

Computer
Magazine
of the Year
C.A.

40 Rock @

POPULAR

Computing

40p WEEKLY

5-11 July 1984 Vol 3 No 27

BRITAIN'S BEST-SELLING MICRO WEEKLY

CLASSIFIEDS
START
HERE

VALHALLA

GLUG GLUG

TITANIC

upto 50% off!

write to:

CLUBSOFT
Unit 18, Wye Industrial Estate
London Rd. High Wycombe

Computer Swap
01-437 4343

Free readers entries to buy
or sell a computer.
Ring 01-437 4343 and give
us the details.

WANTED SPECTRUM GAMES.
(Machine code only). Instant reply.
Top rate royalty payments or cash
to £10,000. Microbyte, 19, Worcester
Close, Lichfield, Staffs. WS13
7TD.

★ STAR
Chasm on
16K Spectrum
see page 10
GAME ★

News Desk

Bitter split breaks Imagine

IMAGINE, the flamboyant Liverpool software company, whose financial problems have been deepening since February, is now insolvent.

Magazine publishers VNU petitioned for a winding up order to be brought against the company on Monday, July 2.

The crisis means that the future of Imagine's two Megagames is now uncertain.

The situation has been exacerbated by a bitter internal split between general manager Bruce Everiss and his co-directors Ian Hetherington and Dave Lawson. The position of Imagine's other director, Mark Butler is still not clear. Bruce

Everiss resigned as director and general manager at midday on Friday, June 29.

Central to the disagreement is a new company called Finchspeed set up by Hetherington and Lawson to raise funds. Hetherington, Lawson and Mark Butler each have a one-third share in the new company.

"They have set up Finchspeed in order to own Imagine's Megagames and assets for themselves," claimed Everiss. "They have a staff list of 20 people to join Finchspeed which means that the remaining 60 Imagine employees will

continued on page 5 ▶



Tramiel ready to buy Atari

JACK Tramiel, Commodore's founder who resigned suddenly in January, now looks set to buy Atari.

No details of the proposed deal are yet available but Warner Communications, of which Atari is a subsidiary, is negotiating to sell the Atari Home Video and Home Computer Divisions to a new company set up by Tramiel, retaining only Atari's Coin-operated Game Division.

Warner Communications has been seeking a buyer for its loss-making subsidiary for almost a year. It originally bought Atari from its founder Nolan Bushnell in 1976 for \$28m and in 1982 the subsidiary turned in an operating profit of \$358m. However, the slump in US video game and home computer sales lead the company to produce an operating loss the following year of \$538.6m.

The heavy trading losses have reduced Atari's worth and the company is now valued between \$40 and \$120m.

Imagine's cofounders Mark Butler (left) and Dave Lawson

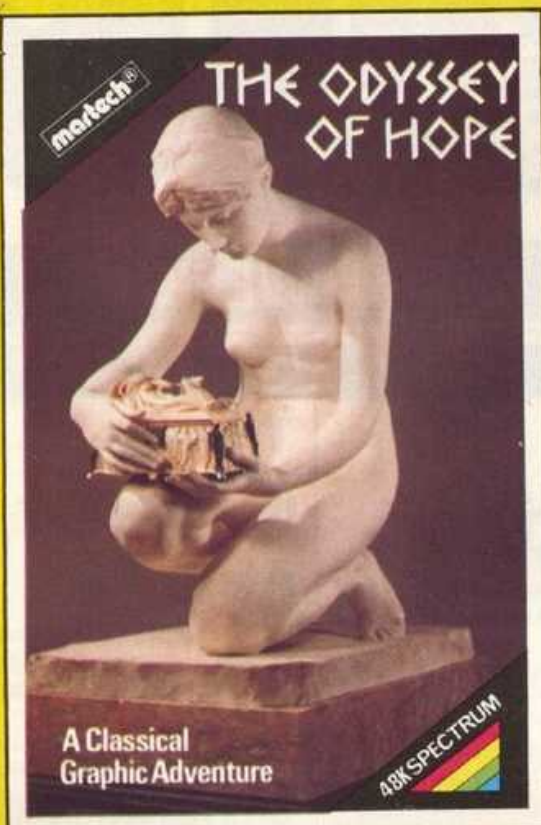
○○○○○○○○○○ This Week ○○○○○○○○○○

● **Street Life** Graham Taylor meets Terry Pratt of Beyond Software on page 12. ● **Special Feature** The new Casio MT-200 keyboard comes under close scrutiny on page 16. ● **Commodore 64** Simon Wallace presents the second part of his word processor program. See page 34. ● **New Releases** This week's selection includes Superbowl from Cable Software and Go Sprite from Mirrorsoft, beginning on page 52.

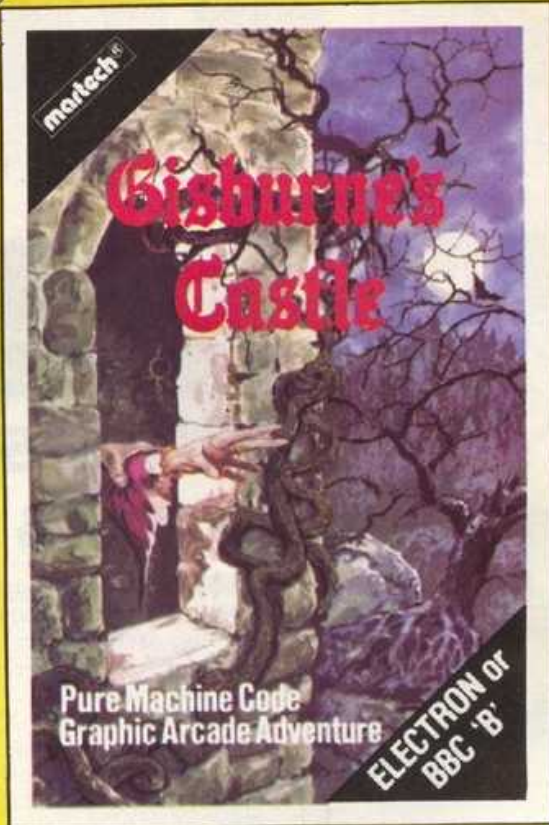
martech®

...spectacular games

NEW



NEW



Pandora by Harry Bates. Reproduced by kind permission of The Tate Gallery, London

SPECTRUM 48K

£5.95

Once upon a time, Zeus had one of his master craftsmen fashion a mortal of perfect beauty — the first woman — he called her Pandora — meaning "all gifts". Zeus presented her with a golden casket, but bade her promise never to open it, but Pandora grew curious and one day she lifted the lid. With a rush and a cry, out came all the ills that now beset man; disease and sorrow, hate, jealousy, theft, lies and many more. Pandora rushed to close the lid, but all of its contents had escaped, save one, "Hope". Since that ill-fated day when Pandora infested the world with terrible woes and suffering, Hope has always remained a comfort to this troubled world — until now! Someone has stolen Hope, and famine, disease and violence have taken over the world.

Enter the magnificent and dangerous world of Ancient Greek Legend in this amazing hi-res graphic adventure. One-eyed giant Cyclops and the many headed Hydra are but a few of the incredible creatures you will meet as you sail treacherous seas and cross dangerous landscapes in your struggle to return Hope to its guardians on Mount Olympus, the home of the Gods.

BBC 'B' or ACORN ELECTRON

£7.95

Guy of Gisburne, treacherous henchman of the Sheriff of Nottingham, has captured the lovely Maid Marion. In his heavily defended castle — he holds her as bait!

Become Robin of Loxley, the hooded man, on a mission of rescue and vengeance.

Written in 100% machine code and making full use of the sound, colour and hi-res capabilities of each computer, Gisburne's Castle blends the action of the arcade with the challenge of an adventure, into one outstanding game.

Features:

- * Hundreds of different graphic locations
- * 20 different animated and intelligent characters
- * 15 different objects to be found and used
- * Joystick option and user definable keys

Available from most leading retailers or directly by mail order

Martech is the registered trade mark of

Software Communications Ltd.

Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE

Dealer enquiries welcome, Tel: (0323) 768456 Telex: 87465 EXIM Brighton

MAIL ORDER

THE ODYSSEY OF HOPE — SPECTRUM 48K ☐
 GISBURNE'S CASTLE — BBC 'B' ☐
 ELECTRON ☐

Name
 Address

Postal Orders or cheques payable to SOFTWARE COMMUNICATIONS LTD., DEPT. PCG
 Prices include VAT, post and packing. Add £1 extra for overseas orders.

The Team

Editor

David Kelly

News Editor

Christina Erskine

Features Editor

Graham Taylor

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 Production

Lucinda Lee

Administration

Theresa Lacy

Managing Editor

Duncan Scot

Publishing Director

Jenny Ireland

Popular Computing Weekly,
12-13 Little Newport Street,
London WC2R 3LD
Telephone: 01-437 4343
Telex: 296275

Published by Sunshine Publications Ltd.



Registered at
the Post Office
as a newspaper

MEMBER OF THE AUDIT
BUREAU OF CIRCULATIONS

ISSN 0265-0509

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. 01-274 8611. Telex: 261643
© Sunshine Publications Ltd 1984

How to submit articles

Articles which are submitted for publication should not be more than 3,000 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.

This Week

News	5
Imagine split	
Star Game	10
Chasm on 16K Spectrum by R Grimwood	
Street Life	12
Terry Pratt of Beyond Software	
Special Feature	16
Casio MT-200 keyboard	
Reviews	18
In-depth software analysis	
The QL page	22
Beep command by Dilwyn Jones	
Spectrum	24
Save and load screen display by Bob Pritchard	
Dragon	26
RTS instruction by Peter Whittaker	
BBC & Electron	31
Facility program by Neil Barnes	
Commodore 64	34
Word processor by Simon Wallace	
Open Forum	37
Three pages of your programs	
Microradio	39
Ray Berry's column	
Arcade Avenue	40
Tony Kendle's arcade check out	
Adventure	43
Tony Bridge's corner	
New Releases	52
Latest software programs	
This week	54
Top 10 plus all this week's software	
Competitions	55
Ziggurat, Puzzle, Hackers	

Editorial

Everybody knows that home copying takes place on a huge scale. And the software houses have had to accept it because there is nothing they can do.

Tape copier programs — the sole purpose of which is to 'unlock' any program protection built into a commercial package making copying easier — are an easy focus for the larger of the software houses.

Justifiably too — companies selling tape copiers are parasitic. Indeed, they may even be inciting people to commit a breach of copyright law.

Software houses threatened to boycott the last ZX microfair if companies selling tape copiers were allowed to exhibit. This magazine doesn't carry ads for tape copiers, partly because it doesn't seem right to do so. But now there is a new and even trickier question to be debated; the question of tape-to-Microdrive and tape-to-disc copiers.

Unlike tape copiers, these cross-medium copiers have a purpose other than piracy. Anyone who has bought a ZX Microdrive or disc drive will wish to transfer their programs onto the new medium. Tape-to-microdrive or disc-copiers make this possible.

A desire to transfer software from tape to a more convenient form is entirely justified. The problem is that, having made one microdrive or copy, you can make another, and another. . .

As yet there is no satisfactory answer to the problem. Sinclair sent a letter to all the software houses instructing them to include a Microdrive copy facility in their cassette software — a suggestion which was met with a stony silence. Acorn had by far a better idea of offering discounts on disc software whenever the original cassette version was returned.

So far only the Acorn system looks remotely workable. And until such time as a solution is found the existence of cross-medium copiers is justifiable because they fulfill a genuine need.

Subscribe to Popular Computing Weekly

I would like to subscribe to *Popular Computing Weekly*.

Please start my subscription from the

ISSUE

UK Addresses: ☐ 26 issues at £9.98 ☐ 52 issues at £19.95

Overseas Addresses: ☐ 26 issues at £18.70 ☐ 52 issues at £37.40

Please tick relevant box

I enclose my cheque to *Popular Computing Weekly* for

Name

Address

Please send this form, and cheque, to *Popular Computing Weekly*, Subscription Dept., 12-13 Little Newport Street, London WC2R 3LD.

Telephone: 0924-402337

[illegible]

Large range of programs available for BBC, Electron MTX, Vic 20 at discount prices — please send for list.

To: Thoughts & Crosses, 37 Market Street, Heckmondwike, West Yorks.

Please accept my order for:

Despatch to:

Name: _____

Address:

enclosed.

P.O./Cheque No. for £

Signed

All prices include Postage, packing & VAT. Overseas orders welcome.

Imagine

continued from page 1

simply be discarded.

"Ian Hetherington and Dave Lawson are in the States to raise funds for Finchspeed. Imagine will not see this money."

Speaking from the US on June 29, Ian Hetherington refuted this. "Dave Lawson and myself have been in Silicon Valley trying to raise money for Imagine for the last two weeks. We set up Finchspeed as an off-the-shelf company to get money into Imagine. 'There is no point in discussing Finchspeed, since it is dead and buried. It's forgotten.'"

However, at an extraordinary General Meeting of Imagine's shareholders on July 1, a contract between Imagine and Finchspeed was approved by a majority of those present.

This contract gives Finchspeed the copyright of the Megagames and the use of Imagine's premises, and Imagine's assets. Finchspeed will pay Imagine £40,000 for equipment needed to develop the Megagames and then 50 per cent of the net profit from the games up to a maximum of £625,000.

The question is whether the deal will save Imagine: "At

present, Imagine owe about £400,000," said Bruce Everiss. "That includes £100,000 to the bank and £250,000 to Marshall Cavendish."

Ian Hetherington would not comment on the figures, other than to say that the figure for the overall amount owed is incorrect. He added, "We are hoping to raise £1.5m in the States, and this will cover all the debts and pay for the Megagames. We have been very close to clinching deals. It is important that the Megagames go out with Imagine's name on them, and I will do anything to ensure that they do."

As for the 60 staff left without a job according to Everiss, Hetherington commented, "Staff will have to be sacked who are now loyal to Bruce Everiss." He added that the personality clashes within the company had been brewing for about three months.

Imagine's two Megagames were originally planned to be launched with an extensive and distinctive promotional campaign. Marble slabs were to be laid in Hyde Park with the names of the games etched into them and the BBC were filming a documentary on their making.

Galactic join Mastertronic

MASTERTRONIC, the software company whose £1.99 games have proved extremely successful, have set up a joint venture company with Galactic Software.

"The new company is called Artificial Intelligence Products, or AIP," said Martin Alper, managing director of Mastertronic. "It will function as a programming house for new Mastertronic games."

The deal constitutes a virtual takeover for Mastertronic, since Galactic now no longer exist as a marketing entity. "Galactic did a lot of programming work for us in our early days," continued Martin. "AIP will give us a much wider range of software."

The first two games from the AIP team will be launched in two to three weeks — *Chiller* (which is loosely based on Michael Jackson's *Thriller* video) for Commodore 64, and *Psycho Shopper* for the expanded Vic 20.

New Apricot under £1000

ACT has announced a new range of computers, with the lowest-priced model costing under £1000.

At £915, the Apricot F1E uses the 8086 processor and offers 128K Ram, a single 3½inch disc drive and bundled software including CP/M-86, Basic and Logo.

Bargain Beeb

ACORN is running a promotional offer on BBC B machines for the month of July.

For £399, the normal cost of the micro, buyers will also receive a BBC data recorder and five free Acornsoft programs.

This is the first time Acorn has been involved in any special offers regarding its machines.

"July is a particularly slack time of year," commented an Acorn spokesman. "It is hoped that we can generate extra sales from the promotion."

The computer in your pocket

PSION — having written the four programs to accompany the QL — has now launched its own computer.

The Psion Organiser is smaller than a paperback book, costs under £100, runs off an ordinary PP3 battery, and is claimed to be "the world's first practical pocket computer".

It uses a Hitachi 6301-X processor which is a complete micro-on-a-chip device incor-

The basic machine at £99.95 provides five commands. *Save*, *Find*, *Erase* and *Enter* which allows data to be stored and retrieved from any cartridge. The fifth, *Calc* gives a calculator facility.

Psion is also offering, initially, a choice of three prerecorded software packs each priced at £29.95. These are *Maths*, *Financial* and *Science* packs. All three incorporate a new



porating its own operating system in a 4K Rom. It has 14K Ram on-board, but the device includes two built-in "solid state drives." These are twin CMOS Eprom cartridge slots for plugging in additional software. They have storage capacity of either 8K (£12.50) or 16K (£19.95).

Where the Organiser is unique, however, is that it can write to these Eproms. Incorporated in the unit is the ability to 'blow' software into any blank cartridge plugged into the device. Information on existing cartridges can also be erased in the same way. Rerecording onto a used cartridge is not possible though, and to do so the cartridge must be reformatted either by a shop (£3.50) or by the individual using a special formatting device (£45).

Either of the cartridges can be removed and a special interface can be connected giving the Organiser a standard RS232C interface. This can be used to printout information to a printer or to dump data to another computer possibly even via a modem and telephone link.

programming language written specially by Psion for the Organiser called Popl. Popl provides and additional 14 commands including *If*, *Goto*, *Print*, *Copy*, *Free* and *Label*. Popl is a procedure-based language rather like Logo.

The Psion Organiser will be sold initially by mail-order beginning in July. The company is at present manufacturing between three and four thousand machines a month and does not anticipate selling it through stores until 1985.

The machine will also go on sale in the US in Spring 1985 and Psion has established Psion Inc a US subsidiary based in Fairfield County, Connecticut, headed up by a former Timex employee, Bill Skyreme.

Psion has also announced that enhanced versions of its QL packages will be launched in August for the IBM PC and XT, the Apricot machines, and the Sirius and Victor. Versions for the Apple Macintosh and Dec Rainbow will follow in the Autumn. All the so-called Xchange packages will sell for over £500.

Psion plans a share flotation onto the USM in Spring 1985.

PREPARE FOR A TEST
OF ENDURANCE...



...an Olympiad spectacular from
Software STUDIOS

Lord of the Rings to follow Hobbit

NEARLY two years after the release of *The Hobbit* adventure game, Melbourne House is able to begin work on a version of *The Lord of the Rings*.

Until recently, the video rights to Tolkien's trilogy, the sequel to *The Hobbit*, belonged to the US company Fantasy Films, who produced an animated film of part of *The Lord of the Rings*.

Now, however, the rights have been acquired by Allen and Unwin, publishers of both of the Tolkien books, which has given Melbourne House an option for a computer game version of *The Lord of the Rings*.

As with *The Hobbit*, Allen

and Unwin and Melbourne House will work in close collaboration.

"Melbourne House will have editorial control over the game, within the rough guidelines, but obviously we will be closely involved on questions of concept and design," said David Fielder, editorial director of Allen and Unwin.

Allen and Unwin is not discounting the possibility of supplying books to accompany the game. "Providing the three books with one game would be unfeasible — in fact, I suspect a computer game on *The Lord of the Rings* in its entirety would also be impossible. It is more likely that more than one game will be produced, together with

more than one book," continued David.

Melbourne House's publicity manager, Paula Byrne, confirmed that Melbourne House would be taking up its option on *The Lord of the Rings*.

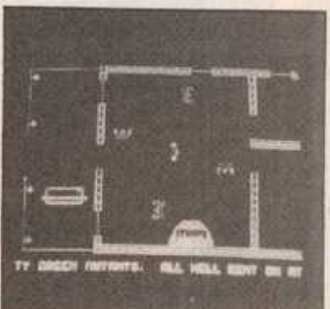
"It will be a long time before any game based on the work appears," she said. "Because the option has only just been agreed, we have not yet begun to consider how we will approach it."

■ Melbourne House has also confirmed September 11 as the date set for the launch of the long-awaited *Sherlock Holmes* for the Spectrum and Commodore 64.

Palace play dead

PALACE Software has launched *The Evil Dead*, an arcade strategy game based on the notorious film of the same name.

The game follows the plot of the film fairly closely. The user controls one of the group of five friends staying in a lonely



'Tennessee shack' only to find themselves turned into zombies and ghouls by the curse of the Evil Dead, who inhabit the house.

You must use objects you find scattered in the house to attack and thwart the evil spirits to save your companions.

The Evil Dead should be available by the end of July on the Commodore 64 at £6.99. Versions for BBC B and Spectrum will follow.

Baxter leaves Commodore

COMMODORE UK will be facing a major reshuffle in August. The company is moving premises from its present offices in Slough to the new plant in Corby.

There will be several changes of staff, the most notable of which will be marke-



John Baxter

ting director John Baxter's departure to Andromeda Software.

"John will be taking up a position as a director of Andromeda to the end of August," said a Commodore spokesman.

QL upgrade — date set

SINCE Sinclair began deliveries of the QL at the beginning of May, three different versions of Superbasic have been sent out with machines.

"The first version issued to customers was FB, which was a penultimate version of the firmware," said a Sinclair spokesman.

"The other versions, PM and AH, are almost identical, but AH is the final version,

Red Shift slugs it out

RED Shift, the war games specialist company has suffered a split. The five-strong programming team — Julian Fuller, Julian Gollop, Clive Norman, Helmut Watson and Joe Capricorn — has set up a freelance group, to be called Slug.

"We will now be selling our games to other companies. While we will continue with war games we hope to branch out into strategy games in general," said Julian Fuller.

Negotiations with The Games Workshop and K-Tel

and an improvement on the others."

To find out which variant is on a given machine, users should type in *Print Ver\$*. The name of the variant should appear on the display.

Sinclair began delivery two weeks ago of QLs with the Eprom inside the machines rather than inserted in the Rom cartridge slot.

Machines delivered from the end of July should have the Superbasic in Rom rather than Eprom.

The conversion of QLs with 'dongle' Eproms is also scheduled to begin at the end of July.

"Our intention is to stagger the recall of machines," the spokesman continued, "and, as yet, we do not know how long customers will be without their QLs when recalled. The service will be absolutely free to customers."



Left to right: Julian Fuller, Clive Norman, Helmut Watson

are currently in progress, and Slug will be writing two games — *Battlecars* and *Talisman* on the Spectrum for The Games Workshop. The games are due for release in Spring 1985.

Amstrad gets JSW

SOFTWARE Projects will be converting its top-selling games *Manic Miner* and *Jet Set Willy* for the Amstrad CPC 464.



Star turn for Mirrorsoft

MIRRORSOFT is the latest company to produce an astronomy program — *Starseeker* for the BBC — which has been given a seal of approval by the London Planetarium.

The program will give astronomical data on any chosen star, as well as the usual night sky screen.

It will also output data on the planets and trace the path of Halley's comet, in time for the comet's next appearance in 1985.

"The program was written by Paul Phillips, a Fellow of the Royal Astronomical Society," said Mirrorsoft general manager Jim Mackonochie. "We were so impressed with it that we took it to the Planetarium to hear their views."

Apart from giving advice and comment, a member of the Planetarium will also be writing the foreword to the manual accompanying *Starseeker*.

SHEEP IN SPACE



CBM 64

Lamasoft

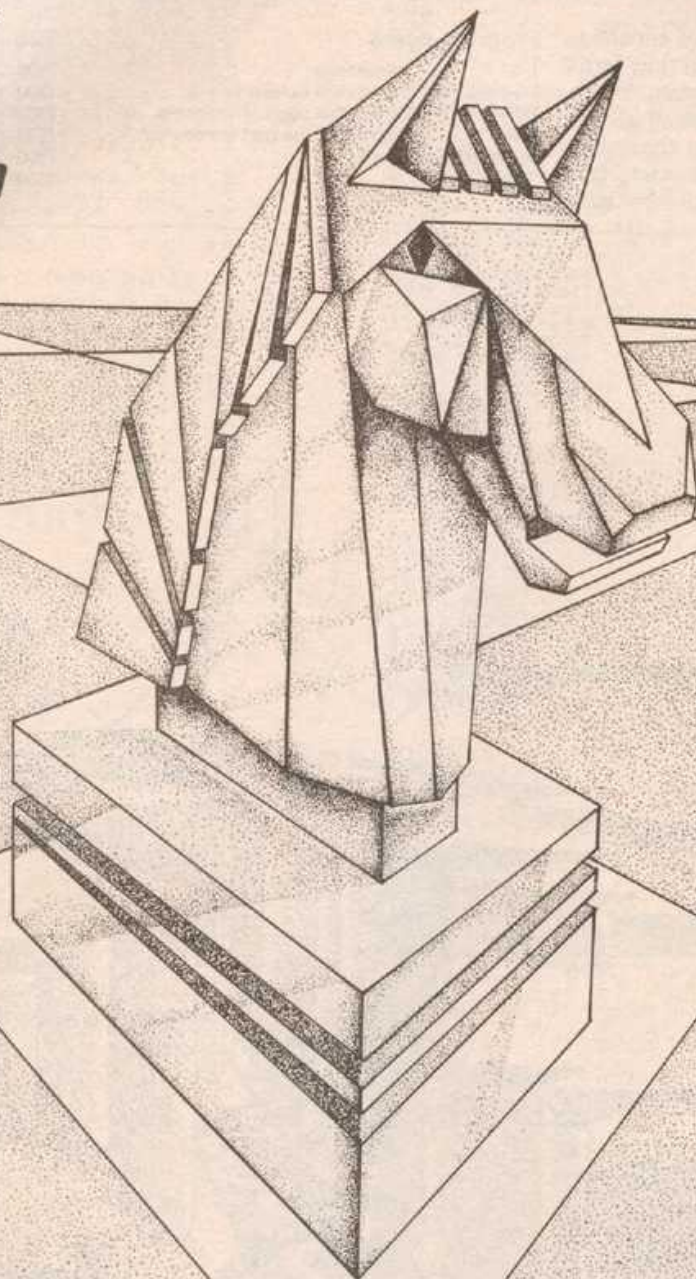
AWESOME GAMES SOFTWARE

49 MOUNT PLEASANT, TADLEY, BASINGSTOKE, HANTS.

From CDS, 'COLOSSUS CHESS 2-0' the ultimate challenge

by Martin Bryant

*for both the chess
player and the
chess master
the finest
chess program
ever written.*



**Available for the Commodore 64
£9.95**

CDS Micro Systems

Also disc version £12.95

* Selected titles only

ONLY £9.95 each at W.H.Smiths, *Boots, John Menzies and other leading Computer Stores, or . . . direct from CDS Micro Systems
Send Cheque or P.O. To CDS, Silverhouse, Silver Street, Doncaster, DN11 1HL, Tel: (0302) 21134. (Trade enquiries welcome)



Chasm

If what's lurking down in the Chasm turns out not to be friendly then you will have only your 16K Spectrum and R Grimwood to blame

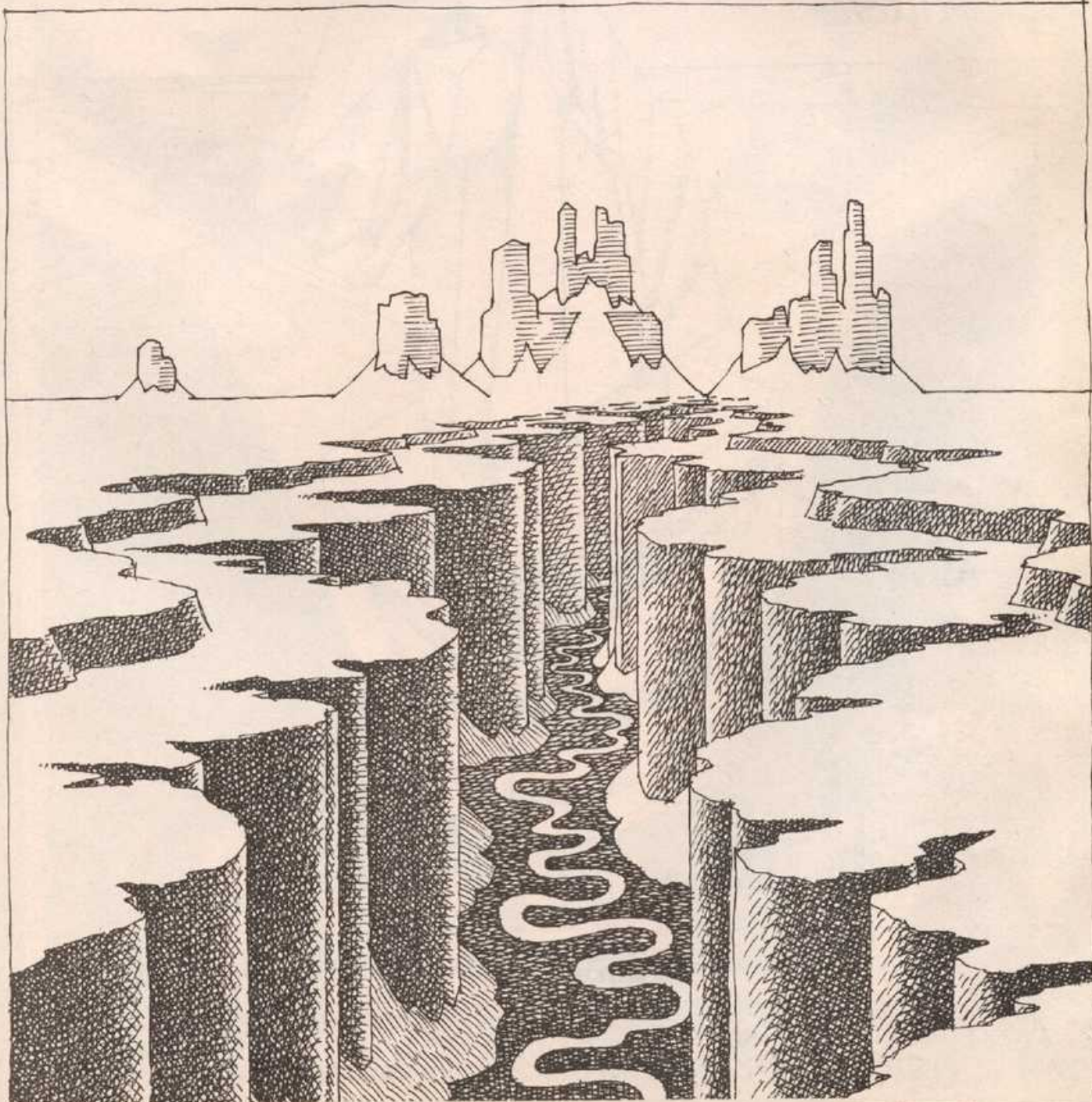
Your mission, now that you've chosen to accept it, is to pilot your tiny craft through the enormity of the Chasm. Important points to remember are that you mustn't fly into the walls of the channel or plough into any of the unsuspecting little life forms that you may find along the way.

Program notes

1-37	Instructions
45-90	Defines the variables
115-200	Selects the stage of the game
260-330	Determines the craft's movement
340-1000	Checks

Sub-routines

1300-1340	Detects a collision with alien
1500-1530	Shooting about the place
1700-1720	You win!
7200-7300	Detects a collision with wall
7500-7580	Better luck next time
8000-8018	User-defined graphics




```

1 REM *****
2 REM * CHASM *
3 REM *
4 REM * © R.Grimwood 1983 *
5 REM *****
6 GO SUB 8000
7 BORDER 0: PAPER 0: INK 7
8 CLS: PRINT FLASH 1, "
9 PRINT AT 0,7;"© R.Grimwood
1983"
10 PRINT "Welcome to the cha
sm."
11 PRINT "You have just compl
eted the elimination of all
the aliens from your kingdom, h
owever you have just learnt of
the exist- ance of a couple mo
re, seeking refuge in the chasm
only a few miles from the city
"
15 PRINT "your task is to eli
minate these few remaining alien
s & you must pilot your ship dow
n the chasm whilst destroying t
hem."
20 PRINT "The chasm narrows &
s your mission continues &
the aliens become more profuse
"
22 PRINT #1;"Press 'm' for mo
re"
23 IF INKEY$="" THEN GO TO 2
3
25 CLS: PRINT "You must avo
id the sides of the chasm, if you
hit them however you will loo
se one of your 3 lives. After
a crash you must start steeri
ng away from the sides immedi
ately or you will hit them aga
in. You will also loose a life
if you hit an alien"
27 PRINT "You will be informe
d of your score when you die
& when you change stages."
28 PRINT "s-x Up-down
-a- o-p Left-right
to fire"
30 PRINT "GOOD LU
CK"
33 PRINT #1;"Press 'p' to star
t"
35 IF INKEY$="" THEN GO TO
35
37 CLS
40 GO SUB 8000
45 BORDER 0: PAPER 2: INK 0
50 LET z=7: LET a=8: LET s=1:
LET d=11
55 LET l=3: LET sc=0: LET w=21
60 PAPER 0
65 FOR g=0 TO 20: PRINT INK 0:
"
"
70 LET a$=""
75 LET b$=""
80 LET c$=""
85 LET d$=""
90 LET e$=""
95 FOR f=1 TO 20: PLOT INK 7;I
NT (RND*255),INT (RND*150): NEXT
f
100 FOR f=1 TO 9999999999: POKE
23592,255
105 LET x=INT (RND*3)-1
110 PAPER 0
111 PRINT OVER 0: INK 6; PAPER
0; AT s,d;"V"
112 PRINT OVER 0: INK 5; PAPER
0; AT s,d;"
115 IF r<=200 THEN PRINT AT w,a
: INK 2; a$
120 IF r>200 AND r<=400 THEN PR
INT AT w,a: INK 2; b$
125 IF r>400 THEN GO SUB 1600:
BEEP 1,0: LET z=z-1: FOR f=1 TO
10: BEEP .1,5: NEXT f
130 IF r>400 AND r<=600 THEN PR
INT AT w,a: INK 2; c$
135 IF r>600 THEN GO SUB 1600:
BEEP 1,0: LET z=z-1: FOR f=1 TO
10: BEEP .1,5: NEXT f
140 IF r>600 AND r<=800 THEN PR
INT AT w,a: INK 2; d$
145 IF r>800 THEN GO SUB 1600:
BEEP 1,0: LET z=z-1: FOR f=1 TO
10: BEEP .1,5: NEXT f
150 IF r>800 AND r<=1500 THEN P
RINT AT w,a: INK 2; e$
155 IF r>1500 THEN GO SUB 1600:
BEEP 1,0: LET z=z-1: FOR f=1 TO
10: BEEP .1,5: NEXT f
160 IF r>1500 THEN FOR f=-35 TO
45: BEEP .05,f: NEXT f: FOR f=4
5 TO -35 STEP -1: BEEP .05,f: NE
XT f: GO TO 1700
170 PAPER 2
175 PRINT
180 LET a=a+x
185 IF a<1 THEN LET a=1
190 IF a>25 THEN LET a=25
195 LET d=d+(INKEY$="p")-(INKEY

```

```

$="o")
295 LET s=s+(INKEY$="x")-(INKEY
$="s")
300 IF s>21 THEN LET s=21
310 IF s<0 THEN LET s=0
320 PRINT OVER 0: INK 6; PAPER
0; AT s,d;"V"
330 PRINT OVER 0: INK 5; PAPER
0; AT s,d;"
340 IF ATTR (s+1,d)=16 THEN GO
TO 7200
350 IF ATTR (s+1,d)=4 THEN GO S
UB 1300
360 LET q=INT (RND*4): IF q=2 T
HEN GO SUB 1200
390 IF INKEY$="a" THEN GO SUB 1
500
1000 NEXT f: GO TO 100
1200 PRINT AT w-1,INT (RND*2)+a:
INK 4; PAPER 0;"@": BEEP .003,4
0
1220 RETURN
1300 PRINT AT s+1,d: FLASH 1: PA
PER 0: INK 2; BRIGHT 1;"#
1305 LET l=l-1
1310 PRINT AT 0,5: PAPER 7: INK
0;"SCORE=";sc; AT 0,20;"LIVES=";l
1320 FOR f=1 TO 10: FOR j=1 TO 2
: BEEP .002,15: BEEP .003,10: NE
XT j: FOR j=1 TO 2: BEEP .003,5:
BEEP .004,0: NEXT j: NEXT f
1330 IF l=0 THEN GO TO 7500
1340 PRINT AT s+1,d: FLASH 0: PA
PER 0; BRIGHT 0;"
1500 LET m=s: LET n=d
1501 FOR f=55 TO 0 STEP -7: BEEP
.001,f: NEXT f
1502 PRINT AT m+1,n: INK 0; PAPE
R 0;"I"
1503 LET m=m+1
1505 PRINT AT m,n: PAPER 0;"
1510 IF m>20 THEN LET m=20: RETU
RN
1515 IF ATTR (m+1,n)=16 THEN RET
URN
1520 IF ATTR (m+1,n)=4 THEN LET
sc=sc+100: PRINT AT m+1,n: INK 3
: PAPER 0;"#": BEEP .1,0: PRINT
AT m+1,n: PAPER 0;"
1525 GO TO 1502
1530 RETURN
1600 PRINT AT 0,5: PAPER 7: INK
0;"SCORE=";sc; AT 0,20;"LIVES=";l
1601 RETURN
1700 CLS: FOR g=0 TO 5: POKE 23
592,255: FOR f=0 TO 7: PRINT INK
f;"
"
1710 CLS: PRINT "PAPER 7;"
CONGRATULATIONS
"
1720 PRINT "You have successfu
lly completed"
1730 PAUSE 100: GO TO 7500
1740 LET l=l-1
1750 PRINT AT 0,5: PAPER 7: INK
0;"SCORE=";sc; AT 0,20;"LIVES=";l
1760 FOR f=45 TO 35 STEP -1: BEE
P .01,f: NEXT f: FOR f=25 TO 35:
BEEP .01,f: NEXT f: FOR f=25 TO
15 STEP -1: BEEP .01,f: NEXT f:
FOR f=5 TO 15: BEEP .01,f: NEXT
f
1770 FOR f=5 TO -5 STEP -1: BEEP
.01,f: NEXT f: FOR f=-15 TO -5:
BEEP .01,f: NEXT f
1780 FOR f=1 TO 5: FOR g=-40 TO
-45 STEP -1: BEEP .01,f: NEXT g:
NEXT f
1790 IF l=0 THEN GO TO 7500
1800 GO TO 235
1810 PAUSE 40: CLS: PAPER 0: BO
RDER 0: INK 7: FOR g=50 TO -10 S
TEP -1: BEEP .0075,g: NEXT g: FO
R h=1 TO 20: BEEP .004,10: NEXT
h
1820 PRINT INVERSE 1; AT 10,8;"SC
ORE=";sc
1830 PRINT #1;"another try?(y/n)
"
1840 IF INKEY$="y" THEN CLS: GO
TO 40
1850 IF INKEY$="n" THEN STOP
1860 GO TO 7560
1870 CLS
1880 POKE USR "n"+0,BIN 10000001
1890 POKE USR "n"+1,BIN 01000010
1900 POKE USR "n"+2,BIN 01100110
1910 POKE USR "n"+3,BIN 01111110
1920 POKE USR "n"+4,BIN 01111110
1930 POKE USR "n"+5,BIN 00100100
1940 POKE USR "n"+6,BIN 00111100
1950 POKE USR "n"+7,BIN 00011000
1960 POKE USR "t"+0,BIN 10010010
1970 POKE USR "t"+1,BIN 01010100
1980 POKE USR "t"+2,BIN 00000000
1990 POKE USR "t"+3,BIN 11010110
2000 POKE USR "t"+4,BIN 00000000
2010 POKE USR "t"+5,BIN 01010100
2020 POKE USR "t"+6,BIN 10010010
2030 POKE USR "t"+7,BIN 00000000
2040 RETURN

```


Beyond midnight

Graham Taylor talks to Terry Pratt
of Beyond Software

Until recently Beyond were yet another software house that seemed destined for a pretty quick oblivion — it was spending a lot of money on adverts for games that were, at best, average and at worst terrible.

We journalists (all knowing beings from the plane of darkness) sniggered to ourselves and put them on the vast list of 'companies most likely to...' (go broke).

But then came two games that changed all that. *Psytron* and *Lords of Midnight* were both games of great technical excellence — more than that they were genuinely original and great fun to play. In fact, people are only starting to scratch the surface of *Lords of Midnight*, new possibilities are being discovered and new ways of playing it are being developed.

It seems like something went right but in point of fact nothing ever went wrong. "The first games were always a preliminary stage just to test the water, Beyond only really took on any staff in April," explains Terry Pratt the manager of Beyond and the person responsible for its setting up and overall development.

Terry is a classic example of putting your money where your mouth is, (actually someone else's money but his credibility). Prior to Beyond he was the editor of the still flourishing *Computer and Video Games* magazine. "I suggested vaguely to the powers that be the idea of doing some software after seeing the quality of some of the stuff we were getting in on the magazine but I never expected to be looking after a separate company!" Most of Beyond's early releases were written by a C & VG contributor Ron Potkin.

"I will admit that one thing that spurred me on was, when I was on the magazine, the hash I had seen other people make of running a software house — I thought I could do it better. We're succeeding now but it certainly was much more difficult than I thought."

"... I thought I could do it better"

First of the 'biggy' games was *Psytron*, a complex game with no real antecedents. In a way it does for strategy/managerial games what *Valhalla* did for adventure games, ie, make them strongly visual with detailed, animated graphics without losing the original strategy flavour.

"*Psytron* was fought over by a number of companies and for various reasons its creators chose us rather than another company." One of the companies known to have seriously considered *Psytron* was Psion although, in the event, they seem to have decided it wasn't right for them.

"Paul Voysey, one of the creators of the *Psytron*, says that they consider the game to have been their *Space Invaders* and they are now at work on *Psi Warrior* which will be their *Manic Miner*, but I know companies always say things like that..."

His voice trails off apologetically — it can't be easy having been a hack (cynical to the last man) and now required to do interviews as a manager (ebullient, enthusiastic, self and company promoting, and unrealistically optimistic to the death).

Good as *Psytron* is, my guess is that *Lords of Midnight* is the game people will still be talking about in ten years time. Like *Psytron* it isn't really much like anything else but is a curious mixture of adventure and strategy.

Set in the Land of Midnight you have to control the armies of the Free against the forces of the Foul — the vast area of the game is mapped out and presented on screen with a true 3D logic; ie, if you see a

"... more difficult to recruit armies..."

tower in the distance and head towards it, next move it will be bigger and nearer. You move initially four characters, each with different strengths and weaknesses, across the land trying to recruit larger armies to your cause, finding useful objects and battling it out with the dark forces which are controlled by the computer.

Different places have different properties — some are magical, others may provide limited rest and shelter. I know people who have been playing it for weeks who are still only beginning to get to grips with its possibilities.

It was written by a long-time Dungeons and Dragon/adventure fan Mike Singleton. Among his other creations is *Starnet* a complex multi-user wargame currently running on the Micronet telesoftware network. "I knew Mike from C&VG days — I was keen for him to work for us. Curiously enough, he started with some arcade ideas but somehow, as we talked, a new idea emerged — it was going to be a game involving linked islands."

The first person to complete *Lords of Midnight* will have the entire story of their battle with the forces of darkness (every battle is different) turned into a fantasy book, a concept that can be guaranteed to make the average adventure fan start talking in elvish.

Lords of Midnight is, however, only the beginning of a three part trilogy — the second section is well planned and is expected to follow later this year. To be called *Doomdark's Revenge*, it will conti-



nue the story.

"There are quite a lot of differences in *Doomdark's Revenge*. For one thing it will be a lot more difficult to recruit armies to your side." The basic plot is that Morkin has been captured by Doomdark's daughter and the others must rescue him. Chief among the goodies is the daughter of Lord of Dreams, Tarithel who is in love with Morkin (but is no wimp). The game is set in lands to the north of Midnight. "We're hoping to do a little more, technically, as well — Mike thinks he may be able to get a third background colour out of the Spectrum." This game will eventually be followed by the final section of the trilogy, *The Eye of the Moon*.

Returning to *Lords of Midnight* I asked Terry if he could offer any general advice to these people trying to play it as an adventure. "Morkin must pick up certain characters, one in particular, although I'm not saying which! Another bit of advice is that not all the Doomdark armies are the same. Some are hunter armies who will always chase a particular character — you can use them as decoys to take the pressure off Morkin."

Both *Psytron* and *Lords of Midnight* are for the Spectrum, but Commodore 64 versions are planned: "A 64 version of *Psytron* is definitely under way and work on *Lords of Midnight* is starting soon." I asked Terry about support for other machines: "We'll always look at new machines but the market is so difficult for them — look at how much material is already around for the Spectrum and 64 — I think that at least as far as this Christmas is concerned we'll only be supporting the two machines."

The interview essentially over, Terry is forced as are all the subjects of Streetlife interviews to have his picture taken by *Popular's* own lensman David (Bailey) Kelly. Terry looks very gloomy about the prospect, particularly when he is made to stand in a corner of the office in an awkward position. Smiling grimly, Terry's picture is taken: "You journalists don't know how lucky you are," he says wistfully. I think he'd choose to take on the hordes of Doomdark any day.

SHOCK! HORROR! SCANDAL!

SHOCK! CITYATTAK. The seven screen, all action, machine code game. Superb graphics, smooth game play, a tough challenge for even the hardened arcade action addict. Now available on disk.

HORROR! The journey of your life ... or death! ODYSSEY. Described by Popular Computing Weekly as: 'Addictive with superb sound effects. An arcade game worthy of Jeff Minter for its pure speed of action!' Pick of the week (12th - 18th April 1984). Now available on disk.

SCANDAL! IT'S ONLY ROCK'N'ROLL. Your chance to succeed where millions of hopefuls fade. To make the big time in 'Showbiz' and show the world that you're a superstar, not just another dreamer. Now available on disk.

K-tel Software is available at:

Larger branches of John Menzies, Boots, and Computer Dealers nationwide.

K-tel Software can also be obtained by sending a cheque or postal order made payable to:- K-tel International (UK) Ltd. At 620 Western Avenue, London, W3 0TU. Allow 28 days for delivery.



TAPE £6.95
DISK £9.95
inc. VAT

SABRE WOLF



THE GREEN
ASHBY DE LA ZOUCH
LEICESTERSHIRE LE6 5JU

48K SINCLAIR ZX SPECTRUM
£9.95

The Key To Success!

Now, with the new Stonechip Spectrum Keyboard, the user has no worry of damaging the Spectrum itself as improved designing enables it to fit the case perfectly.

Assembling the case is simple as it consists of two halves, the top half containing the keyboard, with a small printed circuit board, attached by ribbon cable, plugging into the rear of the Spectrum. The lower half fits precisely around the Spectrum, thus preventing any risk of damaging through movement.

Your Sinclair guarantee need not be invalidated since the Spectrum does not require removal from its case.



THE MAIN FEATURES OF THE KEYBOARD ARE:

- ☐ No modifications to Spectrum necessary as it connects via rear port.
- ☐ Full-length space bar.
- ☐ Built-in 'Echo' amplifier and tape interface.
- ☐ RESET keys remove the need to disconnect power supply lead.
- ☐ Single key 'DELETE'.
- ☐ Single key 'Extended Mode' selection (ie one key replaces the CAPS SHIFT and SYMBOL SHIFT function).
- ☐ Fully compatible with Interface 1 and most peripherals.

STONECHIP 
ELECTRONICS

Stonechip Electronics, Unit 9, The Brook Industrial Estate,
Deadbrook Lane, Aldershot, Hants. Telephone: (0252) 333361

Extender unit available to use with Interface
2 and Kempston Joystick Interface. £2.50.

£59.95

DEALER ENQUIRIES WELCOME
Delivery approximately 28 days

To: Stonechip Electronics, Unit 9, The Brook Industrial Estate,
Deadbrook Lane, Aldershot, Hants. Telephone: (0252) 333361

Please forward me the following products:

.....

All prices are inclusive of VAT, Post & Packing for U.K. deliveries
(overseas add 15%)

Name

Address

.....



Please debit my Access

Card

Number

.....

I enclose Cheque/PO for £

Music micro please

In the first of an occasional series on micros and music **Graham Taylor** looks at the Casio MT-200 keyboard and Centronics interface

Recent months have seen micros and musical instruments linking as never before.

In the past music programs have enabled computers to be used as simple organs or synthesisers combined with music editors which enabled (usually) up to three notes to be stored or played at the same time and manipulated in various ways.

To varying degrees such programs can be useful for learning about music and even simple composition, but there is one big problem so far as actually treating them as a sensible musical instrument is concerned — no keyboard!

One solution is the development, in recent months, of interfaces which enable you to connect your home computer, if it's a BBC, Spectrum, or Commodore 64 to a Midi keyboard. For these unfamiliar with Midi it is a standard, like Centronics which enables different keyboards from different manufacturers to be connected together and used to control one another. It can mean, for example, that a digital drum machine can be played from the keyboard of a separate synthesiser. So far as home micros and Midi is concerned, connecting the two enables the computer to be used as a memory store of note information and as a sequencer — repeating stored sequences of notes over and over for use as a rhythmic basis for music. Donna Summer's *I Feel Love* is probably the classic example of the type.

All this is pretty wonderful except for the

doesn't want to spend too much money comes from Casio — well known for its range of cheap home keyboards which straddle the bridge between simple organs and synthesisers.

The MT-200 is an electronic keyboard which functions as an instrument independently from any computer link. It costs £129 and is worth evaluating purely on its own. You get a four octave keyboard with small but playable keys. There is a choice of eight preset voices labelled things like clarinet, organ, oboe, vibraphone, etc, and six rhythms — such as like Disco, Rock, Slow Rock, etc.

A word here for those not familiar with portable keyboards. Not one of the sounds is in the slightest bit like what it's called, except Organ which sounds like some sort of organ. In fact, to varying degrees and in different ways, all the sound are like organs. They are nevertheless rich and generally speaking, useable. The same is true of the rhythm unit, it sounds a bit, well, artificial.

On the other hand that doesn't mean I don't like it, the sound can actually be appealing just because of its 'plastic' quality. As a keyboard pure and simple the MT-200 is pretty good for the money; no earth-shaker, but fun.

However, on the side of the keyboard is a small plate behind which hides a connection onto which slots a funny white block called a PA-1. This device is a standard accessory to the MT-200 costing £29.50.

The PA-1 is where the interest for micro owners starts — it is a standard Centro-

nics interface to connect the MT-200 to any computer which has a centronics port built in or can be connected to one as a peripheral, eg, the Spectrum.

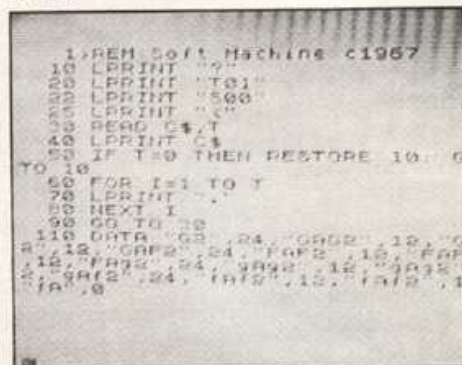
Using the Centronics interface your computer can now control the keyboard with spectacular results. The keyboard is operated by standard Ascii characters which are simply printed down the Centronics line. This means that writing programs using the

keyboard is simple. Notes are referred to by name and octave number and are switched on just by Lprinting this code. Up to eight notes can be switched on simultaneously as can rhythm and preset tones,

although at any given moment only one tone can be used.

If you send certain even numbered note values, listed in the manual, you will find that the notes will play in time with the rhythm unit — more technically they will be using the same clock (a sort of electrical timekeeper) for their timing. This means that, using the device with simple Basic programs, notes and chords can be played in perfect time with the rhythm. Better still, if you are using less than eight notes under computer control you can still play the keyboard in the normal way playing as many notes simultaneously as are left from the eight allowed. You can have the computer playing four-note chord sequences whilst you play anything up to four-note chords directly on the keyboard.

Alternatively, the computer can play a one-note base line and you can play up to seven notes simultaneously on the keyboard.



This opens up tremendous musical possibilities which, apart from the restriction in tone types, are usually only found on very expensive keyboards. Shove the whole noise through a reasonable amp and you will be pretty amazed at how impressive it can sound.

At the moment there is only the information in the PA-1 interface manual to go on, which is just about enough to write Basic programs. In the back of the manual is a fairly substantial Basic listing that provides a complete music editor for the interface — the only problem being that it is written in the Basic used on Casio computers which is vaguely BBC and vaguely Microsoft so it will need quite a bit of conversion, whatever your machine.

However, Casio have now realised the potential of the PA-1 interface and are busy as fast as they can commissioning software houses to write proper software using the interface. This augers well for those of us whose Basic isn't good enough to really get the most out of the interface.

If the idea of playing music on your micro appeals then the Casio MT-200 + PA-1 interface is one of the cheapest and easiest ways to start.



fact that Midi keyboards start at several hundred pounds — much more than the computer. Not ideal for the dabbling beginner. The solution for the budget conscious computer fan who wants to play music but

WE'VE GOT THE TALENT- and our games prove it!

Amazing graphics, fast and furious action, challenging strategy, compelling adventure – this first wave of games from TALENT has got the lot!

Written by professional computer scientists using powerful new programming techniques (which leave machine code standing), these games have pushed home micros to the very limit!

SPOT YOURSELF A TALENT GAME TODAY - WE'RE GOING PLACES - FAST!

GAMES FROM THE
MICRO-STRETCHERS!

ARCHIPELAGO

WEST

PANORAMA (H)

KALAH

LASER REFLEX

**GREAT
INTRODUCTORY
OFFER**

**£2 DISCOUNT ON ALL
TALENT PRODUCTS!**

For every TALENT product you order, we'll deduct £2.00 from the price.
This offer must end on August 31st so don't delay – make sure you've got TALENT!

ARCHIPELAGO

Dare you venture into the ancient undersea labyrinths which link the islands of the Archipelago? Fabulous jewels await you there – but the guardians of the treasure mark your every move, waiting to deal a swift and terrible vengeance. How long can you survive?

A fast-moving, action-packed game with brilliant graphics, animation and music.
Commodore 64 (joystick needed) Cassette £7.95 Disk £9.95

KALAH

One of the oldest games in the world! Originally played by Bedouins using pebbles and holes scooped in the desert sand, this strategy game has absorbed the mind of man for thousands of years. Superb graphics and music, with a choice of levels and depth of search. Easy to learn, fiendishly difficult to beat!
Commodore 64 Cassette £7.95 Disk £9.95

LASER REFLEX

A new angle in alien zapping! Against a brilliant backdrop of stars, you must defend your asteroid base from wave after wave of swooping mutating starships. Your defence – a powerful laser deflected against a giant mirror. How long can you hold out before your defences crumble?

BBC Model B Cassette £7.95
Electron Cassette £7.95

WEST

A compulsive adventure game set in a ghost town in the Wild West. Your task – to flush out a gang of bank robbers and retrieve their loot – with only your trusty steed and your six-shooter to aid you! Test the speed of your draw, your skill at cards, your powers of survival!

The first of a stunning series of adventure games from Allan Black, played in real-time.
Commodore 64 Cassette £9.95 Disk £12.95
BBC Model B (text only) Cassette £7.95
Electron (text only) Cassette £7.95

PANORAMA (H)

An outstanding graphics package for the Commodore 64. Features include: free-hand sketches, circles, ellipses, block move, copy and reverse, magnification, choice of cursor, joystick or key control. PLUS texture definition and texture and colour fill. PANORAMA (H) uses the full colour facilities of the Commodore 64. Pictures can include text and can be stored and incorporated into BASIC programs. The program is menu-driven and comes with a comprehensive illustrated instruction booklet. We use PANORAMA (H) to create all the graphics for our Commodore 64 games. Need we say more?
Commodore 64 Cassette £7.95 Disk £9.95

SOFTWARE FROM SCOTLAND

INSTANT ACCESS 24 HOUR ORDERING SERVICE TEL 041-552 2128

To: TALENT COMPUTER SYSTEMS
FREEPOST (no stamp required)
GLASGOW G4 0BR

Please send me the following items:

COMMODORE 64	Quantity		SPECIAL PRICE
PANORAMA (H)	—	Cassette (£17.95)	£15.95
PANORAMA (H)	—	Disk (£19.95)	£17.95
ARCHIPELAGO	—	Cassette (£ 7.95)	£ 5.95
ARCHIPELAGO	—	Disk (£ 9.95)	£ 7.95
KALAH	—	Cassette (£ 7.95)	£ 5.95
KALAH	—	Disk (£ 9.95)	£ 7.95
WEST	—	Cassette (£ 9.95)	£ 7.95
WEST	—	Disk (£12.95)	£10.95
BBC MODEL B			
LASER REFLEX	—	Cassette (£ 7.95)	£ 5.95
WEST (text only)	—	Cassette (£ 7.95)	£ 5.95
ELECTRON			
LASER REFLEX	—	Cassette (£ 7.95)	£ 5.95
WEST (text only)	—	Cassette (£ 7.95)	£ 5.95
			TOTAL

Total (includes postage and packing)

I enclose a PO/Cheque to the value of £

Please debit my ACCESS ☐

Name (block capitals)

Address

Post Code

PCWK1

Signature Tel

Please allow up to 28 days for delivery. We shall not bank your remittance until your order has been despatched.

Dealer enquiries welcome. Contact Veronica Colin on 041-552 2128

TALENT
COMPUTER SYSTEMS

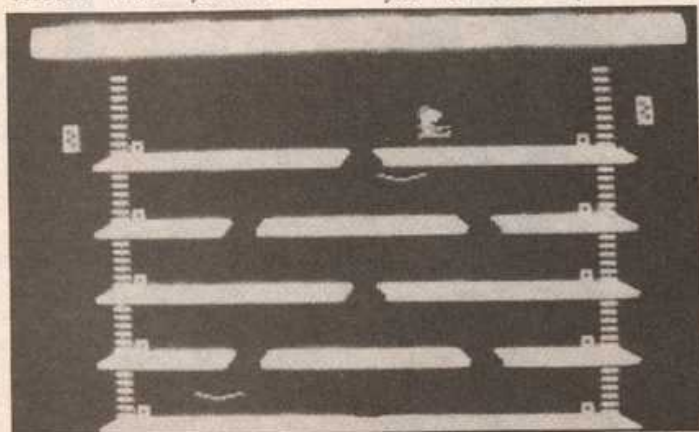
CURRAN BUILDING, 101 ST. JAMES ROAD, GLASGOW G4 0NS TEL 041 552 2128

Floating urns

Program *Danger Ranger* Price £9.95 **Micro** Commodore 64 **Supplier** Microdeal, St. Austell, Cornwall, PL25 4BR.

Danger Ranger is a very simple arcade-style game from Microdeal.

It consists of two games screens which you have to



negotiate your way through controlling a little figure armed with a laser gun — isn't everybody in arcade games!

In the first screen, ten keys have to be collected from several platforms, while avoiding floating urns, which shoot, and radioactivate bats and roving eyes, which don't.

The second screen involves collecting treasure chests while

avoiding drops of deadly acid which fall from the ceiling or rise from the floor (what happened to gravity?)

Straightforward to play and really not very exciting — after completing the two screens, you start right back at the first one again. This time it is a bit more difficult, eg the urns shoot at you more often. And so it continues up to the fifth and most difficult level.

There is one nice touch — you can select a practice op-

tion, which enables you to play the game without losing any lives.

Bearing in mind the high standard of so many of the games available now for the C64, I'm afraid I expect more than this. Particularly since it is on disc.

Richard Corfield



Red for no-nos

Program *The Kingdom of Klein* Price £7.95 **Micro** BBC B. **Supplier** Epic Software, 10 Gladstone St, Kibworth Beauchamp, Leicester LE8 0HL.

This is one of a series of adventures from Epic — long, machine code programs describing fantasy lands and a challenge in the form of a treasure or monster to be found. It is a traditional adventure with the useful facility of saving a partially completed game (a feature sadly lacking in some adventures). The text is presented in colour — red for no-no's, green for go. The scenario is a search for the Magic Klein Bottle which has been stolen by a witch.

There were a couple of small irritations — I spent a lot of time typing N,E,S,W because the descriptions did not include exits from each location; and some of the commands had to be very precise before they were accepted, eg UP and CLIMB were rejected but CLIMB LADDER was accepted.

Adventures are very like crossword puzzles in that the form is usually the same, but the interest for aficionados is in the extent and complexity of the problem presented. Once solved, the game becomes useless. The sheer size of this one should provide even adventure freaks with several hours of fun.

Jan Watterson



Fiendishly clever

Program *The Complete Machine Code Tutor* Price £14.95 **Micro** BBC B **Supplier** New Generation Software, The Brooklands, Sunnybank, Lyncombe Vale, Bath BA2 4NA.

First things first — this isn't a complete tutor. It is a magnificent and fiendishly clever aid for revising and consolidating your knowledge of BBC Assembler.

The pack includes two cassettes and a reference booklet. On the tapes are 24 lessons about Assembly Language; these are very brief and proba-

bly inadequate for a complete novice. But if you know a little about the subject they are a great way to brush up. What makes this a super deal is the exercises which follow each lesson. You are given a short Assembler program and a display showing the contents of various 6502 chip registers. You can run this, modify it, watch step by step what happens as it runs — and you can't crash the system!

Paul Bunn has written a colourful, clear interactive computer teaching package — the best I've come across in any field.

Jan Watterson



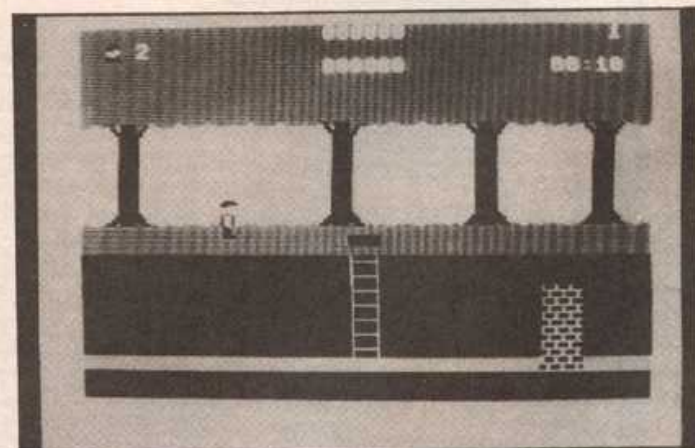
Rolling logs

Program *Cuthbert In the Jungle* (disc) Price £0.00 **Micro** Commodore 64 **Supplier** Microdeal, St. Austell, Cornwall, PL25 4BR

Arade games with a jungle setting seem to be increasingly popular — one of the latest for the Commodore 64 is the disc version of *Cuthbert in the Jungle* from Microdeal.

ping or by grabbing a rope and swinging over them. Alternatively, you can climb down into the underground passage which runs underneath the jungle, but this is not without its perils — it contains a deadly scorpion and is sometimes blocked by a brick wall.

The various obstacles and treasures are spread over no fewer than 120 screens. This would be very impressive except that all the screens use the same background with only the arrangement of the hazards,



In this Cuthbert, who has appeared in some previous games from the same software house, has to find his way through the jungle in search of some treasures, for example a pot of gold and a golden chest.

The jungle is however full of hazards — fires, snakes, tar pits, crocodiles and rolling logs. These can be avoided by the usual means of either jum-

two or three per screen, being changed. Despite that, the game is quite good fun and the number of screens means that it will take a long time to master fully. Surely it could have had better graphics, though.

Richard Corfield



Stepping stones

Program *Jungle Trouble* Price £6.95 Micro Commodore 64 Supplier Durrell Software, Castle Lodge, Castle Green, Taunton, Somerset TA1 4AB.

In *Jungle Trouble* from Durrell Software you find yourself once again stuck in the middle of a hostile jungle. To get back to civilisation, you must find your way through four stages of the jungle. Firstly, the river — you have to jump across the stepping stones, avoiding falling in. Secondly — the forest, where you must cut down the trees while dodging the falling coconuts and fending off the apes. Thirdly — in the cave you have to use a rope to swing over a burning pit and then dispose of a baby dragon. Finally — you have to leap over an ever widening chasm before you can eventually reach home.

The straightforward plot is matched by the graphics and sound which are both pretty uncomplicated. Despite the apparent simplicity of the game, it is actually surprisingly compulsive stuff while you try to master each of the stages. Once you have figured out how to complete each part though the incentive to have another go is reduced, so the game loses from the point of lasting interest.



Richard Corfield

Cluster missiles

Program *Star Trooper* Price £5.95 Micro Commodore 64 Supplier Melbourn House, Church Yard, Tring, Herts, HP23 5LU

Fans of the good old-fashioned alien shoot-out style of arcade games will enjoy this all a pretty standard recipe but, still, it is a well written and presented game. Like other Melbourn House games for the 64, the title screen is accompanied and cleverly programmed and catchy intro music. In the game itself, the graphics are very



Star Trooper from Melbourn House. In this one, you control a long spaceperson (the Star Trooper) who is equipped with a jet back-pack and a laser blaster. Using this equipment, the mission is to destroy the attacking waves of aliens (24 different types in all, with six levels of difficulty). Quite apart from all the aliens, cluster missiles and meteorites must also be avoided, either of which will destroy you, losing one of your three lives. An

seen for the 64. The action is fast and difficult enough to provide a real challenge. This is one of the best games of this type I have seen for the 64.



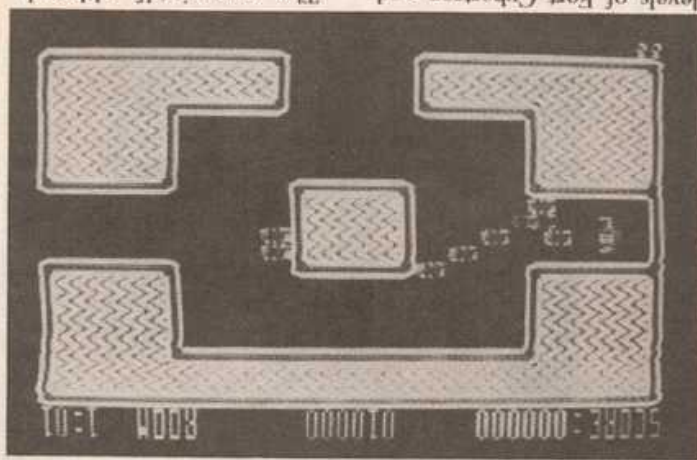
Richard Corfield

The Spook

Program *Cyberton Mission* Price £6.95 Micro Commodore 64 Supplier Micro Power. Cyberton Mission from Micro Power is broadly speaking a futuristic maze game. Not a new type of arcade game by any means, but a very good example of the style.

Your mission is to collect the treasure on each of the four levels of Fort Cyberton and each level has 16 rooms arranged in a 4x4 grid. The rooms are patrolled by robots of various types, some more deadly than others. You can destroy all these with your laser rifle, but you will find the weapon is useless against The Spook, the

ghost of the last person to enter the fort. This seems to appear so the best thing to do is to gad about as fast as you can. If you collect all the treasure on any level you must take it to the safe before you can move on to the next stage.



The game itself, although not dramatically original or different from some others, is quite challenging and has enough variety to make it a lasting favourite.



Richard Corfield

Run of the mill

Program *Chuckie Egg* Price £7.90 Micro Commodore 64 Supplier A & F Software, Unit 8, Canal Side Industrial Estate, Woodbine Street East, Rochdale, Lancashire, OL16 5LB.

Although some elements of the game are not new, it is certainly very good fun, especially at the more difficult levels, where the sight and sound of the farmer whizzing around the hen house at high speed is really comical. Despite enjoying the game, I must have a moan about the loading of the program. It may be that we were just unlucky and we had a slightly dud cassette for review, but unfortunately the loader (one of the speed loaders for the 64) was unacceptably unreliable. It took no fewer than eight attempts to load the game the first time.



Richard Corfield

Very few games for the 64 have actually made me laugh out loud, but *Chuckie Egg* from A & F Software have to guide a farmer round his hen houses collecting eggs and corn. When you have collected a dozen eggs, you can move on to the next hen house. Each hen house consists of various floors connected by ladders or moving platforms. However, the hens and ducks in the hen house are out to stop you collecting the eggs — and

Opinion Poll

Program 1984 Price £6.50 Micro BBC B Supplier Incentive Software, 54 London Street, Reading RG1 4SQ.

Calling all meglomaniacs! Fancy running the country single-handed? This package by R Carter and S Crocker

point is just after the budget when you receive the results of a poll on your popularity.

are clear graphs and good use. What makes this a very special game is that it offers quite a complex model of the British economy. The details are given in the accompanying booklet *Pocket Guide to Running Britain* which should be bedside reading for every Cabinet



offers you that very dubious pleasure. Actually, you only run the economy but that affects everything else.

1984 is a 'kingdom' game where to survive you have to make a series of choices. You choose bank rate, taxes, government spending and negotiate on wages. If you go too far in any direction, it's curtains. In this case the annual crunch

member. The presentation is excellent: a series of clever wipes clears the screen with horizontal movements, there of colour to separate items.

It is a teaching game, I think — certainly I learned that being Chancellor is the last job I would ever want.

Dave Watterson



Power Pills

Program Pacman Price £24.99 Supplier Atarisoft, Atari International, Atari House, Railway Terrace, Slough, Berks

At last here is Pacman from Atari for the Vic20! It must be one of the most sought after pieces of Vic software and ranks along with such veritable arcade giants as *Donkey Kong* and *Centipede* also released from Atarisoft. As any computer buff will tell you, any software from Atari is to be followed to the ends of the earth.

This cartridge is grossly over-priced at £24.99 which is arguably not worth the luxury of instant data retrieval. *Pacman*, as you will probably know, is a game in which you

play the title role by guiding a small "pie chart" like figure round an endless labyrinth while avoiding a maudering gang of ghosts.

However, you can get the upper hand by eating a "power-pill" after which the tables will be turned and it will be the ghosts who run from you.

As is the whole Atarisoft range, the software is well presented in a cardboard box which makes the package more attractive to the consumer, but this also ups the price. Overall, the game has excellent graphics, fast and colourful, and the game also makes good use of the Vic's rather meagre sound capabilities.

David Miller



Floating Point

Program Pascal 4T Price £25.00 Micro 48K Spectrum Supplier Hi-Soft, 13 Gooseacre, Chaddington, Leighton Buzzard, Beds LU7 0SR.

Pascal 4T from Hi-Soft for the 48K Spectrum consists of about 22K of machine-code.

Though the accompanying manual does not set out to teach you Pascal, it shows you some of the things which may be done with it and how to use the powerful editor included in the program. As well as the main program, there is a Pascal version of turtle graphics using the Spectrum's colour and high resolution screen.

As Pascal is a compiled language there is a speed increase of well over twenty times over Basic. When you consider that this is using floating-point numbers you will realise the power of the compiler.

Hi-Soft's *Pascal 4T* is a full implementation of Pascal — not a version of what is called Tiny Pascal. Also, the object code it produces is true Z80 machine-code, not P-code which runs at a much slower rate. There is no Basic computer which can match it for speed. This package is great value for money for anyone interested in finding out more about Pascal.

Roger Thomas



In The Bastille

Program Les Flics Price £6.95 Micro Spectrum Supplier PSS, 452 Stoney Stanton Rd, Coventry.

Les Flics takes a very successful cartoon/film idea and converts it into an original and highly entertaining game. This is an arcade adventure in its truest sense — you need to have arcade reflexes, and the mind of an adventurer to do well. It starts off with you in a maze of streets, being followed by police cars; even at this early stage, you can't afford to hang around for very many seconds unless you want to end up in the Bastille for the rest of your life!! Dotted around the maze are various doors which you

pyright) and you have to move around the various floors of the building in search of numerous objects.

At this stage, the graphics are particularly good, and the game still hard. Each building is different, and contains numerous things for you to collect or do. The most important thing I have discovered so far is that daggers are useful to get out of trouble with the gendarmerie.

The game lets you use either joystick (Kempston or cursor key) or the keyboard. It is nicely packaged in a box, and has limited enough instructions to be frustrating — and addictive. It is clearly one of the new breed of supergame which cost slightly more money, but can be expected to last a long, long time. This deserves to be a top seller, so I hope to see it in the



can enter. Once inside, you become the Pink Panther (or, something exactly the same that, miraculously, avoids co-

charts soon.

David Lester



COMMODORE 64 BASIC BEGINNER'S PACK . . .

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

The Software

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

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

In addition - on the tape:

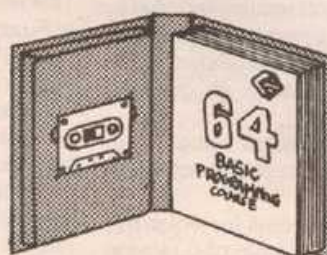
- **Char Gen:** a full-featured character generator that will redefine any or all of the standard 64 characters, even the ones used by Char Gen - while it runs.
- **Sprite Gen:** a sprite generator to define sprites - normal or enlarged, single colour or multicolour. Displays the sprite as it's defined.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

The Book

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

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

The Package



**TOTAL
PACK
PRICE**

£10.50

INC VAT
P & P
UK & EIRE

ALSO AVAILABLE:

BASIC Packs @ £10.50

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

Assembly Language Packs @ £12.50

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

Children's BASIC Packs @ £9.95

COMMODORE 64: VIC 20: BBC



Dr Watson is a trademark of
Glentop Publishers Ltd

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

Please supply the following:

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

Name _____

Address _____

Signature _____

Access Number _____

Sounding off

Dilwyn Jones sounds off 'syntactically' using his QL...Beep...Beep...Beep

The QL's *Beep* command can accept a variable number of parameters to produce a one-channel complex sound.

As well as being so versatile, this means that, initially at least, complex sounds are just that. Indeed, the QL manual states unhelpfully that the "command is best used experimentally rather than syntactically".

Reading that made me think that some kind of sound development program was called for. The program I have written enables you to have an on-screen display of the current parameter values and to play or cancel any sound using the values displayed. Any value can be changed providing that it does not cause an overflow error.

Briefly, these are the eight values used with the SuperBasic *Beep* command, in order:

Duration controls the time for which the sound is played, from a value of 0 playing the note continuously until cancelled to the shortest note with a value of 1.

Pitch 1 sets the pitch. A low value is a high pitch (short period). The use of just the two parameters *Duration* and *Pitch-1* gives the simplest type of one-note beep, as on the ZX Spectrum.

Pitch-2 is the other limit of a note of varying pitch. This may have a higher or lower value than *Pitch-1*. If suitably set up, the sound can alternate between *Pitch-1* and *Pitch-2*.

Grad-X is the rate at which the sound changes by steps of *Grad-Y*. Contrary to what is said in the manual, this accepts values in the range 0 to 32767.

Grad-Y is the step value used while alternating between *Pitch-1* and *Pitch-2*. This gives the change of pitch between every sound played. It takes either a negative or positive value corresponding to ascending or descending notes.

Wrap determines whether the sound goes up and down in pitch or just in one direction, and how many times. A value of 15 means 'wrap forever'.

Fuzzy changes the pitch randomly every cycle. A high value (eg, 15) tends to make most sounds end up like white noise.

Random changes the gradient randomly. The effect depends on other parameters, but is often quite noticeable!

To simulate notes without the full range of eight parameters, any redundant values should be assigned a zero value. When you run the program, it displays the eight *Beep* parameters, their current values and the limits which the values can take. At the bottom of the screen is a display of all the controls available.

At any time the parameter you are working on is displayed in reversed video (ie, red numbers on a white strip). You can move up and down the list with the up and down cursor keys at the bottom of the keyboard. The white strip moves to show which parameter you're currently

working on.

The function key *f1* at the left of the keyboard is used to increase the value of the parameter. Pressing *f1* alone increases the value by 1. Pressing *Ctrl f1* increases the value by 10. Pressing *Shift f1* increases the value by 100. Pressing *Ctrl shift f1* increases the value by 1000. Decreasing values is done with the *f2* function key in the same steps as for *f1*. This is all displayed at the bottom of the screen as a constant reminder of the controls available.

To hear the sound, press either the *f3* function key or the *P* (play) key. QL sound is quite loud, so you need a way of aborting any long sound. Pressing *f4* or the *C* key will cancel the current sound. If you want to quit the program simply press the *Q* key. This does not cancel any sound already set so be sure to do this first, or you may have to enter *Beep* alone as a direct command to make your QL shut up!

The issue of QL that I have been using has an annoying arithmetic habit of making $-1 - 1$ and $-2 - 2$ both equal to 0, but any other numbers are evaluated correctly (eg, $-3 - 3$ gives -6). If this happens on your QL as well, you may be unable to step down negative values from -1 to -2 with the program, so you should step down by, for example, -10 then step back up again in steps of 1.

The program uses many of the QL's facilities, with not a *Goto* in sight. Long variable names are used throughout, which means that there is a lot of typing to be done, but don't let this discourage you. I find this program very easy to use and very useful for developing sounds for SuperBasic games.

```
100 REMark Sound Development Program
110 :
120 REMark (C) DILWYN JONES 1984
130 initialise
140 REPEAT program_loop
150   key=CODE(INKEY$(-1))
160   IF key=99 OR key=67 OR key=244
   THEN cancel_sound
170   LET previous=parameter
180   IF key=208 AND parameter>0 THEN
   LET parameter=parameter-1
190   IF key=216 AND parameter<7 THEN
   LET parameter=parameter+1
200   IF previous<>parameter THEN
210     AT 11,previous+6
220     PAPER 2
230     INK 7
240     PRINT value(previous);FILL$('
',6-LEN(value(previous)))
250   END IF
260   IF key=232 THEN LET value(para
meter)=value(parameter)+1
270   IF key=233 THEN LET value(param
eter)=value(parameter)+10
280   IF key=234 THEN LET value(param
eter)=value(parameter)+100
290   IF key=235 THEN LET value(param
eter)=value(parameter)+1000
300   IF value(parameter)>limit(highe
st,parameter) THEN LET value(paramete
r)=limit(highest,parameter)
310   IF key=236 THEN LET value(param
```

```
eter)=value(parameter)-1
320   IF key=237 THEN LET value(param
eter)=value(parameter)-10
330   IF key=238 THEN LET value(param
eter)=value(parameter)-100
340   IF key=239 THEN LET value(param
eter)=value(parameter)-1000
350   IF value(parameter)<limit(lowes
t,parameter) THEN LET value(parameter
)=limit(lowest,parameter)
360   IF key=113 OR key=81 THEN EXIT
program_loop
370   IF key=112 OR key=80 OR key=240
   THEN play_sound
380   IF key=99 OR key=67 OR key=244
   THEN cancel_sound
390   AT 11,parameter+6
400   PAPER 7
410   INK 2
420   PRINT value(parameter);
430   INK 7
440   PAPER 2
450   PRINT FILL$(' ',6-LEN(value(par
ameter)))
460 END REPEAT program_loop
470 STOP
480 DEFine PROCedure play_sound
490   BEEP value(0),value(1),value(2)
,value(3),value(4),value(5),value(6),
value(7)
500 END DEFine play_sound
510 DEFine PROCedure cancel_sound
```



```

520 IF BEEPING THEN BEEP
530 END Define cancel_sound
540 Define PROCEDURE initialise
550 INK 7
560 PAPER 2
570 MODE 4
580 CLS
590 CSIZE 1,0
600 PRINT'BEEP duration,pitch_1,pit
ch_2,grad_x,grad_y,wrap,fuzzy,'rand
om'
610 CSIZE 2,0
620 AT 0,3
630 PRINT'-----
640 PRINT'Parameter Value Limit
s'
650 PRINT'-----
660 PRINT'duration 0 -3276
8 to 32767'
670 PRINT'pitch_1 0 0 to
255'
680 PRINT'pitch_2 0 0 to
255'
690 PRINT'grad_x 0 0 to
32767'
700 PRINT'grad_y 0 -8 to
7'
710 PRINT'wrap 0 0 to
15'
720 PRINT'fuzzy 0 0 to
15'
730 PRINT'random 0 -3276
8 to 32767'
740 PRINT'-----
750 PRINT
760 CSIZE 1,0

```

```

770 PRINT' value 1 10
100 1000 up/down'
780 PRINT'increase f1 CTRL f1 SH
IFT f1 CTRL-SHIFT f1 cursor'
790 PRINT'decrease f2 CTRL f2 SH
IFT f2 CTRL-SHIFT f2 keys'
800 PRINT'f3/p play sound f4/c
cancel sound q quit';
810 LINE 0,20 TO 165,20
820 LINE 0,15 TO 139,15
830 LINE 0,5 TO 165,5
840 LINE 27,5 TO 27,20
850 LINE 39,5 TO 39,20
860 LINE 65,5 TO 65,20
870 LINE 95,5 TO 95,20
880 LINE 139,5 TO 139,20
890 LINE 54,0 TO 54,5
900 LINE 123,0 TO 123,5
910 CSIZE 2,0
920 DIM limit(1,7),value(7)
930 LET lowest=0:LET highest=1
940 LET duration=0:LET random=7
950 RESTORE
960 FOR parameter=duration TO rando
m
970 READ limit(lowest,parameter),
limit(highest,parameter)
980 END FOR parameter
990 DATA -32768,32767,0,255,0,255,0
,32767,-8,7,0,15,0,15,-32768,32767
1000 parameter=duration
1010 LET previous=parameter
1020 PAPER 7
1030 INK 2
1040 AT 11,parameter+6
1050 PRINT'0'
1060 INK 7
1070 PAPER 2
1080 END Define initialise

```

QL

£49.00
INC

**PARALLEL
PRINTER
INTERFACE**

AVAILABLE NOW

- ★ 12 months guarantee
- ★ Fully self-contained with connectors and 3.0 metre cable
- ★ Plugs into Sinclair QL's RS232C port and
- ★ Drives any CENTRONICS compatible printer, eg, Epson Seikosha Juki OKI NEC Shirwa Star MCP-40 Roland, etc, etc.

To order send name & address with cheque to
MIRACLE SYSTEMS LTD

6 Armitage Way
Kings Hedges
CAMBRIDGE CB4 2UE
Tel: 0223-312886

Ask at your local computer shop.

Sinclair and QL are trademarks of Sinclair Research Ltd

... NOW AVAILABLE ...
... NOW AVAILABLE ...



RICHARD SHEPHERD SOFTWARE

Screen savers

Bob Pritchard shows you how to save and load selected sections of the Spectrum screen display

The two facilities provided in the Spectrum for saving television pictures are extremely useful and without doubt invaluable but they can at times be uneconomical. Using the Save "picture" Screens method, for example, naturally assumes that the whole screen is required to be saved and thus will output to tape 6912 bytes. This comprises 6144 display bytes and 768 attribute bytes. The other method, Save "name" Code 16384, 6912 does the same thing but allows the user to verify what has been saved. Nonetheless, the same amount of bytes goes to tape, that is, 6K of display and ¾K of attributes.

Now this is quite a bit of tape length and once the process has started, unless Break is used, waiting time enters into it. But if you are a keen graphics programmer and have used only a part of the screen that needs to be saved, or the middle section is all that is required, then a lot of saving is being done of bytes not needed, some of them zero. Also, attribute bytes are included when they may not be wanted or they may want to be changed.

Loading back has its drawbacks too. Whatever has been Saved will be Loaded back to the screen exactly as it was Saved,

and this again takes time. A perfectly good graphic display occupying two thirds of the screen may require text or a description being added later in the lower third, or indeed instructions for a game.

The following tables give the relevant details of each section of the screen as divided in the Spectrum system.

DISPLAY

Section	Lines	Start	Finish	Bytes
Top	0 to 7	16384	18431	2048
Mid	8 to 15	18432	20479	2048
Top + Mid	0 to 15	16384	20479	4096

ATTRIBUTES

Section	Lines	Start	Finish	Bytes
Top	0 to 7	22528	22783	256
Mid	8 to 15	22784	23039	256
Top + Mid	0 to 15	22528	23039	512

It is now possible to construct a Basic program, using these figures, which will Save the top, the middle, or the top and middle sections as required, and the whole

thing can be made a Gosub routine in any graphics program you may have written.

The Basic program given here uses an input 1. for top, 2. for middle and 3. for top and middle combined. It provides for Saving just the display bytes as desired, relative to the screen sections, and whatever has been Saved in this manner can also be verified.

When Loading back from tape, it is possible to transpose sections of screen such that what was Saved from the middle can be loaded back to the top and vice versa by entering the change of Code. For example, if on tape there is "picture" Code 16384, 2048 it can be loaded back as "picture" 18432, 2048 and what started life as a top screen picture will then appear as a middle screen picture.

When Loading back displays from tape in this way, enter first some command such as Print at 15,0, thus setting a new print position so that "report" messages do not encroach on the picture just loaded in, marring it. The report 'Bytes:' should now appear below the middle section of the display.

One last point: since the tape is already running after saving the attributes, it only remains to press a key when the second prompt appears to Save the display bytes, if that is what is required. But remember that the display and the attributes will have the same name Saved on tape, only the codes will be different.

```

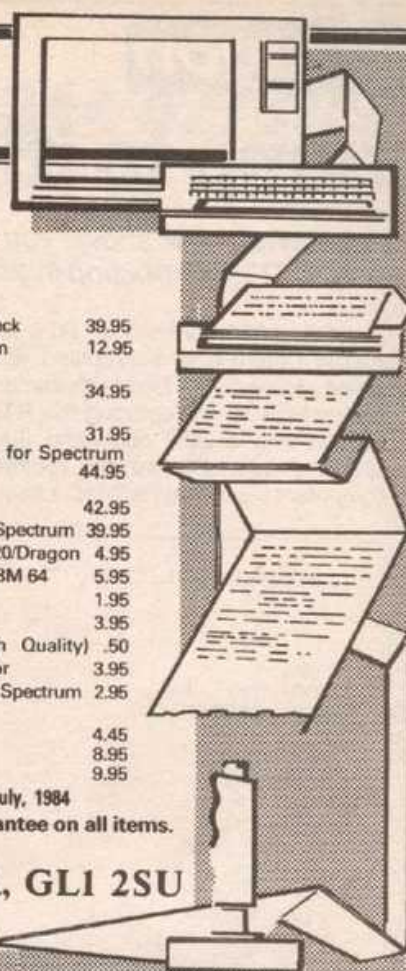
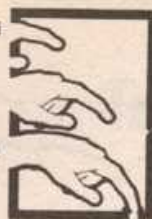
1 REM Saving Screen Sections
2 REM ***Bob Pritchard***
3 REM ***February 1984***
4 REM GOSUB Routine
5 REM .....
4999 STOP
5000 LET d=16384: LET a=22528: L
ET db=2048: LET da=256
5005 DIM o$(32): PRINT AT 20,0;o
$: AT 21,0;o$
5010 INPUT "Screen Section(1,2 o
r 3)?":s
5020 IF s<1 OR s>3 THEN GO TO 50
10
5030 IF s=1 THEN GO TO 5060
5040 IF s=2 THEN LET d=d+db: LET
a=a+da: GO TO 5060
5050 LET db=2*db: LET da=2*da
5060 INPUT "Name for Save?":n$:
IF LEN n$>10 THEN GO TO 5060
5065 INPUT "Saving Attributes? (Y
/N)":a$: IF a$<>"Y" AND a$<>"N" T
HEN GO TO 5080
5070 SAVE n$CODE a,da: REM this
saves Attributes
5080 SAVE n$CODE d,db: REM this
saves Display
5085 IF a$<>"Y" AND a$<>"N" THEN
GO TO 5100
5090 PRINT AT 20,0;"Saved: ";n$;"
CODE ";a$;" ";da
5100 PRINT AT 21,0;"Saved: ";n$;"
CODE ";d$;" ";db
5200 RETURN

```


Kentech

A touch above the rest

HOLDERS OF THE LARGEST RANGE OF COMPUTER ACCESSORIES.



Joystick and Accessories

Pro-Ace Joystick	12.95
Crackshot Joystick	8.95
Quickshot 1 Joystick	9.95
Quickshot 2 Joystick	10.95
Zip Stick Atari	14.95
Dragon	16.95
B.B.C.	17.95
(Free Graphic Software)	
DK Tronics Spectrum Dual Port Interface	12.95
Protek 2 Spectrum Switchable Interface	19.95
Prolink B.B.C. (B) Programmable Interface	9.95

Printer Accessories

Kempston Spectrum Centronics Interface Soft Driven	39.95
Rom Driven	54.95

ZX Print 3 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 Centronics Printer Lead	14.95
B.B.C. Centronics Printer Lead	14.95

Voice Synthesisers

Cheetah Sweet Talker Spectrum	29.75
Cheetah Sweet Talker B.B.C.	24.95
Adman VIC 20 Voice Synth	49.95
Adman CMB 64 Voice Synth	29.95
Currah Spectrum Voice Synth	29.95

Miscellaneous

Datex VIC 20/64 Cassette Deck	39.95
Sound Module for Spectrum	12.95
Vixen VIC 20 16K Switchable Rampack	34.95
Vixen VIC 20 Switchable Motherboard	31.95
New DK Tronics keyboard for Spectrum	44.95
DK Tronics Keyboard Spectrum/ZX-81	42.95
Cheetah 32K Ram Pack 16K Spectrum	39.95
Keyboard Overlays Vic 20/Dragon	4.95
Keyboard Overlays B.B.C./CBM 64	5.95
Graphic Pads Spectrum	1.95
Graphic Pads B.B.C.	3.95
C15 Data Cassettes (High Quality)	.50
Dragons Eye Power Indicator	3.95
Soft Covers (High Quality) for Spectrum	2.95
VIC 20/64, Oric, B.B.C., Dragon, Atari 800 DXL	4.45
Hard Covers VIC 20/64 B.B.C.	8.95
	9.95

ALL PRICES INCLUDE VAT

Postal Insurance Free • Delivery Free • FREE TWO C15 DATA CASSETTES with every item despatched before 31st July, 1984

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

ATTENTION! ATTENTION! ALL COMMODORE USERS!

Do you use tapes? Are you sick and tired of waiting for your programs to be Loaded/Saved from/on the tape? Then you need a **TORNADO!!** Tornado allows you to Save/Load/Verify your Basic/machine code programs faster than a CBM 1541 disk drive does!! Due to popular demand! Tornado now comes with new and more powerful commands plus extra instructions to assist you in making fast versions of your existing machine code/Basic programs. Tornado is available on tape for CBM 64 and 8K+ Vic 20.

Do your Run/Stop and Restore keys often fail? Do you want to come out of those crashes?! Or get into those unbreakable programs?! Then what are you waiting for, get yourself a

BREAKER!! Reset switch and let your computer know who is the boss!! Breaker can be connected to your machine in seconds, no soldering. Included with the Breaker reset switch is extra backup software on tape. Breaker is now available for any CBM 64 or Vic 20.

Available for CBM 64 and the Vic 20 now is the

ROM-FILE which contains a complete disassembly of CBM 64/Vic 20 Rom with comments! As well as a complete description of all 6502/6510 instructions and addressing modes + a complete listing of a machine code monitor and more!

Please make cheques/PO payable to:

BSF COMPUTER SERVICES LTD.
DEALERS AND GENERAL ENQUIRIES
TEL: 079882240

**MAD SUMMER OFFER!!
A FREE BREAKER WITH
EVERY TORNADO IF YOU
USE THIS COUPON!!**

Please send me..... Tornado at £9.95 + my free! Breaker

Please send me..... Breaker at £7.95

Please send me..... Rom-File at £7.95

I enclose cheque/PO/cash to the sum of £.....

Name Computer

Address

Please use this form and block letters only. All prices are inclusive of p&p (mail order only, add £2 if outside UK). Please post to:
BSF CSL, 20-28 BOLSOVER STREET, LONDON W1.

Jump to it!

Peter Whittaker shows you how to make use of the Dragon Rom's RTS instruction in your own programs

Location 359 contains an RTS instruction (return from subroutine) which is called whenever the Rom's character input routine is used. By replacing this RTS instruction with a JMP command (jump to specified address), we can redirect the computer to our own routines. I have writ-

ten three utility programs using this approach. If assembler 1 is entered, anything sent to the screen will also be copied to the Printer. Assembler 2 will also duplicate data sent to the Printer, copying it to the screen. These routines are disabled by **Poke359, 57** and enabled by

Poke359, 126. This is a rather clumsy way of switching a routine in and out. It is much neater if one can just press a key to switch a routine on or off. In all the programs below, the **Shift** and **Right Arrow** keys are used to do this. To avoid confusion, all the programs report after the key press saying whether they are on or off.

Assembler 3 (or Basic #1) is the improved screen to printer copy routine.

Next week we shall use the same system to create an *List* formatting routine and a List speed control.

ASSEMBLER 1. SCREEN TO PRINTER.

```

7001          30      PRT
7001 3417      20 @START PSHS X,D,CC
7003 B6006F    20      LDA 111
7006 8100      20      CMPA #0
7008 2703      20      BEQ @CONT
700A 3517      20 @RETURN PULS X,D,CC
700C 39        20      RTS
700D 3517      30 @CONT PULS X,D,CC
700F B0800F    30      JSR #800F
7012 39        30      RTS
7012 39        30      ORG 359
0167          30      JMP @START
0167 7E7D01    30      END @START
016A
    
```

ASSEMBLER 2 BOTHWAY COPY.

```

7001          30      PRT
7001 3417      20 @START PSHS X,D,CC
7003 B6006F    20      LDA 111
7006 8100      20      CMPA #0
7008 2707      20      BEQ @PRINTER
700A 81FE      20      CMPA #-2
700C 2709      20      BEQ @SCREEN
700E 3517      20 @RETURN PULS X,D,CC
7010 39        20      RTS
7011 3517      30 @PRINTER PULS X,D,CC
7013 B0800F    30      JSR #800F
7016 39        30      RTS
7017 3517      30 @SCREEN PULS X,D,CC
7019 B0800C    30      JSR #800C
701C 39        30      RTS
0167          30      ORG 359
0167 7E7D01    30      JMP @START
016A          30      END @START
    
```

ASSEMBLER 3. KEY ON/OFF COPY.

```

7001          70      PRT
7001 3417      20 @START PSHS X,D,CC
7003 B6006F    20      LDA 111
7006 8100      20      CMPA #0
7008 2703      20      BEQ @CONT
700A 3517      20 @RETURN PULS D,X,CC
700C 39        20      RTS
700D 3517      30 @CONT PULS X,D,CC
700F 3417      30      PSHS X,D,CC
7011 815D      30      CMPA #93
7013 2710      30      BEQ @TOGGLE
7015 B67D57    30      LDA @TOGG
7018 8100      30      CMPA #0
701A 27EE      30      BEQ @RETURN
701C 3517      30      PULS X,D,CC
701E B0800F    30      JSR #800F
7021 3417      30      PSHS X,D,CC
7023 20E5      30      BRA @RETURN
7025 B67D57    40 @TOGGLE LDA @TOGG
7028 8100      40      CMPA #0
702A 270C      40      BEQ @SET
702C 7F7D57    40      CLR @TOGG
702F 8E7D4D    40      LDX #@TCLR
7032 B090E5    40      JSR 37093
7035 7E8371    40      JMP 33649
7038 7C7D57    40 @SET INC @TOGG
703B 8E7D44    40      LDX #@TSET
703E B090E5    40      JSR 37093
7041 7E8371    40      JMP 33649
7044 20434F5059204F4E 50 @TSET FCC " COPY ON",0
704D 20434F5059204F4E 50 @TCLR FCC " COPY OFF",0
7057 00        50 @TOGG FCB 0
0167          60      ORG 359
0167 7E7D01    60      JMP @START
016A          70      END @START
    
```

BASIC #1. KEY ON/OFF COPY.

```

10 CLEAR 200,32000
20 FOR A=32001 TO 32087
30 READ B:POKE A,B
40 NEXT A
50 POKE 361,1:POKE 360,125:POKE 359,126
60 STOP
100 DATA 52, 23, 182, 0, 111, 129, 0, 39, 3, 53, 23, 57, 53, 23, 5
2, 23, 129, 93, 39, 16, 182, 125, 87, 129, 0, 39, 238, 53, 23, 18
9, 128, 15, 52, 23, 32, 229, 182, 125, 87, 129, 0, 39, 12, 125
110 DATA 125, 87, 142, 125, 77, 189, 144, 229, 126, 131, 113, 124, 1
25, 87, 142, 125, 68, 189, 144, 229, 126, 131, 113, 32, 67, 79, 80
, 89, 32, 79, 78, 0, 32, 67, 79, 80, 89, 32, 79, 70, 70, 0, 0
    
```


Tel: 0344 427317

AUTOMANIA



WALLY WEEK

is here!

FOR COMMODORE 64 AND 48K SPECTRUM

WHO WILL JOIN THE EVIL DEAD NEXT?

FROM BRITAIN'S MOST
POPULAR HORROR FILM
COMES A MOST
EXCITING COMPUTER GAME

A FAST MOVING GAME
OF SKILL AND STRATEGY
FOR THE COMMODORE 64

THE EVIL DEAD

THE GAME THAT GUARANTEES SLEEPLESS NIGHTS!

AVAILABLE FROM
ALL GOOD COMPUTER
GAMES STOCKISTS INCLUDING
THE VIDEO PALACE
100 OXFORD STREET, LONDON W1.



275 PENTONVILLE ROAD, LONDON N1 9NL

DISTRIBUTED BY
PALACE VIRGIN GOLD
69 FLEMPTON ROAD,
LONDON E7 0 7NL
TELEPHONE: 01-539 5566

TURBO CHARGE YOUR SPECTRUM



Outperforms any Spectrum interface

The unique Turbo interface from Ram gives you all these features – and more – in one unit:

- * A variety of interfaces including: Rom cartridges, two 9-way D plugs for standard joysticks, PLUS full expansion bus at rear.
- * Compatible with Kempston and Protek protocols.
- * Works with latest Quickshot Mk II auto rapid-fire joysticks!
- * Choice of Rom cartridge or tape cassette software.
- * Instant program loading with cartridge software.
- * Built-in power safety device – unique to Ram Turbo.
- * Full one year guarantee.
- * Immediate availability – 24 Hr despatch on receipt of P.O./credit card details (cheques – seven days).
- * Incredible value – only £22.95.

So don't wait around – simply complete the coupon and send it to us today.

Or call our credit card hot line on 02514 25252. (Access and Visa welcome).

Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet, Hampshire GU13 8PA.

Please send me:

_____ Spectrum Turbo Interface(s) at £22.95
+ £1 p+p (overseas orders £3 p+p)

_____ Quickshot II Joystick(s) at £9.95
(Only when purchased with Turbo – normally £12.95 + £1 p+p)

I enclose cheque/postal order or charge my Access/Visa for: £ _____



Name _____

Address _____

Tel _____

To: Ram Electronics (Fleet) Ltd, 106 Fleet Road, Fleet, Hampshire GU13 8PA.

24 Hr
despatch for
credit cards and
postal orders



Trade and export enquiries welcome.

Trade Enquiries:

Microdealer
0727 34351

Prism
01-253 2277

Wynd up
061-872 5020

Ferranti + Craig
0722 33022

Pinnacle
0689 73141

Centresoft
021-520 7591

Lightning
01-969 8344

Leisuresoft
0604 46658

P.C.S.
0254 691211

R + R
0226 710414

Drake
0752 672235

Twang
0734 508608

FULL THROTTLE



You could be at Silverstone, Nurburgring, San Marino... or any of ten circuits in the world. You are at the back of the field of forty riders. The start is seconds away the flag drops! Can you fight to the front... and stay there?

3D Motor Bike
Grand Prix
on the
48K Spectrum — £6.95

MICROMEGA

Compatible with Kempston, Protek/AGF,
and Interface 2 joystick types.

Available through good
computer stores
everywhere.

Sorted and filed

Neil Barnes continues his multi-purpose facility program for BBC with 1.2 operating system

This is the second part of last week's program — a file program designed to make use of Mode 7 BBC graphics.

Procedures

PROCmenu

Function

Displays menu on screen

PROCtitle (TS, H) Prints title in double height
TS — text to be printed
H — X position of text
PROCdecide
Decides which option has been chosen
PROCnewfile
Allows a new file to be

PROCgetdata
PROCadd

PROCverify

PROCdump
PROCsort
PROCsearch

PROclist

PROCend

created
Inputs data from user
Allows extra items to be added
Allows the file to be verified
Dumps file to printer
Sorts the file
Searches for an item in file
Allows the user to view the file
Ends the program

```

1220 FOR loop1=N TO AI
1230 VDU31,0,13,134:PRINT"Item number:" "N";N;" "
1240 INPUTTAB(16,13)IT#
1250 PRINTTAB(15,13)STRING$(25," ")
1260 IF LEN(IT#)>15 SOUND1,-15,100,1:PRINTTAB(15,13)STRING$(25," "):GOTO1240
1270 IF IT#<>"***" file$(loop1)=IT#:N=N+1:SOUND1,-15,180,1
1280 IF IT#="***" THEN 1070
1290 IF AI=N THEN 1300
1300 NEXT
1310 IF N>AI VDU31,0,5,134:PRINT"You have used all the room that you":VDU134:PP
INT"allocated."
1320 DEFPROCverify
1330 PROCtitle("VERIFYING THE FILE",9)
1340 PRINT"
1350 VDU131:PRINT"Every item that you have inputted will"
1360 VDU131:PRINT"be shown.If you wish to change it"
1370 VDU131:PRINT"just type in the correct version."
1380 PRINT
1390 PRINT
1400 VDU135:PRINT"A file must have already been created,"
1410 VDU135:PRINT"if not the menu will be shown."
1420 VDU31,5,24,129:PRINT"Press SPACE BAR to continue"
1430 REPEAT UNTIL GET=32
1440 PROCtitle("VERIFYING THE DATA",9)
1450 REM Is data correct?
1460 PRINTTAB(25,5)STRING$(15," "):PRINTTAB(10,5)"Item number:" "X";X;" ":VDU13
0:PRINT;file$(X)
1470 PRINT:VDU133:PRINT"Correct? (Y/N)"
1480 A$=GET#
1490 IF A$="Y" OR A$="y" THEN SOUND1,-15,200,2:GOTO1540
1500 IF A$="N" OR A$="n" SOUND1,-15,60,1:VDU31,1,11:PRINTSTRING$(40," "):VDU31,
0,11,134:PRINT"Input correct value.":INPUTTAB(1,13)Q#
1510 IF LEN(Q#)>15 THEN VDU31,1,12:PRINTSTRING$(40," "):SOUND1,-15,100,1:GOTO15
00
1520 file$(X)=Q$:VDU31,0,11:PRINTSTRING$(40," "):VDU31,0,13:PRINTSTRING$(40," "
):SOUND1,-15,100,2
1530 GOTO1460
1540 NEXT
1550 PROCmenu
1560 ENDPROC
1570 DEFPROCdump
1580 REM Dump file to printer
1590 PROCtitle("DUMPING FILE TO PRINTER",5)
1600 VDU31,1,6:PRINT"This facility can only be used after a"
1610 PRINT" file has been created using OPTION 1"
1620 PRINT" otherwise the menu will be shown."
1630 PRINT"
1640 VDU131:PRINT"It is designed to be used in"
1650 VDU131:PRINT"conjunction with a PARALLEL printer."
1660 PRINT
1670 VDU133:PRINT"Make sure the printer has power and"
1680 VDU133:PRINT"that it is ON LINE."
1690 PRINT
1700 VDU134:PRINT"An alphabetical or numerical dump can"
1710 VDU134:PRINT"be attained by first using OPTION 5."
1720 VDU31,4,22,129:PRINT"Press SPACE BAR for printout"
1730 REPEAT UNTIL GET=32
1740 CLS
1750 PROCtitle("PRINTING ITEMS IN FILE",5)
1760 PRINT"
1770 FOR W=1 TO AI
1780 REM Enable printer
1790 VDU2
1800 PRINTfile$(W)
1810 NEXT
1820 REM Disable printer
1830 VDU3
1840 VDU31,4,22,134:PRINT"Press SPACE BAR to continue"
1850 REPEAT UNTIL GET=32

```

Continued over the page


```

1860 PROCmenu
1870 ENDPROC
- 1880 DEFPROCsort
1890 REM Sort file into order
1900 PROCtitle("SORTING THE FILE",8)
1910 VDU31,0,5:PRINT"This option will sort the file into"
1920 PRINT"alphabetical order."
1930 PRINT"Numbers are given precedence over"
1940 PRINT"letters."
1950 VDU31,0,11:PRINT"Do you want the complete file to be":PRINTTAB(8,9)STRING#
(32," "):SOUND2,-15,200,1
1960 INPUTTAB(0,12)"sorted ?"Z$
1970 IF Z$<>"Y" AND Z$<>"y" AND Z$<>"N"AND Z$<>"n" THEN 1950
1980 IF Z$="Y" OR Z$="y" THEN SZ=0:EZ=AI:GOTO2050
1990 IF Z$="N" OR Z$="n" THEN VDU31,0,15,131:PRINT"Which item number do you wan
t to start"
2000 VDU131:INPUT"from ?"SZ
2010 IF SZ<1 OR SZ>N PRINTTAB(7,16)STRING$(33," "):SOUND1,-15,100,1:GOTO1990
2020 VDU31,0,19,134:PRINT"Which item number do you want to end"
2030 VDU134:INPUT"at ?"EZ
2040 IF EZ>N OR EZ<=SZ PRINTTAB(5,20)STRING$(35," "):SOUND1,-15,100,1:GOTO2020
2050 VDU31,2,22,134:PRINT"Press SPACE BAR to sort file"
2060 REPEAT UNTIL GET=32
2070 PROCtitle("SORTING THE FILE",8)
2080 VDU31,7,10:PRINT"*** Sorting the file ***"
2090 REPEAT
2100 flag=0
2110 FOR CX=SZ TO EZ-1
2120 IF file$(CX)<=file$(CX+1) THEN 2170
2130 P$=file$(CX)
2140 file$(CX)=file$(CX+1)
2150 file$(CX+1)=P$
2160 flag=1
2170 NEXT
2180 UNTIL flag=0
2190 VDU31,7,10,134:PRINT"*** File now sorted ***"
2200 VDU31,6,20,133:PRINT"Press SPACE BAR for menu":REPEAT UNTIL GET=32:PROCmen
2210 ENDPROC

```

To be continued next week



Commodore 64

VIC-20

DRAGON 32

ABRASCO
A TOUCH OF MAGIC

Available Through: Good Distributors & Retailers

Including: J.MENZIES, TIGER Distribution, SDL.

ABRASCO The Grange Barn, Pikes End, Eastcote, Middlesex HA5 2EX. Tel: 01-866 9258

AT LAST!

A RANGE OF QUALITY ARCADE GAMES FOR THE SHARP MZ700

HUNCHY. A first for the Sharp! **£5.95**

Rescue Esmerelda from the castle via 8 screens of action-packed fun.

TWIN PACKS — Two fast m/c games for the price of one.

PACK I: U.F.O./NOUGHTS & CROSSES **£6.50**

U.F.O. — Prevent the invasion of earth by alien beings; the game features a high-score table and becomes faster as your score increases.

NOUGHTS & CROSSES — Standard game for two people but very fast.

PACK II: STARGATE/AIR ATTACK **£6.50**

STARGATE — Defend the Stargate and prevent the enemy entering your galaxy.

AIR ATTACK — With a World War I biplane, blast your way through five levels to the 21st century.

PACK III: MAZEMAN/SAUCER SIMON **£6.50**

MAZEMAN — Faster than Pacman and with many nasty modifications. Beat the ghost to the fruit and open the second maze.

SAUCER SIMON — Communicate with an alien craft by copying a series of colour tones. Up to 40 sequential tones and seven levels of difficulty.

MANY MORE PROGRAMS AVAILABLE

Send SAE for details. Trade enquiries welcome

ABACUS SOFTWARE LTD



21 UNION STREET, RAMSBOTTOM

NR BURY, LANCs

Tel: Bolton 53294



COURSEWINNER

The Punters Computer Program

COURSEWINNER allows you to use the power of your computer to get the edge on the bookmaker.

● COURSEWINNER contains a database full of detailed information on all English and Scottish flat courses.

The ten leading jockeys and trainers, and effect of the draw is detailed for each course.

This information can be displayed on the screen at any time.

● The program analyses these factors combined with the results of the last three outings, starting price and weight carried.

● COURSEWINNER is simple and quick to use, yet very powerful.

● Boxed with detailed instruction booklet.

Price £12.50 all inclusive IMMEDIATE DISPATCH (RETURN OF POST)

Available for:

SPECTRUM (48K), BBC (B), COMMODORE 64, DRAGON, APPLE II/IIe, ATARI (48K).

POOLSWINNER

The Ultimate Pools Prediction Program

● POOLSWINNER is the most sophisticated pools prediction aid ever produced. It comes complete with its own massive database.

● Can be used for Scoredraws, Draws, Aways and Homes.

● The database contains over 20000 matches (10 years league football). It updates automatically as results come in.

● The precise prediction formula can be set by the user. This allows development of your own unique method.

● Package is complete with program, database and detailed instruction booklet.

Price £15.00 all inclusive IMMEDIATE DISPATCH (RETURN OF POST)

Available for: SPECTRUM (48K), ZX81 (16K), BBC (B), COMMODORE 64, DRAGON,

APPLE II/IIe, ATARI (48K).

Available from dealers or direct (return of post) from:



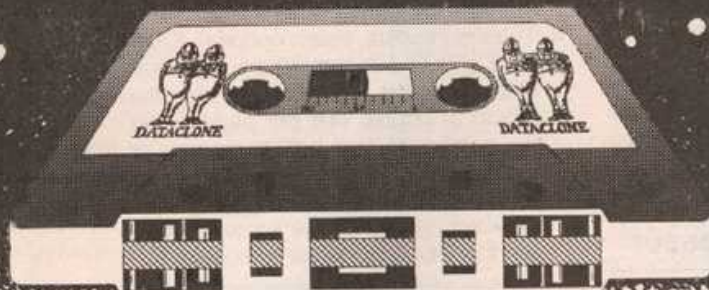
selec

SOFTWARE



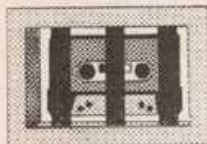
37 Councillor Lane, Cheadle, Cheshire. Phone: 061-428 7425

AN IMPORTANT ADVANCE IN DATA DUPLICATION



disc
duplication
now
available

'POWER LOAD' CASSETTES FROM DATACLONE



Added security against pirates

Power Load is a software controlled system that makes copying extremely difficult, either by audio or bit copying, or by code breaking. Moreover, conversion routines are altered regularly, so no permanent deciphering system can be successful.

Very fast loading

Loading time on the Commodore C64 is over three times faster than a normal cassette; Sinclair Spectrum is over twice as fast.



Ultra reliable

Uniquely, Power Load has been designed specifically for high volume production techniques. Power Load cassettes are at least as reliable as standard cassettes, unlike other systems.

Reduces costs

Using Power Load, a Commodore C64 cassette can be reduced from C30 length to C10 — a substantial cost saving. Available for C64; Spectrum. (BBC and Electron under development).



DATACLONE, Unit 1,

Roslin Square,

Roslin Road,

London W3 8DH.

Tel: 01-993 2134.

Telex: 21879. DATACLONE



Licensed exclusively to
DataClone by Incentive
Software Ltd

Full of character

Simon Wallace takes a closer look at the word processor

In the last issue, we looked at this word processor in fairly general terms. This week, we shall look more closely at its implementation.

The program has been coded in Basic, as described last week. However, one machine code routine has been included to give a fast, accurate guide to the location of the cursor. As this was found to be necessary, the routine has also been used to turn the border red if the cursor is near the end of a logical line or at that bottom of the screen. There is no other protection against losing data off the screen. (This is another area in which you may wish to improve the program.) The program as written leaves enough space to store over 20,000 characters of text. Any longer document would need to be split.

Most input values are set up with defaults. For example, pressing the *Return* key in response to line number and lines to display in the editor will select the end of file, displaying no data. This is the normal way to add to the text. Options for either all or part of the file will default to the whole file. All input values are validated where possible, and, in some cases, sensible but arbitrary values are used.

Definitions for the variables used in the program can be found in the Data Dictionary. There is also a table of the special characters used in Commodore Basic for screen and colour control. When typing the program, use the upper/lower case mode of the keyboard by first pressing Shift and the C= Commodore key. When the program runs it locks the keyboard in this mode.

Using the word processor

Most possible actions are explained on the screen. During an edit the whole screen is used for your data, so editor instructions must be understood in advance. If anything goes wrong see item 15 below.

- 1 Load the program and enter *Run*.
- 2 If you are changing previously entered text, select option *L* to load. Enter the filename. To select the whole file, press *Return* when asked for the start record number. When the file is found on the tape, the screen will turn green.
- 3 Select *E* for edit. Enter the line number to start at and the number of lines to show on the screen. Normally you should edit about ten lines at a time. If you only wish to add text to the end of the file, press *Return* both times instead of entering the numbers.
- 4 During the edit, depressing the *FE* key will enter the reformat routine. Enter the required width of the text. An additional indentation may be given if desired.

- 5 The *F5* key will create an additional line at the current cursor position.
- 6 Depressing *Shift* and *F5* (*F6*) will delete the line at the current cursor position.
- 7 The *Return* key will end the current logical line at the cursor.
- 8 The *F7* key will set the cursor to the start of the next logical line without affecting the current line.
- 9 A blank line should be created by typing the special character \leftarrow on its own on a line. A new page can be started by using \uparrow on its own.
- 10 The background will turn red if the cursor is near the end of a logical line, or at the bottom of the screen. Do not allow data to be lost by typing too much.
- 11 End the edit by depressing the *F1* key. Press *U* to update the data with your changes. Pressing *A* causes the changes to be aborted.
- 12 After an edit you should either enter the numbers for the next edit, or *e* to exit from the editor.
- 13 To save the data, select option *S*. Enter the filename and press *Return* to select the whole data. It is wise not to overwrite the previous version, so keep two different tapes. After the save, rewind the tape and select the verify option if desired.
- 14 To print the data, select option *P*. Enter start and end line numbers (or press *Return* for the whole file). Enter the length of printed text per page. Enter the number of lines between pages or -1 to manually adjust the paper. Enter the device number as shown. Use 3 to preview the text on the screen. 4 or 5 are the standard printer channels. En-

ter the width of margin required. Enter *Y* or *N* to select line numbering. When the computer pauses for pages or at the end of the print, depress a key to continue.

- 15 If you break *Basic* in some way, enter *Goto 999*. This will prevent your data being lost.
- 16 At the end of your work, select option *F* to return to *Basic*. Make sure you have saved or printed first as the data is lost.

Word processor — data dictionary

a	menu option selected
bl\$	blank line (40 spaces)
cd\$	25 cursor down\$
dev	device number to <i>Print</i> on
el	edit line — start line no
en	edit number — no of lines to display
eof	end of file
fi\$	filename for <i>Load</i> or <i>Save</i>
lc	line count (whilst printing)
lr	lines returned on screen
mg\$	margin
out\$	general purpose output line
pe	print end line no
pg	page gap = blank lines between pages
pl	page length
ps	print start line no
qu\$	quote character
q2\$	quote + comma
rl	required line — cursor position
sc\$	array of text read from screen
st	status of tape transfer — see manual
tx\$	array holding main text
x\$	character input from keyboard
xa	ascii value of typed character
x	line no of cursor
y	character position of cursor
yn	yaw no — change in file length due to edit

(Other variables have temporary use only)

Special characters

The following special characters are used in *Print* statements.

\downarrow	CRSR down
\rightarrow	CRSR right
\square	clear screen
\rightarrow	cursor HOME
\blacksquare	colour BLK
\diamond	colour YEL
\square	colour WHT


```

4300 rem.."SCREEN CONTROL"
4310 sys 49152 : x=peek(253) : y=peek(254) : if y>39
then y=y-40
4340 z=x#40+y+1024 : c=peek(z) : c=c or 128 : poke z,c
4360 get x$ : if x$="" then 4360
4365 c=c and 127 : poke z,c : print x$ : xa=asc(x$)
4367 if xa=13 then poke z,34 : poke z+1,44 : gosub 710
4368 if xa<133 then 4310
4369 if xa=136 then print "" : gosub 710 : rem "F7"
4370 if xa=135 or xa=139 then gosub 4500 : rem "F5" or "F6"
4380 if xa=133 then return : rem "F1"
4385 if xa=134 then gosub 4700 : rem "F3"
4390 goto 4310
4500 rem.."INSERT/DELETE LINE"
4510 rl=x : gosub 600 : gosub 800
4520 if ln=0 then 4550
4530 for k=1 to ln
4540 print q$;sc$(k);q2$ : next k
4550 sys 49152 : x=peek(253)
4553 if xa=135 then ln=ln-1 : print q$,bl$;q2$
4555 if ln<ln+2 then 4580
4560 for k=ln+2 to ln
4570 print q$;sc$(k);q2$ : next k
4580 sys 49152 : print " ",left$(cd$,x);
4590 return
4700 rem.."REFORMAT"
4710 rl=0 : gosub 600 : w=70 : m=0 : print "REFORMAT TEXT"
4720 print " Total width required (20-76)"
4725 input " (0 to abandon)";w
4727 if w=0 then 4870
4730 if w<20 or w>76 then 4720
4740 input " Width of extra indentation (0-40)";m
4750 if m<0 or m>40 or w<m+20 then print "ERROR" : goto 4720
4760 rem remove leading spaces
4770 for i=1 to 25
4780 for j=1 to 80
4790 if mid$(sc$(i),j,1)="" then 4800
4795 next j
4800 l=len(sc$(i)) : sc$(i)=right$(sc$(i),l-j+1)
4805 next i
4810 m9$=left$(bl$,m) : i=1 : gosub 800
4815 out$=m9$ : k=u-m : sp$="" : sp=0
4820 l=len(sc$(i))
4821 if sc$(i)="" then 4825
4822 if k<u-m then print q$,out$;q2$
4823 print q$;sc$(i);q2$ : i=i+1 : goto 4815
4826 if l<1 then i=i+1 : goto 4830
4827 if l>k-sp then 4840
4828 out$=out$+sp+sc$(i) : k=k-l-sp : i=i+1 : sp$="" : sp=1
4830 if i>25 then print q$,out$;q2$;" " : return
4835 goto 4820
4840 s=0 : for j=1 to k+1-sp : if mid$(sc$(i),j,1)="" then s=j
4845 next j
4850 if s>0 then out$=out$+sp+left$(sc$(i),s-1) : sc$(i)=
right$(sc$(i),l-s)
4853 if s=0 and k=u-m then poke 53280,10 : sc$(i)=
left$(sc$(i),u-m)
4855 print q$,out$;q2$ : goto 4815
4870 rem..reinststate screen
4875 gosub 800
4880 for j=1 to ln : print q$;sc$(j);q2$ : next j
4890 print " " : return
4900 rem.."UPDATE"
4910 rl=0 : gosub 600
4972 print " Lines displayed = ";ln
4973 print " Lines returned = ";lr : yn=lr-en
4979 print " Update or Abort? (U or A)"
4980 gosub 520
4981 if x$="u" then 4984
4982 if x$="a" then return
4983 goto 4980
4984 if lr>en then 4988
4985 if lr<en then 4990
4986 goto 4994
4988 for j=eof to el step -1 : tx$(j+yn)=tx$(j) : next j
: goto 4994
4990 for j=el to eof : tx$(j)=tx$(j-yn) : next j
4994 eof=eof + yn : print " End of file now at ";eof

4995 if lr>0 then for j=1 to lr : tx$(j+el-1)=sc$(j) :
next j
4997 for j=1 to 2000 : next j
4999 return
5000 rem.."PRINT ROUTINE"
5005 poke 53280,2 : poke 53281,10
5010 print " Printing Options:"
5015 ps=1 : pe=eof : pl=10 : pg=-1
5020 input " Enter start line no";ps
5030 input " Enter end line no";pe
5040 input " Enter page length";pl
5045 if pl<1 then 5040
5050 input " Enter page gap (or -1 to Pause)";pg
5060 if ps<1 then ps=1
5070 if pe=eof then pe=eof
5080 if ps>pe then return
5100 print " Enter device to print on"
5102 print " 3 = TV Screen"
5104 print " 4 = Normal Printer Channel"
5106 print " 5 = 2nd Printer or Printer/Plotter"
5110 dev=3 : input dev : if dev<3 then 5100
5120 if dev>5 then 5100
5150 m=0 : input " Enter margin width";m
5160 m9$=left$(bl$,m)
5170 print " Show text line numbers? (y or n)"
5175 ls="n" : input ls
5199 print " "
5200 open 2,dev,7
5210 lc=0
5220 for i=ps to pe
5250 if lc=pl then gosub 550
5260 if tx$(i)="" then 5280
5264 if lc=0 then 5290
5268 if pl>500 then print "Page throw invalid - Page
too long" : goto 5300
5270 print#2 : lc=lc+1 : goto 5250
5280 if tx$(i)="" then print#2 : goto 5288
5284 if ls="y" then m9$=right$(bl$+str$(i),4)+left$(bl$,m+1)
5286 print#2, m9$;tx$(i)
5288 lc=lc+1
5290 next i
5300 close 2
5900 gosub 510
5999 return
6000 rem.."SAVE ROUTINE"
6010 poke 53280,6 : poke 53281,14
6020 print " SAVE DATA FILE ON TAPE"
6030 gosub 3025
6031 rem..get filename etc
6035 if k>eof then k=eof
6040 if fl$="" or k<j then return
6100 open 3,1,1,fl$ : poke 53280,5
6110 for l=j to k : print#3,q$;tx$(l);q$ : next l
6200 close 3 : poke 53280,6
6300 print " Do you wish to verify (Y or N)?"
6310 gosub 520
6320 if x$="n" then return
6330 if x$<"y" then 6300
6400 print " Rewind tape" : gosub 510
6410 open 3,1,0,fl$ : poke 53280,5
6420 for l=j to k : input#3,out$
6430 if st=0 and out$=tx$(l) then next l
6440 if l=k and st=64 then print " OK" : goto 6500
6450 print " VERIFY ERROR!"
6460 print " Error status reply = ";st
6470 print " Record number = ";l
6480 print " (Last record should be ";k;")"
6500 close 3 : poke 53280,6
6900 gosub 510
6999 return
7000 rem.."FINISH ROUTINE"
7010 print " Do you really want to return to BASIC?"
7020 gosub 520
7030 if x$="n" then return
7040 if not x$="y" then 7020
7100 poke 53280,3 : poke 53281,6
7110 print chr$(142);chr$(147);chr$(9);chr$(159)
7200 end
9999 rem.."END OF PROGRAM"

```


TITANIC

The Adventure Begins...

With Currah Micro Speech

FREE on Side 2
a min-epic in high energy rock
TITANIC (The music)



FOR 48K SPECTRUM

R&R Software Ltd, 5 Russell Street, Gloucester GL1 1NE. Tel: 0452 502819

NOW AVAILABLE
ONLY £7.95

THE



RUN

..... IS HERE

FOR 48K SPECTRUM & COMMODORE 64

POPULAR
Computing
WEEKLY

★ CLASSIFIEDS ★

- ★ Popular Computing Weekly was voted magazine of the year by the C.T.A.
- ★ It is Britain's only weekly home computer magazine with a published Audit Bureau of Circulation sales figure.
- ★ It has a classified section that is now required reading for everyone with an interest in small micros, or who wants to buy or sell: SOFTWARE ★ UTILITIES ★ ACCESSORIES ★ SERVICES ★ HARDWARE ★ HIRING ★ CLUBS ★ RECRUITMENT ★
- ★ £6 per SCC semi-display, 25p per word lineage.
- ★ 6 day copy date.

CALL DIANE DAVIS ON 01-437 4343 FOR AN IMMEDIATE QUOTE.

Popular Computing Weekly, Sunshine,
12/13 Little Newport Street, London WC2R 3LD



MicroNation

Educational and Personal
Software Agents and Developers

- * Have you written a program but don't know where to place it?
- * There are hundreds of software publishers — in this country and abroad — some good, some bad
- * An agency is an organisation which represents you and your interests in placing your software for publication with a software house.
- * Get in touch with us at MicroNation — our job is to help you sell your program to the right company at the best possible rates.

For further information and a brochure contact:-

MicroNation Ltd.,
41 Walter Road,
SWANSEA SA1 5PN.

Telephone (0792) 476203

THE MEGASAVE SAVINGS

SPECTRUM	SPECTRUM	COMMODORE
SABLE WOLF..... 8.25	ATICATAK..... 4.75	SON OF BLAGGER..... 6.50
PSYTRON..... 6.30	AUTOMANIA..... 5.75	BEACH HEAD..... 8.50
MUGSY..... 5.95	BLUETHUNDER..... 4.75	VALHALLA..... 11.50
JACK & BEASTALK..... 4.95	INFERNO..... 5.50	QUILL..... 11.50
FIGHTER PILOT..... 6.25	CODE NAME MAT..... 5.20	SHEEP IN SPACE..... 6.40
TORNADO LOW LEVEL..... 4.75	MILLIONAIRE..... 4.50	CYRPOD..... 5.50
HULK..... 8.50	COOK BOOK..... 8.50	LOCO..... 6.50
LORDS OF MIDNIGHT..... 8.50	SINK THE TITANIC..... 6.75	HULK..... 6.50
KOSMIC KANGA..... 5.10	SPEGRAPH..... 8.25	ARABIAN KNIGHTS..... 5.85
JET SET WILLY..... 4.75	COSMIC CRUISER..... 4.25	SOLO FLIGHT..... 12.00
BEAKY..... 4.85	WORLD CUP F'BALL..... 5.95	BOZO'S N OUT..... 5.50
AD ASTRA..... 4.95	GILLIGAN'S GOLD..... 4.75	STAR TROOPER..... 5.75
NIGHT GUNNER..... 5.50	QUILL..... 10.75	CAVELON..... 5.55
FOOTBALL MANAGER..... 5.55	H.U.R.G..... 10.99	ENCOUNTER..... 8.75
TRASHMAN..... 4.75	BLADE ALLEY..... 4.75	HOUSE OF USHER..... 5.85
MOON ALERT..... 4.70	3D LUNA ATTACK..... 4.75	CHUCKIE EGG..... 6.75
ANTICS..... 5.75	CAESAR THE CAT..... 5.95	BONGO..... 6.30
WARS OF THE WORLD..... 6.75	PYRAMID..... 4.95	OLYMPIC SKIER..... 4.99
LES FLIES..... 5.50	ANDROID II..... 4.75	ALL 2700 INTERCEPTOR..... 5.75
CAVELON..... 4.95	PENNY..... 4.95	ALL 27.95 ANILOG..... 6.30

FREE POST. PLEASE STATE WHICH MICRO.
SEND CHEQUE/P.O. TO:
MEGASAVE Dept 1, Westbourne Terrace, London W2

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.

Moonlander

on Vic20

This is a version of the old arcade favourite for the unexpanded Vic. It is in two parts, first *Load* and *Run* the first program as this

gives the instructions and sets up the udg's. When the first program has been *Run*, proceed and *Load* the second program (the game). When the program has been loaded you can run it and play the game.

```

1 REM*****
2 REM* MOONLANDER *
3 REM*****
4 REM* D.J.PATERSON *
5 REM*****
6 REM* CORBY (1984) *
7 REM*****
8 REM
9 POKE52,28:POKE56,28:POKE60,255:GOTO200
10 FORL=7280T07679:POKE1,PEEK(L+25600):NEXTL
20 FORL=7168T07279:READQ:POKE1,Q:NEXTL
25 PRINT"PLEASE PRESS 'RETURN'"
26 PRINT"LOAD IT":END
30 DATA24,126,255,255,126,36,66,231
40 DATA90,90,90,66,36,24,0,0
50 DATA255,255,255,255,255,255,255,255
60 DATA54,202,129,65,34,66,70,56
70 DATA6,57,64,112,16,16,33,14,14,179,68,2,2,4,
126,56
80 DATA0,0,18,63,253,255,255,255
90 DATA36,60,126,231,253,255,66,0
100 DATA144,2,72,0,146,0,80,2
110 DATA16,36,124,254,170,254,60,130
120 DATA1,3,103,78,123,63,16,28
130 DATA128,192,230,114,222,252,8,56
140 DATA0,0,0,8,16,8,16,8
150 DATA16,8,16,8,16,0,0,0
200 POKE36879,25
210 PRINT"
220 PRINT"      MOONLANDER      "
230 PRINT"
240 PRINT"      D.J.PATERSON      "
250 PRINT"
260 PRINT"YOU MUST LAND YOUR      SPACESHUTTLE ON
ONE OF THE LANDING PADS ON"
270 PRINT"THE MOON. THIS MAY      SOUND EASY BUT
BEFORE YOU CAN LAND YOU MUST
280 PRINT"NAVIGATE YOUR SHIP      THROUGH AN
ASTEROID FIELD!!!"
290 PRINT"WHEN YOU HAVE LANDED    YOU MUST THEN GET
BACK TO THE MOTHERSHIP."
300 PRINT"SHOOTING ALIENS FOR     EXTRA POINTS."
310 PRINT"PRESS ANY KEY TO CONT."
320 GETA$:IF A$=" "THEN G20
330 PRINT"
331 PRINT"      MOONLANDER      "
332 PRINT"
333 PRINT"      D.J.PATERSON      "
334 PRINT"
340 PRINT"XXXXXXXXXXCONTROLS"
350 PRINT"XXXXXXXXXX
360 PRINT"XXXXXXXXXX - LEFT  XXXXXX - RIGHT
370 PRINT"XXXXXXXXXX - LUNCH & FIREX"
380 GOTO10
400 POKEA+22,0:POKEA+22+2
410 POKE36877,200:FORT=1T099:NEXTT
420 GETZ$:IF Z$=" "THEN POKE36877,2
430 GOTO210
490 QM=PEEK(Q+1)
491 IF QM=30RQM=100RQM=11THENJ$="YOU CRASHED
INTO AN ALIEN!!!!!"
492 IF QM=30RQM=40RQM=5THENJ$="YOU HIT AN ASTEROID"
493 IF QM=6THENJ$="YOU CRASHED INTO THE MOON!!!!!"
494 IF QM<7680THENJ$="YOU MISSED THE SHIP AND ARE
NOW LOST IN SPACE!!!!!"
495 IF J$=" "THEN RETURN
496 QX=0:GOTO680
500 POKE1,13:FORL=128T0235
510 POKE5,L:POKE5,L+20
520 POKEA+Y+0,10:10=10+1:IF 10=8THEN 10=1
530 NEXTL
535 POKE5,0:SC=SC+32
540 RETURN
580 M=M+22
590 IF M<40:IF PEEK(M)=90RPEEK(M-22)=5THEN 560
600 IF PEEK(M)=100RPEEK(M-22)=10THEN ZX=1:GOTO670
610 IF PEEK(M)=110RPEEK(M-22)=11THEN ZX=-1:GOTO670
620 IF M<7702THEN M=0:RETURN
630 POKEM,13:POKEM-22,12
640 RETURN
650 IF PEEK(M)=90THEN POKE5,0:GOTO660
660 M=M-22:POKEM,6
670 FORL=15T026STEP-3:POKE5,L:POKE5+1,242
680 FORT=1T0100:NEXTT
690 SC=SC+130:POKE5+1,0:POKEM,32
700 M=0:RETURN
710 IF PEEK(M)<32THEN POKEM,6:POKEM+ZX,6:GOTO672
720 M=M-22:POKEM,6:POKEM+ZX,6
730 FORL=15T026STEP-3:POKE5,L:POKE5+1,242
740 FORT=1T0100:NEXTT
750 SC=SC+100:POKE5+1,0:POKEM,32:POKEM+ZX,32
760 ZX=0:M=0:RETURN
800 FORL=15T026STEP-1
810 POKE5,L:POKE5+1,260
820 POKEA+Y+22,32:POKEA+Y,8
830 FORF=1T07
840 FORT=1T010:NEXTT
850 POKEA+Y+0,P:NEXT NEXT
860 POKE5+1,0
870 PRINT"POKE5-3 25 POKE5-7 242"
880 PRINT"YOU SCORED 150"
890 PRINT"MAKE ANOTHER GAME (Y/N)?"
900 POKE198,0
910 GETZ$:IF Z$=" "THEN RETURN
920 IF Z$="N"THEN 890
930 END
1000 A$(1)="M I JK "
1010 A$(2)="M I I JK "
1020 A$(3)="M JK JK "
1030 A$(4)="M JK I "
1040 A$(5)="M I "
1050 A$(6)="M I JK "
1060 A$(7)="M I I JK "
1070 FORL=7700T08140STEP22:POKE1,32:POKE1+1,32:NEXT
1080 RETURN

```


SPECTRUM OWNERS
A T.V. MONITOR FOR THE PRICE OF A GAME?
WITH THE NEW MICRODELERIUM
MONITOR INTERFACE
YES!!!

Simply connect monitor interface to video in socket of your video recorder, connect video recorder to T.V.

YOU NOW HAVE A COMPOSITE VIDEO MONITOR

Flicker free display.
 No Ghosting or Drift.

Will also enable you to record programs, games etc. to videotape for later analysis or demonstration. Study your game playing technique.

PRICE ONLY £14.95 inc. VAT, postage etc.

Microdrive compatible. Has its own expansion slot. Supports all

peripherals. Runs all software.

Requires BNC socket as video in socket on recorder. See Below.



CHEQUES, POSTAL ORDERS PAYABLE TO:



MICRODELERIUM LTD.

2 ABBEY CLOSE, GIPPENHAM, NR. SLOUGH, BERKS. SL1 5HZ.

ACCESS/BARCLAYCARD ORDERS BEING TAKEN NOW on BURNHAM
 (06286) 63571, 24hr. SERVICE.

DEALER ENQUIRIES WELCOME

P.S. DO YOU WANT FAME, SUCCESS AND RICHES?
 SO DO WE!!

SEND US A COPY OF YOUR PROGRAM FOR APPRAISAL AND LETS SEE WHAT WE CAN DO TOGETHER.

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.

25,000 *HUSTLER PLAYERS CAN'T BE WRONG!!

Don't miss the full range of magical programs for your Commodore

Available from:

W. H. SMITH, LASKYS, LIGHTNING DEALERS, SPECTRUM SHOPS, GREENS, HMV SHOPS, GAMES WORKSHOPS, CENTRESOFT and PCS STOCKISTS and all Good Dealers.

***HUSTLER is a realistic Pool simulation.**

or direct from:



bubble bus software

87 High Street, Tonbridge, Kent TN9 1RX
 Telephone: 0732 355962

Write your own machine code adventures

Without any knowledge of machine code whatsoever

AVAILABLE NOW

THE QUILL
 FOR THE
 COMMODORE 64

AVAILABLE NOW

THE QUILL is a major new utility written in machine code which allows even the novice programmer to produce high-speed machine code adventures of superior quality to many available at the moment without any knowledge of machine code whatsoever.

Using a menu selection system you may create well over 200 locations, describe them and connect routes between them. You may then fill them with objects and problems of your choice. Having tested your adventure you may alter and experiment with any section with the greatest of ease. A part formed adventure may be saved to tape for later completion. When you have done so *THE QUILL* will allow you to produce a copy of your adventure which will run independently of the main *QUILL* editor, so that you may give copies away to your friends.

THE QUILL is provided with a detailed tutorial manual which covers every aspect of its use in writing adventures.

Please send me details and an order form for
The Commodore Quill

I enclose a stamped addressed envelope

I am interested in

Please tick

GILSOFT

30 Hawthorn Road
 Barry
 South Glamorgan
 CF6 8LE
 ☎(0446) 732765

Disk Version £19.95 ☐

Cassette £14.95 ☐

Dealer enquiries welcome

Open Forum

```

1 V=7680:Z=0:V=1:C=30720:G=10:U=Y:SC=0:R=22
2 S=36876:S1=S+2:X=0
3 PRINT "C":POKE$+3,8:POKE$+15:POKE$-7,255
4 POKE$50,255
5 Q$="XXXXXXXXXXXXXXXXXXXX"
6 FORL=8164TO8185:POKE$+L:NEXTL
7 FORD=1TO2
8 Q=INT(RND(1)*22)+8164:POKE$+Q:NEXTD:D=0
9 A$(1)=" DE C DE "
10 A$(2)=" DE C "
11 A$(3)=" DE DE "
12 A$(4)=" C DE "
13 A$(5)=" C "
14 A$(6)=" DE C C "
15 A$(7)=" DE C "
16 FORI=0TO21
17 Q=3
18 FORD=1TO6STEP2
19 PRINTLEFT$(Q$,Q)RIGHT$(A$(L),22-I)LEFT$(A$(L),I)
20 Q=Q+2
21 PRINTLEFT$(Q$,Q)RIGHT$(A$(L+1),I)LEFT$(A$(L+1),22-I)
22 Q=Q+2:NEXTL:IFQ>19THEN80
23 FORL=2TO4STEP2:GOTO26
24 IFPEEK(X+Y)=32ANDG<10THENPOKE$+Y,1
25 GOSUB490
26 IFR=-22THENPOKE$+U,7:POKE$+U+3,3:GOTO130
27 POKE$+Z,32:Z=Z+V

```

```

110 IFZ<10RZ>20THENV=-V
120 POKE$+Z,7:POKE$+Z+3,3
130 GETZ$
135 IFZ$="N"ORZ$="M"THENPOKE$+X,32:IFPEEK(X+Y+22)=1THENPOKE$+Y+22,32
137 IFG=10ANDZ$<>"Z"THENFORT=1TO50:NEXTT:NEXTI:GOTO20
140 IFZ$="N"ANDX<0ANDG<10THENX=X-1
150 IFZ$="M"ANDX<21ANDG<10THENX=X+1
160 IFZ$="Z"ANDG<10ANDR=22THENH=0:GOTO120
162 IFZ$="Z"ANDR=-22ANDM=0THENM=-22:GOSUB600
165 POKE$+1,0
170 IFZ$="Z"ANDG=10THENY=U+22:X=Z:G=22
200 GOSUB490
205 IFPEEK(X+Y)=7THENS=SC+500:R=22:G=10:CY=0:GOTO20
210 H=H+1:IFH=2THENH=0:POKE$+Y,32:Y=Y+R:SC=SC+INT(RND(1)*20)+10:GOTO200
220 POKE$+Y,0:POKE$+Y+1,1
225 IFM<0THENGOSUB610
230 IFPEEK(X+Y+22)=2THENS=SC+500:R=-R:POKE$+U,32:Z=11:GOSUB500:GOSUB1000:CY=1:GOTO24
290 IFCX=1THEN40
300 NEXTI
310 IFR=22THEN20
320 GOTO80

```

Moonlander
by D Patterson

Microradio

GW6JJN



A giant umbrella

Last week I mentioned wrist radios. No it wasn't a joke. It has become a real and exciting possibility. The aeronautical and space company Lockheed have announced and demonstrated a giant antenna of aerial that is to be used in space.

Originally developed for NASA, the antenna will measure over 50 metres across. Its design is like that of an enormous flower consisting of petals made from graphite epoxy and a fine mesh of gold-plated wire. The antenna can be rolled up and loaded aboard the space shuttle for transporta-

tion into space. Once the shuttle is in orbit, the antenna will be off loaded and unfurled rather like a giant umbrella.

The sheer size of the antenna will make it extremely sensitive to tiny signals from Earth. A small wrist radio will be quite sufficient for the space antenna to pick up the signal, say Lockheed. Once the signal has been received, it can be retransmitted by the logic onboard the antenna satellite to anywhere within the hemisphere that can be "seen" by the antenna. This will provide communication throughout a complete continent such as Europe or North America.

The antenna will be in an orbit that is about 24,000 miles above the surface, placed in such a way that the dish is geostationary. That means that it will be in an orbit calculated to be the same as the Earth's own orbit and, therefore, to all intents and purposes, always in the same area.

Geostationary orbits are old hat now that the television satellites use them, but this antenna will mean that not only simple communication will be possible, but also some very interesting geophysical research. An example of this will be the relaying of radio-telescope signals from outside the atmosphere of Earth which is always a limiting factor.

There are vast areas of the Earth that are inhospitable and completely without any telecommunications. Areas such as Northern Canada and Alaska will be opened up and expeditions and research teams will no longer be cut off from the outside world. This will enable the exploration of these areas to be conducted more safely and the search for natural resources made a less hazardous undertaking.

With the use of computerised packet switching techniques, many consumers could be handled each with their own wrist radiophone. The possibilities are really enormous

and it will mean that emergency services and help could be summoned instantly. The very idea of wrist radios is very "Tommorrows World" in concept, but the Lockheed project brings that idea much closer.

The success of the project will obviously decide the future of the idea which is really only new in scale, but this may well be the forerunner of larger antennas that will revolutionise communications as we know them. To get some idea of the scale of this, think of the dome of St Paul's Cathedral in orbit. More on revolutionary communications next week when we shall look at cellular radio.

Ray Berry GW6JJN

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.

Meteors

on BBC

This is a very simple game in which you have to steer your spaceship through a

meteor field. The longer you survive, the higher your score is. The skill level reflects the speed of the game, 1 is fast, 10 is manageable.

The game works basically by testing to see if Z or X has been pressed and then moving the ship appropriately. The meteors

are printed randomly at the bottom of the screen and they scroll up. Line 160 checks to see if the ship has crashed.

I have tried to make this game as compact as possible so there is plenty of scope to improve it, eg, colour, multi-colour characters. The keys are: Z left. X right.

```

10*TV254
20H=10
30MODE5
40VDU23,240,0,24,60,126,126,126,30,0,23,241,238,238,254,124,56,56,56,16,23;10
,32,0;0;0;
50PRINTTAB(0,3)"Enter skill level"
60PRINTTAB(0,4)" 1 to 10."
70flag=TRUE:REPEAT:INPUTTAB(6,5)SK:IFSK<1 OR SK>10 THEN VDU7:flag=FALSE:UNTIL
flag
80CLS:TIME=0:REPEAT
90SOUND0,-10,20,1
90K$=INKEY$(0)
100IFK$="Z"THEN H=H-1
110IFK$="X"THEN H=H+1
120IFH<1THENH=1
130IFH>18THENH=18
140FORT=1 TO (SK*5):NEXT
150PRINTTAB(H,0)CHR$241
160IFPOINT((H*64)+32,970)<>0THENPROCcrash
170PRINTTAB(RND(19),31)CHR$240
180IFK$<>"":PRINTTAB(H,0)" "ELSEPRINTTAB(H,0)CHR$241
190UNTILFALSE
200DEFPROCcrash
210*FX15,0
220FORC=1 TO 15:FORD=1 TO 25:NEXT:VDU19,0,C,0,0,0,0:SOUND0,-15,C*10,1:VDU19,1,C+
128,0,0,0,0:NEXT:VDU19,0,0,0,0,0,19,1,1,0,0,0:CLS
230PRINTTAB(0,5)"Your score was ";TIME
240PRINTTAB(0,10)" Another go(Y/N)"
250REPEAT:A$=GET$:UNTILA$="Y" OR A$="N"
260IFA$="Y" THEN RUN ELSE END
270ENDPROC
    
```

Meteors

by Phillip Venables

Arcade Avenue

Stop the express

I'm pleased to see that Sinclair's new arcade games have finally seen the light of day (no that's not another dig at their delivery dates). The quality of the games is very high and they are reasonably original.

Of the four games I have seen, I got on least well with *Zipper Flipper* which is like a cross between a pinball machine, a fruit machine and breakout. It was a bit slow and the copy I saw had no instructions.

Driller Tanks has some nice graphic animation and is vaguely reminiscent of *Dig Dug* where you burrow around beneath the surface of the earth avoiding or shooting monsters. Although a familiar format, the game is streets ahead of any version of *Dig Dug* for this micro.

Eric and the Floaters was one of the best games — broadly you run around a maze being chased by large and unnecessarily aggressive balloons (a touch of *The Prisoner* here perhaps?). The graphics, movement and game design are extremely good. Your defence against the balloons is to leave time bombs in their path and hope they are close enough by the time it goes off.

Certainly the most impressive game is *Stop the Express*. It's a wonderful concept based on all those old films where the bad guys chase the good guy along the top of a speeding train. It's also superbly executed with many nice touches like electricity pylons that whizz past giving a real illusion of movement. Playing the game is a bit like playing an exciting version of *Hunchback*.

Above all, this game is hard, hard, hard, and very addictive. If you do get caught you are thrown off the train in an apparently agonising and certainly lethal tumble of limbs. Not for the faint-hearted.

Whilst on the subject of *Hunchback* you should check out *Punchy* from Mr Micro. Although just a jazzed up version of the original game, it is based on Punch and Judy where you play Bobby trying to rescue Judy from the booth by leaping various obstacles, dodging flying sausages, etc. The quality of the graphics makes the original game look poor.

It's a shame so many Spectrum owners must already have the Ocean copy of *Hunchback* because, although less faithful to the original theme, this program has a tremendous sense of fun.

However, the game has also

been released for a range of computers ranging from the geriatric Vic20 to the as yet unreleased Armstrad where it should do very well. It is a sign of the quality of the game that Commodore themselves are distributing the version for the CBM64.

Finally, may I congratulate Mr Micro for the quality of their packaging — a large well designed box that displays no less than four screen shots of the action. If we are to see the age of flashy packaging, then I hope it will all become as informative as this.

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.



A RARE OPPORTUNITY TO BECOME A
PROGRAMMER FOR A LEADING
SOFTWARE HOUSE

**PROGRAMMERS
PROGRAMMERS
PROGRAMMERS**

REQUIRED FOR COMMODORE 64 AND
ANY Z80 BASED MACHINES

PROGRAMMERS MUST HAVE AN
EXCELLENT COMMAND OF MACHINE CODE
AND IT IS ESSENTIAL THAT YOU ARE
AWARE OF THE IMPORTANCE OF GOOD
GRAPHICS

*IN THE FIRST INSTANCE WRITE ENCLOSING A SMALL
SAMPLE OF YOUR STANDARD OF PROGRAMMING*

**TO: SOFTWARE DEVELOPMENT MANAGER
ANIROG SOFTWARE LTD.
29 WEST HILL
DARTFORD
KENT**

New from

MIRRORSOFT

Watch out for HI BOUNCER!

leaping your way—a test of speed and tactics with four screens each with eight stages. Keep Mr. Bounce working hard and score points... if you can! HI BOUNCER! tests reflexes and game tactics to the limit. It's so tough that a separate 7-level practice program for kid brother (or dad!) is included.

On cassette for the BBC B (versions for the CBM 64 and Spectrum coming soon). £6.95



Discover the excitement of creative computing with

GO SPRITE

a versatile, easy-to-use sprite editor for the Commodore 64 which also demonstrates animation sequences on-screen. With a choice of joystick, lightpen or user-definable keyboard control Go-Sprite has an icon-driven command system for ease and speed of use.

Go-Sprite can handle up to 32 HiRes or Multicolour sprites and produce overlays up to seven layers.

Sprite data files can be made on disk or tape and two accompanying programs enable you to produce data and arrays for use in your own programs.

For the Commodore 64, on cassette £9.95; or disk £11.95.

All prices are inclusive of VAT. Mirrorsoft programs are available from larger branches of Boots, John Menzies and W.H. Smith and from other leading software stockists.



Go hunting with CAESAR THE CAT

Help Caesar clear the larder of mice. Hunting along crowded shelves you guide Caesar as he chases persistent mice which are devouring plates of food. Widely praised when launched on the CBM 64, acclaimed on the Spectrum, Caesar is now here for BBC B owners.

On cassette for BBC B and Spectrum £6.95 and CBM 64 £8.95.

Cuddle your own CAESAR



We have had so many requests for a soft-toy version of Caesar, the lovable black and white cat featured in our much praised program Caesar the Cat, that we have had some made. He is cute and cuddly, with a body length of approx. 12 inches. He is yours (mail order only) for £8.50 (inc. p & p), while stocks last.

To MIRRORSOFT, PO Box 50, Bromley, Kent BR2 9TT

I enclose a cheque/PO for £..... made payable to 'Reader's Account', Mirror Group Newspapers Ltd.

Please send me the following (enter number required of each item in the space provided):

	Price	Spectrum 48K (01)	BBC B (03)	Electron (04)	CBM64 (05)
Hi-Bouncer! (HB01)	£6.95				
Caesar the Cat (CC01)	£8.95				
Caesar the Cat (CC01)	£6.95				
Go-Sprite—tape (GS01)	£6.95				
Go-Sprite—disk (GS02)	£11.95				

Caesar the Cat—soft-toy £8.50

I understand that my remittance will be held on my behalf in the bank account named above until the goods are despatched.

Or please debit my ACCESS/BARCLAY CARD for the sum of £.....

Card no.

Signature

Name

Address

Postcode

PCW.

Offer applies to Great Britain and Eire only. Please allow up to 28 days for delivery in the UK. MIRRORSOFT is a registered trade mark of Mirror Group Newspapers Ltd., Co. Reg. No. 168660 Reg. Office Holborn Circus, London EC1.

Tony Bridge's Adventure Corner



Hobbit scores

Since we last looked at *The Hobbit* Hall of Fame, many people have written to me with their scores and, incidentally, some of the bugs that they have across. Melbourne House have recently published a book, by David Elkan, which looks at some of the ways in which *The Hobbit* can be solved — maybe there is a case for a volume of Hobbitbugs!

First in the HHOF this time round is Jason Hattrell: he solved it on his CBM64 in less than two days, and a score of 100%. "I had read that this is a difficult adventure and was amazed at how easy it was, although I thoroughly enjoyed it, and was astounded at the graphics, and the way it understood all the various sentences you can type in. I am fourteen years old, and this was my first adventure." I hope you have many years of adventure solving, Jason!

James Arnold of Camberley, also on a CBM64, with a score of 95%.

David Andrew and Trevor Smith of Sunderland, again on a CBM64, and a score of 92.5%. "We enjoyed *The Hobbit* and still find pleasure in it as it varies each time you play it. We think it is the best adventure game we have come across so far. We are now busy with Interceptor's *Heroes of Karn*, but are stuck. We cannot get past the pirate or the serpent, and how do you get Beren? We read your page first every week and would like your opinion on *Valhalla* as we are thinking of buying it."

Valhalla is not so much an adventure, as

a computer movie. The player can sit back and watch the action unfolding on the screen, or can intervene to alter the course of events. The game is a little slow, but features fairly sophisticated command input. You won't find the traditional adventure format followed in *Valhalla* — and there are not a lot of complex puzzles to be solved. The plot takes the form of a number of quests that have to be completed before *Valhalla* is attained. The scope of the game along with the book included in the packaging, make this adventure well worth the seemingly expensive asking price. The Commodore version of *Valhalla* is a bit faster and more colourful than the original Spectrum game. Legend have taken out a £2 million insurance policy, would you believe, against it being pirated before the official release! As for *Heroes of Karn*, I hope to be looking at this one in more detail in a forthcoming Corner, as several people appear to be stuck in it. If you have completed this one, or got some way with it, how about dropping The Grand Elf a line about it?

Gregor Houghton with a score of 75% on, I presume, his Spectrum. Your score, Gregor, is what you see before you place the treasure in the chest — to increase it, you must solve a few more puzzles along the way. Gregor has noticed the well-known *Hobbitbug* (try entering EN Do, which elicits the answer about everything evaporating and The Crack being dead), but has also found the answer: "You swing a broadside, but the ailing moves out of the way of your sword!"

Brian Ure, with 67.5% — Brian is another *Hobbit* who is wondering where the extra percentage is going to come from. Well, Brian, as you know, *The Hobbit* can be solved in more than one way, and you are going to have to explore Middle Earth thoroughly to pick up those extra points. Some people have gone out Troll-bashing after depositing the treasure, while others take the more conventional route of picking up everything they can, and visiting every location. As a rough guide, you can expect to finish the adventure with a score of around 50–60% if you go straight through, and you can pick up around 2.5% for other locations visited, and objects picked up.

J J Smith of Port Glasgow. Ron Pearson

of Kettering, with a score of 95% (the first time round) on his CBM64. Ron Smith of Northants, who very kindly sent me solutions to *The Hobbit* and several other adventures for the Spectrum. K Finney of Wigan, with a score of 50%. Michael Whitehurst of Staffs with a score of 100% (or as it appears in the CBM version, :0.0%). Chris Stamp and his brother, with 95% on a CBM (it seems to be taking over from the Spectrum as the favourite *Hobbit* machine). "Another adventure to be recommended for the CBM64 is *Aztec Tomb*, from Alligata. This is a very entertaining game, and I enjoy it very much, although I haven't completed it, and the spelling is awful (even "Tomb" is spelt "Tumb")! Apart from that a number of people are asking about, and I will be mentioning it in more detail at a later date. Incidentally, Chris has three games of his own on the market, one of which, *Zorgon's Kingdom* for the Vic20, marketed by Romik, is described as "a real-time graphic adventure", although Chris prefers to think of it as an arcade game!

David Fearn of Huntley, in Gloucestershire, who scored 92.5% on his CBM64 (within two hours of purchase!), and 62.5% on his Spectrum (4 months from purchase, we'll put that down to the old "dead-flesh" keyboard of the Spectrum). Look in PCW Vol 2 No 11, for Paul Shreeve's name who, unfortunately, beat you to "the double", David.

Ian Ritchie, with 82.5% on his Oric, for a change. He has found a little bug — the Barren Land is called, on a second visit "Dragonccddreadfuldesolation"! Your findings, going from Beorn's House, Ian, are quite normal and par for the course.

Spencer Richards of Theydon Bois in Essex, a score of 72% came at just one last attempt: "After months of frustration, I'm greatly relieved! PS. I entered your name in Crystal's *Invasion of the Body Snatchers* and was greeted with a hail of trumpets and singing angels! Thank crystal for a fantastic game".

Steve Hammatt with 55%, also on his Oric-1. "I cannot pass Gollum — when he asks me the riddle about "dark" from the book, I answer "dark" and he strangles me. How can I get past?" You should not answer the riddles if you don't know the answer, as you will certainly be killed, should he follow you, with the short sword.

Next week more HHOF.

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.

Now your Commodore 64 is a robot or a synth.



It's processing words, painting pictures & doing maths in machine code.



It's teaching you, taking you on an adventure & using its brains ...All because you've read a book.



Sunshine books make your Commodore mean more.

Start building your library today:

Use this order form to buy the best books available for your Commodore 64.

Please send me the books indicated on this form.

☐ I enclose a cheque/postal order for £ _____, payable to Sunshine Books.

☐ Please charge my Access Card No. _____

Signed: _____

Name: _____

Address: _____

☐ Please send me your free Sunshine Microcomputer Books catalogue.

Send this order form with your cheque or postal order to: Sunshine Books, 12/13 Little Newport Street, London WC2R 3LD.

Phone orders: call 01-437 4343 and charge to your Access | Barclaycard

Computer dealers: Ring our dealer enquiry line on 01-437 4343.

☐ **The Working Commodore 64** £5.95

A library of practical subroutines.

☐ **Commodore 64 Machine Code Master** £6.95

A library of machine code routines.

☐ **Graphic Art for the Commodore 64** £5.95

Techniques for high resolution graphics.

☐ **Commodore 64 Adventures** £5.95

A guide to writing and playing adventures.

☐ **Mathematics on the Commodore 64** £5.95

Essential routines for programming.

☐ **Business Applications for the Commodore 64** £5.95

Write your own business programs.

☐ **Advanced Programming Techniques on the Commodore 64** £5.95

Powerful ideas and applications.

☐ **Programming for Education on the Commodore 64** £5.95

A handbook for primary education.

☐ **Artificial Intelligence for the Commodore 64** £6.95

Make your micro think.

☐ **DIY Robotics and Sensors for the Commodore 64** £6.95

Practical projects for control applications.

☐ **Machine Code Graphics & Sound for the Commodore 64** £6.95

Easy to load routines and ideas.

☐ **Machine Code Games Routines for the Commodore 64** £6.95

A guide to creating top quality games.

Published June 1984

☐ **Building with Logo on the Commodore 64**

Creative use of the language.

Published May 1984

☐ **Commodore 64 Disk Companion** £7.95

Essential routines for the Commodore disk users. *Published May 1984*



Foolish words

Some time ago D. Capstick wrote to PCW enquiring whether there was an implementation of the Csil language on the ZX SPECTRUM.

A At that same time we said that we didn't know of one. Foolish words as it turned out. Not only have we been informed (politely) of Spectrum versions but... well see for yourselves.

Machine: Spectrum. *Supplier:* S Proctor, 27 Richardson Close, Leeds. *Price:* £3. *Machine:* Spectrum *Supplier:* D. Ross, Encom Computers, 54 Fore Street, Bradninch, Exeter. *Price:* £7. *Machine:* BBC. *Supplier:* A Boswell, 16 Birchfield Rd, Sunderland. *Price:* £4.

Machine: BBC. *Supplier:* M Strong, 6 Rholben Rd, Abergavenny, Gwent. *Price:* £2.

Micro music

S Buckfield, of Coulsdon, Surrey writes:

Q I have become very interested in electronic and computer music, and I would be grateful for any information you could give me on synthesizers, particularly those in the price range up to £500.

A This is not really my field. I would have thought that your question would have been better directed at a music magazine (*Which Keyboard?*). But I do have another suggestion to make. The BBC micro is compatible with a large number of synthesizers which it can be used to control. Also, Casio offers a

Centronics printer interface connection for its MT-200 music keyboard. Any micro with a Centronics interface can be connected. The MT-200 costs £129. The interface is £29.50.

A legal claim

J M Bright of Potters Bar, Herts writes:

Q Having bought my son a Commodore 64 for Christmas — it being highly recommended — we were very upset to find that he has had to return it twice to the place where we bought it because it has been faulty. Eventually, they kindly refunded the money and have been very fair about it.

A Surely we should be able to lodge our complaint directly with the manufacturers. I would welcome your advice on this matter, and if possible an address to write to.

A One of the saddest things about buying presents — whether it be a computer or anything else — is when they go wrong or don't work. The feeling of disappointment and annoyance is bound to persist despite any good treatment you receive from the retailer who sold you the machine.

Under the law you do not really have any legal claim against Commodore, whose machines in any case are no more unreliable than any of the other popular home micro manufacturers.

I will nevertheless give you an address to write to: Commodore Business Machines (UK Ltd), 6785 Ajax Avenue, Trading Estate, Slough, Berks SL1 4BG

Monitored colour

Percy Ellis of Wotton-under-Edge, Glos, writes:

Q I have the chance of a colour monitor for use on a Spectrum 48K. Can I use it? If not, what modifications, adaptations are necessary to make the correct connections?

A If the monitor is a 122A Microvitec 1431 then you can use it with no modifications

at all. If not, then you've got quite a lot of work to do.

Page 160 of the Spectrum manual shows the edge connector in diagrammatic form. You will have to solder (using an extension edge connector) two wires, one to the video line and one to 0 volts. These will then form the input/output lead to your monitor. Without invalidating your warranty there is nothing else you can do.

In all honesty, I would advise you to seek professional advice (ie, electrical) before you try making your own leads, etc.

One last thought, there is a new book on the market *The Complete Sinclair Database* by Adams, Beardsmore, and Gilbert which actually covers this topic.

Problem cassette

Ian Rossitor of Southampton writes:

Q I own a CBM64, and have been trying to load *Imagine's Cosmic Cruiser* and *Pedro* without success. I know the tapes are OK because they load and run perfectly on a friend's computer. I have had the heads cleaned, and the leads verified by my helpful dealer without any luck.

The games crash when the *Imagine* emblem is supposed to appear. Please tell me what it could be, or should I stop buying *Imagine* tapes?

A I have had a number of letters regarding tape loading problems on the CBM64. In each case the tapes concerned load perfectly well on another machine. The problem has to lie with the cassette recorder.

Cassette loading problems occur on all machines and the causes tend to be either:

- dirty heads — use a cassette head cleaner.
- magnetised heads — use a cassette head demagnetiser.
- heads out of alignment —

adjust the AZMUTH screw.

Unfortunately, there is no simple solution to every problem, it is just a matter of 'hit and hope'. I don't think that in your case there is any reason to boycott *Imagine* tapes as they work quite satisfactorily on your friend CBM64.

What's the difference?

Malcolm Singh of Dartford, Kent writes:

Q I would like to know the difference between the BBC 'B' and a BBC 'A'. Is there a change in the graphics screen? What is the difference between the operating systems in these machines?

A Without writing a book I would say that the Model A is a Model B with a lot of facilities missing.

The Model B is far superior to the A in very many respects — both in the hardware and in the operating system software. A considerable proportion of the commercial software written for the BBC will only run on the B so it is just as well it is possible to upgrade from an A to a B!

I'm sorry for the brevity of my answer but as I said earlier... I could write a book.

Hi-res mono

B J Gravestock of Ware, Herts writes:

Q With the software supplied with the QL, does colour play a vital part or could one use a high resolution monochrome monitor?

A Whilst colour will undoubtedly enhance the screen displays of the QL software, it is extremely unlikely that it will play a vital role. It would seem to me that a black and white monitor would be extremely well suited to the task of displaying the 'business style' information of the Psion QL packages.

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

GAMES SOFTWARE

SPECTRUM 16/48K, "Raquel" presents her games pack for ages 16 and over only (state age when ordering). Still only £3.50. I. Brooks, 17 Malvern, Coleman Street, Southend, Essex.

SOLUTIONS first two parts Ket trilogy, £1 each or two for £1.50. S.A.E. W. Pooley, 12 Handfield Road, Waterloo, Liverpool 22. State which one required.

WANTED 48K Spectrums and accessories in good condition. Phone for quote. Computamart, 195 Seabourne Road, Southbourne, Bournemouth. Tel: (0202) 433759.

LOW PRICE AND FREE DELIVERY FAVOURITES:

ZAXXON	(SPEC)	£4.95
JETSET WILLY	(SPEC)	£5.35
TRASHMAN	(SPEC)	£5.35
FOOTBALL MANAGER	(SPEC)	£5.35
MANAC MINER	(CBM 64)	£5.35
CAVALON	(CBM 64)	£5.21
THE BOSS	(CBM 64)	£5.05
BEACH HEAD	(CBM 64)	£5.05
COSMIC CRUISER	(BBC)	£4.95
FORTRESS	(BBC)	£3.05
SHOOTER	(BBC)	£3.05
AVIATOR	(BBC)	£13.46 AND MORE

(PLEASE STATE MACHINE)
Send S.A.E. for lists. Cheques/P.O.s to:

Dept. P.C.W.
UNIVERSAL PUBLISHING
P.O. Box 458, London SE27 0NS

IVOR, Escape from the Asylum. Regain Mega Million Enterprises, stole by Ivor. 100% m/c, 120 locations. Cheques, P.O.s for £4.50 to Rhianonns Cital, 21 School Lane, North Hykeham, Lincolnshire.

2 Games for the price of one for the BBC 'B'
'SAFARI' & 'STRAWBERRY ATTACK'
(arcade style games) — £7.95

Cheque/PO to:
M.Z. Software, 8, New Hall Croft, Leeds
S10 3RY Tel: Leeds 711436

MAIL ORDER SOFTWARE

Hunchback	£5.00	Sabra Wolf	£7.95
Beach Head	£7.85	The Quill	£9.95
The Hobbit	10.25	Valhalla	10.70
Imagine titles	4.25	Level 3 titles	7.40

Forbidden Forest/Artec Challenge £7.25 each.
Send cheque/P.O. stating title & machine to:

MAIL ORDER SOFTWARE

9 Knowle Lane, Wyke, Bradford. BD12 9BE.

AQUARIUS AQUAPEDE, machine code version of centipede for unexpanded machine. Send £3.95 to: Paul Clements, Talaber, Gym Goom, Clynog Fawr, Caernarfon, Gwynedd LL54 5PW.

"THE PIT", Excellent machine code version of the arcade classic for the BBC. Only £3.95 incl. P. Stammers, 14, Bowen Road, Rugby, Warwickshire.

CHATEAU OF THE UNDEAD

A SPINE-CHILLING NEW ADVENTURE FOR THE 48K ZX SPECTRUM.

CAN YOU OUTWIT THE EVIL COUNT TOUTEN AND HIS MINIONS OR WILL YOU JOIN THE RANKS OF THE UNDEAD OF AIX-EN-PAENES?

NOT AN ADVENTURE FOR THE FAINT OF HEART!

AVAILABLE NOW AT ONLY £4.95 FROM MICRO-NETWORK, 23 NORTH-BANK ROAD LONDON E17 4JY.

ZAPS, Bangs, Monsters, Blaps. All yours for 75p with the Image Computer Enterprises Spectrum U.D.G. sheet (cheques made to company). The Hobbit, Grampound Road, Cornwall.

SAVERS

COMPUTER COMMUNICATION (UK) Ltd.
PCW, 9 Martins CL. Blackwater, Camberley, Surrey GU17 0AH

Spectrum	£4.99
MOONALERT	£4.99
SABREWOLF	£8.45
CHEQUERED FLAG	£6.65
CBM 64	
BEACH HEAD	£7.99
VOODOO CASTLE	£7.99

SAE for lists Software, Books
Peripherals for all Micros

TARDIS adventure on 16K ZX81 just £4.50. Send cheque/P.O. to J. Harrison, 2 Heath Close, Prescott, Merseyside.

SPECTRUM MULTI PROGRAMME CASSETTE

Something for all the family, golf, battleships, addition, etc. £2.99. Cheque/P.O. M.J. Cheeseman, 1 Gala Close, Stilton, Peterborough PE7 3XR.

SHARP MZ80A. Hardly used. V.G.D. including software, £295. York 21990.

LYNX SOFTWARE. Mastermind colour and no codes. 8 levels, 1 or 2 players. Only £5.00. Play your cards right, 2 levels £5.50. Send cheque/P.O. to: R. Bento, 45 Church Drive, Kingsbury, London NW9 8DN.

CLUBS

Curious about robots?

Why not find out about this new, exciting technology by joining our club?

THE NEWSLETTER: HANDSHAKE

lets you communicate with other groups worldwide. All members are invited to participate and receive software discounts. Send SAE for details!

The Global Computer Club,
51, Applegarth Drive,
Ilford,
Essex IG2 7TQ

BOOKS

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

MAKE MONEY WITH YOUR MICROCOMPUTER

This new report reveals secrets of making money by offering vital services to local businesses. No capital required. Full/part-time from home. 10 day money back guarantee. Only £12 or SAE for details.

Sloanes (A1), FREEPOST,
Barnet, EN4 8BR.

FOR HIRE

TO HIRE a computer from Spectrum 48K upwards, please phone or write to Business & Computer Services, 249a Caledonian Road, London N1 1BA. Tel: 01-607 0157.

WANTED

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 manuscripts, 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

HELP? Have you written any good arcade adventure or strategy games? Your program could be better than you realise. We will give you free appraisal and help with marketing. Don't hesitate! Send tapes with instructions for quick reply to: 4TH DIMENSION, UNIT 4, 4TH AVENUE, BLUEBRIDGE, HALSTEAD, ESSEX.

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.

WANTED: Used original software all popular computers, any quantity. Send list for immediate cash offer. Computamart, 195 Seabourne Road, Southbourne, Bournemouth, Dorset.

CLASSIFIED ADVERTISING RATES:

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

Semi-display: £6 per single column centimetre, 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.

VISIONARY VOLTAGE

Requires M/C arcade and adventure game program for: Commodore 64, VIC 20, Spectrum and BBC Electron. Also programmers capable of translating between the above (based in London Area/Midlands.) Please send cassettes with loading instructions, and details to:-
Visionary Voltage
 34, Bendemeer Rd,
 Putney
 London SW 15

PROGRAMMERS! We need your original programs for new software house - generous royalties. Classix, 12 Barons Way, Langdon Hills, Basildon, Essex.

SOFTWARE

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 5 1/4" floppy discs D/sided - DL density. £2.30 each or 5 for £10.

Send to: M.J. Seaward, St. Olaf's Road, Stratton Nr. Bude, Cornwall EX23 9AF
 Tel: (0288) 4179

HOME ACCOUNTS. Put your house in order! Probably the best home use for your computer! Comprehensive coverage of bank accounts, credit cards, HP., etc. Inbuilt accuracy check for all transactions. Projects cashflow for any period ahead. Available for CBM 64 or VIC 20. £7.50 or FREE details from DISCUS SOFTWARE, Freepost, Windmill Hill, Brixham, Devon. TQ5 9BR. Tel: 080 45 55532.

SUMMER CLEARANCE SALE

	R.R.P.	Our Price
World Class Darts	£6.95	£4.95
Mix 'N Match		
and Mistermind	£6.95	£4.95
Stock Control Database	£10.95	£7.95
All 3 for ONLY £15.95		

Send cheques/POs (p&p inc.) to:

ALPHASOFT
 7 Moss Carr Avenue,
 Keighley, W. Yorks. DD21 4SE.
 (same day despatch)

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, Perryman Road, Haywards Heath, Sussex RH16 3DH.

DEALERS

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.

HEMEL COMPUTER CENTRE LTD.

For fast reliable repair service, send your 16/48K Spectrum computer to us.
 We will repair and return for £16 + p&p.
Hemel Computer Centre Ltd.
 52, High St,
 Hemel Hempstead,
 Herts.
 HP1 3AF
 Tel: 0442 212436

FOR SALE

ORIC, ATMOS 48K. 4 colour printer, disc drive, all leads, and manuals. As new, quick sale hence £425 o.n.o. Data recorder included. Tel: 01-650 8463 (eves.)

COMMODORE 64 software to exchange or sell. Have many American titles. Telephone Geoff on 0245 208217 after 5pm.

TANDY PRINTER/PLOTTER. Screen dump. Paper, pens £95. Working Teleprinter £15. Excellent condition Bally pinball machine £80. Buyer collect. Manchester area. Tel: Mottram 64064.

ATARI COMPUTER 600XL, printer 1027 dual density, disk drive 1050, recorder 1010, Atari writer, music composer, joysticks. Pole Position Lone Raider programming. New unopened, £775. Unwanted prize. Tel: 01-449 5950.

TORCH DISC PACK for BBC Micro only 5 months old. Hardly used, inc all free software, manuals, etc. Bargain at £500. Tel: Winkfield Row 886178.

EPSON FX PRINTER with BBC screen Dump on Rom. As new £295. Microvitec club colour monitor. Hardly used £145. Tel: Winkfield Row 886178.

APPLE II games paddles - £20.00 (02432) 3534.

BBC MODEL 'B': ex-demo models from £349. Disc and speech interfaces can be fitted. Also ex-demo electronics from £179. Phone: Stevenage (0438) 60011.

SUPERTEXT word processing - £80.00. (02432) 3534.

OLIVETTI DY311 Daisy wheel printer. Auto tractor feed - £850.00. (02432) 3534.

SPECTRUM 48K + warranty, £300. Top s/w joystick, £230 all. Tel: 01-370 5042 (eves.)

ACORN ATOM, 12K RAM, 12K ROM s/w, brand new, guaranteed. Power supply, various books and manual £65 ono. Tel: 01-840 5379. Adrien.

BBC B 1.2 O.S s/w, books, data recorder. Excellent condition. Tel: Fernorth 708892 Manchester area.

COMPUTER DESKS

COMPUTER CABINETS

A range of cabinets and housing units especially designed for your home computer system. Keep it dust free, tidy and secure.

Send an SAE to:

MARCOL CABINETS

(Dept PCWk)

SOLENT BUSINESS CENTRE,
 MIDDLEBROOK RD., SOUTHAMPTON SO1 0HW.

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
 P/L, FREEPOST, 48 WESTERN, LAMINGTON, OXON OX6 812

js records
COMPUTER PROGRAMS
 REAL-TIME or (Slow) HIGH SPEED Professional Cassette Duplication and Blanks from 1 to 1,000+. Computer printed Cassette Labels, etc. Fast Security Delivery service.
js records - a division of FILTERBOND LTD. 19 Sadlers Way, Hertford SG14 2DZ.
 0932 - 551188

DATA DUPLICATION
M.G. Copies, Burntwood Walsall West Midlands WS7 0ES
 High speed dedicated data duplication, printing if required. Prices from 28, 57p (C15) per cassette incl library case. Write for your full price list or telephone Burntwood 75375 (24 Hrs).

SERVICES

ZX81 & SPECTRUM REPAIRS
 ADD ON SPECIALIST
MOST COMPUTER COMPONENTS SPECTRUM REPAIRS AVERAGE £15
 • 24 hour turnaround or While-You-Wait
 • Keyboard with spacer - £46.00
 • Open 9 am to 5 pm Mon-Sat
 SEND FOR FREE ESTIMATE (ENC. £1.60 P&P)
MANCOM LTD.
 111, 113, 115, Levenshulme
 Manchester M19 3JP
 Tel: 061-224 1888

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: (02223) 311371.

MICRO-SERV

The home computer repair specialist in Scotland
 BBC, SPECTRUM, VIC 20 AND ALL PERIPHERALS. 3 MONTH WARRANTY ON ALL REPAIRS.
 UNIT 4, Denny Workspace,
 Denny, Scotland, FK6 6DW.
 Tel: Denny (0324) 823468

Spectrum repairs £15
 MKII and MKIII 32K
 upgrades £24-£26 fitted
 all including P+P
 Also Spectrum spares

RA Electronics,
 50 Kimberley Road,
 Lowestoft,
 Suffolk,
 NR33 0TZ, (0502) 66289

SPECTRUM REPAIRS £14. including parts p+p etc. ZX81 £11. Fast reliable service (average turnaround 24hrs) by qualified engineers. Tel: 0772 634897.

UTILITIES

SPECTRUM 48K Microdrive utility, displays all file names, sector and file headers, sector distribution map, file integrity check. Menu driven, m/code £4.50. From Easyuse Software, 67 Arlott Crescent, Oldbrook, Milton Keynes, Bucks MK6 2RA.

SOFTCELL'S DISCO

For the Commodore 64

This is the most powerful tape to disc transfer utility you can buy. No program rewriting is necessary! Why put up with second best? A must for all 1541 disc owners.
 Only £9.95 and 50p p&p

Available from:

THE SIX-FOUR SUPPLIES CO
 PO Box 19
 Whitstable, Kent
 CT5 1TJ

ACCESS/BARCLAY CARD ORDERS on:
 (0227) 266289

SPECTRUM U.D.G. DESIGNS. Dozens of exciting characters with decimal numbers in illustrated book £2. Orders this week receive free decimal/binary conversion table. (80p table only). A.J. Clarke, Pitchill House, Pitchill, Nr. Evesham, Worcs.

THIS SPACE FOR SALE

£18

TELEPHONE:
PCW CLASSIFIED
 01-437 4343 Ext 206

Make a **QUANTUM LEAP** today...
Our 85 characters by 24 line screen
can transform your SPECTRUM
displays now!

"MICRO-PRINT 85"

is an outstanding utility that lets you
select from a choice of SIX character
pitches in your screen and ZX printing.
Either 85 characters-per-line,
or 64 characters-per-line,
or 51 characters-per-line,
or 42 characters-per-line,
or 36 characters-per-line,
or 32 characters-per-line...
Any pitch, any time, any place. Mix all
six within any line. We even give you a
COPY command for any 1-24 line
group. "Micro-print" is incredibly
versatile — nothing else comes close!
The 16 & 48K cassette + Demo are £5
(£8 export) from

MYRMIDON SOFTWARE
PO Box 2, Tadworth, Surrey
KT20 7LU.

ARROW MICRO SERVICES — Commodore 64 —

ARROW TURBO-SAVER

Fed up with waiting for those programmes
to load? Well you need Turbo-Saver, easy
to use and faster than 1541 disk drive,
saves a fortune on tapes. £7.00

ARROW TRANSFER

Transfer your favourite games and
programmes to disk, multi port and
Auto runs. Full instructions
included. £7.00

ARROW MICRO SERVICES

20 Portmeadow Walk
London SE2

Friendly Face

Microdrive Utility

BEYOND TAPE CONVERSION: These
routines make your life easier, by using
menus in place of commands.
Professionally written MERGE routines
for any version of Tasword Two and
Masterfile, giving complete flexibility.
Cartridge based routine aids loading and
file management.

Available NOW from MONITOR,
P.O. Box 442, Mill Hill London NW7 2JF.
Cassette £7.95 Cartridge £14.95 incl
VAT.
Write or call 01-959-1787 for leaflet.

ACCESSORIES

Replica, Loud Firing Colt 45 Automatic

As used
by US Army, ideal stage
prop with ammo. £5.25 carriage 50p

Replica 44 Auto Magnum,

the gangsters
favourite with
ammo £4.35 carriage 50p

Colt 45 replica, snub-nose revolver

as used
by police dept, ideal
stage prop with ammo, £3.50, carriage 40p.
Ideal for video film making. Mail order only.
Send cheques or PO to: Razzamattaz, 80
Selhurst new Road, London SE25

CASSETTE LABELS, self adhesive,
letterpress printed. Any quantity or
colour supplied, also inlay cards —
price list and samples 0326 313605.

BLANK CASSETTES (C10)

Library case,
labels and inlay cards
£2.50 for 5,
£4.99 for 10 and 1 free.
(P & P inc.)

High quality, fully guaranteed.
Programmers Wanted,
50 games for £8.50
(State Machine)

Mail order to only to:
May computer Services
24 Edward Road, London E176LU

C20 BLANK CASSETTES AGFA TAPE

10 FOR £4.60
20 FOR £8.20
50 FOR £18.00
100 FOR £34.00

Prices inc VAT & UK delivery.
Order despatched within 48 hours.
Send cheque/PO to:

K. WILLIAMS
48 Widden Street, Gloucester
GL1 4AN

BLANK CASSETTES

C10 length £3.65 for 10

£28 for 100 inc. p&p

fully guaranteed.

UK Home Computers

82 Churchward Avenue, Swindon, Wilts

A MUST FOR MICRO OWNERS

Eliminate loss of Data and Ghosting through
static with a permanent ANTISTATIC work
area place mat. Size 1 metre x 1.25 metres.
£8.30 inclusive VAT, p&p. Cheques/PO to:
DOWERS INTERIORS, 98 Oxford Road, Ban-
bury, Oxon OX16 7QU. Tel: 0295-52055.

Computer Swap 01-437 4343

Free readers entries to buy
or sell a computer.
Ring 01-437 4343 and give
us the details.

Commodores for sale

VIC 20 + C2N cassette + cartridges +
cassette games + cover mags + books
£95. Tel: Romford 27063.

CBM 64 GAMES. All originals, £5.00
each. Tel: Northwood 26322 for more
info.

VIC 20 starter pack + 16K ram. Approx
30 hrs use. Intro to Basic Part II. Some
programs + bks £120 ono. Tel: 01 422
7142.

CBM 64, Simons Basic, 2 weeks old,
Price £50. Sell for £35 ono. Easy Script
+ 6 games on discs. New £105. Sell for
£75 ono. Tel: 995 7481.

CBM 64, C2N cassette, joystick, various
games, inc: Grand Master Chess,
Still boxed. £195 ono. Tel: 01 803 1046.
Mr Orpin. After 5pm.

EASY-SCRIPT for CBM 64. Boxed with
manual as new. Includes games discs,
and £10 Commodore voucher. Accept
£45 the lot! Might split. (0244) 675717.

COMMODORE 3022 Tractor printer.
Perfect order. Occasional hobby use
only. Lots of paper. Recent ribbon.
Accept £185 ono or might consider
p/exch. (0244) 675717.

VIC 20 starter pack, 16K & word pro.
£90. Commodore 1541 disk drive £190.
Commodore 1525 printer £150. All
boxed & under guarantee £400 the lot.
Tel: 01-658 3389. Will deliver SE
London.

VIC 20 software for sale. All guaranteed
originals. Approx. 30 titles, all at half
original price. For Details telephone
(0362) 4497 weekends or after 5pm any
weekday except Tuesday.

VIC 20 C2N, Super Expander, Stack
Mother Board, Point Master, Vic Revealed,
Learn Computer Programming on the
Vic + games £130 ono. Tel: Chester
(0244) 332388.

VIC 20, C2N recorder 8K Ram, 10 very
good books, for VIC + cassettes. £250.
Tel: 01 431 1790.

CBM 64 for sale, Manic Minor, Chinese
Juggler, Hover Bover, Pedro. All £3.50
each. Tel: Woking 70318.

VIC 20, C2N 16K switchable ram pack,
joystick, intro to Basic 1 + 2, books,
software, cost £390, sell for £215, will
split. Barnsley 762710.

VIC 20 + Cassette recorder 16K ram
pack, Joystick Introduction to Basic Part
I, selection of s/w. Dust cover, £130.
Tel: Wimborne (0202) 889475.

VIC 20, C2N, 3 joysticks, intro to Basic
Part I, 3, 16K + 3 slot Mother Brd. +
Programmers Aid + 9 Cartridges + 45.
(all originals) games + 8 bks in Vic
Revealed. Offers. Tel: 205 9649, after
4pm.

CBM 64, C2N Data Recorder, £80 or
best s/w (all originals) bought Decem-
ber. Still boxed with guarantee. Ge-
nuine reason for sale. £250 ono or swap
for BBC. Tel: (0375) 31219.

CBM VIC 20 inc: manuals, joystick,
recorder, s/w. Paid £125. Tel: 523 8473.
Nigel.

VIC 20 + cassette unit, joysticks, mags,
+ s/w (original) inc: Donky Kong for
£90. Tel: 01 572 6725.

Commodore 64: large selection of high
quality US and Canadian public domain
software available for exchange. Write
to Brendan Conroy, 85 Upper Drumcon-
dra Road, Dublin 9, Ireland.

"EASY-SCRIP" package for CBM 64
computer. Entirely on disc with official
manual and £10 voucher. Unused.
Unwanted gift. Boxed as new. Worth
£95. Fantastic bargain! Accept £39!!
(0244) 675717.

VIC 20 cartridges for sale, titles are: The
Count, Omega Race, Menagerie and
Mole Attack, plus the Vic 20 Games
Book, all 14 each. Phone 051 728 7619.

CBM 64 software for sale: Forbidden
Forest, Matrix, Attack Mutant Camels,
Super Scramble, Crazy Kong, Haunted
House, Escape MCP, £4 each or the lot
for £24. Phone: Coventry 414111 after
5pm.

COMMODORE VIC 20 computer with
cassette unit, games machine, code
monitor and many listings cost £280.
Accept £150. Tel: Welwyn 4814.

VIC 20 computer, cassette recorder,
joystick, intro to Basic Part I, software
worth over £60. v.g.c. Only £130 ono or
swap for Tandy TRS 80 level II compu-
ter. Tel: 051 678 2257.

VIC 20 SOFTWARE for sale. Spiders
from Mars cartridge £10. Choplifter
cartridge £10, Panic £4, Music Synthesi-
zer £7 or will take £25 for the lot. Ring
Colin 515 4696.

CBM 64 or CBM 8032-SK software for
swap, incl. German software. Please
write to Helmut Schmidt, Am Sportplatz,
8741 Sandberg, West Germany.

VIC 20 complete system, serious offers.
Tel: 05432 53344.

VIC 20 + cassettes recorder, joystick
lightrifle, Super Expander, 16K ram,
20 cassettes + 5 cartridges + 8 books.
£250. Tel: 01 953 5713. Boreham
Wood.

VIC 20 + C2N switchable 16K ram point
master. Joystick + £250 of s/w worth
£420. Sell at £225 ono. Tel: 841 8730
after 4pm. Christopher Daw.

CBM 64 imported games (originals) to
swap or sell. Tel: 021 440 2124 (Amier).

7 ORIGINAL GAMES for CBM 64 ie
Burgertime, Wheelie Wallie, Galaxy,
Super Gridder, Colossal Chess, Hoverbo-
ver, Defender 64, £5.00 each or all for
£30. Tel: Northwood 26322.

VIC 20 + C2N cassette, 16K, 8K, 3K
ram pack, 100 mags, 7bks over 90
games. ie Bongo, Matrix, Jet Pack,
£200. Or swap for 64 CBM. Tel: 0530
37709.

64 S/W for sale (all originals) Grid
Runner £3, Pipe Line M Minor, Booga-
boo, Vulcan Patrol, Revenge of Mutant
Camels, £5 each, Hobbit £10. The lot
£35 ono. Tel 0962 712312 after 6pm.
Julia Holmes.



**Book
your
Classified
or
Semi-display
advert by
Credit
Card**

**Call
Diane
Davis
on
01-437 4343**

BARCLAYCARD

VISA

VIC 20, CASSETTE recorder, Motherboard, 16K Ram, Super Expander, joystick, lots of software, cartridges, books, dust covers. Worth £400. Sell for £180. Tel: Cheslyn Hay 413132 after 5.00pm.

CBM 64 GAMES: Twin Kingdom Valley £7. Manic Miner, Star Commando 16 each. Attack + revenge of the Mutant Camels, Hover Bovver £5.50 each. Falcon Patrol + Motor Mania £4.50 each. Tel: 0602 634293.

VIC 20 GAMES for sale all originals. Tel: 061 643 5858. Very cheap.

CBM 64, cassette recorder, joystick and games cassette, programmes reference guide. Little used. £185 Tel: 0795 73672.

COMMODORE 64 disk drive printer plotter + cassette recorder £500 ono. Tel: Erith 41060.

CBM 64 for sale, CBM monitor, cassette recorder. Joystick, s/w, unwanted present. 6 months old. £230 ono. Tel: 01 609 7046.

VIC CARTRIDGES £3.00, Vic cassettes £2. All originals. Tel: (021) 778 1097.

CBM PRINTER MPS 801. Hardly used, 10 months guaranteed. Ideal 1st printer. Some paper included £196 ono. Tel: High Wycombe 35240.

CBM MAGS for sale. Mainly Home Computer Weekly and PCW. Offers! Also Spectrum s/w to swap or sell. Tel: 01 550 6904 after 5pm.

VIC 20, C2N, 16K, 32K expansion + manuals etc. Loads of software, magazines, excellent condition, £125 ono. Tel: (0222) 706242 after 5.30pm.

COMMODORE 64 word processors. Rom cartridge £25. Disk, uses Icons, £25. Mail labels £5. Database with home accounts and mail labels £30. All originals. Phone W Allingard (0491) 39497.

VIC 20 + C2N + 32K switchable Ram pack + Quickshot joystick 30 top games mostly 8 to 16K expanded some books £200 ono. Tel: 0246 203418.

COMMODORE VIC 20 education software, excellent condition, hardly used. Maths 1, Maths 2, English language, and physics available, £6 each. ono. Tel: Swindon 695594.

VIC 20 radio logbook program. Minimum 16K expansion. Many features. Holds 15 items on each QSO. Send £5.00 to Radio Logbook, 9 Moorgate Cottages, Southend, Dereham, Norfolk, NR19 1BD.

VIC 20 software. All half price (+50p p&p). Jetpac, Gorf etc. Also books half price & p.p. Reference Guide, Mastering Vic 20, etc. Send for list. 45 Albert Avenue, Hull HU3 6PF.

VIC 20 plus games, cassette, joystick, introduction to Basic Part I, 3 months old under guarantee £125 Tel: 090 857 366

VIC 20 Adventure Cartridge. Pirates Cove £6, or swap for another cartridge except Mission Impossible. Call or write to Mr P Wake, 7 Burrage Grove, Woolwich. SE18. Anytime.

VIC 20 CBM Tape deck, joystick, super expander, basic part 1, several games, + games books, magazines with £200. Sell for £100 ono. Buyer collects. 13, Eastbury Avenue, West Park, Plymouth PL5 2NB.

CBM 64 Simon's Basic boxed as new, 3 months old, Quick sell £30 ono. Also original tapes, Chess, Super Scramble, Panic 64, Arcadia, Mutant Camels £27 all as new! 061 633 3223.

COMMODORE 64 + C2N cassette recorder. V.G.C. £180 ono. Tel: 01-848 0315.

CBM 64 GAMES. Kong, Revenge of the Camels, Pipeline, Gyropod, Manic Miner, Hunchback, etc. Worth £130. Sell for £70 or £4.50 each. Phone Scarborough 371485.

Dragons for sale

DRAGON disc drive £200. Also Dragon S/W (originals) + bks half price. Tel: Radnage 3198

DRAGON 32 joystick magazines plus over 250 games educational arcade adventure microdeal morrison dragon etc bargain £240 no offers ring Peter 0352-59884 or 32 The Firs, Mold, Clwyd, N Wales

FOR SALE Dragon 32 plus software, books, over 1 years worth of magazines plus all leads and box only £60 write to 46 Southwell Close, Kirkby in Ashfield, Notts. Excellent condition

DRAGON 32 3 months old, joystick + games + tutorial cassettes £100. Tel: St Helens, Merseyside 816651

DRAGON 32, 2 joysticks + centronics printer load £90 of S/W + £45 of mags £180 ono Tel: 01 660 5074

DRAGON 32 6 months old + assorted games £110. Or swap for Spectrum 48K. Tel: Swansea 795 685

DRAGON 32 boxed also telewriter and some games also one joystick many magazines (Dragon user) and books £120 ono phone 0453 45515 ask for David

DRAGON software, many popular titles under half price also intelligivision console (£45) voice synthesis + B17 bomber (£45) 15 cartridges £8 each ono ring Winslow (029671) 2984 for further details

DRAGON 32 with two joysticks, advanced, programming book, software, over £15 worth of magazines, complete with all leads, immaculate condition, worth over £250 will sell for £100 Tel: 061-764 5135

DRAGON 32 boxed joystick meteor cartridge plus over £100 of software kong, skramble, frogger, adventures, etc. Dragon user magazines all manuals and Tandy extended basic book. £130 Tel: 0632-631823 wallsend

DRAGON 32. Good condition, joysticks and 4 games. £110 ono. Newport, Gwent 859266.

DRAGON 32 great condition, boxed. All leads inc + £200 S/W + Dragon Joysticks + cassette recorder, all boxed. £99.95. Tel: 01 202 7694 eves

DRAGON 32, under warranty, immaculate condition, 3 joysticks, cover, speech synthesiser, cassette recorder. All boxed. Books, Meteoroids cartridge, Dragon user mags, many games, worth £450. Sell for £200. Tel: (0325) 718387.

DRAGON 32, DX3 tape recorder, joysticks (Quickshot and Dragon data) and £100 worth of software, worth £367. Sell for £200. Tel: 059 588 460.

DRAGON 32 Home Computer unwanted gift. £95. Unused or Texas TI-99/4a. Offers. One must go. After 6pm. Market Deeping 345358.

DRAGON 32. Perfect condition. Forth, voice synthesiser, Ring of Darkness and 4 other cassettes, 7 books, light pen and joystick. Issues of Dragon Users. Total value £310. All leads. Can not deliver. Write to M. Armatage, 9 Holyrood Avenue, Bridlington Estate, Yorks-hire.

DRAGON 32 + £100 extras, 4 months old, swap for Acorn Electron or sell £200. Tel: Wolverhampton 732679.

DRAGON 32 complete. Recently overhauled. Assembler. £140. Tel: Naphill (Bucks) 3304 Mr Page after office hours.

DRAGON 32 almost new. Colour TV. Tape Recorder. 2 joysticks inc: Quickshot, cartridge, Edet Plus over £20 of games. Dragon user mags. £285.00 Tel: 01-591 6967.

DRAGON 32boxed 9 months old. 2 joysticks sprit compiler + other s/w. + tape recorder. £160 Tel: (0306) 880806 (eves).

DRAGON 32, cassette recorder, Quickshot joystick, assembler, 4 cartridges, ie Chess + Bridge, Light Pen, Rainbow Writer, bks. Cost £500. Sell £250. Tel: Walsall 37862.

DRAGON 32 with joysticks and books. Approx £75 of s/w £150. Tel: Brigg (0652) 57772.

DRAGON 32. Excellent condition £105 of s/w. Mr micros, Dragon. Tuner for Atari-type joystick. all £185. Ring 01-550 9846.

DRAGON CARTRIDGES. Chess, Ghost Attack, Astro Blast, £14.00. All-dream £18.00, Dragon Quick Shot joystick £9.50. Original s/w £4/£6. (Boxed as new). Tel: Notts (0602) 265321.

DRAGON 32 joystick and s/w mags £150. Tel: St Albans 31474 (0727)

DRAGON 32 under warranty, immaculate condition 3 joysticks, cover, speech synthesiser cassette recorder, books, dragon user magazines meteoroids cartridge, many games. Worth £450. sell for £220. Tel: (0325) 718387.

DRAGON 32, manual, leads, joysticks, cassette recorder, dustcover, one book and £90 worth of games (including the King and Ring of darkness), excellent condition. £180 Leigh 601210 evenings or weekends.

FOR SALE 3 M.S.T. packages for Dragon Data DOs — Database, Business accounts: Mailer/Address book. £47.00 consider swap for other dos programs. Tel: Shepshed (0509) 502664 (Klaus).

DRAGON 32. s/w + joystick £99. Tel: 01-402 7671.

DRAGON 32, boxed as new. 2 joysticks, s/w new manuals, leads. £110. Tel: 01-735 4993.

DRAGON 32, 8 tapes, two joysticks still boxed & guaranteed. 3 books & magazines £150 ono Tel: Romford 62968 eves

DRAGON 32K Joystick & Cartridges over 100 programs (games etc) considerable books & mags. Owner buying new advanced computer, anything perfect. £180 ono excellent value. Tel: 0302 539855 (after 5pm)

DRAGON 32 boxed all leads, 2 joysticks all as new & quality original S/W ie: Donkey Kong, Skittle, Chess, Hungry Horace, Computer only £100 the lot. Phone Dunstable (0582) 64363

DRAGON 32 computer joystick 2 cartridges 7 games boxed. Excellent condition. £150 0475 20866

Acorns for sale

ACORN Electron + joystick interface + joystick, manuals, books software cassette player cost £323 + B/W portable TV all for £250. Tel: 01-204 3891

ACORN Electron plus data recorder plus leads plus five books guaranteed includes elbug £170 the lot Wolverhampton 631479

BBC B 1.2 O/S 32K. As new £325 ono Tel: 01-393 4871

Diary

Event	Venue	Dates	Admission	Organisers
Micro Trade 84 (Trade only)	Barbican London	July 4-6 10.00am-6.00pm	Free	Montbuild Ltd, 11 Manchester Sq, London W1 01-486 1951
The Graig Microfair	Graig School Pwll Llanelli Dyfed	July 7 11.00am-5.00pm	50p	Graig School Parents Association, c/o 5 Warborough Close Llanelli, Dyfed SA15 3LH
What Micro? Computer Show	Battersea Park London	July 14-15 10.00am-7.00pm	£1.50	VNU Business Publications Evelyn House 62 Oxford Street London W1A 2HG 01-636 6890
Electron and BBC Micro User Show	Alexandra Palace London	July 19-21 10.00am-8.00pm July 22 10.00am-4.00pm	£3.00 adults £2.00 children	Database Publications 68 Chester Road Hazel Grove, Stockport 061-456 8383
Sinclair Computer Users Exhibiton	Essex Exhibition Centre Moulsham Street Chelmsford Essex	July 21 10.00am-6.00pm	50p adults 30p children	Essex Exhibition Centre Moulsham Street Chelmsford 0245 25900
Scottish Personal Computer World Show	Assembly Halls George Street Edinburgh	July 26-27 9.30am-8.00pm July 28 9.30am-5.00pm	£1.50 adults £1.00 children	Scottish Industrial and Trade Exhibitions 8a Charlotte Square Edinburgh EH2 4DR 031-225 5486

ADVENTURE HELPLINE

Micro: Spectrum

Adventure: Hobbit

Problem: How do you enter the magic door at the elvenkings halls and at the eliroh clearing

Name: Ian Holman

Address: 17 Heald St, Newton-le-Willows, Merseyside

Micro: Spectrum 48k

Adventure: Espionage Island

Problem: I do not know what to do when I have landed and unstrapped the parachute

Name: Master. Simon Piaton

Address: 23 Birchside, Dunstable.

Micro: 48k Spectrum

Adventure: Velnor's Lair (Quick-silva)

Problem: How do you get past the crocodile in the river?

Name: Moz

Address: 98A, The Broadway, Tolworth, Surbiton, Surrey, KT6 7HT

Micro: 48k Spectrum

Adventure: Snowball (Level 9)

Problem: How do I open the smooth doors? Where do I get the space suit from?

Name: A. Slater

Address: 40 Watford Rd, St Albans, Herts AL1 2AH

Micro: Spectrum

Adventure: Hobbit

Problem: Cannot get out of 'a dark dungeon in the elvenkings halls',

dark being the operative word, see enclosed sheet

Name: Michael Gate

Address: 32 Panorama Rd, Swanage, Dorset BH19 2QT

Micro: Vic 20

Adventure: The Wizard and the Princess

Problem: I can not find my way through the maze (chapter 3)

Name: Marcus Bailey

Address: Ivy Cottage, Southway, Middlewich, Cheshire

Micro: Spectrum

Adventure: Planet of Death (Artic)

Problem: What do you do when you come to a speaker with dance music coming out of it and what does the clue mean and also what to do with the computer and the key.

Name: Andy Dalmer

Address: 14, Lindsay Road, Worcester Park, Surrey, KT4 8LE

Micro: Vic 20

Adventure: Adventureland

Problem: How do you kill the dragon and how do you get the royal money?

Name: Richard Edwards

Address: Cartret, Fords Heath, Nr Shrewsbury, Shropshire SV5 8QD

Micro: 48k Spectrum

Adventure: Pimania by Automata

Problem: The start is my problem. It draws some funny shaped things at the back and a road coming out. Then it puts up a cursor. Nothing I type in does anything

Name: Charles Bagot

Address: 2 Green Lane, Chesham Bois, Aversham, Bucks HP6 5LN

For sale

96K LYNX complete with joystick interface, 8 games and assembler. £250 ono. Tel: (0284) 61495.

VIC 20 Tape Deck joystick plus software — Arcadia Skramble Typing Teacher Gridrunner all boxed with books — the lot £130 or swap for 48K Spectrum with tape deck. Codsall (09074) 3956.

For Sale Sanyo Display monitor DM 2112 £55 ono. Tel 061 483 9799 (day) or 061 336 5701 (eves).

FIRE HAWKS + Siege by Postern for 3.00 Blind Alley by Sunshine Publication £2.50. All originals. v.g.c. Tel: 050 270 339 Mathew

ORIC-1 48K with external reset button, eleven months old plus software and software interface, speech synthesizer, three books, fourth, £76 of software, £150 altogether. Tel: Heywood (0706) 623154 after six.

CBM 64 SIMONS BASIC, as new. £35.00. Tel: (0732) 361920.

DMP100 TRS 80 PRINTER 80 character 9.5 inch paper. Punella (Centronics) serial interface. Hardly used £180. Suit most micros. Accepl £125 ono. Tel: (0532) 675129 after 7pm.

EPSON FX80 Printer. As new. £300. Ring Slough 71392.

FX700P boxed. Portable computer, built in display. Coding wallet, instruction program £45. Tel: 041 423 0386 (after 4pm).

LYNX 48K boxed. As new including software and Lync user magazines, £140. Owner upgrading to larger machine. Phone Christopher on Stirling (0786) 841731 between 6pm and 9pm.

OSBOURNE I double density 80 column. Tel: 01-794 9148.

ORIC I 48K new, boxed, 10 months guarantee, £140. OS Oric Atmos complete with £100 plus od a/q inx. Hobbit & Zorgens Revenge plus data recorder. £230.00. Tel: Dave (0268) 559085.

48K LYNX still boxed plus level 9 Dungeon Adventure & new Sanyo tape recorder. Cost £260. Sell £174.00. Tel: 021 476 9425.

SHARP MZ80K with built-in cassette unit and monitor. Excellent condition, lots of software, £200. Price negotiable. Phone Bristol 620290.

FOR SALE Stonechip programmable joystick interface. Very easy to program. No tapes to load. Enables you to use joystick with any game. Only £16. Tel: 0272 518435 (Marcus).

SHARP MZ-80K. 48K RAM. Integral screen and tape dustcover, books, software. Hardly used, excellent condition. Must sell, hence £150 or offers. Tel: Shaw (0706) 843044.

T199/4A Personal record keeping module, boxed complete with instruction manual, £30 ono. Also home budget management module, boxed complete with instructions £20 ono. Tel: Farnborough, Hants. (0252) 511248.

SHARP MZ731 with printer/plotter and cassette built in. 4 languages, Wdpro, Toolkit, games and utilities. Also Sharp P5 printer, all as new, under warranty. £550. Tel: Chester 383 905.

SHARP MZ-80K. Hi-Res graphics board (320x200), 255 user defined characters. Epson printer interface, 50K. Six basics. Assembler. M/c. word processor, many programs, manuals, books, magazines. £370 ono. Tel: 0530 31601.

ACE TRONIC TV game centre & 3 cartridge for CBM 64 (4 tapes). Sell £15.00. Tel: Portsmouth 828123.



commodore FASTBACK IS HERE

A TYPICAL COMMODORE 64 OWNER WAITING FOR A PROGRAM TO LOAD FROM TAPE... BUT NOT ANY MORE!

At last a utility that provides a fast-loading backup. FASTBACK produces copies of most single and multi-part software that load around 10 TIMES FASTER and run independently of the utility. For example: load 'The Hobbit' in 150 seconds with FASTBACK.

Supplied on tape with full instructions.

ONLY £9.95

BACK-UP TAPE COPIERS

Unique machine code programs to allow security back-up copies of the majority of protected software. Available for:

COMMODORE 64	£5.95	ORIC 1	£5.95
VIC 20 (All memory sizes)	£5.95	ATARI (All Models)	£5.95
SPECTRUM	£5.95	BBC (Handles Locked Files and Mixed Baud Rate)	£5.95
ELECTRON	£5.95	ALL WITH FULL INSTRUCTIONS	

TAPE TO DISK TRANSFER UTILITIES

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

BBC ATARI (All models) £9.95

HUGE RANGE OF SOFTWARE & BOOKS FOR BBC, ELECTRON, SPECTRUM, COMMODORE 64, VIC 20, ORIC, DRAGON, MEMOTECH & ZX 81

Trade and Overseas Orders welcome. All prices inclusive. Send Cheque, P.O., Bank Draft or phone your Card Number to 0386 49641.



MICRO CENTRE
BRIDGE STREET, EVESHAM,
WORCESTERSHIRE
Tel: 0386 49641



DATA RECORDER

From the same factory as the C2H—the Super Saver 20/64 Data Recorder (no interface required)

£29.95

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

Jet Set Willy	4.95	Tasword 2	11.95	Abersoft Forth	11.95
Manic Miner	4.95	Campbell's		Q/silva Games	
Hunchback	5.95	Masterfile	12.95	Designer	12.95
Fighter Pilot	6.95	The Quill	12.95	Paint-box	6.50
Krakatoa	4.95	H.U.R.G.	11.95	Omnicalc	8.95
Pool (CDS)	4.95	Groucho	8.50	The Hobbit	11.95
The Alchemist	4.50	Lunar Jetman	4.75	Go to Jail	4.95
Stonkers	4.50	Night Gunner	5.95	Football Manager	5.75
Pedro	4.50	Mugsy	5.75	Pimania	8.50
All Imagine	4.50				
Trashman	4.95				
Atic Atac	4.75				
Valhalla	12.50				
All Level 9	8.90				
Sabre Wulf	8.50				

ALL Melbourne House BOOKS at £1.00 off R.R.P.
 FAST DELIVERY. Prices include p&p and VAT.

NATIONAL SOFTWARE

200 Mulgrave Road, Cheam, Surrey SM2 6JT.
 Phone 01-661 9240 for enquiries.

51

DODGE AND COLLECT

Unique is another masochistic new company trying to make it in the nightmareishly competitive Spectrum market. You have to admire its guts.

Clerky is a dodge-and-collect game dedicated to the white collar labour force that fills our lives with paper and runs the country.



You control *Clerky*, who seems (if the cover picture is anything to go by) a potential heart-attack victim, and have to rush around collecting pieces of paper whilst avoiding flying rubbers and ink pots.

It's quite astonishingly fast, with the only sensible tactic being to run about as fast as possible and never stand still. Pretty soon you will start to sympathise with *Clerky* and feel equally exhausted. Addictive in a frenzied sort of way.

Program *Clerky*
Price £5.99
Micro Spectrum
Supplier Unique
16 Thorney Lane
South
Iver
Buckinghamshire.

GLIDE PATH

Heathrow Air Traffic Control was a complex program for the Spectrum which simulated the job of an air traffic controller supervising the movement of a variety of aircraft.

The program is now available for the Commodore 64 with a number of extra features including the occasional

Concorde which zooms around making life difficult because of its speed.

Using only a radar screen and something called a stack display which gives you information on each aircraft as it enters the radar area, you have to cope with different speeds, glide paths, altitudes, random hazards, wind speeds and somehow get all the aircraft safely through your area.

This involves issuing appropriate commands to each individual aircraft to guide it safely past all the other aircraft in the area. This is a very complex simulation requiring more time than the average.

If you have the patience to stick with and run the demo routines through several times you'll probably find this one has an appeal that doesn't wear off after a few months.

Program *Heathrow Air Traffic Control*
Price £7.95
Micro Commodore 64
Supplier Hewson Consultants
7 Grahame Close
Blewbury
Oxon OX11 9QE

REASSURING

Todd Rundgren once sang — so long ago one is embarrassed to remember — 'keep your eye on the icon'.

Never was a truer word spoken by a hippy wiz kid. Icons are what's happening, man.

Go Sprite is a sprite designer program for the Commodore 64, not the first and certainly



not the last but different from the rest — it's got icons. Icons are pictures that represent the actions you require performed and having them in your program is a bit like living in a mansion in Hampstead rather

than a workers collective in Bromley-by-Bow.

Constructing, augmenting, and changing colour of your sprites is all done using icons as is animation and saving. There are all sorts of little boxes illustrating the various steps in sprite design — you simply point a cursor on the screen to the relevant box.

Icons really are pretty wonderful things. Apart from anything else, they are so much more reassuring and friendly than vast menus written in horrible jargon. Presumably there is a price to be paid in terms of user available memory, but nevertheless if you don't have a sprite program this one will do fine.

Program *Go Sprite*
Price £9.95
Micro Commodore 64
Supplier Mirrorsoft
Holborn Circus
London EC1

BOUNCY, BOUNCY

Kosmik Kanga is an excellent new game from Micromania — rather in the *JetPac* mould.

The idea is to bounce a kangaroo across several different screens past buildings, de-



serts, beaches collecting a variety of objects but avoiding obstacles like planes and trains.

It's all sprites and good animation — the only technical problem being attributes conflicting producing flicker, something Ultimate seem to have either solved or avoided.

Don't let that put you off, though, the graphics are nicely designed, the game has some original touches and the whole thing has been produced with a good deal of wit.

Program *Kosmik Kanga*
Price £5.95
Micro Spectrum
Supplier Micromania
14 Lower Hill Road
Epsom
Surrey

Pick of the week

MOVING COMIC STRIP

Ugh! was one of the first 'new wave' Dragon games to show that the machine was capable of handling good quality graphics after all.

Now Softek have adapted the game for the 48K Spectrum and I think it's even better. The idea of the game is to move a caveman up a twisty track to a cave and collect the eggs that are kept there.

Hampering the caveman are Pterodactyl who does not like her eggs being stolen and an amiable looking dinosaur who is on her side — presumably figuring that creatures with small brains had better stick together.

The graphics are wonderful

not so much because they are smooth scrolling sprites (more or less mandatory these days if you're going to keep up with Ultimate) but because of the superb graphic design. All the characters are drawn in black in a mixture of outline and shading that is just like a cartoon. Here lies the success of the game — it really does look like a moving comic strip which you can also play.

Program *Ugh!*
Price £5.95
Micro Spectrum
Supplier Softek
12/13 Henrietta Street
Covent Garden
London WC2

DEVIATION

Maths buffs could find the *Maths Utilities* library useful. This is a collection of various maths programs including a graph plotter, linear regression, various kinds of deviation, numerical integration, etc, etc. There are 12 programs in total, each one provided with a basic explanation of how it functions.

The price below is for the complete set, although it can also be purchased as three separate packs for £3.50 each.

Program *Maths Utilities*
Price £8.95
Micro *Spectrum*
Supplier *Solway Software*
6 Curzon Street
Maryport
Cumbria
CA15 6LL

INTO THE DUST

Superbowl is the first computerised version of American Pro Football and, curiously enough, it is for the Dragon 32.

Until recently most Dragon games were unspeakably dreadful, as often as not in Basic with nasty black-on-green graphics. It's ironic that the Dragon seems to have run into trouble just as the software started to get quite reasonable.

Superbowl is a case in point. It has animated sprites to depict football star Floyd and the massed, enormously large shouldered, ranks of the opposing Washington team. Floyd has to catch the ball and run



with it as far as he can before the Washington team grind him into the dust.

The whole thing is written in machine-code — it looks great and plays well. Incidentally, the Dragon 32 can now be found for prices between £79 and £59 if you hunt around; it has to be great value, particularly with software of this quality around.

Program *Superbowl*
Price £6.95
Micro *Dragon 32*
Supplier *Cable Software*
Cape House
52 Limbury Road
Luton
Beds
LU3 2PL

INTERMINABLE

War of the Worlds was released with much trumpeting recently — the game is based less on the original book by H G Wells and more on the musical concept album released a few years ago by Jeff Wayne.

The original music is featured in snatches and is apparently also used to give you clues throughout. But what sort of thing is *War of the Worlds*? The best answer is that whilst it is not exactly an arcade game or an adventure, neither is it like Ultimate's recent games or Miner Willy's adventures. In fact, with its ropery scrolling and little matchstick men it reminds me of nothing so much as *Uncle Groucho* by Automata except that it adds interminable screens of text which seem unavoidable and removes all of Groucho's humour.

Since one of the major objectives of the game involves Carrie the girl you love it can be assumed that CRL are happy to alienate many women from the game, who generally speaking can't be expected to raise much enthusiasm for such a concept.

Controls are a mixture of the usual up, down, left, right and single key press instructions like Eat, Drink, Get etc; occasionally there are arcade sequences of an embarrassingly simple 'dodge the laser beam' kind — the rest is a matter of

wandering about. Actually wandering is wrong — your man moves as though being pulled along on a trolley, trying to find the six locations featured in the story in the correct order.

I wouldn't ordinarily be so hard on a game but since the thing costs £7.95 — £2 more than most other computer games for the Spectrum — and the few good loader screens and the other impressive graphics have been designed using Melbourne House's *Draw* program I think Computer Rentals had better chalk this one up to experience and think again.

Program *War of the Worlds*
Price £7.95
Micro *Spectrum*
Supplier *Computer Rentals*
CRL House
9 Kings Yard
Carpenters Road
London E15 2HD

HIGH BLOOD PRESSURE

Thor software's first (to my knowledge) release was *Jack and the Beanstalk*, a game that, in some charts at least, is currently residing at number one — not bad going.



The company has released a number of other programs for the Spectrum, Vic and BBC B. Having missed out on reviewing *Jack and the Beanstalk* (it's great) I thought I'd rectify it by covering one of the newer titles.

Twilight Zone is a real piece of bang bang shoot 'em-up in the Jeff Minter, react or die, tradition (have you ever considered that the software industry could coin the term 'Minte-

resque' in the same way that plays are sometimes termed 'Pinteresque'?) but done well there's nothing wrong with that.

You have two ground bases one horizontal, one vertical, and must blast away at a variety of strange shaped, erratically moving, aliens. Co-ordinating the two bases is difficult enough but adding to your problems is the fact that you cannot fire repeatedly but must wait until each bullet has run its course.

Nothing dramatic, but a good game for fans of this genre who enjoy having their blood pressure and adrenalin raised. Has the BMA been informed?

Program *Twilight Zone*
Price £5.95
Micro *Spectrum*
Supplier *Thor Computer Software*
Erskine Industrial Estate
Liverpool

BIZARRE STORY

Storyline is an educational program for the BBC B which reminds me vaguely of that party game consequences.

The idea is to construct a story. The computer suggests words and the child accepts or rejects them according to whim, creative decision making or whatever. At the end, a probably highly bizarre story is created.

If you get bored with the existing options you can change the word data and insert your own. In this age of video nasties, I should think that's asking for trouble.

Program *Storyline*
Price £7.95
Micro *BBC B*
Supplier *Daco Software*
59 Mackenzie Road
Moseley
Birmingham

New Releases is designed to let people know what software is coming on to 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, WC2R 3LD.

- ZX81**
- (-) Meteor Storm (DK Tronics)
 - (-) Krazy Kong (PSS)
 - (-) Alien Rain (CRL)
 - (-) History (ICL)
 - (-) Geography (ICL)
 - (7) Walk the Plank (Novus)
 - (2) Krypton Ordeal (Novus)
 - (3) Flight Simulation (Psion)
 - (-) Black Crystal (Carnell)
 - (1) Planet Raider (Novus)
- (Figures compiled by Boots/Websters)

- VIC 20**
- (3) Computer War (Creative Sparks)
 - (-) Duck Shoot (Master Tronics)
 - (8) Chariot Race (Micro Antics)
 - (2) Donkey Kong (Interceptor Micro)
 - (-) Jet Pac (Ultimate)
 - (-) Games Designer (Galactic)
 - (-) Snooker (Visions)
 - (6) Sub Hunt (Master Tronics)
 - (10) Undermine (Master Tronics)
 - (7) Vegas Jackpot (Master Tronics)
- (Figures compiled by Boots/Websters)

- Commodore 64**
- (-) Gortek & the Microchips (Commodore)
 - (-) Vaihalla (Legend)
 - (-) Renaissance (Audiogenic)
 - (9) Flight Path (Anirog)
 - (8) Space Pilot (Anirog)
 - (2) Cavelon (Ocean)
 - (4) Pinball Wizard (CP Software)
 - (-) Hammer Attack (Commodore)
 - (-) BMX Racers (Master Tronics)
 - (-) Purple Turtles (QuickSilva)
- (Figures compiled by Boots/Websters)

- Dragon 32**
- (-) Mined Out (Quicksilva)
 - (-) Transylvanian Tower (Richard Shepherd)
 - (-) Night Flight (Salamander)
 - (-) Dataplan (PSS)
 - (-) Star Jammer (Salamander)
 - (-) Area Radar Controller (SFA)
 - (-) Golf (Salamander)
 - (-) Textstar (PSS)
 - (-) Dragbag (PSS)
 - (-) Star Trek (PSS)
- (Figures compiled by Boots/Websters)

- Books**
- (1) Commodore 64 Programmers' Reference Guide, Commodore (Pitman)
 - (3) 60 Programs for Commodore 64, Erskine et al (Pan)
 - (4) Step by Step Programming Spectrum Book 1, Graham (Dorling Kindersley)
 - (2) Guide to playing the Hobbit, Ekan (Melbourne House)
 - (7) Easy Programs for Commodore 64, Stewart and Jones (Shiva)
 - (6) Very basic Basic — Commodore 64, Ellershaw and Schofield (Century)
 - (9) Creepy Computer Games, Erskine et al (Usborne)
 - (-) Commodore 64 Games Book, Bishop (Granada)
 - (9) Teach yourself computer programming on Commodore 64, Carter and Huzan (Hodder)
 - (-) 60 Programs for Vic 20, Erskine et al (Pan)
- (Figures compiled by Bookwise)

- Atari**
- (1) Incredible Hulk (Adventure International)
 - (7) Slinky (Cosmi)
 - (5) Sage 5 The Count (Adventure International)
 - (-) Airstrike II (English)
 - (-) Aztec Challenge (US Gold)
 - (4) Zaxxon (Datasoft)
 - (-) Encounter (Movagen)
 - (10) Rally Speedway (Adventure International)
 - (-) Enchanter (Infocom)
 - (6) Flak (Funsoft)
- * Cartridge ± 48K Disc ± 32K Disc
(Figures compiled by Calisto Computers 021 632 6458)

- BBC***
- (2) Pengi (Visions)
 - (1) Fortress (Pace)
 - (4) Aviator (Acornsoft)
 - (8) JCB Digger (Acornsoft)
 - (7) Bligger (Alligator)
 - (10) Eagles Wing (Invasion)
 - (6) Overdrive (Superiorsoft)
 - (-) Chuckie Egg (A + F)
 - (-) 1984 (Visions)
 - (5) SD Space Ranger (Microbyte)
- * All model B
(Figures compiled by Micro Management 0473 59181)

- Spectrum**
- (2) Sabre Wulf (Ultimate)
 - (3) Fighter Pilot (Digital Integration)
 - (1) Jet Set Willy (Software Projects)
 - (7) Blue Thunder (Foundry Systems)
 - (-) Trashman (New Generation)
 - (5) Paytron (Beyond)
 - (-) Mugsy (Melbourne House)
 - (8) Jack and the Beanstalk (Thor)
 - (8) Chequered Flag (Psion)
 - (10) Scuba Dive (Durell)
- * All 48K
(Figures compiled by W H Smith and Son, London)

CHOCK FULL

Business Programming on your Spectrum is a fairly austere looking book, chock full of programs for graphs, sales forecasting and filing, with not an alien in sight.

The thesis of the book is that 'Sales and Marketing Managers' can legitimately use a home computer for business. Not a dramatic claim perhaps but one which is pretty much vindicated by the book which is well written and full of useful and impressive programs.

More impressive still is that all the programs have been written for use with, if available, microdrives which tend to make all serious business systems on the Spectrum that much more serious because of the greater access speed.

If you need these sort of programs then you need this book.

Book *Business Programming on your Spectrum*
Price £6.95
Micro Spectrum
Supplier Phoenix Publishing Associates
14 Vernon Road
Bushley
Herts WD2 2JL

CLEAR AND SIMPLE

Whilst there are a number of Forth packages for machines like the Spectrum and BBC there are not too many books which explain the language in a simple way.

The Beginner's Guide to Forth is one of the few and covers basic Forth concepts like the Stack and Floating Point as well as Arrays, Strings defining words etc. Appendices cover things like word sets, Error messages and Forth Vocabulary.

A brief inspection suggests the book is clearly written and would certainly form a good introduction to the subject. My only qualm is that with only 85 text pages including large appendices, the book does not go far enough — you'll probably need to buy another book after this one.

Book *The Beginner's Guide to Forth*
Price £2.95
Micro General
Supplier Interface
9-11 Kensington
High Street
London W8 5NP

This Week

Program	Type	Micro	Price	Supplier
Stranded	Ad	Atari	£9.95	English
BCPL Calc	Ut	BBC	£19.90	Acornsoft
Droga	Arc	BBC	£9.95	Acornsoft
Gateway to Karos	Arc	BBC	£9.95	Acornsoft
Lisp Demo	Ut	BBC	£9.95	Acornsoft
Meteor Mission	Arc	BBC	£9.95	Acornsoft
S Pascal	Ut	BBC	£16.85	Acornsoft
Temperature Control	Ed	BBC	£9.95	Acornsoft
Tetrapod	Arc	BBC	£9.95	Acornsoft
The Examiner	Ed	BBC	£9.95	Acornsoft
Turtle Graphics	Ut	BBC	£19.90	Acornsoft
Volcano	Arc	BBC	£9.95	Acornsoft
Gisburne's Castle	Arc	BBC	£7.95	Martech
Cash Book 64	Ut	Commodore 64	£75.00	Anagram
Stranded	Ad	Commodore 64	£7.95	English
The Quill	Ut	Commodore 64	£14.95	Gilsoft
Hercules	Arc	Commodore 64	£6.95	Interdisc
Arcadians	Arc	Electron	£9.20	Acornsoft
Desk Diary	Ut	Electron	£9.20	Acornsoft
Freefall	Arc	Electron	£9.20	Acornsoft
Hopper	Arc	Electron	£9.20	Acornsoft
Picture Marker	Ut	Electron	£9.20	Acornsoft
Sphinx	Ad	Electron	£9.20	Acornsoft
Adventure				

Odyssey of Hope	Ad	Spectrum	£5.95	Martech
White	Ut	Spectrum	£14.95	Oasis
Lightening				
Billboard	Ut	Spectrum	£7.95	Orange
Match Point	S	Spectrum	£6.95	Psion
Headerless/Load	Ut	Spectrum	£3.50	Reflex
/Save				
Simspeech	Ut	Spectrum	£5.95	Sim
Logo	Ed	Spectrum	£39.95	Sinclair
Artist	Ut	ZX81	£1.10	Stuart
Blackjack	S	ZX81	£1.10	Stuart
Challenge	S	ZX81	£0.85	Stuart

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.



The lurid screen

Up and down the country, publishers are converting their authors to word processors. Writers everywhere are beginning to have to commit their immortal prose to the lurid screen and floppy disc, instead of the time-honoured type or manuscript.

From the publishers point of view this all makes good sense. It is after all much cheaper to produce a book or a magazine if it can be written, revised, edited and typeset in one continuous process. No more messy re-drafts. No more expensive retyping or resetting.

But what about the implications of all this for our literary heritage?

The latest school of thought among literary boffins is that a book — or poem — is not just the finished products which you or I see when we take a neatly bound volume down from the shelf. Rather it is a continuous process. No author ever gets it right first time. Even the most mundane piece of prose is usually the product of much agonised re-writing.

Individual words, lines, or whole chapters may disappear or become unrecognisable on the way to the finished book. Many a novel has had its ending completely changed. Jane Austin, for example, wrote two totally different final chapters for her book *Persuasion*.

Which is the 'right' ending then? Probably the answer is neither — there may be the one she preferred but we can learn a lot about the way that she worked and

about the characters in the book from the 'alternative' chapter.

This way of thinking has given rise to a sort of 'literary archaeology'. In America, at Austin University in Texas there is a library devoted to collecting *everything* ever written by famous authors — initial drafts, manuscripts and typewritten copy, typeset versions, page proofs — the lot. Students can then see how the initial idea was re-worked by the author, the publisher, and sub-editor, or even by outsiders, like typists who accidentally forgot to include certain lines when retyping a draft or by friends of the author who gave 'advice'.

The poet TS Eliot, for example often sent his poems to his friend Ezra Pound who frequently substantially re-worked them. The question then arises, just *whose* poems they actually are. If he'd sent a floppy disc instead of paper copy, we might never know who contributed what.

The advent of the floppy disc may spell the end of literary archaeology. You can't tell from a word processed block of text what alterations have been made to it or who made them — to say nothing of what has been accidentally omitted. The moving cursor deletes or overwrites and having done so moves on and it is impossible to tell what was there before.

Moreover, would Shakespeare actually have written better or worse with a Wang? Or might it not have destroyed some of those creative urges? There is, after all, something inherently less inspiring about a blank VDU than a white sheet of paper.

And anyway, can the machines cope? What would a spelling checker have made of e e cumming's?

Leonard Cohen once said that some people only called his poems, poems because the words didn't reach to the ends of the lines — suppose his machine had justified them?

As I sit here, not putting pen to paper, but cursor to screen, I am forced to wonder — do we really want to enslave ourselves to these jumped-up pocket calculators?

Or will the pen be mightier than the micro in the end?

Gail Counsell

A high price

Puzzle No 114

"This is interesting," remarked Professor Hex at breakfast one morning.

As breakfasts were usually silent affairs in the Hex household, the remark indicated that there was some particularly interesting item in the journal that the Professor was reading. "They've just found yet another high prime," continued the Professor, his voice full of excitement, and his coffee and toast forgotten.

"Haven't they found enough already?" queried his unfortunate offspring who was more interested in stirring her cornflakes.



But the Professor was already on another plane. "Two raised to the power of one hundred and thirty two thousand, and forty nine, minus one," he murmured almost reverently.

"It must be pretty big, then," was daughter's parting remark as she darted out of the door.

Indeed, it is quite a large prime — but, mused the Professor, exactly how big is it? That is, how many *digits* are in the evaluation of $2^{132049} - 1$.

Solution to Puzzle No 109

Using the formula given $P = n^2 - 79n + 1601$ successive values of p are computed and checked to see if they are prime.

```
10 FOR N = 1 TO 100
20 LET P = N * N - 79 * N + 1601
30 FOR X = 2 TO SQR P
40 IF P/X = INT (P/X) THEN PRINT N; " "; P; GOTO 60
50 NEXT X
60 NEXT N
```

Remarkably, the formula is very accurate. It only fails for five values when n is in the range 0 to 100.

These values are 80, 81, 84, 89, and 96.

Winner of Puzzle No 109

The winner is: T J Vernon, Rustington Close, Lower Earley, Reading, who receives £10.

Rules

If the puzzle 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 114 is July 20.

The Hackers



AUTOMATA is pleased to announce the winners of



"MY NAME IS UNCLE GROUCHO YOU WIN A FAT CIGAR"



We want to thank everyone who entered into the spirit of the game and took part all over the world, for making it all worth while. At last, the moment you've all been waiting for:

THE IDENTITY OF THE MYSTERY PERSONALITY IN
THE PROGRAM WAS
COMPETITION WINNERS

MICKEY MOUSE

FIRST PRIZE OF THE CONCORD-QE2 VOYAGE TO NEW YORK AND HOLLYWOOD WITH WADS OF SPENDING CASH to Mr. P. A. Daley of Stoke-on-Trent for his winning slogan "THERE'S NO BLOOD IN OUR GAMES, IT'S ALL TOMATA SAUCE!"



SECOND PRIZE to J. McNally of Belfast for "YES, BUT CAN THE STEAM ENGINE DO THIS?"

THIRD PRIZE to I. Walker of Barnsley for "AUTOMATA BEATS THE HELL OUT OF VIOLENT GAMES"

PRIZE FOR THE WORST SLOGAN WITH A CORRECT ANSWER to S. M. Morris of Mid-Glamorgan for "GAMES STARRING THE PIMAN, FANTASTIC BUY ONE, JUST AUTOMATICALLY GOOD"

PRIZE FOR OVERSEAS WINNER to Nabil Shehayed of Quatar, Arabian Gulf.

PRIZE FOR SAUCIEST PRINTABLE SLOGAN to M. Kennedy, R.A.F. Honington for "IF LADY CLAIR WON'T LET YOU PLAY, YOU OUGHTA MATA."

PRIZE FOR THE MOST INCOMPREHENSIBLE SLOGAN to Stephen Guy of Bolton for "AUTOMATA, VIOLENCE AND SHOOT EM UP GAME OUT FUN AND A"

PRIZE FOR SHORTEST SLOGAN WITH A WRONG ANSWER to Kutsche of Bremen, Germany for " "

JOINT RUNNERS-UP FOR THE SHORTEST SLOGAN WITH A WRONG ANSWER to David Grimshaw of Guildford and Hervard H. Merved of Denmark for " "

SPECIAL PRIZE FOR BAD TASTE SLOGAN WITH THE WRONG ANSWER to David Ahrens of Gravesend for "AUTOMATA TOOK THE 'P' OUT OF COMPUTING."

SPECIAL PRIZE FOR THE MOST INCORRECT SOLUTION to Johnathon Perry of Cornwall for "ELIZABETH TAYLOR"

RUNNER-UP FOR THE MOST INCORRECT SOLUTION to John Cole of Alton for "JAMES STEWART"



Congratulations to everyone. Hope you like the Automata bags of goodies and surprises, and to the outright winner, we hope your dreams come true for you and your companion in the U.S. of A. Finally, to those of you who didn't win, remember "it's not the winning that's the thing, it's playing the game"

with love from *Uncle Groucho*