40 Roac C

POPULAR Computing WEEKLY

Only 40p.

4-10 October 1984

It's the best selling weekly

Vol 3 No 40

Oric sues Prism

TROUBLED micro manufacturer Oric Products International has served a writ against its distributor, Prism, for £4m damages.

Oric claims Prism has broken the contrct between the two companies: "Prism was to become Oric's primary distributor, but Prism failed to meet the obligations of that agreement. The £4m refers to loss of sales suffered by Oric," said an Oric spokesman.

Prism will be responding to the writ. "We utterly refute everything that Oric are saying and our solicitor has already filed a response," said Bob Denton, Prism's group managing director.

Bob Denton of Prism

"One problem with Oric has been the price cutting of the Atmos in stores. It was selling at £99 in Green's at a time when Oric's price to us was £115."

This is the second writ that Oric has served in the last two months. In August, they filed a countersuit against KMP, its advertising agency, after KMP sued for £200,000 for non-payment of debts. Oric's countersuit was thrown out of court.

Four million pounds is reported also to be the estimated amount of Oric's total debts at present to creditors.

Terry Shurwood, Oric's sales manager, last week denied reports that Oric had been refinanced.

continued on page 5 ▶

US games invasion continues

MORE American software is on its way to Britain for Christmas, this time from a new company, Ariolasoft.

Set up as a sister company to Arista Records and Ariola, it will be headed by Ashley Gray and Frank Brunger, formerly of CBS.

Ashley Gray

So far Ariolasoft has reached agreement with two of the biggest and fastest-growing software companies — Electronic Arts and Broderbund — to market their titles in the UK and Europe.

"At first we will be working on repackaging the titles and putting them on cassette, so they will first be available for the Commodore 64," explained Ashley Gray. "Where feasible, we will later be converting to the Spectrum, and eventually looking at the MSX machines. However, no firm conversion schedules have yet been fixed."

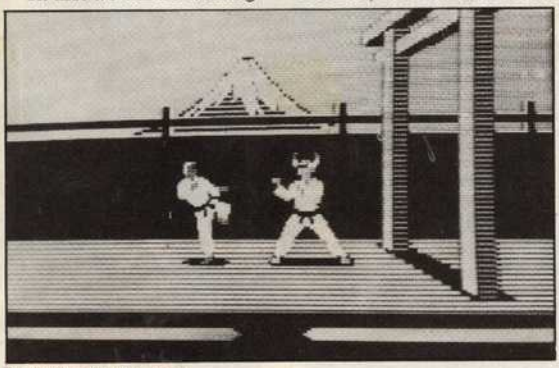
Nor has the order in which the games will appear, but Ashley said, "We will not be bringing them all out at once, as there are 60 titles in total, but our target launch date is set for early November, in order to have the first titles available in volume for Christmas.

"Prices for the range aren't fixed yet, but they will be at the upper end of the price spectrum, in line with the sort of prices US Gold, for instance, are doing."

In the long term, Ariolasoft plans to gain licences from other US companies, and, in turn, market its own British titles in the States.

● Ariolasoft will not, however, be the only company marketing Broderbund games in this country. Software Projects is

continued on page 5 ▶



Broderbund's *Karateka*

New micro for Sinclair?

IT now seems possible that Sinclair will launch a new low-cost home computer next year.

Despite strong rumours that Sinclair is planning an expanded Spectrum machine with built-in microdrives and a proper keyboard, the new games computer is more likely to be 68008-based cut-down version of the QL without microdrives but with 128K Ram, sprites and a cassette port.

Sinclair has publically committed itself to the 68000 chip series as "the chip architecture we have chosen for the next decade".

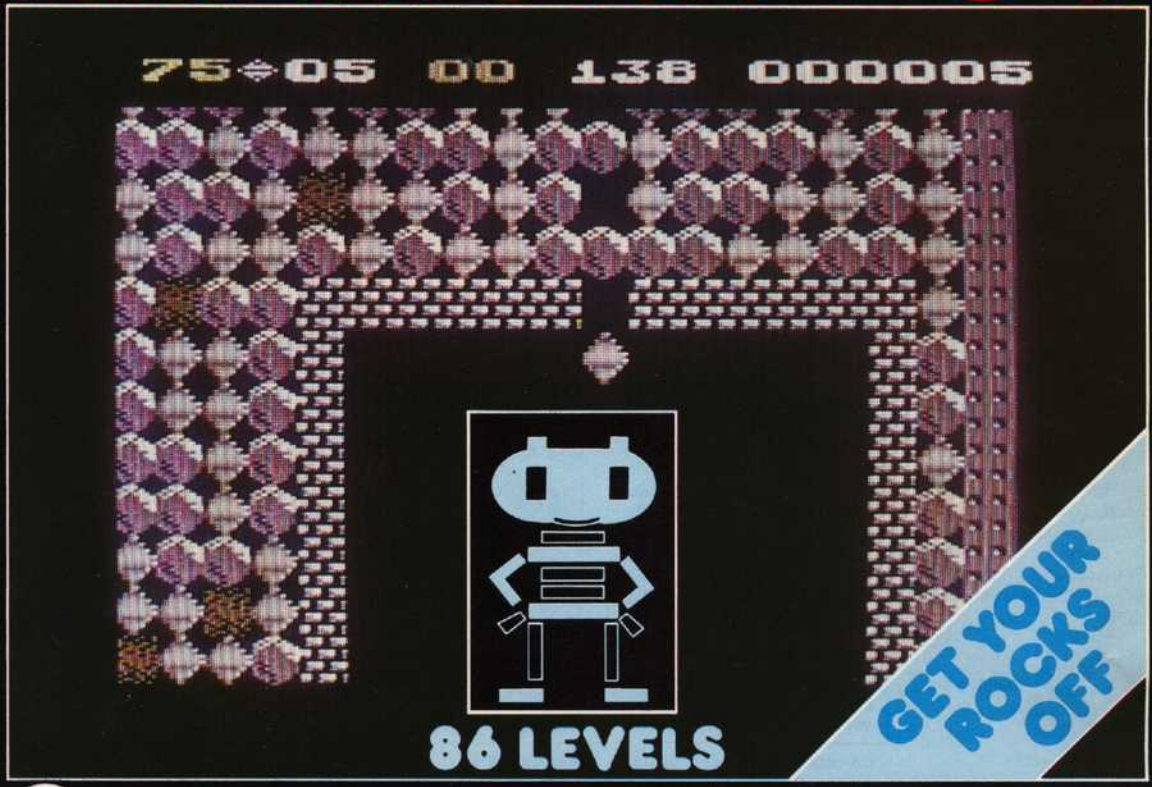
Nigel Searle, the company's managing director, last week denied any plans to launch an

continued on page 5 ▶

INSIDE ❯ COMPUNET ❯ CANNIBAL ISLAND ❯ C16 REVIEW ❯

BIGGER, BOULDER, More BEAUTIFUL

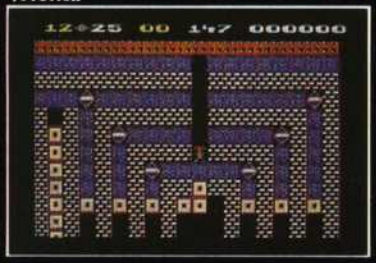
AMERICAN NO 1.

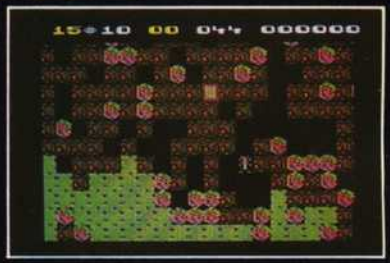


JOYSTICK

BOULDER dash

commodore 64





CASSETTE 8·95 DISK 10·95

I wish to pay by cash/cheque/Postal Order/Access.
To ACCESS: –
I authorise you to debit my Access Account with the amount of £
My ACCESS No. is
Name (as on Access card)
Cardholders address
Signature

State Soft Ltd,
Business & Technology Centre,
Bessemer Drive, Stevenage,
Hertfordshire SG1 2DY.
Phone (0438) 316561.

Statesoft

Really Something Else

POPULAR Computing WEEKLY
Vol 3 No 40

View

The micro industry is no longer the licence to print money that it was once thought to be.

The devastating US price war in home computers has proved conclusively — if any were needed — that the business is now ruthlessly commercial and that profit margins have been slashed to the point where nobody can make enough money to stay in business.

In this country profits on microcomputer hardware are now — with the curious exception of Acorn's BBC machine — pared to the bone. The same thing is happening in the software prices.

Oric has more or less given up on the British market. Camputers has gone. And it is left — in the low price range — for Commodore and Sinclair to slug it out.

Can the companies afford to carry-on chopping away at each other like this?

The answer is probably no. As just one indication of how much the price-war in the UK is beginning to hurt Sinclair last week announced disappointing profits for the year ending in March.

The most serious implication of the price-war is the uncertainty it generates in people's minds about the long term future of many of the micro companies.

Those who are most uncertain and nervy now are precisely those who were the keenest supporters 12 months ago — the banks and the venture capital companies.

Where before the word 'micro' acted as a magic key to release a deluge of support it now has the reverse effect.

If you are thinking of setting up a new little venture I wouldn't mention to your bank manager that it has any connection with micros or new technology, if I were you.

Presents...

News > *Alien* on the micro > ex-Imagine in court **5**

Street Life > Graham Taylor talks to the man who put the Gremlins into graphics **12**

Star Game > Destroy the enemy's headquarters in a life or death mission on the Amstrad — *Helicopter Fury* **14**

Hardware Review > Commodore's networking system Compunet > Brother M-1009 dot matrix printer **17**

Machine Review > Andy Pennell puts the Commodore C16 through its paces **20**

Software Reviews > Alligata's *Son of Blagger* for the BBC B **23**

Spectrum > R A Jones's program gives your Spectrum a simple word processor **29**

The QL Page > The *Search/replace* facility restored by Martin Amess's program **34**

Commodore 64 > Mathematical buffs will find this fool-proof long multiplication facility invaluable **39**

Dragon > Give your games the sound effects they deserve. Brian Cadge shows you how **43**

BBC and Electron > *Cannibal Island* is a simple adventure game which can be easily adapted by Glynne Evans **48**

Best of the Rest > Letters 7 > Open Forum 51 > Microradio 51 > Arcade Avenue 52 > Baud Walk 53 > Adventure Corner 57 > Peek & Poke 59 > Diary 66 > Top Ten, This Week 67 > New Releases 68 > Ziggurat, Puzzle, Hackers 70

Futures...

A challenging word game for the Amstrad . . . auto-run your programs on the QL . . . and a statistics program on the BBC.

Editor David Kelly **News editor** Christina Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Editorial secretary** Geraldine Smyth **Advertisement manager** David Lake **Assistant advertisement manager** Alastair Macintosh **Advertisement executive** Tom Watson **Classified executive** Diane Davis **Advertising secretary/production** Lucinda Lee **Administration** Theresa Lacy **Managing editor f137Duncan Scot Publishing director** Jenny Ireland.
Published by Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2R 3LD. Tel 01-437 4343 Telex 296275 **Typeset by** The Artwork Group, 55-63 Goswell Road, London EC1, in association with Ink on Paper Ltd **Printed by** East Midland Litho Printers Ltd, Oundle Road, Woodston, Peterborough PE2 9QR **Distributed by** S M Distribution, London SW9, tel 01-274 8611, telex 261643. © Sunshine Publications Ltd 1984.

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

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

IS YOUR COMPUTER WATCHING YOU?

October's Your Computer finds out who's really in control, you or your micro.

It discusses the controversial film "1984", and discovers what politicians think about computers. There's even a program that could get your micro into Mensa.

Plus reviews of the Commodore 16 (which you can win), and of the Commodore Plus 4 and the latest software for the CBM 64 and Spectrum.

All in October's Your Computer. Out now.

YOUR COMPUTER
ELECTRICAL-ELECTRONIC PRESS
A DIVISION OF BUSINESS PRESS INTERNATIONAL LTD

Alien–game of the film

ARGUS Press Software has acquired the rights from Twentieth Century Fox to produce a computer game based on the film *Alien*.

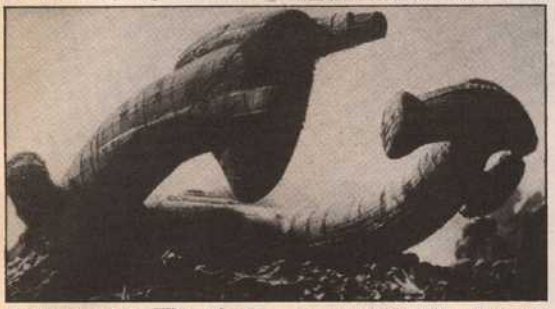
"*Alien* will form part of our *Mind Games* series," explained Peter Holme, Argus's marketing manager. "The player controls the commander of the space ship, but must manipulate and interact fully with the other characters in the game, who all have their own individual personalities.

"You must save the ship and crew from the alien; the rating at the end of the game depends on whether you succeed, or let the beast get to Earth and destroy the human race.

"Because of the changing personalities of the characters in the game, the play will be quite different each time. For instance, if someone picks up a weapon, their confidence factor automatically increases."

The team of programmers for *Alien* includes people who used to work for failed Liverpool company Imagine Software, although Peter was unwilling to name names.

The *Alien* computer game will be released in November to coincide with the relaunch of the film. It will be published simultaneously for the Spectrum and Commodore 64 and will cost £8.99.



● Argus has also recently completed the takeover of another Liverpool software house, Starcade. Its latest release, *Savage Pond*, for the BBC and Atari, is to be converted for the Spectrum, and relaunched by Argus.

"Starcade is a father and son team, who wanted to concentrate on programming, rather than spend time on administration, so the sale to Argus was advantageous for them," said Peter.

Sinclair

Continued from page 1

upgraded Spectrum machine to sell for around £150: "Such a machine would bring us into head-on competition with the Commodore 64.

"Also it would encourage software authors to write for an expanded Spectrum and Z80 chip at a time when we want to focus attention on writing for the QL and 68008."

US games

Continued from page 1

set to release Broderbund's *Loderunner* on Commodore 64 next week, at £9.95.

"*Loderunner* has 150 screens, and also incorporates a games designer, in that the player can alter the parameters of the game. Graphically it's not going to bowl anyone over, but it has an enormously addictive quality," said Software Projects sales manager Colin Stokes.

"As far as I am aware, our contract with Broderbund is non-exclusive, and we are currently negotiating with them to market the top US title *Raid on Bungling Bay* in Britain as our next release."

Tune in to Channel 8

CHANNEL 8 Software has launched a MIDI music keyboard interface — Midisoft 1 — to run with the BBC, Commodore 64 and the Sinclair QL.

Also included in the package is software enabling the user to create polyphonic sequences in segments and chains, edit scores from staves displayed on screen, and dump music scored to a printer.

"With Midisoft 1, you can use the computer's memory to store tunes in real time and manipulate them. You can correct the timing on your playing, or alter the tempo if you wish," said Channel 8's chairman Norman Perriam. "Connecting to the micro means that you can control up to 16 synthesisers at any one time.

Midisoft 1 should be available in November, priced at £189.95.

Details from Channel 8, 51 Fishergate, Preston, Lancs.

● The QL monitor produced for Sinclair by MBS Data Efficiency will sell for £299, not £199 as reported in last week's issue.

Ex-Imagine directors in court

AT a committal hearing at Liverpool High Court, ex-Imagine Software directors Dave Lawson and Mark Butler were ruled to be in contempt of court, after failing to attend a previous hearing.

Lawson and Butler had been instructed under a court order to release former Imagine shareholder Steve Blower from the personal guarantee on Imagine's £100,000 bank overdraft.

The High Court judge said, however, that it would not benefit Steve Blower if Lawson and Butler were sent to prison or fined for contempt. The order to remove Blower's name still stands.

"This dispute about the overdraft has been going on since February 10th this year, when I reached an out of court settlement with Dave Lawson and Mark Butler to pay me damages and take all possible steps to release me from the guarantee," said Steve Blower. "They did not do so."

The overdraft, at Lloyds Bank in Water Street, Liverpool, is jointly guaranteed by all three men, each of whom are personally responsible for the full amount if one or both of the others cannot meet their share of the debt.

After Imagine went into liquidation in July, Steve Blower obtained the court order instructing Lawson and Butler to remove his name within three days.

"They failed to do that, and then did not attend the court hearing when the three days were up," Steve Blower said. "The judge said that the court order was still in force and that Lawson and Butler must pay all the legal costs. With interest, the overdraft is now around £112,000. I am now talking to my solicitor to see what we can do next."

Oric

◀ **continued from page 1**

"Oric will continue as it is, without any cash injection," the Oric spokesman confirmed.

Two Oric directors, Barry Muncaster (managing) and Paul Johnson (technical) have, however, refinanced Tansoft, the software company which has written extensively for both Oric machines. The two, between them, have acquired Tansoft for an undisclosed sum.

Dungeons & Dragons from PSS

Swords and Sorcery is the next major release from Coventry based software house PSS.

The program is a Spectrum adventure combining text, 3D and maze graphics and many Dungeons and Dragons role-playing games type features.

The playing screen is divided into three sections, a bottom text screen, a 3D view of a maze and a top view of part of the same maze. As in role-playing games your 'character' develops in skills and experience over a number of games.

There are a variety of objectives within the game including treasures to be found and quests to be undertaken. All the characters are animated in high resolution 3D. The game is due for release in October.

How to teach your Micro a thing or two

Thousands of home computer owners have yet to discover their microcomputer's potential to help with many of the problems and decisions that come up every day in the home or office.

Perhaps you have always promised yourself that you would teach yourself programming, but have been put off by manuals which seem to assume a lifetime spent studying computer science and mathematics. Maybe you have looked at other computer books, but have yet to find one which is free of unnecessary jargon or where the program examples bear some relevance to real life and not space invaders.

Relax, your search is over.

The 'Learn BASIC' tutorials from Logic 3 are the latest development of a teaching method pioneered by Professor Andrew Colin and perfected by testing on 3 generations of students at Strathclyde University. The 'Strathclyde Method' has been translated into 8 languages and used by over 300,000 microcomputer users.

'Learn BASIC' is a jargon free, step by step, course in computer programming, which explains everything clearly in English, not computer talk. In a matter of hours you will be writing your first programs.

'Learn BASIC' is designed for people who want to keep abreast of the computer age, for people who realise that understanding computers is a key to future success at work, at school, and as a parent.

Get 'Learn BASIC' and teach your micro how to be useful! (Available from major branches of W.H.Smiths, Boots, Laskys, Greens, John Menzies and better computer shops nationwide.)

Please send me more information about your:-

(Tick appropriate box)

'Learn BASIC' tutorials ☐
Logic 3 Spectrum Club ☐
Logic 3 Commodore Club (64 and VIC owners only) ☐

I have a:-

Sinclair Spectrum ☐
Commodore 64 ☐
Acorn Electron ☐
BBC Microcomputer ☐
Dragon ☐

Name .....
(BLOCK CAPITALS PLEASE)
.....
.....

Address .....
.....
..... (Postcode) .....

LOGIC 3

To Logic 3 Ltd., FREEPOST, Mountbatten House, Victoria Street, Windsor SL4 1HE

Letters

Bounds of decency

Your magazine has finally passed the bounds of decency.

I refer to the latest Automata 'advertisement' (September 20 issue).

I realise a full-page ad pulls in a lot of revenue and that a lot of people find Automata funny — but I do not consider putting babies with defects in a mincer to be funny. Perhaps if adverts for software copiers were shown with funnies about cancer you would print them too.

Yours disgustedly,

David Riley
28 Malvern Avenue
Spalding
Lincs

Automata is surely using in its advert the word 'defect' in the context of 'at odds with ideologically a totalitarian state'.

If we felt that an advert was genuinely in unacceptably bad taste then it would not be run, regardless of any revenue considerations such as those to which you refer.

Supply and demand

The idea of low-cost software helping reduce piracy is ridiculous. If a pirate can make a living with normally priced software sold at around half the price to his customers, then the copies of cheap software can equally be sold for half their price. This may not be a vast sum per cassette, but the lower-priced cassettes sell in larger volumes.

Where an individual or a club may purchase one £6 piece of software and copy that, they can buy three at £2 and copy all these.

I feel the only way at present to prevent piracy is to produce cheap Rom software. MSX, (if it catches on) being cassette based, will help the pirates by giving them a market on around a dozen machines with one piece of software. The way reports have it, software houses are happy to convert software for MSX, and do not seem to be worried on this score.

Finally, I have just purchased an Amstrad, and I am very pleased with it except for the price tag of £8.95 for software conversions? The shops are, I would say, cashing in — everything for the Amstrad is £8.95. I very much want to buy software for my machine, but I will not pay these prices.

If the old supply and demand theory applies, as far as I am concerned, there will be no demand from me until the prices fall.

K A Prince
22 Hanger Rd
Tadley
Hants

White to blue

I was typing haphazardly on the keyboard of my Commodore 64 when suddenly the cursor turned from white to blue and the machine locked up.

Knowing that I had not touched the control key I set about trying to find a cause. After much experimentation I discovered that the effect could be obtained by holding down the Commodore key together with the ; and = keys.

Is this a new Commodore 64 bug?

Sarah Cotton
Studely
Warwickshire

Muddled letter

Somewhere between my source file and your typesetting, my letter printed in the September 13 issue became rather muddled.

In the second paragraph, I meant to say that *Goto* statements are superfluous except in error trapping, and that structured programs are easier to write, debug and follow.

Peter Bhagat
Clare College
Cambridge

Manual intake

Newcomers to more advanced computing who have bought the Amstrad CPC464 — and there must be thousands of them by now — may be interested to know that in the instruction manual in Chapter 8 (the concise reference guide) there is an omission.

Namely the keyword *Mod*. This is not listed in the chapter at all. The *Mod* keyword gives the remainder from a division sum. For example, 10 Mod 3 gives the answer 1 since 10 – 3 *3 = 1.

P J Long
3 Victoria Place
Bedminster
Bristol

Talk to each other

You deserve full marks for your QL page as it makes your magazine the only one worth reading! *QL User* and others don't get off first base when they fail to publish such stunning programmes as Richard Snowdon's utility for writing and editing programs on the word processor!

Having received my QL fresh from the factory with its new Rom I am anxious (like many others I suspect) to see what it can do when connected to a Spectrum. Please can you tell me if any interface is required as Sinclair, by supplying a network lead, imply this is not so. However, all attempts to get a QL and Spectrum to talk to each other have failed for me so far. There must be a magic combination of commands that will stop me tearing my hair out. Can someone help?

J C Cabrie
96 St Kingsmark Avenue
Chepstow
Gwent

Special Tape Offer—Week 3

Only £1.50

plus 25p post and packing

Nightmare Planet Adventure

on the Commodore 64

All you have to do to get your copy of the Nightmare Planet text adventure written by Mike Grace is cut out the coupon below, fill it in and send it off with a cheque or postal order (made payable to Sunshine Publications) and the three special vouchers from this and the two previous weeks to: 'Nightmare Planet Offer', Popular Computing Weekly, 12–13 Little Newport Street, London WC2R 3LD. The offer is open only to residents of the UK and Eire and the offer closes on November 4. Please allow 28 days for delivery.

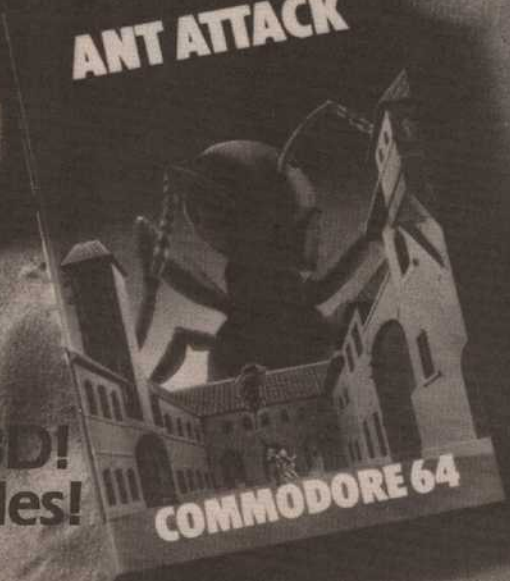
Name .....
Address .....
.....
.....

PLEASE NOTE: If you are sending off for last week's Hewson Consultants discount tape offer, please mark your completed coupon with the machine for which you want the program.

3

They came from out of the desert to the lost city of Antescher and discovered the HORROR of the ANTS...

ANT ATTACK 3D



Real Moving 3D!
4 Camera Angles!

Explore the City, Battle the Ants,
AVAILABLE SOON FROM

QUICKSILVA

COMMODORE 64
Turbo load £8.95
SPECTRUM
48K £6.95

KoalaPad™ TouchTablet

JUST PICTURE IT!

JUST PICTURE IT - BEING ABLE TO DRAW YOUR OWN HIGH RESOLUTION GRAPHIC DESIGNS ON YOUR COMPUTER SCREEN WITHOUT HAVING TO WRITE A PROGRAM . . . !

Well, now you can - with the amazing Koala Pad from Audiogenic!

The Koala Pad touch tablet provides the direct link between you and your screen! It plugs into your Commodore 64 and lets you paint directly onto the screen with a selection of brush sizes and a choice of 16 colours and 16 shades from your software palette.

But that's just the beginning - because every Koala Pad package includes the incredible Koala Painter software which makes it child's play to . . .

- *Fill outlines with a colour!*
- *Draw straight lines!*
- *Make frames!*
- *Draw circles!*
- *Plot radians from a point!*
- *Move objects around!*
- *Copy shapes!*
- *Create mirror images!*
- *Zoom in on an area!*
- *Swap shapes between two pictures!*
- *Save your pictures to disk or tape!*

The program is controlled entirely from the tablet by moving a cursor arrow around to the different menu option. An optional Programmers Guide is also available to tell you how to incorporate Koala Pad pictures into your own programs.

Now you don't have to be an experienced programmer to produce real high resolution graphics on your computer - the Koala Pad from Audiogenic makes it as easy as a pencil and paper. Just picture it!

Available with Cassette or Disk software for the commodore 64

From all good computer shops - or direct from Audiogenic - just fill in the coupon!

Please send me ..... (QTY) Koala Pad Disk/Cassette*. I enclose cheque/P.O. for .....

Commodore 64 Disk or Cassette £79.95†

THE KOALA PAD IS A PRODUCT OF

Koala™ Technologies Corporation

†Price subject to change without notice

*Please charge to my Access/Barclaycard/Trustcard account no:

*Delete/complete as applicable

Signature

Mr/Mrs/Miss

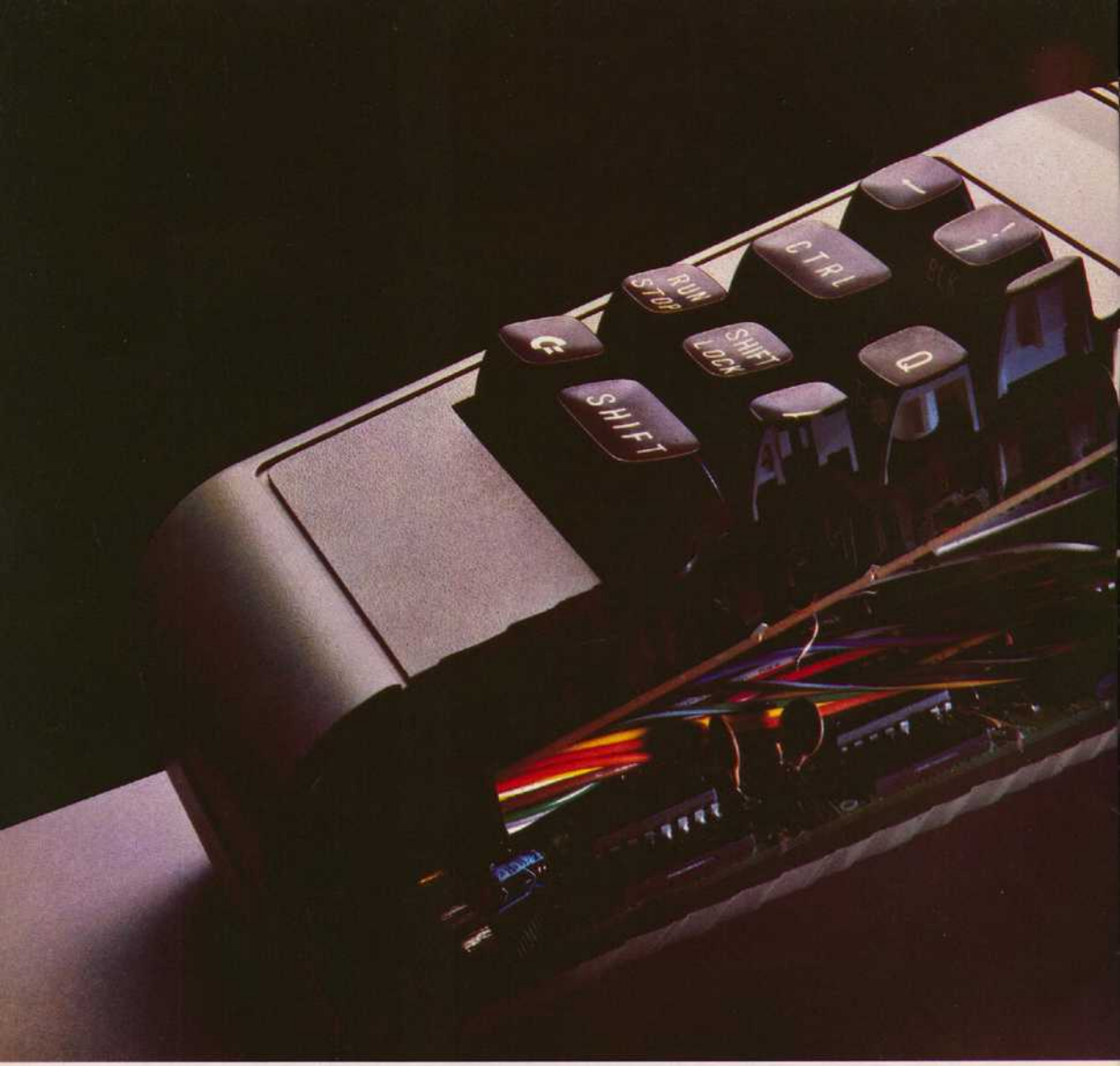
Address

PCW 1

Exclusive distribution in U.K. and Eire by

Audiogenic LTD

P.O. BOX 88, READING, BERKS.



Are you only using

To only play games on a Commodore computer is like asking Albert Einstein to work out the square root of four.

The computer's brain barely ticks over.

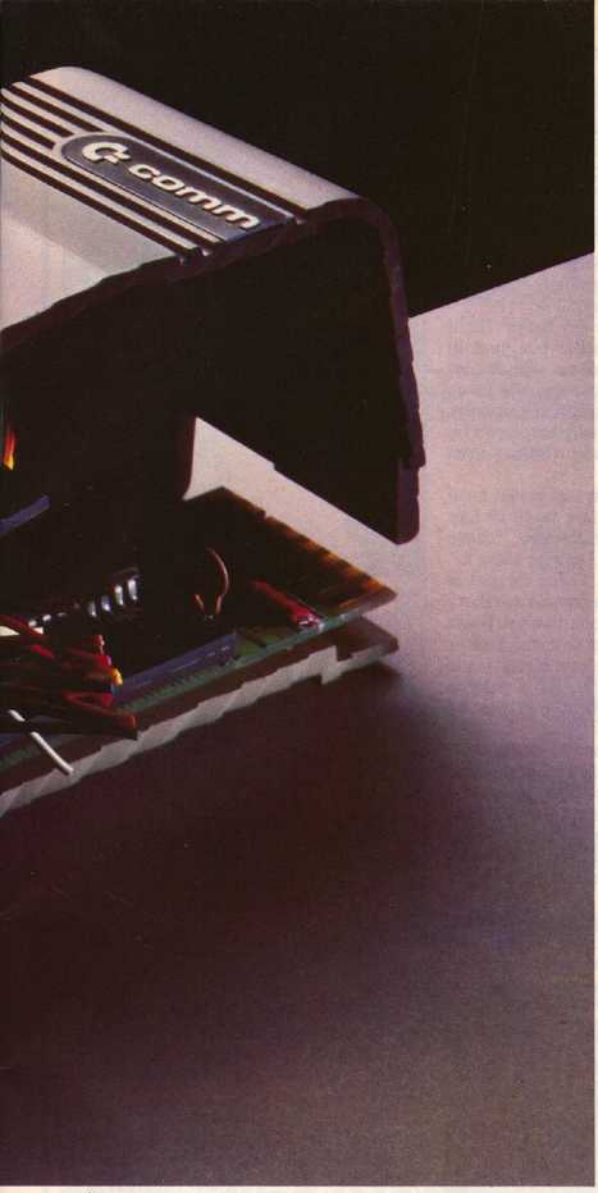
To really stretch it, you need more interesting software programs. For example, record keeping, interactive education, stimulating adventure games or word processing.

And for those you need peripherals.

Like a Commodore disk drive, a really fast storage and retrieval system with a vast memory.

Or a Commodore cassette unit, the inexpensive way of loading and storing programs.

For those who like the idea of text and graphics being more alive and having greater clarity than on a TV, there's the Commodore colour monitor.



COMMODORE MPS801 ☐
Dot matrix printer. £230.00. Tractor feed. Print speed: 50 characters per second.

COMMODORE MPS802 ☐
Dot matrix printer. £345.00. Friction feed for standard paper. Print speed: 60 characters per second.

COMMODORE MCS801 ☐
Dot matrix colour printer. £399.99. 7 colours including black. Print speed: 38 characters per second.

COMMODORE DPS1101 ☐
Daisy wheel printer. £399.99. Letter quality print on standard paper. Print speed: 18 characters per second.

COMMODORE 1520 ☐
Printer plotter. £169.99. For charts and graphs. Print speed: 14 characters per second.

COMMODORE 1541 ☐
Disk drive. £229.00. 170K memory. 5¼" diskette.

COMMODORE 1531 ☐
Cassette unit. For Commodore 16 and Commodore plus/4.

COMMODORE 1530 ☐
For Commodore 64. £44.95 each.

COMMODORE 1701 ☐
Colour monitor. £230.00.

JOYSTICKS ☐
(prices from £7.50)

PADDLES (£13.50) ☐

Details correct at time of going to press.

1/10th of your brain?

And for hard copy, there are our four printers and a printer plotter. These will preserve on paper–in colour, black and white, chart form, graphs or text, the fruits of all your labour.

Finally, for more exciting games, there are joysticks and paddles.

So use your brain. And make sure you use all of your computer's brain.

FOR FURTHER INFORMATION, TICK ONE (OR MORE) OF THE BOXES ABOVE AND SEND TO THE COMMODORE INFORMATION CENTRE, 1 HUNTERS ROAD, WELDON, CORBY, NORTHAMPTON NN17 1QX. TEL: CORBY (0536) 205252.

NAME

ADDRESS

PEPCY1084

commodore

Shooting a line

***Graham Taylor** talks to Tony Crowther of Gremlin Graphics*

If you own a Commodore 64 the chances are you'll have at least one game by Tony Crowther.

If you don't recognise the name you'll certainly recognise the style. Tony's games are distinguished by striking graphics and incredible attention to detail.

These features coupled with sheer arcade pace and addictiveness have ensured that games like *Loco, Blagger, Potty Pigeons* and now *Suicide Express* are sure chart winners.

Tony is an unconventional programmer in many ways. Although young enough to be designated a whizz kid his attitudes towards the industry and to his own work are matter of fact — dismissive, even. His comments mix a kind of amiable arrogance and genuine modesty in about even measures.

Starting with the Vic20 at the age of 16, Tony travelled the well-worn route of learning Basic and eventually graduating to machine code. With much in common between the Commodore machines the move to the more powerful Commodore 64 when it arrived was inevitable.

The first Commodore program to achieve any fame was *Blagger* from Alligata Software. I cautiously suggested that — with its platforms and jumping — it was a little like *Manic Miner*, expecting a stream of denials and illustrations of all the ways in which it was absolutely the opposite. I didn't get it.

"Well, one of my friends saw *Manic Miner* and liked it and suggested I should do something similar — so I did." *Blagger* may have taken a mild slugging from critics crying 'rip-off' but it was still a good game to play and it made the charts.

Tony produced other games for Alligata, *Killer Watt, Son of Blagger* and *Loco*, the latter two released recently enough to ensure that he is probably still more associated with that company than his current one, Gremlin Graphics.

It's a situation Tony is not happy about since he left Alligata earlier this year in some acrimony. "They hit me with a new contract during my employment with them. Basically it meant that I would only receive royalties whilst I was actually employed by them — I'm not getting any royalties from Alligata now."

Although it's a situation that would have most people gnashing their teeth in fury Tony seems fairly indifferent. "There doesn't seem to be much I can do about it."

On to happier matters. Those amazed at the detail in Tony's games assume that there must be some magic secret to it all. Some brave new programming wonder greater than all that have gone before. Surely, at the very least, a quarter of a million pounds worth of Vax development system must be involved somewhere?

"Oh no, there are no special techniques at all, really," says Tony. "I just jot a few things down and put them into the computer." I tried again. Surely all that smooth scrolling and pixel by pixel detail requires something well, exotic and special. "It's all user-defined graphics," said Tony.

User defined graphics didn't have the same ring to it as modal vectors. Did Tony mean regular, common or garden, user-defined graphics as used for nasty blob things supposed to be bombers and nasty square things used to make blocks in skyscrapers in endless versions of *Blitz?* He did.

"With sprites you are limited in what you can do by the number of sprites, I only use them for foreground effects. All the detail in the background consist of vast numbers of user-defined graphics which are relatively scrolled. Using characters to scroll as a screen instead of the high-res screen costs only 1K." That's it.

Relative scrolling is a technique where there are 'levels' of background which scroll in the same direction but at different rates. "I got the technique from *Forbidden Forest.*"

With the puffing steam train in *Loco* and the 'sweet' plot of *Potty Pigeon* in which your pigeon has to collect twigs for its nest, I wondered if Tony had a deliberate policy of producing non, or at least less, violent games.

"Well, I suppose they are a bit cuddly but with *Potty Pigeon* in particular I was just messing about and that's what turned up. Actually I'm getting a bit bored with those sort of games with a large playing area, I fancy doing a shoot-them-up where you get to kill things — I've never done one." Sigh . . .

What about the cartoon-quality of the graphics found in his games? At times the display could almost be mistaken for a film — did he have any special artistic background? "No." Another theory in tatters. "Well — I do have an A level in technical drawing."

I ask Tony what other games he admires. "I don't look much at other games."

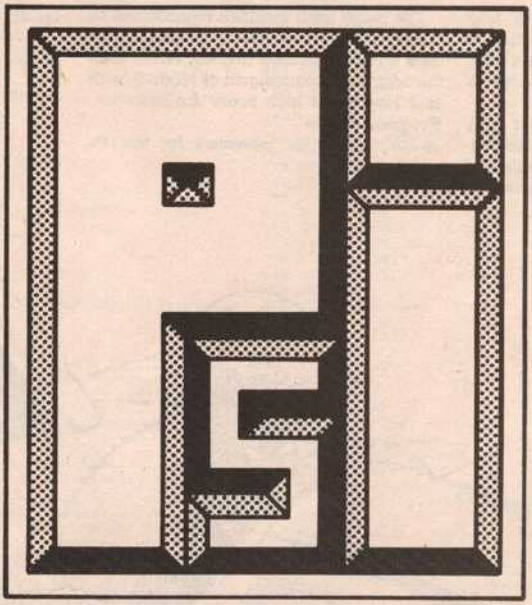
What is Tony working on now? "Well, with *Suicide Express* I think I've pushed the Commodore 64 to its limit in terms of the style of game people associate with me — I'll be doing some things for the BBC, I think I can get games out of it at least as good as those on the Spectrum. I'll use mode five — I'm used to working in three colours."

He's right about *Suicide Express* and not only in terms of technical achievements — the whole game has an atmosphere, a sense of speeding relentlessly through the night, that makes it really special.

If I'd mentioned this to Tony he'd probably have said it was because there was a lot of dark blue and black in it.

BEYOND

CHALLENGING SOFTWARE



WARRIOR

ORIGINALITY **10** • ORIGINALITY **10** • ORIGINALITY **10** • ORIGINALITY

GRAPHICS **10** • GRAPHICS **10** • GRAPHICS **10** • GRAPHICS **10** • GRAPI

SOUND **10** • SOUND **10** • SOUND **10** • SOUND **10** • SOUND **10** • SO

LASTING INTEREST **10** • LASTING INTEREST **10** • LASTING INTEREST

ANIMATION **10½** • ANIMATION **10½** • ANIMATION **10½** • ANIM

OVERALL **11** • OVERALL **11** • OVERALL **11** • OVERALL **11** • OVERALL **11** •

COULD IT EVER HAPPEN?

Helicopter fury

Test your nerve and skill in a version of *Bomber* written for the Amstrad by David Channon

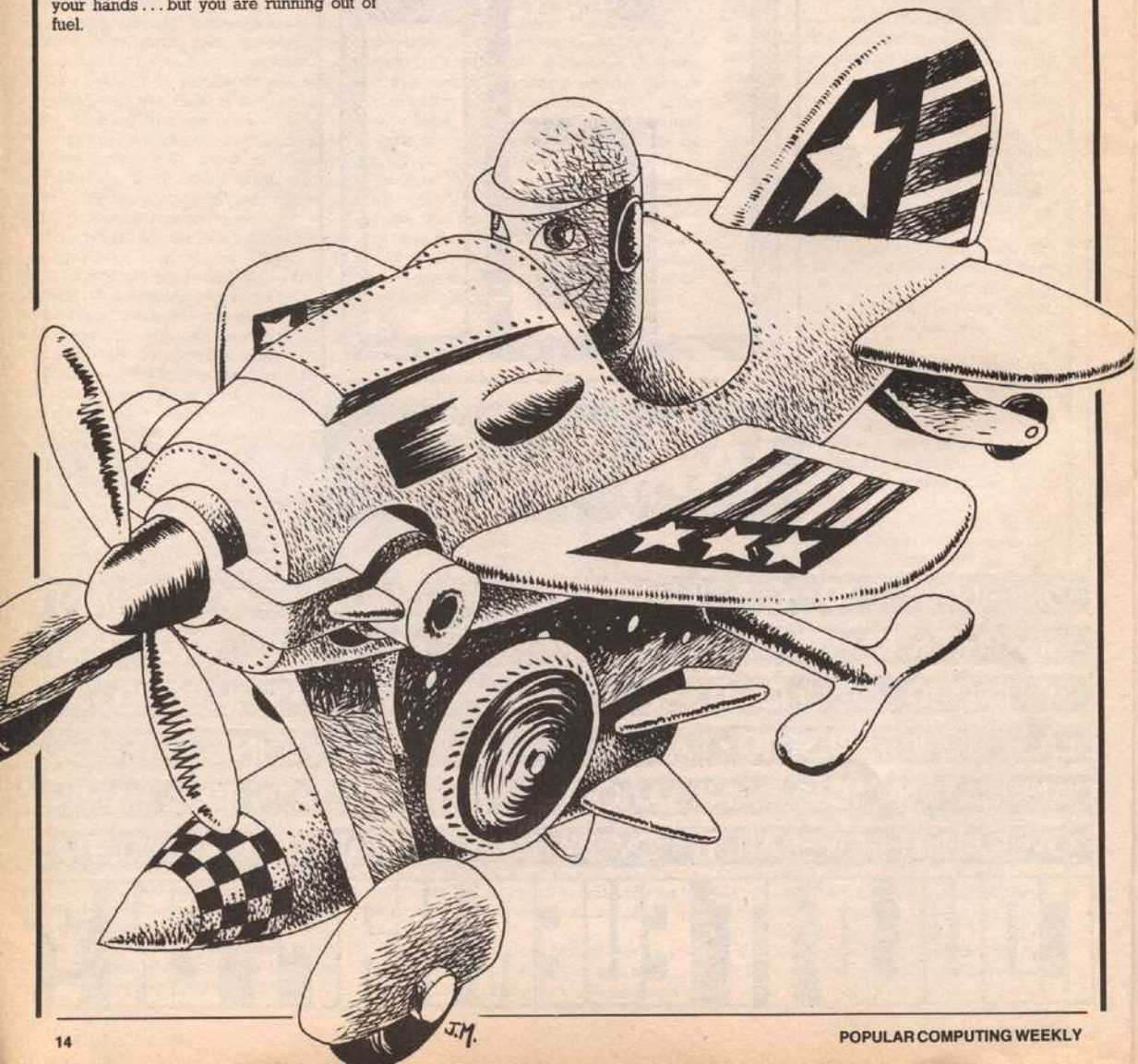
You are a budding helicopter pilot entrusted with the vital mission to raze the enemy headquarters (disguised as a seemingly innocent city) to ground.

You have already battled your way through the enemies defences, and suddenly realise that the outcome of the battle is in your hands . . . but you are running out of fuel.

The game itself includes realistic use of colour and all three sound channels. It also uses a high resolution display, rather than the normal 20 column grid of Mode 0, with skill levels and high score facilities.

Program Notes

10–110 Helicopter movement for title sequence.
120–210 Bomb drop and letter print for title sequence.
220–360 Instructions.
380 Sets rotor blade sound.
400–510 Main loop for ship movement as well as key and joystick read routine.



```
10 REM BOMB DROP
20 REM Program for Amstrad CPC 464 by David Channon
30 REM title screen
40 ENV 1,1,1,3:ENT 1,100,-2,3
50 INK 1,0:INK 0,14:BORDER 14:RESTORE:MODE 2:CLS:GOSUB
790:TAG  60 ENV 2,100,1,1:SOUND 4,200,-32767,7,2,0,5
70 FOR n=0 TO 650 STEP 4
80 MOVE n,300
90 CALL &BD19:PRINT CHR$(254);CHR$(255);
100 IF n=200 OR n=216 OR n=232 OR n=248 OR n=312 OR
n=328 OR n=344 OR n=360 THEN GOSUB 130
110 NEXT
120 TAGOFF:LOCATE 1,21:FOR n= 0 TO 16:PRINT CHR$(7):NEXT
:MOVE 200,376:DRAWR 166, 0:GOTO 230
130 FOR f=290 TO 200 STEP -2
140 MOVE n,f
150 SOUND 2,400-F,3,7
160 CALL &BD19:PRINT CHR$(252);
170 NEXT
180 MOVER -8,0:PRINT CHR$(238);:CALL &BD19:MOVER -8,0:;
READ a$:PRINT a$;
190 RETURN
200 DATA B,O,M,B,D,R,O,P
210 REM Instructions
220 WHILE INKEY$<>"":WEND
230 LOCATE 1,4:PRINT"You are a budding helicopter pilot
 with a mission to destroy an enemy city  ,"
240 WHILE INKEY$<>"":WEND
250 PRINT:PRINT"which intelligence tells you is no city
at all but a headquarters for designers"
260 PRINT:PRINT"of a revolutionary new nuclear device
which,could be a turning point of the war."
270 PRINT"You are running out of fuel and descend
gradually , with enough fuel to enable "
280 PRINT:PRINT"you to rise twice in each game."
290 PRINT:PRINT"A crash into a building is fatal, and
only the total destruction  of the city "  '
300 PRINT:PRINT"would prove a successful mission...."
310 PRINT:PRINT:PRINT"Pressing the large 'ENTER' key or
moving the joystick up will allow you to rise.";
320 PRINT:PRINT"Press the  'SPACE BAR' or normal JOYSTICK
 fire button to drop you bombs but"
330 PRINT:PRINT"remember guidance computers will only
 allow one bomb in the air at a time..."
340 PRINT:PRINT"PRESS 'SPACE BAR' TO CONTINUE."
350 IF INKEY$=" " THEN 360 ELSE 350
360 SOUND 1,400,25,7:INK 1,24:INK 0,1:BORDER 1:GOSUB
1160:GOSUB 870:GOSUB 660
370 TAG
380 ENV 2,100,1,1:SOUND 4,200,-32767,1,2,0,2:REM chopper
 blade envelope
390 uf=2
400 FOR v=389 TO 20 STEP -16
410 FOR h=0 TO 600 STEP 16
420 MOVE h,v
430 CALL &BD19:PRINT CHR$(254);CHR$(255);
440 IF TEST (h+65,v-16)<>0 THEN 950
450 IF f1=0 AND INKEY(47)=0 THEN f1=1:GOSUB 1040
460 IF f1=0 AND JOY(0)=16 THEN f1=1:GOSUB 1040
470 IF uf<>0 AND (INKEY(18)=0 OR INKEY(72)=0) AND v<357
THEN MOVE h,v:PRINT"  ";
:v=v+16:MOVE h,v:PRINT CHR$(254);CHR$(255);:uf=uf-1
480 IF f1=1 THEN GOSUB 1080
490 NEXT h
500 MOVE h,v:PRINT"  "
510 NEXT v
520 SOUND 132,0:REM stop blade envelope
530 REM Game won
540 SOUND 1,200,100,7,1,1
550 MODE 2
560 ps=er+ps:eo=eo+2:IF eo>20 THEN eo=20
570 IF ps>hs THEN hs=ps:INK 1,26:PEN 1
580 PRINT"Congratulations you achieved a score of ";ps
590 IF hs=ps THEN PRINT:PRINT:PRINT:PRINT"You even made
the highest score so far."
600 f1=0:z=1:er=ps:PRINT:PRINT:PRINT"You are now to be
 up another try so be ready to improve your score....."ips=0
610 PRINT:PRINT:PRINT:PRINT"Press 'SPACE BAR' to
continue your game."
620 WHILE INKEY$<>"":WEND
630 IF INKEY$<>" " THEN 630 ELSE GOSUB 870:GOSUB 790:GO
SUB 660:GOTO 370
640 STOP
650 REM Set up buildings
660 MODE 0
670 FOR n=3 TO 19
680 a=INT(RND*5)+eo
690 PEN INT(RND*12)+4
700 FOR f=25 TO a STEP-1
710 LET ps=ps+1
720 LOCATE n,f
730 PRINT CHR$(253)
740 NEXT f
750 LOCATE n,a-1:PRINT CHR$(250):PEN 3
760 NEXT n
770 RETURN
780 REM Graphics
790 SYMBOL AFTER 249
800 SYMBOL 254,4,14,4,7,3,0,0,0
810 SYMBOL 253,127,107,107,127,107,107,127,127
820 SYMBOL 255,254,16,124,246,254,124,73,254
830 SYMBOL 250,8,28,62,127,107,107,127,127
840 SYMBOL 251,0,97,107,127,107,107,127,127
850 RETURN
860 REM Set up pen colours
870 FOR c=4 TO 15
880 INK c,(c+10)
890 NEXT c
900 INK 1,16:INK 2,17
910 INK 3,9
920 RETURN
930 REM Crash
940 WHILE INKEY$<>"":WEND
950 SOUND 132,0:SOUND 1,RND*600,10,7,1,1,5:SOUND 2,RND*27
,20,7,1,1,7:SOUND 4,RND
*600,80,7,1,1,3
960 MOVE h+20,v:PRINT CHR$(238):CHR$(238);
970 SPEED INK 1,1:BORDER 15,16:FOR p=0 TO 100:INK 0,
RND*26:NEXT p
980 TAGOFF:INK 0,1:BORDER 1:CLS
990 MODE 2:INK 1,26:PEN 1:IF z=1 THEN PRINT"You weren't so
lucky this time so your score remains":er
1000 f1=0:IF z=0 THEN PRINT:PRINT:PRINT:PRINT"You need
some practice you were killed so achieve a score of 0"
1010 PRINT:PRINT:PRINT:PRINT"Press 'SPACE BAR' to start
another game."
1020 IF INKEY$<>" " THEN 1020 ELSE 1030
1030 z=0:ps=0:GOTO 360
1040 REM Boab drop
1050 g=h:b=v-16
1060 IF g/32<>INT(g/32)THEN g=g+16:t=b-280:c=b
1070 PLOT 620,620,3:MOVE g,b:PRINT CHR$(252);:b=b-16:MOVE
g,b+24:PRINT CHR$(32);
:PLOT 620,620,1:RETURN
1080 LET b=b-8:PLOT 620,620,3:MOVE g,b:CALL &BD19:PRINT
CHR$(252);:MOVE g,b+16:PRINT CHR$(32);:PLOT 620,620,1:SOUND
 1,c,5,7:c=c+1
1090 IF b<=0 OR b<=t THEN f1=0
1100 IF TEST (g+10,b-16)<>0 AND b<=t THEN PEN 3:MOVE g,b:
PRINT CHR$(251);:RETURN
1110 IF TEST (g+10,b-16)<>0 THEN SOUND 2,c+200,5,7
1120 IF b<=0 THEN MOVE g,b:PRINT CHR$(32);:SOUND 2,100,
10,7,0,0,5:FOR p1=1 TO 3:OUT &400,4:OUT &100,39:FOR p=0 TO
10:NEXT p:OUT &400
,4:OUT &100,38:FOR p=1 TO 8:NEXT:NEXT
1130 IF b<=t THEN MOVE g,b:PRINT CHR$(32);
1140 RETURN
1150 REM Difficulty
1160 MODE 2:CLS:PRINT "Enter the difficulty you wish to
attempt (1-3) ?";
1170 k$="":WHILE k$="":k$=INKEY$:WEND
1180 IF k$="1" THEN eo=20:SOUND 1,200,25,7:GOTO 1230
1190 IF k$="2" THEN eo=15:SOUND 1,400,25,7:GOTO 1230
1200 IF k$="3" THEN eo=10:SOUND 1,600,25,7:GOTO 1230
1210 er=0
1220 GOTO 1170
1230 CLS:PRINT"Press 'SPACE BAR' to start"
1240 IF INKEY$=" " THEN 1250 ELSE 1240
1250 SOUND 1,400,25,7:CLS:RETURN
```

GOODBYTE

SPECTRUM

GAME	RRP	OUR PRICE
DALEY THOMPSON DECATHLON	6·90	5·25
BEACHEAD	7·95	5·99
WHITE LIGHTNING	14·95	10·50
SHERLOCK HOLMES	14·95	10·50
HOBBIT**	14·95	9·99
HULK	9·95	7·99
MUGSY	6·95	5·50
SABRE WULF	9·95	7·99
LORDS OF MIDNIGHT	9·95	6·99
JACK & BEANSTALK	5·95	4·50
MICRO OLYMPICS	5·95	4·75
PSYTRON	7·95	5·99
CODENAME MAT	6·95	4·99
SCUBA DIVE	6·95	5·25
GILLIGANS GOLD	5·90	4·50
OTHER OCEAN ONLY	5·90	4·50
JET SET WILLY	5·95	4·50
FRANK N. STEIN	5·95	4·50
WAR OF THE WORLDS	7·95	5·99
TORNADO LOW LEVEL	5·95	4·60
TRASHMAN	5·95	4·40
ALL IMAGINE	5·50	2·99
FIGHTER PILOT	7·95	5·99
NIGHT GUNNER	6·95	5·25
PENETRATOR	6·95	5·50
MILLIONAIRE	5·50	4·25
WORLD CUP	6·95	5·99
CLASSIC ADVENTURE	6·95	5·50
VALHALLA	14·95	9·99
FOOTBALL MANAGER	6·95	5·25
H.U.R.G	14·95	9·99
MONTY MOLE	6·95	5·50
FULL THROTTLE	6·95	5·75
MATCHPOINT	7·95	6·75
OLYMPICON	5·95	4·75
TWIN KINGDOM VALLEY	9.50	7.50
DANGER MOUSE	6.95	4.99
FOREST AT WORLDS END	5.50	3.99
TILER	5.50	3.99
AVALON	7.95	5.50
HERO	7.95	5.50
ZENJI	7.95	5.50
RIVER RAID	7.95	5.50
ENDURO	7.95	5.50
HAMPSTEAD	9.95	6.95
PSYTRAXX	7.95	5.50
STAR BIKE	6.95	4.99
GIANTS REVENGE	6.95	4.99
SCRABBLE	15.95	11.99
EDDIE KIDD JUMP CHALLENGE	6.95	4.99
COMBAT LYNX	7.95	5.50

COMMODORE 64

GAME	RRP	OUR PRICE
ZIM SALA BIM	9·95	6·99
STRIP POKER	9·95	7·50
BLACK HAWK	7·95	5·50
PSYTRON 64	7·95	5·50
ASTEC	8·95	7·25
ANKH	8·95	7·25
MR ROBOT	8·95	7·25
HOBBIT**	14·95	9·99
TALES OF ARABIAN NIGHTS	7·00	5·50
DALEY THOMPSON DECATHLON	7·95	6·50
LOCO	7·95	5·50
BEACH HEAD	9·95	7·75
ASTRO CHASE	8·95	7·50
DECATHLON	9·99	7·95
MICRO OLYMPICS	5·95	4·75
FLIP AND FLOP	8·95	7·50
SCUBA DIVE	6·95	5·50
PIT FALL I	9·99	7·95
MONTY MOLE	7·95	6·50
ALL INTERCEPTOR AT	7·00	5·50
SOLO FLIGHT	14·95	11·00
TRASHMAN 64	7·95	6·50
VALHALLA	14·95	10·99
DEATH STAR (INTERCEPTOR)	9·95	8·50
PITFALL II	9.95	7.95
RIVER RAID	9.95	7.95
HERO	9.95	7.95
DALLAS QUEST (DISC ONLY)	14.95	12.00
BRUCE LEE	9.95	7.95
NATO COMMANDER	9.95	7.95
SPITFIRE ACE	9.95	7.95
F15 STRIKE EAGLE	14.95	11.00
EDDIE KIDD JUMP CHALLENGE	7.95	5.50
COMBAT LYNX	8.95	7.25
STUNT BIKE	6.90	4.99
MY CHESS II	8.95	7.25
BATTLE FOR MIDWAY	9.95	7.50

TRADE ENQUIRIES
DO YOU SELL SOFTWARE?
PHONE 01-405 1270
FOR DETAILS OF TRADE PRICES

SPECIAL OFFER

	OUR PRICE
SPECTRUM 48K	129·95
SOFTWARE PACKAGE WORTH	56·00
KEMPSTON TYPE INTERFACE	14·95
QUICKSHOT II JOYSTICK	11·95
TOTAL VALUE	212·85
OUR PRICE	£145·00

BBC GAMES

GAME	RRP	OUR PRICE
OLD FATHER TIME	9·50	7·50
CITY DEFENCE	7·50	5·95
MUSIC SYNTHESISER	9·50	7·50
TWIN KINGDOM VALLEY	9·50	7·50
HULK	7·95	6·50
AVIATOR	14·95	11·00
BLAGGER	7·95	6·95
JCB DIGGER	9·95	8·50
HOBBIT	14·95	9·99
VOODOO CASTLE	9·95	8·50

ELECTRON GAMES

GAME	RRP	OUR PRICE
MICRO OLYMPICS	5·95	4·75
TWIN KINGDOM VALLEY	9·50	7·50
HULK	7·95	6·50
ALL ACORNSOFT	9·20	7·50
CHUCKIE EGG	7·90	6·50
BLAGGER	7·95	6·50

ALL PRICES INCLUDE P&P

QUICKSHOT II ONLY £8.99

PLEASE NOTE IF YOUR ORDER EXCEEDS £50 YOU GET 10% FURTHER DISCOUNT

SEND CHEQUES/P.O. TO
GOODBYTE PC7
94 LEATHER LANE, LONDON EC1

PLEASE STATE WHICH MICRO

Test your skill and daring against pirates, Indians and wild beasts . . .

Never before has J. M. Barrie's magic world of the Neverland been so real. PETER PAN – The Adventure Game takes you to the realms of pirates, lost boys, Indians, wild beasts and Captain Hook. Explore the Island, fight the pirates, save Tiger Lily and, if you are really fearless, destroy Hook and steal his ship, to return Wendy and the boys safely home again.

An interactive, real-time adventure, with animated graphics and a host of characters for the 48k Spectrum.

If your local dealer doesn't stock **PETER PAN – The Adventure Game,** just send off this coupon – *please allow 28 days for delivery.*
Please rush me ☐ copies of **PETER PAN – The Adventure Game at £10.95 (£9.95 plus £1 p&p).** I enclose a cheque/P.O. payable to **Hodder & Stoughton Ltd** for £..... or debit my Access/Barclaycard No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Signed..... Address.....

Name..... .....

Send to **Hodder & Stoughton Ltd, CSD 23 (A)** .....

P.O. Box 6, Dunton Green, Sevenoaks, Kent TN13 2XX. ..... Post code .....

Duck shoot

System Compunet **Micro** Commodore 64, plus Commodore modem **Price** Commodore Communications Modem £99.99 **Supplier** Commodore Business Machines (UK) Ltd, 1 Hunters Road, Weldon, Corby, Northants.

Yes, it's finally happened. A mere six months after eager buyers ordered their first CBM modem for the special "Compunet" service at the Pet Show, Compunet itself has actually come into visible existence. Now that the proud owners of the modem can use it for something other than rival Prestel, just how does the new service measure up to its claim to be "arguably the most sophisticated interactive database yet set up for home computer users"?

As of this moment, I have to report that Compunet has yet to fulfill such high hopes, although there are signs that, within the very near future, it might get a great deal more exciting. The problem is that, although there are a number of pretty and intriguing entry pages for various sections, many of the sections themselves are not yet up which, after all the time taken to launch the system, is rather a pity.

The modem itself is a substantial black box, which plugs into the cartridge port, with a cable for the telephone jack. That's the lot. Just plug in the modem, switch on the CBM 64 and there you have an opening screen telling you that you have 30719 bytes free. Registered users have an ID and password which are used after typing the command *Connect* plus the telephone number of the nearest access node. The modem dials for you, the screen changes colour to show that you are being connected and, once you have identified yourself, you're in.

The ID will be particularly important once Compunet is running properly since each individual ID is programmed into the modem. Thus, if you download priced software, it will be direct-debited to the owner of the ID for the modem, according to an agreement signed by the user when registering. Registered users will also be able to use an electronic mail system, the Comp-U-Card credit card electronic shopping service, and, one of the major new features of this service, upload programs and text frames to specified parts of Compunet.

My brand-new package came without the special user manual, which gave me the opportunity to test the claims that the Compunet routes and onscreen facilities were self-explanatory. The system works through a series of directories each with a "duck-shoot" menu (options on a status line at the bottom of the screen which are selected by cursor and implemented via *Return*) and a "bar" at the top of the directory which can be moved over the selected item. Once the subject is highlighted, options on the duck-shoot menu such as *show* (to display the frames), *print*, etc, can be used.

The explanatory frames are reasonably full. Items displayed this way have a separate duck-shoot menu giving the choice of displaying continuously, frame-by-frame, or exiting to the directory. The main duck-shoot lets you select a particular area through *Goto*, move "back" to the last directory and has a variety of instructions covering uploading, downloading, saving frames and how to "edit".

Uploading of user's own software will take place to the "jungle" area, which is a users' playground of messages, tips and programs for sale. You can specify how long you want your program, or message, stored in the jungle and you will be charged accordingly. The life of any such item can be extended by the user if required.

Seasoned Prestel users will find the frames rather slow, since the modem implements full error-checking through the Packet Switching System, and it can take up to 10 seconds before a frame starts displaying. On the other hand, Compunet say that there is no chance of corruption from line noise, something that has a nasty tendency to play havoc with "mailbox" operations on Prestel. The few graphics pages already up on Compunet are of far higher quality than those on Prestel, since they make better use of the 64's facilities.

The system is flexible, and will allow user-to-user contact as well as viewdata emulation for Prestel and other 1200/75 baud systems. As of the moment of writing this review, Compunet is providing very few thrills after the first tour of the directories. But the potential for it to do so is clear.

Barbara Conway

Double strike

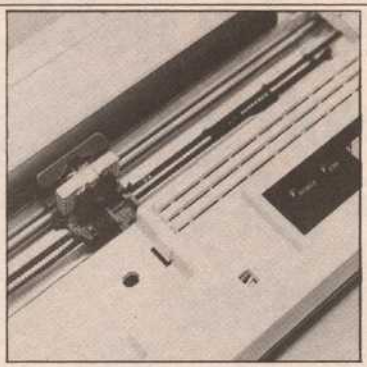
Hardware *M-1009 dot-matrix printer* **Micro** Any Centronics or RS232 machine **Price** £199 **Supplier** Brother, Shipley St, Guide Bridge, Oldershaw, Manchester.

Most home computer users, sooner or later, feel the need for a printer. The biggest problem is cost. Cheap printers often use expensive paper, give copy that fades and is unacceptable for letters. Yet, if you want to do anything other than list programs, then you could pay more than the price of your computer.

The new printer from Brother — the M-1009-costs about £200, but has a number of features that make it more than a stripped-down budget model.

For a start, it takes A4 sheets of plain paper and optional extras include both a roll and a fan-fold feeder and, the nine-pin print head gives characters that are clear although obviously the product of a dot-matrix device.

I hooked up the Brother to a Spectrum, via a Kempston interface. Once the necessary software modifications were made, the first test was to print out a 40,000 word book, written on Tasword Two. The printer behaved impeccably, and was also quick: a sheet of double-spaced A4 took about 50 seconds.



The low-cost of the machine is to a certain extent reflected in its construction: only two screws hold on the top cover which wobbles. The print mechanism is solid enough, although the paper release lever felt a little flimsy. A row of easily accessable dip switches allow changes in the hardware configuration. The model I tested was equipped with a Centronics interface, but RS 232 is an optional extra. This supplements the parallel input; you may switch between the two — a good investment if you are likely to change computers in the future.

There are a number of software options on the M-1009: underline, enlarged, condensed, double strike, super and subscript which let you ring the changes, and some modes can be mixed. Bit image printing can be achieved, but I had problems stemming from my interface which expands Sinclair keywords. A dose of machine code should solve this.

Operating the printer is simple. Two membrane keys force line-feed and switch the printer on and off line. An LED indicates errors. If a problem occurs the printer switches itself 'off-line'. Printing is logic seeking and bi-directional, which makes the machine very time efficient. Loading a sheet of paper is a bit fiddly though. Even after a hundred pages I could not avoid putting a dot on the top edge of the paper as it passed over the print head.

The manual is a classic example of bad translation and strange idioms cloud the meanings of many important sentences. Fitting the ribbon cassette, for example, is very poorly explained.

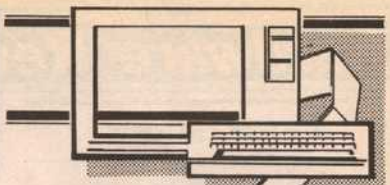
Despite these small quibbles, though, I rate the M-1009 as very good value. Unless you want daisy-wheel quality, it will cope with most needs, and should give sterling service for many years.

Jeff Naylor

Kentech

A touch above the rest

HOLDERS OF THE LARGEST RANGE OF COMPUTER ACCESSORIES.



Joysticks and Accessories

Pro-Ace		£12.95
Quickshot II	Atari	10.95
	Dragon	14.95
	B.B.C.	18.95
Zip Stick	Atari	14.95
	Dragon	15.95
	B.B.C. (Free Graphic Software)	17.95
DK Tronics Spectrum Dual Port Interface		12.95
DK Tronic Spectrum Programmable Interface		22.95
Protek 2 Spectrum Switchable Interface		19.95
Prolink B.B.C. (B) Programmable Interface		9.95

Printers and Accessories

Shinwa CP-80 Printer	£199.95
Daisy Step 2000 Printer	289.95

Kempston Spectrum Centronics Interface Soft Driven	£39.95
Rom Driven	54.95
ZX Print III Spectrum Centronics Interface Rom Driven	34.95
RS 232 or Centronics Cable For above	9.95
VIC 20/64 Centronics Printer Lead	29.95
Dragon/Oric/Atmos Centronics Printer Lead	14.95
B.B.C. Centronics Printer Lead	14.95

Miscellaneous

LIMITED OFFER
DK'TRONICS MARK 1 KEYBOARDS FOR ZX81 and SPECTRUMS
ONLY £25.00
FULL GUARANTEE

Gift Packs

SPECTRUM ONE	Spectrum Soft Cover Spectrum Graphic Pad 5★ C15 Data Cassettes	
Normally £8.65		Gift Price £7.95
SPECTRUM TWO	Spectrum Soft Cover Spectrum Graphic Pad Sound Module	
Normally £20.85		Gift Price £15.95
B.B.C. ONE	B.B.C. Keyboard Overlay B.B.C. Soft Cover B.B.C Graphic Pad	
Normally £14.65		Gift Price £12.95
B.B.C TWO	B.B.C. Programmable Interface Pro-Ace Competition Joystick Micro-Olympics Software	
Normally £28.89		Gift Price £21.95
COMMODORE 64 ONE	Pro-Ace Competition Joystick Beach Head Software	
Normally £22.90		Gift Price £16.95
COMMODORE 64 TWO	Pro-Ace Competition Joystick Solo Flight Software	
Normally £27.90		Gift Price £19.95

ALL PRICES INCLUDE V.A.T.

Send for our FREE catalogue detailing our COMPLETE range. Postal Insurance FREE • Delivery FREE

ALL items in stock at time of going to press. • GOODS despatched on clearance of cheque. • Full Guarantee on all items.

Normal Delivery Time - 7 Days. • Trade Enquiries Welcome.

ST. OSWALDS ROAD TRADING ESTATE, GLOUCESTER, GL1 2SU

Telephone: (0452) 415002 Telex: 43514

You've got your QL hardware. You've got your Psion software.

Now get your Sunshine book.

SUNSHINE

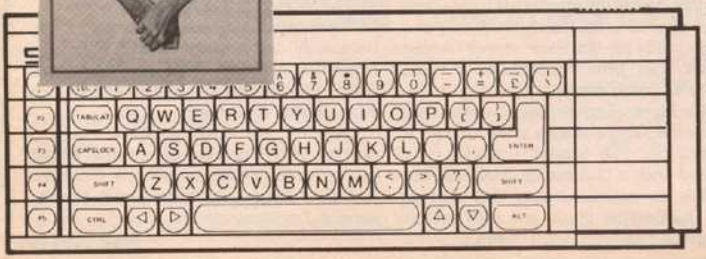
Just released from Sunshine is the latest book from the highly acclaimed QL QLassics series – and it's called *Quill, Easel, Archive & Abacus on the Sinclair QL.*

All these packages, which are included with every QL sold, are recognised as powerful in their own right, but when working together with one another, they become highly effective problem-solving tools for business.

Alison McCallum-Varey's book introduces you to all the four packages, but, most importantly, shows you exactly how to run them as a complete system.

This book, essential for every QL Owner, will expand the day-to-day use of your QL, letting you run Quill and Archive in tandem for instance, and then outputting the results for graphic interpretation by the Easel package.

If you've Quill, Easel, Archive and Abacus on your Sinclair QL, then you need *Quill, Easel, Archive and Abacus on the Sinclair QL.*



Please send me Quill, Easel, Archive & Abacus on the Sinclair QL at £6.95 plus 50p p&p. I enclose a cheque/postal order for £ payable to Sunshine Books.

☐ Please charge my Visa/Access card No.

valid from expires end:

Signed:

Name:

Address:

Send to: Sunshine Books, 12/13 Little Newport Street, London WC2R 3LD.
Look out for the Sunshine range in W.H. Smith's, Boots, John Menzies, other leading retail chains and all good bookshops. Dealer enquiries: 01-437 4343.

POWERSOFTWARE IS HERE...
TEN GOLD SOVEREIGNS MUST BE WON!
cat walk
£5.95
48K SPECTRUM
BILLY BLUEBOTTLE
£5.95
48K SPECTRUM
CAT WALK
Ever wished you were a cat? Then unwind yourself with this bizarre new game for 48K Spectrum
BILLY BLUEBOTTLE
An amazingly original multi-level arcade type game for 48K Spectrum
"WIN"
A GOLD SOVEREIGN
special introductory offer you may find a gold sovereign in one of these games
10 gold sovereigns must be won
£24.95
electron joystick interface
POWER SOFTWARE
ELECTRON JOYSTICK INTERFACE
Simply the best on the market
POWER SOFTWARE
frantic fingers
£3.99
SOFTWARE
£3.50
BUDGET SERIES (actual screen shots)
FRANTIC FINGERS
A series controlability for the B.B.C. Micro
BOUNCING BERTY / ESKIMO CAPERS
Introducing our special high class budget series for 16/48K Spectrum
Interrupting all games programmers ..." Send us your Games !! "...
Available from all red hot dealers or Powersoftware.
Powersoftware, Thinking about moving home because my local dealer's useless dept.
12 Hagley Road, Stourbridge, West Midlands DY8 1PS
Cheques or Postal Orders made payable to Powersoftware.
Billy Bluebottle £ 5.95
Cat Walk £ 5.95
Electron Joystick Interface £24.95
Frantic Fingers £ 3.99
Bouncing Berty/Eskimo Capers £3.50
Cheque/Postal Order Total Value £
All prices include postage & packing.
Name
Address
Block Capitals
Delivery 30 days.
Reg. in England No. 1370177
Cat Walk, Billy Bluebottle, Bouncing Berty, Eskimo Capers, Incorporate English, French, & German instructions

Is Vic there?

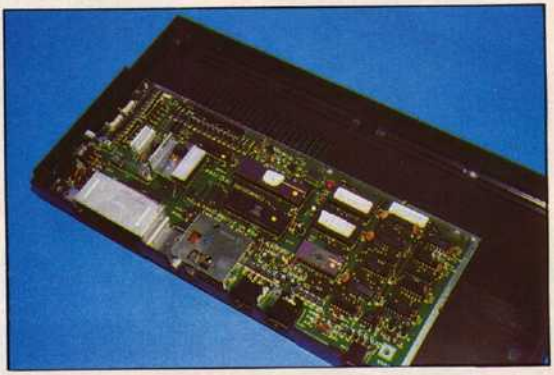
Andy Pennell looks at Commodore's latest bid to capture the budget micro market from the Spectrum—the C16

After years of speculation about its death, the Vic20 is now officially obsolete, replaced by the Commodore C16. The C16 comes in a starter pack, similar to the Vic, consisting of dedicated cassette deck, and four software packages, for £139,99. The 16 in the name refers to the total Ram available, though like the 64 the amount of user Ram is considerably less.

It looks just like any other Commodore machine, in the same case as its predecessors, though in a different colour scheme—the case is dark grey, and the keys light grey. The keyboard itself is of the usual Commodore standard, with decent, angled, keys, though the layout is non-standard, even compared to its predecessors. If you've got used to the positions of keys like, *, +, *Home*, and the all important cursor keys on the 64, then you will have great fun on a C16, as they're all swapped about. I personally find CBM keyboards a little too soft, but typing is a personal thing. It's funny, though, that Commodore can put a decent stepped keyboard on a £140 C16, but Sinclair can't put more than a flat rubbery thing on the £400 QL.

Inside the machine is a smallish circuit board, leaving quite a bit of empty space. The American origins of the machine are immediately apparent, from the metal screening all over the circuit board. In the USA, there are certain legal requirements for radio interference, but there are no such laws in the UK, so British micros usually drown out the average radio in the same room. There are few components on it, the main ones being the 7401 processor and the custom chip that does the clever stuff like producing a TV display What is this 7501 processor I hear you ask? Well, it's just another Commodore version of the illustrious 6502, as the 6510 was in the 64.

On the C64, with its 'elephantine' 64K of memory, when you switch on you get a message saying something like '39K bytes free'. The remaining 26K is used up by the system, so about 40% is unavailable in Basic. On the C16, with 16K Ram, you get about 12K free, which isn't bad. However, the moment you select one of the high-res graphics modes, another 10K of memory goes down the tube, leaving you with under 2K user Ram, less even than the Vic20. This I feel is the major shortcoming of the C16—the lack of memory. On the 16K Spectrum, about 8K is left to the user, which is quite enough for many uses, but designing a 10K screen for a machine that has only 16K is a major oversight by Commodore. It was supposed to be technically possible to expand it up to a Plus/4 and onwards to 128K, but don't hold your breath waiting for Commodore to do anything soon.



Commodore dialect

It has been the hallmark of previous CBM machines that the Basic didn't support any of the machine's best features, such as graphics and sound. It practically made it a necessity to buy one of the many 'extended Basics', either Simon's Basic from Commodore themselves, or one of the independent programs. Well, on the C16, Commodore have killed off that piece of the market, as Basic version 3.5 is supplied with the machine, which has all the extra commands you'd expect on any other machine.

The Basic sits in 32K of Rom, along with the kernal, which looks after the whole machine, and a machine-code monitor. The Basic is Microsoft as you'd expect, but in the same funny Commodore dialect used before. Programs are edited using the same screen editor as before, but with the addition of a few welcome features such as automatic insert mode. The same PET-type graphics characters are available, and the function keys are initially configured to produce various key sequences.

The default commands are a little strange, being mainly concerned with the disc drive, and as most users would not have a disc drive, but the supplied cassette recorder, they seem an odd choice. Anyway, if you don't like them, the *Key* command re-defines them to be anything else—no *Poke*s necessary on the C16. For entering programs there are a few other commands, like *Auto* and *Renum*, which are again new to CBM owners. Fans of 'structured programming' will not be impressed by it, it's only such features being *Do . . While* and *Do . . Until*, with no procedures or long functions.

By pressing the *Esc* key followed by another, various extra functions can be invoked, the most interesting of which are the 'window' commands. Windows are one of the in-things at the moment, and have appeared on the Amstrad and QL, and now the C16. However, you can have only one window at a time, so it's not really in the same league as the others mentioned. I believe a similar effect can be obtained on the C64 by *Poke*ing anyway. Regrettably there is no *Window* command, so to the

process of defining a window has to be done by a tedious sequence of control code printing.

The C16 has five graphics modes. The simplest is test mode, with the usual 40 by 25 lines of text, with each letter able to be a different colour. This is the only one that doesn't take up the extra 10K of memory. In text mode, there are 15 different colours, each with 8 levels of luminance, and black, effectively giving 121 different shades, all of which can be displayed at once.

There are also two high-res modes, one with a 4 lines of text at the bottom of the screen, and one without. In high-res the resolution is 320 by 200, which is about average nowadays, though there is a colour restriction—you can only have two colours in one 8×8 pixel character square, the same as the Spectrum. However, you can still have 121 different colours at once. The two remaining modes are 'multi-colour' modes, which have a resolution of 160 by 200, but can have up to four different colours per character square, still with the choice of 121 colours. The main thing missing on the C16 compared with the 64 is sprites. Undoubtedly the best feature of the 64, they made it much easier and faster to write games for the 64, as the programmer didn't have to bother about the mechanics of actually putting shapes onto the screen and removing them later, as the hardware did it all.

Five graphics modes

They are not present on the C16 though, which is a sad loss, and it will make it harder to write quality games for it. The Spectrum programs show that attribute problems can be overcome by skillfull software, but it has taken a few years to work it out.

Controlling the graphics from Basic is easy, with commands like *Draw, Locate, Box, Circle* and *Paint*. The *Circle* command doesn't just draw circles, but can produce ovals, arcs, or any kind of polygon. The *Char* command is a sort of *Print At* command, that works in any graphics mode, and *Paint* is a way of filling in areas with solid colours. The speed of the graphics generally, and especially the filling, is positively slothful when compared with the speed of the QL, and is a good demonstration of the difference between an 8-bit chip like the 6502 and the 32-bit 68008. The Basic itself is a little slower than previous CBM dialects, but, of course, not as slow as the Spectrum.

The sound facilities of the C16 are not half as good as the 64s, but are still adequate. There are two voices, one for notes, and one for notes or noise, with overall control. There may be more features, but they are not accessable from Basic, and as the *Programmers Reference Guide* has not yet appeared, I can't say. As it gets piped through the TV, volume is not a probem.

The built-in machine-code monitor is not earth-shattering, but it's better than nothing. It has a one line assembler, disassembler, and various memory read and write modes, though it doesn't have single stepping. It seems to have code *Save* and *Load* commands via the cassette recorder (and not disc), but I can't be sure as I had no instructions at all for the monitor.

The C16 comes with its own dedicated cassette recorder, which seems to be the same as the usual one, except that it has a different plug. The tape format is the same slow one as before, so the market for turbo loaders remains for the C16. It also connects to the infamous 1541 disc drive, notorious for its incredible slowness, but also supports the new disc drive, up to four times faster, but not yet available.

The Basic has various commands to control the disc drive, including various back-up procedures, and a *Directory* command. While other users may think it usual, this latter feature is innovative on a Commodore. On the C64 and Vic20, getting a directory of a disc involved wiping whatever program currently in memory, but now you can be like everyone else and display your discs contents without losing your program.

Marketing muscle

As with the QL, the 'joystick' sockets on the C16 are a con by Commodore. Instead of the usual Atari-type sockets, it is cursed with two strange looking mini-din type sockets, so you can't actually plug anything into them. Well, nothing except Commodore's own, forthcoming, 'super joysticks' that is. They aren't much different to the normal run-of-the-mill switched ones.

The documentation supplied with the review machine was very much pre-release, consisting of a couple of hundred photo-copied sheets. What was there was good, though some of the listings were inaccurate. The C16 will be supplied with four cassettes, but these, too, were unavailable for review.

The C16 competes directly with the 48K Spectrum and the Oric. Its advantages include the supplied cassette recorder, good keyboard and better graphics, while its disadvantages are the small amount of Ram and, for now at least, dearth of software. Conversions from the C64 are going to take time, because of the lack of sprites and minimal user Ram, though Vic conversions will be easier.

If it had 16K Ram more then it would be certain to do well, but as it stands it does not have enough for much programming, though Commodore's marketing muscle will ensure it sells.

Integrated Forth, Assembler and Debug for ZX Spectrum

Another radical new concept in add-ons from CURRAH

Next month CURRAH launch μSOURCE, their most advanced product yet. μSOURCE lets you write and use Assembler or FORTH in BASIC lines, so you can run these advanced languages by themselves or even 'integrate' them into BASIC programs.

μSOURCE gives you the ability to write ultra-fast, highly compact programs which use the powers of all three languages, yet is so user-friendly that even a novice will be using it in minutes! Add advanced features like a full Debug, so you can easily correct your programs, and at £44.50 you can give your Spectrum on-board programming power only found on more expensive machines.

Send in now for an advance information pack to: CURRAH, Hollymount, Hartlepool TS26 0HA.

CURRAH

A clue

Program *Valkyrie 17* **Micro** Spectrum **Price** £9.99 **Supplier** Palace Software, 275 Pentonville Road, London N1.

Valkyrie 17 is an adventure game by The Ram Jam Corporation. A new independant software group being marketed by Palace.

It's an adventure game unlike any other — but less for technical reasons than approach. It's definitely different.

The plot of the game involves having to prevent the construction of a super weapon by a group of old Nazis.

You begin the game in a bar in the company of a lady with a thick German accent. Could she be a clue?

From here on things are alternately confusing and funny. You'll probably spend ages trying to get out of the hotel — it seems the manager wants you to pay your bill.

The game understands relatively complex sentences although baulks at conjunctions eg, *Take Gun and Take Robe and Wear Robe.* The graphics are reasonably detailed and above all, quick. No waiting around for ages here.

Removing the boring bit might be a maxim for the game actually. Once you've grasped the basic way of solving a problem the computer recognises the fact and lets you get straight on. For example, supposing at one point you need to tie sheets together to get out of a window, as soon as you've got as far as *Tie Sheets* it says "the sheets are tied together hanging out of the window". No messing around trying to find the right words: *Go to Window, Tie Sheets to Window,* etc, etc.

This sort of thing improves the play massively though it may not appeal to the more literally minded people.

The game is witty, clever and slick. There are over a hundred locations and a similarly sized vocabulary. Lots of clever use of sound effects for telephones which may sometimes be usefully answered. Also some mysterious thumping . . . I liked it a lot.

Ian Waltham

Analysis

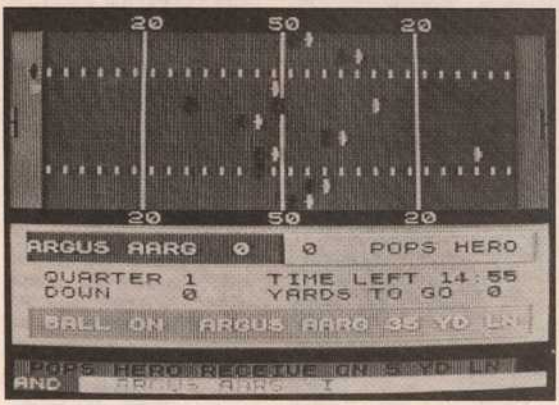
Program *Forecaster* **Price** £15 **Micro** BBC B **Supplier** Brain Power, Triptych Publishing Limited, Sterling House, Station road, Gerrards Cross, Bucks SL9 8EL.

Forecaster by Kevin McKeogh and Stuart Armstrong is not a toy or a glorified garden fete clairvoyant. It is a practical tool for people who need to establish trends in business or other activities.

The program offers several forms of statisitical analysis and can cope with fair quantities of data. There is a substantial handbook which reminds you that it is necessary to think fairly hard about the information you want to find and which pieces of input will help. You can print and save analyses, but note that the cassette version only saves to tape and the disc to disc. It is well worth saving your raw data once entered and before processing. Certain combinations can crash the program by taking calculations outside the limits of the micro.

The value of this package is that it includes as a bonus a very useful instruction cassette which with the first section of the handbook gives a clear, well-written explanation of the processes involved. It is not easy, but it is straightforward and written for the non-technical person, so with patience everyone can appreciate and use the system. The package would probably be worth its price for the teaching section alone — as a combined deal it can be warmly recommended.

Dave and Jan Watterson



Spelt out

Program *Alpha-Beth* **Price** £6.99 **Micro** Spectrum **Supplier** A & F Software, Unit 8, Canal Side Industrial Estate, Woodbine Street East, Rochdale, Lancashire OL16 5LB.

Beth, a rather chunky sprite, hops around a representation of a near-standard Qwerty keyboard, controlled by user-definable keys — a plus point in an educational program.

Above her a VDU displays questions and Beth must jump on the correct keys to spell out the answer.

This can be done unaided for a bonus or help is available via a *Hangman*-type game option or a brief glimpse of the answer. Hindrance comes from the school bully and allies who move randomly round the keyboard. Collisions are fatal.

The game is reasonably enjoyable although it is too easy to type a letter twice and questions begin to be repeated. Other databases of questions are apparently available. In theory, the program combines spelling practice, keyboard aquaintance and general knowledge. However I suspect that it merely encourages rote learning of facts.

Despite these reservations I would have given *Alpha-Beth* three stars, if not for the inclusion of several spelling errors in the program itself. One question even requires the answer Captin (sic) Kirk'. This is unforgiveable in an educational game and I cannot recommend it.

John Minson

Musical

Program *Music Master* **Micro** Commodore 64 **Price** £17.95 **Supplier** Supersoft, Winchester House, Cannning Road, Wealdstone, Harrow, Middx.

Given the excellent sound facilities on the Commodore 64, it's no surprise three are any number of composing programs available; some claim to be composers, others claim to be synthesisers, a few are supposed to be both.

Music Master is the musical equivalent of a word processor and is intended for those with no musical knowledge whatsoever. Rather like those easy-to-play portable keyboards, the program begins with some demonstrations and some presets for electric piano, drum and clarinet which can be used separately or together.

The keyboard is used to play the scale notes with a more conventionally represented keyboard displayed on the screen. The program is set for monophonic playing but, since you have three channels available, three note polyphony is possible.

You can create your own sounds by manipulating the waveforms and envelope shapes, changing the parameters by reference to the screen. More complicated effects are possible by synchronising different oscillators.

The other major section is the music screen which lets you type in music straight from the keyboard, manipulate it and store it. The program comes with various presets in the form of sounds and rhythms. The manual is pretty good and the price is probably justified by the completeness of the system.

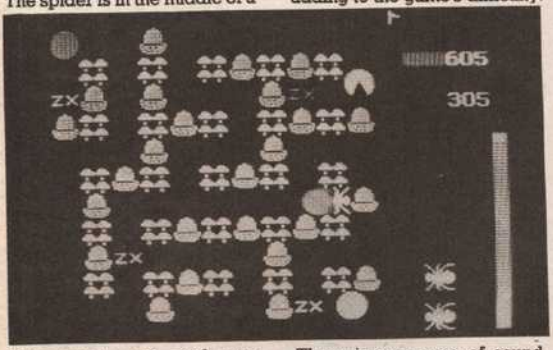
Brian Eastly

Trapped

Program *Hyperaction* **Micro** Spectrum **Price** £5.95 **Supplier** Silversoft, London House, 271-273 King Street, London W6.

Hyperaction's hero is a spider, and this alone ought to justify its release to an unsuspecting world.

Unfortunately, there is little else to recommend the game. The spider is in the middle of a fairly small maze, and must touch some "ZX" symbols to gain points. Barring the way are a number of pacman gobblers who seem to like spider, for lunch.



The difficulty of the game is that the maze is so small that there is very little room to avoid these hungry mite-eaters, and you are easily trapped in a corner with nowhere to run. There are more screens and new dangers to face, but since I never got near clearing the first one, even with the generous allowance of six lives, I cannot confirm that.

I suppose there must be a technique to it all, but I couldn't find it!

The graphics are large and detailed — hence the small size of the maze — and colour is used well if you have a colour monitor or TV. In black and white, though, some of the pacmen are almost invisible, adding to the game's difficulty.

There is some use of sound, though not during the action, presumably to avoid slowing things down too much.

As you would expect from Silversoft, the game is bug-free, provides for a wide range of controls, and responds well. Maybe, it could get to be addictive — if I could do it.

Simon Springett

Complex

Program *Microgo!* **Micro** BBC/Electron **Price** £9.95 **Supplier** Edge Computers, 3 Junction Road, Reading, Berks.

There can't be all that many traditional games left to computerise.

Latest to fall under the spell of the microchip is *Go* which is, apparently, the Japanese equivalent of darts as a national game.

It's a strategic game for two players involving the placing of stones on a lattice-like board in such a way as to enclose and thereby capture territory from your opponent. Though the rules are simple, playing the game can be incredibly complex.

The computer version allows you to play against the computer, no mean achievement considering the potential complexity of the considerations involved in play. Response times are fast — no more than three seconds on the BBC on average so you don't have to hang about.

There is an excellent 'Beginners level' play option where, as you play the game, mistakes and/or vulnerable positions are pointed out to you by the computer.

It's a useful option and I found it invaluable while trying to master the game.

A well designed and excellent implementation of a fascinating game.

Brian Eastly

Slides

Program *Son of Blagger* **Price** £7.95 **Micro** BBC B **Supplier** Alligata Software Limited, 1 Orange Street, Sheffield S1 4DW

It's like watching a world immersed in clear syrup. The animation ripples along in an unsettling way which does not make it any easier to negotiate the hazards of a top secret building to escape with secret papers. *Son of Blagger* repeats the formula of using a window at the top of the screen to display our hero while the bottom half keeps track of the score.

The game works because the sequence of slides, trapdoors, stepping stones and marauding beasts is full of novelty and challenge.

Your task is to pick up the keys to the establishment and escape. It is seldom straightforward. Some keys are visible but behind walls that mean a major detour to pass. Others are obtainable but then you're trapped. Even skilled games-players should find several hours of fun here.

Dave Watterson

Kamakazi

Program *Suicide Express* **Price** £9.99 **Micro** Commodore 64 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield

Try twiddling your thumbs in opposite directions. Tricky isn't it?

Now imagine doing this walking on a tightrope suspended between two double decker buses motoring down the M1 at 60 mph, while reciting Shakespeare and ducking to avoid the enemy gunfire. You are now experiencing a sensation not unlike playing *Suicide Express*.

The format of the game is similar to *Loco* — with a scrolling plan-view of the network of tracks in the lower section of the screen (together with your score, status and so on), and a side view of the action above.

The graphics are superb in detail, colour and perspective, but you are unlikely to have time to appreciate this, as your mind is usually on other things.

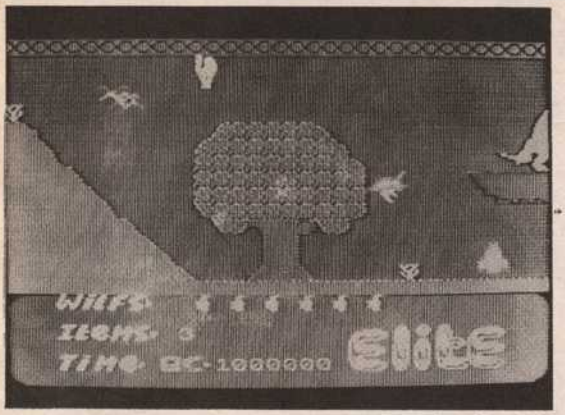
The idea is to control a futuristic train equipped with missiles, fired in front or up and behind. Travelling along the network — choosing when to switch tracks—the least of your problems are avoiding oncoming traffic and replenishing your ammunition supply (too many on board and you blow up).

Other diversions include purple kamakazi hovercraft, green delta-winged bombers, and for good measure the odd flying saucer ... all programmed to prematurely end your journey.

You are given three chances to get as far as you can.

To hell with the details ... this game has got me hooked, from the loading screen and music to the machine-code synthesised voice announcing 'Game Over'.

Joanna Gordon



Control

Program *Kokotoni Wilf* **Price** £5.95 **Micro** Spectrum **Supplier** Elite Systems, 55 Bradford Street, Walsall WS1 3QD.

Kokotoni Willy — sorry, *Wilf* — is an arcade adventure in the style of the *Jew Set Miner's* but this quest is for pieces of an amulet scattered through time.

Starting One Million BC Wilf must dodge dinosaurs, avoid adders and give sharks the slip to gather all 12 pieces before he can retrace his steps through the screens to a time gate to the next era.

It calls for perfect timing and a steady hand to make Wilf, who has wings, walk or fly but there is a choice of keys which are so responsive that, with practice, he can be made to hover in mid-air.

The screens are beautifully drawn and animated and three is a real incentive to continue. There are several witty touches, such as two cavemen playing with a wheel, and many ingeniously timed traps.

If I have a complaint it is that when your sixth Wilf is killed you go back to the very start however far you had advanced.

The game is well structured though, beginning easy and becoming extremely difficult. *Kokotoni Wilf* calls for control, cool and strategy. It is FUN! Supporters of the 'Miner' won't be disappointed.

John Minson

Nightmare

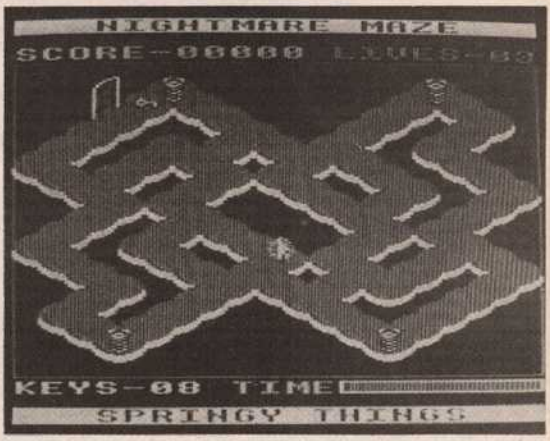
Program *Nightmare Maze* **Price** £6.95 **Micro** BBC B **Supplier** MRM Software, 17 Cross Coates Road, Grimsby, DN34 4QH

There is a horror built in to *Nightmare Maze* by Mike Williams: you can't move where you want! Just as in a dream you know where to go but can't make your feet obey, so in this game you have to be in exactly the right spot to cross the maze's paths. If you press two direction keys at once the micro always reads the wrong one first.

It would be easy if you were not being chased by speedy beasties who don't suffer the same problems themselves. What's worse is you can't simply keep out of their way for you have to catch a certain number of keys (eight on the first level) in order to unlock the door and escape. If you can reach a cup of black coffee the monsters vanish for a few blissful moments and you get a couple of keys. Then they're back and angrier than ever. When you do escape, the nightmare continues with more of the same...

The maze is one of the diagonal type becoming popular as poor-man's 3-D effect and the game is infuratingly addictive.

Dave Watterson



Strategy

Program *American Football* **Price** £9.99 **Micro** Spectrum **Supplier** Argus Press Software Group.

To those who think American football is just two rows of bodybuilders bludgeoning each other, a computer simulation may seem futile. Far better to hurl yourself against a brick wall.

But addicts of Channel Four's broadcasts know that the ol' Gridiron is a matter of strategy; metaphorical warfare, with each team fighting to win ground. Argus therefore dub this a 'Mind Game'.

The display is a plan of the field, populatd by tiny, well animated players. Details of 'Yards to Go', 'Downs', 'Time Left' and the position of the ball appear below it. Play, against either computer or human, consists of entering a two-letter code for your tactics, chosen from eleven offensive and four defensive plays, plus 'Time Outs', with a flashing character indicating the ball carrier. After entering the tactics you then watch the little men hurling themselves into one another.

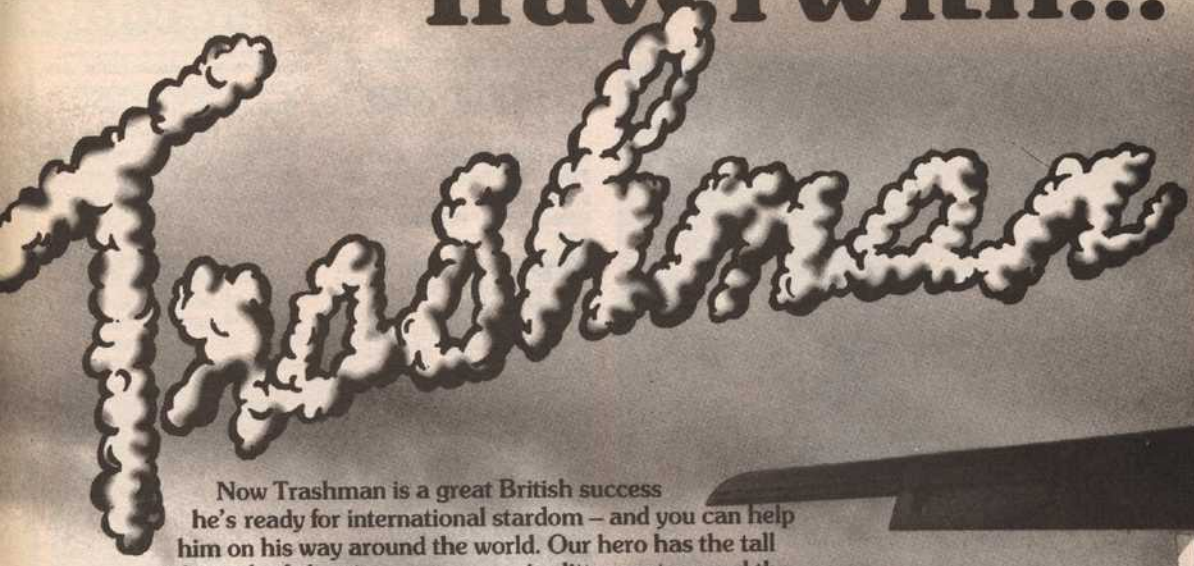
The program includes an invaluable booklet which elucidates the game's myst eries before explaining the program.

Like many micro simulations it is difficult to capture the 'pazzazz' which characterises the real thing (no microchip cheerleaders?) but I enjoyed it. Playing against the computer the game tends to degenerate into a variation on 'stone paper scissors', but played by a league of friends it could become a cult.

The program is a bit pricey, though.

John Minson

Travel with...



Now Trashman is a great British success he's ready for international stardom – and you can help him on his way around the world. Our hero has the tall order task of cleaning up every major litter spot around the globe. Scooping up flowers thrown into the bull ring by matador fans in Spain, collecting the tissues of the faithful as they sob by Jerusalem's Wailing Wall, picking up coconuts from a palm beach in Samoa and collecting the empties at the German beer festival (Trashman still likes his tipple!) are just some of the challenges that make up Trashman's task.

Of course, your skill can help our hilarious hero to complete the necessary litter collection at every location, so he can earn the money to fly on to the next country in his round the world quest. And as he visits every continent on Earth in search of rubbish you can share every fun filled, thrill packed second with him.

Travel with Trashman has one or two player scoring, Hall of Fame and is compatible with Kempston, Sinclair Interface 2, Protek or equivalent joysticks. Available for the 48K Spectrum today from most good computer stores for just £5.95.

TRAVEL WITH TRASHMAN. AUTHOR – MALCOLM EVANS

In the shops from October 19

Selected titles of New Generation Software are available from your local computer store and larger branches of:

WHSMITH · John Menzies · WOOLWORTH · spectrum · Boots

New Generation Software

GSH
Guild of Software Houses

New Generation products are sold according to their terms of trade and conditions of sale.

FREEPOST
Bath BA2 4TD
Tel: 0225 316924

HIGH SPEED

commodore

COMMODORE 64 owners, at last the long wait is over — **FASTBACK** allows multipart software to load around ten times faster and run independently of the utility. For example 'The Hobbit' loads in 150 seconds with **FASTBACK.**
Supplied on tape with full instructions
ONLY **£9.95**

AMSTRAD

SPEEDMASTER is here. Allows choice of save speed. Approx. 2 × faster.
ONLY **£7.95**

TAPE TO DISK TRANSFER UTILITIES

Transfer games etc. to disk. Supplied on tape with full instructions for:—

BBC £9.95
ATARI (All models) £9.95

COMMODORE 64 NEW IMPROVED VERSION **DISCO**
No user knowledge required. Still only **£9.95**
We guarantee this is the best available.
All prices include VAT, Post & Packing. Cheques, P.O. or Phone your Card Number to:

EVESHAM MICRO CENTRE

Bridge St, Evesham, Worcestershire
Tel: 0386 49641
NEW SHOP NOW OPEN – Micro Centre,
1756 Pershore Rd, Cotteridge, Birmingham Tel: 021-458 4564
TRADE AND OVERSEAS ORDERS WELCOME

INTERNATIONAL COMPUTER INFORMATION SERVICES

(Computer Moderated, Play by Mail games)
'GAMES PEOPLE PLAY'

Starting soon:—

TREASURE TRAIL

Our first anti-violence game which is suitable for all ages. Tell us where the Cash Box is hidden and we will give you the **£200** prize.
SOUNDS TOO EASY? ? TRY IT! !
Write or phone for FREE deails. You have to play it to win.

Now running:—

SPACE, THE FINAL FRONTIER

WANTED
SPACE SHIP CAPTAINS

Male or Female, any age group, for 35 newly commissioned Police Starcruisers. Urgently required for 'front line' duties in Quadrant 'Alpha One'. Ships at present operating: 125 Traders, 76 Pirates and only 8 Police.
Apply now. The Federation needs YOU !
ICIS, P.O. BOX 1, FREEPOST, LOUTH, LINCS LN11 8DZ
Tel: LOUTH (0507) 605137 (24 hours)

EXPERIENCE THE STUNNING 3-D REALISM OF DYNAVISION

AVAILABLE FROM YOUR LOCAL DEALER:
CBM 64 £9.95
SPECTRUM 48 £7.95

TRADE ENQUIRIES: DYNAVISION PRODUCTIONS, PO BOX 96, LUTON, LU3 2JP. TEL: (0582) 595222

Down on paper

Turn your Spectrum into a word processor . . .
***R A Jones** shows you how*

This editor provides the user with simple word processing facilities, and as such may be used with the ZX printer for writing letters or even short articles.

The editor runs on a 48K Spectrum, although it should also fit into the 16K version. If any out of memory problems occur on the smaller machine then changing the variable *size*, in Line 80, to a smaller value should provide a cure, as this governs the size of the text file.

On loading and running the program, a message is displayed. This informs the user that, during editing, pressing *Edit* and then entering *Help* will show all the facilities of the editor.

Pressing any key will then clear the screen and print the editing cursor in the top left corner. Text may now be entered from the keyboard.

The editing facilities are, briefly, as follows:

1. To move the cursor around the screen, use *Caps Shift* and any of the arrow keys.
2. To delete a character and close up the text, type *Symbol Shift* and = >.
3. To insert a space, type *Symbol Shift* and < =.
4. To invoke the command procedure (see below) type *Caps Shift* and *Edit*.

These are the only single key functions. There are additional commands available. These are entered by first pressing *Edit* and then, in response to the prompt *Command?*, typing one of the following words:

Print	Print the file on the ZX printer. (Press any key to stop.)
Clear	Clear the text file and start again.
Load	Load a text file from tape.
Save	Save a file on tape.
Find	Find a specified word in the file, and display from it.
Help	Display all editing commands/ functions.

Other points to note are:

When typing or moving the cursor around the screen, the displayed text will scroll in the appropriate direction when necessary.

Commands may be typed in upper or lower case. All keys auto repeat.

```
  1 REM
 10 REM ************************
 16 REM *                      *
 18 REM *                      *
 20 REM *    SPECTRUM          *
 22 REM *    SCREEN EDITOR/    *
 24 REM *    WORD PROCESSOR    *
 26 REM *                      *
 28 REM *    © R.A.JONES       *
 30 REM *                      *
 32 REM *    28th NOV 1983     *
 34 REM *                      *
 40 REM *                      *
 42 REM ************************
 44 REM * Issue 1.0 28/11/83 *
 46 REM ************************
 48 REM
 50 REM

 60 LET size=3200
 97
 98 REM INITIALISATION
 99
100 DIM f$(size)
110 LET start=1
120 CLS : PRINT AT 5,0;"    SPE
CTRUM SCREEN EDITOR"
130 PRINT AT 10,0;"  PRESS 'EDI
T' AND THEN 'TYPE'   'HELP' FOR
 INSTRUCTIONS": PRINT AT 15,0;"
 Press any key to start": PAUSE
0: CLS
140 LET x=0: LET y=0
150 PRINT f$(start TO start+703
);
152 GO SUB 5000: REM print curs
or
154
155 REM MAIN LOOP
156
160 GO SUB 500: REM * get char
155
170 IF a$=CHR$ 7 THEN GO SUB 40
00: GO TO 160: REM * command
175
180 IF a$>=" " AND a$<=CHR$ 127
THEN GO SUB 2000: GO TO 160: RE
M * print character
185
190 IF a>=8 AND a<=11 THEN GO S
UB 3000: REM * cursor key
195
200 IF a=199 OR a=200 THEN GO S
UB 5500
300 GO TO 160
493
494 REM ++++++++++++++++++
495 REM +++ SUBROUTINES +++
496 REM ++++++++++++++++++
497
498 REM GET CHARACTER
499
500 REM IF INKEY$<>"" THEN GO T
O 500
  REM #include line 500 if no
      auto repeat is required

510 PAUSE 0
520 LET a$=INKEY$
530 LET a=CODE a$
540 BEEP .005,0
550 RETURN
1197 REM
1198 REM FIND STRING
1199 REM
1200 INPUT ;"Input string ";a$
1210 FOR i=start TO size-LEN a$
1220 IF f$(i TO i-1+LEN a$)=a$ T
HEN LET start=i: LET x=0: LET y=
0: CLS : PRINT f$(start TO start
+703): RETURN
1230 NEXT i
1240 RETURN
1297
1298 REM PRINT FILE
1299
1300 PRINT #0;AT 0,0; FLASH 1;"P
ress any key to abort": IF INKEY
$<>"" THEN GO TO 1300
1305 FOR i=1 TO size STEP 32
1310 LPRINT f$(i TO i+31);
1315 REM include this line if
double line spacing is required
LPRINT CHR$ 13
1320 IF INKEY$<>"" THEN GO TO 13
40
1330 NEXT i
1340 PRINT #0;AT 0,0;"
1350 RETURN
1997
1998 REM PRINT CHARACTER
1999
2000
2010 LET f$(start+x+(y*32))=a$
2020 PRINT AT y,x;A$
2030 GO SUB 2500: REM * inc x
2040 PRINT AT y,x; PAPER 4;SCREE
N$ (y,x)
2050 RETURN
2497
2498 REM INCREMENT x
2499
2500 PRINT AT y,x;SCREEN$ (y,x):
 REM * print over cursor
2510 LET x=x+1
2520 IF x>=32 THEN LET x=0: GO S
UB 2600: REM * inc y
2530 GO SUB 5000:REM print cursor
2540 RETURN
2597
2598 REM INCREMENT y
2599
2600 PRINT AT y,x;SCREEN$ (y,x):
 REM print over cursor
2610 LET y=y+1
2620 IF y<22 THEN GO TO 2660
2625 LET y=21
2630 LET start=start+32
2640 IF start>size-704 THEN LET
start=size-704
2650 CLS : PRINT f$(start TO sta
rt+703)
2660 GO SUB 5000: REM print curs
or
2670 RETURN
2697
2698 REM DECREMENT x
2699
2700 PRINT AT y,x;SCREEN$ (y,x)
2710 LET x=x-1
2720 IF x<0 THEN LET x=31: GO SU
B 2800: REM dec y
2730 GO TO 5000: REM print curso
r
2740 RETURN
2797
2798 REM DECREMENT y
2799
2800 PRINT AT y,x;SCREEN$ (y,x)
2810 LET y=y-1
2820 IF y>=0 THEN GO TO 2860
2830 LET y=0: LET start=start-32
2840 IF start<1 THEN LET start=1
2850 CLS : PRINT f$(start TO sta
rt+703)
2860 GO SUB 5000: REM print curs
or
2870 RETURN
2997
2998 REM MOVE CURSOR
2999
3000 IF a=8 THEN GO SUB 2700: RE
TURN
3010 IF a=9 THEN GO SUB 2500: RE
TURN
3020 IF a=10 THEN GO SUB 2600: R
```

Continued on page 30

```
ETURN
3030 IF a=11 THEN GO SUB 2800: R
ETURN
3997
3998 REM INPUT COMMAND
3999
4000 INPUT "Command? "; LINE a$
4010 IF a$="print" OR a$="PRINT"
 THEN GO SUB 1300: RETURN
4020 IF a$="clear" OR a$="CLEAR"
 THEN RUN
4030 IF a$="find" OR a$="FIND" T
HEN GO SUB 1200: RETURN
4040 IF a$="load" OR a$="LOAD" T
HEN INPUT "File name? ";a$: LOAD
 a$ DATA f$(): RETURN
4050 IF a$="save" OR a$="SAVE" T
HEN INPUT "File name? ";a$: SAVE
 a$ DATA f$(): RETURN
4060 IF a$="HELP" OR a$="help" T
HEN GO SUB 5600
4490 RETURN
4997
4998 REM PRINT CURSOR
4999
5000 PRINT AT y,x; PAPER 4;SCREE
N$ (y,x): RETURN
5497 REM
5498 REM MOVE TEXT
5499 REM
5500 IF a=200 THEN LET f$(start+
x+(y*32)+1 TO size)=f$(start+x+(
y*32) TO size): LET f$(start+x+(
y*32))=" ": GO TO 5520
5510 IF a=199 THEN LET f$(start+
x+(y*32)-1 TO size)=f$(start+x+(
y*32) TO size)+" ": GO SUB 2700:
 GO TO 5520
5520 CLS : PRINT f$(start TO sta
rt+703)
5530 GO SUB 5000: REM print curs
or
5540 RETURN
5597 REM
5598 REM HELP PAGE
5599 REM
5600 CLS
5610 PRINT " EDITOR FUNCTIONS
    "
5620 PRINT
5630 PRINT " KEY          FUNCTION"
5640 PRINT "-------------------"
5645 PRINT
5650 PRINT " <=           DELETE CHA
RACTER
```

```
SOR AND MOVE              TEXT UP 1
SPACE"
5660 PRINT
5670 PRINT " >=           INSERT A S
LANK AT THE               CURSOR POS
ITION"
5680 PRINT
5690 PRINT " ARROW        MOVE THE C
URSOR IN                  DIRECTION
OF THE ARROW"
5700 PRINT
5710 PRINT " EDIT         INPUT COMM
AND"
5720 PRINT : PRINT : PRINT
5730 PRINT " Press any key to co
ntinue."
5740 PAUSE 0
5750 CLS
5760 PRINT " EDITOR COMMANDS
    "
5770 PRINT
5780 PRINT " COMMAND   ACTION"
5790 PRINT "-----------------"
5800 PRINT
5810 PRINT " PRINT     PRINT THE
FILE"
5820 PRINT
5830 PRINT " CLEAR     CLEAR THE
WHOLE FILE".
5840 PRINT
5850 PRINT " LOAD      LOAD A FIL
E FROM TAPE"
5860 PRINT
5870 PRINT " SAVE      SAVE A FIL
E ON TAPE"
5880 PRINT
5890 PRINT " FIND      FIND A STR
ING (WORD)                AND DISPLA
Y FROM THERE"
5900 PRINT : PRINT
5910 PRINT " These commands shou
ld be                     entered after press
ing 'EDIT'"
5920 PRINT
5930 PRINT " Press any key to co
ntinue": PAUSE 0
5950 CLS : PRINT f$(start TO sta
rt+703)
5960 GO SUB 5000
5990 RETURN
5997
5998 REM END OF CODE
8999
9000 STOP
9999 SAVE "wp": STOP
```

Two new Micro Books

Beginner's Guide to Microcomputing

E A Parr

and

Beginner's Guide to Microcomputer Languages

Michael Duck

Beginner's Guide to Microcomputing is for people who have just bought, or are thinking of buying, a home computer. It gives a serious overall view of their methods and applications with intelligent and informative diagrams and photographs.

192 pages approx *£4.95*

Beginner's Guide to Microcomputer Languages presents to the beginner the six most popular languages – BASIC, Pascal, COMAL, FORTH, PROLOG and LISP.

160 pages approx *£4.95*

Order now from your bookseller or direct from

Newnes Technical Books

Borough Green, Sevenoaks, Kent TN15 8PH

AMSTRAD

AMSOFT, the software division of **AMSTRAD**, requires additional staff to support its exciting and well received CPC464 home computer. We require programmers who are fully conversant with the Z80 microprocessor and its peripherals and who recognise the need for a structured approach to software design.

Our activities include providing a support service for the home user, assisting in the production of the '*CPC464 User*' magazine, supporting worldwide marketing of the computer, its software and peripherals and developing and approving designs and documentation for new products.

Many of our new products are software titles originated by external software houses with increasing emphasis on business, accounting and utility software for the newly announced 3" disc system. We specifically seek programmers with experience either of accounting software or operating systems interfaces.

AMSOFT has modern offices within the Brentwood headquarters of **AMSTRAD**. Applicants prepared to work hard for a successful and expanding company should apply in the first instance, by telephone or in writing, to Sally Tyler.

AMSOFT

Brentwood House, 169 Kings Road, Brentwood, Essex

Telephone (0277) 230222

ANIROG

AT LAST 1 TAPE 2 MACHINES

COMMODORE 64 VIC 20

MINIPEDES

It is the height of summer and the garden is buzzing with bees and bugs. Minipede, a mutant mushroom monster advances relentlessly towards you, devouring everything in its path. 15 screens of fast and furious action make Minipedes a real challenge to the arcade enthusiasts.

Commodore 64 - VIC 20 16K
J.S. or K.B. £5.95

Experience the thrills of the gambling centre of the world from the comfort of your own armchair. Both versions include features such as spinning reels, hold, number-feature nudges, gamble/collect, spin score and hi-score. The Commodore 64 version has additional features, nudge, reward lucky 3, step-a-win and hi-score tables.

As with any arcade machine the odds are stacked against you!

Commodore 64 - VIC 20 16K K.B. £5.95

TOM THUMB

Tom is trapped in a scrolling maze populated by loathsome creatures, guardians of the lost treasures of the Magezam. Six separate screens, five levels of difficulty and four player option provide an exciting challenge for the whole family. Another stunner from the author of **BONGO!**

(1 to 4 players)

Commodore 64 - VIC 20 16K
J.S. £5.95

J.S. AND KEYBOARD £7.95

J.S. £7.95

J.S. AND KEYBOARD £5.95

J.S. or KEYBOARD £7.95

J.S. £7.95

COMMODORE 64 VIC 20

TRADE ENQUIRIES: **ANIROG SOFTWARE LTD. 29 WEST HILL DARTFORD KENT (0322) 92513/8**

MAIL ORDER: 8 HIGH STREET HORLEY SURREY 24 HOUR CREDIT CARD SALES HORLEY (02934) 6083

PAYMENT BY CHEQUE P.O. ACCESS/VISA 50p POSTAGE & PACKAGING

NOT FOR PEOPLE WITH HIGH BLOOD PRESSURE!

Watch out for them—these four new games could be dangerous to your health. And, as they're from A'n'F, they're second to none, calling for a level of skill that's bound to set the adrenalin racing.

SPECTRUM 48k CYLON ATTACK—Now with better than ever isometric perspective graphics (3D). **£5.75**

BBC 32k SNARL-UP—Sheer bumper to bumper frustration and only five chances to hit the fast lane. **£6.90**

COMMODORE 64 GUMSHOE—One bleepin' obstacle after another stops you reaching a girl who needs you–desperately. **£7.90**

SPECTRUM 48k ALPHA-BETH—The brain teaser that makes it doubly difficult for you to give the right answer. **£5.75**

A'n'F
NULLI SECUNDUS

A&F Software, Unit 8, Canal Side Industrial Estate, Woodbine Street East, Rochdale, Lancs OL16 5LB.
Telephone: 0706 341111

SPECTRUM PROGRAMMABLE JOYSTICK INTERFACE

— PLUS SOUND

(Normally a £10 Add on)

from **Rainbow Electronics**

* ***The keyboard is NOT disabled when using the Joystick,***

* ***You can have a Through Port – See Below.***

PROGRAMMABLE — Allows any joystick position to represent any key – *without* wires, or leads, or tapes!

AMPLIFIED SOUND — Internal micro-chip amplifier boosts Spectrum's beep with simple connection to ear or mic socket.

EASY TO USE — All joystick positions are programmed simply by selecting joystick position, pushing desired key on spectrum, releasing joystick, and then the key.

ADAPTABLE — Accepts diagonal positions.

ONLY £24

Extra for Through Port £3

plus £1 p&p.

Send Cheque or P.O. to: **Rainbow Electronics**

Glebe House South Leigh Witney Oxfordshire OX8 6XJ
Tel. Witney (0993) 5432

Get more from your BBC Micro with our ROM-Based Software

All prices include VAT. FREE postage.

Full range details on request.

From our **COMPUTER CONCEPTS Range:**

PRINTMASTER	£33.00	GRAPHICS ROM	£33.00
CARETAKER	£33.00	GREMLIN	£33.00
WORDWISE	£46.00	TERMI	£33.00
DISC DOCTOR	£33.00	COMMUNICATOR	£69.00

Our SYSTEM SOFTWARE selection includes:

SPY 2 £30.00 ADE £60.00 ASM £35.00

BEEBUGSOFT presents:

TOOLKIT £27.00 EXMON £16.00

From PACE SOFTWARE SUPPLIES:

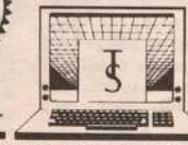
TOOLKIT £34.00 COMMSTAR £34.00

and from LINCOLN MICROSYSTEMS

AID (Dual Screen Monitor) £29.00

Order with confidence. No hidden extras.

A wide selection always available.



TEXTEL SYSTEMS

Unit A65, Saltaire Workshops,
Ashley Lane, Shipley, West Yorkshire, England, BD17 7SR.
Tel: Shipley (0274) 588332 24 Hour Answering Service.

SOPHISTICATED GAMES FOR VIC 20/CBM64

VIC/84 CRICKET Realistic game of tactical skill and luck. Ball by ball commentary with full scorecard and all the major rules of cricket correctly interpreted. Printer/game save facilities.
VIC CRICKET for VIC 20 + 16K 5.99
NEW: 64 CRICKET with extra features 6.99

LEAGUE SOCCER League title game for 2-24 players with automatic fixtures, action commentary, results check, scores, league table, cup draw etc. Printer/game save facilities.
LEAGUE SOCCER for VIC 20 + 16K 5.99
NEW: 64 LEAGUE SOCCER with many more features still 6.99

WHODUNNIT 12 guests have gathered for drinks at Murder Manor, but one of them has more then drinks on his mind. Addictive and thrilling detective game for 1 to 6 players, with genuinely different game each time.
WHODUNNIT for VIC 20 + 8K or any CBM 64 (state which) 4.99

TOP OF THE TOPS Easy to learn game about the music business. For up to 10 players. Includes printer/game save features.
TOP OF THE POPS for VIC 20 + 8K 4.99
NEW: 64 TOP OF THE POPS — even bigger and better 5.99

ELECTION NIGHT SPECIAL Lead your own party into the next General Election. A game for 1-3 players. Printer/game save.
ELECTION NIGHT SPECIAL for VIC 20 + 8K or any CBM 64 ..... 4.99

PARTY 4 Four games to match the progress of your party: MASTERWORD, A DAY AT THE RACES, GAME X (Strip Poker) and CONSEQUENCES. Harmless fun (nothing offensive) but good fun.
VIC PARTY 4 for VIC 20 + 3K or more 5.99
64 PARTY 4 ..... COMING SOON

***NEW*: ADULTS ONLY** Fun game for 2-10 broadminded players. Lots of cuddling and kissing, plus many other rewards and forfeits: you never know what you'll end up doing, or with whom! Nothing offensive, but you MUST be fairly broadminded.
ADULTS ONLY for VIC 20 + 16K expansion 5.99
64 ADULTS ONLY ..... COMING SOON

DISC VERSIONS AVAILABLE FOR ALL GAMES — £2.00 EXTRA. ALL PRICES INCLUDE (P&P) (UK ONLY). GAMES SOLD SUBJECT TO CONDITIONS OF SALE WHICH ARE AVAILABLE ON REQUEST. PLEASE WRITE OR PHONE FOR DETAILS OR OUR FULL RANGE

SOPHISTICATED GAMES
Dept PCW, 27 Queens Rd, KEYNSHAM, Avon BS 18 2NQ
Tel: 02756-3427

HIRE SPECTRUM SOFTWARE

OVER 280 different tapes for hire including **ARCADE, ADVENTURE, BUSINESS, EDUCATIONAL**, etc. – even an m/c Compiler. **FREE** 26 page catalogue. **FREE** newsletter, with hints, tips and our top tape chart.

OVER 3000 tapes in stock, with up to 60 copies of each title for fast service. All tapes sent by 1st class post.

LOWEST PRICES – hire up to 3 tapes at a time, from 63p each for two weeks hire. (Plus p&p and VAT). European members welcome.

Tapes for sale at DISCOUNT prices. Telephone 01-661 9240 (9am - 5pm) or write for further details, or complete the coupon and **JOIN TODAY** – you've nothing to lose!

SAVE £3.00!!

For a limited period, we are offering **HALF-PRICE** membership to readers of this magazine. Join now, **LIFE** membership is only £3.00 (normally £6.00).

SWOP SHOP

A new service from N.S.L. **SWOP** your unwanted tapes with tapes from other members for a small handling charge of only 60p (plus p&p and VAT)

NATIONAL SOFTWARE LIBRARY

42 Harefield Avenue, Cheam, Surrey SM2 7NE.

I enclose cheque/postal order for £3.00 for LIFE membership. Please rush my membership kit to me. If, within 28 days, I'm not delighted with your service you'll refund my membership fee..

Name _____

Address _____

_____

_____ PCW40

A global option

This useful utility by **Martin Amess** *provides a string search facility*

One useful feature that is sadly missing from the QL is the facility to search for and/or replace a certain string contained in a program.

The following program implements this feature allowing you to search for and replace a chosen string contained in a selected program stored on a microdrive. There are three options to choose from.

The first is a search only option. The second goes one stage further and allows you to replace your selected string if required. The third is a global replace option which will replace all occurances of the selected string.

When either option 2 or 3 is chosen then a new program with the alterations will be stored in the file *File_Bak*. At the beginning, any existing file with the name *File_Bak* will be deleted. When the search is completed you can copy the file *File_Bak* to your own program name if you are satisfied with it using the *Copy* command.

Program Notes

Lines 115 to 225

This repeat loop contains the main menu. You are requested to enter your chosen option number (1 to 3). Any other number will result in the program ending.

You will then be asked to enter the string that is to be searched for. If you selected options 2 or 3 you will then be asked to enter the new string that will replace it.

Finally you will need to enter the file that is to be searched, in the format *Mdv? Name_of_File*, where *?* is the Microdrive number and *Name_of_File* is the name of the file stored on microdrive.

Lines 230 to 310

The procedure *Search* is defined. This procedure will search line by line for any occurence of your selected string. When a line is found it will be displayed on the screen and the prompt *Any More (Y/N)?* displayed. Answer *Y* to continue the search or *N* to return to the menu.

Lines 315 to 475

The procedure *Search_Replace* is defined. This procedure is similar to *Search* except that when a line is found containing the selected string you will be asked *Replace ? (Y/N)* after the line has been displayed on the screen. Answering *Y* will replace the string in this line with that of the new data entered at the beginning.

After entering *Y* or *N*, the program line will be checked further to see if there are any more occurences of the selected string. If there are you will be asked again whether or not to replace it.

Once the line is completed the program will continue checking the next line. When the end of the file is reached you will be returned to the menu.

Lines 480 to 620

The procedure *Global* is defined. This procedure works in the same way as the *Search_Replace* procedure except that the user is not asked whether or not to replace individual occurences of the selected string. All occurences are automatically replaced. As each line is processed by the program it is displayed on the screen.

A problem with the QL is that when a line of data is inputted from a file it must not be longer than approx. 125 characters, otherwise the *Buffer full* error will be given.

Many program lines are often larger than 125 characters and therefore this program would not necessarily work with all program files. So to avoid this problem, data is inputted one character at a time using the *Inkey$* keyword. Although this will resolve this problem, it does mean that it slows the program down.

The procedure *line_Input* (Lines 640 to 675) inputs the data from the file one character at a time, searching for the control character *Chr$(10)* which represents the end of each particular line of data.

However, should you be sure that your program does *not* contain any lines over 125 characters, then lines 265,365 and 530 can be replaced by the line *Input #11, Line$*, which will enter data from the file line by line and therefore speed the program up considerably.

```
100 REMark SEARCH & REPLACE
105 REMark © 1984 MARTYN AMESS
110 INK 7 : PAPER 0
115 REPeat MENU_LOOP
120 CLS #0:CLS #1
125 REMark MAIN MENU
130 AT 2,10:PRINT "MAIN MENU":AT 3,10:PRINT "----------"
135 AT 8,0:PRINT "Enter required option.":AT 10,5:PRINT
    "1. SEARCH ONLY":AT 12,5:PRINT "2. SEARCH & REPLACE"
    :AT 14,5:PRINT "3. GLOBAL REPLACE":AT 16,2:INPUT "EN
    TER NUMBER ";OPTION
140 IF OPTION < 1 OR OPTION > 3 THEN EXIT MENU_LOOP
145 CLS
150 IF OPTION <> 1 THEN DELETE MDV1_FILE_BAK
155 AT 10,5:PRINT "ENTER STRING TO SEARCH FOR ":
    AT 12,7:INPUT SEARCH_STRING$
160 IF OPTION= 2 OR OPTION =3 THEN
165 AT 12,5:INPUT "ENTER NEW STRING ";NEW_STRING$
170 OLD_LEN=LEN(SEARCH_STRING$) : NEW_LEN=LEN
    (NEW_STRING$)
175 END IF
180 IF SEARCH_STRING$ ="" THEN STOP
185 CLS :AT 10,1:PRINT "ENTER FILE NAME TO SEARCH":AT
    11,5:PRINT "E.G 'MDV1_TEST
    _BAS'":AT 13,0:INPUT FILE_NAME$
190 CLS
195 SELect ON OPTION
200 =1 : SEARCH
205 =2 : SEARCH_REPLACE
210 =3 : GLOBAL
215 END SELect
220 END REPeat MENU_LOOP
225 STOP
230 REMark SEARCH FOR A STRING
235 DEFine PROCedure SEARCH
240 AT 0,10:PRINT "SEARCH ONLY":AT 1,10
    :PRINT "-----------";
245 OPEN #10,FILE_NAME$
250 REPeat SEARCH_LOOP
255 AT 10,10:PRINT "Searching..."
260 IF EOF(#10) THEN EXIT SEARCH_LOOP
265 LINE_INPUT
270 SET=SEARCH_STRING$ INSTR LINE$
275 IF SET THEN
280     SCR_CLEAR:AT 10,0:PRINT LINE$
285     AT 16,0:INPUT "ANY MORE (Y/N) ?";QUES$
290 IF QUES$="N" THEN EXIT SEARCH_LOOP
295 SCR_CLEAR
300 END IF
305 END REPeat SEARCH_LOOP
310 CLOSE #10:END DEFine
315 REMark SEARCH AND REPLACE A GIVEN STRING
320 DEFine PROCedure SEARCH_REPLACE
    :PRINT "------------------"
325 AT 0,10:PRINT "SEARCH & REPLACE":AT 1,10
330 OPEN #10,FILE_NAME$
335 OPEN_NEW #11,MDV1_FILE_BAK
340 SCR_CLEAR
345 REPeat LOOP
350 AT 10,10:PRINT "Searching..."
355 IF EOF(#10) THEN EXIT LOOP
360 SET=0
365 LINE_INPUT
370 SET=SEARCH_STRING$ INSTR LINE$
375 IF SET THEN LINE_FOUND
380 PRINT #11,LINE$
385 END REPeat LOOP
390 CLOSE #10 : CLOSE #11
395 END DEFine SEARCH_REPLACE
400 DEFine PROCedure LINE_FOUND
```

```
405 SCR_CLEAR
410 AT 10,0:PRINT LINE$
415 AT 15,0:INPUT "REPLACE ? (Y/N) ";QU$
420 SCR_CLEAR
425 IF QU$ <> "Y" THEN RETurn
430 NEW_LINE$=FILL$(" ",((LEN(LINE$) +
    (NEW_LEN-OLD_LEN))))
435 NEW_LINE$(1 TO (SET-1)) = LINE$(1 TO (SET-1))
440 NEW_LINE$(SET TO)=NEW_STRING$
445 IF (SET + NEW_LEN) > LEN(LINE$) THEN GO TO 235
450 NEW_LINE$((SET + NEW_LEN) TO)=LINE$((
    SET+OLD_LEN) TO)
455 LINE$=NEW_LINE$
460 SET1=SET:SET=SEARCH_STRING$ INSTR LINE$
    ((SET+NEW_LEN) TO)
465 IF SET <> 0 THEN SET=SET+SET1+OLD_LEN
470 IF SET THEN GO TO 235
475 END DEFine
480 REMark GLOBAL SEARCH & REPLACE
485 DEFine PROCedure GLOBAL
490 AT 0,10:PRINT "GLOBAL REPLACE":AT 1,10:
    PRINT "----------------"
495 AT 3,2:PRINT "Processing line:"
500 OPEN #10,FILE_NAME$
505 OPEN_NEW #11,MDV1_FILE_BAK
510 SCR_CLEAR
515 REPeat GLOBAL_LOOP
520 IF EOF(#10) THEN EXIT GLOBAL_LOOP
525 SET=0
530 LINE_INPUT
535 SET=SEARCH_STRING$ INSTR LINE$
540 IF SET THEN AMEND_LINE
545 PRINT #11,LINE$
550 SCR_CLEAR:AT 10,0:PRINT LINE$
555 END REPeat GLOBAL_LOOP
560 CLOSE #11 : CLOSE #10
565 END DEFine
570 DEFine PROCedure AMEND_LINE
575 NEW_LINE$=FILL$(" ",((LEN(LINE$) +
    (NEW_LEN-OLD_LEN))))
580 NEW_LINE$(1 TO (SET-1))=LINE$(1 TO (SET-1))
585 NEW_LINE$(SET TO)=NEW_STRING$
590 IF (SET + NEW_LEN) > LEN(LINE$) THEN GO TO 235
595 NEW_LINE$((SET + NEW_LEN) TO)=LINE$
    ((SET+OLD_LEN) TO)
600 LINE$=NEW_LINE$
605 SET1=SET:SET=SEARCH_STRING$ INSTR LINE$
    ((SET+NEW_LEN) TO)
610 IF SET <>0 THEN SET=SET+SET1+OLD_LEN
615 IF SET THEN GO TO 320
620 END DEFine
625 DEFine PROCedure SCR_CLEAR
630 AT 3,0:CLS 2
635 END DEFine SCR_CLEAR
640 DEFine PROCedure LINE_INPUT
645 LINE$=""
650 REPeat LOAD_LOOP
655 A$=INKEY$(#10)
660 IF A$=CHR$(10) THEN EXIT LOAD_LOOP
665 LINE$=LINE$ & A$
670 END REPeat LOAD_LOOP
675 END DEFine LINE_INPUT
```


NOW 3RD GREAT YEAR!

HIRE SPECTRUM 2X81 and COMMODORE 64 TAPES

LIFE MEMBERSHIP £5·00 TAPE HIRE FROM 50P INCLUDING VAT

HUGE RANGE! ADVENTURE GAMES ARCADE and SIMULATION GAMES BUSINESS and PRACTICAL PROGRAMS UTILITIES M/c COMPILERS EDUCATIONAL FROM OVER 60 TOP SUPPLIERS

FREE ILLUSTRATED QUARTERLY MAGAZINE WITH TIPS, NEWS, REVIEWS DISCOUNT OFFERS

OVER 3,000 DELIGHTED MEMBERS!

■ The first true software library to be set up in the world—and still the largest ■ Unrivalled tape stock, as you'd expect from our head start ■ Run by a 16-bit computer (2 million bytes of program and data on disk!) with the help of six less able but more friendly mere humans! ■ Often imitated (sometimes almost to the letter—flattery indeed!) but never equalled ■ Friendly, helpful service—at the end of a phone if needed ■ Free membership of our Discount Club: pounds off peripherals and top-of-the-chart tapes ■ Any loading problems (rare!) automatically credited ■ Shop now open (next to Post Office) for rental and discount sales of tapes and peripherals ■ Branches throughout the world ■ No complicated schemes, no commitment to quantity—rent what and when you like ■ Printed, illustrated magazine "Computerchat" packs in more than any mere typed newsletter ■ Keenest-ever rates ■ ACCESS holders can join by telephone on 0730 892732 ■ NO RIVAL can offer all this....

SPECIAL OFFER! YOUR FIRST TWO TAPES FREE

IF YOU USE THIS COUPON!

or send £1 for magazine & details. Props: ALEC FRY ARPS, FRSA and ERNA FRY, BA

To: SOFTWARE LIBRARY, Farnham Road, West Liss, Hants GU33 6JU.

NAME.....Machine.....

ADDRESS.....

THE ORIGINAL SOFTWARE LIBRARY!

Special offer from this issue: LIFE MEMBERSHIP £5 (normally £9.50). Overseas (Europe only) £10, or join local branch in W. Germany, France, Holland, Belgium, Scandinavia, South Africa, Ireland—send Int. Reply Coupon and we'll forward your enquiry.

All software supplied with publishers permission.

HISOFT PASCAL DEVPAC

Quality ZX SPECTRUM* Software

HISOFT PASCAL 4T

"... I haven't seen any other compiler that could match Hisoft's Pascal" ... *Using the Spectrum Micro – Autumn 1983*

"This is a very impressive product ... of benefit to any Spectrum programmer ..." *David Bolton ZX COMPUTING Aug/Sept 1983*

Just two comments from full length reviews of our powerful and virtually full implementation of Standard Pascal. The advantages of using Pascal are well-known — fast, self-documenting, and above all, structured programs and now, with Hisoft Pascal, you can reap all these benefits on a wide range of home computers, including the 48K Sinclair Spectrum! Hisoft Pascal produces programs that run typically 40 times faster than equivalent ZX BASIC programs and, sometimes, up to 1,000 times faster!

Hisoft Pascal supports FOR ... DO, WHILE ... DO, REPEAT ... UNTIL, CASE ... OF, INTEGERs, REALs, CHARacters, RECORDs, POINTERs, SETs, ARRAYs etc. etc. — it is not a Tiny Pascal but a virtually full implementation of the language allowing the user to develop true high-level language skills while attaining e ecution speed close to that of machine code. Complete with a 70-page manual.

HISOFT DEVPAC 3

"... DEVPAC is most highly recommended. The documentation is first class." *Your Computer May 1983*

"... *if you write programs in machine code, buy DEVPAC – it is the best currently on the market." Adam Denning, ZX SOFT in Which Micro September 1983*

Two comments from reviews of earlier versions of DEVPAC — **now** we have DEVPAC 3 available: a powerful Z80 assembler with conditional assembly, assembly from tape (to enable generation of very large code files), ORG, EQU, DEFB, DEFS, DEFW, DEFM, labels of any length — in fact all you need for fast (3,000 lines per minute) and powerful assembly programming. But it doesn't stop there: DEVPAC 3 also includes an incredible debugger/dis-assembler giving you a 'front panel' display of the Z80 system and allowing extensive debugging of your machine-code program, including single-stepping programs **EVEN IN ROM!!** Open up the secrets of low-level programming with DEVPAC 3.

Prices:

Hisoft Pascal 4T (ZX SPECTRUM) £25 inclusive
(NewBrain, SHARP MZ700 etc) £35 plus VAT

Hisoft DEVPAC 3 (ZX SPECTRUM) £14 inclusive
(NewBrain £25 inclusive

★★★STOP PRESS★★★ Hisoft Pascal for the SPECTRUM now comes complete with a Turtle Graphics package allowing fast and easy production of complex graphic displays

HISOFT

180 High Street North
Dunstable
Beds LU6 1AT
Tel: (0582) 696421

First, a question.

Who do you think are the world's most avid consumers of microcomputers?

The ingenious Japanese? The fashionable French? The acquisitive Americans?

Believe it or not, it's we British who own more micros per person than any other nation on earth.

Yet, despite its amazing impact, the microcomputer has only just begun to scratch at the surface of our lives. Without doubt, the best is yet to come.

Use and Abuse.

In several recent surveys, some astonishing facts about micro use and abuse were revealed.

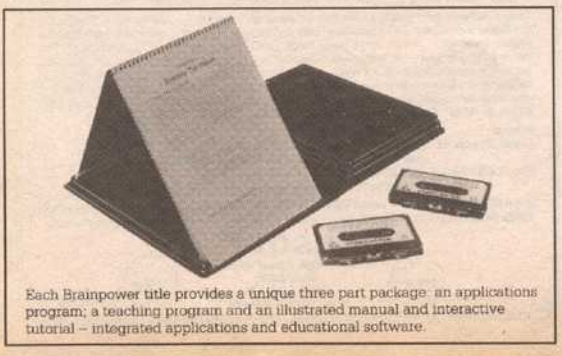
It was discovered that the micro is hopelessly under-utilised. If you're already a micro owner, your own experience may well confirm this unhappy state of affairs.

Brainpower. A source of knowledge.

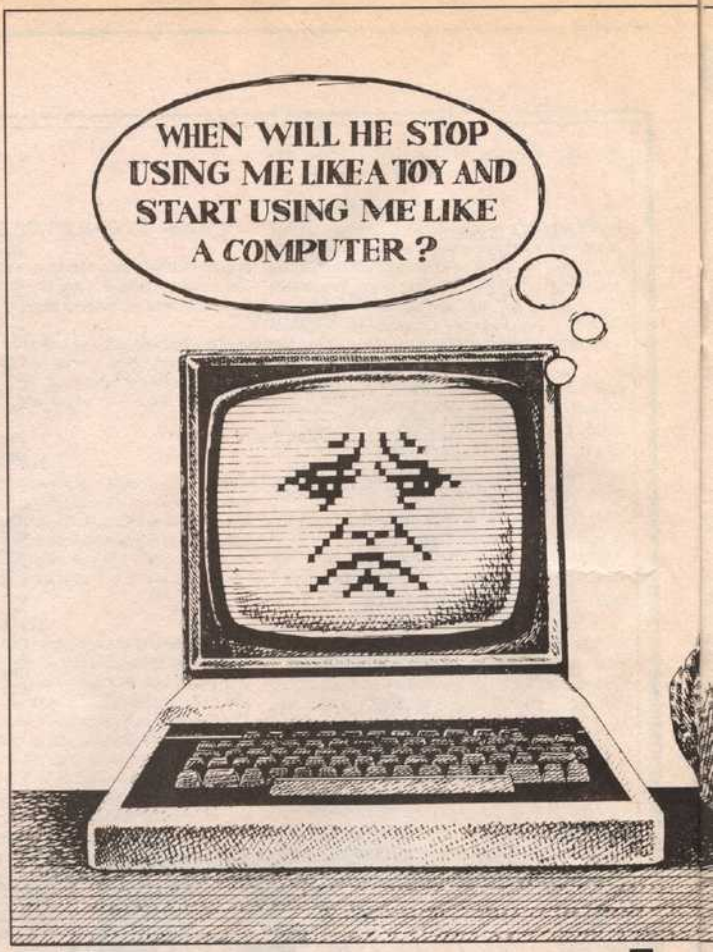
For thousands of years, the key to self improvement has been in the hands of the written word. Now, thanks to the Brainpower range, it's very much in the hands of the micro.

As the Brainpower range demonstrates, this does not require prior knowledge of micros, or how they work.

The Brainpower concept has been devised as *integrated* applications and educational software. And its aim is to stretch both your mind and your imagination.



Each Brainpower title provides a unique three part package: an applications program; a teaching program and an illustrated manual and interactive tutorial – integrated applications and educational software.



Now you and y bring out the be

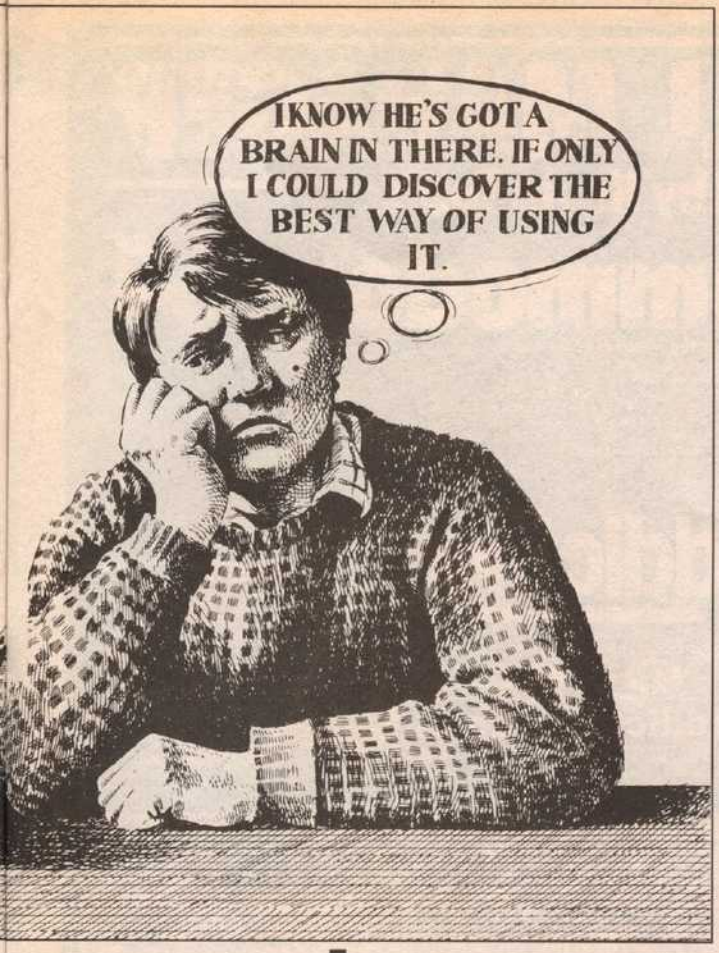
It offers a unique way to realise your own full potential and that of your micro. In a way you could never hope to achieve from the printed word alone.

In this respect, the Brainpower range stands on its own.

A unique concept.

All the Brainpower titles share one thing in common, apart from their stimulating subject matter, that makes them unique.

You will find each title comprises three distinctive elements: A teaching program that helps you to get to grips



your micro can test in each other.

with the subject at your own pace. An applications program to put what you learn into action. And finally, with each package, you get an expertly written book and interactive tutorial.

STAR WATCHER

The secrets of the heavens are yours. Isolate all the constellations as well as main stars for easy identification. Even turn stars and constellations on and off at will. Screen by screen, you will see exactly how the 1,500 brightest stars move through time and space. And all from any point on the Earth's surface at any time of the year.

Star Watcher is without doubt the definitive home observatory.

DECISION MAKER

Should you buy a new house? Change jobs? Have children? Start your own business? Such decisions should not be taken lightly. Armed with Decision Maker, you can be quite sure of examining every avenue, and arriving at a rational, structured answer.

If you value the way you run your life, you need Decision Maker.

NUMBERS AT WORK

Tackle all the number problems you're likely to face in daily and business life. From straightforward multiplication and division of fractions, through decimals, percentages, ratios, mark-ups and margins to compound interest, depreciation, VAT and PAYE.

Numbers at Work gives you a distinct edge, since you will be able to both understand and manipulate numbers at will.

PROJECT PLANNER

Project Planner teaches you how to divide even the most complex project down into meaningful components. Learn how to determine the length and importance of every single task, and those elements critical to the fulfilment of your plan. Even anticipate problems you hadn't envisaged.

You have the measure of any situation because you have the fullest possible grasp of all the factors which affect it.

FORECASTER

Forecaster takes the guesswork out of forecasting, by accepting that tomorrow's events will be best predicted on the basis of today's facts. Armed with Forecaster, sales targets and growth trends, even sporting events and election results can be accurately and very quickly predicted.

Invaluable to you in both your private and business life.

ENTREPRENEUR

Entrepreneur teaches you all the steps required to plan and start your own business. It will forecast your first 18 months' cash flows, generate your Profit and Loss Account and Balance Sheet. Help you in discussions with your bank manager and partners. Explain the notions of assets, liabilities, overheads, working capital, cash flow and break even point.

Invaluable to anyone who is planning a business venture.

	SPECTRUM 48K	BBC B Tape	BBC B DISK 40/80 Track	COMMODORE 64 Tape	COMMODORE 64 Disk
Tick your choice	£14.95	£19.95	£24.95	£19.95	£24.95
Decision Maker		N/A	N/A		
Numbers at Work		N/A	N/A		
Star Watcher		N/A	N/A	N/A	N/A
Entrepreneur		N/A	N/A		
Project Planner	N/A				
Forecaster	N/A				

Please add £1.50 for postage and packing

* I enclose a cheque or postal order, crossed and made payable to Triptych Publishing Ltd for £.

* Please debit my Access/Barclaycard, number

NAME

ADDRESS

POSTCODE

TELEPHONE SIGNATURE

Send to: Triptych Publishing Ltd, (TBL Book Service Ltd) FREEPOST, CAMBERLEY, SURREY GU15 3BR. All goods fully tested and returnable if in any way defective. Allow 28 days for delivery. *Delete as applicable. PCWK

BRAINPOWER

FOOTBALL MANAGER

Designed by Kevin Toms

for the Commodore 64

Some outstanding features of the game

• **Matches in 3D graphics** • Transfer market
• **Promotion and relegation** • F.A. Cup matches
• **Injury problems** • Full league tables • **Four Divisions**
• Pick your own team for each match • **As many seasons as you like**
• Managerial rating • **7 skill levels** • Save game facility
• **Financial manipulations** • 64 teams and customising feature
• **You can even be sacked!**

Prices: BBC Model B £7.95
Commodore 64 £7.95
Spectrum 48K £6.95
ZX81 16K £5.95
(N.B. 3D GRAPHICS ARE NOT INCLUDED IN THE ZX81 VERSION)
Overseas orders add £1.50

Strategy Game of the Year, 1983
(Nominated)
Golden Joystick Awards

Addictive

Available from computer software stockists nationwide, including Boots and John Menzies

To order by mail (p&p free) send cheques or postal order to:

Addictive Games
7A RICHMOND HILL, BOURNEMOUTH BH2 6HE

SOFTWARE PLUS COMPUTERS

Members of SPECTRUM PLC

COMMODORE PRODUCTS

COMMODORE 64
(Including Cassette Recorder, Joystick & 4 Games) 249.95
1541 Disk Drive 210.00

ARRIVING THIS WEEK:
COMMODORE 16 and PLUS 4 COMPUTER DPS 1101 DAISYWHEEL PRINTER

PRINTERS – Prices include cable for most micros
(Please state make when ordering)
SHINWA CP80 ..... 215.00
EPSON RX80FT 265.00
MANNESMANN TALLY MT80 ..... 240.00
SMITH CORONA L-1000 (DAISYWHEEL) 276.00

SOFTWARE – Delivery Free of Charge

396	KOKOTONI WILF	6.95	373	HEATHROW	7.95
395	SCRABBLE	14.95	372	ARABIAN NIGHTS	7.00
394	FALCON PATROL	7.95	371	POTTY PIGEON	7.95
393	TERRORIST	7.95	370	FLAK	14.95
392	GOLF	7..95	369	TRASH MAN	7.95
391	H.E.R.O.	9.99	367	NITERIDER	2.99
390	SHEEP IN SPACE	7.95	366	MAGIC CARPET	2.99
388	WIMBLEDON '64	7.95	365	PIGS IN SPACE	2.99
397	BEAR BOVER	6.95	364	KRYPTON	2.99
386	DAREDEVIL DENNIS	7.95	363	WESTWORLD	2.99
385	MACHINE CODE TUTOR	14.95	362	DARK STAR	2.99
384	MONTY MOLE	7.95	361	MIND CONTROL	2.99
378	DECATHLON (OCEAN)	7.95	359	FOOTBALL MANAGER	7.95
377	WHERE'S MY BONES	7.00	357	AUTOMANIA	7.95
376	GILLIGANS GOLD	6.90	356	ANDROID 2	6.90
375	BLACK HAWK	7.95	355	FELIX IN THE FACTORY	7.95
374	DECATHLON (ACTIVISION)	9.99	354	EAGLES	29.95

SOFTWARE PLUS, 12 York Street, Bath, Avon BA1 1NG
or Telephone 0225-61676 with your Access or Barclaycard No.
Please add £10 for delivery when ordering Hardware and send orders to:—
Authorised dealer for COMMODORE, ACORN, AMSTRAD, SPECTRUM, SANYO

A sign of the times

Reduce your multiplication error on the CBM 64 with this utility program by **Steve McCarthy**

The following routine for long multiplication will allow numbers of any length to be multiplied together and an answer produced which omits both rounding and any 'E' format. Further to this, it has been discovered that the function on the CBM 64 sometimes results in inaccurate results and again is limited by the length of a number which may be handled.

The 'raising a number to a power' inaccuracies may be overcome using the formula *Print Int((AN)+.5)*, but there is still the limitation of the numbers' lengths. The subroutine below overcomes this.

Program 1 is an example program merely to pass values over to the subroutines. As it stands, the length of numbers is limited by the length of line accepted by the Input command, but if the subroutines are incorporated in another program, the size of number is limited only by the space available to the relevant strings within the Commodore's memory.

Program One

The two numbers to be multiplied are passed to the subroutine in *A$* and *B$*.
WN denotes whether these are both whole numbers or not.
The answer is returned in *Z$*.
N, I and *J* are control loop variables.
Temporary variables are *E, N1, N2, A, B, C, X$, Y$* and *E$*.
Neg is a signal which flags whether the result will be negative (1) or positive (0).
Nd is a value denoting the number of decimal places in the answer.

Program 2

In addition to the above, *Po* holds the power the number is to be raised to.
P is a control loop variable.
P$ is a temporary variable.

Input rules

For long multiplication, either integers or decimals, positive or negative, may be input. The same applies to the number to be raised to a power. However, the power can only be positive.

Line No.

10-180	Example program to collect and pass on input values
1000	Check to see if either input value is 0. If it is, return 0 in answer.
1005	Zeroise variables and check if both numbers are integers.
1010-1095	Find decimal point(s), adjust strings and signal a decimal answer.
1100-1106	Check for negative value of input and signal if found.
1108-1240	Multiplication routine.
1250-1270	Remove leading zeroes from answer.
1290	Adjust format of answer if not whole number.
1300	Add leading zero to answer if it is a decimal less than 1.
1310-1320	Add negative sign to answer if flagged and return.
2000-2020	Subroutine for handling powers.

```
 5 REM*********PROGRAM 1.......EXAMPLE INPUT***********
 10 PRINT"□PRESS 1 FOR POWER, 2 FOR LONG MULTIPLICATION."
 20 GETK$:IFK$="2"THEN100
 30 IFK$<>"1"THEN20
 40 PRINT"ENTER NUMBER TO BE RAISED:":INPUTP$
 50 PRINT"ENTER POWER:":INPUTPO
 60 PRINT"INPUT 1 IF NUMBER IS AN INTEGER, ELSE 0":INPUTWN
 70 IFWN<>1ANDWN<>0THEN60
 80 GOSUB2000:GOTO150
 100 PRINT"ENTER FIRST NUMBER:":INPUTA$
 110 PRINT"ENTER SECOND NUMBER:":INPUTB$
 120 PRINT"INPUT 1 IF BOTH ARE WHOLE NOS., ELSE 0":INPUTWN
 130 IFWN<>1ANDWN<>0THEN120
 140 GOSUB1000
 150 PRINT"ANSWER= ":PRINTZ$
 160 PRINT"PRESS ANY KEY FOR NEXT NUMBERS"
 170 GETK$:IFK$=""THEN170
 180 GOTO10
 999 REM********PROGRAM 2.......LONG MULTIPLICATION
     SUBROUTINE***********
1000 IFA$="0"ORB$="0"THENZ$="0":RETURN
1005 E=0:Z$="":ND=0:IFWN=1THEN1100
1010 FORN=1TOLEN(A$)
1020 IFMID$(A$,N,1)="."THEN1040
1030 NEXTN:GOTO1060
1040 ND=LEN(A$)-N
1050 A$=LEFT$(A$,N-1)+RIGHT$(A$,LEN(A$)-N)
1060 FORN=1TOLEN(B$)
1070 IFMID$(B$,N,1)="."THEN1090
1080 NEXTN:GOTO1100
1090 ND=ND+LEN(B$)-N
1095 B$=LEFT$(B$,N-1)+RIGHT$(B$,LEN(B$)-N)
1100 NEG=0:N1=0:N2=0
1102 IFLEFT$(A$,1)="-"THENN1=1:A$=RIGHT$(A$,LEN(A$)-1)
1105 IFLEFT$(B$,1)="-"THENN2=1:B$=RIGHT$(B$,LEN(B$)-1)
1106 IF((N1=1)AND(N2<>1))OR((N2=1)AND(N1<>1))THENNEG=1
1108 A=LEN(A$):B=LEN(B$)
1110 FORI=ATO(1-B)STEP-1
1120 FORJ=BTO1STEP-1
1130 C=I+B-J
1140 IF C>A THEN1200
1150 IF C<1 THEN1190
1160 X$=MID$(A$,C,1)
1170 Y$=MID$(B$,J,1)
1180 E=E+VAL(X$)*VAL(Y$)
1190 NEXTJ
1200 E$=STR$(E)
1210 Z$=RIGHT$(E$,1)+Z$
1220 IFLEN(E$)<=2 THEN E=0:GOTO1240
1230 E=VAL(LEFT$(E$,LEN(E$)-1))
1240 NEXTI
1250 IFLEFT$(Z$,1)<>"0"ORLEN(Z$)<=ND THEN1280
1260 Z$=RIGHT$(Z$,LEN(Z$)-1)
1270 GOTO1250
1280 IF ND=0 THEN1310
1290 Z$=LEFT$(Z$,LEN(Z$)-ND)+"."+RIGHT$(Z$,ND)
1300 IFLEFT$(Z$,1)="."THENZ$="0"+Z$
1310 IFNEG=1THENZ$="-"+Z$
1320 RETURN
1999 REM*******RAISING TO A POWER CONTROL
     SUBROUTINE*********************
2000 Z$=P$
2010 FORP=1TOPO-1
2020 B$=Z$:A$=P$:GOSUB1000:NEXTP:RETURN
```

HATS OFF TO MEL

M

☐ Please send me your free catalogue.

Please send me:

GENERAL BOOKS

☐ Learning With Adventure Programs	£5.95
☐ A Guide to Playing The Hobbit	£3.95
☐ Computer and Video Games Book of Adventure	£5.95

COMMODORE 64 BOOKS

☐ Commodore 64 Games Book 2	£6.95
☐ Commodore 64 Software Projects	£6.95
☐ Commodore 64 Machine Language for the Absolute Beginner	£6.95
☐ Commodore 64 Games Book	£5.95
☐ Commodore 64 Sound & Graphics	£5.95
☐ Commodore 64 Exposed	£6.95

SPECTRUM BOOKS

☐ Complete Spectrum BASIC Course	£9.95
☐ Micronet Book	£6.95
☐ Over The Spectrum	£4.95
☐ Spectrum Machine Language for the Absolute Beginner	£5.95
☐ Advanced Spectrum Machine Language	£6.95
☐ The Complete Spectrum ROM Disassembly	£9.95
☐ Super Charge Your Spectrum	£5.95
☐ Understanding Your Spectrum	£6.95
☐ Spectrum Microdrive Book	£5.95

BBC BOOKS

☐ BBC Hardware Projects	£9.95
☐ BBC Software Projects	£6.95
☐ BBC BASIC for Beginners	£7.95

I enclose my cheque/money order for £

Please debit my Access Card No. Expiry Date

Signature

Name

Address

Postcode POP1/10

Orders to:
Melbourne House Publishers
39 Milton Trading Estate
Abingdon, Oxon OX14 4TD

Correspondence to:
Church Yard
Tring
Hertfordshire HP23 5LU

All Melbourne House cassette software is unconditionally guaranteed against malfunction.

Trade enquiries welcome.

£	
£	+ p/p .80
Total	
£	

All prices include VAT where applicable. Please add 80p for post and pack.

Access orders can be telephoned through on our 24-hour ansafone (0235) 83 5001.

GSH

BOURNE HOUSE!

Learning With Adventure Programs gives you a chance to enjoy the most exciting and challenging type of computer game together with friends or children. The book outlines how to make Adventure playing a sharing experience and specific examples are given for The Hobbit, Valhalla, The Quill and Snowball.

Commodore 64 Games Book 2. Just when you thought it was safe to go back to your micro... here's 30 more exciting new and original games for your Commodore 64. Every game has been specifically designed so you learn programming skills as you go. There's arcade games, strategy games and games you can modify and develop yourself. With CHEXSUM, typing in is easier, and mistakes are quickly located. A must for all Commodore owners.

Commodore 64 Software Projects is a special book which will enable you to create useful programs and learn more about programming.

Software Projects gives you program ideas, discusses the overall set-up and an outline of the various procedures. You write the programs, and Software Projects tells you how to test it or offers hints and clues on how to do it. Create six useful programs, ranging from information management to business programs and games.

BBC Hardware Projects is the A.B.C. of BBC interfacing for the enthusiast or student. This book will enable you to add a whole new dimension to electronic projects by interfacing your BBC micro with other equipment.

Now you can use your BBC to operate up to two hundred and fifty five mains powered appliances and domestic lighting, build your own joysticks plus many more practical, experimental and educational projects.

The definitive book for every BBC owner who wants to fully utilise the BBC micro in their own electronic hobbies and projects.

The Complete Spectrum BASIC Course is a comprehensive book which will immediately become an indispensable learning tool for all your Spectrum programming. All is revealed in our easy, step-by-step guide with programs and "test yourself" exercises. The appendices explain the major pitfalls that you may encounter in each problem. Even if the idea of writing programs is completely mystifying to you this book will show you just how easy it is and how much fun you can have learning. In no time you will be able to write and enjoy complex programs. If you want to learn to program your Spectrum then The Complete Spectrum BASIC Course is the book for you.

Electrifying Action

Storm Warrior.

He needs no allies, his strength and agility will prove him worthy of the name – 'Storm Warrior'.

Storm Warrior is a 12 screen, all machine code, fast moving graphics adventure using 58K of RAM. It features 5 levels of play, full playing demo mode on the first four screens, game freeze facility and a fast loading system.

Commodore 64 Tape £7.95 Disk £9.95 (including VAT.)

The White Viper.

A great graphics adventure in the land of Demons. Coming Soon.

Commodore 64 Tape £7.95 Disk £9.95 (including VAT.)

Dead City Rescue.

The mind blowing, fast loading, 100 screen graphics adventure featuring 5 different speeds of scrolling to give an incredible depth of perspective. Mentally stimulating, strategy packed, visually stunning!

Commodore 64 Tape £7.95 Disk £9.95 (including VAT.)

FRONT Runner

Meet the Challenge

Available from your favourite Software Retailer.

Random waves

Improve your sounds on the Dragon using this machine code routine by ***Brian Cadge***

The Dragon's *Sound* and *Play* commands may be quite adequate for making the odd beep and playing the odd tune, but the lack of white noise facilities and the interference heard on higher pitched notes makes it impossible to create good sound effects in your own Basic games. However, it is quite simple to overcome these two main problems.

The interference is caused by the Dragon's IRQ program (the program that interrupts Basic 50 times a second to update the value of timer etc), so turning it off whilst producing sound eliminates this. Normal notes are produced by a square wave sound, that is turning the speaker on and off at regular intervals. To produce white noise we simply produce a random wave—taking values from the Rom at high speed will produce this effect. This is especially useful for producing gunshot and explosion type effects.

The program listed here allows you to define your own sound effects and produce them with a single command. Once installed the machine code program can be used in your own programs.

To input the program, type in the Basic loader program, taking care with the Data statements. When run, the program will either tell you that you have made an error entering the data statements (in which case you should check through the listing and correct the mistakes) or inform you that the program has loaded into reserved Ram successfully. An Assembler listing is also included.

Sounds are defined in strings, such as *A$*, to produce the sound anywhere in your program you add the line; *XX=USR0(VARPTR(A$))*. The string does not have to be A$, it can be any string variable, but it cannot be a constant (eg, *USRO(VARPTR("ABC"))*.

The commands used in the string allow you to do the following:

V — Sets initial volume (0–255)
v — Sets rate of change of volume (−128 to +128)
A — Sets initial Frequency (0–5000)
a — Sets rate of change of frequency (−128 to +128)
C — Sets number of cycles to output (0–65535)
L — Sets lowest frequency value (100–5000)
W —Sets square wave/white noise flag.

You do not have to set up every parameter in each string, as if a parameter is not changed, the last value used will be assumed. The string is composed as follows. Capital *V* indicates a volume setting, whilst an inverse *V* (shown above as *v*) indicates a rate of change of volume value. These are followed by a character whose *ASCII* code is the required setting, so to set the initial volume to 150, you would use *"V"+CHR$(150)*. The rate of change of volume can be either positive so the *ASCII* value following the inverse *V* would be 0 to 128, or negative, in which case the *ASCII* code is 256 minus value. So a value of minus three would give 253. To set the initial frequency, a capital *A* is followed by two characters whose 16 bit value is the initial setting. So to set this to 520, you would use *"A"+CHR$(2)+CHR$(8)*—that is 2×256=512+8=520. To set rate of change of frequency use an inverse *A* followed by the value, as used for volume.

The number of cycles to be output is set by a capital *C* followed by two characters as for the frequency. The higher this number is the longer the sound will last. The sound type is set by using *W* followed by either *CHR$(0)* for normal noise or *CHR$(1)* for white noise. When the frequency is changing, if it hits zero or the lowest allowed value (ie, the highest number allowed) the sound will 'bounce' and alter direction. You can set this highest value with the *L* command, again followed by two characters.

All this may sound complicated, but it is really very simple once you start experimenting. If the string you enter is invalid in any way, a new error message *?SD ERROR* is produced. A couple of examples to try out are:

```
A$= "V" + CHR$(255) + "v" + CHR$(1) + "A" +
    CHR$(0) + CHR$((200) + "a" + CHR$(15)
    + "C" + CHR$(4) + CHR$(20) + "L" +
    CHR$(2) + CHR$(0)
A$= "v"+CHR$(5)+"a"+CHR$(1)
A$= "W"+CHR$(1)
```

Remember that lower case letters in the above examples should be entered on the Dragon as inverse letters, obtained using *Shift–0*.

```
5 ' BASIC LOADER PROGRAM
10 CLEAR200,32500
20 FOR I=0 TO 235:READ A$:V=VAL("&H"+A$):CS=CS+V:POKE 32501+I,V:NEXTI
30 IF CS<>23918 THEN PRINT"ERROR IN DATA STATEMENTS!":SOUND1,1:STOP
40 DEF USR0=32501
50 PRINT"CODE LOADED - USE XX=USR0(VARPTR(X$))"
60 A$="v"+CHR$(5)+"a"+CHR$(1)
70 XX=USR0(VARPTR(A$))
80 NEW
100 DATA BD,8B,27,1F,01,E6,84,AE,02,A6,80,5A,81,41,27,1D,81,61,27,23,81,56,27,26
,81,76,27,29,81,43,27,2C,81,4C,27,39,81,57,27,2E
110 DATA C6,11,7E,83,44,10,AE,81,10,BF,7F,5F,5A,20,2E,A6,80,B7,7F,61,20,27,A6,80
,B7,7F,62,20,20,A6,80,B7,7F,63,20,19,10,AE,81
120 DATA 10,BF,7F,64,5A,20,0F,A6,80,B7,7F,68,20,08,10,AE,81,10,BF,7F,66,5A,5A,26
,A1,20,0A,00,C8,0F,FF,01,04,B0,01,F4,00
130 DATA B6,FF,23,8A,08,B7,FF,23,B6,FF,01,84,F7,B7,FF,01,B6,FF,03,84,F7,B7,FF,03
,1A,10,CE,9C,40,BE,7F,64,B6,7F,62
140 DATA 7D,7F,68,27,02,A4,C0,B7,FF,20,8D,40,7F,FF,20,8D,3B,B6,7F,63,B8,7F,62,4D
,26,05,70,7F,63,20,03,B7,7F,62
150 DATA 10,BE,7F,5F,B6,7F,61,31,A6,10,8C,00,00,22,05,70,7F,61,20,0F,10,BC,7F,66
,23,05,70,7F,61,20,04,10,BF,7F,5F
160 DATA 30,1F,26,B4,1C,EF,39,10,BE,7F,5F,31,3F,26,FC,39
```

Continued over the page

```
*
* USER DEFINED SOUND GENERATION
*
        ORG   32501
USR     JSR   35623     ;GET USR
        TFR   D,X       ;VALUE IN X
        LDB   ,X        ;LEN OF STR
        LDX   2,X       ;ADR OF STR
SETUP   LDA   ,X+       ;A CHR
        DECB
        CMPA  #'A
        BEQ   SETAMP
        CMPA  #'a
        BEQ   SETACG
        CMPA  #'V
        BEQ   SETVOL
        CMPA  #'v
        BEQ   SETVCG
        CMPA  #'C
        BEQ   SETCYC
        CMPA  #'L
        BEQ   SETLOW
        CMPA  #'W
        BEQ   SETWHT
ERROR   LDB   #17       ;SD ERROR
        JMP   33604     ;PRODUCED
SETAMP  LDY   ,X++
        STY   AMPTUD
        DECB
        BRA   NXTCHR
SETACG  LDA   ,X+
        STA   AMPCHG
        BRA   NXTCHR
SETVOL  LDA   ,X+
        STA   VOLUME
        BRA   NXTCHR
SETVCG  LDA   ,X+
        STA   VOLCHG
        BRA   NXTCHR
SETCYC  LDY   ,X++
        STY   CYCLES
        DECB
        BRA   NXTCHR
SETWHT  LDA   ,X+
        STA   WHITE
        BRA   NXTCHR
SETLOW  LDY   ,X++
        STY   AMPLOW
*       DECB
NXTCHR  DECB            ;CHRS LEFT
        BNE   SETUP     ;MORE TO DO
        BRA   SOUND     ;MAKE SOUND
*
*
AMPTUD  FDB   200
AMPCHG  FCB   15
VOLUME  FCB   255
VOLCHG  FCB   1
CYCLES  FDB   1200
AMPLOW  FDB   500
WHITE   FCB   0
*
SOUND   LDA   65315     ;SETUP CHIP
        ORA   #8        ;FOR 6 BIT
        STA   65315     ;SOUND FROM
        LDA   65281     ;D/A PORT
        ANDA  #247
        STA   65281
        LDA   65283
        ANDA  #247
        STA   65283
        ORCC  #16       ;IRQ'S OFF
        LDU   #40000
        LDX   CYCLES
SNLOOP  LDA   VOLUME
        TST   WHITE     ;CHECK IF
        BEQ   OUTDA     ;WHITE NOIS
        ANDA  ,U+       ;ADJUST
OUTDA   STA   65312     ;D/A SND
        BSR   WAIT
        CLR   65312     ;CLEAR D/A
        BSR   WAIT
CHGVOL  LDA   VOLCHG    ;CHANGE VOL
        ADDA  VOLUME    ;& CHECK
        TSTA            ;FOR LIMITS
        BNE   VOLOK
        NEG   VOLCHG
        BRA   CHGAMP
VOLOK   STA   VOLUME
CHGAMP  LDY   AMPTUD    ;CHANGE AMP
        LDA   AMPCHG    ;& CHECK
        LEAY  A,Y       ;FOR LIMITS
        CMPY  #0
        BHI   TRYHI
        NEG   AMPCHG
        BRA   AMPDON
TRYHI   CMPY  AMPLOW
        BLS   AMPOK
        NEG   AMPCHG
        BRA   AMPDON
AMPOK   STY   AMPTUD
AMPDON  LEAX  -1,X      ;FINISHED?
        BNE   SNLOOP    ;NO - AGAIN
RETURN  ANDCC #255-16   ;IRQ'S ON
        RTS             ;GOTO BASIC
WAIT    LDY   AMPTUD
DELAY   LEAY  -1,Y      ;DELAY LOOP
        BNE   DELAY     ;FOR
        RTS             ;AMPLITUDE
```


Superb Quality at a Ridiculously Low Price!

all Games £3-95 all Utilities £7-95

GUARANTEED same-day despatch ORDER NOW!

GAMES FOR DRAGON

NEW **STARFIGHTER** — The surface of a hostile planet scrolls beneath you as you bob and weave to seek and destroy enemy craft. £3.95

BONKA — Climb the ladders and dig holes to trap the "Meanies" before they kill you. £3.95

DRAGON 2 — Snakes, Lander and Invaders: 3 Games for £3.95

VULTURES — Galaxian-type game in which a flock of Vultures guard their eggs. Just when you think you've killed them all, the eggs hatch! £3.95

MISSION XK1 — Penetrate the asteroid belt to land on the planet Zyphon and collect liquid zyphoneum fuel. £3.95

NEW **LASERGATES** — Trapped in a time warp maze on the derelict asteroid Cretos, you defend yourself against the robot guardians left by the "Old Ones", using only the old flintlock phaser and the portable switchpad which opens and closes the passage doors against the space winds. £3.95

DRAGON 4 — Pterodactyl, Torpedo Run and Hornets. 3 games for £3.95

DROIDS — Stop the Droids removing lead shields to release the bombs which will destroy the world. £3.95

MAURICE MINOR — Out for a quiet drive in your Morris Minor you inadvertantly wander on to a race track and find yourself in the middle of a Grand Prix! £3.95

CHESS — 8 selectable levels of skill, cursor control of moves supports Castling and En Passant. £3.95

NEW **SKY JOUST** — Fight for the supremacy of the sky from the back of your battle-ostrich, specially trained to joust. £3.95

GAMES FOR COMMODORE 64

NEW **NITEFLIGHT** — Flight simulator with realistic real-time control provides an excellent introduction to the difficulties of flying by instruments for the more serious user (or an unusually difficult challenge for the arcade games player!) £3.95

CYBERMEN — You attempt to remove the platinum bars distributed at random throughout the maze of corridors in the Cosmic space station defended by the Cybermen. These home in on you to kill you and their indestructable overseer can even pass through walls! £3.95

NEW **JELLLYBONES** — Get your skeleton (piece by piece!) to its coffin at the centre of a maze patrolled by killer deathwatch beetles, while the passage doors open and close at random in the wind. £3.95

VULTURES — a Commodore version out of our Dragon game. £3.95

BONKA — a Commodore version of our Dragon game. £3.95

TUDOROLL — FOR BBC/ELECTRON

An addictive game of strategy and skill. The aim is to score as many points as possible on the 9 sections of your scorecard using the three cards displayed on screen and the trump card. For 1 to 4 players. 5 levels of skill (2 are for 1 player only against the clock). £3.95

NEW

SHARP MZ 700

3 Adventures and an Arcade Game

THE OLD HOUSE — Search the Old House to find the fabulous diamond hidden there. Be careful of touching levers and buttons which might have unexpected effects! £3.95

KNIGHT ERRANT — A mammoth adventure where you enter the castle with your manservant to find Merlin. Complete with magic, spells, pits, crocodiles in the moat and many other fascinating features. £3.95

HAUNTED HOUSE — When the old miser died his money was known to be hidden somewhere in his house. Many tried to find it only to be slain by his ghost or by the many traps left for intruders. £3.95

SCRAMBLE — Now you can play the old favourite on your Sharp £3.95

UTILITIES

COMMODORE 64

NEW **EDITOR/ASSEMBLER** — Two pass global type. Supports labels of six characters. Directives: ORG, RMB, FCB, FDB, FCC, REM. Hexadecimal arithmetic. Powerful debug Monitor includes single-step tce plus set break points, selection of useful sub-routines and Disassembler. £7.95

NEW **BASIC PLUS** — Adds 31 new commands (all available as keywords — no SYS calls required). The new commands are: AT, BCOL, BDR, CIRCLE, CLG, CLS, CRASH, DRAW, FILL, HIRES, INK, LASER, LINE, MOB, MOF, MULT, OFF, OLD, PAPER, PCOL, PING, PLACE, PLOT, PUT, SCOL, SOUND, SPRITE, SSD, TEXT, UNPLOT, ZAP. £7.95

NEW **SPRITEMASTER** — This provides quick and easy editing of up to 128 sprites. Both standard and multicoloured sprites are catered for. Animation of sprites is made very easy by the use of the SCAN command. The edited sprites may be saved to tape or disk for use in other programs. Altogether 15 commands are avcailable and the program is menu driven for ease of use. £7.95

NEW **ZIPPO** — This saves and loads your Basic or machine code programs 8 times faster. It also provides all your programs with an auto-run facility. For only £3.95!

DRAGON

EDITOR/ASSEMBLER — Two pass global type. Supports labels of six characters. Directives: ORG, RMB, FCB, FDB, FCC, REM. Hexadecimal arithmetic. Powerful debug Monitor includes 14 commands plus set break points, selection of useful sub-routines and Disassembler. £7.95

Note new Address

Add 50p P&P for orders under £5.00

J. Morrison (Micros) Ltd.
Dept PCW841, 4 Rein Gardens,
Tingley, West Yorkshire WF3 1JR

ORDER NOW!
Telephone (0532) 537507
and use your Access card
SAME-DAY DESPATCH

Salamander SOFTWARE DISCOUNT CLUB

FREE STICKERS

FREE MEMBERSHIP

FREE POSTERS

FREE T SHIRTS

Dear Dragon Owner,

Are you feeling left in the lurch, tired of trying to find quality Dragon Software in the shops? Relax! Now Salamander brings you the Software Discount Club which offers the best value in one of the widest ranges available.

Just clip the coupon below – get free membership to the Salamander Software Discount Club and see how much you can save. Membership gives you further discounts – a minimum of £2.00 and possibly much much more on any future order.

There's a Tandy 4 colour printer as 1st prize in the members only competition and, as a member, you've the opportunity to contact the Dragon Agony Aunt with all your Dragon problems.

But remember – act now! – this is a special introductory offer – so send today and bring out the best in your Dragon with the Salamander Software Discount Club.

THE FRANKLINS TOMB TRILOGY

"Program of the month" Computer Choice

1. – Franklins Tomb
2. – Lost in Space
3. – Fishy Business

All come complete with 24 page illustrated manual.

£2 off each – were £9.95

NOW £7.95

STRATEGIC WIZARD WAR

A game of magical combat involving skill and luck. For 2-9 players.

"Wizard War stands out as the most original game" *Popular Computing Weekly.*

£3 off – was £7.95

NOW £4.95

UTILITY D.R.S. DATA RETRIEVAL

The most sophisticated database available for the Dragon. Stores 22,000 characters, 7 times more on disc. Allows any field searching. Ideal for storing addresses, recipes and business use.

£5 off – was £14.95

NOW £9.95

ADVENTURE WINGS OF WAR

The World War 2 adventure that's got them gripped from Swansea to Katmandu.

£3 off – was £7.95

NOW £4.95

EDUCATIONAL TURTLE GRAPHICS

Based on LOGO. A system which gives you an increased knowledge of geometry and a basic understanding of simple programming. An ideal educational tool for all ages.

£3 off – was £9.95

NOW £6.95

SAVE OVER £10

All 3 of the Franklins Tomb Trilogy featuring everybody's favourite detective – Dan Diamond.

Normally £29.85

NOW £19

EXTRA SPECIALS

£4 off each of these six fabulous games

GAMES COMPENDIUM
NIGHTFLIGHT
STAR JAMMER
GOLF
VULCAN NOUGHTS & CROSSES
SUPER SKILL HANGMAN

Usually £7.95

£3.95 each

Game	Price	Quantity
Wings of War	£4.95	
Franklins Tomb	£7.95	
Lost in Space	£7.95	
Fishy Business	£7.95	
Wizard War	£4.95	
Utility D.R.S.	£9.95	
Turtle Graphics	£6.96	
Games Compendium	£3.95	
Nightflight	£3.95	
Star Jammer	£3.95	
Golf	£3.95	
Vulcan O & X	£3.95	
Super Skill Hangman	£3.95	
Franklins Tomb Trilogy	£19.00	

Please make cheques/P.O. payable to Salamander Software

Name _____

Address _____

_____

Total £ enclosed _____

☐ Please send me your full colour catalogue.

Salamander SOFTWARE DISCOUNT CLUB

Salamander Software Discount Club
17 Norfolk Road, Brighton, East Sussex. BN1 3AA

SIMPLY CHEAPEST SOFTWARE
CHECK THESE PRICES

SINCLAIR SPECTRUM

NEW TITLES	RRP	OUR PRICE
TWIN KINGDOM VALLEY	7.95	5.68
KOKO TONI WILF	6.95	4.96
AVALON	7.95	5.69
BEWARE HOUSE	5.95	4.25
WHITE LIGHTNING	14.95	10.69
PYJAMARAMA	6.95	4.96
TERROR HAWK	6.95	4.96
AIR TRAFFIC CONTROL	9.95	7.11
PERILS OF BEAR GEORGE	6.95	4.96
DRAGON FIRE	7.95	5.69
ALL LEVEL 9 GAMES	9.95	7.11
MOONSWEEPER	7.95	5.69
STAGE COACH	6.95	4.96
RIVER RAID	7.99	5.69
ENDURO	7.99	5.69
HERO	7.99	5.69
BLACK HAWK	6.95	4.96
DELTA WING	6.95	4.96
TRAXX	6.95	5.38
ZENJI	7.99	5.69
DEFUSION WORMS	6.95	4.00
SHERLOCK HOLMES	14.95	10.69
BEST SELLERS		
MATCH POINT	7.95	5.68
PSYTRON	7.95	5.68
MONTY MOLE	6.95	4.96
DALEY'S DECATHLON	6.90	4.96
FRANK 'N' STEIN	5.95	4.25
FULL THROTTLE	6.95	4.96
SABRE WULF	9.95	7.11
TORNADO LOW LEVEL	5.95	4.25
WORLD CUP FOOTBALL	6.95	4.96
LORDS OF MIDNIGHT	9.99	7.15
STOP THE EXPRESS	5.95	4.25
CODE NAME MAT	6.95	5.07
RAPSCALLION	6.95	4.96
MICRO OLYMPICS	5.95	4.25
JET SET WILLY	5.95	4.25
JACK & THE BEANSTALK	5.95	4.25
MUGSY	6.95	5.00

SPECTRUM

	RRP	OUR PRICE
FIGHTER PILOT	7.95	5.50
NIGHT GUNNER	6.95	4.99
FACTORY BREAKOUT	5.50	3.96
THE FOREST	9.95	7.11
FOOTBALL MANAGER	6.95	5.15
MANIC MINER	5.95	4.25
WORSE THINGS HAPPEN AT SEA	5.95	4.25
ALCHEMIST	5.50	3.96
HARRIER ATTACK	5.95	3.63
SCUBA DIVE	5.95	3.80
BLUE THUNDER	5.50	3.92
SNOWMAN	6.95	5.38
ATIC ATTACK	5.50	4.39

COMMODORE 64

NEW TITLES	RRP	OUR PRICE
INT. SOCCER (ROM)	9.99	8.24
TROLLIE WALLIE	7.00	5.00
TOY BIZARRE	9.99	7.14
ZENJI	9.99	7.14
RIVER RAID	9.99	5.64
STUNT BIKE	6.90	4.93
ALL LEVEL 9 GAMES	9.95	7.11
KOKO TONE WILF	6.95	4.96
HERCULES	6.95	4.96
FALCON PATROL 2	7.95	6.13
TERRORIST	7.95	6.13
BRUCE LEE	14.95	10.69
STRIP POKER	9.95	7.11
BEST SELLERS		
BEACH HEAD	9.95	7.11
DALEY'S DECATHLON	7.90	5.65
GORF (ROM)	9.99	8.24
SOLO FLIGHT	14.95	11.51
POOYAN	9.95	7.67
THE QUILL	14.95	10.69
SUMMER GAMES (DISK)	19.95	14.26
ENCOUNTER	9.95	7.11
HOBBIT	14.95	10.69
DALLA QUEST (DISK)	14.95	10.69
FOOTBALL MANAGER	7.95	5.68

COMMODORE 64 (CONT)

	RRP	OUR PRICE
VALHALLA	14.95	10.69
LOCO	7.95	5.68
WIMBLEDON	7.95	5.68
BLACK HAWK	7.95	6.33
TALES OF ARABIAN NIGHTS	7.00	5.39
BLAGGER	7.95	5.68
DECATHLON	9.95	7.25
POTTY PIGEON	7.95	5.70
GILLIGAN'S GOLD	6.90	4.93
PITFALL	9.99	7.15
HERO	9.99	7.25
CAVELON	6.90	4.93
AZTEC CHALLENGE	8.95	6.87
FORBIDDEN FOREST	8.95	6.89
TRASHMAN	7.95	6.07
FLIGHT PATH 737	7.95	5.68
FALL OF ROME	6.99	5.00
HEROES OF KARN	7.00	5.39
HEATHROW AIR TRAFFIC CONTROL	7.95	5.68
HUNCHBACK	6.90	4.95
EVIL DEAD	6.99	5.00
SHEEP IN SPACE	7.50	5.90
HULK	9.95	7.11
MANIC MINOR	5.95	4.25
TWIN KINGDOM VALLEY	9.50	6.79
BEAMRIDER	9.99	7.25
REV. MUTANT CAMELS	7.50	5.36
HARRIER ATTACK	6.95	4.96
THE BOSS	8.95	6.39

BBC

	RRP	OUR PRICE
WHITE KNIGHT MK2	11.50	8.50
MICRO OLYMPICS	5.95	4.25
HOBBIT	14.95	7.00
FOOTBALL MANAGER	7.95	5.68
FORTRESS	8.95	6.39
GHOULS	7.95	5.68
ELITE	14.95	10.69
SON OF BLAGGER	7.95	5.69
TARZAN	7.95	5.69
AVIATOR	14.95	10.69
CHUCKIE EGG	7.90	5.65

All tapes guaranteed genuine; First class delivery within 7 days. P+P UK please add 50p per order: Europe add 75p per tape: Elsewhere add £1.00 per tape. Send large S.A.E. for full list (state machine) please amke Cheques P/O's payable to:

BARGAIN SOFTWARE

10 MELODY COURT, STONEHILL ROAD ESTATE, LONDON W4 3AW
TEL: (01) 995 2763

POPEYE®

© 1984 King Features Syndicate, Inc.

Guess what's for dessert?

Pack up your BBC B and travel (if you dare) to Cannibal Island by ***Glynne Evans***

This is a simple adventure game written in Basic on the BBC micro in mode 7. Although it does not have many locations the program is designed so more data can be added.

The scenario is a desert island in the tropics and the object is to find the lost treasure and return to your ship. The program understands most of the Basic commands.

North, west, south, east, up, down can all be abbreviated to the first letter. *Take, get, drop, swim, jump, dig, unlock, look* are all self-explanatory.

To obtain a list of the objects being carried up to a maximum of three, type *Inv*. All commands must be capitals and most can be abbreviated to the first three letters.

Program Notes

10 to 100	Instructions and initialise variables
110 to 170	Main program loop calling other procedures
180 to 230	End of game
300 to 380	*Defproc*readin reads in object data
390 to 440	*Defproc*objects prints objects at location if any
450 to 750	*Defproc*input gets input and acts accordingly
760 to 800	*Defproc*sep separates string
810 to 890	*Defproc*take take routine
900 to 960	*Defproc*drop drop routine
970 to 990	*Defproc*inv inventory routine
1000 to 1780	Data for locations and exits in the form of description string then six pointers to other room numbers NSWEUD

```
10 MODE7
30 PRINTCHR$(141);CHR$(132);"    Cannibal Island"
40 PRINTCHR$(141);CHR$(129);"    Cannibal Island"
50 PRINT'"You have been shipwrecked on a desert island
   while searching for treasure. By sheer coincidence this
   is the very island Blackbeard left his fortune on.
   The crew have mutinied and fled in fear of the
   dangerous ";
60 PRINT"cannibals who inhabit  the island.":PRINT'"You
   alone continue the search for the   fortune!"
70 G$=GET$
80 CLS
90 ENVELOPE1,1,0,0,0,0,0,0,127,0,0,-1,126,126
100 L=1:E=0:DIM O$(9,1),C$(4,1),O(9),C(9):PROCREADIN:
    PTD=0:CA=1:LKD=1:BM=0:LOC =1:FL=0:PLK=0
110REPEAT
120 IF PTD=0 PROCDESCRIBE:PRINT'Z$:PROCOBJECTS:PTD=1
130
140PROCINPUT:PLK=PLK+1
150 IF O(2)=99 AND L=25 THEN PRINT"With amazing initiative
    you lay the driftwood across the gap and jump across
    just in time to see the wood go up in flames!Gripping
    stuff eh?":L=28:O(2)=98
160 IF L=2 AND O(1)=99 THEN GOTO 190
170UNTIL E=1
180 IF O(1)<>99 PRINT"You are not with us any longer
    sadly!":PRINT''"Another game?":G$=GET$:IFG$<>"Y
    "THENEND ELSE RUN
190 CLS:PRINTCHR$(141);CHR$(132);"Well done !"
200PRINTCHR$(141);CHR$(129);"Well done !"
210 PRINT''"You have succesfully completed the
    adventure in ";PLK;" actions!"
220 PRINT"You are a HERO and return with your
    treasure to England and live happily    ever after
    in a life of luxury!"
230 END
240DEFPROCREADIN
250FORA=1TO8:READO$(A,0),O$(A,1):NEXT
260DATA"a Beautiful Treasure Chest","CHEST","a piece of
   driftwood","DRIFTWOOD","a small bottle","BOTTLE","a
   large green parrot","PARROT","**Golden keys**","KE YS",
   "a banana","BANANA","a spade","SPADE","an aqualung",
   "AQUALUNG"
270FORA=1TO8:READ O(A):NEXT
280ENDPROC
290DATA39,5,19,3,98,12,17,98
300DEFPROCDESCRIBE
310 RESTORE(L*20)+980
320READZ$,N,S,W,E,U,D
330 IFZ$="J"THENZ$="We are in jungle.There are paths going
    everywhere."
340 IFZ$="M"THENZ$="We are in a maze of rock formations
    which all look the same to me!"
350 IF L=20 AND BM=1 THEN Z$="There is a pile of rubble
    where the     witch doctor's hut was!"
360 IF CA=0 AND L=7 THEN Z$="Long John Lagoon!
    A hole goes down into the ground!":D=23
370 IF CA=0 AND LOC=0 AND L=23 THEN Z$="We are in the
    tunnel.The door is open tothe north and light shines
    from above.":N=24
380ENDPROC
390DEFPROCOBJECTS
400 PRINT"I can see"
410A=0:FORB=1 TO 9:IF O(B)=L THEN PRINTO$(B,0):A=1
420 NEXT
430 IF A=0 THENPRINT"nothing else here."
440ENDPROC
450DEFPROCINPUT
460 INPUT"*"I$:L$=LEFT$(I$,3)
470 IF L=21 AND L$="PUS" AND BM=0 THEN PRINT"BAAAAAANNG!
    !!!":SOUND0,1,6,20:BM= 1:O(8)=20:PTD=0:ENDPROC
480 IF L$="REA" AND L=22 THEN PRINT"The message reads:
    28 Feb 1901 I am dying...the natives have taken all
    my possessions....getting weak..that witch doctor...
    I'll show him...he took myaqualung...":ENDPROC
490 IF L$="FIL" AND O(3)=99 AND L=21 AND FL=0 THEN FL=1:
    O$(3,0)="a bottle of water":PRINT"The bottle is now
    full.":ENDPROC
500 IF L$="EMP" OR L$="POU" AND O(3)=99 THEN FL=0:O$(3,0)
    ="a small bottle":PRINT"The bottle is now empty.
    ":PROCCHKBOT:ENDPROC
510 IF L$="FIL" AND O(3)=99 AND L<>21 AND FL=0 THEN
    PRINT"You cannot reach the water!":ENDPROC
520 IF L$="SWI" AND L<>8 THEN PRINT"You can't swim
    here.":ENDPROC
530 IF L$="SWI" AND L=8 AND O(8)<>99 THEN PRINT"You
    start to swim but the water sucks   you down and
    you drown!(nasty!)":E=1:ENDPROC
540 IF L$="SWI" AND L=8 AND O(8)=99 THEN PRINT"Whoooosh!
    You dive in and swim to the bottom.There you find a
    **Golden Key**!":O(5)=99:O(8)=98:PTD=0:SOUND0,1
    ,4,5:ENDPROC
550 IF L$="INV" THEN PROCINV:ENDPROC
560 IF L$="UNL"ANDL=23 AND LOC=1 AND O(5)=99 THEN PRINT"
    The door swings open revealing a tunnel north!":
    LOC=0:PTD=0:ENDPROC
570 IF L$="HEL" THEN PRINT"What do you think this is,
    a giveaway?":ENDPROC
580IF L$="KIL" THEN PRINT"Violence gets you
    nowhere!":ENDPROC
590 IF L$="JUM" AND L=3 THEN PRINT"Wa'    out below!":
    FOR J=255 TO 150 STEP -1:        ;J,1:NEXT:FOR
    DEL=1TO860:NEXT:PRINT"SPLASH!!":SOUND0,1,4,5::
    E=1:ENDPROC
600 IF O(7)=99 AND L$="DIG" AND L=7 AND CA=1 THEN PRINT
    "You dig furiously and find a hidden cavebelow!!":
    CA=0:PTD=0:ENDPROC
610 IF L$="DIG" AND O(7)<>99 THEN PRINT"You can't dig
    without the spade!":ENDPROC
620 IF L$="DIG" AND O(7)=99 AND L<4 THEN PRINT"You dig
    a hole in the deck andthe ship sinks in a whirlpool
    of water!":E=1:ENDPROC
630 IF L$="DIG" AND O(7)=99 AND L<>7 THEN PRINT"You
    can't dig here te groundstoo hard."
640 IF L$="NOR" OR I$="N" THEN IF N<>0 THEN L=N:PTD=0:
    ENDPROC
650 IF L$="SOU" OR I$="S" THEN IF S<>0 THEN L=S:PTD=0:
    ENDPROC
660 IF L$="WES" OR I$="W" THEN IF W<>0 THEN L=W:PTD=0:
    ENDPROC
670 IF L$="EAS" OR I$="E" THEN IF E<>0 THEN L=E:PTD=0:
    ENDPROC
680 IF LEFT$(I$,2)="UP" OR I$="U" THEN IF U<>0 THEN
    L=U:PTD=0:ENDPROC
690 IF L$="DOW" OR I$="D" THEN IF D<>0 THEN L=D:PTD=0:
    ENDPROC
700 IF I$="LOOK" THEN PROCDESCRIBE:PRINT'Z$:PROCOBJECTS:
    ENDPROC
710 IF L$="TAK" OR L$="GET" THEN PROCSEP:IF SP=1
    PROCTAKE:ENDPROC
720IF L$="DRO" OR L$="THR" THEN PROCSEP:IF SP=1
    PROCDROP:ENDPROC
730 IF L$="NOR"ORL$="SOU"ORL$="WES"ORL$="EAS"ORL$=
    "DOW"ORI$="UP"ORI$="U"ORI$="N"ORI$="S"ORI$="D"ORI$=
    "W"ORI$="E"THENPRINT"I can't go that way old chap!":
    ENDPROC
740 PRINT"Don't understand old bean!"
```

```
750 ENDPROC
760DEFPROCSEP:SP=0
770FORA=1TOLEN(I$):IFMID$(I$,A,1)=" "THENPS=A:SP=1
780 NEXT
790IFSP=0THENENDPROC
800P$=RIGHT$(I$,LEN(I$)-PS):ENDPROC
810DEFPROCTAKE
820OP=0:FOR A=1TO9:IFO(A)=99THENOP=OP+1
830NEXT:IF OP>2 THEN PRINT"You are carrying too much.
    ":NH=0:ENDPROC
840NH=0
850 FORA=1TO9:IFLEFT$(P$,4)=LEFT$(O$(A,1),4) AND O(A)=L
    THEN NH=A
860 NEXT
870 IF NH=0 THEN PRINT"That ain't here!":ENDPROC
880 PRINT"O.K.":O(NH)=99
890 ENDPROC
900DEFPROCDROP
910 NH=0
920 FORA=1TO9:IFLEFT$(P$,4)=LEFT$(O$(A,1),4) AND
    O(A)=99 THEN NH=A
930NEXT
940 IF NH=0 THEN PRINT"I haven't got that!":ENDPROC
950 PRINT"O.K.":O(NH)=L
960ENDPROC
970DEFPROCINV:WE=0:PRINT"You have:":FORA=1TO9:
    IF O(A)=99 THEN PRINTO$(A,0):WE= 1
980 NEXT:IFWE=0 THEN PRINT"nothing."
990 ENDPROC
1000DATA"We are in the hold of the ship.It is dark and
    murky,the only lightcoming from the open hatch above."
1010DATA0,0,0,0,2,0
1020DATA"This is the deck.From here you can see
    the jungle and the beach to the east.Theship is
    aground in shallow water.The rigging looks climbable."
1030 DATA0,0,0,4,3,1
1040DATA"You climb the rigging with amazing agility and
    find the Crows Nest.The viewis incredible.The island
    is large and  snow tipped mountains can be seen in
    thedistance.There is a river to the East."
1050DATA0,0,0,0,0,2
1060DATA"There is sandy beach with a dense jungleto the
    east and a large sailing ship is aground on the reef
    offshore.The beach  continues north and south."
1070DATA6,5,2,9,0,0
1080DATA"The beach continues but the rocks are  larger.
    There is a dark worn track leading east into the
    jungle.Other pathsgo north and south."
1090DATA8,7,0,9,0,0
1100DATA"AH HAARR this be Hook Bay.The beach
    curves round to the north and back south"
1110DATA8,4,0,9,0,0
1120DATA"You smash your way through dense undergrowth and
    find the ancient cannibal ritual ground.A large totem
    pole sticks out of the centre of the clearing
    menacingly!The earth is sandy and loose here."
1130 DATA5,0,0,0,0,0
1140DATA"Dead man creek.There is pool of brown stagnant
    water here with sheercliffs  all around.The only
    exit is south."
1150 DATA0,4,0,0,0,0
1160 DATA"J"
1170DATA10,8,11,11,0,0:REM ROOM 9
1180DATA"J"
1190DATA12,8,9,11,0,0
1200DATA"J"
1210DATA10,8,12,9,0,0
1220DATA"J"
1230DATA13,8,10,9,0,0
1240DATA"J"
1250DATA9,10,8,14,0,0:REM ROOM 13
1260DATA"The jungle is thinning and I can seesmoke rising
    abovethe trees tothe northWest is a jungle path."
1270DATA15,0,13,0,0,0
1280DATA"The trees are spread out and I can see  a
    village of grass thatched mud huts west.It looks
    deserted.South is a path  into  the jungle."
1290DATA0,14,16,0,0,0
1300DATA"This is the centre of the village.Eastis the
    path into the jungle.There is a  lit fire here with
    stones around theedge.All around are the mud huts."
1310DATA18,17,20,15,0,0
1320DATA"We are in a one of the huts."
1330DATA16,0,0,0,0,0
1340 DATA"This is obviously the chiefs hut.It is  large
    and has may animal skins on the  walls.There is a
    draft from above."
1350DATA0,16,0,0,19,0
1360 DATA"We are on the roof of the hut."
1370 DATA0,0,0,0,0,18
1380DATA"AAAA! OH NO! It's the witch doctors hut.The hut
    is hung with skins and animal  teeth,claws and bones.
    In the corner sitsthe man himself.I think he is
    meditating"
1390DATA0,21,22,16,0,0
1400DATA"We are by a swiftly flowing stream that is
    within easy reach.There is a push button here."
1410DATA20,0,0,0,0,0
1420DATA"AHA! We are standing in the missionary'shut.
    A bamboo table is in one corner witha piece of paper
    stuck to it!"
1430DATA0,0,0,20,0,0
1440DATA"We are in an underground tunnel.There
    isa locked door north."
1450DATA0,0,0,0,7,0
1460DATA"YOU NOW WILL ENTER THE TREASURE
    CHAMBERSWHICH ARE HEAVILY GUARDED
    There are exits in all directions."
1470DATA25,23,27,26,0,0
1480DATA"This is the south side of the fire pit,
    a natural volcanic fissure.The distance across is too
    far to jump.The only exit is south."
1490DATA0,24,0,0,0,0
1500DATA"We are going along a round
    curving west-east tunnel."
1510DATA0,0,24,25,0,0
1520DATA"We are going along a round curving
    east-west tunnel."
1530DATA0,0,25,24,0,0
1540DATA"M"
1550DATA32,35,34,29,0,0
1560DATA"M"
1570DATA37,37,28,30,0,0
1580DATA"M"
1590DATA29,29,32,36,0,0
1600DATA"M"
1610DATA28,33,38,29,0,0
1620DATA"M"
1630DATA31,0,31,35,0,0
1640DATA"M"
1650DATA0,34,24,32,0,0
1660DATA"M"
1670DATA0,0,33,35,0,0
1680DATA"M"
1690DATA33,0,31,37,0,0
1700DATA"M"
1710DATA37,0,0,0,0,0
1720DATA"An amazing purple rock grows out of the floor.
    There are exits east and west."
1730DATA0,0,28,36,0,0
1740DATA"M"
1750DATA39,32,35,30,0,0
1760DATA"HOOray HOOray! We are in the treasure  vault.
    The chest is in the corner full  of valuable tresure!
    You must now make it back to the ship!"
1770DATA0,38,0,0,0,0
1780DATA0,38,0,0,0,0
```

SAVE . . . SAVE . . . SAVE

DISCOUNT COMPUTERS AND SOFTWARE

48k Spectrum..... £119.95
48k Oric Atmos £139.95
Prices include VAT & P.&P.

Discount Software for Atari ★ BBC ★ CBM 64 ★ VIC 20 ★
Spectrum ★ Oric 1 ★ Oric Atmos ★ Texas 99/44

For free lists send SAE stating machine type to:

RAMTOPS
47 Broom Lane, Levenshulme, M/C M19 2TX
or telephone 061 442 5603.

SPECTRUM & BBC POOLS PREDICTOR

WITH 11,000 MATCH DATABASE

Now in its 3rd successful season, Mayday Software's Pools Predictor has been made even more powerful with a new and unique 11,000 match database. SEVEN separate forecasting techniques have been combined to give you the best forecasts yet. And just as easy to use is our new racing analyser. This uses the racecard from your daily paper to analyse any horse race — and it's yours at no extra charge!

FREE RACING ANALYSER

BOTH PROGRAMS FOR ONLY

£8.99

MAYDAY SOFTWARE
181, PORTLAND CRESCENT
STANMORE, MIDDX, HA7 1LR

THE MEGASAVE *FANTASTIC* SAVINGS

SPECTRUM

SHERLOCK	12.95
CHINESE JUGGLER	5.95
DANGER MOUSE	5.95
PYJARMARAMA	5.95
BEAR GEORGE	5.95
STEVE DAVIS SNOOKER	6.85
ENDURO	6.85
DEUS EX MACHINA	12.95
DARK STAR	6.50
LORDS OF MIDNIGHT	8.50
KOSMIC KANGA	4.95
MONTY MOLE	5.85
DECATHLON (DALEYS)	5.85
RAPSCALLION	5.85
AUTOMANIA	5.75
TWIN KINGDOM VALLEY	7.95
HAMPSTEAD	8.50
LEGEND OF AVALON	7.95
KENTILLA	6.95
BRAXXBLUFF	6.95
RIVE RAID	6.85
HERO	6.85

SPECTRUM

GIANTS REVENGE	4.95
MICRO OLYMPICS	4.75
WHITE LIGHTNING	12.50
FRANKL N STEIN	4.95
FULL THROTTLE	5.95
QUILL	10.75
PSYTRAXX	6.85
STARBIKE	5.95
KOKOTONI WILF	4.95
DELTAWING	5.95
STAGE COACH	5.95
BLACK HAWK	5.95
TERRAHAWKS	5.95
GILLIGAN'S GOLD	4.95

COMMODORE

JET SET WILLY	6.95
KOKOTONI WILF	5.95
STUNT BIKE	5.75
QUO VADIS	8.75
MONTY MOLE	6.85
ZAXXON	8.75
NATO COMMANDER	8.75
HIGH NOON	6.85
HAVOC	8.50
RIVER RAID	8.50

ANKM	7.85
AZTEC	7.85
PSYTRON	6.85
ANCIPTAL	6.50
POSTER PASTER	5.85
JAVA JIM	6.95
CURRAH SPEECH	27.50

CMB 64

3D ANT ATTACK	7.85
ZIM SALABIM	8.50
STEVE DAVIS SNOOKER	6.85
LAZY JONES	6.85
DANGER MOUSE	6.95

POST & PACKAGING FREE
STATE WHICH MICRO
FAST SERVICE
SEND CHEQUE/P.O. TO:
MEGASAVE Dept 1, 76 Westbourne Terrace, London W2

POPULAR Computing WEEKLY Back Issues

Almost all the copies of **PCW** that you missed can still be bought as back issues for only 50p, including postage and packing.

An **index** of the contents of the 36 issues published in 1982 is now available from the Publishers for only £1.20. It includes full details of all the programs, routines, reviews and news that you might have missed.

Please send me the following back issues at 50p each:

Total £

Please send me a copy of the 1983 PCW Index at £1.20 ☐
I enclose a cheque postal order for £

Name

Address

Please return to Back Issues, PCW, 12-13 Little Newport Street, London WC2R 3LD.

MEGABYTE

SPECTRUM		SPECTRUM		CBM 64	
ANTICS	5.50	PSYTRON	6.40	FORBIDEEN FOREST	7.75
AUTOMANIA	5.70	RAPSCALLION	5.80	HIGH NOON	6.85
BEACH HEAD	6.75	RIVER RAID	8.75	INTERN'T'L SOCCER	8.85
BRAXX BLUFF	6.10	SABRE WULF	7.95	JETSET WILLY	6.85
DALEY'S DECATHLON	5.90	SHERLOCK	11.75	LOCO	6.85
ENDURO	8.75	TERRAHAWKS	5.70	KOKOTONI WILF	5.85
FRANK N STEIN	5.10	T.L.L.	4.75	MANIC MINER	6.70
GIANT'S REVENGE	5.75	VALHALLA	11.15	MONTY MOLE	6.85
HAMPSTEAD	11.75	WHITE LIGHTNING	11.75	PITFALL II	8.85
KOKOTONI WILF	5.10	**CMB 64**		PERCY PIDGEON	6.85
JETSET WILLY	4.75	ASTROCHASE	7.75	PYSTRON	7.75
LORDS OF MIDNIGHT	7.95	AUTOMANIA	6.75	RIVER RAID	8.85
MANIC MINER	4.75	AZTEC CHALLENGE	7.75	SOLO FLIGHT	11.75
MATCHPOINT	7.25	BEACHHEAD	8.25	STRIP POKER	8.25
MISSION I	6.85	DALEY'S DECATHLON	6.85	TALES ARAB. NIGHTS	5.95
MONTY MOLE	5.70	DEATHSTAR INTERCEP'R	8.25	TASHMAN	6.85
MUGSY	5.70	EVIL DEAD	5.95	T.L.L.	6.85
OLYMPICON	4.75	FLIP AND FLOP	7.75	VALHALLA	11.15
PYJAMERAMA	5.70	FOOTBALL MANAGER	6.85	ZIM SALABIM	8.25
		BLUE THUNDER	5.85		

PLEASE INDICATE COMPUTER

FAST, FREE DELIVERY IN THE UK ALL TAPES ORIGINALS

SEND CHEQUE/P.O. TO:
MEGABYTE 3 JOHNSON ROAD, BROMLEY, KENT.

DON'T JUST PLAY GAMES!
EDUCATIONAL SOFTWARE
ONLY £4.95 EACH

for ANY

SPECTRUM or DRAGON or VIC 20

All Programs written by Qualified Educationalists

Physics 'O' Level/CSE	Maths CSE
Biology 'O' level/CSE	Computer Studies 'O' lev/CSE
Maths 12/14 years	Maths 8/11 years
Arithmetic 7/10 years	Science 12/14 years
Knowledge Quiz 9/99 years	Reasoning 11
Maths 'O' level (Dragon only)	Many others (free catalogue)

FAST DELIVERY BY FIRST CLASS POST

Cheques/PO to:

MICRO DE BUG CONSULTANCY
Dept PCW, 60 Sir Johns Road
Selly Park, Birmingham B29 7ER
021-472 7610

DISCOUNT PERIPHERALS

EPSON PRINTERS (DOT MATRIX)	**PRICE**
RX80T	£199
FX100FT	£499
RX100	£385
RX80FT	£229
SHINWA (Cosmos)	
CP80	£179
STAR DELTA	
10 160 cps 80 columns	£335
15 160 cps 132 columns	£453
STAR GEMINI	
10 120 cps 80 columns	£210
15 120 cps 132 columns	£299
STAR RADIX	
10 200 cps (caps NLQ)	£475
15 200 cps (NLQ) 132 columns	£579
DAISY WHEEL PRINTERS	
JUKI 20 cps	£349
DAISY STEP 2000 20 cps	£229
BROTHER HR1 16 cps	£499
BROTHER HR15 20 cps	£360

Many more printers available also monitors from MICROVITEC PHILLIPS and SANYO. We are dealers for SPECTRUM, COMMODORE and BBC computers and carry a wide selection of software and games for the above, together with consumables, printer ribbons, diskettes, joysticks etc. For more information, or to place your order contact.

STEVRON MICROS
199 DUNSTABLE ROAD
LUTON, BEDS
0582 458630

Open six days per week
10am to 6pm
except Wednesdays
10am to 1pm
Prices exclusive of VAT and delivery

Open Forum

Open Forum **is for you to publish your programs and ideas. Take care that the listings you send in are all bug-free. Your documentation should start with a general description of the program and what it does and then give some detail of how the program is constructed.**

Catalogue

on BBC

This is a simple utility designed to run on the BBC with an Epson printer (It could easily be adapted for any printer.) The program is for those, like myself, who forget to keep careful notes on the contents of their many cassettes. The program allows a cassette cover to be produced using the DS **Cat* command. To exit use <*Esc*> and a screen dump is performed. Tape loading errors are ignored, the error message is retained to indicate the appropriate problem file. If the number of files is greater than one screen, <*Esc*> before scroll and continue with **Cat*.

Program notes

10-50 Initialise printer
80-220 Main loop, input of tape number side, **Cat*, prompts to quit or continue.
260-280 Error handling <esc> to quit **Cat*, tape errors continue, other start again.
320-430 Screen dump outer loop gives address of 1st byte of each newline, inner loop gives offset, test to prevent printing of blank lines.

Variables

ts$	Tape name
tn$	Tape side
ans$	Response
J	Address of 1st byte of newline
JJ	Byte offset
B	Ascii value of character to be printed

```
10REM
20REM     HARD COPY CASSETTE CATALOG
30REM
40REM     R BRIDGES 26-AUG-84
50REM
60ON ERROR GOTO 260
70VDU2,1,27,1,64,3
80REPEAT
90MODE7:VDU12
100INPUT"INPUT TAPE NUMBER "tn$
110INPUT"INPUT TAPE SIDE "ts$
120VDU12
130PRINT"TAPE NO."tn$;SPC(3);"SIDE ";ts$
140*CAT
150PROCscreen_dump
160VDU12
170PRINT"DO YOU WANT TO CONTINUE Y/N":ans$=GET$
180IF ans$="n" OR ans$="N" THEN END
190PRINT"CARRY ON WITH SAME SIDE Y/N":ans$=GET$
200IF ans$="y" OR ans$="Y" VDU12:GOTO140
210VDU2,1,10,3
220UNTIL FALSE
230REM
240REM      ERROR HANDLING
250REM
260IF ERR=17 GOTO150
270IF ERR>215 AND ERR<220 GOTO140
280GOTO90
290REM
300REM      SCREEN DUMP
310REM
320DEFPROCscreen_dump
330VDU2
340FORJ=&7C00 TO &7FE7 STEP 40
350FOR JJ=0TO39
360B=?(J+JJ)
370IF J>&7CB0 AND JJ=0 AND B=32 GOTO420
380VDU1,B
390NEXT
400VDU1,10
410NEXT
420VDU3
430ENDPROC
```

Catalogue
by R Bridges

Microradio

GW6JJN

Program transmission

Commodore users will be interested in an interface just released from Zero Electronics of Great Yarmouth.

The *Com-in 64* enables the Commodore 64 to be used as a terminal for Baudot, Morse, Ascii and Slow Scan TV (SSTV) characters. It also boasts a built-in wordprocessor, RTTY, program transmission and modem facilities.

Message buffers can be stored from the screen to cassette or disc—the screen display itself is divided into a received text section and output section with a bar showing band speed (45, 50, 75, 110 and 300 baud available) mode, current time, (a 24 hour clock is included), options selected, etc. Text can also be dumped to a printer.

The *Com-in 64* costs £125.00. Further details can be got from Zero Electronics, 149 Kingsstreet (Nash House), Great Yarmouth NR30 2PA.

More news comes from Cirkit, the mail-order electronics suppliers formerly known as Ambit. Its new modem is priced at just £59.95, and will be marketed by Protek.

Cirkit says that the modem, the 1200, is four times smaller, three times faster, and a quarter of the price of its nearest rival. It has British Telecom approval for phone connection and can access Telecom Gold and Prestel.

Micro owners will be able to exchange data and programs over the telephone, and it will eventually send and receive electronic mail.

It will be compatible with any computer with an RS232 port and interface packs will be available for the BBC B Electron, Spectrum, QL, Atmos, Amstrad, and MSX. Cirkit is currently planning a number of similar micro products, so watch this space.

The launch of cheaper communications equipment will probably be a coming trend, as it is becoming evident that people want to do more than play games with their micros.

Acorn's release of its *Viewdata* adaptor for the BBC at £113—a surprisingly reasonable price for Acorn—bears this out. The unit gives access to both Prestel and Telecom Gold. Still, the Cirkit 1200 will do all this at half the price...

Ray Berry GW6 JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share, or topics that you would like to see covered, write to: Ray Berry, Microradio, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Open Forum

Tape Loader

on Oric

Many commercial programs display something on the screen whilst the program is loading. This program emulates this situation and is used as follows:

1. The screen program should be loaded into the computer.
2. Lines 2100 and 2120 should be customised the name of the main program and the author's name, respectively.
3. Save the screen program *Auto* and then stop the tape but *do not* rewind the tape.
4. Save the main program after loading it into the computer.

The program works by printing a screen and then loading the next program on the tape, which should be unnamed.

Variables

G1) General purpose numberic variables.
G2)
T$(1-6) Text strings.

```
"TAPE LOADING SCREEN"
By Barbara Prowse 1984


996 REM**************************
997 REM*  TAPE LOADING SCREEN   *
998 REM* BY BARBARA PROWSE 1984 *
999 REM**************************
1000 CLS:PAPER7:INK0:PRINTCHR$(17):FORG1=1TO4:PRINT:NEXT
1020 FORG1=1TO7:READT$(G1):NEXT
1040 DIML(17):FORG1=1TO17:READL(G1):NEXT
1060 FORG2=1TO17:G1=L(G2):GOSUB1500:NEXT
1100 CLOAD"":CLS:PRINTCHR$(17);:END
1500 IFG1=6THENPRINT" ";CHR$(4);CHR$(27);"D";CHR$(27);"J";:GOTO1540

1520 PRINT"  ";CHR$(27);"A";
1540 PRINTCHR$(27);"S";T$(G1);CHR$(27);"W";
1560 PRINT:IFG1=6THENPRINTCHR$(4)
1580 RETURN
2000 DATA"*******************************"
2020 DATA"*                             *"
2040 DATA"*   Software for ORIC 1 48k   *"
2060 DATA"*         is loading.         *"
2080 DATA"*   ......PLEASE WAIT......   *"
2100 DATA"* PROGRAM NAME (max 25 chars) *"
2120 DATA"*    by NAME (max 22 chars)   *"
2140 DATA1,2,3,2,1,2,6,2,7,2,4,2,1,2,5,2,1
```

Tape Loader
by Barbara Prowse

Arcade Avenue

Round the track

There's lots to squeeze in this week so let's get straight on with it. J Colthart of Tamworth has written in as a witness for his/her friend, one Simon Taylor, who has escaped *Bugaboo*'s cave in just 29 seconds — and they have photos to prove it. They think this is pretty unbeatable — but do you know better? Meanwhile Gary O'Conner of Buckley in Clwyd has scored 47,410 on *Ant Attack*. He used the system that we mentioned a few weeks ago of jumping over boundary walls on an ant's back (remembering that points are awarded for escaping as quickly as possible).

Gary Burrows of Liverpool has scored the following on some 'old but gold' Spectrum games: *Jet Pac* 126,760, *Pssst* 92,285, *Manic Miner* 250,000, *Zzoom* 265,900, *Arcadia* 32,632, on level 58 (which knocks spots off of my high score). Incidentally, Gary, thanks for the encouraging comments but you'll have to write to the editor if you want the Avenue enlarged.

But out of this range of truly memorable scores I must confess to being most impressed by the achievement of B P Jay of Ipswich who writes "as far as I know I'm the first person to have finished first on all ten circuits of Micromega's fantastic new game *Full Throttle*. In a three hour battle on the evening of Wednesday 18th August I sweated my way to first place on each circuit and managed to stay there until I thankfully passed the chequered flag. All races were run on four circuits of the track. We were also offered a tip that "all you need is a bit of patience"!

Andrew Lang of Great Billing has completed *Atic Atac*, *Jet Set Willy* (by cheating), *Sabre Wulf*, *Trans Am* and *Antics* and has also sent us the following extra lives poke for *Hunchback*, which I, at least, will find extremely useful, *Poke* 24760,255 gives you 255 lives (Spectrum version only).

A letter has come from Martyn Henderson of Aberdeen who is desperate for suggestions on how to land the plane in *TTL*. "I have had the game for about a month now and am more and more impressed by the graphics. It might seem a ridiculous problem but I've tried landing every way I can think of but still can't manage it." Well, we did touch on this a few weeks ago but to recap briefly, you must fly from right to left over the airport using the shadow to line yourself up. As soon as you have passed the tree covered island you can use the altimeter to bring yourself down to almost ground level. Then, as you reach the runway, drop the last small bit and wait for the plane to stop.

Tony Kendle

The Arcade Corner is a new section for anyone who enjoys playing arcade games. If you have any comments, from playing tips on difficult games or programs you'd particularly like to praise (or blame!) then write to: Tony Kendle, Arcade Avenue, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Trun

on Spectrum

The idea is to avoid the blocks and your own path, and see how long you can last. Use Q - up, A - down, O - left, P - right. It confirms you of your high score when each go is over.

Program notes

Lines 60-70 Sets up variables.
Lines 80-90 Sets up screen.
Lines 100-200 Moves player.
Lines 220-240 Checks if player has hit anything.
Lines 250 Adds to score.
Lines 400-440 Prints score, high score and what you crashed into.
Lines 500-570 Prints instructions.

```
  10 REM .........TRUN.........
  20 REM ....By Michael Kay....
  50 GO SUB 500
  60 LET hsc=0
  70 LET sc=0: LET a=128: LET b=
2: LET s=1
  80 PAPER 7: INK 0: CLS
  90 FOR f=0 TO 120: PRINT INK 2
;AT RND*19,RND*31;"■": NEXT f
 100 PLOT INK 2;a,b
 120 LET n$=INKEY$
 130 IF n$="q" THEN LET s=1
 140 IF n$="a" THEN LET s=2
 150 IF n$="o" THEN LET s=3
 160 IF n$="p" THEN LET s=4
 170 IF s=1 THEN LET b=b+2
 180 IF s=2 THEN LET b=b-2
 190 IF s=3 THEN LET a=a-2
 200 IF s=4 THEN LET a=a+2
 220 IF b=174 OR b=0 THEN GO TO
420
 230 IF a=0 OR a=254 THEN GO TO
420
 240 IF POINT (a,b)=1 THEN GO TO
400
 250 LET sc=sc+.1
 300 GO TO 100
 400 FOR f=0 TO 100: NEXT f
 410 CLS : PRINT AT 8,2;"You cra
shed into an obstacle";AT 9,11;"
or yourself";AT 11,9;"Your score
 = ";INT sc: IF INT sc>hsc THEN
LET hsc=INT sc: PRINT AT 3,9;"Ne
w high score"
 415 PRINT AT 5,9;"High score =
";hsc: GO TO 450
 420 FOR f=0 TO 100: NEXT f
 430 CLS : PRINT AT 9,1;"You hit
 the destuctive barrier";AT 11,9
;"Your score = ";INT sc: IF INT
sc>hsc THEN LET hsc=INT sc: PRIN
T AT 3,9;"New high score"
 440 PRINT AT 5,9;"High score =
";hsc
 450 PRINT AT 21,1;"Press any ke
y to start again"
 460 IF INKEY$<>"" THEN GO TO 70
 470 GO TO 460
 500 BORDER 2: PAPER 2: INK 7: C
LS
 510 PRINT AT 1,14;"TRUN"
 535 PRINT AT 13,1;"Beware dont
get to close to the barriers"
 540 INPUT "Do you want to play
(y/n)";j$
 550 IF j$="y" THEN RETURN
 560 IF j$="n" THEN STOP
 570 GO TO 540
```

Trun
by Michael Kay

Baud Walk

It's a miracle

The highly flexible and popular WS2000 modem from Minor Miracles has finally received the official approval from British Telecom, months after it went on sale.

The WS2000 saga has taken some eight months to be settled and the final British Approvals Board nod only came after the company suppressed the modem's Bell 202 standard half-duplex capability.

The WS2000 has found a niche in the multi-standard modem market, retailing at just under £130, and rumours that previously sold units would have to be recalled were denounced by a company spokesman. "We are still trying to ascertain the final position but as far as we are concerned the company has met the standards set down by the BABT." The Telecommunications Act threatens users who use unapproved modems with severe penalties and, in fact, British Telecom is entitled under law to enter any premises where it suspects unapproved equipment is attached to its network—although in practice this is a rare occurence.

The WS2000 operates at 300/300, 1200/1200, 1200/75 and has auto-dial and auto-answer capabilities. Minor Miracles are planning to operate their own dial-up database service which will include a modem diagnostic facility.

Other developments are planned by the company, including a mode of operation which allows total software control over the hardware.

This development will allow, for example, setting up command files to auto log-on to networks like PSS which is a hazardous, if not tortuous, process at the moment.

The modem will also be able to set up to auto-dial at predetermined times different databases and automatically retrieve pre-specified pages or data for later examination. This has a number of applications particularly with numeric databases-containing financial information, which could be retrieved and then integrated into packages like spreadsheets or databases.

Finally, a word on a completely different note. *MUD*, the Multi-user Dungeon game, will be appearing, it is hoped, on Compunet, the Commodore 64 database due for official launch this week. Attempts were made to load *MUD* on to the Compunet system during the Personal Computer World show, but apparently failed. *MUD* will be published on Compunet by Century Communications.

Robin Wilkinson

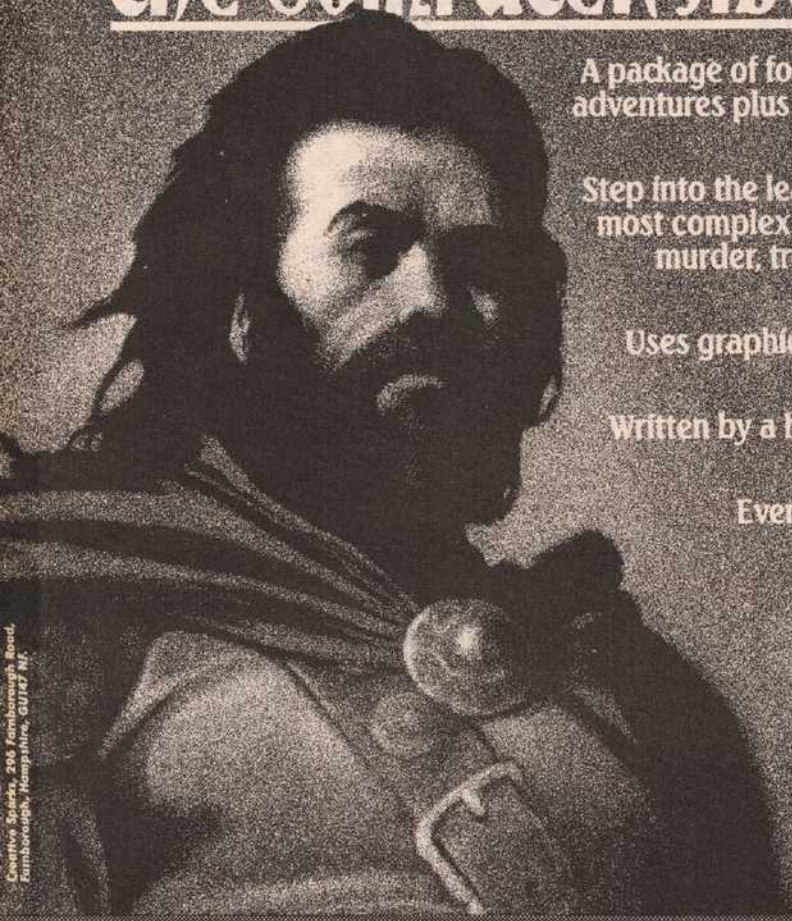
Baud Walk is a new weekly column with news on networking, databases, reviews of modems and software and points of contact for information.

Any readers with experience of networking are asked to send their experiences or news of services to. Robin Wilkinson, Baud Walk *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

He can also be contacted on Prestel mailbox 019993727.

MACBETH

THE COMPUTER ADVENTURE



A package of four completely different adventures plus four character analysis programs.

Step into the leading role in one of the most complex and intriguing webs of murder, treachery and witchcraft ever conceived.

Uses graphics as an integral part of the problem solving.

Written by a highly qualified team of experts.

Even the most experienced adventurers will find something new and challenging.

Let your computer stretch your imagination.

FOR COMMODORE 64

£14.95

Creative Sparks, 296 Farnborough Road, Farnborough, Hampshire, GU147 NF.

CREATIVE SPARKS

Available from
All good computer software stockists.

Send me (tick as required)

- ☐ My local stockist's address
- ☐ Your full list of games
- ☐ _____ copy/ies of this game

TNEE 293 at £14.95 each	£	:	p
+ single P&P sum		:	30p
Total to send	£	:	p

Method of payment
By cheque or PO (no cash) made payable to **TECS**

☐ By Access or ☐ Barclaycard

Enter card no.

Sign below:

Credit card sales: UK buyers only.
Response within 21 days.

Creative Sparks,
Department MO,
296 Farnborough Road,
Farnborough, Hampshire, GU14 7NF.
Telephone: (0252) 518364.

Name

Address

PCW1084

ANCIPITAL

£7.50

LLA 21011

commodore 64

BIZARRE ACTION AND STRATEGY FROM

LLAMASOFT

49 MOUNT PLEASANT, TADLEY, HANTS. RG26 6BN.

DEALERS can order direct from CBS Telesales 01-960 2155 quoting account number, LLA code number and quantities. Goods delivered within 48 hours.

What's on Your T.V. Tonight

Spectrum 48K - £7.99
CBM 64/BBC/Atari

MIND GAMES

Argus Press Software Group

Recommended viewing
Early Evening
6.40 pm Cloak of Death

Starring **Ghosts Galore.** Spine chilling, blood curdling, great gory graphics. Horror, shock in the early evening. Avoid the rats and crazy dogs – you'll feel really good after this one!

Written by David Cockrain
Special Effects Dr Zambesi
Directed Martin Edwards
Produced Argus Press Software

Available for Atari, Spectrum and CBM 64

Mid-evening
9.00 pm Quest for Eternity

Starring **The Overlords of the Universe**

The candidate (you) have to get to the Chamber of Creation. It's a laugh a minute, since it's 2000 light years away on the most horrible planet in the Universe ... and your starship doesn't work either!

Written by David Cockrain
Directed Martin Edwards
Produced Argus Press Software

Available for Atari, Spectrum 48K, CBM 64.

Midnight Movie
11.55 Star Force Seven

Starring **The Zurgs**

After a desperate space battle only one fleet of heroes remain to prevent the invasion of earth. The future of humanity lies with you!

Written by Ian Soutar
Special Effects Ian Soutar
Directed Martin Edwards
Produced Argus Press Software

Available for BBC, Spectrum 48K, CBM 64.

For mail order, write with cheque/ P.O./card No. to:
Mind Games, Argus Press Software Group, No. 1 Golden Square, London W1.

Tony Bridge's Adventure Corner

Post nuclear

There have been many new releases since I last looked at the new adventure pile. Many of them have been written with the aid of *The Quill*, which, as most of you will know, is Gilsoft's excellent adventure-writing utility.

Celyn Jones Software of Clwyd have released *The House* for the Spectrum 48K — as all these Quill'd adventures are. It's a tale of a dead witch's will, which she has secreted in a lonely old house. You live nearby, and so it is only natural that you go and search for it — but the last inhabitants of the house met with a rather unfortunate demise. But that won't put you off, will it?

D C Jones, the author, took some five weeks to complete the adventure, and he has produced a pretty good one. There are not many spelling or grammatical mistakes, and the colour is used well. As he admits, the action is a bit slow in the beginning, but soon hots up — there are a lot of objects, some mundane, like the old gardening gloves, and the spade, and others not so mundane, like the green farming liquid (what use is that going to be?). The first part of the adventure consists of a wander round the overgrown garden, and every so often, you come up against the locked door of the dark, foreboding house. Look behind you!

Not bad at all, and, to the person who completes it, four sentences are revealed: send these off to Celyn Jones, and you're in line for £100. Celyn Jones Software, 14-16 "Borthyn, Ruthin, Clwyd LL15 1NU, £5.50.

Alex Sharp, Brendon Kavanagh and David Shandley are the authors responsible for the next Quill'd adventure, which is *Merlin's Quest*. It's based on the legend of Merlin and young Arthur Pendragon, and follows that legend very closely. The trio have studied many books in order to make things as authentic as possible, while ensuring that the adventure remains very playable. The objective of *Merlin's Quest* is the Golden Harp, which must, of course, be found (well, you can't have Golden Harps just left lying around, can you?) — or, according to the second title page, to discover Excalibur.

Very atmospheric (and educational) and great value at £5.00. SKS Software (alias Sharp, Kavanagh and Shandley) are currently looking for someone to market the game, and they are assured of a successful adventure — it's much, much better than many of the so-called "mega-adventures" which are flooding the market at the moment, and I thoroughly enjoyed playing it. For now, you can buy direct from SKS Software, Summerfield Farm, Nantwhich Road, Broxton, Nr. Chester CH3 9JH.

Dowsoft! (please note the exclamation mark, PJ — and here's a couple more for you!!) is the name under which the Dowling brothers write, again using *The Quill*. 19-year-old Ian writes the scenario, leaving Tim to bring his obvious talent to bear in converting it to the Spectrum. Their first release is *Adventure on the Planet Akma*, and puts you, the player, in a cell on the aforesaid planet. Your task is to break out (well, you've been there for two months, with nothing but a rat and a mound of old bones for company) then travel across the planet's surface and finally find the rebel force, the Letics.

I didn't spot any spelling mistakes, though there are a few errant hyphens, and the occasional odd layout, but there is a great deal of atmosphere in the long evocative location descriptions, and the adventure plays quite well. In fact, it would be an ideal introduction for the beginner — not too hard, but lots of intriguing puzzles (oh dear, and some maths problems, too) and very colourful. The scenario is particulary good, well above average, while retaining simplicity. There are plenty of chances for combat too. Dowsoft! 3 Hempland Drive, Stocton Lane, Yorks YO3 0AY, £5.00.

Now to the last Quill'd game this week (there'll be more, never fear!), *Survivor*, from Redwhite Software. Written by Bob Purdy, it is a chilling tale of a post-nuclear nightmare. If this sounds familiar to you, the scenario is superficially similar to that of *Ground Zero*, the adventure from Artic. That was also Quill'd, though this fact is kept quiet by Artic — but what a difference! *Survivor* is a superb game from start to finish. The start is in your fallout shelter, where food supplies have run out.

Because this adventure is set in a post-nuclear landscape, it's only natural that things are not going to be normal — venturing outside, for a start, is not your average Sunday stroll. Before you leave your shelter, pick up the Geiger counter, this will come in handy in measuring the radiation left over from the Big Bang in each area. Some areas will be clean and harmless, while others have a high level, and thus will be dangerous to walk through. The program will tell you how many Rems per turn your body can take — and these are not *Rem*arks! Up to 200 Rems is OK, while over 200, and you start to become ill.

There are a lot of objects, in fact, an embarrassment of them; you can only carry four, and there are at least six in the very first location that might well be useful — which ones to take, and which to leave behind? There is a rather simple puzzle at the very start to solve, giving you a word which may well come in handy later in the adventure, and this unusual aspect, along with the nightmarish atmosphere, replete with rabid rats, other crazed survivors jumping out from shadowy doorways to stab you, combines with the colourful location descriptions to make an adventure well worth playing, and highly recommended. It's £4.95 (p&p included) from: Redwhite Software, 23 Thornhill Street, Canton, Cardiff CF5 1RD. So, a bumper crop of Quill'd adventures this week.
there'll be plenty yet to come.

Finally, I must just mention a couple of new adventure for the QL. I knew it wouldn't take long, and Talent Software, whose *West* adventure for the CBM64 I mentioned a couple of weeks ago, have released that game for the QL, along with a second, called *Zkul*. I haven't seen it yet, but I believe that it leans heavily on elvish Magick and other D&D delights, and apparently it is for experienced adventurers only. One feature that seems especially "why-did-nobody-think-of-that-before?", is a "scratchpad" on which the player can jot down notes for later implementation.

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 problem, 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 .....
.....

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So, if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further write to: Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

Mail Order Sales from
Microdeal Mail Order 41 Truro Rd,
St. Austell Cornwall PL25 5JE

Credit Card Sales
Phone 0726 73456

Dealers Contact
MICRODEAL DISTRIBUTION
0726-73456
or WEBSTERS SOFTWARE
0483 62222

MICRODEAL

Selected Microdeal Titles available from computer dealers nationwide or from larger branches of

John Menzies Stores and Boots

Peek & Poke

Basic workings

Srredts Slain of Antwerp, Belgium writes:

Q I have recently bought a Tandy TRS80 Colour computer. I have always assumed that the Tandy and the Dragon computer were exactly the same until I tried some of your programs. I couldn't get any of your Basic programs to run at all but the machine-code ones all worked perfectly. Can you explain why this is?

A What is the same between the two machines is the Basic and the general hardware arrangement. The Rom routines however are different. This should mean that Basic programs are completely compatible whilst machine-code programs may need some adaptation. I can only think you were lucky with the machine-code programs you have tried which just happened to use areas of machine-code that were the same.

Equally you must have been unlucky with the Basic programs because they used machine-code *Pokes* or *Peeks* that were not the same as those used in the Tandy.

A classic question

Mr A Morris of Kingshurst, Birmingham writes:

Q I own a 48K Spectrum and would like to know whether there is a *Poke* that disables the Break key from being used.

A This is one of the classic questions asked quite regularly in this and every other technical advice column in the computer press.

Can you completely protect your programs? No, is the simple answer. Can you disable the break key? Yes, up to a point. It involves playing about with the error stack pointer and making it point to a different place from usual so that your program just keeps running without an error being recorded by the system. This is the line you should use (note though that it may not work with Interface 1 attached): *Let* p=*Peek* 23613 + 256**Peek*23613 + 1:*Let* p=p−2: *Poke* 23613 + 1, *Int* (p/256): *Poke* 23613, p−256**Peek* (23613 + 1).

It's a bit drastic since it *News* the machine if you press *Break*; warn friends in advance!

Merits of each

Billy Lau of Spennymoor, Durham writes:

Q I own a BBC micro with disc drives and have been arguing with a friend who has a QL about the merits of each. Who is right on the following?

1) He claims the BBC is old-fashioned because it has masses of micro chips inside.

2) I think the QL's Basic is a mix of BBC and Spectrum Basics plus the odd extras. I believe the QL copied the idea of using functions, procedures, *If... Then... Else, Repeat... Until* from the BBC but he says these commands are standard and the BBC wasn't the first to use them.

3) He claims the QL is a much more powerful and faster computer altogether and is only beaten by the BBC's sound and keyboard. Please can you prove him wrong.

A Comparing—judging—two computers on these terms is not easy, still I'll try to have some sort of stab at your specific points.

1) It is true that the current chip layout on the BBC probably does reflect when it was designed and it wouldn't be the way it would be designed now. Micros these days are designed—like the Electron—with bigger and bigger ULA chips, to reduce the chip count on the circuit board and so reduce the manufacturing costs.

2) Your friend is right I'm afraid—procedures, etc, go back a lot further than the BBC. Although there are a number of features of BBC Basic which represented the first implementation of these commands on a home micro.

3) What do you mean by powerful? The QL has a lot more—that's for sure and the multi-tasking and window facilities are very sophisticated if you can get at them. But QL Basic is not faster than the BBC.

Speak and spell

David Richardson of Treskilling, Cornwall writes:

Q I have a BBC computer and we were going to buy a speech synthesiser but since our sister has a 'speak and spell' toy, I was wondering if we could link it up to the computer and use that instead. Could we do this and how much would it cost?

A The answer is almost certainly yes you could do it, but unless you have a good knowledge of electronics it probably wouldn't be worth the trouble you'd have to go to.

I don't know what speech chip the 'speak and spell' uses but it is quite likely to be the Texas one—it is used by most of the computer speech units. However, it is far from staightforward. You would need to remove the chip and build the appropriate circuitry to connect it to the BBC and then you'd have to write some fairly complex software.

Teaching programs

Mr B P King of Bream in Gloucestershire, writes:

Q I am considering purchasing the Acorn Electron but I am concerned about the availability of software—especially educational software as I have children of five and ten years.

What percentage of BBC software is compatible with the Electron, particularly on the educational side?

A The Electron and the BBC are fully (well nearly) compatible in terms of Basic although the Electron runs considerably more slowly.

What this means in practice is that BBC programs written in Basic which do not especially require speed can be used happily on the Electron. Although some BBC educational programs fall into this category, most good ones, usually requiring at least some machine code, do not.

You are reliant, therefore, on software written especially for the machine. There is some good material but, unlike the BBC which has a special reputation in this area, there is no more than other micros like the Spectrum.

A strong dilemma

Steven Rigby of Watford Herts, writes:

Q Could you please help me? I am trying to decide on buying one of the following things. The first is to expand my Spectrum with, probably, a microdrive, a Stonechip keyboard and a Currah speech unit. The alternative is an Acorn Electron—keeping the Spectrum at the same time. Please help me decide.

A A strong dilemma! I can't really answer your questioning because I don't know what your reasoning is. I must say that unless you have some special reason for getting the Electron—BBC Basic at school for example—I can't really see that you need it. Spectrum software is certainly better, by and large, than Electron software and with a proper keyboard which you say you are thinking of getting, can be turned into a very useful word processor with *Tasword Two*.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW*, 12-13 Little Newport Street, London WC2R 3LD

CLASSIFIED

Semi-display — £6 per single cc
Lineage — 25p per word

CALL *DIANE DAVIS* ON *01-437 4343* FOR SEMI/DISPLAY ADVERTISING

ACCESSORIES

AT LAST, A QUALITY MODULATOR

Does your computer picture suffer from drift or shimmering? Then buy the Modeum III R.F. converter, to make a monitor quality picture on any television. Also fitted with mode function for switching between computer and television programs; suitable for any computer with a composite video outp-ut inc; Memotech 500 + F.D.X., BBC, Vic 20, CBM 64. (N.B. — BBC B/W only).

Send £29.95 + £1.75 p&p to:
Solar Computer Products, P.O. Box 4, Monmouth, Gwent NP5 4YZ
(28 days for delivery or send S.A.E. for details)

PRINTERS THE AMAZING KAGA,

Taxan N.L.Q. Printers are here! 160 C.P.S., near-letter quality. All usual fonts, tractor and friction feeds. Ideal for Q.L., BBC, Spectrum and Interface.

80 Column; £269
156 Column; £380

Paper labels and accessories all at silly prices.

Phone for quote and details:
EIDERSOFT 01-478 1291.
(10 am-7pm).

COMPUTER ACCESSORY BARGAINS

9½" x 11" Listing paper £9.50
11" x 370mm Standard listing paper £11.50
Memorex Disks 5¼ box of 10 ..... £17.00

WE ALSO STOCK ALL RIBBONS FOR PRINTERS AND WORD PROCESSORS
PRICES INC. V.A.T. AND P&P
TELEPHONE FOR OTHER ACCESSORY PRICES
Tel: Radlett 7953
and send order to:
CASSIDY COMPUTERS AND STATIONERY SUPPLIES
14 THE WARREN, RADLETT, HERTS.

SUPER JOGGERS!

Our super new full colour high-tech pro-gramming charts that make the manual redundant!

Each chart colour fully displays all the information that has to be most frequently accessed. They make an ideal present. Available for ZX Spectrum, BBC, Electron, CBM64.

Phone for details now, or send cheque/P.O. for £1.25 to:
EIDERSOFT
Freepost, P.O. Box 54, Ilford, Essex IG1 1BR.
Tel: 01-478 1291
(10am-7pm)

Self Adhesive Cassette & Disk Labels

CASSETTE LABELS - On A4 sheets, 12 labels per sheet, 100 labels - £3.50, 1000 - £21.85
Rolls of 500 labels, on tractor feed backing paper for overprinting by computer printer,
White - £14.66, 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 - £15.00

The above prices are VAT & carriage inclusive
For our full price list and sample brochure
Telephone (0795) 28425 (24 hrs.)

INDUSTRIAL PROCESS
Self Adhesive Labels - *SUPERFAST*
Unit A4, Smeed Dean Centre, Eurolink Way
Sittingbourne, Kent ME10 3RN

BLANK CASSETTES AND DISKETTES.

Quality Cassettes and Diskettes at competitive rates.
Quantity discounts available.
E.G. 100 C15 inc. library case £0.25p. each + VAT.
Call or write for price list.
ACCLAIM LTD.,
The Haven,
Somerset Road,
Redhill, Surrey.
Tel. 07372 41551.

Replica Loud Firing Colt 45 Automatic, 23 shot
As used by US Army, ideal stage prop, with ammo **£5.25** carriage 50p

Snub Nose Colt -45 replica.
As used by U.S. Police Department, ideal stage prop, with ammo. **£3.75** carriage 50p.

Colt Python 357
As used by Police and screen heavies, with ammo **£4.45** carriage 50p

Ideal for video film making. (Mail order only.) Send PO or cheques to: Razzamattazz, 80 Selhurst New Road, London SE25

BLANK CASSETTES

10 C10's for £3.65: 100 for £25.00
10 C15's for £3.85: 100 for £26
10 C20's for £4.00: 100 for £27.00
FULLY GUARANTEED. Inc P&P
C.O.D. add 65p. Immediate Despatch.

U.K. HOME COMPUTERS
82, Churchward Ave, Swindon, Wilts.
24 HR Order Phone 0793-695034

MONITORS

Philips V7001 with R.G.B. composite and sound!
Amazing £59!
Kaga KG12 (N.B. suits 85 column Q.L.)
Amazing £99!
All prices Ex. V.A.T., Delivery £5.
Tel Eidersoft 01-478 1291
(10am-7pm)

PRINTERS & DESIGNERS

of
computer game
cassette inlay cards
VERY GOOD RATES
for full details
PHONE: 0269 871 158

THIS SPACE FOR SALE

£18
TELEPHONE:
***PCW* CLASSIFIED**
01-437 4343 Ext 206

LOAD CORRECTLY with the LOADMASTER

Set the volume control on your cassette recorder right EVERY time. Just plugs between recorder and computer. Price inc P.&P. £11.49.
Probemaster Ltd.
23 The Ridgeway,
Cuffley, Potters Bar.
Herts. EN6 4BB

UTILITIES

MICRODRIVE ONE (MD1)

AT LAST 48k Spectrum owners with m-drives, discs, etc. can now transfer the MAJORITY of their tape programs (inc headerless, 48k programs those with LOW addresses - say 16384) and get them running.

MD1 has 5 programs to help YOU convert them so that they run (2 housekeeping progs), FULL manual and prog examples.

To transfer basic, code, or arrays to the drive use our mini tape 6MS program at £3.

Cost £6.50 inc p/p (disc owners etc ask for MD1X).

OVERSEAS: £1 Europe, £2 others for each product. SEND SAE for enquiries.

ALL WITH MONEY BACK GUARANTEE
LERM, DEPT WE1
10 Brunswick Gardens
Corby, Northants

CLASSIFIED ADVERTISING RATES:

Line by line: 25p per word, minimum 20 words.

Semi-display: £6 per single column centemetre, minimum length 2 cm. (Please supply A/W as PMT. Or supply rough setting instructions.)

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 Diane Davis 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 WC2R 3LD.

ARROW MICRO SERVICES

20 Portmeadow Walk
London SE2

ARROW MICRO SERVICES
- Commodore 64 -

ARROW TURBO-SAVER
Fed up with waiting for those programs to load. Well you need Turbo-Saver, easy to use and faster than the 1541 disk drive, programs reload independent of Turbo-saver.....£7.00

ARROW DISKOPY
This selective disk copier will copy both PRG and SEQ files faster than 1541 back-up and you don't need to copy all the disk, very user friendly and easy to use.....£7.00

ARROW TRANSFER
Transfer your favourite games to disk both multi part and Auto Runs, works with most software.....£7.00

ARROW DISK-DOCTOR
Now you can recover scratched files easily, edit any byte on any block in Hex or Alpha, alter programs, edit the directory, format disks.....£8.00

THEE JETSET WILLY EDITOR
100% machine code program. Will totally redesign Jetset Willy and create an extra 3 rooms.
£3.50 inc. (p&p)
Taking orders now for Jetset Willy Mk. II
Send cheques/POs to
SOFTRICKS
7, Rowan Place, Dundee, Scotland DD90 PR. Tel: 0382 38232

BBC B-TAPE TO DISC ETC.
Copier + character definer + a new plotter + a new character aid.
Send cheque/PO for £5.00 to J & L Soft, 9 Downalong, Bushey Heath, Herts. For more info. send stamped addressed envelope.

SPECTRUM 48K versatile analyser 3000 word manual; fast fourier transform, DFT, window functions, Hilbert transform, convolution, deconvolution, correlation, decorrelation, integration, differentiation, modulus, phase, real, imaginary, display, plot, £8.95 cheques. sae details: Softbug, 35 Ellenbrook Lane, Hatfield, Herts, AL10 9RW.

OMEGA SYSTEMS

HIGH SPEED DRAGON

Why buy disc drives? Try our menu driven tape, and find any of our 8 FREE example programs in seconds! Incl. Minichess, Grandprix, Galactica, Blockbusters, etc. Save up to 33 of your own programs.

HIGH SPEED DRAGON

Only £3.95 inc.
Cheques/PO's to: OMEGA SYSTEMS
44 Curlew Road
Abbeydale
OMEGA SYSTEMS **Gloucester GL4 7TF**

X-CERT

THE MUCH TALKED ABOUT X-CERT SOFTWARE

The sauciest game ever released for the 48K Spectrum, is available now, but only by mail order. Written entirely in machine code the game consists of 4 waves of SHOCK, HORROR and SCANDAL, featuring the ugliest to the most beautiful of girls, in which you have to..... CENSORED....also you must ..... CENSORED...all the time. For your copy "Gissa Kiss" (code name, Smut) discreetly packaged, send £5.00 to Titan Programs Ltd., 46 Market Place, Chippenham, Wilts. SN15 3HU.

OVER 18's ONLY
. . . BUY NOW BEFORE IT'S BANNED!

SHERLOCK HOLMES

Spectrum 48K	£11.40
Full Throttle	£5.70
Quo Vadis (C.64)	£8.50
Midway (C.64)	£8.25
Zaxxon (C.64)	£8.50
Zim salabim (C.64)	£8.50
Quickshot II	£9.50

Cheques/POs to:

La Mer Software, 22 West St, Weston-super-Mare, Avon BS23 1JU. Tel: 0934 26339.

GAMES SOFTWARE

48K SPECTRUM adventure game; the lost orb: has 120 locations, written in pure machine-code and costs only £6. First-time customers receive next £6 game free! Cheque/P.O.'s to: 9, Middlewood Park, Livingstone, W. Lothian, EH 548AZ.

DISCOUNT SOFTWARE

Spectrum	rrp	Our Price
D.T. Decathlon	6.90	5.79
Full Throttle	6.95	5.79
Fighter Pilot	7.95	6.69
Moonsweeper	7.95	5.89
Final Mission	5.50	4.50
E.K. Jump Challenge	6.95	5.85
Comm. 64		
Micro Olympics	5.95	4.99
Arabian Nights	7.00	5.80
Blagger	7.95	6.69
Flight Path 737	7.95	6.69
Wimbledon 64	7.95	6.69
High Noon	7.90	6.65

Cheques/PO to **POSTELL (PCW)**
11 Bilboe Rd., Bilston, W.Mid WV14 8EE
SAE for lists: State which micro

AQUARIUS VIC 20 ZX81

£1.29 Good Quality Software Only £1.29 each (inc.) **£1.29**

AQUARIUS (UNEX) Pontoon, Football Team, Space Pits, Fruit Machine, Ski.
ZX81 (16K) Temple, 3D Maze, Deathstar.
VIC 20 (UNEX) Horse-Bet, Pontoon, Football Team, Pinball, Arok Adventure.

or choose any 3 for £2.99

D. Spencer (Dept P)
50 Cranswick Close
Billingham, Cleveland

THE TRIAL OF ARNOLD BLACKWOOD
AND SEQUEL
ARNOLD GOES TO SOMEWHERE ELSE
AMSTRAD 64
"THE TRIAL" ALSO AVAILABLE FOR DRAGON 32
ADVENTURES £5.50 each inc.
NEMESIS. 10 CARLOW RD., RINGSTEAD, KETTING, NORTHANTS NN14 4DW

24%-40% OFF RRP
(ORIGINALS)
Over 500 progams for Spectrum, CBM 64, BBC, Electron & Amstrad micros.
e.g. SPECTRUM – SHERLOCK – £9.72
CBM 64 – Beach Head – £6.67
BBC – Elite – £10.17
COr full deails and lists
Tel: 0992 21260
CHECK OUR PRICES FIRST

QL SOFTWARE

* QL GAMES *

SPECTRE INTERCEPTOR: deploy your ghost busters to trap the goul (a game of strategy with four levels of difficulty)
CHIEFTAIN COMBAT: scour the battlefield in your class alpha tank and out manouevre the enemy (real time arcade action)
Both games on one cartridge for £11 inc. P&P from:
*** SNOWSOFT *, 6 Bousfield Cres., Newton Aycliffe, Co. Durham.**

Q.L. ASSEMBLER

At last a Q.L. Assembler. You can now write 68008 machine code for your Q.L. For only £7.50 (if you send your own cartridge – otherwise £12.50) the 68008 is easily controlled. Only available from:
R.L. Johnson, 4 Beeby Road, Scraptoft, Leics LE7 9SG.

Q.L Printer Problems?

Do you get blank lines interspaced in your EASEL printouts? For only £3.50 (if you send your own cartridge – otherwise £8.50) you can have a modified EASEL program producing perfect printouts on most graphic printers.
Available from:
R.L. Johnson, 4 Beeby Road, Scraptoft, Leics LE7 9SG

Q.L. UTILITIES
FILE UTILITY PROGRAM

Bidirectional scrolling directory with file length, copy complete cartridge, single key multifile copy and delete, full wildcard named copy and delete, print directory, print file block sector map, single key multiple format, verify file.

BOOT PROGRAM

Bidirectional scrolling directory with file length. Single key load or run.

£8.50 + 25p p&p for both
M. STRATHERN, 174 Richmond Rd London E8

DUPLICATION

Dear Reader, my name is Simon Stable. I specialise in real-time data-duplication for most cassette based micros. Disc copying for BBC 40/80 (protection available) Dot-matrix printed labels/ blanks. Blank cassettes.

FAST TURNAROUND **0869 252831** COMPETITIVE PRICES
P1, FREEPOST, 46 WESTERN, LAMBTON, OXON OX8 8 1Z

DATA DUPLICATION
M.G. COPIES
Burntwood, Walsall, West Midlands.
0543-480887 or 05436-75375 (24Hrs)
Data duplication, quality cassettes, printing, distribution to customers with competitive prices and fast turn around. Price lists and samples on request.

"DATATAPES" for highest quality blanks and data duplication, call now for a sample quote. You will find us VERY competitive. The Midland Railway Grain Warehouse, No 2, Derby St, Burton Upon Trent, Staffs. (0283) 38199.

Access

Book your Classified or Semi-display advert by Credit Card

Call Diane Davis on 01-437 4343

BARCLAYCARD VISA

SOFTWARE

WD Software

QL Utilities (£10 on Microdrive)

This package offers single-key loading, running or deletion of files, multiple formatting of cartridges, and auto backup of files from one or more cartridges to another with optional over-writing of namesakes. In addition, a directory of 60+ files can be viewed without screen overflow. NB a VERIFY program is unnecessary — QDOS does this automatically. Now includes directory print-out and "qprint" to print any or all files on a cartridge with optional dated titles. Owners of the earlier package can update by sending OUR cartridges and 25p.

CURRENT SPECTRUM PROGRAMS

Tradewind (£5 Cassette)

Buy a ship, provisions and cargoes to trade between the harbours of the Coral Islands. Make a fortune if the weather and pirates let you live long enough to master seamanship and economics. A strategy/adventure game with graphics for 48K.

Jersey Quest (£5 Cassette)

Following an accident, you are stranded in the labyrinth of time and must find your own way back to the Present with the aid of persons and objects from Jersey Folk. Meet the Black Horse of St Ouen, the Dragon and Knight of La Hougue Bie, the Black Cat of Carrefour a Cendre, the Witches of Rocqueburg and many others. A text-only adventure for 48K in machine code (Quill).

Morse Tutor (£4 Cassette, £8.50 Microdrive)

4-19 words/minute, variable spacing number of groups of random letters, numbers or mixed, random sentences, own message, single characters (including punctuation), variable pitch, FEEDBACK via screen, printer of SPEECH (phonetic alphabet via Currah u-Speech on 48K version. 16K and 48K versions on one cassette, 48K only on Microdrive cartridge.

Spectrum Programs on Microdrive

All the above are available on Microdrive cartridges at a price of £4.50 for one cartridge + the price of each program as shown above. E.g., a cartridge with Tradewind and Morse Tutor would be £13.50. As a **BONUS**, Gavin Monk's Indexed Loader is included **FREE** with each cartridge.

available from

WD Software, Hilltop, St Mary, Jersey. Tel. (0534) 81392

COMPUTER SOFTWARE; BUSINESS AND GAMES FOR MOST COMPUTERS.
Commodore 64, VIC 20, BBC, Atari, Dragon, Spectrum, MZ700, ZX81.
New Releases for CBM 64, Spectrum, BBC, Atari, Dragon, Spectrum, MZ700, ZX81.
New releases for CBM 64, Spectrum, BBC. Every 2 weeks — just send S.A.E. and we send you a new list every 2 weeks.
Altai C10 data cassettes 40p each. 5 C15 data cassettes £2.40
5¼" floppy discs D/sided — DL density. £2.30 each or 5 for £10. We also supply all computers
Send to: M.J. Seaward, St. Olaf's Road, Stratton Nr. Bude, Cornwall EX23 9AF
Tel: (0288) 4179

SPECTRUM DIGITISER. Transfer any sized drawing to the screen. Digitiser software, overlay material and instructions, £9.95. CCS, 13 Walton Crescent, Llandudno Junction, Gwynedd.

AQUARIUS (16K), Vic20 (8K116K), ZX81 (16K), BBC/Electron, 48K Spectrum. Football, league team. Full league-table, injuries etc. Player strengths, promotion, relagation and very addictive! £3.50. D. Spencer, 50, Cranswick close, Billingham, Cleveland.

BRILLIANT 48K Spectrum adventure game Kill Horocus and Find the Parchment of Peace. Very hard! £4.50. L. Cope 118, Bridgeacre Gardens, Binley, Coventry.

SPECTRUM Video/V.T.R. clock — a professional-looking animated clock for all video recordings, includes on-screen information date/title etc. Many more features £2.99. A.J. Wilkinson, "Glenthorne", Buckley Hill, Milnrow, Rochdale OL16 4BU.

A USER friendly file storage and data handling program for BBC 'B'. Includes many options of a more expensive version: just £7.95. 16 good games for the BBC 'B' and a useful utilities all on one cassette. All for just £3.00. From J. Blatch, Two Mile Oak Inn, Totnes Road, Newton Abbot, Devon.

SERVICES

WHY DO SPECTRUM USERS FROM LONDON, DEVON, ESSEX, & CAMBRIDGE SEND THEIR MICROS TO US FOR REPAIR?
Average price £15
- Only Co. in all U.K. offering **while-you-wait service.**
- **or 24 hour turnaround every micro insured for return journey.**
- **phone or send for free estimate enc. £1.60 UK., I.O.M., Eire, C.I.**
- **No hidden handling charges.**
- **special rates for schools.**
- **please phone for appt.**

MANCOMP LTD. (dept. PCW)
Printworks Lane, Levenshulme, Manchester M19 3JP
Tel: 061 224 1888.

HEMEL COMPUTER CENTRE LTD.
For fast reliable repair service, send your 16/48K Spectrum computer to us.
We will repair and return for £18 + £1.60 p&p.
Also BBC, Commodore, Atari and Dragon service
Hemel Computer Centre Ltd.
52, High St,
Hemel Hempstead,
Herts.
HP1 3AF
Tel: 0442 212436

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. fr £18.50 and description of fault to:
SUREDATA (PCW)
Computer Service
45 Wychwood Avenue, Edgware, Middx.
Tel: 01-951 0124

SINCLAIR COMPUTERS
EXPERTLY REPAIRED
and throughly overhauled by professional computer engineers using only top grade components.
All modifications recommended by Sinclair are fitted and all units soak tested *and fully guaranteed for six months.*
MP ELECTRONICS
The Laurels, Wendling, Dereham, Norfolk NR19 2LZ
Spectrums £20. ZX81's £12.50. Spectrums 2 & 3 Upgraded to 48K £32.50
Tel: (036 287) 327

REPAIRS — ZX81 — SPECTRUM out-of-guarantee repairs by our computer dept. Engineers have had three years experience servicing Sinclair computer products. Price including p+p ZX81 — £11.50; 16k Ram — £9.95; Spectrum — £18.75. Send with cheque of P.O. to: TV service of Cambridge Ltd., French's Road, Cambridge CB4 3NP. Tel: (0223) 311371.

SPECTRUMS SERVICE AND REPAIRS
MAIL ORDER OR CALL IN
HUGE
selection of software and full range of accessories. SAE for lists.
Enfield Communications,
135, High Street,
Ponders End, Enfield, Middx.
TEL: 01-805 7434.

SPECTRUM REPAIRS £14 including parts, P&P etc. ZX81 £11. Fast reliable service (average repair 24 hours) by qualified engineers. – Tel: 0772 634897.

SPORTING FORECASTS PROGRAMS by Professor Frank George for Commodore 64, BBC, Electron, Spectrum, Dragon, Football Forecast, Poolperm and Horse Forecast now available. Details from Poringware, PO Box 161, Brundall, Norwich.

SPECTRUM REPAIRS
We expertly repair Spectrums for £15 inclusive of parts, labour and return postage. Spectrums upgraded to 48K for £24 including post.
R.A. ELECTRONICS, 50 Kimberley Road, Lowestoft, Suffolk.
Tel: (0502) 66289

COMMODORE REPAIRS. By Commodore approved engineers. Vic 20 Modulators £6.50, Vic 20 from £14.50, CBM64 from £18.00, C2N from £7.00, printers, disc, etc. for more details write or tel: G. C. Bunce & Son, 36 Burlington Road, Burnham, Bucks. SL1-7BQ. Tel: (06286) 61696.

BOOKS

BODY — POPPING, break dancing. All styles of disco. Teach yourself. SAE for details. Dance Publications, 136 Monkhill Lane, Pontefract WF8 1RT.

COMPUTER BOOK SPECIALIST! Electron, Spectrum, oric. S.A.E. for lists. D.A. Armstrong, 30, Octavia Street, Kircalds, KY2 5HH. Fife, Scotland.

EDUCATIONAL SOFTWARE

PLAY & DISPLAY
Guitar chord chart BBC 'B' call up the most common chords, see the diagram and HEAR the chord played.
Plus, 2 simple lessons to start your guitar playing on the right note.
£5 inc.
Pigsoft,
16, Springfarm Road,
Stapenhill, Burton-upon-Trent
Staffs.

AMSTRAD 464
New range of software available for the Amstrad CPC 464, also for BBC 'B'.
Pontoon, Matchmaker, Maths I, Maths II.
£4.00 each, £6.00 for 2.
Cheques or S.A.E. to:
Terrysoft,
29, Woodbridge Road,
Barking, Essex IG11 9ER

FOR HIRE

TO HIRE a computer from Spectrum 48K upwards, please phone or write to Business & Computer Services, 294a Caledonian Road, London N1 1BA. Tel: 01-607 0157.

MAGAZINES

DRAGON USER
To make the most of your Dragon you need **Dragon User** — the independent magazine for Dragon owners. To make sure that you receive a copy of Dragon User regularly subscribe direct to us. A year's subscription costs £10 for 12 issues (overseas rates available on application). Send a cheque or postal order made payable to Dragon user, and accompanied by your name and address, to Dragon User, Subscription Department, Oakfield House, Perrymount Road, Haywards Heath, Sussex RH16 3DH.

RECRUITMENT

MICRO COMPUTER AUCTIONS

NEXT AUCTION — FRIDAY, 28th SEPTEMBER AT: AUCTION ROOMS, 27, KING STREET, LONDON WC2.
ENTRIES AS SOON AS POSSIBLE PLEASE; CATALOGUES 50p EACH OR £3 P.A. TO:

Micro Computer Auctions (PCWK)
Northington House
59 Grays Inn Road
London WC1X 8TL
Tel: 01-242 0012 (24 Hours)

CLUBS

THE INTERNATIONAL ADVENTURE CLUB

For full Membership details and an application form, write to:

I.A.C. Membership Dept
10 Ennis Close
Harpenden HERTS AL5 1SS

Or Prestel Mailbox number:
582786663

COURSES

COMPUTER WORKSHOP

PRACTICAL COMPUTING SERIES OF 1 DAY COURSES

Beginners; Business applications; programming. £25 per day (lunch inc.)

Tel: 01-778 9080

COMPUTER COURSES

TAKE A MICRO-BREAK AND COME TO BOURNEMOUTH

Mid week and weekend courses from beginners to advanced basic. M/C code and assembler courses available on request maximum 16 persons per course. Commodore 64's and BBC 'B's used or bring your own micro and we will adapt our courses to your machine.

for further info write to;
THE MICRO-LEARNING CENTRE
Saint John's Lodge Hotel,
10, Saint Swithin's Rd. South,
Bournemouth.
TEL: (0202) 290677

GLASGOW

Scotland's First Independent Micro Training Centre

MICROTEACH

Complete Basic Programming courses

BBC, SPECTRUM, DRAGON.
Practical 10 week course (eves) for beginners through to advanced graphics and small business applications.

TEL: 041 332 0666/9445.

WANTED

CREATIVE PROGRAMMER WANTED

by established music company, to further develop multi-media idea.

Please write to:
Dept 001,
Panache Music Ltd.,
P.O. Box No. 8,
E. Horsley,
Surrey KT24 5TY.

(Listing your current commercial programming activities)

WANTED—PROGRAMS!!

Have you written any original, high standard arcade/educational games?
If you have, and you are finding it hard to break into the market, then send your games to us, and we will arrange marketing and distribution for you.

Mark II: F.A.O. Gregory Bartlett
Big Thinker Distribution
High View, Somerton Hill
Longport, Somerset
or Tel: Somerton 73748

WANTED: CBM 64 and C2N cassette with all leads and manuals, must be under guarantee, will pay £120 Cash. Tel: 01-630 8681.

WANTED: Top cash paid for home computers and accessories in good condition. Bring or mail (phone for quote). Computamart, 195 Seabourne Road, Southbourne, Bournemouth. Tel: (0202) 433759.

TRAINEE PROGRAMMERS

We require a small backup group to aid new business projects.
Experience and income.
Enthusiastic hobbyists welcome.

Box No. (PCW 1) (Classified)
Popular Computing Weekly
12-13, Little Newport Street,
London WC2R 3LD.

AGENTS WANTED

To supply hardware/software to clubs, homes, schools, etc.
Up to 25% commission.
£20.00 worth of free software with your first accepted order.
Send for details to Home Base Micro Supplies: 4 Queenswood Avenue, Northampton.

SUNSHINE

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. Full details of what we can offer from David Lawrence, Book Editor, Sunshine, 12-13 Little Newport Street, London WC2R 3LD.

Sunshine Publishers of Popular Computing and Dragon User.

FOR SALE

COLOUR MONITORS, 14", 2nd user, excellent condition, no case, £119.50 inc. Tel: Lucas (0482) 702999/701437.

SINCLAIR Q.L. — Latest model unused delivery arranged. Offers invited. Tel: York 769262.

VIC 20 + CZN cassette, 16K switchable Ram, joystick, 6 cartridges, software, intro to Basic I, book + mags., £165 o.n.o. Tel: (07373) 62496.

SHARP MZ80K 48K Ram printer, interface, 100+ games, word processor, assembler, extended basic, forth, fortran, database, service manuals, circuit diagrams, £300. Rickmansworth (0923) 774257.

ATARI 400 with Basic cartridge, manuals etc. £65. 410 programme recorder £20. Both hardly used, boxed. (01) 348 3538.

SORD MS with Basic-I cartridge, manuals etc. Hardly used, boxed £95 ono. (01) 348 3538.

MEMOTECH 512 — excellent condition — as new plus data recorder plus extra cassettes. £220 o.n.o. Tel: 01-622 2306 (Eves).

THE HAPPY HIPPY GAME. For 48K Spectrum. The naughtiest Game under the Sun. Better than page 3. More fun than Hector Nicol. Send only £2.50 to P.O. Box Nbr 7. Airdrie, Scotland ML66 8S.

VIC 20 AND PRINTER, disc drive, rcorder, joystick, word-processor, spreadsheet, database, microtax. Cartridges include 16K Memory, Adventureland, Ratrace, Chess, Menagerie, Super-expander, Composer + 50 games. £425. 01-731 4192.

ZX MICRODRIVE, INTERFACE 1, and four extra cartridges, only £70. Write to: Nick Cook, 33 Manor Way, North Harrow, Middlesex, HA2 6BZ (cheque/postal order).

BBC MODEL B with disk inter + Microvitec colour monitor Q Cumana look disk drive + computer desk and three blank discs + two with 16 popular programmed games. The lot £650. Tel. Guildford 64503.

16/18K SPECTRUM PRINTERS AD. Five styles script from dot matrix printer £3.95. Seven styles 48K £4.50. C. Penny, 22 Rufford Drive, Yeadon, Leeds.

ZX91 16K "DATAPRINT" drawing program plus 9-part maths revision course for juniors. Both menu driven £3.49. Zodiac Software, 20 Silvedale, Northwich, Cheshire.

AMSTRAD SYNTHESISER 3 — includes fading notes. Multi mode only £3.50 including P&P. Cheques to J. Fawbert, 70 Park Avenue, Shoreham, W. Sussex.

Computer Swap 01-437 4343

Free readers entries to buy or sell a computer.
Ring 01-437 4343 and give us the details.

Spectrums for sale

48K SPECTRUM, £100 inc. s/w. Tel: 01-981 2289.

48K SPECTRUM, I/F 2, 2 jsticks, tape recorder, £150 of s/w, books, mags, cassette rack, £160 ono. Tel: 0482 711399.

48K SPECTRUM + VTX 5000 + ZX printer. 10 rolls paper, tape recorder, seven software tapes, leads, manuals, mags. All for £320 ono. Tel: 01-969 5823.

SPECTRUM 48K — 11 months old, recently serviced. 150 games (catalogues) £250 ono. Tel: Jason: 01-866 0438 after 4.30.

SINCLAIR ZX INTERFACE 2 joystick port/cartridge socket. In box with manual, excellent condition, hardly used. £15. Phone (0875) 811274 after 5pm.

48K SPECTRUM PRINTER sound board Micro Speech Kempston + Sinclair interface's joystick, D.K.Tronics keyboard, cassette deck and £250 worth of software. Bargain at £270. Phone 01-598 9122 or swap BBC B.

48K SPECTRUM, COMPLETE with cassette deck, interface and joystick plus £300 worth of software — 3 mths old, sell for £200. Tel: John 021 784 0138.

SPECTRUM SOFTWARE — Full Throttle, Codename Mat, Mugsy, Jet Set Willy — all £3 each or swop any two for any Spectrum Level 9 adventure. Tel: 0532 657038 and ask for Andy.

48K SPECTRUM ISSUE 2, DK'Tronics keyboard, Currah Speech Unit, printer, stack light rifle, carrying case, 16 original cassettes, books. Cost £455 +, asking £280. Tel: 01-363 3579.

SCARAB RTTY 2 for Spectrum program and assembled interface £25 Picturesque Editor assembler £5. E. L. Oakley, 67 South Road, Northfield, Birmingham B31 2QZ, 021-476 7974.

SPECTRUM 48K LORDS Of Time £5, Knights Quest, Urban Upstart £3 or swap for other level 9 adventure (not Colossal). Tel: 01-505 5905.

NEW STONECHIP KEYBOARD for ZX Spectrum, includes amplifier system £35 ono. Also custom aluminium framed carry case for Spectrum, large, unused. £20 ono Tel: 01-980 4811 x 3736 or 01-771 3448 (after 8pm).

SPECTRUM EDUCATIONAL swap for under 9yo. I can offer Magic, Shop, Party Time, First Numbers, Shape Sorter and Alphabet Games! Phone after 7pm 01-800 6767.

I AM SELLING Cambridge joystick interface and Scrabble by Psion for the Spectrum. All offers considered. Brand new. Phone Staines 57086 and ask for Farley after 4pm.

SINCLAIR PRINTER in fantastic condition plus 5 paper rolls. Only £25 ono or swap for complete light pen stuff. Urgent. Katharine Ussher, 66 Weltse Road, London W6 9LT. Tel: (01) 741 7209 evenings.

SPECTRUM SOFTWARE Black Crystal £3; Crypt £2.50, Cricket Captain £2, Dallas £1.50, Golf £2.50, Snooker (Vision) £3.00, Wanted: Trashman; Psytron, all above £12.00. 26 Harry Price House, Oldbury Warley B69 1EQ.

SPECTRUM EDUCATIONAL swap for under 9YO. I can offer Castle Spellerous, Money, Party Time and Shape Sorter! Write to 79 Beaconsfield Road, London N15 4SH.

ZX SPECTRUM + interface I + interface 2 + microdrive + Fuller box + 2 microdrive cartridges. Tel: 01-330 1320. Surrey area. In the evenings.

SPECTRUM 48K, interface one, Microdrive, interface two, Joystick, Chess Rom cartridge, two microdrive cartridges, six rolls printer paper, ZX printer, cassette recorder, lightpen, £210 software, books, £430 ono. Phone (0304) 612983 (evenings).

SPECTRUM 48K cassette recorder, joystick, I/F, printer, carry case, lots s/w original — swap for CBM64 + C2N w. similar s/w library. Tel: 0742 347551.

SPECTRUM S/W for sale. Scuba Dive, Invincible Islands, Trans AM, Horace Skiing, Digger Dan, etc. Tel: 01 622 9929.

SPECTRUM 48K for sale £130 s/w. Automania, Football Manager, etc. Sound amplifier. I/F, tape rec. £230 ono. Tel: 0259 724279.

SPECTRUM 48K Valhalla boxed with manual any reasonable offer considered. Tel: Maidstone 26785.

48K SPECTRUM. Currah Speech Box. ZXX Printer. Tape Recorder plus 23 original titles and three programming books. All boxed as new. Worth £400+. £250 ono. Phone Chris, Holywell (0352) 711662 after 6.

FOR SALE:- Gemini full accounts program for 48K Spectrum. Cost over £90.00. Will accept £40 complete with manual. Phone 0226 82645.

AGENCY FOR THE COMPUTING ARTS

If you are a good programmer, you probably need an agent.
CALL:
BATH 60717
or write to:
6 Quarry Rock Gardens, Claverton Down Road, Bath, Avon BA2 6EF

FOR SALE. ZX printer paper. £1 per roll post paid. Only a few left. Phone 0226 82645.

FOR SALE: many software titles for Spectrum. All originals in perfect condition less than one third cost price. Phone 0226 82645.

VTX 5000 SPECTRUM adaptor for Prestel/Micronet VGC £50. Also over £200 of software including Sabre Wulf, Mugsy, Match Point, Scuba Dive, Hunchback. Sell for £60 ono. Phone Graham 303 9878.

SPECTRUM KEYBOARD, a brand new Fuller FDS, interface one compatible £40 phone (0773) 718157 any night.

SPECTRUM SOFTWARE for sale, Blue Thunder, Chequered Flag, Dimension Destructors, CDS Pool, Tranz AM, Mugsy, Bear Bovver, Star Trader, sell £4 each or swap. Any offers? Rick — 01 699 7093.

48K SPECTRUM plus cassette recorder, manuals and 3 machine code tutorial books. Also 22 original software titles including Monty Mole, White Lightning, Valhalla, Hobbit etc. £165 ono. Telephone 02367 33142 (Robert).

48K SPECTRUM, brand new Fergasun Computer cassette recorder, over 100 C12 cassettes, hundreds of games and magazines, book and all manuals and leads. Phone 021-742 7908 and make me an offer.

SPECTRUM SOFTWARE all excellent games, top names, originals, well looked after. All half price. Everything must go. Ultimate's, Crystal's etc. Write or come to Phil, 22 Clover Hey, Haresfinch, St. Helens, Merseyside.

ZX81 SOFTWARE. By NGs, Psion, Bugbyte etc. Great games, all half price. Sell together for K15. Trader, Catacombs, Monster Maze, 3D-Def. Mazogs etc. Phil, 22 Clover Hey, Haresfinch, St Helens, Merseyside.

PRINTER SERVICES for Spectrum ZX81 listings 50p includes Screen Dump cassette inways 20p. Send tape number/programs. CIPO Andrew Wallis. 56 Holly Lane, Marston Green Birmingham. B37 7AL. 30p P+P First class.

48K SPECTRUM, Ferguson tape recorder, interface two, Atari Joystick, and £80 software and £12 magazines. 5 months guarantee. All for £175. Tel: 0492 33348 after 4pm and ask for Paul.

SPECTRUM CURRAH micro speech. All new £18. Also Telesound Beep amp as new £5.00. Tel: Telford 597136.

48K SPECTRUM, 2 months old, with brand new cassette case and lots of software. Hardly used. Complete with some magazines and all accessories. Worth over £500. Sell for £200. (no offers). Paul Huxman, 49 Powis Street, Liverpool, L8 3TU. 051 727 7211.

SPECTRUM SOFTWARE for sale titles inc. Sabre Wulf, Antics, Decathlon and many others. Very cheap. Send SAE for details to 50 Athol St, MBRO Cleavland TS1 4LB.

SPECTRUM SOFTWARE for sale includes Valhalla, Hulk and Match Point all software worth £140 will sell for £45 ono. Will split. Tel: Wendover (0296) 623423 after 4.30pm.

WANTED SPECTRUM Waxworks and Ten Little Indians. Write, Gray, 87H Tower Drive, Midton, Gourock, Inverclyde or phone Gourock 39817 evenings.

SPECTRUM 48K Joystick + Kempston interface + books. Lots of software including the latest; Mags; Currah (Microspeech optional); computer 1 month old! (Guaranteed) sell for £120. Negotiable. Tel: Michael 01 3402630 (Archway/Highgate).

FOR SALE: "Spectrumiser", Hi-res. Basic compiler for ZX81. Brand new, unwanted gift, cost £6.50 sell for £3.50. Philip Carlin, 8 Tithe Croft, Heath Town, Wolverhampton. All letters answered.

48K SPECTRUM and Fox Programmable interface and Quickshot joystick with 170 cassette programmes including Hobbit, Sabre Wulf, Quill, Full Throttle, etc. £250. 20 Gringley Road, Misterton, Doncaster. Tel: 0427 890479.

QUICKSHOT II joystick £6.50 and Stonechip programmable interface for Spectrum £17.50. Boxed as new, unwanted gifts. Tel: Saffron Walden 27288.

SWAP SINCLAIR 16K ZX81 and many games + mags for BBC printer with interface of Cheetah speech synth. Considered. Tel: Eckington 433563 after 6pm or weekends any time.

SPECTRUM 48K 2 months old, £140 of software, Hobbit, White Lightning, Quill etc. Kempston + 2 joysticks. All worth over £300. £250 ono cash. Slough 33962.

SPECTRUM, Currah Speech + demo tape £20. Tel: 0905 21871.

SPECTRUM GAMES, many original titles inc Ant Atack, Penetrator, etc only £3.50 each or will swap, also want to buy Spectrum keyboard will pay good price. Tel: 031 669 5203 after 8.30pm.

PROGRAMMABLE J/STICK interface for all programs plus Currah micro speech. New. Boxed. £40 or exchange for Spectrum interface 1, or RD Digital Traler. Similar Condition. Local only. Phone Tyneside 2656523.

SINCLAIR INTERFACE 1 £35 Micro drive + 3 cartridges. 01 688 6797.

48K SPECTRUM DK tronics keyboard. Currah microspeech, downsway programmable interface plus joystick, 3 books and 33 original cassettes £250 ono or swap for Commodore 64 + C2N. Bristol 649441.

SPEC ORIG. GAMES for sale, all 48K Sabre Wulf, Mugsey + Harg £12.00 the lot. Rotherham 70149.

48K SPECTRUM, Kempston interface, Quickshot math 1 joystick. WH Smith Nu 2 tape recorder + over 200 games, Currah Speech unit. Total worth over £1300. Sell for £270. Tel: 0698 833689 (Glasgow + Motherwell area only ask for David).

SPECTRUM S/W quicksilver games designer, as new £10.00 also Protak Hunter Killer £5.00 will send post free. Tel: (0622) 26657 6pm after.

48K SPEC, cass recorder, Kempston interface £200 worth orig. s/w for sale. All receipts. £200 ono or swap for CBM 64 + cass player. Tel: 01 304 7687.

48K SPEC + printer, interface, microdrive, 9 cartridges, Kempston joystick interface + s/w, £280 quick sale. Tel: 023 52615.

SPECTRUM SOFTWARE including Hobbit, Ant Attack, Maziacs ZZoom Flag Jet SEt, Willy Cooke, Escape, All Horaces over £150, worth sell for £50 or swap for 16K ZX81 – Phone 0249 890139.

SPECTRUM 48K inlcuidng ZX printer and Currah Speech. Also Kempston Joystick plus interface and DK Tronics lightpen. Lots of quality software, worth over £340, sell for £210. – Phone 021459 1921 evenings.

SPECTRUM S/W to swap. Monty Mole, Mr Wongs Loopy Laundry, The Pyramid, Sabre Wulf. Want Lords of Midnight and any others. – Phone Graham on 0268 21465 after 6 p.m.

SPECTRUM 48K + 115 games, Kempston Joystick + Interface, worth £800, offers please orswap for Amstrad with colour monitor. – Tel 01-950 6262 ask for Nicholas or Tel: Garston 662305 (even.).

SPECTRUM SOFTWARE for sale, 12 Top Titles, inclusind 3D Lunar Attack, Adroid 2, Blue Thunder, Hunchback, Trand-AM, Alchemist. Retail price £76, willsell for £25. – Tel: 01-858 9964 (evens).

SPECTRUM 48K Alphacom printer, Tape Recorder, Amplifier/switch unti, carry case/work station, word processor, database, many books £250. – Tyne and Wear (0632) 574786.

I HAVE SOFTWARE (originals) to swap including Jumping Jack, Armagedden, Spookyman, Meteor Storm, Destroyer and Star Trek etc. Please send your list of swaps to: Ian Carroll, 4 Trentbrake Avenue, Hartlepool TS2S 5JN.

SPECTRUM: Swap Currah Microspeech, DK Tronics light pen, Joystick & Interface, Scrabble, Melbourne Draw, Paintbox, Atic Atac, for ZX interface & ZX microdrive with cartridge.

EXCHANGE MY SPECTRUM48K and software for CBM 1541 Disck drive (any disk based software also appreciated). – Phone Andy on 051430 7608 (Drive must be in perfect condition).

WANTED: Adventures for Spectrum, Phipps, Level 9 or Digital Fantasia, or Scott Adams. Must include original packaging instructions etc. Also want microdrive + interface one. Reasonable price paid. – Tel: 594-2281 after 5 p.m.

SWAP Valhalla, Hurg, Pyramid, Eye of Star Waarrior (Spectrum 48K) for programmable interface. – St. Helens 54981.

SPECTRUM SOFTWARE for sale. Zip-zap, Arcadia Jetpac £3. Planet of Death, Terror Daktil 4D £3.50. Black Crystal £4 or the lot for £16. – Tel: Birmingham 421 3410.

SPECTRUM SOFTWARE sale: Golf £3, Cricket Captain £2.50, Tyrant of Athens £2, Dalls £2.50, Eye of a Star Warrior, £2.50; more. – Jeff, 26 Harry Price House, Oldbury, Warley B69 1EQ.

48K SPECTRUM (Issue B) with manuals and magazines, Ferguson tape recorder and Kempston Joystick included is £130 worth of original software, £185 o.n.o. – Tel: Radlett 7318 after 4 p.m. ask for Paul.

FOR SALE: "Spectrumber", Hi-Res Basic compiler cassette for ZX81, brand new, unwanted gift, cost £6.50, sell for £3.50. – Philip Carlin, 8 Tithe Croft, Heathtown, Wolverhampton. All letters answered.

48K SPECTRUM, £120 of original software + Quickshot Joystick + interface + Currah Speech. All leads, manuals, magazines + books worth £52, altogether worth £360. Sell £210 o.n.o. will pay postage. – Tel: Robin (0624) 812334 after 5 p.m.

WILL SWAP my Spectrum 48K and softwre for a 1541 CBM disk drive (software on disck also appreciated). – Phone Andy on 051430 7608 must be in perfect condition.

WANTED any ultimate, imagine and Q/silver software for Sinclair Spectrum, must be originals and in good condition. – Write to: P. Hainge, 8 Villa Street, Newtown, Birmingham B19 2XR.

WANTED: I need the ZX printer manual. Please contact Daniel Morrisey at 1A Ashcombe Road, Weston-super-Mare, Avon BS23 3DS, or phone 0934 31449 and ask for Daniel Morrisey.

MONOLITH ZX81 ECR 81 enhanced data recorder with certification tape. Automatic levels ensure trouble-free saving and loading. Perfect. Little Used. £26. – Phone Hornspton-in-Arden 2180. (West Midlands).

QUICKSHOT Joystick + BBC interface (Prolink), £20, Spec software incl. QS, Asteroids, QS Aquaplane, QS EAsyspeak, Gulpmans Avenger, £4 each, £18 the lot. – Tel: Nick on 0323-844781 after 4 p.m.

ZX 81 PROGRAMS Minor Forty, Frogger, etc. Also s/w £1.50-£22 or lot £30. – Tel: 01-639 8657.

48K SPECTRUM incl. DK Tronics K'board, tape, rec. £400 s/w, mags £225 o.n.o. – Tel: 01-203 1490.

SPECTRUM 48K w tape recorder, books, mags, 25 originals etc. worth £400, yours for only £200 o.n.o. – Tel: 061-928 9877 (Brendon).

48K SPECTRUM I/F, microdrive, 6 cartridges, ZX printer over 30 games + s/w £250 o.n.o. – Tel: (evens (0862) 81546.

SPECTRUM 48K still under gttee 20 orignal progs, Atari 850 i/f to swap for BBC B computer or sell for £100 each. – Tel: 0783 363579.

SPECTRUM TAPES : Around 25 tapes, all original. Games, educational, utilities and business, little used, from £1 each. Also Spectrum books, Adventure programming, Microdrive use etc. from £3. –Tel: Clacton (0255) 434329 days and evenings.

TURN YOUR 48K SPECTRUM into a word processor and filing system: Daisywheel printer/typewriter for sale, only £295 (no offers) includes 10 12 and 15 cpi daisywheels, all interfaces and cables. Customised Tasword and Masterfile programes available. Delivery possible. – Tel: Clacton (0255) 434329 days and evenings.

Acorns for sale

ACORN ELECTRON good condition £150 747 Flight Simulator £5. The Electron Book £3.00. Many blank cassettes £3.00. All together £155. Phone Mark after 4pm 624 6509 (London).

BBC SOFTWARE — Chuckie Egg, Darts, Howzat, Horror Castle, Shrinking Professor, — £6.00 each ono. Send no money yet. Write giving name address + phone, to Keith Hazell, Flat 20, 30 Grenada Road, Southsea, Portsmouth PO4 0RH.

BBC DOUBLE DENSITY disc interface kit by Lul. As new. £75.00. Tel: 0272 877789.

BBC GAMES SOFTWARE now unwanted will sell for half price the following, Starship Command, Monsters, Vortex, Overdrive, Gorph, Snowball, Telephone 0245 50432 to enquire on price or reserve.

BBC 'B' with DFS & wordwise. £380 ono. Acorn Teletext adaptor, immaculate condition with TFS Rom & manual. £175 ono. New Wordwise version 1.20. (original). £30. Watford DFS Kit V-1.30. £85. Beebug Toolkit Rom £20. Phone 0227 750600.

ACORN ELECTRON £140 OKI Microline 80 printer £100 signpoint printer interface £30. Cassette player software books etc. Tel: Oxford 770730.

BBC R H Light pen with software and manual worth £45. Will sell for £20 or swap for speech chip or quickshot joystick with programmable interface. Phone Bromsgrove for Adam 0527 73034.

BBC SOFTWARE for sale. Aviator £9, Planetoid £6, Rocket Riad £6, Honyfold Assembly £5, Meteors £5, Super Invaders £5, Painter £5, Planes £5, Starship Command £6. All originals. Telephone 0527 73034.

BBC MODEL B 1·2 OS 6 months old £275 ono. Write L. Edwards, 84 St. John's Road, Bletchley, Milton Keynes, MK3 5EB.

BBC 'B'. Excellent condition. Also Seikosha 250X printer. Both hardly used, + £150 software. Bargain £500 ono. Selling because buying car. Could deliver. Write, Tony Kempston, c/o John

Mowlem, Portal C. Ashleyhay Lane, Wirksworth, Derbyshire.

BBC B 1·2 operating sys, + disc drive + diskets + cass recorder, + s/w + mags + books, £499. Tel: Hoddesdon 468197.

BBC 'B' 1·2 O.S. V.G.C., boxed, leads, manuals + s/w. £325. BBC 'B' with disk interface as new, boxed manual + leads £400. Tel: 01 989 8449.

BBC 'B', 1·2 O.S., Acorn DFS, TEAC, 40 track disk drive, Wordwise, exman, + £60 s/w...£475 ono. Tel: 01 626 1567 (ex. 2292) Phil.

BBC B + Joystick + s/w. 5 mths old with ex 3 yr guarantee £340. Will consider Spec 48K in part exchange + cash. Tel: Camberley 33905.

BRAND NEW BBC B, speech synthesiser, sound amp, volume control, light-pen, s/w worth £100, book worth £25. Total value £650 sell £500. Selling due to emigration. Contact Mr. S. Patel, 14 Weverneside Ave, Ashdown, Lancs OL6 8UY.

Dragons for sale

DRAGON 32, boxed, manual graphics, w.p. tape. £100 ono. Tandy TRS 80, 64K. Disk drive, s/w — £400. Tel: Crowborough (08296) 61252.

9 DRAGON GAMES tapes £1.50 each (all original!), 2 books £2.50 each, 3 cartridges £5 each, printer lead £5, 2 joysticks £6, Sanyo SLIM3G recorder £10. Tel: Nigel (0532) 504431.

DRAGON 32 computer, tape recorder, large selection of software plus books and 12 Dragon Users and joysticks sell for £120 ono. Details discussed on phone. Tel. anytime. Gresford 5653.

DRAGON SOFTWARE 17 original tapes — includes The King, Space Shuttle, Cuthbert Jungle. 1 cartridge + 3 books total value £171. Sell for £85. David McNeish, 10 Graham Avenue, East Kilbride, Glasgow G74 4JZ Tel: East Kilbride (035 52) 20001.

DRAGON DOS with leads, new unused £50 ono includes manual. Or swap anything reasonable considered phone Peter Leach at Antrim 65345.

D32, immacaulate cond. boxed with leads, Cass recorder £150, s/w, to cart joystick many drag user mags, worth £300 bargain £165, Tel: 01-886 4208 after 6pm.

DRAGON 32 for sale with cassette recorder and leads, boxed £50 ono. Phone Swindon 823867.

DRAGON 32, w. £500 s/w, + mags + j'sticks. (slightly faulty). £160-£180. Tel: 041 942 3752.

DRAGON 32, boxed, excellent condition, all leads included with cassette player £100 worth of software, Quickshot joystick, adaptor and 1 Dragon joystick worth £350. Sell for £170 ono. Tel: (0902) 751758 (evenings).

DRAGON, 3 joysticks, lightpen, m/code book, user magazines, software games & utilities, dust cover. £115. Tandy CGP-115 printer £95. together for £200. Tel: 01 36034 43.

DRAGON 32 micro for sale. Over £150 worth of software. 4 books, two new joysticks, worth over £360. Sell for £110. Phone Dorking (0306) 888426 evenings or weekends.

DRAGON 32, cassette recorder, colour TV, light pen, joystick, £200 + software inc. Chess, Bussard Bait, Kong, Scramble, Cartridge, Assembler, Dissassembler, Graphics system. Books, cost £500+. Sell £200 ono. Tel: (021) 354 9861.

Ataris for sale

ATARI V.C.S. console, joysticks, paddles and eleven games including Space Invaders, Superman and Yars Revenge. £90 ono. Phone 0847 65682.

BBC WITH BSF, Cimara Twin Drive 200K with power supply, lots s/w £575. Speech recognition system £40. Tel: 01-739 2273 or 01 249 9895.

ATARI 600XL, cassette recorder, game, joysticks, books, carrying case, 7 months old, £140. Tel: 01 399 2669.

ATARI VCS complete with nine cartridges inc. Space Invaders and Adventure. Boxed and in V.G.C. £100. 20 Gringley Road, Misterton, Doncaster. Tel: 0427 890479.

ATARI SOFTWARE 16 cartridges Defender Poleposition Gorf Centipede etc. £8 each also 25 cassettes Seadragon Bajabuggies Strätos Rearguard etc £4.00 each or the lot £150.00 or exchange for Atari 800 Conway 9 Berryleys Luton Beds.

ATARI 410 cass rec brand new boxed £25.00. Tel: 359 1177.

ATARI 400, 48K, Recorder, Basic, Manuals, + paddles, joysticks, over £200 original tapes, inc. Pacman £100. Tel: Glasgow 618007 (after 5pm).

Commodores for sale

VIC 20 C2N 16K switchable ram. Intro to Basic 1 and 2. Joystick, Mags and Books, all boxed and over 120 games. £170 ono. Tel: Derek 950 0685 after 5 p.m.

CBM 64 tape to disk transfer service. Phone 01-940 7627 after 6 p.m. for details or write P. I. Services, 48 Sheen Park, Richmond, Surrey TW9 1UW. (Ensloe s.a.e.) Thank You.

CBM 64 software for sale. All the best games including Valhalla, Loco, Beachhead, Encounter etc. All originals. Write to Graeme Mort, 34 Knock Way, Gallowmill, Paisley, Scotland.

CBM 64. C2N 2 sticks over. £200 with games inc. Football, Solo Flight, Black Hawk, Beachhead. 4 months guarantee left. As new. £250. Tel: 0246 203418, Davison.

VIC 20 cartridges: Gorf £8, Chess £6, Avengers £6, The Count, Mission Impossible, Jupitar Lander, Cosmic Cruncher, Alien, Menagerie. All £6 each or the lot £50 ono. Tel: 061 652 0905 after 8 p.m.

32K VIC 20 + C2N + Joystick + over £200 of original s/w + Intro to Basic, Books and Mags. £150. Tel: Andy 01-841 0675 after 5 p.m.

COMMODORE 64 owner wishes to contact other 64 owners to swap programs and ideas. Send your list of programs for exchange to: Janfrik Helgesen, Joh Hjorts Vei 24, 5030 Landas, Norway.

COMMODORE 8K ram cartridge, Vic-1110. Perfect working order and condition. Also "Jetpac" game by ultimate. Original condition. Both for £20 or will split. (0244) 675717.

VIC 20 computer, C2N Recorder, 16K switchable ram, 8K standard ram, 3 cartridges, approx 40 games, book, £200 ono. Tel: (0248) 724 654.

COMMODORE C2N cassette unit. As new, with instruction booklet. Could send by post if necessary. Accept £25 ono. Chester 675717.

CBM 64 computer, disk-drive, monitor, cassette, manuals, many books, magazines, games, utilities, joysticks, multipian 64, vizawrite, mirroassembler, superbase 64, accessories. All in excellent condition. Upgrading. Complete system cost £1,200. Sell £750. Tony 01-690 3820.

VIC 20 plus C2N cassette plus 16K ram. 10 cassettes including jetpack, chess, arcadia. Vic revealed plus other books and manuals. All good condition and boxed. £160. Tel: Wincanton (0963) 33109.

CBM 64 software originals. Will sell cheap or swap. Decathlon (A), solo flight. valhalla, falcon, patrol, stockmarket, monopole, wanda, fall of Rome. Tel: 061 439 9649 after 6 p.m.

SWAP. YOUR unwanted software for the Vic 20 and C64 – this is not a club. Send s.a.e. to D. Woodward, 45 Stonewood Ave., Hall Green, Birmingham B28 9 AX. All swaps free.

VIC-20, RECORDER, + 3K, 13 rom cartridges, 6 books, 7 slot Afron expansion unit, joystick, over 129 games, many arcade + mags. Only £230 ono. Belly, 35 Moor Top Drive, hemsworth, West Yorks.

ADMAN SPEECH synthesiser for CBM 64, will possibly fit Vic 20 also, only two months old. V.g.c. New equipment forces sale. £25, no offers. Phone South Ockendon 855757, buyer collects.

CBM 64. WILL swap Simons basic, used twice, for easy script or similar word processor, Database or Spreadsheet considered. Tel: 061-436 1205.

VIC 20 MACHINE code monitor, super lander, pirate cove and innovative computing book, £20. Tel: 01-669 7108.

VIC 20, C2N, 16K switchable ram pack, intro to Basic 1 software including jetpack and crazy kong. Good bargain at £130 ono. Tel: (0532) 520855 Leeds.

CBM/PET 32K professional computer (perfect) with VDU, C2N recorder, manual and software: £250. Chips: Toolkit, £16. Superchip, £25. Arrow, £16. Also various PET books and software sold separately. Phone: 01-992 0031.

VIC 20 COMPUTER + cassette, + 8K ram, 22 games, tape + introduction to Basic 1. Quick sale. £100 ono. Tel: 593 5021, Dagenham. (Still under guarantee).

COMMODORE 64 software, rat-race. siren city £4, son of blagger £4, kong £2, ultisynth £7, revenge £4, cuddly cuburt £4, china miner £4, stix £3. All originals. Phone 0656 55050, ask for Robert.

CBM 64 + **C2N** cassette, + MPS 801 printer, + box of paper, + joystick, + programmers. Reference manual + £150 worth of software (including Mr. Wimpy, space shuttle etc). Only £430 ono. Will deliver. Tel: (0325) 321907...NOW!

VIC-20 PRINTER + power supply and printer rolls £40. Super expander + books and programs £20. Pointmaster, joystick £5. Tel: 832305 or write 12 Derwent Avenue, W. Auckland, Bishop Auckland, Co. Durham DL14 9LM.

CBM 64 GAMES, Blackhawk, Slurry, £4.50 each. Tel: 051 521 2736. Ask for Paul.

VIC 20 C2N cassette, super expander, switchable 16K ram. mother board and joystick, adventure and sargon chess cartridges, 19 cassettes and 4 books. All boxed. £200.00.

C64 + **C2N** cassette + quickshot, joystick, + s/w, including Hunchback, Kong etc. Magazines unused. Still boxed. Sell £210 ono. Tel: Andrew (eves.) 01-592 7949.

C1520 PRINTER PLOTTER, 3 months old, sell £40. Tel: 01-592 2204.

VECTREX WITH five game cartridges, worth £200. Asking £99. Contact D. Carr, 17 Bristol Road, Sheffield S11 8RL. Please include telephone no. if possible.

CAMBRIDGE PROGRAMMABLE joystick plus interface and tape. Excellent condition £25. 061 620 2598.

LYNX 48K. Boxed as new, manual, leads, demo tape, plus assembler/disassembler, Lynx user magazines, £110 ono. Clive Newton, 90 Pentre Close, Cymbran, Gwent NP44 7LR. Tel: Cwmbran (06333) 60547.

LYNX 48K boxed as new. £110 ono.

COMPUTER SWAP

Computer Swap entries are limited to 30 words. Either fill in the accompanying form and send to Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD or telephone 01-437 4343.

All software offered through computer swap must be in original condition and for private sale only.

It cannot be swapped.
Warning: It is illegal to advertise pirated software.

COMPUTER SWAP

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

Name.....

Address.....

.....

Telephone.....

Phone Malcolm (01) 377 0020 ext. 229 days or (01) 553 0349 after 7 p.m.

CGL SORD M5 with Basic 9 cartridges and manuals. Graphic Designer Cass., 3 Games Cartridges, 2 Games Cassettes, 1 Joypad £175. Tel: 0772 30124.

VIDEO GENIE, 16K cassette, sound. Many books/software, £75. Also ZX printer £10. Also Alphacom 32 printer for Spectrum, £45. Tel: Kirkham 682337.

SINCLAIR INTERFACE 2, hardly used, boxed, £15 ono. Also ZX printer as new, boxed, with extra paper and ZX81 p.s.u., £30. Tel: Mike Aldridge (0922) 52239 any time.

FOR SALE near complete collection of PCN, asking £6. H.C.R. Eprom programmer, £35 ono. BBC software, Legion, Checkout, Ghouls, Vortex, asking £3.50 each. Phone 736 7714. Ask for Satvinder.

SINCLAIR QL, brand new, unwanted prize £360. Phone 0439 70706, evenings.

MICRO DRIVE + interface 1, brand new + one cart, £75.00 ono. Tel: 01-691 2247 between 5 p.m.-10 p.m.

TEXAS TI99/4A, as new, plus joysticks, connect four cartridge and "basic" education tape. £75 ono. Clive Newton, 90 Pentre Close, Cwmbran, Gwent NP44 7LR. Tel: Cwynbran (06333) 60547.

CBM 64, cassette, j'stick, disk drive, 1701 colour monitor, all under G'tee, £100 s/w inc. Solar Flight, Word Processing, Hobbit, etc. £550 or will separate. Tel: 0634 812457.

VIC 20 plus cassettes for sale £80 phone Peter 802 3946.

COMMODORE VIC 20 w. C2N cassette unit, dust covers, 3K + 16K expan. cartrs, Sargon 2 Chess cartr. Intro to Basic Pt I. Books on Vic 20, Educational packs, also. Games. eg. Jetpac. £165. Tel: Paddock Wood. 3846.

CBM 4032 monitor and keyboard 4040 dual disc drive 4022 printer plus programs paper and manuals professional outfit virtually usused. Cost over £2,000 accept £1,000. 0405 813794.

CBM 64 new s/w for sale. Beach Head £7, Arabian Nights, Daley's Decathlon £5. Also TKV and the Boss. Tel: Andy on 0224 582164 after 6pm.

VIC 20 plus cassette recorder + 16K switchable ram pack and joystick with £170 worth of software. Total TS £388. Am asking £160. Phone after 6. Muzfer. 01 385 2699.

CBM 64 software at half price. Aztec challenge, manic miner, Pipeline, Solo Flight, Killer Watt and many others. Tel: 01 318 4880 after 6pm (London).

COMMODORE 64 C2N cassette, joystick many books and over £300 worth top software still under warranty and boxed £369 or swap for Amstrad 64 with colour monitor. Phone 0630 57129.

COMMODORE 64 original software for sale half price. Heroes of Karn, Hulk, Lords of Time, etc, etc, 40 Brook Road, Rotherham, South Yorks, S65 2UW. Phone Rotherham 70149.

CBM 64 games cartridges. Le Mans, Jupiter Lander, Visible Solar System cost £30 accept £13.50 incl. postage. Tel: 0795 75420 all in perfect condition.

UNUSED COMMODORE books for sale at half prices. Contact T. V. Tran, 130 Elgar Ave, Great Malvern, Worcs, WR14 2HA.

COMMODORE CBM/PET high resolution graphics board. Converts "new Rom" 2001 and 3000 series machines to display Hi-res graphics. Includes extra 8K screen memory. Full instructions £59 ono. Tel: Chester 675717.

VIC 20 STARTER pack, 9 cart, 8 cass, 2 educ cass. Sell £220 ono. Tel: 572-3989.

ADVENTURE HELPLINE

Colossal Adventure on BBC B. How to get the lamp into the Plover Room? Also, how to open the clam and get its pearl? Also, how to open the clam and get its pearl? Tim Moll, 119 Millhouses Lane, Sheffield S7 2HD.

Greedy Gulch on Spectrum. How to find ammunition for the gun? How to get past the rattlesnake? Mrs V Lawless, 16 Culross Avenue, Manchester M10 0SR.

Hitch-Hikers Guide on Spectrum. How do you get past the Tiger in the museum? Also, what do I do when I have been ejected out of the Vogon spaceship? S Allen, 42 Landowne Cres, Stanwix, Carlisle, Cumbria CA3 9EW.

Pirate Cove on Vic 20. How do I get past the crocodiles in the pit which is in the cave? Gary Baker, Kirkland Cottage, Stranraer, Scotland.

Hobbit on Spectrum. I cannot get out of the Elven Kings wine cellar, nor out of the Goblins Dungeon. Stephen Sedlen, 97 Maisemore, Yate, nr Bristol BS4 14UW.

Adventureland on Vic 20. How to get past the Lava Stream? How to get the honey? Paul Williams, 1 Llindir Street, Hellan, Denbigh, Clwyd.

Espionage Island on Spectrum. How do I get past the swamp which is sinking? I keep sinking up to my neck. Chris Kissack, 30 High View

Hobbit on Spectrum. How do I excape from the Goblin's Dungeon and the King's Wine Cellar. Alan Sayles, 6 Measowbank Street, Dumbarton, Strathclyde.

Voodoo castle on BBC. What enables me to become small enough to enter the crack at the bottom of the chute? John May, 44 Ruskin Road, Chadwell-St-Mary, Grays, Essex.

Ultimate Adventure on Dragon. One is supposed to buy articles from a market to help with the adventure. Every time I try the computer replies 'Can only be bought in the market' when I am already *in* the market. Mrs P Griffiths, 28 Trent Road, Billinge, Near Wigan, Gtr Manchester.

Goblin Towers on Commodore 64. I am lost in the forest. I cannot seem to progress in any direction. I am new to adventures. Janet Foster, 24 Moresby Avenue, Normoss, Blackpool.

Pirate's Cove on Vic20. On pirate island, in the cave maze, how do I feed and get past the crocodiles? Bryan Gault, 5 Sherwood Drive, Brant Road, Lincoln.

Smuggler's Cove on Spectrum. I can't get into the trapdoor and when I go past it I come to a barrier which I cannot get past. Jim Fraser, St Martha's, 6 Ramsey, Isle of Man.

Voodoo Castle on Vic20. How do you open the Ju-Ju bag? How do you get out of the jail cell and who is (in the adventure) your friend? Julian Foley, The Anchorage, Back of the Hill, Annan, Dumfriesshire.

Urban Upstart on Spectrum. I am unable to get past the fan or the airport officer sargent, even after offering them all. Christopher Rainer, 2 Mill Hill Road, Hinkley, Leicestershire.

Snowball on Commodore 64. How do I get through the security door? What is the combination? Howard Seymour, Welwyn Garden, Herts.

Hobbit on 64. How do I get out of the Goblin's Dungeon? How do I kill the dragon? Gregory Neilson, 86 Herbert Avenue, Parkstone, Poole, Dorset.

SEE INTERNATIONAL ADVENTURE CLUB (CLASSIFIED)

Diary

Event	Dates	Venue	Admission	Organisers
ZX Fair	Oct 6 10.00am-5.00pm	Pudsey Civic Centre Pudsey W Yorks	75p adults 50p children	Northern Premier Exhibitions 0532 552854
Livingston Computer Fayre	Oct 6-7 10.00am-5.00pm	Peel House Ladywell Livingston W Lothian	£1.00 programme	Itec/W Lothian Computer club
Computer Graphics 84 (over 18s only)	Oct 9, 10 10.00am-6.00pm Oct 11 10.00am-4.00pm	Wembley Conference Centre	Free in advcance £5.00 on door	Outline Conferences 01-868 4466
Apricot and Sirius Show North	Oct 16-18 10.00am-6.00pm	New Century Hall New Century House Corporation Street Manchester	Free in advance from organisers	16 Bit Computing Magazine 01-241 2354
Computer Games and Systems Retailer Show (trade only)	Oct 17-18 9.00am-5.30pm	Novotel London W6	Free	Macro Exhibitions 0992 469556
Home Computer Education and Games Fair	Oct 20 12.00pm-8.00pm Oct 21 10.00am-6.00pm	Luton College of Higher Education	£1.50 adults £1.00 children	Shaw and Kilburn 0582 29511
Electron and BBC Micro User Show Oct 25-27 10.00am-5.00pm Oct 28 10.00am-4.00pm	Alexandra Palace London N22	£3.00 adults £2.00 children	Database Publications 061-456 8383	
Home Tech 84 Oct 26-29 10.00am-6.00pm	Bristol Exhibition Centre	£1.50 adults £1.00 children	Nationwide Exhibitions 0272 690465	
Computers in Action	Oct 30 10.00 am-6.00pm Oct 31 10.00am-8.00pm Nov 1 10.00am-6.00pm	Anderson Centre Glasgow	Free	Trade Exhibitions 041-204 0280
Mycomp (Thames Valley Personal Computer Exhibition)	Nov 1-3 10.00am-6.00pm Nov 4 11.00am-8.00pm	Fulcrum Centre Slough	£2.00 adults £1.00 children	Swan House Special Events 09332 43866

Top 10

Spectrum

1	(7)	Match Point	(Psion)
2	(2)	Full Throttle	(Micromega)
3	(3)	Tornado Low Level	(Vortex)
4	(9)	Cavelon	(Ocean)
5	(8)	Sabre Wulf	(Ultimate)
6	(–)	Jack and the Beanstalk	(Thor)
7	(1)	Daley Thompson's Decathlon	(Ocean)
8	(6)	Rapscallion	(Bug Byte)
9	(–)	American Football	(Digital Integration)
10	(5)	Fighter Pilot	(Digital Integration)

(Figures compiled by W H Smith and Son, London)

Dragon

1	(1)	Up Periscope!	(Beyond)
2	(2)	Ring of Darkness	(Wintersoft)
3	(3)	Cuthbert in the Mines	(Microdeal)
4	(5)	Eightball	(Microdeal)
5	(8)	Dungeon Raid	(Microdeal)
6	(6)	Mr Dig	(Microdeal)
7	(9)	Buzzard Bait	(Microdeal)
8	(–)	The King	(Microdeal)
9	(10)	Hungry Horace	(Melbourne House)
10	(–)	Cuthbert in Space	(Microdeal)

(Figures compiled by Boots/Websters)

BBC B

1	(–)	Elite	(Acornsoft)
2	(1)	Fortress	(Pace)
3	(–)	Overdrive	(Superior)
4	(5)	Micro Olympics	(Database)
5	(9)	Wallaby	(Superior)
6	(2)	Ghouls	(Micro Power)
7	(8)	Aviator	(Acornsoft)
8	(3)	Smash and Grab	(Superior)
9	(10)	Stock Car	(Micro Power)
10	(4)	Spitfire Command	(Superior)

(Figures compiled by W H Smith and Son, London)

Books

1	(3)	A Guide to Playing the Hobbit	(Melbourne House)
2	(7)	Battle Games	(Usbourne)
3	(9)	Space Games	(Usbourne)
4	(–)	Commodore 64 Games Book	(Melbourne House)
5	(5)	Practical Spectrum Machine Code	(Shiva)
6	(4)	Machine Code Sprites and Graphics	(Sunshine)
7	(10)	Computer Programming for Beginners	(Fontana)
8	(8)	100 Programs for the BBC Micro	(Prentice-Hall)
9	(–)	Spectrum Book of Games	(Granada)
10	(–)	Adventures in BBC Basic	(John Wiley)

(Figures compiled by Boots/Websters)

Vic 20

1	(2)	Snooker	(Visions)
2	(5)	Sub Hunt	(Mastertronic)
3	(3)	Flight 015	(Craig Communications)
4	(–)	Max	(Anirog)
5	(9)	Duck Shoot	(Mastertronic)
6	(6)	Tower of Evil	(Thorn EMI)
7	(8)	Crazy Kong	(Interceptor)
8	(–)	Vegas Jackpot	(Mastertronic
9	(10)	3D Maze	(Mastertronic)
10	(7)	Phantom Attack	(Mastertronic)

(Figures compiled by Boots/Websters)

Atari

1	(–)	Solo Flight	(Centre Soft)
2	(–)	Caverns of Khafka	(Centresoft)
3	(7)	Zaxxon	(Centresoft)
	(–)	Orc Attack	(Atari)
5	(–)	Carnival Massacre	(Atari)
	(–)	Leggit	(Imagine)
7	(–)	Slinky	(Centresoft)
	(–)	Captain Sticky's Gold	(English Software)
9	(–)	Computer War	(Atari)
10	(9)	Colony 7	(System 3)

(Figures compiled by Boots/Websters)

Commodore 64

1	(1)	Scrabble	(Leisure Genius)
2	(3)	Beachhead	(US Gold)
3	(6)	Decathlon	(Ocean)
4	(4)	Arabian Nights	(Interceptor)
5	(–)	Football Manager	(Addictive)
6	(7)	Decathlon	(Activision)
7	(8)	Gilligan's Gold	(Ocean)
8	(–)	Stunt Bike	(Ocean)
9	(–)	Space Walk	(Mastertronic

(Figures compiles by Boots/Websters)

ZX81

1	(1)	Alien Raid	(CRL)
2	(2)	Walk the Plank	(Novus)
3	(–)	Black Crystal	(Mastertronic)
4	(9)	Flight Simulation	(Psion)
5	(3)	Krazy Kong	(PSS)
6	(5)	Planet Raider	(Novus)
7	(7)	Espionage Island	(Psion)
8	(8)	Krypton Ordeal	(Novus)
9	(4)	Meteor Storm	(DK'Tronics)
10	(6)	Meteoroids	(DK'Tronics)

(Figures compiled by Boots/Websters)

Book Ends

NETWORKING

As the festive season draws nearer, the books get bigger — the particular offering in front of me being *The Complete Spectrum*.

To its credit, the book does (for once) live up to the title. There is everything here, from wiring up the plug and extensive instructions on which end of the TV cable to put into the telly, to the elements of machine-code programming and microchip architecture.

Not bad for 487 pages. There are also useful sections on add-ons, networking, adventure programming and more.

However, beware. Much of the material has been previously published in other guises by Ian Sinclair *et al*, so be careful to read the list of books on the inside cover.

All in all, though, if you are buying a Spectrum and want to know the ropes, there are definitely worse ways of spending ten quid.

Book	*The Complete Spectrum*
Price	*£9.95*
Micro	*Spectrum*
Supplier	*Granada Publishing Grafton St London W1*

ANNOTATED

A book useful for experienced Basic programmers ready to move on is *Advanced Basic and Machine Code for the Commodore 64* by the ubiquitous Peter Gerrard.

The book begins with advanced Basic programming techniques such as file searches and data storage before moving into machine code with a simple sprite moving program discussing Basic instructions, flags and such like.

There are a number of useful machine code routines that can be incorporated within your own programs which are well annotated to show exactly what's going on.

A book better than many of the type; a useful and clear set of appendices on machine code instructions are included as well.

Book	*Advanced Basic and Machine Code for the Commodore 64*
Price	*£6.95*
Micro	*Commodore 64*
Supplier	*Duckworth The Old Piano Factory 43 Gloucester Crescent London NW1*

This Week

Program	*Type*	*Micro*	*Price*	*Supplier*
Frogman	Arc	Ace	**£4.95**	Mountsoft
Moneybags	Arc	Ace	**£4.95**	Mountsoft
Dragon	Ed	Amstrad	**£4.00**	Terry Soft
Potluck	Ed	Amstrad	**£4.00**	Terry Soft
Pontoon	S	Amstrad	**£4.00**	Terry Soft
Amstrad Assembler	Ut	Amstrad	**8.95**	Mountsoft
Matchmaker	Ut	Amstrad	**£4.00**	Terry Soft
Runemagic — The Wizards	Ad	BBC	**£6.95**	Triffid
Runemagic — The Secret River	Ad	BBC	**£6.95**	Triffid
Microgo 1	S	BBC	**£9.95**	Edge
Text Ed	Ut	BBC	**2.25**	Js
Pettigrew Chronicles	Ad	Commodore 64	**£.9.95**	Shards
The Armour	Ad	Commodore 64	**2.99**	EFC
Ad Infinitum	Arc	Commodore 64	**£7.50**	Mr Chip
Kikstart	Arc	Commodore 64	**7.50**	Mr Chip
Games Creator	Ut	Commodore 64	**12.95**	Mirrorsoft
Supabasic	Ut	Commodore 64	**9.99**	Interceptor
Ace High	Arc	Dragon	**6.95**	Tudor Williams
Kentilla	Ad	Spectrum	**6.95**	Micromega
Pettigrew Chronicles	Ad	Spectrum	**9.95**	Shards
Se-Kaa of Assiah	Ad	Spectrum	**7.50**	Mastertronic
Wrath of Magra	Ad	Spectrum	**12.50**	Mastertronic
All or Nothing	Arc	Spectrum	**5.95**	Abbex
B.M.X. Trials	Arc	Spectrum	**6.95**	Llainlan
Braxx Bluff	Arc	Spectrum	**6.95**	Micromega
Crossman	Arc	Spectrum	**2.95**	Js
Grave Doom	Arc	Spectrum	**6.95**	Llainlan
Poltergeist	Arc	Spectrum	**£5.95**	PSS
Runaway Train	Arc	Spectrum	**6.95**	Llainlan
Spider Attack	Arc	Spectrum	**6.95**	Llainlan
Super Mutt	Arc	Spectrum	**5.95**	Silver Soft
Battlecars	S	Spectrum	7.95	Games Workshop
D Day	S	Spectrum	**7.95**	Games Workshop
Financial Manager	Ut	Spectrum	**£3.45**	Js
Music Master	Ut	Spectrum	**£17.95**	Supersoft

Key: Ad — adventure/**Arc** — arcade/**Ed** — education/
S — strategy-simulation/**Ut** — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to: This Week, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.

A MORAL?

The Key to Time is an adventure from a new Spectrum software house which calls itself Lumpsoft!

It seems from a quick play to be a well planned adventure with a wide vocabulary, some wit, and some original ideas.

There are, however, two big problems with it. Firstly it appears to have been written with *The Quill* but it is not credited. Bad.

Secondly, the entire adventure is constructed around characters, ideas, and plots from *Dr Who*. This is also bad.

The mere fact that Lumpsoft are (presumably) a small software house and have in other respects tried hard with the adventure does not excuse the fact that many of the ideas are not their own.

I guess the BBC will fight their own battles though, and in other respects this is a fun

program with much to recommend it.

Will you let the morality of property rights sway you?

Program	*The Key to Time*
Price	*£5.95*
Micro	*Spectrum*
Supplier	*Lumpsoft*
	17 Hardrow Road
	Leeds LS12 4BX

PROFESSIONAL

Kensington was, and for all I know, is, one of the most successful board games of recent times.

Without repeating the rules in their entirety, the game involves the strategic placing of stones on a board that looks rather like an Islamic mosaic.

Leisure Genius is continuing in its production of computer versions of famous board games with a version of *Kensington* for the Commodore 64.

Although simple in concept the game can demand careful strategic thought and consequently represents quite a challenge in programming — the version appears to play well, with, thankfully, faster response times than Leisure Genius' version of *Scrabble* for the 64.

The screen displays the classic board and lets you choose from a variety of options including watching the computer play itself, to your simply playing against a friend using the TV screen as a board.

If you like Kensington then it's certainly fun to play against the computer and this is a very professionally-produced program.

I still don't think a TV screen is quite as aesthetically satisfying as a board, though.

Program	*Kensington*
Price	*£12.95*
Micro	*Commodore 64*
Supplier	*Leisure Genius*
	3 Montagu Row
	London W1H 1DB.

DECISIONS

Of Triptych software much has been heard but little seen until now.

Most of the Triptych releases have something interesting about them but *Decision Maker* got my vote as being the most unusual.

Easier to use than explain, it employs modern techniques of decision analysis to help you come to a conclusion about anything you are trying to decide upon — from whether to buy a compact disc player to whether to ask the person in the corner drinking brandy alexanders to come and boogie on the dance floor.

Obviously, it's intended for rather more serious purposes where the possible advantages are more clearly known.

Analysing the factors involved in the decision provides to be a fairly complex affair, and, as with all Triptych tapes, a teaching tape is provided that shows you how to get the most from the program and use it properly.

In fact the teaching tape and the manual give you a pretty fair education in the analysis of risks and probabilities that is valuable in itself, quite apart from the program tape that actually lets you use this information in a practical way.

The program is well written with no obvious blunders in error trapping so even novice computer users should find it easy to use. In many ways it has succeeded in an area that few other programs have even attempted — using the computer to educate adults.

Program	*Decision Maker*
Price	*£15*
Micro	*Spectrum*
Supplier	*Triptych*
	Sterling House
	Station Road
	Gerrards Cross
	Bucks SL9 8EL

Pick of the week

DESERTED CITY

It's nearly a year since *3D Ant Attack* was first issued to an unsuspecting public who were to be stunned at its amazing Escher-like qualities and 3D multi viewpoint graphics.

At last comes *Zombie Zombie* — more of the same but with some interesting new features. For one thing, the baddies are not those nightmarish ants but yukky squelchy zombies that turn red to attack you at unsuspected moments.

Apart from the city, as enigmatically deserted and mysterious as ever Antescher was, you have a helicopter to take you over long distances safely, a blaster to deter zombies and a choice of gender. (By the way if you are a male who wouldn't ordinarily consider being the girl, for reasons of macho posturing disguised as sexual insecurity, take my advice — if you play the game as a girl you get better graphic effects.)

You also get the chance to design your own city and save it to tape — a lot of fun to try out on your friends. But what, you ask, is the objective of the game? Well, this took me quite a while to figure out, as there isn't anyone to rescue and the instructions aren't telling. However I'm prepared to give you a hint — the music played is *Ten Green Bottles* and the zombies are green as well... well then... brilliant Holmes.

Program	*Zombie Zombie*
Price	*£6.95*
Micro	*Spectrum*
Supplier	*Quicksilva*
	PO Box 6
	Wimborne
	Dorset
	BH12 7PY

MASTER KEY

Psytrax is more than just a multi-screen game — it's beyond even a mega-screen game with 1000 screens, which should ensure it takes ages and ages to see everything there is.

The game involves moving a 'microdroid' around inside a computer looking for a number of master key cards that gradually open up the routes to the CPU.

The game is all done with slick sprite graphics and looks good — whilst it's basically a reaction game there are strategic elements as some objects have specific uses which have to be discovered by experiment.

The 1000 screens may be a little misleading though — all the screens have a similar layout and look. If you like

zapping things you won't go wrong here.

Program *Psytraxx*
Price *£6.95*
Micro *Spectrum*
Supplier *The Edge*
31 Maiden Lane
Covent Garden
London WC2

DODGY NEWS

Despite being written in Basic, *Velnor's Lair* won quite a few friends for its deviousness and imagination. Now the author of that program has produced a new adventure which loosely continues the plot of *Velnor*. The program is *Kentilla*, and aside from being in machine code it adds to *Velnor* in the form of graphics and interaction with other characters.

Before the program the plot — well, a bit of it. Grako wants to turn Caraland into a torture playground, despite the wishes of the locals who felt this would be a pretty naff idea. To the rescue comes whizzo wizard Ashka who sends Grako on his bike to the abyss (just take the A437 from Rhyl).

Anyway. Velnor, who was a bit miffed at his defeat at the end of *Velnor's Lair* finds Grako's tomes (spells, etc) which give him power beyond even *Dynasty*'s Blake Carrington. It all turns out to be Grako's plan, Velnor does himself a mischief when he tries to use the spells and is duffed up by Tylon, and Grako manages to escape, complete with the Moonstone of Algrath, which makes him even worse than before. The citizens of Caraland reckon this is a bit of very dodgy news.

The adventure understands fairly sophisticated sentences and the graphics, though small, are neatly drawn and appear instantaneously. The ingeniousness which characterised Velnor is here too

The use of different colours for the different sections of text is also a good idea. Plenty of atmosphere and a lot of fun.

Program *Kentilla*
Price *£6.95*
Micro *Spectrum*
Supplier *Micromega*
230-236 Lavender Hill
London SW11 1LE

MEDIUM LEVEL

The Legacy is a text adventure for the Spectrum which has the prime virtue of not featuring a single elf, troll, fire-breathing dragon or mystic crystal sphere.

The Legacy has, instead, halls, dining rooms, taxis, and library. Also a mysterious activity involving hats. Not only these, but it comes complete with a pub in which you can drink (at a cost of some points).

The Legacy is intended to be an adventure of the medium level — it'll need a little thought and perhaps a bit of previous experience with adventures but shouldn't involve several months thought over each question.

Program *The Legacy*
Price *£5.95*
Micro *Spectrum*
Supplier *Tamsoft*
1 Golden Square
Hathern
Loughborough
Leics LE12 5HJU

CODE WORD

The *Ket* trilogy is now complete with the release of *The Final Mission*. This final section looks the most difficult of all, and it will certainly have helped to have played the other two parts, as for one thing, you can load in your character as developed through the other sections if you have completed them.

For those not familiar with the *Ket* adventures, they are characterised by being very vast and very difficult indeed

although usually only using simple Verb-Noun instructions.

In *The Final Mission* you finally get to confront the evil Vran Verusbel if you can make your way through the five Gate Guardians alive. If you get to the end with this one, the special code word combined with the special code words of the previous two parts gives you a complete sentence and you get to win a video recorder.

Program *The Final Mission*
Price *£5.50*
Micro *Spectrum*
Supplier *Incentive Software*
54 London Street
Reading
RG1 4SQ

IN DARKNESS

Out of the Shadows is an unusual adventure. It has the interesting idea that you have to explore a land — illustrated by an on-screen map in whjich large sections are obscured by darkness. You have a torch which will light a certain area, but not where corners or buildings obscure the beam.

You must explore this world fighting various baddies and meeting people who may be of use to you, building up levels of character skill and searching various treasures.

Commands are mostly verb-noun but that doesn't limit the variety within the game. With the elements of magic, fighting stamina, knowing what to buy, when to fight and when to run away it should appeal to more traditional strategy adventurers. Cheap too.

Program *Out of the Shadows*
Price *£5.95*
Micro *Spectrum*
Supplier *Mizar Computing*
104 Bradwell Road
Bradville
Milton Keynes
MK13 7DH

BUG BULLETS

Just before the poor old Vic 20 finally dies its long overdue death at the hands of the C16, it's worth noting that there are still odd pieces of software being produced. Not only that but some pretty good software too. Palace Software, best known for its *Evil Dead* epic, have produced two games, *Squish* and *Bricks*.

Squish is pretty well summed up by its name, no subtlety here. The simple idea is to squish as many bugs as possible by hitting them in the right way, avoid touching them at all at other times and beware the bug bullets.

There are 20 levels in all, in some of which the bugs are invisible, not bad for less than 5K.

Program *Squish*
Price *£5.99*
Micro *Vic20*
Supplier *Palace Software*
275 Pentonville Road
London N1 9NL

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.

50 forward

What is the most natural way in which to express ideas in programming, and which is the most sensible?

Is it more natural to say 2+3, as in Basic or Pascal, is it more natural to say (SUM 23), as in LISP, or is it more natural to say 23+, as in Forth?

I will argue that Basic and Pascal are rather more unnatural than Forth in the way they perform operations.

The first style of adding two numbers given above is called *infix* notation, because the arithmetical operator (the plus in this case) is fixed in between the numbers, and this is the style we learn at school. This, in turn, is the reason why it seems the only way.

The second style of presentation is called *prefix* notation, because the operator precedes the numbers on which it operates.

The second style of presentation is called *prefix* notation, because the operator precedes the numbers on which it operates.

The final style is known as *postfix*, because the nature of the operator is postponed until we know the value of the numbers.

What happens when the infix indoctrination is not present?

In a study of the teaching of children in schools, using turtle graphics, it was discovered that when the children were deciding about the movement of the turtle they often said aloud "50 forward".

In the programming language the children were using, they had to change this instruction to *Forward* 50. The children had to change from a postfix instruction in English to a prefix notation in the programming language, where the postfix notation was far more natural.

Put yourself in the place of somebody drawing a square in turtle graphics, where first we decide how far to move (say, *: Distance*), and then we turn through 90 degrees (either right or left). The sequence so far is

:Distance units 90 *Deg–rt.*

This line of program (in a mythical language) uses postfix notation, and is in perfect harmony with the way we think. We move so many units forward and turn so many degrees to the right.

To draw a square this sequence has to be performed four times:

:Distance units 90 *Deg_rt* 4 times.

The instructions from the beginning of the sequence, up to the number 4, are repeated that number of times. If there are other instructions before the repeated sequence, then we can use square brackets to delineate the limits of the repeated action. For example,

35 *Deg–lt [: Distance* units 90 *Deg–rt]* 4 times

that is, turn through 35 degrees left, and then draw the square.

Suppose there is a special instruction to draw a square, where the instruction is already provided by the system, or we have written a procedure to so do. To draw a square of side 100 we simply enter

100 *Square*

and nothing could be easier.

Now take the example "You have five sweets, then somebody gives you one more. How many will you have?" Obviously we can code this in the mythical language as

5 1 *More is*

or, equivalently,

5 1 × *Print.*

It is clear that postfix notation is the logical notation to use because it matches thought processes, and allows these thought processes to be discussed; and it leads to greater efficiency on the computer, because it is more logical.

Consider these three examples where a square is to be drawn with a side of (2+3)*(4–5):

Infix	*Inf.Square* (2+3)*(4–5)
Prefix	*Pref.Square Mult Add* 2 3 *Sub* 4 5
Postfix	2 3 More 4 5 *Less Multiply Posf.*Square

I prefer the first and third versions. The first version is useful because that is the way conventional arithmetics work (but for no other reason), and the third version presents operators in the order in which we perform the tasks.

The prefix form contravenes the task ordering, because the last operation to be performed is *Pref.Square*, yet it is the first instruction to be encountered.

In fact, when you look at the infix form—the form we are all taught in schools—that is pretty confused as well. With infix you have to remember the order of precedence of the operators.

Boris Allan

Hercules' problem

Puzzle No 127

Here is one of the lesser known of the Labours of Hercules. One thousand silver coins were laid out in a row, one pace apart. Starting at a marker just one pace away from the first coin, Hercules was to run to each coin in turn, then bring it back to the marker before going back for the next coin. And so on until the final coin had been collected.

Now, each coin bore a number from one to a thousand in accordance with its position in the row. The significance of this Hercules learned at the start of the race.

You see, in ancient mythology the numbers 7 and 13 were considered unlucky, and so any coin that bore a multiple of 7 or 13 was to be left and not collected. That is, he would pass on to the next coin. Similarly, any number that contained in it any of these digits — a seven, one or three — was also to be left.

How far did he run, in paces?

Solution to Puzzle no 122

As the zero is unaffected, it is clearly not present in either of the first two calculations shown, but the fact that there are nine different symbols displayed indicates that each of the other digits (one to nine) are used. As both products are the same, we have to find an instance where the products of two different single and two-digit numbers can result in a three-digit product — all digits being different.

```
10 FOR A = 2 TO 8 20FOR B = 11 TO 99 30 LET C = A * B 40 IF C < 100 THEN GOTO 170 50 FOR D = A + 1 TO 9 60 LET E = C/D 70 IF E < > INT (E) THEN GOTO 160 80 LET Z = A*1000000000 + B*1000000 + C*1000 + D*100 + E 90 Z$ = STR$ (Z) 100 FOR N = 2 TO 9 110 FOR M = N+1 TO 10 120 IF MID$ (Z$, N, 1) = MID$ (Z$, M, 1) THEN GOTO 160 130 NEXT M 140 NEXT N 150 PRINT A; B; C; D; E 160 NEXT D 170 NEXT B 180 NEXT A
```

This shows *two* possible answers: 2 × 78 = 56 and 4 × 39 = 156 or 3 × 58 = 174 and 6 × 29 = 174. Comparison with the third equation shows that it is the second of these two that provides the answer.

Winner of Puzzle 122

The winner is: Hugh Walker, Burnet Avenue, Burpham, Guildford, Surrey, who receives £10.

Rules

If the puzzle prize can be sensibly solved using a computer, then the winner will have included a listing of the program used to find the correct answer. The closing date for entries to Puzzle No 127 is October 19.

The Hackers

The Unsurpassable Experience.

The Official

ZAXXON

SEGA

synsoft

Now you can play one of the most challenging arcade games on your Commodore 64 home computer. ZAXXON's incredible 3-D graphics, diagonally scrolling screen and supersound are reproduced in great detail. Everything you love about the arcade game is here – and much more. ZAXXON is now more difficult than ever before! So hang onto your joystick and keep firing. Then practice. You may eventually encounter the deadly ZAXXON himself.

commodore 64

U.S. GOLD
An American Software

synsoft

THE ULTIMATE IN AMERICAN SOFTWARE FOR YOU ON U.S. GOLD

U.S. Gold is stocked by all leading computer stores including:

Boots John Menzies WHSMITH WILDINGS WOOLWORTH

CASSETTE £9.95
DISK £14.95

U.S. Gold Ltd., Unit 24, Tipton Trading Estate, Bloomfield Road, Tipton, West Midlands DY4 9AH Telephone: 021-520 7591. Telex: 337268.

CRUSOE ..... 48K Spec £6☐	DEUS EX MACHINA ..... 48K Spec £15☐	PIMANIA ..... 48K Spec £10☐
PI-EYED ..... 48K Spec £6☐	GO TO JAIL ..... 48K Spec £6☐	OLYMPIMANIA ..... 48K Spec £6☐
PIROMANIA .... 48K Spec £6☐		PI-BALLED ..... 48K Spec £6☐
PI-IN'ERE..... 48K Spec £6☐	MORRIS MEETS THE BIKERS .. Any Spec £6☐	DARTZ ..... 48K Spec £5☐
YAKZEE .. Dragon/48K Spec £5☐	T-SHIRTS State Size ..... Price £5☐	NEW WHEELS JOHN? 48K Spec £5☐
'BACKCHAT' Speech Synth. CBM64 with Software & Programming Book ..... £25☐		Piman's Stereo L.P. Cassette .... £3☐

PIMANIACS CLUB for 20% off all products, PI-Monthly Magazine. Annual Subscription U.K. £5☐ Overseas £7☐

I enclose the right money, or debit my ACCESS/VISA Card. My Card number is .....

Card holders signature ..... Card holders name ..... My name .....

My address .....

..... Post Code .....

NO EXTRAS! *All our prices include VAT and Postage & Package. 24 hr.–CREDIT CARD HOT LINE (0705) 735242.*
Send your order and payment to: AUTOMATA U.K. LTD. 27 HIGHLAND ROAD, PORTSMOUTH, HANTS. PO4 9DA, ENGLAND.