICA 80 column mode or a variety of others from enlarged 40 column mode to condensed at 132 column. Italics are available in all modes. Normally this printer would be expected to sell at £300 plus we are offering it at our **ultra keen price inclusive** of printer lead to suit BBC, Amstrad, CBM 64, Oric, Dragon, Einstein or Memotech.

ONLY £249.00

Price includes Centronics lead to suit your micro.
 Or to suit Spectrum with Kempston "E" interface £269.00

COMMODORE OFFERS

STAR SG10C

A superb new 120 cps **COMMODORE ready printer** that offers many features including friction and tractor feed, CBM graphics, near letter quality mode etc. Packaged ready to use at the special introductory price of

ONLY £249.00

CBM 64 COMPENDIUM PACK includes CBM 64, C2N Datasette, Music Maker, Designer's Pencil and Adrian Mole book and game **ONLY £189.95**
CBM 128 in stock now **ONLY £259**
CBM PERIPHERALS PACK includes 1541 Disk Drive and MPS 803 Printer **ONLY £199.95**
CBM COMMUNICATIONS MODEM **ONLY £49.95**
CBM MPS 803 PRINTER unbelievable value **ONLY £119.95**
CBM 1541 DISK DRIVE **ONLY £149.95**
CBM COMPATIBLE DATA RECORDER **ONLY £29.95**
SUPERBASE 64 half price **ONLY £49.95**
MICRO SIMPLEX 64 normally £150 + VAT **ONLY £49.95**
CBM 1570 DISK DRIVE now available **ONLY £189.95**

SPECTRUM OFFERS

SPECTRUM + 48K complete with data recorder, joystick and interface, four US gold games and a holiday voucher **£139.95**
SPECTRUM EXPANSION SYSTEM **ONLY £89.95**
PROTEK 3 position switchable j/stick interface with **QUICKSHOT II JOYSTICK** **ONLY £19.95**

EGOOD MEGASAVE SOFTWARE

46 THE MALTINGS, STANSTEAD ABBOTS, WARE, HERTS

SPECTRUM 48K	OUR RRP PRICE	OUR PRICE	OUR RRP PRICE	OUR PRICE	OUR RRP PRICE
Secret Diary of A. Mole	9.95	6.95	Saboteur	8.25	7.85
Shadow of the Unicorn	14.95	12.95	Xcod	8.95	6.75
800 Quest for Tyres	7.95	5.95	Neverending Story	9.95	7.35
Impossible Mission	7.95	5.95	Galileo 40	3.95	7.35
Ketro Clone	7.95	5.95	Elite	14.95	10.95
Hacker	7.95	5.95	Beach Head II	7.95	8.25
Manport	9.95	7.10	Project Future	6.95	5.20
Bored of the Rings	6.95	5.10	COMMODORE 64/128		
Starquake	7.95	5.95	Who Dares Wins 2	7.95	5.95
Waterloo	9.95	7.25	Battle of Britain	9.95	7.25
Gyro Scope	7.95	5.95	Sabre Wolf	9.95	7.20
Borden's Shadow	9.95	7.50	Secret Diary of A. Mole	9.95	7.20
Fighting Warrior	7.95	5.95	Codename Matt 2	3.95	6.75
1 of the Mask	9.95	7.25	Donald Duck	7.95	5.90
D.T. Superstar	8.95	4.99	Summer Games 2	9.95	7.20
Back to School	6.95	4.20	Parasold	7.95	5.95
Fairlight	9.95	8.99	Super Zaxxon	9.95	7.30
Bounty Bob	7.95	5.35	Kennedy Approach	14.95	11.95
Critical Mass	8.95	6.75	Black Runner	8.95	6.75
Robin/Wood + £1 vchr	9.95	7.25	Winter Games	9.95	6.99
W Series Basketball	7.95	5.90	Crazy Comets	7.95	5.90
Ark of Yessod	8.95	6.50	Hacker	9.95	6.99
Internal Basketball	6.95	5.20	Spy vs Spy 2	9.95	7.20
Monkey on the Run	7.95	5.35	Placing Destruction Set 12	10.50	10.50
			Robin/Wood + £1 vchr	9.95	7.35

All prices include free fast delivery & same day despatch, when available. Personal callers welcome. 10% discount on all orders for seven or more tapes or in a value over £45. Cheques/P.O.s payable to EGD. For up to date news on available & Access orders ring (0822) 870588. Free Game included for orders over £18. P0626

AMSTRAD OFFERS

CPC 6128 Computer Green Monitor **ONLY £289.00**
Colour Monitor **ONLY £389.00**
SSA-1 Speech Synthesizer and Amplifier **ONLY £27.95**
Amstrad LP-1 Light Pen **ONLY £17.95**
Amstrad RS232 Interface Module **ONLY £47.95**
3in Disks suitable for all Amstrad models **ONLY £4.25 each**
OR buy a box of ten disks and get "EXCAT" free **ONLY £40.00**
DD1 Disk Drive **£159.00**

BBC OFFERS

CUMANA DISK DRIVES
CSX 100 (100K single) **ONLY £99.95**
CSX 400 (400K single, 40/80 switchable) **ONLY £114.95**
CDX 800S (double 400K, 40/80 switchable) **ONLY £209.95**
 — Other models available ring for prices —
TATUNG TMO1 RGB Colour Monitor with green screen option c/w **ACORN DFS KIT** **ONLY £199.00**
ACORN DFS KIT **ONLY £89.95**

EVESHAM MICROS
BRIDGE STREET, EVESHAM,
WORCS., WR11 4RY.
Tel: 0386 49641

All offers subject to availability

All prices include P&P and VAT. Send cheque, Postal Order of Credit Card No. Credit Card order accepted by phone. Callers welcome. Wide range of goods stocked. Trade enquiries welcome. European orders send price as advertised. Outside Europe £2.00 for Airmail. Mail order to Evesham Shop please.

MICRO CENTRE
1756 PERSHORE ROAD,
COTTERIDGE, BIRMINGHAM.
Tel: 021-458 4564

New Releases

HIGH LEVELS

Imhotep is Ultimate's latest Commodore 64 game and it leaves me baffled as to what, exactly, Ultimate think they are doing. *Imhotep* is an utterly unoriginal zap, zap game of the most repetitive kind.

It could easily have been written two or more years ago and Mastertronic would put it out for £1.99. Its single saving grace is that it is quite a well designed zap game and is addictive in a slightly irritating sort of way.

I'll spare you the plot; suffice to say you have to survive and battle your way over a scrolling landscape of pyramids and palm trees (at least to begin with). You are a little man on a flying vulture and the baddies are lots of other men of lots of other vultures. Your vulture is equipped with the usual laser blast device (do the NSPCA know?) with which to shoot down anything that moves.

There is some subtlety to the game in that different coloured vulture riders behave in different ways; some actively seek you out and must be blasted as soon as possible, others can safely be dodged and they will fly off



harmlessly.

The game quickly gets fiendishly difficult to play with an enormously high level of joystick dexterity and reaction speed being required. Though a challenge, this is also infuriating since no one in the office could figure out how to change the level.

We didn't get to see later screens despite a great deal of effort and concentration.

It seems fairly obvious that this game wasn't written by Ultimate in house - it doesn't have the Ultimate look and there is an author's credit on the opening screen. So what made them decide to release it? More particularly, what made them think they can charge £9.95 for something that is clearly not a top of the range game? I'm mystified. Maybe later levels get very much more sophisticated, but I doubt it.

It isn't terrible, but I strongly advise you not to just go out and buy this one because of the Ultimate name and the pretty box. See it in action first, then decide.

Program *Imhotep*

Price £9.95

Micro Commodore 64

Supplier *Ultimate Play the Game*

Ashby de la Zouch

NUMBER ONE

The Last V8 along with *Spellbound* and *Hero of the Golden Talisman* form the first three titles in Mastertronic's new MAD range. Games thought to have a bit extra than the usual titles and consequently put out at a higher price. Though one would hardly call £2.99 high.

The Last V8 is an unusual road race game with some astounding music from Rob Hubbard who seems to be capable of things on the Commodore 64 that enable people with a complete arsenal of DXTs, Fairlights and Linn Drums.

On this occasion the music sounds like 12 rock bands playing simultaneously with Keith Emerson on synthesizers and Mike Oldfield on guitar - it's very LOUD!

I like the plot of *The Last V8* as well; it has definite Moorcock/Mad Max touches - humanity has been decimated (as usual) and you are a scientist charged with the task of bringing together the remnants of mankind.

To achieve this you have constructed a car, a hybrid of old parts and new technology - the last V8.

The game involves steering the V8 around a series of landscapes - each section must be completed within a strict time limit (before the



occasional stray nuclear device drops and melts your car).

The skill of the game comes in the successful negotiation of the track.

The screen is divided into two sections - car instrument panels on the bottom two thirds and a scrolling aerial view of the track in the top third. Though the car is fairly tiny, the rest of the scrolling background is nicely detailed.

There are buildings, houses, trees and rivers, but careful design gives the required impression of an empty rather bleak landscape.

To begin with the game is fiendishly difficult; negotiating the first section of track within the time limit seems impossible - although you begin to realise that provided you do not actually bump into anything there are some shortcuts.

One final feature of the game, it has synthesized speech - quite good it is, too, though there are some words like radeaschen that take a while to figure out.

At £2.99 the game is already a steal, so hopefully everybody will buy this game rather than copy it. It makes quite a few full price titles look faintly ridiculous.

Expect to see it in the number one slot within the next three weeks.

Program *The Last V8*

Price £2.99

Micro Commodore 64/
Commodore 128

Supplier *Mastertronic*
8-10 Paul Street
London
EC2A 4JH

ALIEN TARGET

More goodies from Mastertronic with *Space Hunter* a space game that reminds me vaguely of *Codename Mat*.

Your task is to search through 15 star systems capturing food transporters before alien horrors can grab them and blast you to bits.

All this involves piloting the usual space cruiser at warp speeds through the usual clusters of little white dots and blasting at the usual fleets of triangular shaped alien space ships. The screen shows alien targets, range and a map of the local star system.

A battle computer also helps you blast things in an orderly fashion.

A new touch for this sort of game is a docking option where you can get beamed aboard various supply ships that are around.

In this mode the screen changes to a side view of the interior of the place you've entered and you get to hunt about looking for food - it looks rather like a boring maze game with big blocky graphics.

However, as unoriginal as the game is, it has the immediate virtue of being cheap and is as fun to play as many of its expensive rivals. Worth a look or two.



Program *Space Hunter*

Price £1.99

Micro Commodore 64

Supplier *Mastertronic*
8-10 Paul St.
London
EC2A 4JH

New Releases

EXTENDED

Pride Utilities' program, *System X*, is an extension to Amstrad Basic - it adds 30 new commands, some fairly trivial, but others very useful indeed.

All commands are preceded by a slash to tell the machine that these are not part of the usual command set.

Trivial additions include *Capoff* and *Capon* to switch the caps lock of or on within a program.

Interesting and useful commands include *Dpeek* to peek two locations at once, *Getchar* to read a character from the screen text position and place it in a string and *Motor* to switch the 464 cassette player on or off or other devices connected to the 464 remote plug.

Other commands cover moving sections of memory around and speeding up sav-

ing - both potentially very useful indeed. £9.95 is a reasonable price for this kind of utility.

Program *System X*
Price £9.95
Micro Amstrad
Supplier *Pride Utilities*
 7 Chalton Heights
 Luton
 Beds
 LU4 9UF

RETARDED

Bum. Breasts. Poo Poo. Hilarious eh? I can't find the right word to describe *Whoopsy* from Shards Software. Well actually I can but decorum restrains me.

The phrase 'utterly juvenile' does spring to mind, *Whoopsy* is the sort of game five year olds may well snigger over.

Here's the plot; you are a baby and over several screens, all of them almost exactly the same as one another, you must collect toys and dodge your mother.

Your mother can be distracted from her attempts to spoil your fun by the simple expedient of judicious use of your non-potty trainedness. Leaving your mark causes mummy to rush towards the offending mess and clear it up giving you time to grab some more toys.

It's a laugh a minute as you can imagine.

The graphics are OKish, mummy, in particular, is well designed.

Whoopsy is the end result of the sort of ideas very socially retarded programmers have after having drunk 12

Pick of the week

BIZARRE SCENARIO

The Pawn is an extremely sophisticated text adventure for the QL; sophisticated partly because of its long evocative descriptions of each location, but primarily because of its complex language parser which can negotiate the most fiendishly twisted English language sentences imaginable.

The program is capable of understanding, for example, instructions to take certain combinations of objects, eg, get all except the ring. If the objects are inside an object, eg, a bag, you can refer to the collected objects as the contents of the bag.

The provisional manual summarises what is possible in an instruction from a mythical adventure (I'd love to play it): Get all except the cases, but not the violin case, then kill the man eating shrew with the contents of the violin case. Remove the shrew's tail and use it to tie the pole and the noose together.

The Pawn also features other characters that you will wish to converse with, you can use both Ask (as in Ask the troll about the food) or Say (as in Say to Norman "how's your stone cladding"). Like Infocom

games it features basic commands like Brief/Verbose to toggle the length of text description and a Score which is constantly displayed.

Other clever options include a command Left n and Right n where n is the position of the margin - useful on TVs with slightly dodgy displays - and Contrast which lets you choose green and white text.

The plot is something I am reluctant to say much about except that it is not the usual po-faced stuff and instead features a bizarre scenario of warring drink manufacturers - well, I think that's what it all means. The actual point of the plot is one of the things you have to find out in the game.

The Pawn is an extraordinarily clever adventure and I think it is also one of the few QL programs that actually looks like it is using some sophisticated programming power and a 6800 series chip. Any QL owner even half interested in adventures should buy it.

Program *The Pawn*
Price £19.95
Micro QL
Supplier *Sinclair Research*

pints of Special Brew.

Supplier *Shards Software*
 Roycroft
 15 Linton Rd
 Barking
 Essex

Program *Whoopsy*
Price £6.95
Micro BBC

pride-utilities

AMSTRAD CPC 464/664/6128

SYSTEM X

OVER 30 NEW EXTENDED BASIC COMMANDS



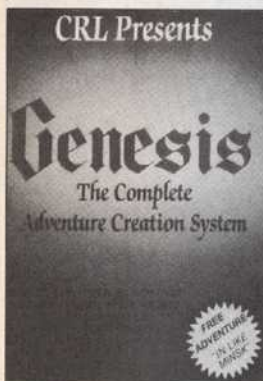
This week

Program	Type	Micro	Price	Supplier	Powerplay	S	BBC	£14.95	Arcana
Hi Rise	Arc	Amstrad	£7.95	Bubble Bus	The Last V8	Ad	Commodore		
Your Health	Ut	Amstrad	£7.95	Hisoft			64	£2.99	Mastertronic
AtariSmash Hits 4	Arc	Atari	£11.95	English	Golden Talisman	Ad	Commodore		
Elektraglidge	Arc	Atari	£8.95	English			64	£2.99	Mastertronic
K Ram	Ut	Atari	£29.95	Kuma	Henry's House 2	Arc	Commodore		
Devpac ST	Ut	Atari ST	£49.95	Hisoft			64	£6.95	English
6502 Macro Ass/					Imhotep	Arc	Commodore		
Diss	Ut	Atmos	£10.95*	R McLaughlin			64	£9.95	Ultimate
Computers at Work	Ed	BBC	£14.95	BBC	Little Computer				
The Mole Concept	Ed	BBC	£14.95	BBC	People	Ed	Commodore		
Uniformly Acc.							64	£14.95	Activision
Motion	Ed	BBC	£14.95	BBC	Rick Hudson	Ad	Electron	£9.95	Robico

*Plus you own cassettes or disc.

DIFFERENCES

The second adventure generator for the Amstrad in the space of two weeks - this time *Genesis* from Camel Micros,



marketed by CRL. It's always a problem taking a quick look at detailed programs like these - you really need to spend weeks at the keyboard before delivering a definitive report. However, when comparing the two packages, it's worth reporting on some first impressions.

Both are graphic adventure generators (with the addition of sound with *Genesis*), yet one is £9.95 (*Genesis* again); the Incentive offering being £22.95. . . that's one big difference. But there are differences. *Genesis* offers 50 Marker/Counter variables. . . Incentive's *Graphic Adventure Creator* offers almost eight times as many. Although the 'number of locations' statistic can be misleading, Camel estimate easily getting 80-100 locations

each with its own graphic in memory, while Incentive quote 200-300. The Incentive package also allows multiple input - *Genesis* does not.

This is not to say that *Genesis* is a bad buy - as the example program shows, (both produce code that runs independently of the creator by the way) it can produce perfectly acceptable results. I just get the feeling that GAC is probably the better of the two. However, if you find its cost prohibitive, *Genesis* is the one for you.

Program *Genesis*

Price £9.95

Micro Amstrad

Supplier CRL

CRL House
9 Kings Yard
Carpenters Road
London E15 2HD

STRIKE-BREAKER

Hi Rise is a game that, though lacking any elements to make you gasp, wow amazing, is so utterly playable and horribly addictive that all other considerations fade away. It is also, I think, one of the first good games to be released on the Amstrad first.

The plot is the usual arcade idiocy. You are Builder Bob, little alliterative person, and your task is to paint a series of scaffolds. Unfortunately, the striking workers (we are not told their names but Sam, Sonny, Simon, Sonja, Stan, Stanislaus and Solzhonitzyn are names that spring to mind) don't want you to break the strike and chase you around the scaffold. They can be stopped only by a

court injunction and sequestration of their union assets - well, actually that's a lie, you stop them by squirting glue in front of them.

What makes the game is the 3D design of the scaffold - it looks vaguely like *Ant Attack* with shading used to give a sense of thickness to the girders. It also means that you can't see what lurks behind every corner, adding to the difficulty of the game. There are 99 different scaffolds to master and I haven't even been able to complete the first one but next time . . . excellent fun.



Program *Hi Rise*

Price £8.95

Micro Amstrad

Supplier Bubble Bus

87 High Street
Tonbridge, Kent
TN9 1RX

TIME LIMIT

Every so often I get sent a

program from people hoping to make it big (whatever that means) and asking what I think of their first effort. *Steeplejack* is from a company called DigiTape, which describes it as 'not best nor cheapest but fun to play' and that's about right, I think.

The game involves destroying, section by section, a series of objects - the first screen is a British Rail train. This involves planning your path around the object to do the most damage as quickly as possible. You are under a strict time limit and it proves difficult not only because of the sheer amount of destruction you have to achieve, but also because inside each object there lurk various nasty objects that may leap out and zap you, forcing you to start all over again.

Graphically the game is no more than average but there is a touch of originality to the game and it is fun to play. At £2.99 it's a little more than standard budget price but not offensively so. It rates a look, anyway.

Program *Steeplejack*

Price £2.99

Micro Spectrum

Supplier DigiTape

Freepost
Swansea

Compiled by Graham Taylor

New Releases is designed to let people know what software is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to: New Releases, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

This week

Activision, 15 Harley House, Marylebone Road, London NW1, 01-486 7588. Arcana, Avondale Workshops, Woodland Way, Kingswood, Bristol, Avon BS15 1QH, 0272 6571. BBC, 35 Marylebone High Street, London W1M 4PP. Bubble Bus, 87 High Street, Tonbridge, Kent TN9 1RX, 0732 355962. CRL, CRL House, 9 Kings Yard, Carpenter's Road, London E15 2HD, 01-533 2918. Electric Dreams, 31 Carlton Crescent, Southampton, Hampshire SO1 2EW. English, Box 43, Manchester, M60 3AD, 061-835 1358. Hisoft, 180 High Street North, Dunstable, Beds LU6 1AT, 0582 696421. Kuma,

Kuma Computers, 12 Horseshoe Park, Pangbourne, RG8 7JW, 07357 4335. Mastertronic, Park Lorne, 111 Park Road, London NW8 7JL, 01-402 3316. Psion, 22 Dorset Square, London NW1 6QG, 01-723 9408. R. McLaughlin, 28 Farmfields Close, Sheffield S19 6LR, 0742 470094. Robico, 3 Fairland Close, Llantrisant, Mid Glamorgan, CF7 8QH, 0443 227354. Sigmasoft, 8 Pine Dale, Rainford, Merseyside, WA11 8DP. Superplant, Llangeitho, Tregaron, Dyfed, Wales SY25 6QG, 097423 223. Ultimate, Ultimate Play the Game, Ashby-de-la-Zouch, Leicester, LE6 5JV, 0530 411485.



Wider perspective

I remember my first meeting with an Apple II computer in 1979, a computer so elementary that it had an Integer only Basic in Rom, and required a plug in card to load the floating-point Applesoft Basic.

The first thing that happened to my Apple was that the top came off, revealing a large part of the workings, and nearly all the chips.

That experience is probably most easily shared these days by owners of BBC computers, who are forever having to take off the top to their machine, for this purpose or that.

Look at those chips arrayed for inspection, to see what types of chip they area, and where they were fabricated.

Opening up any microcomputer these days - regardless of manufacturer - is like taking a journey round the world. And in the journey, the developing countries seem to take over a large part of the itinerary.

There is no such thing any more as a completely British, US, or Japanese microcomputer. Fabrication of the final product may take place in Britain or wherever, but only small number of the components will actually be made in Britain.

Of the indigenous computer manufacturers in Britain, how many are anything other than computer assemblers? How much of the hardware for the final product is British? Often very little. I am not suggesting that we should ignore the British content of a product, rather I am saying that we ought to start examining that part of the content of a product which comes from the developing countries of the world and asking ourselves how the micro companies can produce their models at such seeming incredibly low prices.

How many people who contributed to charity appeals for the dying in Africa also bought a microcomputer because it was exceptional value for money? How many of these people who bought such a computer realise the often appalling conditions for the mainly female 'sweatshop' workers in some developing countries?

The attitude of computer assemblers is rather short-sighted (as well as being rather selfish).

Many of the problems in Africa, say, are due to the way in which aid from the developed world (East and West) is given. Most ends up as military aid, but another popular form of aid is to develop (cheap) manufacturing, which in turn is used to help to subsidise industries in the developed countries. The debt problems of the Third World can be directly attributed to worthless aid and exploitation of cheap labour. Yet, Governments and governing bureaucracies will not act to help the needy in any real sense - for example, the present farce concerning Britain and the EEC's reasons for not giving aid.

How can the individual help? In South Africa black workers have been exploited in a similar manner, and public pressure in the West caused many multinational companies to start paying living wages to black employees (how well it worked in practice is another question). This was not action at the level of governments, but action on firms to act in a humane manner.

I would suggest that any microcomputer company which trades anywhere in the world also has duty to do its utmost to ensure that the workers in those countries, producing good for our exploitation, should be paid a minimum wage.

The prices we pay for our micros in the high street would have to increase, but given the profit margins on computers, there would not be a vast increase in price for the end user.

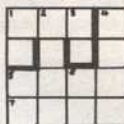
It is time micro firms began to look beyond profits to a wider perspective which includes concern for the individual, be that individual in this country or thousands of miles away.

Boris Allan

Grid values

Puzzle No 182

In this Crossnumber puzzle can you find the value of A, B, and C that fit into the grid?



ACROSS

- B²
- B * C **
- B³

DOWN

- B
- A³
- A + B
- A * B
- C - 1
- A

Solution to Puzzle No 177

The numbers which satisfies the five given conditions is 933157.

```

10 LET N=2
20 LET S=N*N
30 R=S+1
40 P$=STR$(R)
50 FOR Q=2 TO LEN(P$)
60 Q$=MID$(P$,Q,1)
70 IF Q$="0" OR Q$="2" OR Q$="4" OR Q$="5"
   OR Q$="8" THEN GOTO 120
80 NEXT Q
90 X=R
100 GOSUB 130
110 IF T=1 THEN PRINT X
120 N=N+2:GOTO 20
130 T=0
140 FOR F=3 TO SQR(X)+1 STEP 2
150 IF X/F=INT(X/F) THEN 180
160 NEXT F
170 T=1
180 RETURN
  
```

From condition ii) we know that the required value is one more than a perfect square and so the program generates successive squares. As this value must also be prime, the square must be even so as to produce an odd value when 1 is added. Therefore the number to be squared must also be even. Each value is tested, firstly to determine that all digits are odd (Lines 40 to 80), and then to test for primality. The simplest (though not the shortest) method is by trial division (Lines 130 to 180).

All values that pass the primality test are printed out.

Winner of Puzzle 177

The winner is J P Mensink of Ryde, Isle of Wight, who receives £10.

Rules

The closing date for Puzzle 182 is December 4.

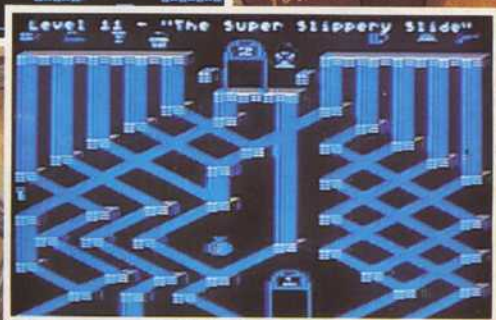
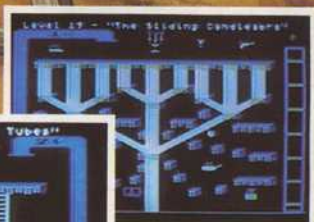
The Hackers



BOUNTY BOB STRIKES BACK!

**THE MOST
ADDICTIVE
PLATFORM GAME
YET DEvised**

**Twenty-five all-new levels
Multi-channel music
Automatic Demo Mode
Level 'Warp' ability**



Available for

AMSTRAD

ATARI 64

SPECTRUM

BBC



Bounty Bob™ returns in this new and exciting follow-up adventure to Miner 2049er.™ This time around it's even tougher than before and Bob needs your help more than ever to guide him through the mine. The mutant organisms have multiplied and over-run the mine entirely, making it extremely difficult to survive the hazards of the underground passageways. (Using the high-powered special equipment in the twenty-five new caverns is Bob's only hope of achieving his objective of securing the mine and defeating the plans of the evil Yukon Yohan!™)

**COMMODORE 64/128 - ATARI -
AMSTRAD - BBC**

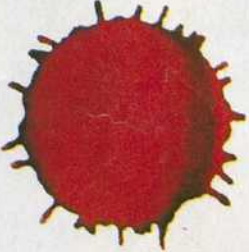
CASS £9.95 DISK £14.95

**SPECTRUM 48k £7.95
CASSETTE**

All screens as seen on Commodore 64



HEALTH WARNING: BOUNTY BOB CAN SERIOUSLY DAMAGE YOUR SANITY!



THE

YOUNG

ONES

Extra copies

ly fish

**SPECTRUM
AMSTRAD
MSX
COMMODORE**

£7.95

Orpheus Ltd., The Smithy, Unit 1, Church Farm,
Hatley St. George, Nr. Sandy, Beds. SG19 3HP
Tel. Gamlingay (0767) 51481/91 Telex 817117 ETHGEN G



Please send me _____ copies of THE YOUNG ONES @ £7.95
P&P FREE (UK only); £2.00 P&P overseas.

Name: _____

Address: _____

Please make cheques or money orders payable to Orpheus Ltd
and send together with your order form to:
Orpheus Ltd, The Smithy, Unit 1, Church Farm,
Hatley St. George, Nr. Sandy, Beds. SG19 3HP.

