

40 Rock £3

POPULAR Computing WEEKLY

Only 50p.

15-21 May 1986

Vol 5 No 20

CST rescues QL from the dead

- A QL upgrade and a rescue plan launched at the ZX Microfair
- CST's Thor to be released with a 68020 processor in September

- Full specifications of the Thor and information on the rescue plan
- Full details below and inside*

HELP is at hand for the QL, with

at least one, possibly two new machines scheduled for a September launch. The first of the machines, CST's Thor, was previewed at Saturday's ZX Microfair. It is currently an upgrade of the original machine, but CST plans a completely new 68020 processor machine for September.

The single prototype Thor, which the company has at the moment, was completed the day before the Microfair, and is basically a repacked version of CST's QL add-ons fitted into a CPU box with a detachable keyboard. The latter's layout and design is actually that of IBM's AT business computer – streets ahead of the original QL keyboard.

The main system unit houses the QL circuit board, all other parts of the original machine having been thrown away, and additional circuitry from CST to

continued on page 4 ▶

COLOUR FEATURE



Review – see
p16



The Amiga launch – p4
Full Commodore show
report – p10

THIS WEEK'S NEWS

- Amstrad plans 256k Spectrum?
- Redesign for Commodore 64 this year?



Konami®

ARCADE HOT SHOT

SPECTRUM 48K
£7.95
SPECTRUM 48K

COMMODORE 64
£8.95
AMSTRAD

*„the name
of the game“*

Imagine Software (1984), 6 Central Street
Manchester M2 5NS. Tel: 061 834 3939. Telex: 669977

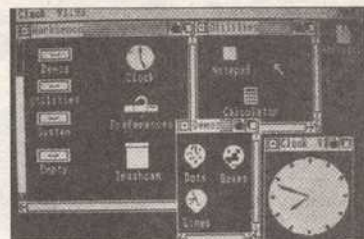
Imagine Software is available from:

WHSMITH, John Menzies, WOOLWORTH, LASKYS, Rumbelows, Greens, Spectrum Shops and all good dealers

SPECIAL FEATURES

10 Show Report

All the news from the Commodore computer show. That Amiga launch... and much more



The Amiga in action

24 Readers' Survey

Love *Popular*, or hate it? Your chance to tell us exactly what you think of us... and help famine-fighting charity War on Want at the same time



HARDWARE

12 Centronics GLP2

The GLP1 was generally well-received - now here's its successor in the dot-matrix printer field. Peter Worlock reports on the improvements made

SOFTWARE

14 Promerge Plus

Arnor adds mail merge to its Protext word processor on the CPC machines

Hisoft Pascal

An inexpensive addition to the Amstrad library of Pascal implementations which will run on the 6128 or 8256

GAMES

16 Price of Magik

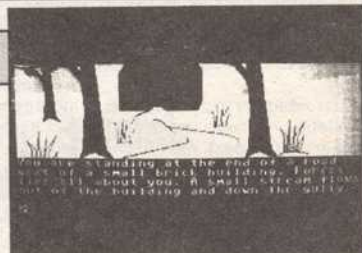
Level 9 is arguably the premier adventure house in the UK - how does its latest, *The Price of Magik*, hold up to the rest of the range. Read our review and ogle the colour pictures

18 Reviews

20 Adventure Corner

21 Adventure Helpline

22 Arcade Action



Reviews - see page 18

PROGRAMMING

27 QL

Lose yourself in our maze program

29 Amstrad

Concluding part of the astronomy program

32 Atari ST

A simple paint program for your monochrome ST

28 Commodore 64

One for engineers: practise your resistor colour codes

30 Spectrum

The final lap of our marathon machine code utilities series

33 Bytes & Pieces

36 Peek and Poke

REGULARS

4, 5, 6 News Desk

Commodore revamps its 8-bit machines

35 Communications

David Wallin discusses a simple way to become a Bulletin Board sysop - with Communitel

44 New Releases

46 Charts

7 Letters, Puzzle

Special symbols on the PCW8256

Editor Christina Erskine News editor John Lettice Features editor Graham Taylor Software editor John Cook Production editor Lynne Constable Supplements editor Christopher Jenkins Supplements designer Barbara Hajek Promotions manager Simon Langston Advertisement manager Tom Watson Advertisement executive David Osen Classified executive Jon Beales Editorial secretary Annmarie O'Dwyer Administration Geraldine Smyth Managing editor Peter Worlock Publishing director Jenny Ireland.

Published by Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 298275 Typeset by Publishers Reprographics Services Ltd, 4 Roger Street, London WC1, Printed by Greenaway Harrison, Sutton Road, Southend-on-sea, Essex. Distributed by S M Distribution, London SW9, Tel 01-274 8611, Telex 261643.

© Sunshine Publications Ltd 1986.

Popular Computing Weekly. Tel: 01-437 4343.

ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here - so please do not be tempted. We cannot guarantee to return your programs - so please do not send your only copy. 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.

Commodore reveals its UK Amiga prices

COMMODORE finally unveiled exact prices and packaging on the Amiga computer, at its official UK launch last week.

Commodore UK's acting general manager Chris Kaday revealed, "The Amiga will come in two versions, one at £1,475 plus VAT, the second at £1,675 plus VAT".

The lower priced package, whose final retail price will be £1,696.25, comprises the computer, with 512K Ram, a 3½ inch disc drive, colour monitor, mouse, and start-up software packages. The more expensive version (RRP - £1,926.25) also has a second external 3½ inch drive.

The Amiga is expected to be available through specialist dealers from next month onwards. Commodore is taking orders now.

Kaday said that apart from general business outlets, the



Kaday: two versions of Amiga company also hoped to sell the Amiga to educational establishments, for Cad/Cam applications, graphics/animation development, eg, in advertising agencies, and for musical and desk-top publishing projects. Nor did he discount the (very rich) home user.

Additional products to be sold with the Amiga include the external disc drive as a sepa-

rate package, for £249 (ex-VAT, £286.35 inclusive), and external 5½ inch disc drive at £299 (£343.85 inclusive of VAT), and Sidecar, a hardware IBM emulation package, which contains an Amiga interface and 8088 processor, enabling IBM programs to be run on the Amiga at full speed.

There is also a software IBM emulator, Transformer, which will be cheaper but not as compatible.

Sidecar also boasts 256K Ram expandable to 512K, three IBM compatible I/O expansion slots. It plugs into the Amiga expansion bus.

Kaday said Sidecar would be available in this country "before the end of the year".

For details of Amiga software and availability see this week's Commodore show report on page 10.

CST saves the QL from the dead

◀ continued from page 1

control four Rom slots, a mouse port and a parallel port. The machine also has 640K Ram, enhanced QDOS and space for two disc drives. It will be sold with at least one 720K 3½ inch floppy drive, and the other slot will take either a second floppy or CST's £1,000 20Mb Winchester drive, which was also launched at the show.

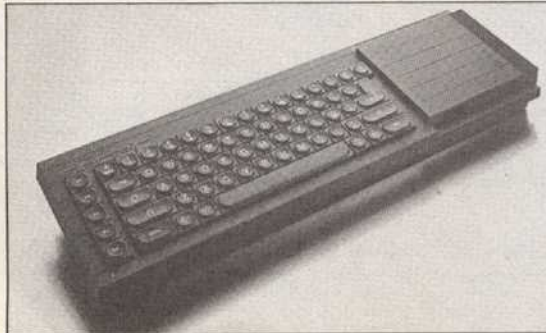
The Thor will initially be sold as an upgrade, although CST is trying to obtain stocks of QLs so that complete systems can be assembled. No price has been fixed yet, but as the components for the base system retail for around £600, it's likely to be over this mark.

The second QL will be from Care Electronics and while

CST intends to leap-frog straight to the full 32-bit 68020 processor, Care hopes to sell a 68000-based machine with single disc drive for £499. According to Tony Tebby of Care, this is the QL rescue plan, and involves a new company being set up with funding from QL dealers. He says if he can get a commitment from dealers to take 50 machines each in the first month it will be possible to raise the £250,000 needed. He claims to be half-way to this total already.

The machine itself, he says, will be fully QL compatible rather than being a QL mark two. This means that the project can go ahead without the active co-operation of Amstrad.

Amstrad's attitude to the two rescue plans isn't yet clear, but as the company is thought to be preparing its own 68000 machine it may not be favourable.



QL: Back from the dead?

Software houses hold back on Spectrum 128

PROGRAM development for the 128K Spectrum has come to a virtual standstill, as companies unsure of the machine's future put their projects back.

Firebird is continuing with the rewrite of *Elite*, and has released an extended version of *Rasputin*, but doesn't intend to produce any more specifically 128 titles until it becomes clear there's a reasonable market. Alan Giles of Melbourne House revealed that the 128 version of *Rock 'n' Wrestle* has been abandoned while development of the extended version of *Lord of the Rings* has been "put on hold."

Ocean, two of whose games were bundled with the 128 as sold by Sinclair is also easing up on development, although it still intends to bring out a number of products in the future.

Hewson, which produced a version of *Technician Ted* for the 128's launch, is according to Andrew Hewson adopting a "wait and see attitude."

It's therefore looking very much as if, although 182 compatible 48K games will be available, there will be little specifically 128 software on sale until at least Christmas.

Amstrad plans 256K Spectrum?

THE new version of the Spectrum, which Amstrad plans to bring out this autumn, may now be rather different than at first thought.

It now looks as though Amstrad will not only increase the memory of the Spectrum to 256K, but also utilise Astron cards, credit-card style cartridges with their own part on the machine.

These are currently produced in the UK by Electric Software which had been in negotiations with Sinclair over Astron cards for the Pandora portable project. Pandora has apparently been dropped by Amstrad, but the credit-card implementation has been transferred to the new Spectrum.

It is thought Amstrad plans to bring the machine out at under £200, as a sophisticated games console.

Memotech and Tatung to launch micros

TATUNG and Memotech are both launching machines against Amstrad in the next few months. Tatung's follow up to the Einstein is to be launched towards the end of the Summer at a price which is "competitive with Amstrad", according to Tatung spokesman David Bell.

The new machine, which is currently out with software developers, has 3 inch disc drive, 256K Ram, stereo sound output and can display up to 512 colours on screen at the same time. It is, according to Bell, compatible with the previous Tatung machine and will run with Syntaxsoft's Spectrum emulator for the Tatung.

The configuration of Memotech's new machine is less certain. The company is currently in receivership, but is maintaining hardware and software helpline support. The software helpline is being handled by Syntaxsoft whose boss, Keith Hook, also runs Genpat, the Memotech user group, while a spokesman on the hardware support line told

Popular Computing Weekly that Memotech was regrouping as a new company under Jeff Boyd, one of the founders of the original company (see *Popular Computing Weekly*, March 27).

Neither Boyd nor Hook was available as PCW went to press, but as the latter has been a software adviser to Memotech for some time it seems likely that Syntaxsoft will be heavily involved in the new machine, and that it will be Z80-based, this being Syntaxsoft's area of specialisation.

Memotech and Tatung are both likely to be attracted by the Amstrad market as their machines are based on the same Z80 processor as Amstrad's micros, and the capabilities of the machines are similar.

If the two companies can cash in on the revival of the CP/M operating system they stand some chance of creaming off some of Amstrad's small business sales.

Commodore alters prices and plans a new look for the 64

SEVERAL changes have been made to pricing and packaging policy on Commodore's 8-bit range, reflecting to some extent, the implications of the Amstrad/Sinclair deal for Commodore UK.

While the Commodore 128 was intended at its launch to supersede the aging 64 model in time, it now looks likely that Commodore is considering a relaunch of the 64 in the home market entertainment field.

A redesign of the machine's casing, to bring it more up to date, and more in line with the low-slung keyboards and cream coloured units of the other machines in Commodore's range is also on the cards.

A redesign of the 64 was first mooted at the PCW show last September, but the idea seemed to fade away as Commodore heavily promoted the 64 in the musical application field.

However, Chris Kaday of Commodore UK acknowledged that the Amstrad/Sinclair deal had given Amstrad a virtual monopoly of the current and future entertainment micro market in Britain, aside from Commodore, and that such a relaunch was a possibility.

Some rethinking has also been done on the two 128 machines. The direct 64 upgrade, the Commodore 128, is now available in a compendium pack, similar to that of the 64,



Tatung's original Einstein micro.

Timex to ship Sinclair machines into Poland

THE CONFUSION over the ownership of the various constituent parts of Sinclair Research has taken a turn for the worse, with the news that Timex has signed a deal to supply its Spectrum-derived Timex 2068 to Polish schools.

It has further been suggested that Timex secured the eastern European rights to Sinclair

products from Sinclair prior to the Amstrad takeover, despite the fact that Alan Sugar claimed he had secured "worldwide rights" to Sinclair machines at that time.

The Timex 2068 is a variant of the Spectrum first launched in the US, but subsequently withdrawn. It has since been sold in Portugal, where Timex retains rights to the machine. Timex won't comment on the Polish deal, but a statement is expected in the next few days.

Amstrad denies disc shortages

AMSTRAD is set to circulate a letter to dealers, saying that the reports of shortages of its 3 inch discs are "myths".

Amstrad's computers are virtually the only ones to use 3 inch discs, and their scarcity has been a problem for any Amstrad disc drive owner.

Now Amstrad has asked its disc supplier Matsushita of Japan for written confirmation of the disc's availability which can be referred to the trade.

Matsushita's letter, however, is expected to include the clause that it will continue to produce the 3 inch discs only as long as Amstrad requires them.

for £269.

The 128D, with a built-in 5 1/4 inch disc drive, will now be available in three versions: the cpu plus drive for £499, the cpu, drive and monochrome monitor at £599, and the latter package, plus printer and *Microclerk* business software for £899.

Kaday denied however, that this third package was intended to compete with Amstrad's PCW machines. "We are aware of the significant penetration of the PCW's, but this is different—we aim to provide a credible alternative.

The 128D pack has a better quality printer, it's a different machine, with different software, at a different price."



Miracle Technology's Multimodem for the 64 gets BAPT approval

Miracle Technology's 64 Multimodem for the Commodore 64 and 128 has now received BAPT approval. The modem has its own software on ROM, provides CCITT V21/V23 and Bell standards, and handles baud rates of 300/300, 1200/75 and 75/1200. It features auto-dial and auto-answer, and functions include save and print frame. It costs £116.15.

Details from Miracle Technology, St Peters Street, Ipswich IP1 1XB (0473 216141).

Ocean adds touch of Genius to Laser range

OCEAN'S utility software division, Ocean IQ, has released versions of its *Laser Genius* machine code system for Spectrum, Amstrad and Commo-

dore 64/128. A Spectrum 128 version is to be released shortly.

Laser Genius is a development program written by Oasis Software, which produced *White Lightning* and Ocean IQ's range of compilers and assemblers. It consists of an editor, assembler, monitor and analyser, the latter being a software emulation of some of the functions of hardware-based debugging devices.

The program costs £14.95 for tape, and £19.95 for Commodore and Amstrad disc.

Mastertronic to sell cheap C128 games

MASTERTRONIC is releasing a range of £4.99 disc-based games software for the Commodore 128. The first titles are both enhanced versions of earlier Mastertronic hits on the 64 - *The Last V8* and *Kick Start*.

The two are among the first specifically 128 titles to be released in this country, and the low price will make them particularly attractive to users. Mastertronic spokeswoman Alison Beasley promises more

128 titles in the near future.

Mastertronic has in the last few months proved that a market for minority machines, such as the C16 and Plus 4, exists. The C128 market is therefore a logical extension to this.

Kuma launches utility pack for the Amiga

KUMA Computers has released *K-SEKA*, an Editor/Assembler/Debugger for the Amiga. The product is a fast, efficient 68000 assembly code system which includes an Editor, Disassembler, Linker and Machine Code Monitor and operates under Amiga DOS.

K-SEKA is currently available at a retail price of £79.95.

Details from Kuma Computers, 12 Horseshoe Park, Pangbourne, Berks. (07357 4335).

ROMS is a full range software program for a full range of computers in conjunction with PARTNER. The power of professional word processing really becomes apparent.

ROMS will allow you to create personalised standard letters using each user's individual file. You could create a standard form letter and a file of names and addresses. ROMS will then produce a copy of the standard letter for each name in the file giving each one its own personal name, address, etc. Also for those situations (invoices, newsletters, subscription renewal) or just print your own Christmas cards!

This is ROMS in its simplest form and the software will allow for even greater flexibility by using some of the features listed below.

* ROMS 1 *

DS Enterprises 01-671 0209

Disks

5.25"	DS DD
Diskexpress (Recommended)	£12.50
3.5"	DS DD
Fuji	£28.50
Maxell	£29.50

All disks are guaranteed and come packed in plastic flip and file type boxes.

Drives

QL, Spectrum or BBC Compatible		Dual 80 Track
Single 80 Track		
3.5"	£110.00	£199.95

QL Software

Lattice C	£85.00
Pascal (Full ISO)	£79.00
Super Charger (Basic Compiler)	£48.50
Ram Disc (Ram Disk & Utilities)	£14.95
Tasprint	£17.50
QLpaint	£21.95
Toolkit II (Eprom version)	£32.95
Ice & Choice	£34.95
Sign Designer (Designs Screens & Signs)	£16.95
Touch Typist	£11.50

Add Ons

512k Expanderam (Miracle Systems)	£120.00
Including Ram Disk	£127.50
Dual 3.5" Drive & Interface	£265.00
Citizen 120D Printer	£225.00
Centronics GLP	£159.95
Saga 3 Keyboard	£64.95

DS ENTERPRISES, 25 Trinity Rise, London SW2 0QP

All prices include VAT and Post & Packing

PC925

FAULTY SPECTRUM?

As you are probably aware from press reports Sinclair Computers no longer have a repair department.

Our computer repair workshop has been an **OFFICIAL Sinclair Repair Depot** for the past six years and we are pleased to announce that we will continue to do your out of guarantee repairs as in the past.

Send your faulty computer **DIRECT**

SPECTRUM	£18.75 inc parts
ZX81	£11.50 inc parts
16K RAM	£9.95 inc parts
MICRODRIVE	£15.95 inc parts
INTERFACE 1-11	£18.75 inc parts

CALL OR SEND WITH CHEQUE OR P.O.

**T.V. SERVICES
OF CAMBRIDGE LTD
FRENCH'S ROAD
CAMBRIDGE CB4 3NP
Tel: 0223 311371**

187V

Capslock queries

I've had several queries about using my "Quill Capslock" program which gives an on-screen caps lock and clock, with *Abacus*, *Easel* and *Archive*. The clock-setting routine can be merged with boot programs in the same way as for *Quill*, but line 8 must be changed to contain the appropriate filename.

You'll also have to produce a modified version of Capslock with altered window positions using the table printed in Vol 5 No 17. The new window coordinates are: for the caps lock indicator - 274,236; for the clock - 340,236

There is an easier way to do this than using the table. The Microdrive cartridge I'm supplying for £4 has a version of Capslock already which modified for use with *Abacus* and *Easel*, and a program which makes it easy to change Capslock to suit whatever *Archive* screen you're using.

If you're still stuck with version 1 of *Quill*, the published clock-setting routine won't work. You can get Capslock running by inserting an *Exec* command between the *LBytes* and *Call* commands in line 200 but it may affect the screen stability.

Anyway, your time would be better spent getting hold of a version 2 copy of *Quill*.

David Witherow
St Leonards
East Kilbride

Star
Letter

8256 sex symbols

Locoscript seems to have attracted equal amounts of admiration and criticism from its many users. On the face of it, one of its limitations seems to be that you cannot create user-defined symbols or even type certain accented letters if they are not part of the standard character set.

Being a professional biologist I needed to use male (♂) and female (♀) signs when writing scientific papers. After an hour or two of experimenting it seemed fairly obvious that the male sign could be constructed from an "upward arrow" printed in superscript on top of a zero in subscript. The arrow had to be printed in italic to get the necessary slope to the right. Similarly, a female sign could be made from superscript zero and subscript "plus".

The difficulty came in trying to superimpose the two

halves of each character, as there is no backspace key on the Amstrad, only a back delete key. Also you cannot send a backspace control to the printer from within *Locoscript*.

The answer is to print the values of the special symbol on separate lines, with zero line space between them!

When I tried this for the first time it seemed so complicated and time-consuming that I nearly abandoned the whole idea. At this point my over-worked brain managed to come up with the solution that saved the day. All I had to do was save the sequence of commands for each symbol as a "phrase". These phrases are stored in the *Phrases.Std* file, and now I could type my male sign using Paste "M", and the female sign with Paste "F".

Well, of course things are not that simple. You have to line them up in the same column by eye, which can only be done with "codes" switched off using f1. You simply type a series of blank

spaces in front of the second part of the symbol until it lies directly under the first part.

The effect on the screen is decidedly odd because altering the line space only changes the printer output, not the screen display. However, the printed result is very satisfactory.

One warning I have to pass on is that the process will not work in proportional spacing, but only with one of the fixed spacings. Although the columns line up on the screen in proportional spacing they will not necessarily do so on the printer.

The basic principle of using zero line feed to superimpose characters opens the door to the production of many new symbols on *Locoscript*. Several promising signs are accessible using Alt and Extra, and combinations of these are sure to lead to interesting results.

Peter Barnard
Leigh-on-Sea
Essex

Mr Barnard receives a year's supply of *Popular* binders.

Tiger? No way!

A word of warning for anyone considering buying Gremlin Graphics' *The Way of the Tiger*. Don't!

I was foolhardy enough to splash out ten shiny pound coins on this much-acclaimed

game. After all, it was not only a *Crash Smash* but a *Your Sinclair* Megagame.

Very pretty graphics, great animation of your ninja and flowers blowing in the wind, ducks swimming, fish leaping and other strange stuff. Next day I sat down to play it from

the beginning.

I breezed through all three parts in no time.

The first part is dead easy - just repeated blows and backward leaps polish off your opponents; in the second part repeated jabs of the pole make

continued over the page

Puzzle

Puzzle No 208

At Cynthia's party we played 'Buzz Fizz'. If you don't know the game, let me explain. A group of players sit in a circle. The first player calls out "One", the next player calls "Two", and so on, each player counting up in turn. When play returns to the first player he continues in sequence, and so the game goes on.

However, for any number which is either a multiple of five, or contains a five as one of its digits, the player calls out "Buzz" in place of the number. Similarly, numbers which are a multiple of seven or which contain that digit are replaced by the word "Fizz". Players with numbers such as 35, 56, or 57, which exhibit both of these properties call out both.

Any player making a mistake drops out of the game, which continues until only one player is left, eg, a sequence starting at 24 would run: "twenty-four", "Buzz", "twenty-six", "Fizz", "Fizz", "twenty-nine", "Buzz", . . . and so on.

Anyway, at this party we must have been very good at the game, as we had counted to well

over one hundred before Cynthia had to drop out of the game. This was not because she had made a mistake - in fact, up until then everyone had had a perfect score - but because she had lost a contact lens and had to look for it!

At the time that this happened there had been an equal number of both "Fizzes" and "Buzzes" called. What was the earliest count on which this could have occurred?

Solution to Puzzle 203

The wall has a height of 256 inches (21 ft. 4"), and the windows are 30 inches wide.

There are two variables to be taken into account, the width of the wall (an exact number of inches), and the width of the windows (also an exact number of inches over 12). These values are generated in two *For/Next* loops in the program. The width of the window ranges from 12 to one third of the width of the wall. This is because three windows placed side by side cannot be more than this. For each set of values the various areas are calculated and the total

area of brick remaining is compared with the total window area, if it is seven times the window area the result is printed out.

```
10 FOR INCH=1 TO 300
20 AREA=FACH*INCH+1/3*INCH*2/3*INCH*2/3
30 FOR WINDOW=12 TO INCH/3
40 AREA3=1/3*WINDOW*WINDOW
50 BRICK=AREA-3*AREA3
60 IF BRICK=7*AREA*7 THEN PRINT INCH,WINDOW
80 NEXT WINDOW
90 NEXT INCH
```

Not that the wall area includes the pointed area at the top (which will be equal to the square of half the width of the wall), but will exclude the area of the windows and the area of the door. The windows themselves occupy an area equal to 11 times the width of one window squared.

Winner of Puzzle No 203

The winner is Al Ginbey of Berlin, West Germany, who will be receiving £10.

Rules

The closing date for puzzle 208 is June 10.

continued from page 7

your opponents fall into the water; and in the third part, repeated slashing for the first two, and slash-dodge for the second two (including the grand master) got me through easily.

"Well done" it says. I then expected to go back to the start with more, harder opponents to beat. But no - that, as they, is your lot.

Infuriated is not the word for it. I have just spent £10 on a game which I'll probably never want to play again as I can whizz through it in no time.

I'm not an ace games player, so if your readers want a game that will keep them occupied for a long time, they shouldn't buy *The Way of the Tiger*.

*The Doppel-ganger
Barnsley
Yorkshire*

What's a Crash Smash?

Amstrad disc blues

I'm an Amstrad 464 owner who, in my innocence, recently bought a 3" disc drive, thinking to put my large but



"We've waited so long it's become a legend before its own lifetime."

original software collection on to it.

I now find that because of illegal filenames, headerless loaders and that nasty turbo that this was a pipe dream.

I can get some on to disc but not all will run, and of those that run, not all do so properly. This does not endear me to our 'struggling' software firms.

I now no longer purchase any software unless I can be assured that it will transfer,

and I can see no point in buying disc software unless it uses all of the disc. After all I can't see anybody putting a five minute program on a C60 cassette - can you?

The practice of producing anti-disc software will not damage the tape pirates but merely produce a new enemy out of the needs of the disc user. Roll on the Amstrad Interface 3.

*T Meredith
BFPO 20*

Most software companies will upgrade cassette software to disc for a small fee. In any event, it's not as though you can no longer use your cassette-based programs.

String driven thing

I read Martin Lanni's letter to *Peek & Poke* (Vol 5 No 18). Your resident expert's answer was fair enough, but...

I had the same type of problem a while ago and it transpired that I was not making allowances for the machine's inability to send a null string. The message I got was the same, "String Too Long".

I now translate null strings to

another character (something like the hash symbol) when sending, and back again on receiving. I have also noticed that the Commodore 64 is particular about the secondary address on file numbers.

*Richard Hardaker
Cobham
Surrey*

A fair point - one of the reasons why professional software uses default settings to such a great extent is to avoid this kind of problem. Instead of doing the translating at the input/output stages, you can predefine all strings to a default character and simply overwrite them as necessary.

Every week *Popular Computing Weekly* offers prizes for Star letters. The most interesting item in our postbag each week will win the writer a free year's supply of exclusive *Popular Computing Weekly* binders.

Send your thoughts to Letters, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

ZX! BASIC v2

POPULAR
Computing
WEEKLY

A powerful machine code extension of Spectrum BASIC is free when you subscribe to *Popular Computing Weekly*.

Take out an annual subscription to *Popular Computing Weekly* at £19.95 U.K. (£37.40 overseas) and receive, free of charge, the ZX! BASIC v2 tape. The program provides 28 extra commands including sprite handling, collision detection and drawing routines - plus a comprehensive sprite designer.

Complete and return the form below for your free extended BASIC.

Please enter my annual subscription to *Popular Computing Weekly* at £19.95 U.K. (£37.40 overseas), and send my free ZX! BASIC v2 tape.

I enclose a cheque made payable to Sunshine Publications Ltd.

Please charge my Visa/Access card

No:

Expiry Date:

Name: Address:

Which computer do you use?

Return this form together with your payment to: PCW Subs., 12/13 Little Newport St., London WC2H 7PP (Please allow 21 days for delivery).

DO YOU WANT TO BE A HERO?



The result of unique co-operation between three ace software developers and the Biggles film production company, Biggles - The Untold Story will knock you right out of the air! It's a multi-part arcade strategy game in which each part must be completed to reach your final goal.

In the air, on the rooftops, on the ground, or in the trenches

YOU CAN BE A HERO!

Coming in May Commodore 64 £9.95 tape, £12.95 disk
Spectrum 48K £9.95 tape

Coming in June Amstrad CPC £9.95 tape, £14.95 disk

MIRRORSOFT

Purnell Book Centre, Paulton, Bristol BS18 5LQ

Amiga stars at Commodore show

Christina Erskine tours the show where the Amiga was finally let loose, and finds that Commodore's 8-bit machines have not been forgotten

The Amiga, its launch, its continuous demonstrations courtesy of Commodore, and its price, entirely dominated the Seventh Official Commodore Computer show, held at London's Novotel from May 9-11.

The fact that Commodore publicly showed the Amiga for the first time in the UK at the *Which Computer?* show in January has apparently now been forgotten ("That was a preview," say Commodore executives), and the show last week was being treated as its official launch.

This is curious. The Commodore show has in recent years been attended by entertainment companies and the general public, largely because Commodore's best-selling machines have been aimed in this region too. I suspect that many of the large crowds surrounding the Amiga demonstrations could only goggle and consider their Barclaycard credit limits ruefully.

For the Amiga, its graphics/art, sound and speech abilities notwithstanding, is being directed first and foremost at the business user, be it a purely desk-top user, ad agency or graphic design house user. Home users, in all honesty, will either have to wait for price cuts (which could take some time), or Amiga 'clones' from other companies.

But I may be wrong. Certainly, the Amiga attracted huge interest at the show. Commodore ran continuous demos on its own stand, which congested the upper floor more than somewhat, and also in the Commodore Theatre on the ground floor. It is also important to look at what the Amiga can do, and what the third party software companies intend to put on it, because the capabilities of Amiga encapsulate the way that the home computer market is moving. Every hardware company would like to be able to produce a machine with the Amiga's features at a price everyone can afford, and it won't be that long before one of them does it.

The Amiga

For a few lucky people, an Amiga could be theirs within a couple of weeks. Commodore was taking orders at the show, and an initial shipment of 1,000 machines is in Britain now. More should be arriving next month, and Commodore is blaming a dock strike for any delays that occur.

Anyway, plenty of Amigas were in evidence at the show on a number of stands - what of the software to run on them?

The Amiga village took up much of the upper floor, and housed twelve companies showing their wares. Its graphics features were being shown off to good effect by



The Amiga - star of the show

Ariolasoft, which demonstrated its *Deluxe Paint*, *Deluxe Video* and *Deluxe Print* packages, licensed from US company Electronic Arts. *Deluxe Paint* is the sort of art creation program which makes any other look rather ill for its sheer speed, flexibility and features available. *Deluxe Video* enables you to create animated graphic sequences, with sound effects and sub-titles, all from a series of not over-complicated menus, while *Print* is a rather jolly little program which will make Christmas cards, calendars, personalised notepaper, etc.

On a more business-like note, Eidersoft's Amiga village stand showed an integrated accounting package, inclusive of nominal ledger, cash book, budget control, sales orders, sales analysis, purchase orders, sales ledger, purchase, ledger, inventory control applications, to name but some. Interlex introduced *The Office System*, comprising six modules, each at £49.95: *Office* (environmental manager), *Office Word* (simple word processor), *Office Chat* (electronic mail), *Office Data* (database), *Office Monitor* (analysis of data), *Office Net* (networking).

Precision has also joined the exclusive band working on Amiga titles: it was showing a variety of titles, including *Aegis Images*, *Aegis Impact*, and *Aegis Animator* (paint, slide presentation and animation

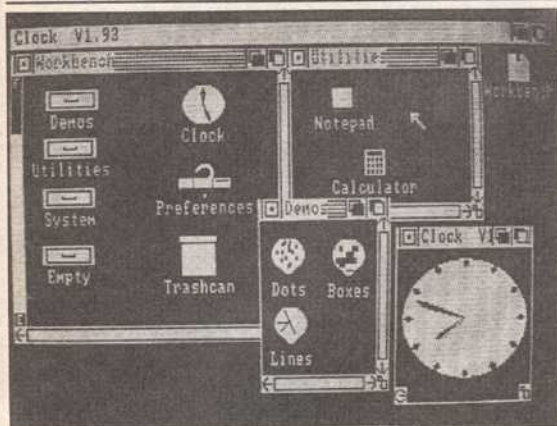
packages), *Logistix* (a spreadsheet, database and business graphics compilation). Precision was also displaying hardware for the Amiga, and was one of the few stands to do so. Its range included a seven-slot expansion box system, and expandable Ram board with 2M memory, and a stereo sound digitiser.

Precision also had an ink-jet printer on display, the Canon PJ-1080A, compatible with the Amiga, 64 and 128, and quite reasonably priced at £299.

Other hardware on show for the Amiga included another 2M Ram expansion, the AX2000, from Canadian company Comspec Communications. Plus, of course, Commodore's own external drives, the additional 3½ inch, and 5¼ inch version.

On the languages side, Metacomco announced its Pascal had earned an ISO certificate from the BSI, thus endorsing it as a full, standard Pascal implementation. Micro APL introduced its APL.68000 for the machine.

Not all was deadly serious on the Amiga. In the village, Enigma Developments demonstrated *Trivia Trove*, a series of strategic puzzles - the sort you need to be able to solve in three seconds flat to get into Mensa. Enigma evidently thinks the Amiga is a no-holds-barred home micro: "a game



Windows and multi-tasking on the Amiga

for the whole family", it insists in its press hand-out.

Elsewhere, Mirrorsoft was proudly displaying its astronomy program, *The Halley Project*, licensed from Mindscape in the States, while the Amiga version of that much-publicised venetian blind simulation, *The Pawn*, was demonstrated on the ground floor.

The Amiga village certainly showed that the Amiga will not be completely starved of software, however, space around the village stands was so limited, it was a lucky person who managed to get close enough to see the goods on display.

Commodore 64/128 – serious software

The 64/128 computers were not forgotten in all the attention being devoted to the Amiga. There was plenty of serious stuff about, notably from Viza Software, Gemini Marketing and Supersoft.

Viza showed its word processor, *Vizawrite Classic*, for the C128, which includes a 30,000 word spell checker, plus its spreadsheet/database/business graphics package, *Vizastar* – all integrated. Gemini showed *Office Mate* (word processor, database, accounts and mailing list) and *Office Master* (the same, plus further accounts modules).

Supersoft, which has been producing Commodore software since before most of us can remember, had a whole new range for the 64 and 128, including a Z80 cross assembler, Turbo disc, and advanced machine code monitor (128 only).

Microclerk, the business package bundled with the "business system version" of the 128D (see news story) was being shown as a stand-alone product on JCL's stand. *Microclerk* comprises accounts designed for the small business user, word processor with mail merge, filing, calculator program, and costs £99.99 in its stand-alone configuration.

Also on the non-games area, but more leisure orientated, Wigmore House showed its acclaimed Wigmore mouse

package and software, Trojan displayed *Cadmaster*, to be used with its light pen, while for communications enthusiasts, rivals Micronet and Compunet fought it out on near-adjacent stands on the upper floor.

An interesting slant in the communications area, was the appearance of British Rail, which took a stand to exhibit how you can book and buy rail tickets through Prestel and credit

cards. The British Rail representative explained that appearing at shows was a new policy, but that it hopes to make its presence felt at a number of micro exhibitions this year.

Music

The heavy promotion of the Commodore 64 in this area has led to a variety of products being introduced, to take advantage of the yet-to-be-surpassed-for-the-price Sid chip.

Most conspicuous was Music Sales, showing its full Commodore UK-endorsed range, the Music Maker, Sound Studio and the new Sound Expander (see *Popular Computing Weekly*, February 13 for a review). These products are available in one complete package for £149.99. Music Sales' Sound Sampler (£69.99) was also being shown.

Third party musical offerings came from Supersoft, with a C64 drum machine cartridge and software called *Rhythm King*

(£39.95), and *Microvox*, a digital sound sampler (£299.95, cartridge plus hardware), which has features such as harmonising, phasing and flanging.

Games

Most of the show faithful were there: Anco (Anirog), Level 9, Mirrorsoft, Llamasoft and Bubble Bus. C16 owners could find plenty of software on the Anco (*Winter Events* in particular). Typesoft, Martech showed *Zoids and Samatha Fox Strip Poker* on the 64, Level 9 displayed *The Price of Magik* (see elsewhere in this issue). Mirrorsoft showed *Biggles – the Computer Game* for the first time in public, while Jeff Minter's Llamasoft was mainly concerned with Batalex and other recent 64 releases.

Robtek showed its much sought after *Game Killer*, and was offering special show prices on that and *Turbo* for the 64.

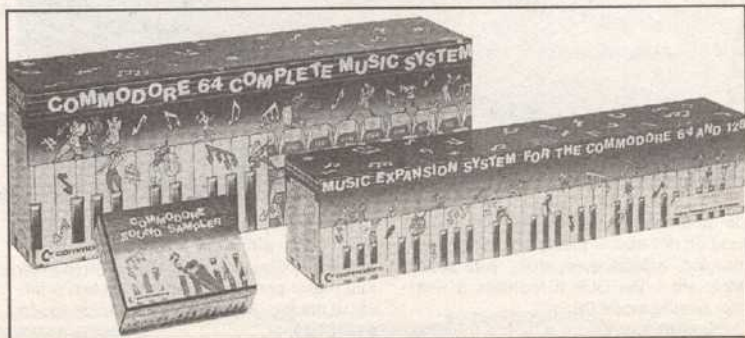
There were plenty of bargains to be had for anyone looking to expand their C16/C64 catalogue, as a number of wholesalers/retail outlets exhibited at the show.



Above: *Aegis Images* (Amiga), below: *Vizastar* (128), bottom: Music Sales complete system (64/128)

Use Windows Page Line Top

Printer Type	Printer	Printer	Printer	Printer
1	Circle Sheet	0	12.45	
2	Line Line	0		
3	Paper Length	65	Line 80	0
4	Header Cell	000		
5	Top Margin	5	Line 70	0
6	Left Margin	5	Line 70	0
7	Right Margin	75		
8	Line in Page	25		
9	Footer Cell	000		
10	Setup Cell	ASD	Current	
11	Start Cell	000		
12	End Cell	1000		
13				
14				
15				



A flawless performance

Peter Worlock looks at the latest dot-matrix printer from Centronics

Anyone looking for a general purpose printer is faced with a bewildering range to choose from. Extending the range even further is a new printer from Japanese manufacturer Centronics, being marketed here by Saga Systems.

The GLP II is a dot-matrix model using a nine-pin print head which means it features true descenders and the ability to print good quality graphics and screen dumps.

What makes the GLP II stand out in the crowd is that it comes with both Centronics parallel and RS-232 serial interfaces built in, selectable from one of the two banks of DIP switches.

The printer has a host of facilities, including selectable baud rates for data transmission speeds; the ability to emulate either an Epson or IBM standard printer; eight international character sets; plus a three-way print buffer.

In either Epson or IBM mode, the GLP II has a 2K data buffer, and a 1.8K print buffer holding the data for a full line of print. However, in Epson mode, a third, "download", buffer is available. This allows you to send user-defined characters to the printer - ideal for Commodore owners, or those who want to print unusual characters such as scientific or mathematical symbols.

THIS IS DRAFT MODE

THIS IS CONDENSED MODE

THIS IS EMPHASISED MODE

THIS IS ENLARGED MODE

10 characters per inch.

Some of the print features are not usable in this form, but you can use NLQ together with underlined, enlarged and sub- and superscript.

All of these features are controlled through software by using Epson-standard ESCape codes. I would have preferred, however, a hardware setting for NLQ mode.

Construction

On the whole, the GLP II is solid and well-built. It is very small - only 13 x 7.5 x 2.5 inches - but fairly heavy. This makes it ideal where desktop space is at a premium.

The print head looks a little flimsy, but during this test it performed flawlessly and Centronics claims a life of 50 million characters minimum.

The DIP switches are reasonably accessible in a trench under the print head; a lot better than the Epson method which requires dismantling the whole printer to get at them.

Print speed is fair with a claimed 100cps in draft mode, and 25cps in NLQ mode. In reality no printer reaches these quoted speeds and the GLP II is no exception. But NLQ speeds are still faster than the average daisywheel.

This is Near Letter Quality (NLQ) mode.

The printed characters are larger and better-formed.

Note that you can also incorporate underlined and **bold typefaces** in NLQ mode.

Conclusion

The GLP II has a lot to commend it as a general purpose printer for home computer users. It's small, well-built and more than adequate for screen dumps and listings, while the NLQ mode is fine for letters and essays.

Business users would be better advised to look elsewhere, perhaps to the Epson LQ series or similar. For the rest of us, the GLP II is well worth a look and at £199 is very fairly priced.

Hardware Centronics GLP II Price £199
Supplier Saga Systems, 2 Eve Road,
Woking, Surrey GU2 4JT. Tel: 04862
22977.

In addition to the usual print modes found on dot-matrix printers - condensed, enlarged, emphasised, sub- and superscript, etc - the GLP II features a near-letter quality mode (NLQ).

NLQ is printed using a 12-pin matrix at

The basic model comes with friction feed only, although tractor feed is an optional extra, and the paper path is such that paper can be positioned to start printing at the top of the first sheet, which saves a lot of paper.

COMMODORE 128 Advanced Programming



The Commodore 128 can be used in three separate modes, the 128K mode is particularly attractive to the serious computer user. This book is intended for the owner who already knows the elements of programming in BASIC, and who wants to make the Commodore 128 work for its living. Because the BASIC of the 128 is so much superior to that of the older C64 model, much more can be accomplished without knowledge of machine-code, and this book fully stretches the abilities of the new BASIC. The focal point of each chapter is the application of BASIC subroutines to data processing, and to that end many very useful and original subroutines are included. You will learn, for example, how to work with pointers in BASIC, and how to speed up a string sort by the use of pointers to array members.

Whether your interest is for business or pleasure, hobby or profit, this is a book that will reward your reading and bring new perspective to your use of Commodore 128.

ISBN 1-85181-034-X
PRICE £5.95

LEARNING ASSEMBLY LANGUAGE ON THE C128



A complete course with text and software, this step by step package introduces the complete beginner to 6502/6502 programming. The assembler provided with the course is especially designed for self teaching purposes so that once a basic understanding of assembly language is established, the reader can transfer to the actual Commodore built-in assembler with a minimum of effort and be free to explore the application of machine code.

The software contains a complete 8502 assembler/disassembler using

Unified mnemonics, with Symbolic labels, Macros, Hard Copy, Memory Labels, and Save/load.

The assembler allows programs to be written easily in assembly language and these it translates automatically into machine code.

ISBN 1-85181-027-7
PRICES £12.50 tape or £14.50 disc.

3D GRAPHICS DRAWING BOARD FOR THE C64 AND C128



This software package allows you to create, alter and combine 3D images on the screen. This easy-to-use program is a breakthrough in graphics software—the 3D perspective images can be easily manipulated using the zoom, rotate, scale, stretch and move options. Hidden line removal adds further realism and the finished designs can be saved permanently to disc or printer.

PRICES C64—£14.95 (disc only)
ISBN 1-85181-028-5
C128—£14.95 (disc only)
ISBN 1-85181-029-3

WATSON'S NOTES FOR THE C128 + C64

Authors: D. Kedem & I. Kalisky

The concept of the Watson's Notes books is of a series of easy to follow units, each covering a specific area of BASIC programming. The books are aimed at younger readers, but any newcomer to computing will find that the style lends itself to clear and rapid progress through the various subject areas.



C128
Unit 1:
First Steps in BASIC £3.95
C64:
Unit 1:
First Steps in BASIC £2.95
Unit 2:
Exploring BASIC £2.95
Unit 3:
Making BASIC work £2.95
Unit 4:
Creative Graphics £3.95
Unit 5:
Sprites £3.95
Unit 6:
Concepts in Graphics £3.95

GLENTOP

PUBLISHERS □ LIMITED

Standfast House, Bath Place, High Street, Barnet, Herts. EN5 5XE Tel: 01-441 4130 Telex: 22828

Arnor terminates text file turmoil

It may seem biased but there are few Amstrad utilities that I have looked forward to as much as this extension to the excellent *Protext* word processor. The principal use of *Promerge* is to provide mail merge facilities, but Arnor has also taken the opportunity to improve the features offered for basic word processing.

CPC owners have been a bit spoilt to date since both *Tasword* and *Newword*, for example, have offered quite advanced conditional mail merge printing as standard. (This means that the text of the merge letter can be altered depending on the contents of the data supplied, for example, if phone number data is present, then print the block beginning "Please ring...", etc).

Although it follows on the heels of both of these, hopefully *Promerge* will open up a new market of small business users for Arnor, especially since it always tries to go a bit further than the competition. First, *Promerge* is much more flexi-

ble than either of the above when it comes to reading data - it is likely that almost any program you own will be able to send data in a form that can be understood.

Reformatting of the text is automatic at printing, which *Tasword* doesn't do, and there are some extra facilities - for example you can test substrings of data and even remove part of the data at printing; 'Mr A Smith' can be printed as 'Dear Mr Smith'.

Extensions to the word processor include many more embedded commands that can be placed into the text to ensure that chores such as setting up the printer drive can be completely automatic. Those with Epson compatible printers can now use microspace printing (variable text size and proportional spacing) and can now both edit and print text in a choice of six foreign languages (the special characters appear both on screen and on the page).

Files can now be printed or viewed from disc without re-

placing the one in memory. There is also a typewriter mode for direct printing (useful for envelopes).

Finally *Protext* options can now be set from Basic so you can create a loader program on disc that configures the program exactly the way you want when it runs.

The disc and Rom versions are not identical; *Promerge Plus* on Rom offers even more than the disc, and also overcomes the restrictions on text size caused by loading both *Protext* and *Promerge* into Ram. Extra features include the ability to have two files in memory at once, Background printing of one file while another is being edited is also possible.

You can now more or copy blocks of text as defined 'boxes' or rectangles on screen (invaluable for tables of data or two column printing). There is a decimal calculator that can insert values into the text. Finally *Protext* can now automatically convert Ascii text files back to its own document type (replacing hard carriage returns with soft ones, etc) rather than just vice versa - feature that is enormously useful and,

as far as I know, unique.

CPC 6128 (or DKTronics Ram pack) owners can make use of the second memory bank such that the maximum text size is now 80K in two separate halves (blocks can be switched between them) which is about the same as the largest file that can be edited on a CF2 disc by *Newword*/*Wordstar*, etc.

It must be said that to buy *Protext*/*Promerge*/*Prospell* on Rom, which is essential to get the full advantage of power and memory space, will cost you a good £100 plus, but together with a 6128 and a decent printer you will have a set-up that can thrash any 8-bit word processor for speed and even cross swords with some 16-bit programs for power. If only it ran on the PCW as well, but then since this is the last of their advertised releases who knows what Arnor will be up to next?

Tony Kendle

Program *Promerge Plus*
Price £24.95 disc, £34.95
Rom Micro Amstrad CPC
range Supplier Arnor Ltd,
The Studio, Ledbury Place,
Croydon CR0 1ET

Disc dilemmas divided

These are a series of extremely clever and extraordinarily useful disc indexing programs ideal for those people who have recycled their 3 inch discs so often that the disc label is covered in scribble, or for those who have a tendency to save everything as *Letter1*, *Letter2*, etc.

Findex is a utility that allows you to name each of your discs very simply, A, B, C, etc. You can run your amended discs through *Findex* and it makes a complete index file of each record, its size, location, user number, etc. It is possible to selectively specify which files to include by the use of wildcards which are very more flexible.

Two related programs are also provided. *FileAnalysis* will study the index and recommend the optimum arrangement of files on your disc to cut down on wasted space. *FileManager* will allow you to mark certain files or filetypes in the index as condemned. Once this is done the files will

be erased the next time you index the disc even if they are set to *Read Only*!

Keywords is a utility that complements *Findex* and can be run from within it. It will simply search through and index every file on your discs that contain a certain keyword or combination.

Doubledot works best on word processor files and allows you to emulate one of the nicer features of *Locoscript*. It will allow you to enter up to ten lines of comments at the beginning of any text file, using typical *Wordstar* conventions to mark these comments although you can choose your own. The program will then work through the specified filetypes filing, displaying or printing these comments.

Tony Kendle

Program *Disc & title utilities*
Micro All Amstrad Price
£49.95 Supplier Newstar
Software, 200 North Service
Road, Brentwood

PCW Pascal upgraded

HiSoft Pascal is the third implementation of the language available for Amstrad owners, and for would-be programmers on a budget, it's the cheapest.

This new implementation also includes support for the GSX graphics system, which further reduces what little differences there were between the various packages.

HiSoft's version will run on either the 8256 or 6128 (or other CPC machines with expanded memory and disc). What you get is a text editor, compiler, a small library of routines, and a handful of demonstration programs including a turtle graphics interpreter.

Documentation is adequate as a reference guide but is not designed as a tutorial, so beginners at Pascal will need to buy one of the many standard introductions to the language.

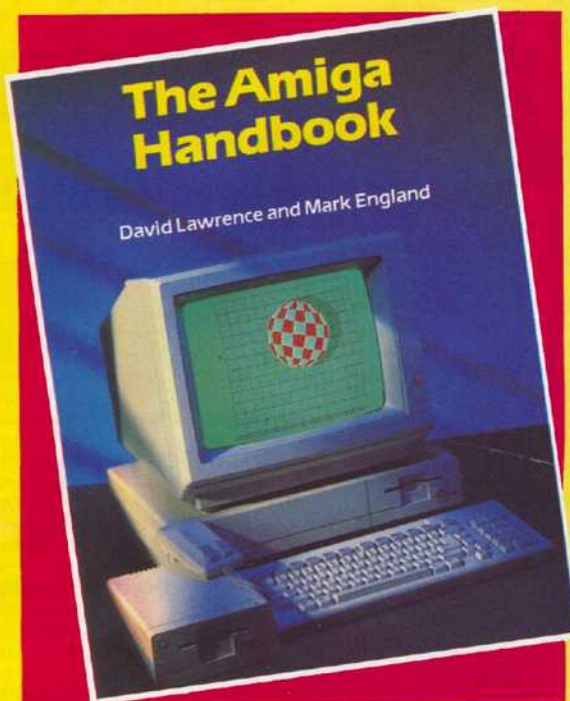
The major feature is now the GSX support, and this is comprehensive. The drawing of lines and polygons, block fills, and colour (on the CPCs) is supported, making graphs and business displays easy to produce.

Digital Research's Pascal/MT+ is a natural choice for computing students facing academic constraints, while Borland's Turbo Pascal is fast, fun and probably the one for real language buffs. However, if you want to sample Pascal, or you don't have much money to spare, HiSoft's version has a lot going for it.

Peter Worlock

Program *Pascal 180 Micro*
Amstrad 8256/6128 Price
£39.95 Supplier HiSoft, 180
High Street, North
Dunstable LU6 1AT.

JOIN THE REVOLUTION — BUY YOUR INTRODUCTION TO THE FUTURE



- ★ The easy-to-read Workbench environment and how to make it work for you
- ★ The kind of applications programs you need to build a system on the Amiga and how to use them effectively

The new Amiga represents a revolution in personal computers. This book is the authoritative introduction to that revolution.

The **Amiga Handbook** by David Lawrence and Mark England takes you behind the scenes to examine:

- ★ The custom-designed chips that allow the Amiga to outpace machines many times its price
- ★ The wide-ranging built-in libraries that control the Amiga's graphics, sounds, animation and speech
- ★ The 'Intuition' user interface that controls Amiga's windows and icons, and the more traditional text-based Command Line Interpreter
- ★ Programs in the powerful Amiga BASIC language to make the Amiga read a story, produce colourful graphs or simply print out a bill

**This is the first book for the Amiga.
Buy the book and join the revolution**



**To Theresa Lacy, Sunshine Books
12/13 Little Newport Street
London WC2H 7PP**

Please send me _____ copies of **The Amiga Handbook** ISBN 0 946408 91 2 at £7.95 (plus 90p p&p) per copy.

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

Alternatively please debit my Visa Access
American Express

Account number _____ Expiry date _____

Signed _____

Name (capitals please) _____

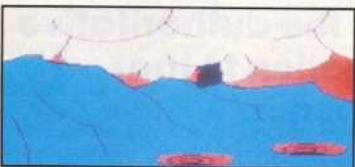
Address _____

Magikal mystery tour

Christina Erskine gets embroiled in the quest to destroy Myglar in Level 9's latest, *The Price of Magik*

After *Terrors of Trantoss* last week, we continue on the adventure theme, with Level 9's latest.

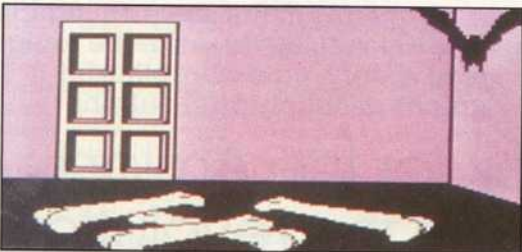
Any new Level 9 title is eagerly awaited by its legion of followers, and the *Price of Magik*, sequel to *Red Moon*, is no exception. Now out on the Commodore 64, conversions are in hand for just about any machine you can think of.



The Price of Magik is a traditional style adventure – lots of spells to learn and use successfully, a wealth of locations to be explored – points earned for reaching the more out of the way ones – and all the usual baddies, werewolves, wraiths, an ancient sorcerer who has abused his power; and some not-so-usual ones.

The plot

Your aim is to find, learn and implement 18 spells, and use the magical powers you learn throughout the game to defeat Myglar, ex-noble guardian of the red moon crystal turned bad, and now concentrating all the red moon crystal's powers to pro-

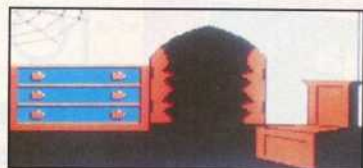
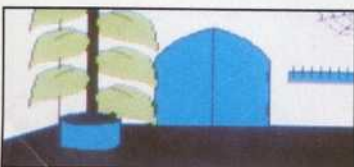


longing his own mortality.

Once you've done all your spell-finding, then of course you have to hunt down Myglar himself.

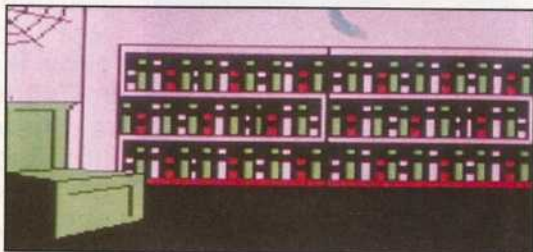
Gameplay

The game uses the dreaded Lenslok pro-



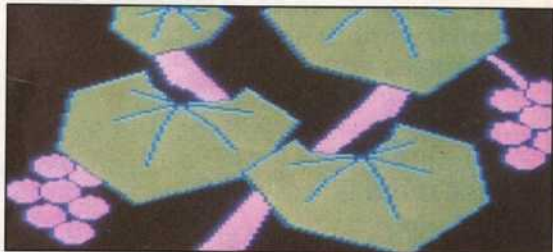
tection system, though it uses it sensibly. You are not required to get the plastic out and start squinting straightaway. Lenslok is restoring parts of the game you have saved on tape, so you can get quite a bit of gameplay in before running the gauntlet.

The instruction leaflet makes grand claims about the parser – "a wider range of English sentences than any other cassette-based game I've seen". Maybe so,



around waiting for colour fills. To speed things up even more, the formation of pictures and text-printing is done simultaneously.

You begin standing outside a tumble-down house, where much of the action takes place; alterna-



tives are to explore the garden, march in through the front door, or climb to the roof up a vine. Best policy is to have a quick look round the garden, collecting everything in sight, and then up the vine. Go through the door at first, and you're liable to encounter all sorts of malevolent creatures before you can obtain any weapons or armour.

A map, need I say it, is essential. The parser allows you to type a series of location moves in one go, so knowing

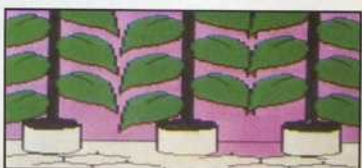


but don't expect it to be completely bug-free.

Most of the anomalies appear when you type in a command, using a word not in the parser's vocabulary, and for some reason, it decides you mean another quite different word. This does not really detract from the gameplay, what is annoying (as always) is

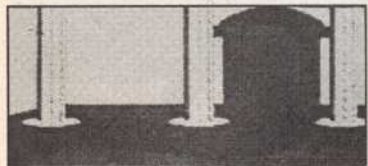
being told "I can't see it", when the damn object has just been described in the blurb.

The graphics are in true Level 9 style – somewhat crude, but recognisable illustrations, with some most peculiar colour combinations. In *The Price of Magik*, they're drawn very quickly, and, big plus, if you move out of a location before its picture has finished drawing itself, it'll move on straightaway – no hanging



exactly how to get to a chosen location is a must. Some locations need to be revisited several times, so you want to find the quickest route.

A wonderful addition to the parser is the *Oops* command (not available on every single version), which works as a take-back move, and can be used at any time. It

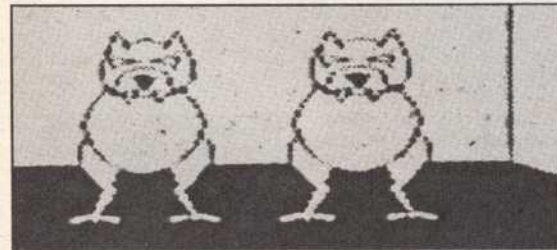


can get you out of situations which look fatal, and will put you back in the location immediately before.

The "price" referred to in the title, is your state of mind. The early stages of the game revolve around becoming insane enough to implement the magic you acquire. Every time you get the message *Your sanity is shaken*, it's good news. Every time you learn and implement spells, you move up the ranks - you start off as a sorcerer's apprentice, through conjuror, soothsayer, shaman, spellbinder, magician, wizard up to supreme wizard.

Tips on playing

- Can't see in the dark? The eyebright needs to be rubbed into your eyes.
- The spells - there are 18 in all that you need - are the three letter "words" found, mainly inscribed, around the place. Each one needs a "focus", before you can use



it. The focus is an object you must be carrying, linked in some way to the spell and its action, eg, the "see" spell requires you to have a feldspar lens.

- If you can catch the blood-sucking bat - in a cage, perhaps, and drag it around with you, it'll come in handy when you come across the bloodworm.

- Slugs don't like salt.

- The *Oops* command comes in particularly useful when confronted with the chests - ten different coloured ones. Only one is of any use to you; the rest are positively dangerous, and the colour of the

useful one is randomly generated each time you play. Properly speaking, one of the spells is implemented here, but I'm assuming you find the chests before you discover the intricacies of that particular spell.

- A suit of armour is a must - and if you're going to get one, you'll need to collect and carry a lot of bones!

- More armour can be acquired from something wearing it already - but make sure you don't leave it running around naked!

- Many of the baddies you come across can be ignored - simply get out of the room. Some of course, will be in key locations, and can't be avoided. Others aren't as vicious as they seem. You will be protected from the werewolf, for instance, if you explored the herb garden properly, and the monkey, despite the fact that it snarls and bares its claws at you at every opportunity, is actually very useful to have around.

- The pictures which you come across in many locations may seem merely decorative, but once you have found the "bom" spell, they'll be much more useful.

- If you type in *Score*, you'll be given a rating for sanity, status and age. Your age increases with every spell you use, and once it reaches 100, you're presumed dead. To keep young, find the red moon crystal.

- In combat, you'll be given stamina points - and once that reaches zero, you're also dead. To keep your strength up, the tapestry will be essential, once you've discovered the spell to galvanise it.

- If you find an apparently useful object sticking out of the ceiling, but can find no way of reaching it (jumping, standing on

The Price of Magik

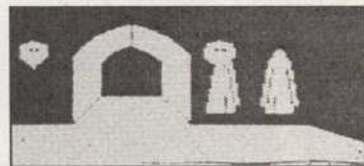


Level 9 Computing

books and peering at it through a feldspar lens being no use at all - nor is it any good hunting for a ladder), then logically speaking, it should also be sticking out of the floor immediately above, shouldn't it?

- Reading the plaque in the river is a fiendishly complicated business. Basically, you need the silver mail, and you must do something sensible with all your possessions before diving headlong into the river.

The Price of Magik is available for the Commodore 64 now, and shortly



also for the Amstrad CPC series, Spectrum 48 and 128, Atari XL/XE, BBC (no graphics) and MSX. Tape versions cost £11.95. Level 9 can be contacted at PO Box 39, Weston-sup-Mare, and will supply comprehensive cheat sheets to game owners on request.

Bombo baulks at budget

As if to prove once again that budget titles can be as good as the real thing, *Bombo* stands up very well to the "authorised" version of *Bombjack*. Here – wait a minute – *Bombo* is £7.95! And I was just about to praise it unreservedly.



It just goes to show that the fine line between budget and full price software has now practically disappeared. Although *Bombo* is similar in many ways to the original game – with detailed backgrounds, a jet-packing hero, and a number of bomb to collect despite many enemies, it doesn't justify the full price tag. For a start, there are only three backgrounds, Mediaeval Brit-

ain, New York and Ancient Egypt. Secondly, the much-touted music by WeMUSIC turns out to sound like Rob Hubbard on a bad day, and thirdly there's an annoying flickering line towards the top of the screen which speaks of hurried programming.

That apart, the game plays pretty well – the flying eyes, birds, drones, hives and revolvers may not appear particularly menacing, but they get faster and trickier as the levels progress.

However, the layout of the 20 bombs which you have to collect on each level is fairly straightforward until you have progressed to a high stage of the game, so it's not too difficult. As I said – *Bombo* would have been an excellent budget game, but doesn't have much to offer at £7.95.

Chris Jenkins

Program *Bombo* Micro
Commodore 64 Price £7.95
Supplier Rino, 1 Orange
Street, Sheffield S1 4DW.

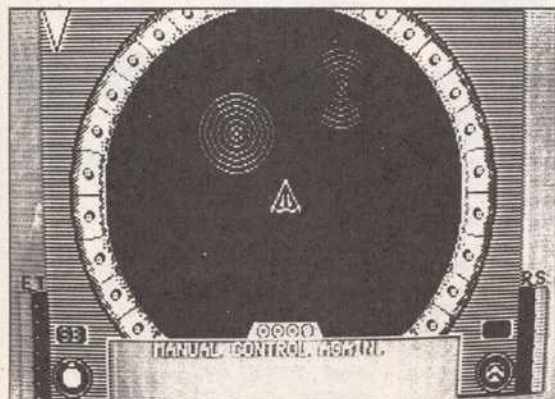
The heart of the Empire

The problem with *Empire!* is that it is not what it seems to be. It isn't anything like *Elite*, except that it involves trading in space. It isn't only, or even primarily, a galactic shoot 'em up either. This has led some people to be disappointed at what it isn't rather than celebrating what it is.

What it is, is a vast (estimated

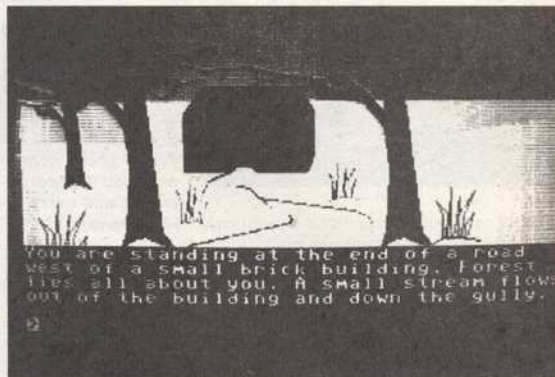
three months playing time) space strategy game, where blasting aliens sits alongside special missions, deciding objectives, defending systems and trading, your ultimate objective being to clear the universe of aliens by gradually securing more bases.

The first screens of *Empire!* (apart from the excellent loading screen) are not overwhelm-



Big cave – big joke

You are standing by a small stone hut, a river runs to the south 16, 32". All your old favourites are here, such as, the evil dwarf, this time with ginger



You are standing at the end of a road west of a small brick building. Forest lies all about you. A small stream flows out of the building and down the gully.

(sounds familiar?), well it should do, because this latest release from CRL is based on the original *Crowther* and *Woods Adventure*. But do not be misled into thinking this is another 'clone', far from it, for this is the 'original' version found by a St Brides pupil innocently hacking into a computer system owned by the American Government.

You realise this version is going to be totally different when, on entering the hut, you see a pair of smelly wellies strange (but logical) you may think, but clearly not the same.

St Brides have done to *Adventure* what Fergus McNeil did to *Lord of the Rings* and in doing so have produced a wonderful, highly amusing game.

One witty part which rather pleased me was, when I waved the Black Rod, instead of a Crystal Bridge appearing, Tony Bridge appeared, uttering words of wisdom like, "See

hair, glasses and a beard but, instead of throwing an axe, he throws a sharpened ZX81 at you. Killing the python is done in a rather unusual way as well, what you need to do is! No, I think I'll let you work that out.

The game comes in two parts, part two loads in after you have completed side one, also featured is a quick *Save* to Ram, something all games should have, and rather nice graphics.

So what are you waiting for? Pop down to your local store and buy a copy then rush home and enjoy all the fun of this terrific spoof.

Roger Garrett

Program *The Very Big Cave Adventure* Micro Commodore 64 Price £8.95 Supplier CRL, 9 Kings Yard, Carpenters Rd, Stratford London E15.

ingly impressive – mostly the in-space fighting and travelling sections to the game look little better than asteroids. That's really not the point though, since they are only a small part of it. There are planets to land on, starbases to dock with, starmaps, hyperspace and all kinds of experience to be had. The screen displays vary from some rather nice 3D 'forward views' as you zoom across the planet surface to the top-down presentation of flying through space.

Empire! is an enormously complicated game, which will hook you if you give it a chance and start to become involved in the complex strategic elements. It isn't *Elite*, it isn't even graphically state of the art, but give it a go, anyway . . .

Graham Taylor

Program *Empire!* Price £9.95 Micro Spectrum Supplier Firebird, Wellington House, Upper St Martins Lane, London WC2H 9DL

Hibernating hedgehog

Ello - Spiny Norman here - cousin of Spiky 'Arold who's just got 'imself into a computer game. Imagine - another blow for hedgehog power! And no you don't 'ave to run 'im over in your artic!

Wantin' to see whether 'e'd let down the family name in this new, low price Silver Range game, I loaded it into my Spectrum and off we went. *Spiky Harold Goes Hibernating* says the loading screen. Oh good, thinks I - something nice and peaceful where you try to keep a little hedgegie asleep. Roll over, Mrs Tiggywinkle!

But not a bit of it! Instead it's all about obtaining food from 54 chambers before you can put your feet up for the winter. Blow me if it ain't nothing more than *Jet Set Hedgehog!*

What separates it from the run of the mill jump and collect

games is its scale. At least they've done old Fatty 'Arold's girth justice - he's a big sprite. 'Owever, that's introduced problems of its own. There's a little graphics flicker, which I can stand because the scenery's lovely, and sluggish controls - which I can't! I suppose it may be momentum but it's very tricky to make 'Arold stop on a sixpence, and when you're talking about pixel accuracy, that's not good.

Sorry, 'Arold, but blow your royalties - I can only recommend this to hedgehog fanciers!

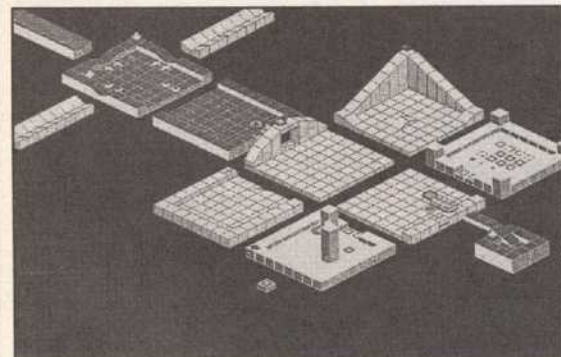
John Minson

Program *Spiky Harold* Micro Spectrum 48K **Price** £1.99 **Supplier** Firebird, Wellington House, Upper St Martin's Lane, London WC2H 9DL

In a spin over Spindizzy

If you've been stunned by *Spindizzy* on the Amstrad or the Spectrum, you'll go wild over the Commodore 64 version. For those of you who have

which you must use to fully explore a strange artificial world in another dimension. The backgrounds through which Gerald spins are beauti-



not yet caught the bug, *Spindizzy* is a marvellous development of the ideas behind the arcade game *Marble Madness*, in which you steer an object with full inertial control over a bizarre landscape.

In *Spindizzy*, the object is Gerald - a spinning inverted pyramid (which can also take the shape of a gyroscope or a sphere if you are that way inclined).

Gerald - is a mapping robot

fully detailed, including planes, ramps, dips, jumps, trampolines, towers and causeways. Guiding Gerald is no easy task, and a plummet into oblivion is your reward if you slip up.

You can press the fire button to give Gerald an extra boost up ramps, and use the space bar to brake. Also (and you will not appreciate the importance of this until you are through the "beginners' section" and well

That sinking feeling

The latest adventure release from Firebird is also the sequel to their earlier success *Subsunk*. Once again you find yourself in an underwater situation; the first thing you discover is a dead body, searching the body reveals a passcard, which, when inserted into the appropriate slots, enables you to explore the seabase.

Not a very original plot, namely to find and stop a missile being fired towards Britain, but it is enhanced by the friendliness of the program. For example, on examining a conveyor belt we are told "you see nothing of interest but you can climb it". Nothing tantamount to a revelation but every little thing helps in an adventure. The program allows you to wander about the many locations at will, which is very nice if, like me, you like to get some

idea of what you need to do, before starting to piece the whole thing together.

The graphics are sharp and colourful; one of a shark, circling outside the observation bubble, was particularly impressive. The problems are not over difficult and, as in *Subsunk*, not very logical.

Text descriptions leave a lot to be desired and I feel the overall atmosphere could have been made more stimulating by more lengthy wording; nevertheless, overall the game is quite enjoyable and should keep you occupied for some considerable time.

Roger Garrett

Program *Seabase Delta* Micro CBM64 **Price** £1.99 **Supplier** Firebird, Wellington House, Upper St Martin's Lane, London WC2

Is the King Kong?

A long time ago, when the ZX80 was all the rage and the video arcades had just begun, an arcade game came out that was described as "The first full colour multi screen game". This game was known as *Donkey Kong* and hailed the way of the future. Today it is now available for the QL and it is called *The King*.

Once loaded up the game starts with you playing the part of a helpless factory worker called Mario, who has had his girl friend snatched from him, by an evil gorilla. Mario tries to save her by climbing up the different levels of the factory,

only to find the gorilla taking her further up. While he tries harder to get closer, the monkey persistently throws barrels at him in order for him to die.

The controls are the cursor keys and the space bar is used to jump obstacles or get a hammer enabling you to smash the obstacles. The game is by no means original but it is extremely addictive and quite well presented.

Mathew Palmer

Program *The King* Micro ZL **Price** £14.95 **Supplier** Micro Deal, Box 68, St Austell, Cornwall PL25 4YB

into the game) you can change your point of view using the function keys.

Your task is not only to complete the whole mapping task, which involves hundreds of increasingly difficult screens, but also to collect spinning jewels which can be found in the most inaccessible places. There are also puzzles to solve, such as the "music room" where moving over squares on the floor plays notes, the purpose of which you must determine. You have unlimited lives, but losing

one causes you a time penalty.

Spindizzy is brilliant - great graphics, very complex, a challenge to both thought, and speed of reaction. Minimal sound - but nevertheless a vital purchase. Buy it.

Chris Jenkins

Program *Spindizzy* Type Arcade Machine Commodore 64 **Price** £9.95 **Supplier** Electric Dreams, 31 Carlton Crescent, Southampton, Hants



First Superman — now Redhawk

Tony Bridge looks through a batch of new releases, including Redhawk and Heavy on the Magick

The latest release from Melbourne House is, I'm glad to report, very interesting to adventurers. *Redhawk* concerns your exploits as Kevin Oliver/Redhawk, a combination of human and superhero not too far removed from Clark Kent/Superman or David Banner/Hulk. Unlike those two, however, your character doesn't have to undergo any particular traumas to become invincible — none of that tiresome finding an unoccupied phone booth or waiting to be smashed in the teeth. Just the simple utterance, "kwhah" will suffice to turn you into the hooded wonder. But I'm getting ahead of myself: what strikes the player at the start is the layout of the game.

As Graham Taylor said in the magazine a couple of weeks back, the idea is so simple and so obvious it's surprising that no-one has thought of it before: a comic strip unfolds itself before your eyes as the game progresses, and speech bubbles contain the words that you have commanded your character to utter. As a superhero of real Marvel proportions, you find yourself pitted against equally super-villains; in this game, though, you can fight against evil or align yourself with the forces of darkness. The display reflects your popularity rating as well your strength as you make your way towards rescuing somebody or other from something or other.

From what I've seen, the actual adventure is not so hot (I'm sure that we'll see others in the series — indeed I hope so) but it is the friendly environment that is so interesting to see; this extends even to the saving, loading and restarting routines, and the on-screen editing of commands — this last is particularly useful, allowing the player to backtrack several inputs and either correct mistakes or re-use a recent

command. The graphics are good (exactly the same on Spectrum and Amstrad versions, though time seemed to move more slowly in the Amstrad version for some reason) and the adventure, though rather basic, is well worth looking at.

By the time you read this, Level 9 should have released *The Price of Magick* at least for the Commodore (see elsewhere in this issue) although the usual comprehensive range of micros should eventually be catered for. Judging by the sneak preview that I was given on the Atari ST, *Magik* is a return to mainstream adventures for Level 9: at the start, the player can walk up to an old house, climb the ivy thereupon, clamber into the attic and start exploring. I'm sure though that the problems met will be just as devious as previous Level 9's!

While talking of Level 9, its interest in the latest 16-bit computers has paid off for QL owners in the form of a three-pack of the original Level 9 adventures, the *Middle Earth* series. While the new versions follow the original story lines, Level 9 have taken advantage of extra memory to expand on the scenarios and make them even more wonderful than before.

Strong competition

This week, I caught my first glimpse of Magnetic Scrolls/Rainbird's opus for the Atari ST, *The Pawn* — as you'll know, this was first released on the QL as a text-only affair and I discussed the adventure at length in the Corner of October 16. The lengthy descriptions ensure a certain amount of atmosphere and there are several in-jokes to be enjoyed. The parser, though it was fairly spectacular on a quick look, doesn't live up to Magnetic Scroll's promise: at one point, a trapdoor is men-

tioned, but trapdoor doesn't appear in the vocabulary of the adventure. The authors are apparently would-be Infocom-bashers, though *The Pawn* resembles the Infocom classics like a herd of elephants resembles the Royal Corps de Ballet. There are many moments of charm, certainly, and the graphics on the new ST version are superb (and I could play with them for hours, pulling the pictures up and down like venetian blinds), but with Level 9 beavering away to bring its programs to the QL and ST/Amigas, the competition will be strong.

Good scenario

I've only got space to mention two more new releases, but they are both very interesting and worth your attention.

Ramjam is best known by adventurers for *Valkyrie 17*, a very droll text/graphics affair that enjoyed great success when it was released a year or so ago. Its new adventure has been some time coming but is a cracker. In *Terror of Trantoss*, some beautiful graphics support a good scenario in which the player can switch between two characters in classic adventuring and hack 'n' slay situations (see last week's issue for a preview).

Meanwhile, Gargoyle carries on with its range of idiosyncratic games — no other software house is quite like it, and it always comes up with something stunning. With *Heavy on the Magick*, Gargoyle has yet again done everything right. The graphics are, as usual, superb and evocative — the scenario concerns your character, Axis the able (or Axis the merely adequate) in his quest in the dungeons of colodone's pile. Though this sounds like some rather personal disease, it's actually the perfect setting for some more hack 'n' slay, with dragons, wraiths and all the rest making an appearance for your delight. Though I keep getting stomped on by Apex, the trusty idiot, I found plenty to do, with examinable objects galore, lots of spells to use (once you figure out how), and all the usual Gargoyle nous.

There are 255 rooms to explore, 21 different animated monsters including wyverns, werewolves, vampires and all the usual goodies, 280 (count 'em) objects to examine and use — and the program recognises 400 words, which ought to be enough! Another Gargoyle classic!

Adventure Helpline

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

Fill in the coupon, explaining your prob-

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

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

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

ADVENTURE HELPLINE

Hampstead on Spectrum. Where exactly do I find the lathe bracket? P Collingson, Red House, Thorpe Lane, Fylingthorpe, Whitby, N Yorks YO22 4TN

Adventure Quest on Spectrum. Can't get past Djinn to Oasis is there a way down rusty grating near start? Mr D J Lay, 91 Allport Lane, Bromborough, Wirral Merseyside L62 7HL

Red Moon on Spectrum. How can I use spells, the iron always inhibits my Magic. David Edgar, 1 High Parksall, Erskine, Scotland PA8 7HY.

Thats the Spirit on Spectrum. How to get past the cat and the Phantom in the church. Mr G Hoyle, 15 Ashbourne Crescent, Taunton, Somerset TA1 2RA.

Woodbury End on Electron. How do I get out of the darkened room? Miss I H Legat, 8B Yarborough Close, Godshill PO38 3HS Isle of Wight.

Fourth Protocol on Spectrum. What does Suetofore mean and any other hints. S G Oglesby Grss, RAF Gatow BFPO 45.

Marsport on Spectrum. Which Objects manu-

facture R and Y tokens? Vincent Johns, 12 Newlands Avenue, Syke Rockdale, Lancs OL12 0BN.

Lord of the Rings on Spectrum. I have solves part 1 but am now stuck in Lothlorian. Any help gratefully received. Andreas Jantas Pater Delpstr, 8 6806 Vierheim, W Germany.

Land of Illusion on Atmos. How to I open the door to Barthogs Castle. Have got mushrooms, inscription, and vanishing potion. Martin Tubb, 35 Poplar Court, Gap Road, Wimbledon SW19.

Bored part 3 on BBC. What use is De-Bugger, how do I open box in store? Peter Lord, 6 Wellswood Gardens, High Meadows, Exeter, Devon.

Sherlock on Spectrum. How do you decode the codes given by Basil? Don Green Radlett 2573.

Fourth Protocol on Spectrum. What is the lift past word. Marc M, 18a Grantbridge St, Islington, London N1 8JN.

Sea Quest on BBC. How do I get the key from the Mermaid? Clive David, 12 Gron Florold Rhuubina, Cardiff CF4 6ST.

Madness and the Minotaur. I can't find anything? As above.

Fourth Protocol part 2 on C64. How do I get into the industrial estate once I've told guard the plot No which is C1 do I need an item to open

gate. LCPL Payne. J Troop 2 Sgn, 21 Sigregret, Bfpo 366.

In Search of Holy Grail on C64. Cannot open aramatic Dictionary or become invisible to go north past eggene. Mrs Wilson, 76 Richmond Road, Derby DE3 8PX.

Eureka on CBM64. What is the password at the beginning of the Carribean adventure? C Nicholas, 123 Brimthorpe Hse, Agdon St, London EC1 VOBR.

Bored of the Rings on Spectrum. How do I find the pepper to get past the Morona Gate at the end of Part One? John Keen, 120 Furness Road, London NW10 5UH.

Ring of Darkness on Dragon 32. Unable to survive the first stages of the game. Tips would be grateful. Miss M Book, 11 Bradford Road, Boston, Lincs.

Escape from Pulsar 7 on C64. How exactly do I find the cable? I think its in the wrecked cabin. Len Shuttleworth, 12 Richborough Close, Orpington, Kent BR5 3TQ.

Karateka on C64. How do I get past the door to Akuna's fortress. It keeps falling on me. Darren Grgory, 29 Ludlow Grove, Blackpool F72 0PZ.

Starcross on C64/Apple II. No score or progress. Any tips at all, please. Darren Gregory, (for address, see above).

BITS & BYTES COMPUTERS



MAIL ORDER HOT-LINE



BITS & BYTES COMPUTERS
31 BOLD STREET
LIVERPOOL CITY CENTRE
LIVERPOOL
L1 4ND

BITS & BYTES COMPUTERS
UNIT 4
OLD SWAN SHOPPING ARCADE
GREEN LANE/PRESCOT ROAD
OLD SWAN LIVERPOOL 13

051-264 7362

NEW TITLES AVAILABLE FROM DAY OF RELEASE

JOIN THE BITS & BYTES COMPUTER DISCOUNT CLUB FOR THE CHEAPEST PRICES PLUS FREE GIFTS!
ONLY £2.50 FOR LIFE MEMBERSHIP. SPECIAL OFFER! FREE GIFT IF YOU JOIN BEFORE 31st MAY 1986

CHART TITLES AT DISCOUNT PRICES

COMMODORE 64		SPECTRUM		AMSTRAD		C16		B.B.C.	
R.R.P.	CLUB PRICE	R.R.P.	CLUB PRICE	R.R.P.	CLUB PRICE	R.R.P.	CLUB PRICE	R.R.P.	CLUB PRICE
Urduim	9.95 7.25	Bomb Jack	7.95 5.95	Way of the Tiger	9.95 7.25	Commando	7.95 5.95	Commando	9.95 7.25
V	9.95 6.50	Way of the Tiger	9.95 7.25	Spin Dizzy	9.95 7.25	Winter Olympics	8.95 5.50	Winter Olympics	7.95 5.95
They Sold A Million II	9.95 7.25	V	8.95 6.50	They Sold A Million	9.95 7.25	C16 Classics II	9.95 7.25	Karate Combat	8.95 6.50
Spin Dizzy	9.95 7.25	Spin Dizzy	9.95 7.25	Ping Pong	9.95 7.25	Kung Fu Kid	6.95 5.50	Yie Ar Kung Fu	9.95 7.25
Bomb Jack	9.95 7.25	Green Street	7.95 5.95	Sky Fox	9.95 7.25	Airwolf	6.95 5.50	10 Computer Hits II	9.95 7.25
Way of the Tiger	9.95 7.25	Super Bowl	7.95 5.95	Get Dexter	9.95 7.25	Football Manager	8.95 5.50	Citadel	9.95 7.25
Star Quake	8.95 6.50	Batman	7.95 5.95	Doomsday Blues	9.95 7.25	Ace	9.95 7.25	Phantom Combat	9.95 7.25
Raise the Titanic	9.95 7.25	Boulder	7.95 5.95	Frankie goes to Hollywood	9.95 7.25	Lawn Tennis	5.95 4.95	Tennis	2.99 2.50
Raspurin	7.95 5.95	Max Headroom	9.95 7.25	Rambo	8.95 6.50	Bongo	5.95 4.95	Strike Force Harrier	9.95 7.25
Hocus Pocus	8.95 6.50	They Sold A Million	9.95 7.25	Zoids	8.95 6.50	The Berks Trilogy	6.95 5.50	Way of the Exploding Fist	9.95 7.25
Ping Pong	8.95 6.50	Ping Pong	7.95 5.95	Movie	8.95 6.50	Manic Miner	6.95 5.50	10 Computer Hits I	9.95 7.25
Turbo Esprit	8.95 6.50	Crash Smashes	9.95 7.25	Batman	8.95 6.50	Defence 16	7.95 5.95	3-D Grand Prix	9.95 7.25
Super Bowl	9.95 7.25	Quasatron	8.95 6.50	Kaiser	7.95 5.95	Reach for the Sky	6.95 5.50	Tynesoft Pack (4 games)	9.95 7.25
Hardball	9.95 7.25	Muggys Revenge	9.95 7.25	Turbo Esprit	8.95 6.50	Jet Strix	6.95 5.50	Repton II	9.95 7.25
Zap Sizzlers	9.95 7.25	Sky Fox	8.95 6.50	Alien Highway	8.95 6.50	Space Pilot	5.95 4.95		
10 Computer Hits II	9.95 7.25	10 Computer Hits II	9.95 7.25	Panzardrome	8.95 6.50	Manic Deathchase	5.95 4.95	ELECTRON	
Fairlight	9.95 7.25	Who Dares Wins II	7.95 5.95	Tornado Low Level	7.95 5.95	Daley Thompson Star Events	6.95 5.50	Exploding Fist	9.95 7.25
Max Headroom	9.95 7.25	Star Strike II	8.95 6.50	F.A. Cup Football	8.95 6.50	Rescue from Zylon	6.95 5.50	Mouse Trap	7.95 5.95
F.A. Cup Football	8.95 6.50	Twister	7.95 5.95	Rook 'n' Wrestling	9.95 7.25	Dorka Dilemma	6.95 5.50	Bug Eyes	6.95 5.50
Electraglide	8.95 7.25	Turbo Esprit	8.95 6.50	Boulder	9.95 7.25	Petals of Doom	6.95 5.50	Treasure Hunt	9.95 7.25
Arcade Classics	8.95 7.25	Back to the Future	9.99 7.25	Sword & Sorcery	9.95 7.25	Hustler	2.99 2.50	Beach Head	7.95 5.95
War Play	7.95 5.95	Heavy on the Magic	9.95 7.25	Thomahawk	8.95 6.50	Diagon	2.99 2.50	Thi-Boxing	5.95 4.95
Asylum	9.95 7.25	Cyberlin	9.99 7.25	Collosus Chess 4	9.95 7.25	Twin Kingdom Valley	2.99 2.50	Steve Davis Snooker	8.95 6.50
Red Hawk	8.95 6.50	Hot Shots	9.95 7.25	Fairlight	9.95 7.25	Sky Hawk	2.99 2.50	Karate Combat	8.95 6.50
Doomdarka Revenge	8.99 7.25	Alien Highway	7.95 5.95	Samantha Fox Ship Poker	8.95 6.50	Space Escort	2.99 2.50	10 Computer Hits I	9.95 7.25
PSI-5 Trading Company	8.95 7.25	Red Hawk	7.95 5.95	Hypersports	8.95 6.50	Tycoon Text	6.95 5.50	10 Computer Hits I	9.95 7.25
Boulder Dash II	8.95 7.25	Boulder Dash III	9.95 7.25	Red Hawk	8.95 6.50	Gunslinger	6.95 5.50	Dynabyte Collection (5 games)	7.99 5.95

COMMODORE COMPENDIUM PACK £169.99 CHEETAH JOYSTICK £7.95 DISK GAMES ALSO AVAILABLE HUGE SELECTION OF ATARI GAMES
SEND CHEQUES/P.O.'s TO: PRICES INCLUDE V.A.T. & POSTAGE. ADD £1.00 PER ITEM FOR OVERSEAS ORDERS

BITS & BYTES COMPUTER (LTD) MAIL ORDER DEPARTMENT
40-42 BALMORAL ROAD, FAIRFIELD, LIVERPOOL L6 8NF. TEL: 051-264 7362



Mars bars and citadels

Tony Kendle welcomes the conversions of *Bomb Jack* and *Moon Cresta*, gives some tips for *Superior's Citadel*, and continues the Marsport solution

It has suddenly become fashionable in the computer games industry to be critical of licensed deals and arcade copies in particular. Mel Croucher, ex of Automata, seems to be leading this crusade with calls for more originality in software design. In many ways I agree with him; especially that there should be room for the creative artist in the games world. I felt Automata's *Deus Ex Machina* was, and is, excellent and the latest project, *ID* for CRL's Nu-Wave label, contains some fascinating new concepts. Both are important steps towards clarifying the future contribution computers can make to home entertainment for the more sophisticated player.

Where I think our ideas differ is that I can't understand why a game that was initially created for a coin arcade machine should be regarded as somehow less valid or less creative than a game that has been designed from scratch.

High quality

Computers are becoming more advanced every year, standards demanded of software are increasing even faster and most of our best games are of necessity becoming a team effort. It is no longer reasonable to expect those who are skilled in programming to take on the role of games designer as well and once you have accepted the need for an 'ideas team', it becomes irrelevant whether these are based abroad in a company such as Konami or Atari.

Two of my favourite games of the moment are Elite's *Bomb Jack* and Incentive's *Moon Cresta*. Elite has deservedly struck a small goldmine with its extremely high quality conversions and it has to be said that they are in many cases much more playable than some of its earlier games - I mention no names but I'm sure that the image of helicopters relentlessly crashing into walls will spring to some people's minds.

Moon Cresta has been a long time coming for the Amstrad and BBC, but the quality is again superb with subtle and clever attention to detail. Perfect addictive stuff for those spare half hours when you can't face 8-bit social commentary.

Richard Kercher of High Wycombe has written, voicing the unfortunately true complaint that for some time there have been no tips for the BBC micro. However, rather than stopping there, Richard has

demonstrated that he is a man of resource and no small intellect by starting the ball rolling again with these tips for the new Superior Software game, *Citadel*.

1) To get past the mummies in the pyramid drop the idol head on to the platform. Drop the green man idol on the coffin in the pyramid and get the crystal. 2) To get past the witch drop the skull and two bones into the cauldron. The witch passes over the cauldron and dies.

3) In the lab drop the cannon ball and the bottle marked P (gunpowder) into the white cannon. This enables you to get the crystal. 4) Drop the stone blocks (the cyan coloured ones) as you pass Stonehenge to get extra energy.

5) To get past the guard in the temple get the chicken and put it on the pad until it cooks. Go to the temple and you won't get attacked. 6) When using the starport don't collect the crown object in the palace until the last - it destroys Starport when you return.

Richard's personal best score is 95 points and he now wants to know what the barrel is for. I would like to echo that with a request for more help on this.

Now then let's get on with some more tips for Gargoyle's *Marsport*. If you can remember back to before our little interlude with David Jones's *Spellbound*, we left Commander John Marsh on laxa level

Bomb Jack from Elite



just through the danger room. Most players should have found the ice cream room on that level and within it the cornet and the ice pack. The cornet is the key to the music room which you will find on Level F, and which contains a lute and a mute. The ice pack is the key to the hot house on Level G where you will find a geranium for the plant room on Joly level. If you haven't found these rooms yet, don't worry.

Going back through the danger room on laxa level and exploring for a bit will soon bring you to the map room. In here you will find three important objects - the Earth map, the Mars map and the Sun chart.

Hidden away

Exploration of laxa will also bring to light some glass as a flame, both held in sectors patrolled by the sept so be careful. The Sun chart, the glass and the frame can be factored together to make sunglasses (eyeshields). The Mars chart is the key to get into the bar when you find it (it's a Mars bar, of course) and the Earth map is the key to get into the soil depot on Gill level. The bar will contain tea whilst getting through the depot will give you access to a lift to a previously hidden part of level A, where you can try the sunglasses out in the Astronomy room. You will then find an empty tank and also be able to get a lift down to level B.

The object of the first part of the game is to find the three keys to m-central. The first key can be found quite easily by just taking the up tube from Daly to Alba and going to the director's office. The second key is in the bank on level B. To get into the bank you will need the dough from the bakery.

Once you have got on to level B the most important room for you to find next is the oratory. In here you will find a projector, a dais and a pointe (note the spelling!). The most immediately useful is the dais which when factored with the lute gives a Lead Suit. I must confess I was stuck for hours here, not expecting something as subtle as an anagram.

With the lead suit you can cross the danger radiation room on this level. This gives you access to a lift to a new part of Joly where you will find safety boots and earmuffs. The boots are, inevitably, the key to the chemists back on Daly where you will find a syringe, some valium and some oxygen. The latter can be factored with the empty tank to make an air tank. More next week.

NEW!

M/DRIVE DOCTOR (Spectrum 48K/+/128K)

Extends BASIC to provide extra disk-like commands.
*Rename facility *Sector restorer *Full catalogue
*MEGAFORMAT (108-120K) *Cartridge clone (2 drives)
*Merge ANY program *Default drives and wildcards
*File finder *Printer output *Special commands for advanced users and much more. Compatible with all Interface One ROM types. Included is a full sector editor program for on screen alteration of data.
**... this program is an excellent buy... useful to anyone who uses microdrives seriously... Highly recommended" (Simon Goodwin - Author QL SUPERCHARGE).

**"excellent utility..." (S. Crow - Author STARQUAKE)

AVAILABLE MAIL ORDER ONLY. SUPPLIED ON CARTRIDGE COMPLETE WITH A 2800 WORD USER MANUAL FOR £7.50 inc P & P. (Price £8.50 inclusive outside U.K.)

QL version coming soon. Enquire for details.

SEND CHEQUES/P.O TO:

'PIPEQ SYSTEMS'
151 MILLBRIDGE
DOLLIS VALLEY WAY
BARNET
HERTS EN5 2UH

PIPEQ SYSTEMS

PD906

C16 PROGRAMMERS YOUR PROGRAM FOR AN EXCITING FUTURE

- 1 Sign a C16 programming deal with Gremlin
- 2 Develop your ideas with our team of experts
- 3 See your idea emerge into a professional marketing package
- 4 Watch it zoom up the charts
- 5 Light a big fat cigar **COUGH! COUGH! SPLUTTER!**
- 6 Order your Porsche!!
- 7 Book a holiday in the Carribean
- 8 Become a Tax exile

But seriously... when it comes to developing and promoting C16 software they don't come any better or any more experienced than Gremlin. Whether you have games complete, concepts under development or just superb programming skills contact GREMLIN TODAY. It could be your first step on the road to fame and fortune. We are also interested in programs and programmers for CBM 64, Atari, Amstrad, MSX and Spectrum.

Gremlin Graphics



Write to: Ian Stewart,

Gremlin Graphics Software Limited, Alpha House,
10 Carver Street, SHEFFIELD S1 4FS. Tel: 0742 753423

MSX · COMMODORE · ATARI · AMSTRAD · SPECTRUM
WE PRODUCE RESULTS ACROSS THE BOARD

← UK Home Computers

SPECIAL OFFERS.

SPECTRUM:

OPUS DISCOVERY 1 DISK SYSTEM.....	£119-00
DK'TRONICS KEYBOARDS.....	£29-95
RAM TURBO JOYSTICK INTERFACE.....	£15-00
BETA MAGIC BUTTON DISK INTERFACE.....	£108-00

(Can be used with the following Disk Drives marked *)

DISK DRIVES:

*500k EPSON DOUBLE SIDED 40Track.....	£125-00
*1mB ** ** ** 80 **	£150-00
B.B.C. 40T SINGLE SIDED 100k.....	£94-50

(All Drives are cased. Epson's have P.S.U.'s built-in. Discount 2+ Drives)

CASSETTES & DISKS:

	C10s	C15s	C20s	C30s
10	£3-80	£4-00	£4-15	£4-60
20	£7-00	£7-20	£7-40	£8-20
50	£15-00	£15-20	£15-90	£17-50
100	£27-00	£28-00	£29-00	£33-00

(PRICES INCLUDE LIBRARY CASES AND POSTAGE & PACKING)

10 × 5 1/4" DS:DD £10 (Includes Plastic Case)

10 × 3 1/2" SS:DD £25 (Boxed)

PRINTERS:

PANASONIC 1090 96cps, NLQ. CENTRONICS.....	£175-00
SHINWA CP80A+ ** **	£189-00
QL Centronics Interface & Cable.....	£24-95

ALL GOODS FULLY GUARANTEED. ABOVE PRICES ARE FULLY INCLUSIVE OF VAT, POST & PACKING. ORDERS/ENQUIRIES TO:

UK HOME COMPUTERS

82, CHURCHWARD AVE. SWINDON, WILTS. SN2 1NH
TELEPHONE (0793) 899034



Readers' survey

We reckon it's about time to find out exactly what you, the readers, think of *Popular Computing Weekly* – what you like about it, what you don't like, what you would like to see more of.

You can help us by filling in the survey printed below. In doing so, you'll also help the charity War on Want, because for every completed questionnaire we receive, we'll donate 10 pence to WOW. The money will go to its general fund which goes to help fight poverty in the Third World, just as does money spent on WOW's compilation tape for the Spectrum.

Send your completed survey off to Readers' Survey, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP, to reach us by Monday, June 16. We will publish the results in a future issue of the magazine.

1 Which of the following computers do you own?

- | | | | |
|-----------------------------|--------------------------|-----------------------|--------------------------|
| Acorn BBC | <input type="checkbox"/> | Acorn Electron | <input type="checkbox"/> |
| Amstrad 464/664/6128 | <input type="checkbox"/> | Amstrad PCW 8256/8512 | <input type="checkbox"/> |
| Atari ST | <input type="checkbox"/> | Atari 400/800 | <input type="checkbox"/> |
| Commodore 64 | <input type="checkbox"/> | Commodore C16 | <input type="checkbox"/> |
| Commodore 128 | <input type="checkbox"/> | MSX | <input type="checkbox"/> |
| Sinclair Spectrum | <input type="checkbox"/> | Sinclair QL | <input type="checkbox"/> |
| Other (please specify)..... | | | |

2 When did you buy your first computer?

- | | | | |
|------------------------|--------------------------|--------------------------|--------------------------|
| Within last six months | <input type="checkbox"/> | Six months to 1 year ago | <input type="checkbox"/> |
| 1-2 years ago | <input type="checkbox"/> | More than 2 years ago | <input type="checkbox"/> |

3 How long have you had your current computer?

- | | | | |
|----------------------|--------------------------|----------------------|--------------------------|
| Less than six months | <input type="checkbox"/> | Six months to 1 year | <input type="checkbox"/> |
| 1-2 years | <input type="checkbox"/> | More than 2 years | <input type="checkbox"/> |

4 Do you plan to buy a new computer this year?

- | | | | |
|------------------------------------|--------------------------|----|--------------------------|
| Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| If yes, please specify model | | | |

5 Which of the following peripherals do you own?

- | | | | |
|------------|--------------------------|-----------------------------|--------------------------|
| Monitor | <input type="checkbox"/> | Printer | <input type="checkbox"/> |
| Disc drive | <input type="checkbox"/> | Modem | <input type="checkbox"/> |
| Microdrive | <input type="checkbox"/> | Graphics tablet | <input type="checkbox"/> |
| Light pen | <input type="checkbox"/> | Mouse | <input type="checkbox"/> |
| Plotter | <input type="checkbox"/> | Other (please specify)..... | |

6 Which of these peripherals do you plan to buy this year?

- | | | | |
|------------|--------------------------|-----------------|--------------------------|
| Monitor | <input type="checkbox"/> | Printer | <input type="checkbox"/> |
| Disc drive | <input type="checkbox"/> | Modem | <input type="checkbox"/> |
| Light pen | <input type="checkbox"/> | Graphics tablet | <input type="checkbox"/> |
| Plotter | <input type="checkbox"/> | Mouse | <input type="checkbox"/> |

7 How much do you spend on software each month?

- | | | | |
|-----------|--------------------------|---------------|--------------------------|
| Up to £10 | <input type="checkbox"/> | £10-20 | <input type="checkbox"/> |
| £20-30 | <input type="checkbox"/> | More than £30 | <input type="checkbox"/> |

8 How much time do you spend at your computer each week?

- | | | | |
|-----------------|--------------------------|------------------|--------------------------|
| Less than 2 hrs | <input type="checkbox"/> | 2-10 hrs | <input type="checkbox"/> |
| 10-20 hrs | <input type="checkbox"/> | More than 20 hrs | <input type="checkbox"/> |

9 What is the main use of your computer (tick one only)?

- | | | | |
|-----------------------------|--------------------------|----------------|--------------------------|
| Programming | <input type="checkbox"/> | Games | <input type="checkbox"/> |
| Word processing | <input type="checkbox"/> | Communications | <input type="checkbox"/> |
| Graphics | <input type="checkbox"/> | Music | <input type="checkbox"/> |
| Other (please specify)..... | | | |

10 Do you program in any of the following languages?

- | | | | |
|-----------------------------|--------------------------|--------------|--------------------------|
| Basic | <input type="checkbox"/> | Machine Code | <input type="checkbox"/> |
| Pascal | <input type="checkbox"/> | Forth | <input type="checkbox"/> |
| Logo | <input type="checkbox"/> | Lisp | <input type="checkbox"/> |
| C | <input type="checkbox"/> | Fortran | <input type="checkbox"/> |
| Other (please specify)..... | | | |

11 How often, on average, do you buy Popular Computing Weekly?

- | | | | |
|----------------------|--------------------------|--------------------------|--------------------------|
| Subscriber | <input type="checkbox"/> | Buy every week | <input type="checkbox"/> |
| Buy every other week | <input type="checkbox"/> | Buy once a month or less | <input type="checkbox"/> |

12 Do any other people read your copy of Popular Computing Weekly?

- | | | | |
|------|--------------------------|-------------|--------------------------|
| None | <input type="checkbox"/> | 1-2 | <input type="checkbox"/> |
| 3-5 | <input type="checkbox"/> | More than 5 | <input type="checkbox"/> |

13 What is your main reason for buying Popular Computing Weekly (tick one only)?

- | | | | |
|------------------------|--------------------------|------------------|--------------------------|
| News | <input type="checkbox"/> | Games reviews | <input type="checkbox"/> |
| Other software reviews | <input type="checkbox"/> | Hardware reviews | <input type="checkbox"/> |
| Arcade Action | <input type="checkbox"/> | Adventure Corner | <input type="checkbox"/> |
| Programming features | <input type="checkbox"/> | Advertisements | <input type="checkbox"/> |

14 Please rate the following features according to whether you would like more, about the same or less coverage.

- | | More | Same | Less |
|------------------------|--------------------------|--------------------------|--------------------------|
| News | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| New Products | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Letters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Competitions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Hardware reviews | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Games reviews | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other software reviews | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Arcade Action | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Adventure Corner | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Programming features | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| New Releases | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Communications | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Peek & Poke | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Bytes & Pieces | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Games charts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Computer Swap | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Advertisements | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

15 How interested are you in the following subjects?

- | | Not at all interested | Somewhat interested | Very interested |
|-----------------------------|--------------------------|--------------------------|--------------------------|
| Computer books | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Computer languages | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| DIY hardware projects | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Computers in business | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Computers in education | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| New technology (eg CD-Roms) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

16 Which of the following magazines do you buy regularly?

- | | |
|-----------------------------------|--------------------------|
| Crash | <input type="checkbox"/> |
| Your Sinclair | <input type="checkbox"/> |
| Sinclair User | <input type="checkbox"/> |
| ZX Computing | <input type="checkbox"/> |
| Zzap 64 | <input type="checkbox"/> |
| Your Commodore | <input type="checkbox"/> |
| Commodore User | <input type="checkbox"/> |
| Commodore Computing International | <input type="checkbox"/> |
| Amtix | <input type="checkbox"/> |
| Amstrad Action | <input type="checkbox"/> |
| Amstrad Computer User | <input type="checkbox"/> |
| Computing with the Amstrad | <input type="checkbox"/> |
| Atari User | <input type="checkbox"/> |
| QL World/QL User | <input type="checkbox"/> |
| Personal Computer World | <input type="checkbox"/> |
| Your Computer | <input type="checkbox"/> |
| Byte | <input type="checkbox"/> |
| Other (please specify)..... | |

17 Please give one way in which you think Popular Computing Weekly could be improved.

.....

.....

18 Name Age

Occupation

Address

.....

.....

POOLSWINNER

THE ULTIMATE POOLS PREDICTION PROGRAM

- **MASSIVE DATABASE** Poolswinner is a sophisticated Pools prediction aid. It comes complete with the largest database available - 2500 matches over 10 years. The database updates automatically as results come in.
- **PREDICTS** Not just SCOREDRAWS, but ALWAYS, HOMES and NO SCORES.
- **SUCCESSFUL SELEC** guarantees that Poolswinner performs significantly better than chance.
- **ADAPTABLE** Probabilities are given on every fixture - choose as many selections as you need for your bet. The precise prediction formula can be set by the user - you can develop and test your own unique method.
- **SIMPLE DATA ENTRY** All team names are in the program. Simply type in the reference numbers from the screen. Or use FIXGEN to produce fixture list automatically (see below).
- **DISC/MICRODRIVE COMPATIBLE** Tapes supplied with conversion instructions.
- **PRINTER SUPPORT** Full hard copy printout of data if you have a printer.

AVAILABLE FOR Spectrum (48K), Commodore 64, VIC 30 (+16K), AMSTRAD, BBC B, Atari (48K), ZX1 (16K), Dragon, Apple II, ELECTRON

PRICE £15.00 (all inclusive)

FIXGEN 85/6

AT LAST! No more struggling for hours to get the fixture list into the computer. FIXGEN has been programmed with all English and Scottish fixtures for 1985/6. Simply type in the date, and the full fixture list is generated in seconds. Fully compatible with Poolswinner.

POOLSWINNER with FIXGEN £16.50 (all inclusive)

COURSEWINNER v3

THE PUNTERS COMPUTER PROGRAM

You can develop and test your own unique winning system by adjusting the analysis formula, or use the program in simple mode. Coursewinner V3 uses statistical analysis of major factors including past form, speed ratings, course statistics, prize money, weight, going, trainer and jockey form etc, etc. It outputs most likely winners, good long odds bets, forecasts, tricast etc. The database includes vital course statistics for all British courses. You can update the database - never goes out of date.

AVAILABLE FOR Spectrum (48K), Commodore 64, BBC (B), AMSTRAD, Atari (48K), Apple II

PRICE £15.00 (all inclusive) includes Flat And National Hunt versions.

Send Cheques/POs for return of post service to ...

selec

SOFTWARE

37 COUNCILLOR LANE, CHEADLE, CHESHIRE. ☎ 061-428 7425

(Send for full list of our software)

FRONT PAGE SCOOP FRIDAY THE 13th
AVAILABLE FOR SPECTRUM, C64, AMSTRAD
ONLY £3.95

NEW FUTURE SOFTWARE

OUR PRICES ARE EVEN BETTER - NOW YOU CAN ORDER BY FREEPOST

SPECTRUM	RRP	OUR PRICE	ATARI 400/800	RRP	OUR PRICE
JONAH BARRINGTON SQUASH	7.95	3.95	DANGER RANGITS	6.95	2.99
VIEW TO A KILL	9.95	2.95	MR DIG	6.95	2.99
ROCKLANDS RAT RACE	7.95	3.25	FIGHTER PILOT	6.95	2.99
ATC	7.95	3.25	GOLDEN BATON (ADV)	8.95	2.50
TAPPER	7.95	3.95	MOUNTAIN KING (ROM) (special price)		4.95
PLUS 85 STOK MANAGE	3.95	3.95	BOULDER'S A BOMBS (ROM) (special price)		4.95
FIRE AND WATER (darkbox)	9.95	3.25	INTERNATIONAL KARATE	9.95	3.98
FLIGHT FROM PARADISE	9.95	3.25	ENCOUNTER		
INTERNATIONAL KARATE	9.95	3.25			
BORER OF THE RINGS	7.95	3.95			

BBC	RRP	OUR PRICE	COMMOORE 64	RRP	OUR PRICE
BEACHHEAD	6.95	3.95	IMOTEP	9.95	3.55
ALLEN	6.95	4.95	SPY'S DEMISE/STRIKES BACK		9.95
HEATHROW ATC	7.95	3.25	JONAH BARRINGTON SQUASH	9.95	3.95
747 FLIGHT SIM	6.95	4.95	BOUNTY BOB STRIKES BACK (special price)		4.95
			STAFF OF KARNATH	9.95	3.95
			FIGHTER PILOT (DIS. INT.)	9.95	3.25

ELECTRON	RRP	OUR PRICE	COMMOORE C16	RRP	OUR PRICE
HEATHROW ATC	6.95	3.25	TYLON TEX	6.95	2.95
GREMLINS	8.95	3.95	DDPC: FIRE EMMA	6.95	3.95
STRATOBOMBER	7.95	2.99	XARGON WARS	6.95	2.95
ELECTION 8 PACK	4.95	3.95	THE HOBBIT	6.95	2.95
Forex, Baltimore 2000, Johnny Reb, Stolen Lamp, Empire, Roman Empire (special price)	4.99		PETALS OF DOOM	6.95	2.95
			SPEEDERMAN	7.95	3.25

VCS 8500 ATARI	RRP	OUR PRICE	AMSTRAD	RRP	OUR PRICE
SOLAR FOX (special price)	4.95		AMERICAN FOOT	9.95	4.50
COMBAT (special price)	4.95		ALEX HIGGINS FOOT	8.95	3.95
VENTURE (special price)	4.95		CENTRE COURT	8.95	4.25
BASKETBALL (special price)	4.95		HEATWAVE (special price)	17.95	15.95
STARRAIDERS (special price)	5.95		TECHNIC TED	7.95	2.95

This is just a small selection of games on offer. Send now for our seven page catalogue S.A.E. please. BFPD Overseas order add £1 P&P per order

ALL PRICES INC VAT & P&P.
CHEQUES POSTAL ORDERS TO:

NEW FUTURE SOFTWARE

FREEPOST (no stamp needed)

and send to: 4 Rowanburn, Canonbie, Dumfries, Scotland DG14 0RH
AUTOMATIC FREE MEMBERSHIP TO NEW FUTURE SOFTWARE CLUB WITH FIRST ORDER OR CATALOGUE REQUEST ... INCLUDES MONTHLY NEWS SHEET WITH LOTS OF SPECIAL

SOFTWARE PLEASE STATE 2ND CHOICE TO AVOID DISAPPOINTMENT
TELEPHONE ORDERS ON (05415) 539

20PD036

C & F ASSOCIATES

BBC CASSETTE	RRP	OUR PRICE	POWERPLAY	RRP	OUR PRICE
COMMANDO	9.95	7.50	STRIKE FORCE HARRIER	14.95	12.95
STRIKE FORCE HARRIER	9.95	7.50	MOON CRESTA	11.95	10.45
KARATE COMBAT	7.95	6.50	BRUCE LEE	11.95	10.45
BRUCE LEE	9.95	7.50	WINTER OLYMPICS	11.95	10.95
WINTER OLYMPICS	7.95	6.50	EXPLODING FIET	12.95	10.95
EXPLODING FIET	9.95	7.50	YIE AR KUNG FU	14.95	12.95
YIE AR KUNG FU	9.95	7.50	STEVE DAVIS SNOOKER	8.95	6.95
STEVE DAVIS SNOOKER	8.95	6.95	HICK HANSON	9.95	7.95
HICK HANSON	9.95	7.95	PROJECT THESIUS	9.95	7.50
PROJECT THESIUS	9.95	7.50	CITADEL	9.95	7.50
CITADEL	9.95	7.50	YIE AR KUNG FU	9.95	7.50
YIE AR KUNG FU	9.95	7.50	THAI BOXING	5.95	5.50
THAI BOXING	7.95	6.50	WINTER OLYMPICS	7.95	5.50
WINTER OLYMPICS	7.95	6.50	COMBAT HITS (10) 2	7.95	5.50
COMBAT HITS (10) 2	9.95	7.50	SOUTHERN BELLE	7.95	5.50
SOUTHERN BELLE	7.95	5.50	JUMP JET	9.95	5.50
JUMP JET	9.95	7.50	BUG EYES	9.95	5.50
BUG EYES	14.95	12.95	KARATE COMBAT	8.95	6.95
KARATE COMBAT	16.95	14.95	QUESTPROBE	7.95	5.50
QUESTPROBE	11.95	10.45	REPTON 2	9.95	7.50
REPTON 2	12.95	10.95	JET POWER JACK	6.95	5.95
JET POWER JACK	12.95	10.95	CLACTACTY HITS (10) 2	7.95	5.95
CLACTACTY HITS (10) 2	14.95	12.95	FLIGHT PATH 737	5.95	4.95
FLIGHT PATH 737	9.95	7.50	FOOTBALL MANAGER	8.95	6.95
FOOTBALL MANAGER	14.95	12.95			

ALL PRICES INCLUDE VAT AND POSTAGE & PACKING (Overseas Orders add £1.00 per item)
CHEQUES/PO PAYABLE TO: C & F ASSOCIATES AND SEND TO
C & F ASSOCIATES (PCW), PO BOX 2, BIDEFORD EX39 3RE
Telephone: (023 73) 619

PD712A

CUT PRICE SOFTWARE

SPECTRUM	RRP	OUR PRICE	COMMOORE 64	RRP	OUR PRICE	AMSTRAD	RRP	OUR PRICE
Rock & Wrestle	9.95	8.50	Bombjack	14.95	19.20	Laser Basic	14.95	11.00
Superbow	9.95	8.50	Empire	9.95	7.25	Zeus	9.95	7.25
Way of the Tiger	9.95	7.25	Empire	9.95	7.25	Transact	29.95	9.95
Elite	14.95	10.00	Zip Stoppers	9.95	8.00	Shadowfire	9.95	7.25
v	7.95	5.50	Sold a Million II	9.95	7.25	Invastar	9.95	7.25
Bombjack	7.95	5.50	Titanic	9.95	7.25	Cyrus II Chess (disk)	13.95	10.85
Startrave	7.95	5.50	Zeus	9.95	8.50	Sorcery II (Disk only)	14.95	10.95
Crash Smashers	9.95	7.25	Zeus	9.95	7.25	Way of the Tiger	9.95	7.25
Commando	7.95	5.00	Titanic	9.95	7.25	Elite	14.95	11.00
Rambo	9.95	8.50	Laser Basic	14.95	19.20	Sold a Million II	9.95	7.25
Alien Highway	7.95	5.00	Spindizzy	39.95	35.95	Mini Office II	16.95	12.95
The Planets	9.95	7.25	Freeze Frame	9.95	7.25	Sabotour	8.95	8.00
Sold a Million II	9.95	7.25	Doomer's Revenge	9.95	7.25	Bomb Jack	9.95	8.00
Spindizzy	7.95	5.00	Pat Trading	9.95	7.25	Monopoly	9.95	7.25
Spindizzy	9.95	8.95	The Price of Magic	9.95	7.25	Monopoly (D)	14.95	10.95
Heavy on the Magic	9.95	7.25	Pat Trading	14.95	10.00	Get Dealer	9.95	7.25
Mugby's Revenge	7.95	5.25	Sterquania	8.95	6.90	Mini Office II (D)	19.95	14.95
Winter Games	7.95	5.00	Uridium	8.95	6.90	Cyrus II Chess	9.95	7.25
Gun Fight	9.95	8.50	Rock & Wrestle	9.95	7.25	Satright (Disk)	14.95	10.95
Zeus	7.95	5.00	Hard Ball	9.95	7.25	Sold a Million II (Disk)	14.95	10.00
Salman	7.95	5.00	Superbow	14.95	10.00	Spindizzy	9.95	7.25
Turbo Esprit	9.95	8.50	Pat Trading (D)	19.95	14.95	Get Dealer	9.95	7.25
Cybern	9.95	8.95	Game Mazer (D)	19.95	14.95			

Large selection of AMSTRAD disk w/w available at reduced prices. AMSTRAD blank disks £28.95 per box of 10. Large range of COMMOORE disk available. This is a small selection from our stock. Please ring for more details. P&P included. Overseas orders add 75p per tape. For Mail Order please send Cheques/PO payable to CPS Visual Access Card orders by phone welcome to:

CUT PRICE SOFTWARE, 4 Stacksbury Hatch,

Harlow, Essex CM19 4ET

Tel: (0279) 24433 (24hr ansaphone)



HIGH RESOLUTION COLOUR MONITOR

Essential for text and superb for graphics



Chroma I

14" SCREEN RESOLUTION (585 x 895 PIXELS)

from only £249.95 inc VAT
SOUND FACILITY AVAILABLE
£17.50

Available in Wood or Metal Case

for SPECTRUM, SINCLAIR QL and BBC...£249.95 inc VAT
for AMSTRAD in 5volt and 12volt supplies £264.95 inc VAT
for ATARI 520 and 1040£269.95 inc VAT
Sound Facility for spectrum Amstrad and Atari, £17.50 inc VAT

Spectrum requires RGB converter, £28.95

Metal box £19.95 extra

All models include inverse switch and TTL/Analogue switch suitable for other computers - Please ask

COD or Send your cheque to:

CHROMAGRAPHICA, 135 Cliff Road, Hornsea, North Humberside HU18 1JB

Telephone: 0482 881 065 (days) 04012 4699 (evenings)

TRADE ENQUIRIES WELCOME

NAME.....
ADDRESS.....
TELEPHONE.....COMPUTER.....

Please supply: Chroma I £249.95 + £9.95 carriage. Converter (for Spectrum 48) £28.95 inc VAT. Sound £17.50 inc VAT

Colour..... Wood Metal 20PD031



MAZE

by Dilwyn Jones

This program is a maze designer program which draws the maze on the screen using a moving green blob to show how the routine works and what routes it takes. You may like to use the *Make_A_Maze* procedure in your own programs.

The maze design algorithm is described first. Mazes generated have only one through path from the randomly generated entry point on the West side of the maze and the randomly generated exit point on the East side. There will, of course, be several random branches off the main route if the size of the maze is large enough and the dreaded Sinclair random number generator does its bit properly. These routes will all lead to dead ends because the routine only allows one through path. The maze is, therefore, realistic – as long as it is large enough.

The walls of the maze are bit mapped into the array *maze*. The width of the maze is specified by the variable *across* and the height of the maze by the variable *down*. A border of one element is required around the maze, hence the array is dimensioned using *DIM maze(down+1,across+1)*.

Bits 0 to 3 of each element represent openings or walls out of each square in the maze:

bit 0 set = opening to the North) reset
bit 1 set = opening to the East) wall
bit 2 set = opening to the South) in that
bit 3 set = opening to the West) direction
The top left corner of the maze is *maze(1,1)* —NW
The top right corner of the maze is *maze(1,across)* —NE
The bottom left corner of the maze is *maze(down,1)* —SW
The bottom right corner of the maze is *maze(down,across)* —SE

The entry point is held in *inx* and *iny* and the exit point in *outx* and *outy*. The entrance is always on the West side and the exit always on the East side – *inx* will therefore always be 1 and *outx* will always be equal to *across*.

During creation of the maze, bits four and five of each element are used to denote visited points in the maze and points leading to dead ends (ie, "can't return here" points) respectively. If bit four is set to one, it means that the routine has already visited that point and can return there if re-tracing its steps from a dead end.

When such a point is re-visited on return from a dead end, it is flagged as leading to a dead end so that the computer will not attempt to go there again, by resetting bit

four and setting bit five.

The program starts at the entrance and looks for unvisited points at random, but with a slight weighting towards certain directions so that it tends to tie itself in knots to create a more complex maze. The maze is initially all walls; a grid if you like. Once a suitable point to move to is found, an opening is created between the old square and the new square by setting the appropriate bits in *both* squares and (re) setting the appropriate *visit* bits.

The routine looks all around the present square for an unvisited square. If none is found, this is a dead end and steps must be taken to retrace back to a suitable point. If all points surrounding the present square have bit five set, all points in the maze have been visited and the maze is complete.

The reason for the border around the maze is to create a no-go area around the maze so that the computer will not step outside the maze – this means that no edge detection is necessary.

Next week, we'll be using these principles in a 3-D maze type game. Meanwhile, if you'd like copies of both programs, send £2.50, plus a formatted microdrive or floppy disc (5 $\frac{1}{4}$ " or 3 $\frac{1}{2}$ ") to: Dilwyn Jones, 4 The Crescent, Bangor, Gwynedd LL57 2AA.

```

100 REMARK maze demo 1, draw a csize 2,0
110 maze WHILE designing it
115 REMARK by Dilwyn Jones
120 MODE 4;WINDOW 512,256,0,0:PAPER 0:CL
5:REMARK works in mode 4 or 8
130 WINDOW 448,280,32,16:PAPER 2:INK 7:C
LS:CSIZE 2,0:CLS#0
140 REMARK size of maze
150 across=30:down=14:PRINT#0,"Please wa
it - designing the maze..."
160 GRID:MAKE_A_MAZE:CLS#0
170 DEFINE PROCEDURE MAKE_A_MAZE
180 DIM maze(down+1,across+1)
190 inx=1:iny=RND(1 TO down)
200 x=inx:iny=iny:REMARK entrance
210 maze(y,x)=maze(y,x):1:32:REMARK entr
ance, no exit
220 outy=RND(1 TO down):outx=across:REM
ark exit
230 REMARK create 'no exit' border
240 FOR ac=1 TO across:maze(0,ac)=32:maz
e(down+1,ac)=32
250 FOR dn=1 TO down:maze(dn,0)=32:maze
(dn,across)=32
260 REMARK set entrance, exit bits and
draw openings
270 maze(inx,iny)=maze(inx,iny):1:16:BLCK
K 2,10,14,11:iny=1,2:REMARK west entry
280 maze(outy,outx)=maze(outy,outx):1:2:
BLOCK 2,10,14*(across+1),11*outy+1,2:REM
ark east exit
290 REMARK arrows at entrance then exit
300 CURSOR 2,11*(iny+1):PRINT CHR$(189):C
URSOR 14*(ac+1)+2,11*outy+1:PRINT CHR$(
189)
310 REPEAT outer
320 BLOCK 12,10,14*(ac+2),11*(iny+1,4):PAUSE
1:REMARK green 'blob'

```

```

330 BLOCK 12,10,14*(ac+2),11*(iny+1,2):REMARK
erase blob
340 IF (maze(y,x-1)&&40)<>0 AND (maze(
y,x-1)&&40)<>0 AND (maze(y+1,x)&&40)<>0
AND (maze(y-1,x)&&40)<>0) THEN
350 REMARK this is a dead end square
360 maze(y,x)=maze(y,x)&&239:1:32
370 REMARK now try to trace back this
path check visit and wall bits
380 IF (maze(y-1,x)&&20)=20 THEN y=y-
1:NEXT outer:REMARK North
390 IF (maze(y,x-1)&&24)=24 THEN x=x-
1:NEXT outer:REMARK East
400 IF (maze(y+1,x)&&17)=17 THEN y=y+
1:NEXT outer:REMARK South
410 IF (maze(y,x-1)&&18)=18 THEN x=x-
1:NEXT outer:REMARK West
420 REMARK can't trace back, end of m
aze
430 EXIT outer
440 END IF
450 REPEAT inner
460 rand_no=RND(0 TO 9):REMARK N=7,8,
9:E=0,1;S=2,3,4;W=5,6 - random direction
with bias in certain directions
470 REMARK create appropriate new,ne
w values. Don't update y,n yet
480 new_x=(rand_no=0 OR rand_no=1)-(
rand_no=5 OR rand_no=6)
490 new_y=(rand_no=2 OR rand_no=3 OR
rand_no=4)-(rand_no=7 OR rand_no=8 OR
rand_no=9)
500 REMARK new,newx are the point to
move to
510 REMARK Been there before? If not,
it's OK
520 IF (maze(new,newx)&&40)=0 THEN E
xit inner

```

```

530 END REPEAT inner
540 REMARK Mark as a visited but retur
nable point
550 maze(new,newx)=maze(new,newx):1:1
6
560 REMARK mark an opening by setting
appropriate bits both places:draw
570 SELECT ON rand_no
580 =7,8,9:maze(y,x)=maze(y,x):1:1:maz
e(new,newx)=maze(new,newx):1:4
590 BLOCK 12,1,14*(ac+2),11*(iny+2
600 =0,1:maze(y,x)=maze(y,x):1:2:maz
e(new,newx)=maze(new,newx):1:18
610 BLOCK 2,10,14*(ac+1),11*(iny+1,2
620 =2,3,4:maze(y,x)=maze(y,x):1:4:maz
e(new,newx)=maze(new,newx):1:14
630 BLOCK 12,1,14*(ac+2),11*(iny+1),2
640 =5,6:maze(y,x)=maze(y,x):1:18:maz
e(new,newx)=maze(new,newx):1:2
650 BLOCK 2,10,14*(ac+1),11*(iny+1,2
660 END SELECT
670 REMARK move to new place
680 x=new_x:y=new_y
690 END REPEAT outer
700 REMARK exit point marker, not stric
tly needed
710 maze(outy,outx)=(maze(outy,outx)&&2
39):1:32
720 END DEFINE MAKE_A_MAZE
730 DEFINE PROCEDURE GRID
740 REMARK draw maze with no openings
750 FOR dn=1 TO down+1:BLOCK 14*(across+
2,1,14,1):dn,7
760 FOR ac=1 TO across+1:BLOCK 2,11*(do
wn+1,ac)+1,1,7
770 END DEFINE GRID

```




PLANETS POSITIONS

by David Webber

This week, your final helping of listing for our Astronomy program, which will calculate the positions of the planets, and graphically display them up against the background of constellations.

As an aid to de-bugging, we've found that the most common error is confusing

lower case l's with the number one - so if you get an unexpected syntax error on entering a line, check for this first.

For the faint hearted, tape copies are available from David Webber, at a price of £2.50. Write to him at Cummel Fayle, Ballaterston, Ballaugh, Isle of Man.

```

3700 REM
3710 REM FROM ECLYPTIC TO EQUATORIAL CO-ORDS
-----
3720 REM
-----
3730 m=1/a
3740 b=v/g
3750 ec=23.43
3760 d1=(SIN(b)*COS(ec))+COS(b)*SIN(ec)*SIN(m)
3770 DEF FNs(x)=ATN(x/SQR(1-x*x+1))
3780 d1=FNs(d1)
3790 d2=INT(d1):d3=INT((d1-d2)*60)
3800 t1=(TAN(m)*COS(ec))-TAN(b)*SIN(ec)/COS(m)
3810 t1=ATN(t1)
3820 IF t1<0 THEN t1=t1+360
3830 IF t1>=90 THEN t1=t1-180
3840 IF t1<=-90 THEN t1=t1+180
3850 h1=INT(t1/15):h2=INT((t1/15-h1)*60)
3860 RETURN
-----
3900 REM
3910 REM SCREEN FORMAT
3920 REM
3930 as="###.###"
3940 PRINT USING as;lm;vg;
3950 PRINT TAB(44)USING"###.###":h1;
3960 PRINT USING"###.###":h2;
3970 PRINT TAB(60)USING"###.###":d2;
3980 PRINT USING"###.###":d3
-----
3990 RETURN
4000 REM
4010 REM STAR CHART 1
4020 REM
4030 BORDER 0:INK 1,24:INK 0,0
4040 GOSUB 5800
4050 y=10
4060 FOR x=36 TO 620 STEP 60:MOVE x,37:y=y-1
PRINT y:NEXT
4070 MOVE 47,17:PRINT"Right Ascension - hours
Date -":t1:"":t2:"":t3:"":t4:"":t5:"":t6:"":t7:"":t8:"":t9:"":t10:"":t11:"":t12:"":t13:"":t14:"":t15:"":t16:"":t17:"":t18:"":t19:"":t20:"":t21:"":t22:"":t23:"":t24:"":t25:"":t26:"":t27:"":t28:"":t29:"":t30:"":t31:"":t32:"":t33:"":t34:"":t35:"":t36:"":t37:"":t38:"":t39:"":t40:"":t41:"":t42:"":t43:"":t44:"":t45:"":t46:"":t47:"":t48:"":t49:"":t50:"":t51:"":t52:"":t53:"":t54:"":t55:"":t56:"":t57:"":t58:"":t59:"":t60:"":t61:"":t62:"":t63:"":t64:"":t65:"":t66:"":t67:"":t68:"":t69:"":t70:"":t71:"":t72:"":t73:"":t74:"":t75:"":t76:"":t77:"":t78:"":t79:"":t80:"":t81:"":t82:"":t83:"":t84:"":t85:"":t86:"":t87:"":t88:"":t89:"":t90:"":t91:"":t92:"":t93:"":t94:"":t95:"":t96:"":t97:"":t98:"":t99:"":t100:"":t101:"":t102:"":t103:"":t104:"":t105:"":t106:"":t107:"":t108:"":t109:"":t110:"":t111:"":t112:"":t113:"":t114:"":t115:"":t116:"":t117:"":t118:"":t119:"":t120:"":t121:"":t122:"":t123:"":t124:"":t125:"":t126:"":t127:"":t128:"":t129:"":t130:"":t131:"":t132:"":t133:"":t134:"":t135:"":t136:"":t137:"":t138:"":t139:"":t140:"":t141:"":t142:"":t143:"":t144:"":t145:"":t146:"":t147:"":t148:"":t149:"":t150:"":t151:"":t152:"":t153:"":t154:"":t155:"":t156:"":t157:"":t158:"":t159:"":t160:"":t161:"":t162:"":t163:"":t164:"":t165:"":t166:"":t167:"":t168:"":t169:"":t170:"":t171:"":t172:"":t173:"":t174:"":t175:"":t176:"":t177:"":t178:"":t179:"":t180:"":t181:"":t182:"":t183:"":t184:"":t185:"":t186:"":t187:"":t188:"":t189:"":t190:"":t191:"":t192:"":t193:"":t194:"":t195:"":t196:"":t197:"":t198:"":t199:"":t200:"":t201:"":t202:"":t203:"":t204:"":t205:"":t206:"":t207:"":t208:"":t209:"":t210:"":t211:"":t212:"":t213:"":t214:"":t215:"":t216:"":t217:"":t218:"":t219:"":t220:"":t221:"":t222:"":t223:"":t224:"":t225:"":t226:"":t227:"":t228:"":t229:"":t230:"":t231:"":t232:"":t233:"":t234:"":t235:"":t236:"":t237:"":t238:"":t239:"":t240:"":t241:"":t242:"":t243:"":t244:"":t245:"":t246:"":t247:"":t248:"":t249:"":t250:"":t251:"":t252:"":t253:"":t254:"":t255:"":t256:"":t257:"":t258:"":t259:"":t260:"":t261:"":t262:"":t263:"":t264:"":t265:"":t266:"":t267:"":t268:"":t269:"":t270:"":t271:"":t272:"":t273:"":t274:"":t275:"":t276:"":t277:"":t278:"":t279:"":t280:"":t281:"":t282:"":t283:"":t284:"":t285:"":t286:"":t287:"":t288:"":t289:"":t290:"":t291:"":t292:"":t293:"":t294:"":t295:"":t296:"":t297:"":t298:"":t299:"":t300:"":t301:"":t302:"":t303:"":t304:"":t305:"":t306:"":t307:"":t308:"":t309:"":t310:"":t311:"":t312:"":t313:"":t314:"":t315:"":t316:"":t317:"":t318:"":t319:"":t320:"":t321:"":t322:"":t323:"":t324:"":t325:"":t326:"":t327:"":t328:"":t329:"":t330:"":t331:"":t332:"":t333:"":t334:"":t335:"":t336:"":t337:"":t338:"":t339:"":t340:"":t341:"":t342:"":t343:"":t344:"":t345:"":t346:"":t347:"":t348:"":t349:"":t350:"":t351:"":t352:"":t353:"":t354:"":t355:"":t356:"":t357:"":t358:"":t359:"":t360:"":t361:"":t362:"":t363:"":t364:"":t365:"":t366:"":t367:"":t368:"":t369:"":t370:"":t371:"":t372:"":t373:"":t374:"":t375:"":t376:"":t377:"":t378:"":t379:"":t380:"":t381:"":t382:"":t383:"":t384:"":t385:"":t386:"":t387:"":t388:"":t389:"":t390:"":t391:"":t392:"":t393:"":t394:"":t395:"":t396:"":t397:"":t398:"":t399:"":t400:"":t401:"":t402:"":t403:"":t404:"":t405:"":t406:"":t407:"":t408:"":t409:"":t410:"":t411:"":t412:"":t413:"":t414:"":t415:"":t416:"":t417:"":t418:"":t419:"":t420:"":t421:"":t422:"":t423:"":t424:"":t425:"":t426:"":t427:"":t428:"":t429:"":t430:"":t431:"":t432:"":t433:"":t434:"":t435:"":t436:"":t437:"":t438:"":t439:"":t440:"":t441:"":t442:"":t443:"":t444:"":t445:"":t446:"":t447:"":t448:"":t449:"":t450:"":t451:"":t452:"":t453:"":t454:"":t455:"":t456:"":t457:"":t458:"":t459:"":t460:"":t461:"":t462:"":t463:"":t464:"":t465:"":t466:"":t467:"":t468:"":t469:"":t470:"":t471:"":t472:"":t473:"":t474:"":t475:"":t476:"":t477:"":t478:"":t479:"":t480:"":t481:"":t482:"":t483:"":t484:"":t485:"":t486:"":t487:"":t488:"":t489:"":t490:"":t491:"":t492:"":t493:"":t494:"":t495:"":t496:"":t497:"":t498:"":t499:"":t500:"":t501:"":t502:"":t503:"":t504:"":t505:"":t506:"":t507:"":t508:"":t509:"":t510:"":t511:"":t512:"":t513:"":t514:"":t515:"":t516:"":t517:"":t518:"":t519:"":t520:"":t521:"":t522:"":t523:"":t524:"":t525:"":t526:"":t527:"":t528:"":t529:"":t530:"":t531:"":t532:"":t533:"":t534:"":t535:"":t536:"":t537:"":t538:"":t539:"":t540:"":t541:"":t542:"":t543:"":t544:"":t545:"":t546:"":t547:"":t548:"":t549:"":t550:"":t551:"":t552:"":t553:"":t554:"":t555:"":t556:"":t557:"":t558:"":t559:"":t560:"":t561:"":t562:"":t563:"":t564:"":t565:"":t566:"":t567:"":t568:"":t569:"":t570:"":t571:"":t572:"":t573:"":t574:"":t575:"":t576:"":t577:"":t578:"":t579:"":t580:"":t581:"":t582:"":t583:"":t584:"":t585:"":t586:"":t587:"":t588:"":t589:"":t590:"":t591:"":t592:"":t593:"":t594:"":t595:"":t596:"":t597:"":t598:"":t599:"":t600:"":t601:"":t602:"":t603:"":t604:"":t605:"":t606:"":t607:"":t608:"":t609:"":t610:"":t611:"":t612:"":t613:"":t614:"":t615:"":t616:"":t617:"":t618:"":t619:"":t620:"":t621:"":t622:"":t623:"":t624:"":t625:"":t626:"":t627:"":t628:"":t629:"":t630:"":t631:"":t632:"":t633:"":t634:"":t635:"":t636:"":t637:"":t638:"":t639:"":t640:"":t641:"":t642:"":t643:"":t644:"":t645:"":t646:"":t647:"":t648:"":t649:"":t650:"":t651:"":t652:"":t653:"":t654:"":t655:"":t656:"":t657:"":t658:"":t659:"":t660:"":t661:"":t662:"":t663:"":t664:"":t665:"":t666:"":t667:"":t668:"":t669:"":t670:"":t671:"":t672:"":t673:"":t674:"":t675:"":t676:"":t677:"":t678:"":t679:"":t680:"":t681:"":t682:"":t683:"":t684:"":t685:"":t686:"":t687:"":t688:"":t689:"":t690:"":t691:"":t692:"":t693:"":t694:"":t695:"":t696:"":t697:"":t698:"":t699:"":t700:"":t701:"":t702:"":t703:"":t704:"":t705:"":t706:"":t707:"":t708:"":t709:"":t710:"":t711:"":t712:"":t713:"":t714:"":t715:"":t716:"":t717:"":t718:"":t719:"":t720:"":t721:"":t722:"":t723:"":t724:"":t725:"":t726:"":t727:"":t728:"":t729:"":t730:"":t731:"":t732:"":t733:"":t734:"":t735:"":t736:"":t737:"":t738:"":t739:"":t740:"":t741:"":t742:"":t743:"":t744:"":t745:"":t746:"":t747:"":t748:"":t749:"":t750:"":t751:"":t752:"":t753:"":t754:"":t755:"":t756:"":t757:"":t758:"":t759:"":t760:"":t761:"":t762:"":t763:"":t764:"":t765:"":t766:"":t767:"":t768:"":t769:"":t770:"":t771:"":t772:"":t773:"":t774:"":t775:"":t776:"":t777:"":t778:"":t779:"":t780:"":t781:"":t782:"":t783:"":t784:"":t785:"":t786:"":t787:"":t788:"":t789:"":t790:"":t791:"":t792:"":t793:"":t794:"":t795:"":t796:"":t797:"":t798:"":t799:"":t800:"":t801:"":t802:"":t803:"":t804:"":t805:"":t806:"":t807:"":t808:"":t809:"":t810:"":t811:"":t812:"":t813:"":t814:"":t815:"":t816:"":t817:"":t818:"":t819:"":t820:"":t821:"":t822:"":t823:"":t824:"":t825:"":t826:"":t827:"":t828:"":t829:"":t830:"":t831:"":t832:"":t833:"":t834:"":t835:"":t836:"":t837:"":t838:"":t839:"":t840:"":t841:"":t842:"":t843:"":t844:"":t845:"":t846:"":t847:"":t848:"":t849:"":t850:"":t851:"":t852:"":t853:"":t854:"":t855:"":t856:"":t857:"":t858:"":t859:"":t860:"":t861:"":t862:"":t863:"":t864:"":t865:"":t866:"":t867:"":t868:"":t869:"":t870:"":t871:"":t872:"":t873:"":t874:"":t875:"":t876:"":t877:"":t878:"":t879:"":t880:"":t881:"":t882:"":t883:"":t884:"":t885:"":t886:"":t887:"":t888:"":t889:"":t890:"":t891:"":t892:"":t893:"":t894:"":t895:"":t896:"":t897:"":t898:"":t899:"":t900:"":t901:"":t902:"":t903:"":t904:"":t905:"":t906:"":t907:"":t908:"":t909:"":t910:"":t911:"":t912:"":t913:"":t914:"":t915:"":t916:"":t917:"":t918:"":t919:"":t920:"":t921:"":t922:"":t923:"":t924:"":t925:"":t926:"":t927:"":t928:"":t929:"":t930:"":t931:"":t932:"":t933:"":t934:"":t935:"":t936:"":t937:"":t938:"":t939:"":t940:"":t941:"":t942:"":t943:"":t944:"":t945:"":t946:"":t947:"":t948:"":t949:"":t950:"":t951:"":t952:"":t953:"":t954:"":t955:"":t956:"":t957:"":t958:"":t959:"":t960:"":t961:"":t962:"":t963:"":t964:"":t965:"":t966:"":t967:"":t968:"":t969:"":t970:"":t971:"":t972:"":t973:"":t974:"":t975:"":t976:"":t977:"":t978:"":t979:"":t980:"":t981:"":t982:"":t983:"":t984:"":t985:"":t986:"":t987:"":t988:"":t989:"":t990:"":t991:"":t992:"":t993:"":t994:"":t995:"":t996:"":t997:"":t998:"":t999:"":t1000:"":t1001:"":t1002:"":t1003:"":t1004:"":t1005:"":t1006:"":t1007:"":t1008:"":t1009:"":t1010:"":t1011:"":t1012:"":t1013:"":t1014:"":t1015:"":t1016:"":t1017:"":t1018:"":t1019:"":t1020:"":t1021:"":t1022:"":t1023:"":t1024:"":t1025:"":t1026:"":t1027:"":t1028:"":t1029:"":t1030:"":t1031:"":t1032:"":t1033:"":t1034:"":t1035:"":t1036:"":t1037:"":t1038:"":t1039:"":t1040:"":t1041:"":t1042:"":t1043:"":t1044:"":t1045:"":t1046:"":t1047:"":t1048:"":t1049:"":t1050:"":t1051:"":t1052:"":t1053:"":t1054:"":t1055:"":t1056:"":t1057:"":t1058:"":t1059:"":t1060:"":t1061:"":t1062:"":t1063:"":t1064:"":t1065:"":t1066:"":t1067:"":t1068:"":t1069:"":t1070:"":t1071:"":t1072:"":t1073:"":t1074:"":t1075:"":t1076:"":t1077:"":t1078:"":t1079:"":t1080:"":t1081:"":t1082:"":t1083:"":t1084:"":t1085:"":t1086:"":t1087:"":t1088:"":t1089:"":t1090:"":t1091:"":t1092:"":t1093:"":t1094:"":t1095:"":t1096:"":t1097:"":t1098:"":t1099:"":t1100:"":t1101:"":t1102:"":t1103:"":t1104:"":t1105:"":t1106:"":t1107:"":t1108:"":t1109:"":t1110:"":t1111:"":t1112:"":t1113:"":t1114:"":t1115:"":t1116:"":t1117:"":t1118:"":t1119:"":t1120:"":t1121:"":t1122:"":t1123:"":t1124:"":t1125:"":t1126:"":t1127:"":t1128:"":t1129:"":t1130:"":t1131:"":t1132:"":t1133:"":t1134:"":t1135:"":t1136:"":t1137:"":t1138:"":t1139:"":t1140:"":t1141:"":t1142:"":t1143:"":t1144:"":t1145:"":t1146:"":t1147:"":t1148:"":t1149:"":t1150:"":t1151:"":t1152:"":t1153:"":t1154:"":t1155:"":t1156:"":t1157:"":t1158:"":t1159:"":t1160:"":t1161:"":t1162:"":t1163:"":t1164:"":t1165:"":t1166:"":t1167:"":t1168:"":t1169:"":t1170:"":t1171:"":t1172:"":t1173:"":t1174:"":t1175:"":t1176:"":t1177:"":t1178:"":t1179:"":t1180:"":t1181:"":t1182:"":t1183:"":t1184:"":t1185:"":t1186:"":t1187:"":t1188:"":t1189:"":t1190:"":t1191:"":t1192:"":t1193:"":t1194:"":t1195:"":t1196:"":t1197:"":t1198:"":t1199:"":t1200:"":t1201:"":t1202:"":t1203:"":t1204:"":t1205:"":t1206:"":t1207:"":t1208:"":t1209:"":t1210:"":t1211:"":t1212:"":t1213:"":t1214:"":t1215:"":t1216:"":t1217:"":t1218:"":t1219:"":t1220:"":t1221:"":t1222:"":t1223:"":t1224:"":t1225:"":t1226:"":t1227:"":t1228:"":t1229:"":t1230:"":t1231:"":t1232:"":t1233:"":t1234:"":t1235:"":t1236:"":t1237:"":t1238:"":t1239:"":t1240:"":t1241:"":t1242:"":t1243:"":t1244:"":t1245:"":t1246:"":t1247:"":t1248:"":t1249:"":t1250:"":t1251:"":t1252:"":t1253:"":t1254:"":t1255:"":t1256:"":t1257:"":t1258:"":t1259:"":t1260:"":t1261:"":t1262:"":t1263:"":t1264:"":t1265:"":t1266:"":t1267:"":t1268:"":t1269:"":t1270:"":t1271:"":t1272:"":t1273:"":t1274:"":t1275:"":t1276:"":t1277:"":t1278:"":t1279:"":t1280:"":t1281:"":t1282:"":t1283:"":t1284:"":t1285:"":t1286:"":t1287:"":t1288:"":t1289:"":t1290:"":t1291:"":t1292:"":t1293:"":t1294:"":t1295:"":t1296:"":t1297:"":t1298:"":t1299:"":t1300:"":t1301:"":t1302:"":t1303:"":t1304:"":t1305:"":t1306:"":t1307:"":t1308:"":t1309:"":t1310:"":t1311:"":t1312:"":t1313:"":t1314:"":t1315:"":t1316:"":t1317:"":t1318:"":t1319:"":t1320:"":t1321:"":t1322:"":t1323:"":t1324:"":t1325:"":t1326:"":t1327:"":t1328:"":t1329:"":t1330:"":t1331:"":t1332:"":t1333:"":t1334:"":t1335:"":t1336:"":t1337:"":t1338:"":t1339:"":t1340:"":t1341:"":t1342:"":t1343:"":t1344:"":t1345:"":t1346:"":t1347:"":t1348:"":t1349:"":t1350:"":t1351:"":t1352:"":t1353:"":t1354:"":t1355:"":t1356:"":t1357:"":t1358:"":t1359:"":t1360:"":t1361:"":t1362:"":t1363:"":t1364:"":t1365:"":t1366:"":t1367:"":t1368:"":t1369:"":t1370:"":t1371:"":t1372:"":t1373:"":t1374:"":t1375:"":t1376:"":t1377:"":t1378:"":t1379:"":t1380:"":t1381:"":t1382:"":t1383:"":t1384:"":t1385:"":t1386:"":t1387:"":t1388:"":t1389:"":t1390:"":t1391:"":t1392:"":t1393:"":t1394:"":t1395:"":t1396:"":t1397:"":t1398:"":t1399:"":t1400:"":t1401:"":t1402:"":t1403:"":t1404:"":t1405:"":t1406:"":t1407:"":t1408:"":t1409:"":t1410:"":t1411:"":t1412:"":t1413:"":t1414:"":t1415:"":t1416:"":t1417:"":t1418:"":t1419:"":t1420:"":t1421:"":t1422:"":t1423:"":t1424:"":t1425:"":t1426:"":t1427:"":t1428:"":t1429:"":t1430:"":t1431:"":t1432:"":t1433:"":t1434:"":t1435:"":t1436:"":t1437:"":t1438:"":t1439:"":t1440:"":t1441:"":t1442:"":t1443:"":t1444:"":t1445:"":t1446:"":t1447:"":t1448:"":t1449:"":t1450:"":t1451:"":t1452:"":t1453:"":t1454:"":t1455:"":t1456:"":t1457:"":t1458:"":t1459:"":t1460:"":t1461:"":t1462:"":t1463:"":t1464:"":t1465:"":t1466:"":t1467:"":t1468:"":t1469:"":t1470:"":t1471:"":t1472:"":t1473:"":t1474:"":t1475:"":t1476:"":t1477:"":t1478:"":t1479:"":t1480:"":t1481:"":t1482:"":t1483:"":t1484:"":t1485:"":t1486:"":t1487:"":t1488:"":t1489:"":t1490:"":t1491:"":t1492:"":t1493:"":t1494:"":t1495:"":t1496:"":t1497:"":t1498:"":t1499:"":t1500:"":t1501:"":t1502:"":t1503:"":t1504:"":t1505:"":t1506:"":t1507:"":t1508:"":t1509:"":t1510:"":t1511:"":t1512:"":t1513:"":t1514:"":t1515:"":t1516:"":t1517:"":t1518:"":t1519:"":t1520:"":t1521:"":t1522:"":t1523:"":t1524:"":t1525:"":t1526:"":t1527:"":t1528:"":t1529:"":t1530:"":t1531:"":t1532:"":t1533:"":t1534:"":t1535:"":t1536:"":t1537:"":t1538:"":t1539:"":t1540:"":t1541:"":t1542:"":t1543:"":t1544:"":t1545:"":t1546:"":t1547:"":t1548:"":t1549:"":t1550:"":t1551:"":t1552:"":t1553:"":t1554:"":t1555:"":t1556:"":t1557:"":t1558:"":t1559:"":t1560:"":t1561:"":t1562:"":t1563:"":t1564:"":t1565:"":t1566:"":t1567:"":t1568:"":t1569:"":t1570:"":t1571:"":t1572:"":t1573:"":t1574:"":t1575:"":t1576:"":t1577:"":t1578:"":t1579:"":t1580:"":t1581:"":t1582:"":t1583:"":t1584:"":t1585:"":t1586:"":t1587:"":t1588:"":t1589:"":t1590:"":t1591:"":t1592:"":t1593:"":t1594:"":t1595:"":t1596:"":t1597:"":t1598:"":t1599:"":t1600:"":t1601:"":t1602:"":t1603:"":t1604:"":t1605:"":t1606:"":t1607:"":t1608:"":t1609:"":t1610:"":t1611:"":t1612:"":t1613:"":t1614:"":t1615:"":t1616:"":t1617:"":t1618:"":t1619:"":t1620:"":t1621:"":t1622:"":t1623:"":t1624:"":t1625:"":t1626:"":t1627:"":t1628:"":t1629:"":t1630:"":t1631:"":t1632:"":t1633:"":t1634:"":t1635:"":t1636:"":t1637:"":t1638:"":t1639:"":t1640:"":t1641:"":t1642:"":t1643:"":t1644:"":t1645:"":t1646:"":t1647:"":t1648:"":t1649:"":t1650:"":t1651:"":t1652:"":t1653:"":t1654:"":t1655:"":t1656:"":t1657:"":t1658:"":t1659:"":t1660:"":t1661:"":t1662:"":t1663:"":t1664:"":t1665:"":t1666:"":t1667:"":t1668:"":t1669:"":t1670:"":t1671:"":t1672:"":t1673:"":t1674:"":t1675:"":t1676:"":t1677:"":t1678:"":t1679:"":t1680:"":t1681:"":t1682:"":t1683:"":t1684:"":t1685:"":t1686:"":t1687:"":t1688:"":t1689:"":t1690:"":t1691:"":t1692:"":t1693:"":t1694:"":t1695:"":t1696:"":t1697:"":t1698:"":t1699:"":t1700:"":t1701:"":t1702:"":t1703:"":t1704:"":t1705:"":t1706:"":t1707:"":t1708:"":t1709:"":t1710:"":t1711:"":t1712:"":t1713:"":t1714:"":t1715:"":t1716:"":t1717:"":t1718:"":t1719:"":t1720:"":t1721:"":t1722:"":t1723:"":t1724:"":t1725:"":t1726:"":t1727:"":t1728:"":t1729:"":t1730:"":t1731:"":t1732:"":t1733:"":t1734:"":t1735:"":t1736:"":t1737:"":t1738:"":t1739:"":t1740:"":t1741:"":t1742:"":t1743:"":t1744:"":t1745:"":t1746:"":t1747:"":t1748:"":t1749:"":t1750:"":t1751:"":t1752:"":t1753:"":t1754:"":t1755:"":t1756:"":t1757:"":t1758:"":t1759:"":t1760:"":t1761:"":t1762:"":t1763:"":t1764:"":t1765:"":t1766:"":t1767:"":t1768:"":t1769:"":t1770:"":t1771:"":t1772:"":t1773:"":t1774:"":t1775:"":t1776:"":t1777:"":t1778:"":t1779:"":t1780:"":t1781:"":t
```


terns in which to fill your drawings. When the program is first entered and run, the output screen will be cleared and brought to full size.

A selection of patterns will appear at the top of the screen, and a list of options on the left hand side.

To change either the shading pattern or the cursor type, move the arrow on to your

choice and press the left hand cursor key. To change the cursor dimensions (Height, Length and Radius) move over the option and use the left mouse key to increase the variable, and the right hand key to decrease the variable. The radius variable only applies to the circle cursor.

When drawing, the left mouse button prints the selected option, while the right

button deletes it. Both buttons pressed at once cause the area surrounding the cursor to be filled. Watch for pixel gaps!

To get a screen dump of your masterpiece, press the alternate key and help. The program has a lot of scope for additional routines and alterations; it also shows that the relatively slow ST Basic can run fast enough to be used seriously.

```

340 if q#4 then goto ell1      :rem
350 if q#6 then goto box      :rem used as atari basic does
not 360 if q#8 then goto draw   :rem 'goto "variable name,numb
er"
370 RETURN                    :rem
380 CIRC:rem                  :rem
390 p:circle x,y,r:rem        :rem draw circle
400 DRAW: LINEF X-.5#L,Y,X+.5#L,Y :rem draw horizontal line
410 RETURN                    :rem
420 ELL1: PELLIPSE X,Y,.5#L,.5#H :rem draw ellipse
430 RETURN                    :rem
440 ENDPROG: poke systab+24,0 :rem
450 end                       :rem
460 del: gosub l:find         :rem delete cursor routine
470 color 0,0,0,n:m          :rem
480 gosub l:find             :rem
490 color 1,1,1,n:m         :rem
500 return                   :rem
510 SCSET                     :rem SETS UP SCREEN AND VARIA
BLES
520 COLOR 1,1,1              :rem
530 FULLW 2:CLEARM 2         :rem
540 RESTORE 570 IFOR N=1 TO 7 :rem
550 READ L,W#:GOTOXY 0,1:W#;NEXT :rem
552 linef #40,22,37,22:linef 57,22,57,400 :rem
560 RETURN                    :rem
570 DATA 2,CIRCLE,4,ELLIPSE,6,BOX,8,LINE,10,HEIGHT,13,LENGHT,16,RAD
IUS
580 boxes: rem printing boxes :rem
590 POKE SYSTAB +24,1         :rem
600 for n= 0 to 34           :rem box routine
610 linef n#16,0,n#16+15,0   :rem
620 linef n#16,0,n#16,18     :rem
630 linef n#16+15,18,n#16,18 :rem
640 linef n#16+15,18,n#16+15,0 :rem
650 color 1,1,1,n#1,2       :rem
660 IF N#23 THEN color 1,1,1,n-22,3: :rem
670 fill n#16+7, 4          :rem fills in each box
680 next                     :rem at the top of screen
690 POKE SYSTAB +24,0       :rem
700 return                   :rem
2000 ctast 1 if k<>1 then k#0: return :rem
2005 if y >23 and x<90 then goto ttest :rem shade change
2010 COLOR 0,0,0:LINEF X1#16,20,X1#16+15,20 :
2020 let x1= INT(x/16)      :
2030 n= x1#16-2            :
2035 if x1>23 then n=x1-22:m=3 :
2040 if x1>34 then x1#4 :GOTO 2030 :
2050 k#0                    :
2060 COLOR 1,1,1,N,M       :
2070 LINEF X1#16,20,X1#16+15,20 :
2080 return                 :
3000 ttest:if k#0 then return : rem change cursor mode
3020 if y>167 then goto adjust :
3025 gotoxy 0,q+1 ?" " :
3030 if y>133 and y<167 then q#8 :
3040 if y>100 and y<133 then q#6 :
3050 if y#66 and y<100 then q#4 :
3060 if y>32 and y<66 then q#2 :
3070 gotoxy 0,q+1 ?"*****" :
3080 k#0                    : return
3090 adjust:if y#167 and y<216 then goto ht :rem change variables
3100 if y>216 and y<265 then goto ln :
3110 if y>265 and y<340 then goto rd :
3120 return                 :
3130 ht:if h<.5 then k#0:h#1: goto ht1 : rem alters ellipse and
3140 if k#1 then let h=h+1   : rem box height
3150 if k#2 then let h=h-1   :
3160 ht:gotoxy 0,1:17:?" " :
3170 gosub cval:return       :
3180 ln:if l<.5 then k#0:l#1: goto ln1 : rem alters above lenght
3190 if k#1 then let l=l+1   : rem and line lenght
3200 if k#2 then let l=l-1   :
3210 ln:gotoxy 0,14:17:?" " :
3220 gosub cval:return       :
3230 rd:if r<.5 then k#0:r#1: goto rd1 : rem changes circle radius
3240 if k#1 then let r=r+1   :
3250 if k#2 then let r=r-1   :
3260 rd:gotoxy 0,17:?" " :
3270 gosub cval:return       :
3280 cval: if h#r then let y#20+.5#h :rem calculate boundaries
3290 if r#h then let y#20+r+1 :
3300 if l#r then let x#60+.5#l :
3310 if r#l then let x#60+r+1 :
3320 k#0: return             :
4000 poke systab+24,0       :
4010 end                     :
5000 rem DO NOT TYPE IN REM STATEMENTS , THEY ARE NOT NECESSARY.

```

Desk File Run Edit Debug

OUTPUT

CIRCLE
ELLIPSE
BOX
LINE
AAAA
HEIGHT
42
LENGHT
48
RADIUS
5





TOOLBOX

by Paul Murray

This week, the final instalment of our marathon series of machine code utilities for your Spectrum – together with a comprehensive reminder on what has gone before. To finish off then, we have Dump. First of all, type *Clear 61900* – (in fact, you should do this every time you enter any of the code from the whole Toolkit suite). Now run the Basic loader we printed all those weeks ago, and enter the code listed this week. If the checksums come up OK, save the code to tape.

Dump is a variable dump routine which will produce a listing of the variables contained in memory at the time at which it is called, together with the values associated with them (except for arrays).

Simple numeric variables are displayed in the form:

Name = value

and simple string variables are shown as: Name\$ = "Text"

Control variables (ie, those associated with *For-Next* loops), are differentiated from ordinary numeric variables by having a 'greater than' symbol to the left of their names, for example

>Name = Value

The values of the elements of string and numeric arrays are not displayed, however their dimensions are given inside parentheses, in the fashion used in DIMing them; for example:

A(7,8,9) Deriving from Dim A(7,8,9)

or

NAME	CALL AT	Toolbox Command Summary
COMPACT	62000	NONE
TRACE	62331	SPEED CONTROL : Poke 62335 (0 = SINGLE STEP ELSE 1 TO 255 = FAST TO SLOW) O/P MEDIUM : POKE 62387 (2 = SCREEN, 3 = PRINTER)
RENUMBER	62704	BV = BASE VALUE INC = INCREMENT ST = START LINE FIN = FINISH LINE
AUTO	63718	BV = BASE VALUE INC = INCREMENT
HEADER	64010	NONE
ERROR	64163/64167 (GOSub/Goto)	LIN = LINE TO BRANCH TO ON ERROR (ERROR CODE PICKED UP AT 64283)
DELETE	64493	FL = FIRST LINE LL = LAST LINE
SEARCH	64613	F\$ = 'FIND' STRING R\$ = 'REPLACE' STRING
DUMP	65071	O/P MEDIUM : POKE 65075 (2 = SCREEN, 3 = PRINTER)

Q\$(5,10) Deriving from Dim Q\$(5,10)
Since the size and number of dimensions is given, it is left to the user, if he or she so wishes, to produce a *For-Next* routine to print out the actual values of the elements of the array.

The routine is called by Randomize Usr 65071 and output may be sent either to screen or printer, using
Poke 65071,Out5put

where Output=2 results in screen dump, whilst Output=3 sends the dump to the printer.

Finally, if you have fallen at the last hurdle in the typing stakes (or if you've missed one or two weeks) a tape copy of the whole of the Toolbox suite can be obtained from Paul Murray, for £3.00. Write to 5 Hanham Mills, Hanham, Bristol, BS15 3NU.

65071	205	107	13	62	2	65186	0	237	176	229	239
65076	205	1	22	42	75	65191	224	56	205	227	45
65081	92	237	91	89	92	65196	62	13	215	225	201
65086	27	229	167	237	82	65201	229	215	62	40	215
65091	225	200	126	230	224	65206	225	78	35	70	35
65096	7	7	7	61	61	65211	9	229	237	66	86
65101	229	135	95	22	0	65216	35	78	35	70	35
65106	33	102	254	25	94	65221	229	213	205	43	45
65111	35	86	225	1	58	65226	205	227	45	209	21
65116	254	197	213	126	230	65231	122	183	40	8	213
65121	31	198	96	35	201	65236	62	44	215	209	225
65126	114	254	151	254	177	65241	24	230	225	62	41
65131	254	228	254	245	254	65246	215	62	13	215	225
65136	252	254	229	215	62	65251	201	229	215	225	126
65141	36	215	62	61	215	65256	229	203	191	215	225
65146	62	34	215	225	78	65261	203	126	35	40	245
65151	35	70	35	126	229	65266	229	24	164	229	215
65156	197	215	193	225	35	65271	62	36	215	24	183
65161	11	120	177	32	244	65276	229	245	62	62	215
65166	229	62	34	215	62	65281	241	215	62	61	215
65171	13	215	225	201	229	65286	225	205	157	254	17
65176	215	62	61	215	225	65291	13	0	25	201	0
65181	17	146	92	1	5						

CHECKSUM=30374

Scrolling on CBM64

by Jon Chatten

This is a "block scroll" program, ie, scrolling the background to the left, as your character moves right. A block scroll scrolls the screen 1 whole character in the direction you choose. Here the bottom six lines are scrolled leaving the rest of the screen static (for score and lives, etc). To use the program type the basic loader, which includes a test program.

To use the scroll in your own programs, type out Lines 20-28 of the basic listing into your program and use "SYS 49152" to scroll to the bottom six lines 1 character space. The program scrolls character memory and not colour memory.

```

10 REM *** HORIZONTAL BLOCK ***
12 REM *** SCROLLING ***
14 REM *** BY JON CHATTEN ***
16 REM *** CODE LOADER. ***
18 :
20 FOR I=49152 TO 49235:READ@:POKE I,0:NEXT
22 DATA 162,0,160,0,169,248,6,153,80,195,206,24,138,195,40,170,224,240,208,240
24 DATA 162,0,189,249,6,157,248,6,189,33,7,157,32,7,189,73,7,157,72,7,189,113,7
26 DATA 157,112,7,189,153,7,157,152,7,189,193,7,157,192,7,232,224,40,208,215,162
28 DATA 160,0,169,80,195,153,7,232,24,152,185,40,168,192,240,208,240,96
30 :
32 REM *** TEST PROGRAM ***
34 :
36 PRINT "XXXXXXXXXXXXXXXXXXXX";
38 PRINT "HELLO, THIS IS JUST A TEST TO SEE IF THE ";
40 PRINT "SCROLLING PROGRAM WILL WORK AND THERE'S ";
42 PRINT "NO ERRORS. IF THESE INSTRUCTIONS ";
44 PRINT "ARE NOT SCROLLING TO THE LEFT, CHECK ";
46 PRINT "THE DATA YOU HAVE TYPED IN FOR ERRORS!! ";
48 PRINT "HIT RETURN IF OK, ELSE HIT RUN/STOP...";POKE56295,0
50 SYS49152:FORG=10100:NEXTG
51 GETAF:IFAF<CHR$(13) THEN50
52 FORG=10300:SYS49152:NEXTG:PRINT"ALL WORKING O.K.":END
READY.
    
```

Disc Utility on Amstrad

by D G Shedden

This short utility program eliminates the need to *Cat* your discs before running to decide which of the file names is the one that should be entered.

The bare program (without the *Rems* except Line 1000) should be saved on each of your discs as *Index*. Each time you add a program it is only necessary to add a *Data* line containing the normal name of the program followed by a comma and then the disc loading title.

If you are tidy minded the line numbers can be arranged to keep the titles in alphabetical order but this is not necessary.

To use the program insert a disc then *Run "INDEX"*. All program titles will then be displayed with an associated number. When the number is entered the selected program will then load as normal.

A maximum of 21 titles can be displayed, but an absolute maximum of 23 titles can be shown by scrolling up the heading. This is normally more than adequate, particularly when commercial programs are on the disc.

```

10 MODE 1:DIM x$(23),y$(23)
20 LOCATE 15,1:PRINT"DISC MENU":PRINT
30 X=1
40 WHILE x$(x-1)<>"zzz"
50 READ x$(x),y$(x)
60 PRINT x;" "...|x$(x)
70 x=x+1
80 WEND
90 LOCATE 1,X+1:PRINT CHR$(18):PRINT
100 PRINT"PLEASE ENTER SELECTION 1 to";
x-2:PRINT"or 99 to CHANGE TO ANOTHER
DISC ";:INPUT" ",y
110 IF y=99 THEN 3000
120 CLS:LOCATE 13,1:PRINT"LOADING "|x$(y)
130 RUN y$(y)
1000 REM ** ENTER DATA lines here in the
form DATA PROGNAME,disc name
1010 'e.g.1010 DATA COMBAT LYNX,combat
1020 'e.g.1020 DATA MASTERCALC,mastload
1030 'e.g.1030 DATA TASWORD,tasword
2000 DATA zzz,zzz
3000 CLS:LOCATE 1,10:PRINT"INSERT NEW DISC
THEN PRESS ANY KEY"
4000 WHILE INKEY$="" :WEND:RUN"INDEX"
    
```

Break Key on Spectrum

by David Tummey

First, type the program into the computer and then follow the instructions on screen. When it asks for a key to be pressed for the new Break key, press the key you wish to use, but remember that only the old Break key works when loading in a new program.

The new Break key will break out of all Basic programs (even in *Input* statements), and will break out of some machine code routines.

To save the program, type *Goto 9999*.

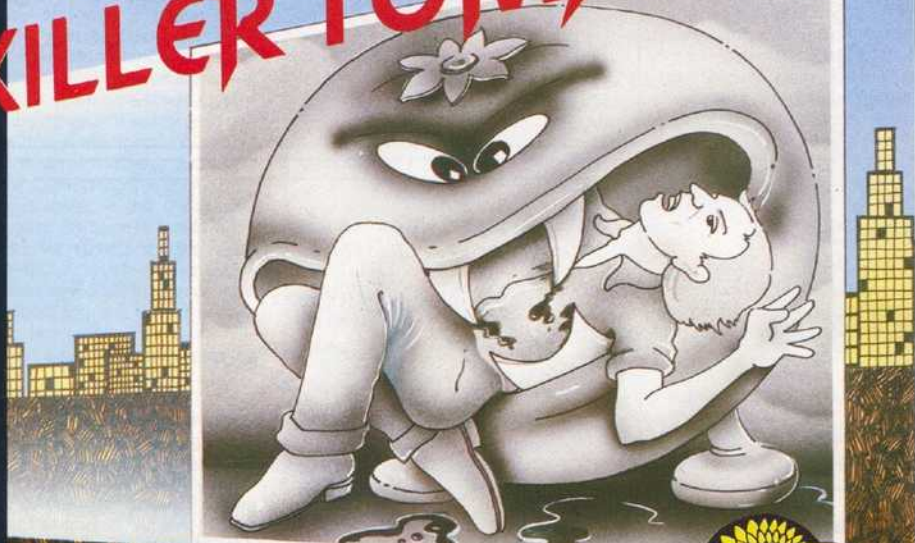
Remember that after every *New* statement you use, the new Break key must be re-installed by typing *Randomize Usr 65120*.

```

4 CLEAR 65119
5 GOSUB 200
10 FOR n:=65120 TO 65126
20 READ a:POKE n,a:NEXT n
30 DATA 62,9,237,71,237,94,201
40 FOR n:=65129 TO 65146
50 READ a:POKE n,a:NEXT n
60 DATA 255,243,245
70 DATA 58,8,92,254,n,32,5,241
,251,205,3,19
80 DATA 241,251,201
90 PRINT "Press Break or space
to escape from program"
100 PRINT "Press any key to NE
110 PRINT "Then type RAND USR
65120"
120 PAUSE 0:PAUSE 0
130 NEW
200 PRINT "Press key for Break
key (space = Normal Break ke
y)"
210 LET n=CODE INKEY$
220 IF n=0 THEN GOTO 210
230 RETURN
999B STOP
9999 SAVE CHR$ 22+CHR$ 1+CHR$
0+"Break"+CHR$ 6 LINE 4
    
```


Nominated for the "Worst Vegetable Movie of all Time"

ATTACK OF THE KILLER TOMATOES



Squash 'em or be squashed

Based on one of those all-time lows in the world of movie making that were actually nominated for a Golden Turkey Award, the Attack of the Killer Tomatoes squelches on to your screens courtesy of Global Software

It's a bit of a sauce, really. There's Wimp Plasbott, working away in the PuraTom (tm) processing plant, when suddenly, several hundred killer tomatoes turn on you.

Rotten, aren't they?

All you have to do is to help Wimp keep the Pizza Parlours well supplied with purée while attempting to hammer the reds before they can do the same to you.

Sounds absolutely killing, doesn't it?

But can you stand the sight of rivers running red? And have you got the bottle for it?

If you haven't, hard squish!

Available for: Spectrum 48K, all Amstrad CPC machines and all MSX 64K machines

Available through all good dealers

£7.95

Send cheques & P.O.'s to:



**GLOBAL
SOFTWARE**

PO Box 67, London SW11 1BS.

Tel: 01-228 1360

Become a sysop with Communitel

David Wallin looks at Communitel, another Bulletin Board software package, for would-be BB operators



A few weeks back we dealt with FBBS budget Bulletin Board software for prospective sysops. This week I'll be giving you information about the Communitel system, which is Bulletin Board software and a whole lot more as well.

The Communitel package was designed for a specific purpose when it was first written: to enable the 200 or so Itecs (Information Technology Exchange Centres) in the country to communicate with each other.

Now it is available for any BBC B owner to set up their own Bulletin Board.

There are three versions of the software available. The one I will be describing is 'level two' which is the most comprehensive (and expensive) of the packages. Levels one and one-plus of the software are for off-line use (no modem-to-modem link). Prepare yourself for a shock; the price is £375!

Before you decide that it's far too expensive bear in mind that the price includes an excellent modem, manufactured by Dacum and 'intelligent' that is, it has built in firmware and a cpu. It has autodial, auto answer, 1200/75, 75/1200 and 300/300 baud rates, and connect/disconnect protocols.

The modem is totally software controlled so has no knobs or buttons to be fiddled with. This is the main part of your £375. I would assess the modem as being worth £220-£280, that's the price of most intelligent modems with similar features (eg, the Tandata Tm512 at £255). So the software is not so expensive as it would first appear.

Another consideration is that similar systems, such as Metrotel, running on a Torch, cost four figure sums (Metrotel retails at about £1700).

The software

So what does the other £120 odd buy? The Communitel software is a really easy to use, high quality software package. It has a very comprehensive manual, plenty of illustrations and it's written in plain English rather than jargon.

The software can be configured to your specific terminal settings, printer codes and disc size, etc, so that you can get the most from it and your hardware. On a 100K disc you can store 95 frames and a 200K disc can store 195 frames. Prestel has

some 300,000 frames, so your system won't really compete with it, but 195 frames will keep your spare time to a minimal amount. BBC owners will know that you can store 31 files on a disc side, but don't worry, the software sorts all this out and stores everything in one massive file.

The software is not only for setting up a Bulletin Board, but for accessing it as well. (Screens from other Communitel boards may be received at 1200 baud).

The features

Using the software is simple; an auto-boot runs the program and you are presented with a menu, which gives these features:

- Search local viewdata base
- Hey Presto viewdata editor
- Carousel automatic display
- Print Viewdata frames
- Local telesoftware formatter
- On-line host system
- Viewdata/telesoftware terminal (for logging on to other boards)
- Create a new viewdata base file (to set up a new board)
- Change system settings (for re-defining your terminal)
- Exit the viewdata system (to exit the software)

● **Search local viewdata base** – having set up a Bulletin Board it will need rigorous testing. This feature lets you play around with the board just as if you had logged on, but you don't move from your computer. Your keyboard acts as the remote terminal. The usual *#, *{number}#, etc, are all fully implemented.

● **Hey Presto Viewdata Editor** – this is the screen editor for creating your frames. It is said to be by far the best ever on the standard BBC.

It has all the features of the editing computers used by Prestel and is said to be better in some ways. It can handle all types of viewdata graphics, colours, double height, etc. Text and graphics are available simultaneously.

● **Print Viewdata Frames** – this feature is for printing of the screens you have created or screens you have loaded down from another board. Screens may be dumped to any of a long list of printers using most of the popular dumping Roms.

Either one screen may be dumped or a list may be set up and each will be dumped

in turn.

● **Local Telesoftware Formatter** – this is a powerful utility for converting a BBC program, data or text file into CET standard telesoftware.

To be downloadable, on a viewdata board, telesoftware must be in CET standard form. (CET – the Council for Educational Technology).

● **Carousel Automatic Display** – this section lets you set up an electronic slide show of frames. That means that you can define a series of frames, in a list, and each one will be displayed in turn, after a specific time delay has been reached. This is an off-line section only which means that there is no modem link involved. This is like the systems used at many travel agents, tourist information centres, exhibitions, shows and displays.

● **On-Line Host** – this is the magic part that puts you on-line. The board which you have set up and tested on the search local viewdata base feature will be running and await a caller. It will answer the phone and send you frames in the order you specified.

The structure

The frames are set up in a tree structure, with frames branching out from each other. You must set up a main menu, hello frame and log off frame. Messages may be left on the system and are usually left at page 910.

Included are three example databases for messaging about with to get used to the software.

So if you want to start a Viewdata board and you've got about £400 just lying about, then this is ideal. In the future I hope to look at the Linemaster Rom for the BBC which is only £10, but it also lets you start a Viewdata board.

More information, or indeed, the software itself is available from Communitel Ltd, 189 Preston Road, London W10 6TH (01-960 7998).

If you have any queries, tips or comments to make about any aspect of micro communications, David Wallin would love to hear from you.

Write to him at *Popular Computing Weekly* 12-13 Little Newport Street, London WC2H 7PP.



Machine incompatibility

Phillip Lock, of Leamington Spa, Warwick, writes:

Q A friend of mine gave me a tape with five games for the Amstrad. I was wondering if it is possible to run the games through my Spectrum 48K and if there is any listing available to allow me to load the tape.

A Mmm, tricky, but the simple answer is, you can't. The problem is, for a start, the two tape loading systems are incompatible, as are the machines. The architecture (the way the memory is set out) is radically different on the two machines so that programs for the Amstrad would not run on the Spectrum, and vice versa. However, it is just possible that you could rearrange the Spectrum's tape loading system so that it would read the tape. But, even if you did, it would be a complete waste of time.

Sprite wrap

Mrs Lin Wyte, of Hounslow, Middlesex, writes:

Q I have just got my hands on a Commodore 64 computer and find that I am very interested in sprites and user defined graphics. I have managed to make up a few routines for both, using *Flip*, *Turn*, *Inverse*, and *Roll* (with wrap around) moving up and down.

What I cannot do is make them wrap around from right to left of vice versa.

A I presume you mean that you are writing a designer program for the sprites and UDGs and that while designing them you want to *Roll* from

right to left with wrap.

This is fairly easily done if you take into account that the definitions (for UDGs to start with) are held in the computer as 8 bit bytes. Consider one line for instance is 50, in binary this is 00110010, and to shift it left or right, simply multiply, or divide by two respectively. So left would be 100 (decimal) or 01100100 (binary) and right 25 (00011001). To wrap around to the right, check whether the result of the division is a whole number or not. If not, then add 128 to the result, ie, place the bit shifted out of the right hand side into the left hand side.

For left shift, check whether the result of the multiplication is greater than 255, if so, add one and *And* with 255. So, the following program that will scroll all 8 lines of a UDG left or right.

```

10 FOR T=0 TO 7
20 READ A
30 POKE 12288+T,A
40 NEXT
50 POKE 53272,28
60 PRINT"XXXXXXXXXXXXXXXXXX"
70 GET AS
80 IF AS=":" THEN GOSUB 200
90 IF AS=":" THEN GOSUB 400
100 DIF AS<>" " THEN 70
110 POKE 53272,21
120 END
200 FOR T=0 TO 7
210 A=PEEK(12288+T)
220 A=A/2
230 IF A<>INT(A) THEN A=A+128
240 POKE 12288+T,INT(A)
250 NEXT
260 RETURN
400 FOR T=0 TO 7
410 A=PEEK(12288+T)
420 A=A*2
430 IF A>255 THEN A=A+1:A=A
AND 255
440 POKE 12288+T,A
450 NEXT
460 RETURN
    
```

Polyphonic problem

Paul Holdaway, of Stockport, writes:

Q I have had some difficulty when trying to write simple music on the Amstrad. When I type in two music lines which are the same note, but not necessarily the same value, and then *Run* the program, the computer plays the notes as if they were only one. So, instead of a slight break in between the two notes, they are played as a continuous tone. How can you help me get

around this, in the most simple way?

A Try this:
10 FOR T=0 TO 100
20 SOUND 1,200,40,7
30 SOUND 2,300,10,7
40 NEXT

What this does is fill up places in the sound queue until there are none left and hence play both notes simultaneously. What you want to do is to make them play separately. This can be done by including the following lines:

```

25 IF (SQ(1) AND 128) = THEN 25
35 IF (SQ(2) AND 128) = THEN 35
    
```

What these do is check whether the note is currently in use and wait until it is finished. When it has, then the next note can be played. The alternatives to this method are either to use envelopes (a little bit more sophisticated), or use only one channel.

A phased interface

Jonathan Farmer, of Edinburgh, writes:

Q I'm having problems with my interface 1 and 48K Spectrum. Although it is properly connected, the computer does not accept valid commands and prints the usual "?". I've tried cleaning the Spectrum edge connector with a pencil eraser and an alcohol based cleaning fluid as the man from Sinclair Research suggested, but neither have worked.

I have had the problem before but usually it has fixed itself. This time it hasn't. However, if a *Clear* command is entered with a value between approximately 53000 and 64000, then it is possible to *Cal* a cartridge and also enter *Run* after *New* to load the 'run' program I have on most cartridges. But, if *Load*, *Save* or *Merge* are entered for the

microdrive, then the computer loads, saves or merges from tape instead.

Also, although the Alphacom 32 printer and Protek joystick work when plugged into the interface, using the joystick in cursor mode allows all movements except left, but works perfectly in Kempston and Interface 2 modes.

Do I have a bad connection between the interface and my Spectrum, or is my interface faulty?

A It looks as though the connection between the interface and the Spectrum is at fault here, although it is difficult to be certain.

There are a number of alternatives. The Spectrum or interface may be broken, although if it is the Spectrum, it should be obvious, since it is rare that they only go slightly wrong.

If it is the interface then the same may not apply but, being able to get a catalogue and load the 'run' program makes it sound all right.

So we come down to the connection between the two. You say that you tried cleaning the edge connector on the Spectrum; it may be worthwhile trying to clean the connector on the interface 1. Failing this, you may have a broken connection on either device, possibly the Rom select line.

If so, fixing could be difficult depending on how good you are with a soldering iron. The best thing to do in this case is to try getting the system fixed at one of the repair companies that advertise for this kind of work in the back of this magazine. This can be expensive, so it is better to get a quote before they fix it.

If this is nearly the price of a new system, you may as well get a new one (I presume that the guarantee has run out). 48K Spectrums do not cost the earth at the moment.

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 *Kenn Garroch* 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

Evesham Micros

THE UTILITY SPECIALISTS

Check out these offers on top quality dot matrix printers. All the models offered are substantially reduced from the normal high street prices. Prices are fully inclusive of VAT, delivery and lead to suit any computer with centronics parallel printer port, eg. Amstrad, B.B.C., Einstein, Atari ST, Oric, Dragon, Memotech or MSX. For the CBM 64/128 we supply a user port centronics cable. For Spectrum or QL owners an appropriate interface is supplied for an extra £20.00, for Atari models other than the ST an extra £30.00. Delivery is by insured receipted delivery and orders are despatched the next working day after receipt, provided we have stock.

TATUNG TP100

Buy purchase volume or to other (highly) priced, high specification printer at an unbeatable price, it is from the same manufacturer and of very similar specification to the Memotech Tally M100 and Centronics CP46. The only of printer reported to be the most popular in its class today meets every feature. It uses square jaws which avoid that "dolly" look and gives a nicely formed up "near letter quality" print at 100cps. Friction and tractor feed are standard. It has full graphics ability. Take a look at these unenviable, actual size print samples.

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

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

ONLY £179.95

Price includes Centronics lead to suit your printer.
Or to suit Spectrum with Kempston "E" interface £199.95

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

JUKI 5510

Our best offer yet? This printer has a recommended price of £299.00 plus VAT. It is a very professional 180 cps model that boasts the luxury of three pass NLC at 30cps as well as all the usual amenities such as friction and tractor feed, EPSON compatibility (including the ribbon), 3k buffer, etc. One aspect that differs about this model is that it can be upgraded to COLOUR application by purchasing the optional colour kit. (£112.00)

ONLY £219.95

PRICE INCLUDES CENTRONICS LEAD TO SUIT YOUR MICRO.
OR TO SUIT SPECTRUM WITH CENTRONICS "E" INTERFACE £239.95

If you would like a print sample with further information on any model please send S.A.E.

MICRO P. MP165

This printer is a very high specification at an unbelievable price. It boasts 185 cps in draft mode and 70 cps in near letter quality mode, which is switch or software controllable. It is friction and tractor feed as standard has a 2k buffer and is EPSON compatible (it even uses an EPSON ribbon). It can print in standard PICA 80 column italics are available in all modes. Normally this printer would be expected to suit IBM, but we are offering it at our ultra keen price inclusive of printer lead to suit £200. Amstrad, CBM 64, Oric, Dragon, Einstein or Memotech.

ONLY £249.00

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

ALL OFFERS SUBJECT TO AVAILABILITY

EVESHAM MICROS
BRIDGE STREET, EVESHAM,
WORCESTERSHIRE,
Tel: 0386 41999

SPRING SPECIALS

ATARI 104ST mono	£799.00
ATARI 104ST colour	£999.00
(these prices INCLUDE VAT)	
OPUS DISCOVERY 1	£114.95
CBM 128 computer	£229.95
CBM 128 compendium pack	£279.95
CBM music pack	£149.95
CBM MPS803 printer	£149.95

5.25" 3M DISCS (packs of ten)	
SS/DD	£11.95 DS/DD £14.95
or in plastic library case	
SS/DD	£12.95 DS/DD £15.95

3.5" 3M DISCS (packs of ten)	
SS/DD	£29.95 DS/DD £39.95

3" DISCS (suit Amstrad)	
BOX OF TEN	£39.00

STAR NL10

New high specification printer just released. All the usual features PLUS easy front panel selection of most modes, semi automatic single sheet feed AND plug in interface cartridges. Choose between standard centronics parallel, IBM, or Commodore. Ideal for Commodore owners who want the convenience of a CBM ready printer but may wish to change later, just buy a new interface cartridges for £39.00.

OUR PRICE: ONLY £269.00
(state which cartridge required)

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

ANCIENT & MODERN

Unit 111 (Rear), Washington Road, West Wills Trading Estate, Westbury, Wilt.

AMSTRAD	REV5	1430	520	VECTRON	7/5	4.95		
MUSIC SYSTEM (disc)	19.99	13.95	LORDS OF THE RINGS	19.99	11.50	FOURMOST ADVENTURES	7/5	4.95
SPIN DOZZY	9.99	5.99	PRINCE Y THE 13th	9.99	4.50	2001 AD	7/5	4.50
NOMAD	8.99	5.99	ZORRO	8.99	5.50	FORBIDDEN PLANET	7/5	4.50
ROUNDO BOY	3.99	3.99	AGONY STORYMAKER	9.99	5.00	UP THE MOUNTAIN	9/5	4.95
TAU CEE	9.99	5.99	XING FU MASTER	9.99	6.99	BATTLE OF THE PLANETS	3/5	5.99
BATTLE OF THE PLANETS	9.99	5.99	FIGHTING WARRIOR	8/5	5.50	SAINT JOURN	3/5	5.99
MELBORNE DRAW	14.99	9.99	CAUSSES OF CHANCE	8/5	4.00	RASPUTIN	7/5	4.50
DISCOVERY (disc)	11.99	8.99	PLAY YOUR CARDS RIGHT	7/5	4.50	WINGSTONE	7/5	4.50
COMMODORE 64 disk			LITTLE COMPUTER PEOPLE	9/99	4.99	WATERLOO	9/99	4.50
GAME MAKER	13.99	13.99	ARC OF YESSOO	9/99	3.99	COSTA CAPERS	7/5	4.50
THE HOBBIT	17.99	10.99	RAMBO	9/99	3.99	EWYRYT THE GERM	7/5	4.50
DONALD DUCK	12.99	7.99	KINGDOM BACK	7/99	2.99	TWISTER	7/5	4.50
FRAX	14.99	2.99	KING STRIKES BACK	7/99	2.99	SAI COMBAT	6/5	4.50
TIME TUNNEL	12.99	9.99	REV5	14.99	9.99	TIP RA NO	9/5	3.99
LORD OF THE RINGS	16.99	13.99	SUPERMAN	9/99	4.50	ALLEN E	3/5	4.99
GONDO WIND RIDER	12.99	7.99	SUPERMAN	9/99	3.50	SUN'S CHAMP	11/5	5.99
MACKY'S SPACE ADVENTURE	12.99	7.99	BACK TO THE FUTURE	9/99	3.50	ROUNDO BOY	7/5	3.99
FILIP & FLOP	12.99	2.99	WILLIAM WOBBLER	9/99	3.50	FOXTON	9/5	3.99
ROCK 'N' WRESTLE	14.99	9.99	EODOLIN	14.99	9.99	ASTRO CLONE	7/99	3.50
SUMMER GAMES II	14.99	9.99	LESER BACK	9/99	3.99	BOMBY JACK	7/5	3.50
WALDFORDS	12.99	2.99	AMAZON COMPILER	19/99	12.99	GREEN BERRY	7/5	4.99
COMMODORE 64			SPECTRUM			PING PONG	7/5	4.99
OFF THE HOOK	6/99	9/99	OFF THE HOOK	6/99	9/99	MAC HEADROOM	9/5	4.99
GAME KILLER	14/99	10/99	SAM FOX STRIP POKER	8/5	5/99	SECRET OF ST. BRIGDES	6/99	3/99
HARD BALL	9/99	6/25 V		7/5	5/20	ROBMY MESSAGE	7/5	3/99
TIME TUNNEL	9/99	6/25 V		7/5	5/20	STEVE DAVIS SNOOKER	7/5	4/99

All prices inc. Vat and P & P. Overseas please add 10p per tape. Thousands of others in stock. Please send S.A.E. for full list of items. Cheques/P.O.s payable to Ancient and Modern, Unit 111 (Rear), Washington Road, West Wills Trading Estate, Westbury, Wilt.

MEGASAVE SOFTWARE

46 THE MALTINGS, STANSTEAD ABBOTS, WARE, HERTS

SPECTRUM 48K	R.R.P.	OUR PRICE	NEW GAMES II	R.R.P.	OUR PRICE	P.P.R.	OUR PRICE
Lords of the Rings	15.95	11.95	Now Games II	8.95	6.50 V		6.95
Starstrike II	7.95	6.75	Movie	7.95	5.75	Boulder	6.95
Way of the Tiger	9.95	8.95	FA Cup	9.95	8.95	Unlucky	6.95
Skyfox	7.95	6.75	Conc	9.95	8.95	Superbowl	6.95
Sold a Million II	9.95	6.95	Batman	7.95	5.75	Zoids	9.95
Cybernet	12.95	8.95	Boulder	7.95	5.75	Commando	9.95
Turbo Sprint	9.95	6.99	Focus Focus	7.95	5.75	Fairlight	9.95
Zero	6.99	5.99	Red Hawk	7.95	5.75	Fast Hawk	9.95
Mugby's Revenge	4.99	3.99	Young Ones	7.95	5.75	Starship Andromeda	9.99
Heavy on the Magick	9.95	6.95	Spinstray	9.95	8.99	Max Headroom	9.95
Splitfire 40 V	7.95	5.75	Quasotron	9.95	6.99	Titanic	9.95
Superbowl	9.95	8.95	COMMODORE 64/128	9.95	8.99	Hall	9.95
Bomb Jack	7.95	5.75	PSI FI	9.95	8.99	Doornadas Revenge	9.25
Green Beret	7.95	6.75	Empire	9.95	8.99	FA Cup	8.25
Twister	7.95	6.95	Golf Construction Set	12.29	9.99	Saboteur	8.99
Bali Blazer	7.99	6.45	Rock 'n' Wrestling	9.99	8.96	Thrust	1.99
Ping Pong	7.95	6.75	Sold a Million II	9.99	8.95	Int. Karate	6.50
Alien Highway	7.95	6.75	Starquake	8.99	6.75	Comet Game	7.95
Rambo	7.95	6.45	Way of the Tiger	9.95	8.99	Focus Focus	6.95
Comet Game	7.95	6.75	Tigers in the Snow	9.99	6.99	Spinstray	9.25
Winter Games	7.95	6.45	Bomb Jack	9.95	8.95	Alter Ego (D)	24.95
Fantastic Four	9.95	6.75	Warplay	7.95	5.75	Bored of the Rings	6.95
Sam Fox	8.95	6.65	Mercenary	9.95	8.95	Price of Magick	9.95

All prices include free last delivery & same day despatch, when available. Personal callers welcome. 5% discount on all orders for cash or more tape or to a value over £45. Cheques/P.O.s payable to MEGASAVE. For up to date news on available & access orders ring (0920) 870668. Free Game included for orders over £20 or overseas orders. 20P96D

PCW 8256 368K RAM DISK

EXPAND YOUR PCW 8256 RAM DISK (drive m:) FROM 112K TO 368K. THE 8256 HAS CAPACITY TO EXCEPT 8 EXTRA 256K RAM CHIPS.

8 ADDITIONAL CHIPS ARE SUPPLIED WITH SIMPLE INSTALLATION AND OPERATING INSTRUCTIONS.

ONLY £35 INCLUSIVE

DEALER ORDERS WELCOME

ANYAL TECH ENGINES
PO BOX 35, EASTLEIGH
HAMPSHIRE SO5 5WU

SUPA SOFT DISCOUNT SOFTWARE

SPECTRUM	R.R.P.	OUR PRICE	Green Beret <th>8.95 <th>6.00 <th>Sold a Million 2 <th>8.50 <th>10.00 </th></th></th></th></th>	8.95 <th>6.00 <th>Sold a Million 2 <th>8.50 <th>10.00 </th></th></th></th>	6.00 <th>Sold a Million 2 <th>8.50 <th>10.00 </th></th></th>	Sold a Million 2 <th>8.50 <th>10.00 </th></th>	8.50 <th>10.00 </th>	10.00
Way of Tiger	9.95	8.45	Super Bowl	9.95	8.45	Sold a Million 2	8.50	10.00
Superbowl	7.95	6.45	Ping Pong	9.95	8.45	Splitfire 40	7.50	N.A.
Bomb Jack	7.95	5.00	Sam Fox	9.95	8.45	Starstrike II	8.50	10.95
Ping Pong	7.95	5.00	Urdukm	9.95	8.00	Strife Force Har	8.25	10.95
Sam Fox	7.95	5.00	Hardball	9.95	8.45	Alien Highway	10.00	10.00
Starstrike 2	7.95	5.00	Zap Bazzers	9.95	8.45	Fairlight	9.95	10.00
Alien Highway	7.95	5.00	Electradige	9.95	8.45	Unlucky	11.00	14.00
Cybernet	7.95	5.00	FA Cup	7.95	6.00	Soccer	6.95	N.A.
Twister	7.95	6.45	King Fu Master	9.95	8.45	Laser Basic	10.99	14.85
Bali Blazer	7.99	5.50	Rock and Wrestling	9.95	8.45	Laser Compiler	7.00	30.00
The Planets	9.95	6.95	Game Maker (D)	19.99	13.95	Pyrtadev (TK)WSN A	24.95	24.95
Back to Future	7.95	6.25	Price of Magick	9.95	8.45	Mini Office 2	12.00	14.90
Rock and Wrestling	9.95	8.00	Starquake	9.95	8.95	Superbowl	6.95	N.A.
Cross Smashers	9.95	6.95	RMS Titanic	7.95	5.00	Warplay	7.95	5.00
R.M.S Titanic	7.95	5.25	War Play	7.95	5.00	PS 1-1 Trading Co	14.95	10.00
Batman	9.95	8.45	PS 1-1 Trading Co	14.95	10.00	Popular Accounts	99.99	89.95
Biggies	9.95	8.45	PS 1-1 Trad Co (D)	14.95	10.00	Pop. Accounts +	149.95	118.55
Henry on Magic	7.95	6.00	Silent Service (D)	14.95	10.00	Popular Inviting	69.95	49.95
Who Wins 2	7.95	6.00	Silent Service (D)	14.95	10.00	Popular Super	149.99	119.95
Splitfire 40	9.95	8.99	Sold a Million 2	9.95	8.45	Popular Super C	149.99	109.99
FA Cup	7.95	5.00	Empire	9.95	8.45	Chit Chat E. Mail	99.99	49.99
Sold Million 2	9.95	8.41	Freeze Frame 2	39.95	33.95	Chit Chat E. Mail	99.99	49.99
COMMODORE 64	R.R.P.	OUR PRICE	AMSTRAD			CASS DISK		
Rock and Wrestling	9.95	8.45	Rock and Wrestling	6.95	10.95	Chit Chat C. Pack	99.99	49.99
Superbowl	9.95	8.45	Sage Database	6.50	5.00	Sage Database	99.99	49.99

Post & Packing Inc. Overseas Orders Please Add 75p per tape. Mail order only. Cheques/Post orders (Staring only please)

Made payable to Discount Software, Dept 4, 210 Nicholls Town, Harlow, Essex CM18 8EF. 20P95D

CALL JON BEALES on 01-437 4343 FOR SEMI/DISPLAY ADVERTISING

SOFTWARE

400/806

LOOK

NOW

XL/XE

ST

ATARI OWNERS

Are you having difficulty finding suitable software. If so, then look no further. We have available for both hire and purchase one of the largest selections of both UK and American titles to choose from. Games and Utilities for all ages. Hardware and add-on utilities at discount prices and special deals regularly being offered. If you would like further information please send a large s.a.e. to:—

CHAMWOOD PRODUCTS AND GAMES
 30A Warwick Avenue, Quorn, Loughborough
 Leicestershire LE12 8HD
 Tel: 0509 412604

GRAPHICS ADVENTURE for Spectrum 48k "Merhownie's Light and The Spore" direct from the writer £2 each. S. Kendall, 118 Kingsway, Ossett, W. Yorks WS5 8DQ.

HORSE RACE PREDICTIONS

A fast, easy-to-use, program to predict any national hunt or flat horse race. Just enter information from daily paper. Producing 66% winners on top tips. Tried and tested now for four years. Available for any Spectrum or Commodore 64. **Send £6 to D. C. Jackson, 1 Osborne Place, Todmorden, Lancs. Tel: 070681 6854.** 19PL10

HOME ACCOUNTS. Put your house in order! Comprehensive coverage of bank accounts, credit cards, HP, etc. Inbuilt accuracy check. Projects cash flow for any period. Available for Commodore, Amstrad and Spectrum £8.45. Free details from Discus Software, Froepost, Beach Approach, Brixham TQ5 8BR. Tel: 08045 5532.

CLASSIFIED ADVERTISING RATES:

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

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

THESE RATES DO NOT INCLUDE VAT.

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

IF YOU WISH TO DISCUSS YOUR AD, PLEASE RING Jon Beales 01-437 4343.

HINTS - POKES - MAPS

Monthly Handbooks packed with hundreds of Tips, Pokes, Maps, Competitions and Software.

Offers	
C18/Plus 4 Handbook	£1.00
Amstrad Handbook	£1.00
BBC Handbook	£1.00
Commodore Arcade Handbook	£1.00
Commodore Games Review Handbook	75p
Spectrum Arcade Handbook	£1.00
Spectrum Games Review Handbook	75p
The Adventure Handbook (CBM/Spec)	£1.00

SEND CHEQUE OR PO TO:
 H & D SERVICES (PCW)
 1338 ASHTON OLD ROAD
 HIGHER OPENSHAW
 MANCHESTER M11 1JG 21/10

TRIVAL Crossword Spectrum 48K & Dragon 32/64. Test your knowledge with over 4000 questions for 1-4 players. Only £3.50. James Fletcher, 29 Samuel St., Warrington, Cheshire.

GIANT NEW ADVENTURES
 "LOVETOY" and "GORDESS"
 CBM 64/128. Spectrum 48k
 only £2.00 each
 PO BOX 1526, DUBLIN 18PL20A

Amstrad & Commodore 64 Software hire. Don't waste money on games you will be bored with after a few weeks. Hire the games you want to at low cost. **FIRST GAME FREE.** Send stamp for details K&M Computer Club, 40 Fairstead, Birch Green, Skeimersdale WN9 8RD. 20PL24

C16/PLUS 4 JUNIOR EDUCATIONAL CASSETTE

Suitable 5 to 11 years of age. Help your child to learn their spellings, times tables, and increase their maths ability with this personalised computer. Contains spellings, times tables and three levels of addition, subtraction, multiplication, division. All user friendly with personalised comments and scores. **£6.95 per cassette incl P&P** Cheques/POs to

B. CLUNN, 29 LANGDALE RISE MAIDSTONE, KENT
 Enquiries Maidstone 62258 20PL21

TV PURSUIT at last TV Pursuit 48K Spectrum. Over 12 questions. Send cheque, PO £5. E. Lewis, 36 Surrey Tower, Gravney Grove, London SE20 8UW.

SCREENMASTER is a family of advanced graphics programs that give full access to the code, so you can adapt them for your own special needs. Use them individually or together (eg on disc).

SM1 - Powerful character generator. Create single character blocks, 2x2 character blocks (sprites) and 8x8 blocks (pictures). Novel scrolling window design grid. Cartoon animate sprites. Paint coloured pictures. Pick up blocks from a screen file.

SM2 - Creative art & drawing. Rubber-banded line, circle, ellipse, polygon & arc drawing. Freehand draw & erase. User defined brushes & fill patterns. Multi-size text. Character, sprite & pictal handling. Alter, move, copy & paint areas of screen. Kill incorrect commands.

SM3 - Advanced graphics compiler. Store pictures in highly compressed form. Run-time routines to reconstruct pictures can be included in user programs. Edit & redraw at any time (we find this incredibly useful). Rubber-banded drawing as in SM2. Create macro commands. Available April. Spectrum (48K & Plus) tape £4.50 each. **SPECIAL OFFER 2 for £7.95 or 3 for £9.95.**

DOCUMENTATION PACKAGES - detailed info, including expanded, commented listing. £1.95 per program.

CAR CURE - EXPERT SOFTWARE to help diagnose faults on your car. Covers 300 symptoms & 900 faults. Spectrum (48K & +) and Amstrad CPC484 tape £9.95. BBC disc £11.95. Amstrad 454/664/8128 disc £13.95.

Please send S.A.E. for information pack. Add £1.50 for airmail outside Europe.
 4 Clarence Drive, East Grinstead, W. Sussex RH19 4RZ.
 tel: 0342 28186. 2110:



ORIC/ATMOS UPGRADE/REPAIRS SOFTWARE/PERIPHERALS

Oric Atmos modem £84.95 + 1.50 p+p
 Other hardware available W.E. (SOFTWARE)
 Foley Bank, Worcester Rd
 Gt Malvern
 Worcestershire WR14 4QW
 06845 69059
 Telex/Prestel
 Mailbox 6845/69059 20PL10

AMSTRAD CPC OWNERS. AMTIX! May '86 said, "It has the potential to be something quite special," about the Sci-Fi adventure *The Lost Phirious*. Only £2.50 from Vidipix, 125 Occupation Road, Corby, Northants.

TEN GAMES PACKS

All original Arcade games software including the classic "Spacewar 42" and the highly addictive "Battle Boat".
 Amstrad CPC 664 pack £2.45
 Sharp MZ700 pack £2.45
 ZX Spectrum pack £2.45
 Please state which computer your games pack is for when ordering. Make all cheques/postal orders payable to:

PACE SOFTWARE
 40 Baiton Green, Clifton, North's NG11 8LG
 Wholesale dealers inquires welcome 20PL20

Here's my classified ad.

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

I make this	words, at
per word so I owe you £	
Please continue on a separate sheet of paper	

Name

Address

.....

.....

.....

Telephone

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

FAST COMPUTER REPAIRS

VIDEO VAULT INTERNATIONAL 10★ REPAIR SERVICE



ACCESS
WELCOME

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

WHILE YOU
WAIT SERVICE
CALL FOR APPOINTMENT

24 HOUR
TURNAROUND



KEYBOARD
FAULTS
SPECTRUM
ONLY £8.95

HOW TO SEND YOUR COMPUTER

Just parcel your computer in suitable wrapping enclosing £19.95 for Spectrum repairs, please do not send power supplies. Commodore computers, just send £1.75 (U.K. Eire, I.O.M. C.I.) or £6.50 (Europe/Scandinavia) with your address or phone number and we will contact you same day by phone or letter with quote. If you prefer, please call us and we will give you a quote over the phone, we aim to please. That's what made us the most reliable and No. 1 Service Centre in the U.K.

SPECTRUMS REPAIRED for only £19.95 including PARTS · INSURANCE and P & P. NO HIDDEN EXTRAS

We don't give you a between price and let you guess the bill, we give you a 100% fixed price NO extras. We don't need to boast about our service, we have 1000's of customers from all over the world highly delighted with our service and help. Only 20 minutes from Manchester Centre. Commodore 16s, Commodore 64, Vic 20, also repaired call us for details. Please note we never charge between prices. Don't wait weeks for your repair, we turn around all computers in 24 hrs. All repairs carry a full 3 month guarantee, plus on every Spectrum we repair, we send you 4 free games worth £25.80 for your enjoyment and pleasure.

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

N.B.
WE DO NOT
CHARGE AN
AVERAGE
PRICE

TRADE
REPAIRS
most
welcome

(SPARES AVAILABLE THROUGH OUR D.I.Y. SECTION.)

BEST SERVICE — BEST PRICES!

COMMODORES

* NOW REPAIRED *

Commodore 64, C16's, Vic 20,
1541 Disk Drives. Same Day Service.
Call us for details or purchase
the I.C.'s from our D.I.Y. section

NEW
VIDEOVAULTS 80K UPGRADE KIT
WATCH THIS SPACE FOR DETAILS
AVAILABLE SHORTLY

*SPECIAL KEYBOARD UPGRADE



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

for only £31.50
which includes fitting + return P & P and V.A.T

Normal retail price £49.95 without fitting

ORDER
NOW!

SPECIAL OFFER!

YOU CAN'T REFUSE
16K to 48K Upgrade

Upgrade your 16K Spectrum to 48K Spectrum
for only £19.95 fitted including V.A.T. and P & P.
(Issue 2 - 3 only)

(Retained by Public demand.)
To order the Upgrade Kit,
(only £17.95.)



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

THE
LOGICAL
CHOICE

VideoVault D.I.Y. CORNER

We regret we cannot
show all the components
available. Just give us a
call and we can quote you
over the phone, delivery
by 1st class post.

Spectrum Parts

Z80B CPU	3.50
4116 Rams	1.0
ZTX850	0.60
Transistor ZTX 213	0.60
Transistor ZTX313	0.50
Power Supply Units	9.95
Foetl (Each)	0.25
16K to 48K Upgrade	
Kil	17.95
Sockets 16-40 Pin	14.50p
Cassette Leads	3.50
T.V. Leads	3.50
Keyboard Membranes	5.00

Commodore 64 Chips

6526	23.00
6510	23.00
6581	23.00
901227-05	23.00
901226-01	23.00
901225-01	23.00
6569	23.00
4164 Rams	3.00
Power Supply Units	29.00

All prices + P & P £1.50
But include V.A.T.

TRADE
ORDERS
WELCOME

VIDEOVAULT HEALTH WARNING!!!

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

STOP
PRESS

MANCHESTER BRANCH
opening SHORTLY in the
City Centre. Sorry for
delay to all our Manchester
customers.

7 OPEN
DAYS
A WEEK

SERVICE
ENGINEERS
REQUIRED

ONLY 1st CLASS
ENGINEERS
NEED APPLY
FOR OUR
MANCHESTER
BRANCH
OPENING SHORTLY

VideoVault Ltd.

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

© Copyright Videovault Ltd. No. 151085

SPECIAL
OFFER

NORMAL
RECOMMENDED
RETAIL PRICE
4 FREE GAMES
YOURS FREE WITH EVERY
SPECTRUM REPAIR
£25.80

SERVICES

COMPUTER REPAIRS NOW IT'S YOUR CHOICE

SPECTRUM
DRAGON
BBC
COMMODORE

Fixed Price

£19.95
£29.95
£34.95
£34.95

Quotation

£9.95 + parts
£11.95 + parts
£15.95 + parts
£15.95 + parts

- Guarantee: Six Months
- Extras: None - Post, VAT & Insurance inc.
- Quote: Mail Computer & Daytime Contact Phone No.
- Fixed Price: Mail Cheque + Computer
- Range: We also repair IBM, Apple, Osborne, Sirius, Apricot + wide range of Peripherals.

Call (0423) 501679 Anytime
OMNICON LTD,
16 Hayward St.,
Harrogate HG1 5BJ

PL990

CHILTERN COMPUTER SERVICE

FOR FAST RELIABLE REPAIR SERVICE
SPECTRUM £18.00
WE ALSO REPAIR CBM 64 & BBC, VIC 20, ORIC,
AMSTRAD, PRINTERS & DISC DRIVES
Ask for details.

We give 3 months warranty on replaced parts
Send computer with details of fault and cheque
made out to:

CHILTERN COMPUTER CENTRE
98/100 HIGH TOWN ROAD, LUTON, BEDS
TEL: 0582 455684

Overseas enquiries welcome

PL281

LONDON COMPUTER REPAIR CENTRE

- ★ Spectrum, Commodore, BBC, Atari, Amstrad etc.
 - ★ Low cost repairs from £12.00
 - ★ Collection & delivery optional
 - ★ Used Micro's bought, sold, exchanged.
- Call NIGEL: 01-863 7166

MICRO SUPPORT

Unit 3, 15 Springfield Road,
Harrow, Middx, HA4 1QF.

PL313

COMMODORE Repairs by Commodore approved engineers. Vic 20 Modulators £8.50. Vic 20 from £14.50. CBM64 etc. For more details write or tel: G. C. Bunce & Son, 38 Burlington Road, Burnham, Bucks SL1 7BQ. Tel: 06286 61696.

RECRUITMENT

DOMARK

Require a

PROGRAMMER

experienced in Z80 code on the AMSTRAD
to work in-house.
Previous experience essential.
Write or phone Richard on
01-947 5622

TPC10

PROFESSIONAL DUPLICATION

FAST reliable service of DATA DUPLICATION for most computers. Comprehensive facilities include: ensure / re-recording, blank, discs, cassettes, tapes, re-printed labels, slides, COMPETITIVE PRICE LIST form.



PL395

AMSTRAD

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

Amstat1 - means, s devts, t-tests, 1-way-ADV, 2-way-ADV, correlations, regressions, histograms, scattergrams, transformations, file storage and retrieval, manual. £14.99 each, £19.95 disc.
"A genuinely useful bargain buy" - Tony Kendle, Popular Computing Weekly, Nov 14-20, 1985.
Amstat2 - a "Complete Siegel" - 27 nonparametric tests - £39.95
AMSTAT1/AMSTAT2 together £49.95.
Cheques/P.O.s to:
S. C. Coleman, 33 Leicester Road, Ashby-de-la-Zouch, Leics LE6 5DA. Telephone: 0530 415919. Technical Enquiries after 5.00pm or Weekends.

PL31

FOR SALE

FACULTY ENTERPRISES

AMSTRAD	OUR RRP PRICE	COMMODORE	OUR RRP PRICE	COMMODORE	OUR RRP PRICE
Rambo	9.95	7.55 Superbow	9.95	7.55 Solo A Million II	9.95
Solo A Million II	9.95	7.55 Solo A Million II	9.95	7.55 World Cup	9.95
Friday 13th	9.95	7.55 Friday 13th	9.95	7.55 Friday 13th	9.95
Ship of Doom	7.25	5.50 Missile Command	7.25	5.50 Ship of Doom	8.50
Planet of Death	7.25	5.50 Pilot64	7.25	5.50 3D Ball Attack	6.50
Space Hawks	8.99	8.90 Automan	7.25	5.50 Flight From Dark	7.95
3D Invaders	8.99	8.90 View To A Kill	8.99	8.90 Cosmic Cruiser	7.25
Harris Attack	8.99	8.90 Flyer Fox	7.99	5.50 Black Hole	7.25
View To A Kill	8.99	8.90 Speech	7.99	5.50 View To A Kill	7.25

**P + P INC. PLEASE MAKE CHEQUES
PAYABLE TO FACULTY ENTERPRISES,
29 RUTLAND COURT, PONDERSEND,
ENFIELD, MIDDLESEX.**

20PL1

YOUR PERSONAL CENTRONICS PRINTER

£99 plus vat
plus £8 p+p

- DRAFT MATRIX PRINT
- NEAR LETTER QUALITY
- SUBSCRIPT SUPERSMOOTH
- CONDENSE EMPHASIZE
- 96 CHAR + 48 EURO + 16 MATHS
- GRAPHICS
- OPTIONAL TRACTOR

128 Station Rd
Claremont
Leicester
LE3 8ER

ROCK HALL

TEL: (0533) 313531

AMSTRAD CF2 3"

5 FOR £19.95

10 FOR £37.95

FULLY INCLUSIVE, FAST DELIVERY
CALLERS BY APPOINTMENT ONLY

RUGBY MICRO SPARES
30 OXFORD STREET
RUGBY, WARCS CU21 3NF
PHONE 0788 71643

SORD M5 Computers and software at giveaway prices. Stocks limited. SAE for lists or telephone 0279 417636, Playfair Projects, 133 Hookfield, Harlow, Essex CM18 6QL.

ACORN ELECTRON with Plus One expansion unit, view word processor ROM cartridge. All leads and manuals and some software, still under guarantee. Accept £90. Tel: Gary, (0244) 532589 (evenings).

EARN A FORTUNE!

Make Money From Used Micros is an incredible new manual which shows you can earn a fortune from buying and selling used home computers, accessories and software for amazing profits. You can make hundreds a week from this vastly under-exploited market with the hard-earned facts and figures contained in this information-packed 25,000 word guide.

Even if you do not own a computer this report will give you all the necessary facts. Contents include how to get stock, what to pay, what to charge, what to sell - and what to avoid, sales techniques, testing, profitable sidelines, computers, software, printers, modems, disk drives, monitors and much more.

Whether home-based, mail order, or in a shop, Make Money From Micro will show you exactly how to run a part-time business or make a full-time living from this highly lucrative market. This must be the biggest money spinner yet so don't waste a second. Order a copy right now and start earning real cash.

Make Money From Used Micros - £2.95 inc. p&p or SAE details. Trade Enquiries Welcome

USED SOFTWARE

Used Spectrum, CBM64 and Amstrad software at half price - even current chart toppers! Cash paid for recent releases. We also wholesale used software!

USED COMPUTERS

We specialise in modern used computers and accessories. All equipment tested and covered by warranty. Cash paid for popular equipment and job lots.

COMPUTAMART (Dept.CS), 195/197 Seabourne Road, Southbourne, Bournemouth, Dorset. Tel: (0202) 433759.

EXPLANATION BOOKLETS in GCE maths, with short basic solution routines for all micros. Details from 'Prepsoft', 5 Gains Road, Portsmouth PO4 0PJ

AMSTRAD tape to disc transfer. Send £8 plus original tape to Gilroy, 44 Ommaney Road, New Cross, London SE14 5NT.

COMMODORE C128, 1570 disk drive, C2N recorder, games, discs, books, live months old, in original packing. Quick sale, £500. Tel: 021-565 2344.

AMSTRAD AND ORIC software. Hire or buy from super selection. Send SAE stating computer, Software Club, 26 Beechley Drive, Cardiff.

There's a Dealer near you . . .

BIRMINGHAM

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

PL544

ESSEX

NOBLES
14-17 EASTERN
ESPLANADE
SOUTHEND-ON-SEA,
ESSEX
Tel: (0702) 63377/8

PL503

CAREY ELECTRONICS
FOR
THE BBC MICROCOMPUTER
SYSTEM
COMPUTERS AND SOFTWARE,
PERIPHERALS.
7 CHURCH ROAD
WALTON-ON-NAZE, ESSEX
FRINTON-ON-SEA (02556) 6993
9am-9pm

PL844A

H REYNOLDS
79 ORSETT ROAD
GRAYS, ESSEX
Tel: (0375) 375948

PL501

MIKES COMPUTER STORE
292 LONDON ROAD
WESTCLIFF-ON-SEA
ESSEX
Tel: (0702) 332554

PL505



520 STM
£399

Communication

PLUS+ INCORPORATING MICRO MEND

5 HONEYWOOD ROAD
(Off Cranes Farm Rd)
BASILDON

Tel: (0268) 21818

PL602A

Communication

PLUS+ INCORPORATING MICRO MEND

c/o KEDDIES
(second floor)
HIGH STREET
SOUTHEND

Tel: (0702) 62426

PL502

ESTUARY

PERSONAL COMPUTERS

318 CHARTWELL NORTH
VICTORIA CIRCUS SHOPPING CENTRE
SOUTHEND ON SEA
Tel: (0702) 614131

PL454

GLASGOW

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

PL705

HEREFORDSHIRE

HONEYSETT COMPUTERS
17 UNION STREET
HEREFORD HR1 2BT
Tel: (0432) 279404
ASK ABOUT
CLUNKER SALE

PL624

HUMBERSIDE

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

PL493

KENT

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

PL494

dgh

software centre

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

PL508

MICROWAY COMPUTERS
39 HIGH STREET
RAINHAM, KENT
Tel: (0634) 376702

PL512

MIDDLESEX

INNOVATIONS
COMPUTER & VIDEO
9 HARMONDSWORTH ROAD
WEST DRAYTON
MIDDLESEX UB7 9JS
Tel: (0895) 420457

PL910

LEEDS

MICROPOWER

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

PL583

LEICESTERSHIRE

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

PL540

LONDON

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

PL495

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

PL485

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

PL509

GAMES WORLD
129 KING STREET
HAMMERSMITH
LONDON W6
Tel: 01-741 4467

PL516

LIVERPOOL

BLUE CHIP

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

PL486

SUSSEX

GATWICK COMPUTERS
62 THE BOULEVARD
CRAWLEY, SUSSEX
Tel: (0293) 26240/37842

PL512

SUFFOLK

**FOR MSX, SPECTRUM,
COMMODORE, AMSTRAD**



Sudbury Micro Systems
Computer Retail & Consultancy

**64 NORTH STREET
SUDBURY
TEL: SUDBURY 311839**

PL901B

S. WALES

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

PL848

YORKSHIRE

**MICRO BYTE SOFTWARE SHOP
36 COUNTY ARCADE
LEEDS
FULL RANGE OF TOP
QUALITY SOFTWARE,
PHONE FOR PRICES
Tel: (0532) 450 529**

PL813

STAFFORDSHIRE

**MICROTRONICS
27a MARKET STREET
TAMWORTH, STAFFS
Tel: (0827) 51480**

PL911

**HOME SOFT COMPUTING
1st FLOOR
81A BOLEBRIDGE ST
TAMWORTH
STAFFS
(0827) 63549**

PL911A

**YORK COMPUTER CENTRE
7 STONEGATE ARCADE
YORK
Tel: (0904) 641862**

PL816

WARWICKSHIRE

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

PL848

NORFOLK

**THETFORD MICROS
SPECIALISTS -
COMPUTER REPAIRS
21 GUILDHALL STREET
THETFORD
NORFOLK
(0842) 61645**

PL912A

**TELEX YOUR
CLASSIFIED
COPY TO:
296275
SUNRGY**

HAS

**MICRO BYTE SOFTWARE SHOP
19A LOWER WARREN CENTRE
WAKEFIELD
Tel: (0924) 376656
FULL RANGE OF
TOP QUALITY SOFTWARE
PHONE FOR PRICES**

PL914

**FOR
POWERFUL
DEALER
ADVERTISING
CALL JON
BEALES
on 01-437 4343**

PL914

IMPORTANT ANNOUNCEMENT

TERIVIROS ANTI-STATIC FLUID

will keep your computer screens hygienically clean, free from static and making them a pleasure to use.

TERIVIROS TREATMENT

is approved by BRITISH TELECOM and leading computer manufacturers.

Computers are expensive, use *TERIVIROS* and protect your investment.

***TERIVIROS* ANTI-STATIC CLEANING FLUID** £3.50 plus 50p P&P cheques and P.O. to Telecommunications Services UK.

Address to:

The Marketing Division, Telecommunication Services UK, 48 Queen Street, Exeter EX4 3SR.

Trade inquiries welcome.

TERIVIROS trade name.

PL002A

AMSTRAD UPGRADE

PCW8256 TO 512K/368K RAM DISC

Plug in 8 RAM CHIPS and change a link. Sound easy? Our simple comprehensive instructions make it so. FIVE A4 pages of information for even the most inexperienced.

We supply JIG FREEFORMED CHIPS/NO BENDING REQUIRED. BEST SELLING UPGRADE KIT IS ONLY **£32.50.**

5 1/4" DISKS. DS/DD-96TPI box of Ten only **£9.95** inclusive.

EPROMS

HITACHI QUALITY - 250nS Access Time - THE RELIABLE ONES Prices INCLUDE VAT and UK POSTAGE - normally by return.

2764	1-2 PCS.....	£2.35
	3-9 PCS.....	£2.25
	10 PLUS.....	£2.15
27128	1-2 PCS.....	£3.35
	3-9 PCS.....	£2.95
	10 PLUS.....	£2.65
27C 256	1-2 PCS.....	£7.50
	3-9 PCS.....	£7.25
	10 PLUS.....	£7.00

RAMS

HITACHI	6264-LP15	1-9 PC.....	£3.50
		10 PLUS.....	£3.00
NEC	41254 41464 RAM (SOLIDISK UPGRADE).....	£8	each
NEC	48416 (WATFORD UPGRADE).....	£2.95	each

Send UK cheques/Money Orders/LA or Gov't order to:

SILICON CITY,
Mithian, St. Agnes, Cornwall TR5 0QE
ACCESS/VISA orders,
telephone 087255 2112,

20PD10A

New Releases

Graham Taylor looks through this week's new arrivals

Amstrad

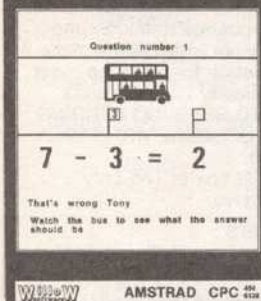
Program *Commando Type* Arcade **Machine** Amstrad **Price** £9.95 **Supplier** Elite, Anchor House, Anchor Road, Aldridge, Walsall WS9 8PW

Program *Early Words Type* Educational **Machine** Amstrad **Price** £9.95 **Supplier** Willow Software, The Willows, Wrington Lane, Congresbury BS19 5BQ

Program *Early Maths Type* Educational **Machine** Amstrad **Price** £7.95 **Supplier** Willow Software, The Willows, Wrington Lane, Congresbury, Bristol BS19 5BQ

Educational software was slow to start on the Amstrad but seems to be growing apace. Willow Software has recently released two packages for the younger age ranges entitled *Early Maths* and *Early Words*.

Early Maths



Early Maths consists of four separate programs covering, in all, age ranges from four to eight. Titles of the programs are, you'll be surprised to hear, *Addition*, *Subtraction*, *Multiplication* and *Division*.

The tasks involved are fairly simple, with basic animated sequences to illustrate the sum being asked. For example, if the child makes a mistake in the addition program, eg, when asked to count the number of figures in two groups, then the figures move individually to enable the correct answer to be discovered.

Similarly a wrong answer in the division program produces a cricketer who bats a series of

balls into a number of boxes representing the divisor.

There are a lot of programs similar to this around, but *Early Maths* is quite neatly produced and is among the better offerings.

Program *Fourmost Adventures Type* Adventure **Machine** Amstrad **Price** £7.95 **Supplier** Global Software, PO Box 67, London SW11 1BS

Program *Monopoly Type* Amstrad **Machine** Amstrad **Price** £9.95 **Supplier** Virgin Games, 2-4 Vernon Yard, Portobello Road, London W11 2DX

Program *Price of Magic Type* Adventure **Machine** Amstrad **Price** £9.95 **Supplier** Level 9 Computing, PO Box 39, Weston-Super-Mare, Avon BS24 9UR

Program *Shadowfire Type* Arcade **Machine** Amstrad **Price** £9.95 **Supplier** Beyond, Wellington House, Upper St Martins Lane, London

Program *Tau Ceti Type* Arcade **Machine** Amstrad discs **Price** £14.95 **Supplier** CRL, CRL House, 9 Kings Yard, Carpenter's Road, London E15 2HD

This special disc version of CRL's most highly rated game is one of the few special versions of a game that actually delivers some really new material.

Contrasted with the cassette version of the game, the disc edition is much larger, has improved graphics and more complete and complex instructions.

The game is basically the



ALTER EGO

Program *Alter Ego Type* Simulation **Machine** Commodore 64 **Price** £24.99 **Supplier** Activision, 23 Pond Street, London NW3



Alter Ego is strange. Partly a game perhaps, possibly a lesson in life (well, American life anyway). Whatever it is, the entire office was hooked. You could treat it as an upmarket me-generation parlour game.

The idea is simple - you live a complete life. During that life there are some experiences you may deliberately seek, eg, deciding to get a job. With other experiences, the diverse flotsam and jetsam of existence just crops up from time to time. How you handle each experience determines both how your personality develops and the more mundane details of living, such as what job you get, what material success you have and so on.

Presentation is in the form of a family tree of icons, each icon indicates a certain kind of subject matter, physical wellbeing, family, emotional, risks. As you ascend the tree, time passes and the kinds of experiences you have changes. It works like this: you select an icon and are presented with a situation, you then select your response to the situation from a variety of options presented, and sometimes your selection may be rejected as being completely out of character.

What makes the program so compulsive is the way you may choose to do many things that either would not ordinarily happen to you or which you would ordinarily shy away from. These in-

clude (parents, be warned) a fairly full range of sexual experiences, from Helga the sexual contortionist to starring in porn movies.

However, wild immorality has a cost, not least diseases. Indeed, throughout the program the goody-goody options (no wild sex, no drugs, helping friends in need, getting a good job) are usually the right ones, though occasional debauchery seems to do no harm.

The construction of the game is superb, the way actions interrelate and the range of experiences available are astounding (well, it is based around three discs of data) as is the way your age governs your responses.

It isn't like anything else and is a wonderful game to play as a group (cries of "ignore the suicidal friend" filled the air). Sex proved to be the experience most often sought. Surprise, surprise.

I have only two real objections to the game, firstly it is a bit, well, American, sometimes the 'right' way of handling situations is as sickly sentimental "Gee Dad, you're the tops", as American sitcoms. The other problem is that it is very expensive. Nevertheless, there's nothing like it and you will, I predict, be hooked.

same: defuse a reactor by finding and assembling a series of cooling rods found inside some of the buildings scattered about the desert planet of Tau Ceti.

The game is a mixture of smoothly scrolling graphics as you skim over the bleak surface of the planet and interiors

when you enter and search around the inside of the various buildings.

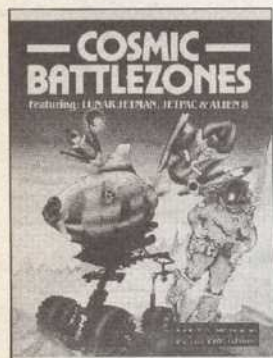
If you haven't seen the original game and have a disc drive, *Tau Ceti* is a must. Even if you have the original, it might be worth investing in this beefed-up disc version.

BBC

Program *Cosmic Battlezones*
Type Arcade **Machine** BBC
Price £9.95 **Supplier** US Gold, Unit 10, The Parkway Industrial Centre, Heneage Street, Birmingham B7 4LY

Who'd have thought it? Games by Ultimate being bundled together on a compilation, and on the BBC as well. Still it's happening to everyone and even the best games stop selling at some point. There are only three games in the pack, but a good mix: *Alien 8*, *Jetpack* and *Lunar Jetman*. In many ways all of these games are better than Ultimate's current crop.

Lunar Jetman came first and whilst it's 'blast everything and collect various objects' scenario is a little dated now (okay, it's very dated indeed) the large sprites still look good and



the basic quality of design is still apparent.

Lunar Jetman is, to my mind, the most complicated game Ultimate ever released. On a craggy moonlike surface you move Jetman and Lunar Rover around, seeking out alien missile bases and blasting them to bits. The problem is there are just so many different options. Your rover can either carry a bomb or a gun, then there are transporters shaped like telephone boxes. If that, and dozens of assorted, myriad coloured, aliens isn't enough, there is the problem of the ruts and gulleys in the lunar landscape - every five seconds you get stuck there. Graphically excellent, virtually unplayable.

Finally, *Alien 8*, the follow-up to *Knight Lore*, which retained all the key features of that game but added a few others - some cried 'copy' but I never cared, the original was so fabu-

lous. The game is played in 3D with dozens of strange rooms - the chambers of a spaceship. The task of your Disneyesque robot is to reanimate the crew of the ship, by placing a key in a lock in each of the cryogenic chambers. There are problems in most of the rooms both in getting through them and in getting the required object. Devious, ingenious, graphically and technically stunning.

A pretty good deal for the money then, and worth buying if you've missed any two of the three games in the pack. Sad also, since Ultimate hasn't released anything of the calibre of these games in ages.

C16

Program *Berks Trilogy* **Type** Arcade **Machine** C16 **Price** £6.95 **Supplier** CRL as above

Commodore 64

Program *Countdown* **Type** Strategy **Machine** Commodore 64 **Price** £8.95 **Supplier** Macten Software, GBA Cyt 17 Maes Nott, Caerfyrddin, Dyfed SA31 1PQ

Program *Price of Magik* **Type** Adventure **Machine** Commodore 64 **Price** £9.95 **Supplier** Level 9 Computing as above

Program *Spindizzy* **Type** Arcade **Machine** Commodore 64 **Price** £9.95 **Supplier** Electric Dreams Software, 31 Carlton Crescent, Southampton, Hampshire SO1 2EW

Program *Vidcom 1* **Type** Utility **Machine** Commodore 64 **Price** £4.95 **Supplier** Alpha Omega, 9 Kings Yard, Carpenter's Road, London E15 2HD

Program *Bored of the Rings* **Type** Adventure **Machine** Commodore 64 **Price** £8.95 **Supplier** CRL Limited, CRL House, 9 King Yard, Carpenter's Road, Stratford, London E15

I don't have the figures but *Bored of the Rings* on the Spectrum must have been at least as successful as *Lord of the Rings*, the official version. Certainly the former got better reviews.

The point about *Bored of the Rings* is that it is genuinely funny, only very occasionally lapsing into schoolboy juvenilia. Not only is it funny but it has a good many tricky puzzles which test the mettle.



Author Fergus McNeil has surely read *Bored of the Rings*, the book, by National Lampoon, since many of the basic ideas are similar, ie, that Gandalf is actually a dodgy old conjuror more likely to work the three card trick down Oxford Street than cross magical spells for the sake of good. The idea too that Frodo (here Frodo) is actually the only person dumb enough to get stuck with a dead end quest only Rambo would relish is also not entirely original.

But never mind, the game is great and now that it's been converted to the Commodore 64, a whole new tribe of less than totally serious adventurers can explore its murky depths.

Bored of the Rings is enormous (loaded in three sections) and comes with a wonderful bonus in the form of Sceptical, the nature of which I will leave you to discover.

MSX

Program *Price of Magik* **Type** Adventure **Machine** MSX **Price** £9.95 **Supplier** Level 9 Computing as above

PCW

Program *Pascal 80* **Type** Utility **Machine** PCW 8256 **Price** £39.95 **Supplier** Hisoft, 180 High Street North, Dunstable, Beds LU6 1AT

QL

Program *Ink-Well* **Type** Utility **Machine** QL **Price** £9.95 **Supplier** Palantir Products, 60 St Lukes Rd, Bedminster, Bristol

of the first, but certainly one of the cheapest, font designer programs for

the QL is *Ink-Well*, a font utility compatible with most QL text editors like the *Quill* and all Epson compatible printers. There are eight fonts supplied on microdrive and the opportunity to construct your own, using a font editing program.

Fonts need not be a full 16 pixels high, thus you may have text of various sizes, and you can also print text with proportional spacing. Instructions are issued to the program via control codes inserted in your document - all *Ink-Well* instructions use the curly brackets, which may not otherwise be used, hardly a great loss. Inside the brackets are simple instructions on which font to select, what sort of line spacing and text spacing. You may also indicated sections to be printed inverse or emphasised.

Altogether a very powerful program. My only quibble is that the supplied fonts don't seem very exciting. Some are too similar to one another and others seem downright ugly. *Ink-Well* is, in other respects, highly recommended.

Spectrum

Program *Price of Magik* **Type** Adventure **Machine** Spectrum **Price** £9.95 **Supplier** Level 9 Computing as above

Program *Rock n Wrestle* **Type** Arcade **Machine** Spectrum **Price** £9.95 **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston Upon Thames, Surrey KT11 4DB

Program *Spindizzy* **Type** Arcade **Machine** Spectrum **Price** £9.95 **Supplier** Electric Dreams as above

ST

Program *Time Bandit* **Type** Arcade **Machine** ST **Price** £29.95 **Supplier** Microdeal, PO Box 68, St Austell, Cornwall PL25 4YB



Top Twenty

- | | | |
|--------|--|-----------------|
| 1 (-) | Batman (Spectrum, Amstrad) | Ocean |
| 2 (-) | Thrust (C64) | Firebird |
| 3 (-) | Spindizzy (Spectrum, C64, Amstrad) | Electric Dreams |
| 4 (1) | Commando (Various) | Elite |
| 5 (11) | Formula One Simulator (Various) | Mastertronic |
| 6 (3) | Bomb Jack (Spectrum, C64) | Elite |
| 7 (2) | They Sold (2) (Spectrum, C64, Amstrad) | Hit Squad |
| 8 (14) | Spellbound (Spectrum, C64, Amstrad) | Mastertronic |
| 9 (-) | Kik Start (Spectrum, C64, C16) | Mastertronic |
| 10 (9) | Green Beret (Spectrum, C64) | Imagine |



- | | | |
|---------|---|----------------|
| 11 (4) | V (Spectrum, C64) | Ocean |
| 12 (-) | International Karate (Spectrum, C64) | System 3 |
| 13 (10) | Last V8 (C64, Amstrad, Atari) | Mastertronic |
| 14 (8) | Superbowl (Spectrum, C64, MSX) | Ocean |
| 15 (7) | Way Of The Tiger (Spectrum, Amstrad, MSX) | Gremlin |
| 16 (12) | Heavy On The Magik (Spectrum) | Gargoyle Games |
| 17 (6) | Comp. Hits 10 Vol 2 (Various) | Beau Jolly |
| 18 (5) | PSI-5 Trading Company (Spectrum) | US Gold |
| 19 (13) | Starstrike 2 (Spectrum) | Realtime |
| 20 (18) | One Man And His Droid (Various) | Mastertronic |

Top Tens

Amstrad

- | | | |
|--------|------------------|-------------------|
| 1 (-) | Batman | (Ocean) |
| 2 (9) | Get Dexter | (PSS) |
| 3 (1) | Commando | (Elite) |
| 4 (2) | Last V8 | (Mastertronic) |
| 5 (6) | Into Oblivion | (Mastertronic) |
| 6 (3) | They Sold (2) | (Hit Squad) |
| 7 (4) | Spindizzy | (Electric Dreams) |
| 8 (8) | Comp Hits 10 (2) | (Beau Jolly) |
| 9 (-) | Turbo Esprit | (Durell) |
| 10 (-) | Zoids | (Martech) |



Atari

- | | | |
|---------|---------------------|-----------------------|
| 1 (1) | Last V8 | (Mastertronic) |
| 2 (-) | Vegas Jackpot | (Mastertronic) |
| 3 (8) | Scooter | (Americana) |
| 4 (2) | One Man & his Droid | (Mtronic) |
| 5 (3) | Action Biker | (Mastertronic) |
| 6 (6) | Ollies Follies | (Americana) |
| 7 (3) | New York City | (Americana) |
| 8 (5) | Shamus | (Americana) |
| 9 (-) | Shoot Em Up | (Budgie) |
| 10 (10) | Fighter Pilot | (Digital Integration) |

BBC

- | | | |
|--------|----------------------|---------------|
| 1 (1) | Commando | (Elite) |
| 2 (-) | Bruce Lee | (US Gold) |
| 3 (2) | Winter Olympics | (Tynesoft) |
| 4 (9) | Moon Cresta | (Incentive) |
| 5 (7) | Phantom Combat | (Doctor Soft) |
| 6 (3) | Karate Combat | (Superior) |
| 7 (5) | Citadel | (Superior) |
| 8 (-) | Strike Force Harrier | (Mirrorsoft) |
| 9 (10) | Yie Ar Kung Fu | (Imagine) |
| 10 (8) | Speech | (Superior) |

All figures compiled by Gallup/Microscope

Commodore 64

- | | | |
|--------|-----------------------|-------------------|
| 1 (-) | Thrust | (Firebird) |
| 2 (-) | Spindizzy | (Electric Dreams) |
| 3 (-) | Int Karate | (System 3) |
| 4 (1) | PSI-5 Trading Company | (US Gold) |
| 5 (3) | Bomb Jack | (Elite) |
| 6 (8) | Spellbound | (Mastertronic) |
| 7 (2) | They Sold (2) | (Hit Squad) |
| 8 (-) | F1 Simulator | (Mastertronic) |
| 9 (5) | V | (Ocean) |
| 10 (6) | Kane | (Mastertronic) |

Spectrum

- | | | |
|--------|------------------|------------|
| 1 (-) | Batman | (Ocean) |
| 2 (1) | Green Beret | (Imagine) |
| 3 (6) | Hvy On The Magik | (Gargoyle) |
| 4 (2) | Starstrike 2 | (Realtime) |
| 5 (-) | Quazatron | (Hewson) |
| 6 (-) | Cyberun | (Ultimate) |
| 7 (5) | Bomb Jack | (Elite) |
| 8 (7) | Way Of The Tiger | (Gremlin) |
| 9 (3) | V | (Ocean) |
| 10 (4) | Superbowl | (Ocean) |

NEXT WEEK

SPECIAL SUPPLEMENT

It's supplement time at *Popular Computing Weekly* next week, and this time we have a bumper pull-out on the Sinclair Spectrum.

● Microfair report

All the fun of the 19th ZX Microfair held on May 10.

● Word-processing

The Last Word, from Saga Systems, lines up against the mighty *Tasword 3*. Which is the best buy?

● Exclusive reviews

Includes The Edge's latest, Bobby Bearing.

● Spectrum 128 round-up

Confused by all the reports of 'non-compatibility' and 'enhanced versions'. We clear the air with a survey of all the 128-specific titles.

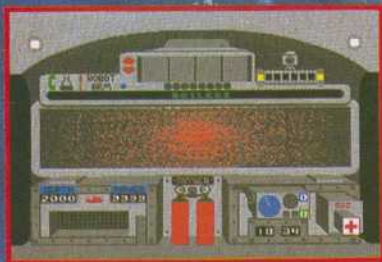
All you need to know about your Spectrum in *Popular* next week - order your copy now.

The Hackers



R·M·S

TITANIC



Explore the world's most famous wreck - almost two miles beneath the waves. Search for the massive wealth of treasure that lies inside her and devise a plan to raise the entire ship.

A fast-action icon-driven graphic adventure in which you explore the five levels of the wreck, with more than 240 rooms, and over 170 objects, the majority of which will be found on the actual ship.

Finance your expedition.
Attend press conferences.
Map the wreck.
Raise the Titanic!

*Electric
Dreams*

SOFTWARE

Available on the Commodore 64, Amstrad and 48k Spectrum from:
Electric Dreams Software, 31 Carlton Crescent, Southampton. Tel: 0703 229694

DF

CELEBRATE IN STYLE

WITH

CELEBRATE IN STYLE WITH THE OFFICIAL

WORLD CUP CARNIVAL



Follow the action, enjoy the excitement and the atmosphere of the World Cup Carnival computer game. This FREE competition - a chance to win a Commodore Disc Player - is available to all computer enthusiasts. Full colour - World Cup Carnival.

Commodore
Tape 64/128 Disk
£9.95 £14.95

Amstrad
Tape £9.95 Disk £14.95

Spectrum 48K
Tape £9.95

Commodore 16
Tape £9.95

This FREE competition - a chance to win a Commodore Disc Player

CBM 64/128



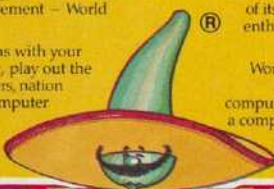
Enjoy the excitement of the world's premier sporting occasion as the whole of the globe focuses attention on the ultimate in football achievement - World Cup victory.

Follow the action as it happens with your own computer progress chart, play out the drama of real match encounters, nation versus nation in your own computer football game and capture the spirit of this momentous competition

and its Latin American setting famous for its carnivals, the passion of its people and the fervour and enthusiasm they demonstrate for their sport.

World Cup Carnival. The ONLY official football supporters' computer game. The ONLY way for a computer enthusiast to follow the World Cup.

Programmed by A.S. Designs



© SPORT-BILLY PRODUCTIONS 1984

PIQUE - Official mascot FIFA World Cup 1986

U.S. Gold Ltd., Unit 10 The Parkway Industrial Centre, Heneage Street, Birmingham B7 4LY. Tel : 021-359 8881

