POPULAR
Computing WEEKLY
with Home Computing Weekly

Only 50p.

6-12 March 1986

It's the best selling weekly

Vol 5 No 10

40 Rock Rd, C

Off the Hook – title details announced

TITLES have now been finalised for the Commodore 64 and Spectrum versions of *Off the Hook*, the follow-up to last year's highly successful charity compilation tape, *SoftAid*, which raised over £360,000 for the Band Aid Trust.

Off the Hook will comprise ten titles, donated by software companies. This time, the money will go to the Princes Trust for Drug Rehabilitation (see *Popular Computing Weekly*, January 9).

The Spectrum version will consist of *Psytron* (Beyond), *Fall Guy* (Elite), *Buggy Blast* (Firebird), *Ad Astra* (Gargoyle), *Splat* (Incentive), *Mugsy* (Melbourne House), *Kong Strikes Back* (US Gold), *Chequered Flag* (Psion), and *Blue Max* (US Gold).

For the Commodore, the tape will contain *Pitfall 2* (Activision), *Psytron* (Beyond), *Fall Guy* (Elite), *Demons of Topaz* (Firebird), *Sam Stoat Safebreaker* (Gremlin Graphics), *Kong Strikes Back* (US Gold), *Black Thunder* (Quicksilva), *Deathstar* (System 3), *Talladega* (US Gold), and *Classic Adventure* (Melbourne House).

Off the Hook's organiser, Rod Cousens, is determined that this time there should be as many machine versions as possible. Although Amstrad and BBC versions of *SoftAid* were planned, he was unable to reach agreement over enough titles to release a tape. "I definitely want to do versions for Amstrad, BBC and C16 owners – I've got

continued on page 4 ▶

In this issue

COLOSSUS CHESS 4

25 copies to win in our special competition

THIS WEEK'S NEWS

- Atari confirms new STs for show
- Spectrum 48/128 compatibility in doubt
- Commodore agrees credit terms with bankers

INSIDE ⟩ FOUR PAGE PULL-OUT INDEX FOR POPULAR 1985 ⟩

RELEASED THIS WEEK

ZX SPECTRUM £7·95

COMMODORE 64 £7·95

AMSTRAD £8·95

PING PONG

The officially endorsed version of the No.1 arcade game by **Konami**®

Imagine

the name of the game

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

You can almost feel the tension of the big match breaking through the screen . . . the expectant crowd is almost on top of you! You return the service with a ***Top-spin Backhand,*** *then a* ***Forehand Back-spin,*** *the ball bounces high from your opponent's looping, defensive lob . . .* ***SMASH!*** *. . . a great shot opens the score . . . but this is only your first point! Play head to head or against the computer in this, Konami's first and best table-tennis simulation.*

Imagine Software is available from selected branches of: WHSMITH, John Menzies, WOOLWORTH, LASKYS, Rumbelows, Greens, Spectrum Shops and all good dealers

CONTENTS

Vol 5 No 10

4 NEWS
Commodore signs new agreement with bankers

10 COMMUNICATIONS
David Wallin continues his weekly networking feature

17 HARDWARE
A Spectrum Teletext interface and QL memory upgrades reviewed

19 REVIEWS
The Force on the Commodore and Personal Assistant for the Amstrad

20 AMSTRAD
The final part of our word processor listing

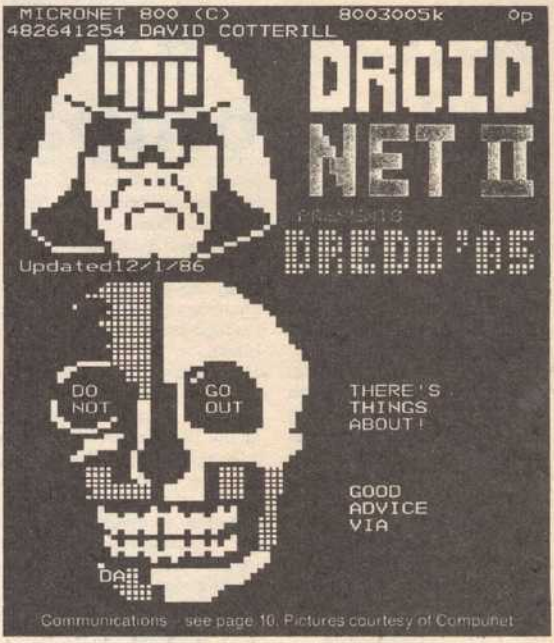
22 SPECTRUM
Space Probe – an orbital simulation

23 INDEX
Your four page key to what article was printed where, in last year' volume of *Popular Computing Weekly*

28 QL
A look at using machine code in the generation of random numbers

30 C64
Autorun your own programs with this clever utility program by W Wako

32 ATARI
Graphic routines with ST Basic



Communications – see page 10. Pictures courtesy of Compunet

6 Letters
8 Peek and Poke
8 Rogue Program
14 Codewords
34 Arcade Avenue
35 Adventure Corner
43 Charts
44 New Releases
46 Puzzle, Ziggurat Hackers

EDITORIAL

It seems strange that this weekend's Atari Computer show should be the world's first, as its organiser Database Publications is claiming. After all, Atari is a veteran in the games machine and computer market.

Yet the games machine and XL range always had something of a cult appeal. Software was pricey, due to much of it being imported product.

The arrival of Jack Tramiel as its new head 18 months ago and his radical new philosophy has changed all that. Tramiel's charismatic quality is far more than a journalistic cliché, and his aggressive determination to bring out the products he wanted has caught the world's attention.

British companies are now writing for the new machines as never before, even though the majority are still hedging their bets and waiting for a more substantial user base.

The ST range, whether you're a Tramiel fan or not, *is* radical. They are the machines which all industry pundits have said for the last two years would be produced for the consumer section of the market, and Tramiel has dared to produce them. Furthermore, he dared to do it in an aggressive fashion with a company he took with heavy debts and a staunchly 'gamesy' image.

The first 520STs released last autumn, suffered the fate of many new machines: they were fundamentally unfinished and in very limited supply. Now that that hurdle has been more or less cleared, Atari is launching low-end versions (the 520 STFM and 520 STM) and a top end model (the 1040 STF) designed to add flexibility to the series.

A variety of STs at a variety of prices (from about £450 to £1,000) should make the range more attractive. But the paradox of hardware leading software and the software companies waiting for proven sales still exists.

The ST range is not yet a mass seller – but it has deservedly captured people's imagination.

Editor Christina Erskine **Features editor** Graham Taylor **Software editor** John Cook **Production editor** Lynne Constable **Advertisement manager** Diane Holyoak **Advertisement executive** David Osen **Classified executive** Jon Beales **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 296275 **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.
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.

ABC

Computer Trade Association Magazine of the Year

Sinclair annoyed at 128 incompatibility

OWNERS of the new Spectrum 128 are discovering problems in trying to run their old 48K programs on the new machine. The two machines, it now transpires, are not quite as compatible as was first thought.

Firebird, Activision, Digital Integration and Software Projects are the offending companies. Firebird has admitted that *Elite* will not run in either 48K or 128K mode on the Spectrum 128.

The problem appears to involve an area of Ram immediately below screen memory which has been changed on the 128.

The same catch causes trouble for Activision's *Hacker*, and Software Projects' *BC's Quest for Tires*.

Tomahawk is the guilty program at Digital Integration where the company says its tape-loader routine is to blame.

Melbourne House, however, has uncovered another snag. All of its games will run on the 128, but not if you have a Kempston joystick plugged into the machine. Kempston says it is aware of the problem and is investigating. In the meantime, Kempston owners will either have to use the keyboard option or invest in a new joystick.

Sinclair is understandably annoyed about the problems and says they are caused by the software houses "making dangerous assumptions" about the operating system. However, it says the companies involved are working on fixes for the problems.

Digital Integration says it will have an upgraded version of *Tomahawk* ready in about two months, while Firebird will have *Elite* patched up within a month.

Anyone who has bought one of these products should return it to the retailer concerned for a refund, or send it direct to the software house involved.

See also Letters, page 6.

Off the hook

◄ continued from page 1

about five Amstrad titles already. We hope to get enough to do an Atari version too."

Rod Cousens hopes to get endorsement for the tape and its aims from Pete Townshend, the ex-Who guitarist, who has spoken out publicy about the dangers of heroin addiction. "What I'm trying to do now is to get some kind of audio input on the tape from Pete Townshend," he said.

Off the Hook, in each of its versions, will cost £6.99. Cousens is hoping it will be launched on March 24.

However, the *Off the Hook* appeal will not end there. Cousens plans to take an *Off the Hook* stand at September's *Personal Computer World* show, to sell old software titles for the charity.

Commodore reaches agreement with bankers

COMMODORE International's banks have reached an agreement with the troubled micro manufacturer over its credit facilities in 1986.

Commodore now has facilities of $135 million (£93 million) up to March 1987. The agreement comes after financial losses for Commodore in the last four successive quarters. Now it has 13 months to re-establish profitability.

Commodore International's chairman, Irving Gould, said, "We have been working closely with our banking partners. In a series of recent meetings, we reviewed our forward plans including our product strategies and comprehensive cost reduction programme already in progress."

Meanwhile, it is unclear whether the comprehensive cost cutting programme, which has already involved the closure of the Corby assembly plant, will also demand further cuts at Corby, with the UK operation being slimmed down still further.

Atari confirms launch of new STs

ATARI has now confirmed it will launch a number of new products in its ST micro range at the first ever Atari Computer show, to be held at the Novotel in Hammersmith between March 7-9.

The one megabyte Ram ST, the 1040 STF, which was launched at CES in Las Vegas in January, is to be shown in this country for the first time. The F at the end of the micro's name denotes the floppy disc drive that is built in to the cpu. In the US the 1040 costs just under $1000, so in the UK a price around £900 looks likely. Like the current 520ST, it will be offered with either a colour or monochrome monitor.

Two new 520 STs will also be introduced, the 520 STM and the 520 STFM. These versions will fill the £400-£500 price slot, which was to be catered for by the 260ST, until Atari announced at CES that this would not now be continued. However, a 260 ST has been produced for the German market.

The 520 STM is a 520, but with a TV modulator port, rather than the RGB output, so that it can be used with an ordinary television. It will be sold as a stand alone unit, and not with the disc drive and monitor.

The 520 STFM also has a TV modulator, but also a floppy disc drive built in as in the 1940. It is expected to cost around £500. Exact prices are to be announced at the show.

"The 1040 STF is the machine we will be selling to specialist dealers, and the 520s will become the low end machines," explained Max Bambridge, Atari UK's general manager.

"We always said we would do a low level machine, and at the time we anticipated a 256K memory, but prices have degraded so much that we can now do 512K at the same price."

Atari will also exhibit its 20M hard disc, which is already available, albeit in very limited quantities. It will furthermore, launch a new games machine, the 7800, which will be upwardly compatible with the current 2600.

The new STs, according to Max Bambridge, will be available almost immediately, with the exception of the 520 STFM, which will follow later.

Ex-Beyond chiefs join Nexus

BILL Delaney, formerly MD of Beyond Software, and colleague Clive Bailey have taken over new company Nexus (see *Popular Computing Weekly*, January 30).

Nexus was originally set up by programmers Paul Voysey and Tayo Olwu to supply Beyond with products.

The first product is titled *The Nexus Mission*, and will be available for the Spectrum 48K and 128, C64 and 128 and Amstrad CPCs. "We plan to bring that out at Easter, and then seven titles before April 1987," said Bill Delaney.

Nexus will cost £9.95 for tape versions and £11.95 on disc.

Disc drive ready for Spectrum 128

OPUS has launched the first disc system for the Spectrum 128. It is a new version of its Discovery disc drive package.

The Discovery is a 3½ inch, 250K capacity, double density drive and interface. The device also offers parallel printer port, joystick interface and built-in power supply for both the drive and the Spectrum 128 itself.

Discovery for the Spectrum 128 will cost £149.95, the same price as the 48K Spectrum version.

More details from Opus at 55 Ormside Way, Holmethorpe Industrial Estate, Redhill, Surrey (0737 65080).

Atari TOS now available in Rom

ATARI's TOS operating system for the 520ST has finally made its way into Rom, rather than being loaded from disc.

Machine built now should have the operating system fully integrated in the Rom. Buyers of the 520ST since the beginning of the year should have found Rom upgrade kits with their machines. Those who bought the machine in 1985 can now buy an upgrade kit for £25.

However, ST owners who bought their machines from Silica Shop, in Sidcup, Kent, should be able to obtain their upgrades free of charge. For details of Silica Shop's scheme, ring 01-309 1111.

Others can get further information from Atari UK at Atari House, Railway Terrace, Slough, Berks (0753) 33344).

New Activision text and graphic adventure

ACTIVISION's latest text and graphic graphic adventure is *Borrowed Time*, a Chandleresque tale of 1930's private detective Sam Harlow.

You as Sam Harlow, must prevent a murder occurring. The twist is that it is you who is likely to be murdered.

The adventure features pull-down menus and interaction between characters. It is also one of the first in Activision's range for 16-bit machines, although the first version will be on disc for the Commodore 64 and 128 at £14.99 later this month.

Versions will follow for the Atari ST, Amiga, Apple II and Macintosh.

Football Manager kicks off again

FOOTBALL Manager, now four years old, is still alive and kicking.

It has recently been converted to the C16 and Plus/4, and now Addictive has developed a version for the Atari 8-bit range, at £9.95, for release this week.

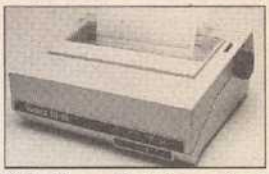
This means that *Football Manager* is now available on 11 machines, which is almost certainly a record.

Samleco's NLQ dot-matrix printer

SAMLECO has announced a NLQ (near letter quality) dot matrix printer, available with interface cartridges for Commodore and Sinclair micros.

The DX-86 provides 80-column print-out, at speeds of 120 cps in draft mode, 65 cps in correspondence mode and 35 cps in NLQ mode. It also has facilities for condensed and double width printing.

Available now, it costs £251.85. Details from Samleco, 9 Fairacres Industrial Estate, Dedworth Road, Windsor, Berks (0753 854717).



WANTED!

IJK SOFTWARE LTD., a UK based software house publishing software for most of the popular home Micro's since 1981, **WANTS YOUR SOFTWARE!**

- We are looking for **GAMES, UTILITIES or EDUCATIONAL** software for **ANY** popular home micro, but more especially the **C16, PLUS4, ELECTRON, AMSTRAD, or ORIC Computers.**
- If you have any software you think will meet our requirements, then send it **AT ONCE** to the address below.
- We guarantee to assess it and return it to you **WITHIN 7 DAYS,** in the strictest confidence. If it meets our requirements you will be made an **IMMEDIATE CASH OFFER!**
- **DONT DELAY — SEND TODAY**

IJK

IJK SOFTWARE LTD
Software evaluation unit,
Unit 3c, Moorfields, Moor Park Ave,
Bispham, Blackpool, Lancs, FY2 0JY

Letters

Open channels

Many thanks to G C Watson (letters, January 23) for solving the problem I had with List between Spectrum and Brother. Since writing in December I had found out (from the Microdrive manual) how to LLIST, but I prefer the flexibility of Mr/Ms Watson's version. Also it demonstrated that I can have more than one channel open at any one time, something I found rather confusing in the manual. I also found the brackets superfluous with control character numbers.

I have also modified line 279 in Tasword Basic to print in English characters. (This only means using the hash sign for the pound, CHR$ 35.)

```
279 FORMAT "b" ; 6900
:OPEN # 3; "b":LPRINT CHR$
27; "R" ; CHR$ 0
```

MS A B Wright
31 Ashbourne Way
Thatcham
Newbury
Berks

Pure whimsy

In volume 5 number 3 you suggested that no-nem potential market ground would be opened by the new Acorn Masters series. I disagree totally; what's more I believe little or no reasoning other than pure whimsy was employed in your biased degradation of what has the potential of being a market leader.

The Acorn Masters series is without doubt the machine that has been long predicted and long awaited by many computer enthusiasts. It has, of course, been obvious that Acorn were in the process of developing a minor revelation.

The prices of course is, I agree, a little high but then haven't they always been. Certainly customers will inevitably be lost or rather not gained by the over all deciding factor, but as with all quality products, the proof is in the tasting and as with the late BBC B series, each savour will increase the satisfaction of the purchase success.

You are as well aware as myself that good potential in this market must be supported if it is to survive the disturbing slump. While I realise you are trying to present a critical eye for machines but wouldn't it be in your own interests if you lent a little more support when a young genius is in our midst?

M L Hartley
Manager
The Water Hole Factory
751 SU
Mount Alice
West Falkland
BFPO 666

Tape offer

If you have not yet sent in your Firebird tape/Arcade Champion's Guide card with the coupons, please do so, so that it reaches us by Monday, March 31. This will enable us to process your entries more quickly.

Also, as from Wednesday, March 12, no more Micro Magic cards please. Believe it or not, there are some stragglers claiming prizes. If you still have a Micro Magic card, send it in now.

Ups and downs

I read the letter from T J Box (Vol 5, No 7) with great interest. I am presently between micros having just disposed of a C64. I have followed the ups and downs of the Enterprise since its inception three years ago.

Although it has been available now for a few months, I have not seen any books or magazines to cover this machine, nor is there any abundance of software. I would, therefore, like to ask the following questions in the hope that some of your readers might know the answers.

1) Where can I obtain an Enterprise?
2) Are there any books on the machine?
3) Is there a monthly magazine or users group?

B Perrier
19 Cheviot Crescent
Dundee

Closed market

Regarding LW Tomlin's letter (Vol 5, No 6), the writer should look at the market the QL was initially aimed at. One can sell anything to home micro enthusaists, especially when their parents do the buying.

"Now what are we going to call our next model?"

However, the QL was pitched at the small business user. Such a user will buy a machine for the software he/she sees it running, not from a look at the spec sheet. Furthermore, if it doesn't look as though it will work, doesn't feel as though it will work, and uses as storage medium one step up from knotted string, then I reckon the chances of it being a hit are severely limited.

Selling a few thousand that don't work effectively closes the market to you.

Paul Hardy
Bingley
W Yorks

Great success

I have bought many computers, but the QL is the first for which I have paid less than a million pounds. Or, to put it another way, the first bought with my own money. Since the original machine was replaced by Sinclair in mid-1984, I have used it for 20-30 hours a week with great success.

Like other of your readers, I thought that David Kelly's remarks (Ziggurat Vol 5, No 6) were made in ignorance, but his reply (Vol 5, No 8) made it clear that he was talking about one application – games playing. I don't knock games. Your magazine wouldn't exist without them, and many move on into computing. However, to regard the QL just as a games machine is absurd, even if it can run a stronger chess program than any other machine that appears in your weekly charts.

David Kelly says that 'sophisticated musical handling' is an essential requirement. I don't recall this being a feature of any machine by IBM or Amdahl and it certainly is not on the QL.

If you want to play games and nothing else, the QL may not be the best buy. For other tasks it must be a front runner. The bundled software alone is worth the price of the machine.

Ken Whyld
Caistor
Lincoln

Upgrade problems

On February 14 I bought a Spectrum 128. After reading the instructions, I realised it was about the same as the 48K model so I entered a few of my old games. Some worked, others did not.

I also bought a copy of *Elite*. After reading all the bad publicity the Lenslok system had had, I was astonished to find it easy to use. Unfortunately, the program crashed, despite using three different cassette players.

This morning (February 22) I purchased *Tomahawk* and rushed home, only to find that this game also refused to load.

I would like to know if Amstrad and Commodore users have experience similar problems on upgrading to 128K models, and I hope somebody will release a list of the games for the Spectrum 48K that will work on the 128.

Nick Palmer
Middlesborough
Cleveland

See the News Desk for more on this.

Ink problems

With reference to your letters page (January 23), black stamp pad ink works well, but the felt transfer pad will next cause problems by matting in line with the transfer roller base. Small slits in the end of the felt with a razor helps and increased spring pressure also helps.

It is worthwhile shopping around for ribbons. I buy from Meedmore in Liverpool at £3.78 each.

B Gibson
Stockport
Cheshire

EAST
SAI COMBAT
Set against a series of subtle backgrounds, Sai Combat has 8 skill levels and can be played by one or two players, with a choice of 16 moves. The combatant sprites are large and easy to control via keyboard or joystick.
Spectrum 48K £6.95
OR WEST
A Crash! Smash
Rev up your engine and take to the skies to save your country. Hunt down the enemy and build up your log of kills as you rise through the ranks to the elite of the RAF.
Spectrum 48K £9.95
Amstrad CPC £9.95
Commodore 64 £9.95 tape, £12.95 disk
Spitfire
40
PLUS
New expanded 128K Spectrum version with a full mission mode, improved sound, and more ground detail. Still only £9.95!
ONLY THE BEST
FROM
MIRRORSOFT
Purnell Book Centre, Paulton, Bristol BS18 5LQ

Peek & Poke

Spectrum maze

Walter Pooley, of Waterloo, Liverpool, writes:

Q I have been experimenting with generating mazes on the Spectrum, using the four compass points N,S,E,W, giving four exits from each location and moving four times to exit the maze. Would I be right in thinking there are 256 possible combinations 4×4×4×4? Would it be possible to write a Basic program to list these combinations?

A If we assume that after four (correct) moves you exit the maze, then can we also assume that after four (incorrect) moves in any one direction that you hit a boundary of some sort. If we can, fine, if not then you have an infinite maze!

Assuming all that, then you have a 7×7 matrix (excluding boundaries and the exit). this gives you a total of 49 locations. If you include the boundaries then you have a 9×9 matrix, or 81 locations. The best way of listing the actual combinations generated is to hold the maze in an array, and using a *For . . . Next* loop merely print it out after generation has taken place.

Which computer?

K Jones, of London, writes:

Q My son wants a computer for his birthday and I'm not sure which one to get him. I'm hoping that you can help me make up my mind

He is 12 years old and would really only use the machine for games. I have narrowed the field down to the Amstrad CPC464, the Acorn Electron and the Commodore 64. Which one would you recommend and why?

A Of the three computers that you mention and for those reasons, I would go for the Commodore 64 or the Amstrad. Simply on the basis of the huge amount of quality games software available, the Commodore would be a good choice.

The Amstrad is a good machine but does not have the depth of software that is available for the Commodore 64. Games written specifically for the CPC464 are still few and far between, although the number of conversions is growing. What the Amstrad does have is the built-in cassette deck and monitor, so there would be no TV arguments in your household.

The Electron disqualifies itself in my book, because Acorn is no longer manufacturing the machine, and there is not a vast software base in any case.

Graphic tablet

P Robinson, of Harlow, Essex, writes:

Q Can you tell me where I could buy a graphics tablet for the Spectrum?

A Certainly. Try writing to Saga Systems Ltd, Greenhaigh, Woodham Road, Woking, Surrey GU21 4DL. (You could always try scanning the ads in *Popular*.)

No support

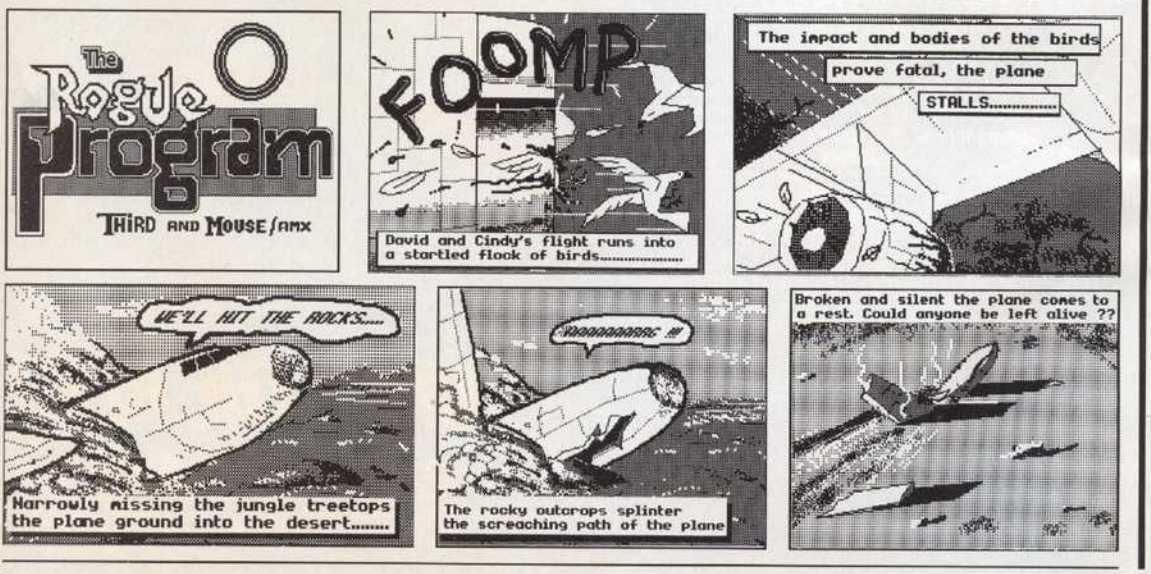
G. Carter, of Leicester, writes:

Q I am using a BBC B at school as part of my O level computer studies course, and I want to buy a computer of my own for project work, etc. As the Electron is so cheap now, do you think I should get one?

A Probably not. Although it is very cheap at the moment, it is becoming increasingly hard to find, as Acorn has stopped manufacturing it, and therefore support for the machine will dwindle rather than grow.

However, if you *only* want to use the computer for project work related to BBC Basic and your school studies to get you through the O level course, then it's an awful lot cheaper than buying a BBC, even though the BBC B too, is getting hard to find in the shops. The catch is that after the exams, you may well still want to use your micro. The Electron's software range is not large, and it offers little in the way of cheap upgrade potential. And you may well find it difficult to sell second-hand these days.

The Rogue Program



THE FORCE

An icon-driven multi-screen strategic simulation of what it's like to take on the most difficult task of all

You may have saved the world from invading aliens many times over – but are you good enough to protect one small town from the criminal element within?

You have at your command around 500 officers, 100 vehicles and a host of other units. All that goes to make up four city police stations in fact. All you have to do is keep the crime rate down . . . and the people happy.

MIND GAMES

Available for the Spectrum 48K and CBM64

Argus Press Software Ltd., Liberty House,
222 Regent Street, London W1R 7DB
Telephone: 01-439 0666

Designed in consultation with Britain's Senior Police Officers

Argus Press Software Group

Special interest groups

This week I'll be looking at one particular facet of independent Bulletin Boards – special interest groups, or SIGS as the jargon will have it.

A SIG is a section of a bulletin board set up for a particular subject, and it needn't be computer-orientered. You can get restaurant guides, pen pal services – and one BB even has a SIG devoted to alternate medicine. Indeed, Prestel's own home computer database, Micronet, is shortly to diversify out of the computer arena with its Sunday supplement pages, which will include music and video reviews.

SIGS generally enables users to leave messages, letters and questions to people with the same or similar interests. This means that they can get help about a problem they have from others who may know more about that particular subject.

Many BBs have more than one SIG, for example TBBS London has 10 different SIGs, and some, like most of the ITeC boards, have no SIGs at all.

SIGs are set up by the Sysop (SYStem OPerator) of that particular board and are often 'requested' by users of the BB. For example the Vulcan Board (NBBS Marlow) had a number of SIGs and recently added an Amstrad SIG to the list because so many people had left him messages requesting one.

If your favourite board lacks a SIG that you feel it should have, then get in touch with the Sysop (either by leaving a message or going into 'chat mode') and ask for one to be set up.

But, of course, most SIGs do deal with specific computer subjects; some of the most common SIGs are:-CP/M, BBC, Spectrum, modems and hacking, adventure help and the TRS-80. How did the TRS-80 get in there you may ask? Well, the TRS-80 is the computer on which many boards run, including all of the TBBS boards.

If you are unable to find the SIG section on a board then either there may be no SIG section or it may be restricted access or even just plain hard to find. If it is restricted access then have a quiet word with the SYSOP to see if your security level can be roused to allow you to use the SIGs.

BABBS I — *(3)* (0394-276306)	Pascal, Modems, Mac, Hardware, CP/M, DOS, Sales and Wants, Guests and Adventure Clues
BABBS II (BASUG) — *(3)* (0268-778956)	Apple, DOS, ProDOS, Pascal, CP/M, Modems, Hardware, Mac, Adventures, Sales and Wants, Jokes and Insults (?)
BB – Belton — *(D)* (0493-781334)	BBC, Spectrum, MUD, Pen-Pals, Famous Friends, Sales, Adventures, Graffiti and Euro-Boards
Bluelips — *(3)* (0843-32637)	E-Mail, Cruisin' and Atari Bits
CBBS SW — *(D)* (0392-53116)	CP/M, BBC, Atari, Sinclair TRS-80, Apple, Misc., and Basic
CCCBB — *(3)* (0249-817007)	Atari, Commodore, Odds and Ends, Pen Palls, Exchange and Mart
FBBS Swansea — *(3)* (0792-203593)	BBC, Modems, SYSOPs, Sales, Amateur Radio and Adventures
ITeC – Cardiff — *(V)* (0222-464725)	Technology, Alternate Medicine, YTS, CP/M, Modems BBC, Spectrum, Amstrad, Commodore, Radio Communications and Electronics
Mailbox 80 — *(3)* (061-428-8924)	Dragon/Co-Co, IBM PC, BBC, TRS-80, Atari, Apple, Modems, CP/M, Prestel, Adventure and Radio
Matrix — *(D)* (061-736-8449)	Personal, Jokes, MUD, Languages, Modems, CP/M, Acorn Tandy, Spectrum, Apple and Commodore
RIP — *(3)* (0742-667983)	TRS-80, Apple, Oric, Mac, BBC, IBM PC, Modem, Sales and Wants, Adventure Clues and Alien Life Forms (It takes all sorts!)
TBBS – London — *(3)* (01-348-9400)	TRS-80, BBC, CP/M, Forth & Pascal, C, Modems, Sales and Wants, Where to Eat, Hacker's Club, Radio Communications (RTTY)
TBBS-Blandford — *(3)* (0258-54494)	Sales & Wants, Commodore 64, TRS-80, BBC, Apple, Modems and Atari
Vulcan Board/ NBBS-Marlow — *(D)* (0628-46691)	Amstrad, Apple, Vulcan, MUD, BBC, Spectrum, Radio control and Adventure help

The list below comprises some of the larger boards and their SIGs.

NB the figures in brackets indicate the band rate on that board: 3 – 300/300 band; V – 1200/75 band; D – dual band rates: both of the above.

As with all charts, lists, tables, etc, this one can only be correct at the time of writing. A BB may have added new SIGs the meantime.

This week's BB top ten has been compiled by William J Holmes of Cliffsend, Nr. Ramsgate, Kent.

	Name	*Baud Rate*	*Number*
1.	Bluelips	300/300	0843-32637
2.	Marctel	300/300 & 1200/75	01-346-7150
3.	CCCBB	300/300	0249-817077
4.	Microgmome	1200/75	01-888-8894
5.	Vulcan	300/300 & 1200/75	0628-46691
6.	Dark Crystal	300/300 & 1200/75	01-954-9847
7.	CABB	300/300 & 1200/75	01-631-3076
8.	CommunITel	1200/75 demo 1	01-968-7402
9.	CBBS — SW	300/300 & 1200/75	0392-53116
10.	TBBS – London	300/300	01-348-9400

It's new Bulletin Boards time now: firstly CCCBB (listed in the SIG list), which stands for Calne Computer Club Bulletin Board. You can dial it on 0249-817077, and it's on 300/300 baud. It should be 24 hours a day by now but you may get a human answering the phone on the other end, if so this means the new equipment and software isn't working just yet. All you do if this happens is ask the person on the other end to put on the BB.

I'd better give a mention to the Vulcan Board, also known as NBBS-Marlow. Both names are correct but I think it prefers to be called the 'Vulcan Board'; it's both 300/300 and 1200/75 baud rates, 24 hours a day and the number is 0628-46691.

Now BBS09. This is a 'ring back Board' (first dial the number, let it ring *once* then replace the receiver. Redial and follow the normal procedure for dialling a BB). The number is 0705-736025, and I think it's 300/300 baud but I'm not sure – only way to find out is have a go at ringing it up. Its hours are 1900-2200, except Sundays when it's 1000-2200.

And the last one for this week is System 2000. Again it's a 300/300 baud board and it's open between 1900 and 0700. The phone number is 0642-486643.

David Wallin

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.

Don't miss the BIG Atari event of 1986!

ATARI COMPUTER SHOW

Champagne Suite, Novotel, Hammersmith, London W6

Friday 7 March 10am-6pm

Saturday 8 March 10am-6pm

Sunday 9 March 10am-4pm

For the first time Atari UK and all the major suppliers of Atari hardware and software are pulling out all the stops to make the first-ever Atari Computer Show the top event of the year.

Everyone who's anyone in the Atari world will be there. Already many third-party suppliers are planning to use the show as a launching pad for products still on the drawing board.

If you're a long-standing Atari user the show will bring you right up to date on all the exciting developments now taking place in the ever-expanding Atari world.

And if you're one of the many thousands of newcomers to Atari computing it will open your eyes to the vast selection of Atari hardware and software that is now available for the whole Atari range.

It's a show you cannot afford to miss!

EXHIBITORS ALREADY BOOKED

Atari
2 Bit Systems
Antic Publications
Atari User
Bastidon ITEC
Baz
Boot-Out
Cashlink
CDS Software
Compumart
Computer Bookshops
Computer Concepts
Datascape
Direct Disc
Evesham
GST
Gultronics
Haba
Intergalactic Robots
KECM
Kuma
Llamasoft
Microdeal
Micromart
Miniature Tool Co
Page 6
Quest
Ramco Electronics (UK)
Silica Shop
Software Express
Software Plus
Zonefour

Save £1 a head – and miss queues! – by the sending for your tickets now!

Please supply:

☐ Adult tickets at £2 (save £1) ..... £ ____

☐ Under 16s tickets at £1 (save £1) ..... £ ____

Total £ ____

☐ Cheque enclosed made payable to Database Publications Ltd.

☐ Please debit my credit card account

Access ____ ____ ____ ____

Visa ____ ____ ____ ____

Admission at door: £3 (adults). £2 (under 16s)

ATARI COMPUTER SHOW

Advance ticket order

Post to: Atari Show Tickets, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Name .....

Address .....

.....

Signed .....

PHONE ORDERS: RING SHOW HOTLINE: 061-429 7931

Please quote credit card number and full address.

POP 4

MODEM HOUSE

BARGAIN BASEMENT

It's 1986 – The Year of Communications

Discover Prestel, Micronet 800, Viewfax, bulletin boards and open a whole new world.

Everybody's doing it — linking their home computers to giant mainframes and networking to thousands of other micro users via the phone and a modem.

A whole new world of mainframe games, electronic mail, free 'telesoftware', electronic notice boards, real time conversation, armchair shopping and home-banking will be at your fingertips! And at local and cheap rate, charges are only around 40p for a whole hour's entertainment for Prestel/Micronet.

The BBC Micropack comes complete with all the software (in ROM) required to access the world of electronic communications, networks, telesoftware and databases (both in public and private.)

***ONCE ONLY OFFER — £29.95** incl. of VAT and P&P for limited period only*

***NEW...** The very latest COMMSOFT ROM suitable for the BBC B, BBC Plus and MASTER SERIES — **£29.95** ex VAT*

The Modem 2000 provides 1200/75 baud, enabling access to Prestel, Micronet 800, BT Gold, Farmlink, Citiservices, Homelink, and some free bulletin boards (some databases and networks require a small subscription). Fully BT Approved.

Simply clip the coupon and send it with a cheque (payable to Modem House) to:

MODEM HOUSE
70 Longbrook Street,
Exeter, Devon EX4 7AP
Tel. (0392) 213355

APPROVED for use with telecommunications systems run by British Telecommunications in accordance with the conditions in the instructions for use

Please send to me:

☐ *Modem 2000(s)* ***£29.95***

☐ *COMMSOFT ROM* ***£34.95***

I enclose £ .....

Name .....

Address .....

.....

Telephone .....

Please allow 28 day delivery. Access/Visa No .....

This offer applies only while stocks last

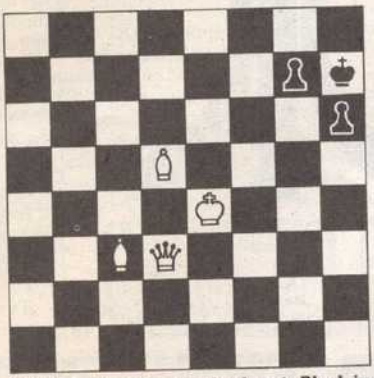
25 CHESS PROGRAMS TO BE WON!

Popular Computing Weekly has teamed up with CDS Micro Systems for a competition that is slightly more cerebral than most.

We've got 25 copies of CDS's *Colossus Chess 4*, one of the foremost home micro chess packages, to give away. *Colossus Chess 4* has already been a hit on the C/S 64 and Apple II, and now it has just been released on the Amstrad CPC machines.

All you have to do is study the chess problem shown in the diagram. When you think you've found the solution, send it in with the coupon to *Colossus Chess 4 Competition, Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

You can either mark your chosen moves on the diagram or send the solution on a separate piece of paper using standard chess notation.



White must move and checkmate Black in two moves

ENTRY RULES

Entries must reach us by Monday March 31, 1986. The first 25 correct solutions selected at random will receive a prize of a copy of *Colossus Chess 4*. The judges decision is final, and normal competition rules apply.

POPULAR CHESS COMPETITION

To: *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Name .....

Address .....

.....

.....

Machine: (tick appropriate box)

Commodore 64 disc ☐ Commodore 64 tape ☐

Amstrad CPC disc ☐ Amstrad CPC tape ☐

Apple II (disc only) ☐

NEW FUTURE SOFTWARE

STOCK TAKING CLEARANCE. BARGAINS GALORE

SALE . . . SALE . . . SALE!!!

SPECTRUM

	RRP	OUR PRICE
GREAT SPACE RACE	14.95	3.20
TRAVEL WITH TRASHMAN	7.95	2.99
BACKPACKERS GUIDE	7.99	2.50
BEACH HEAD	7.95	4.25
SUBTERAANEAN	6.95	1.99
ROCKY HORROR SHOW	7.95	3.75
SHADOWFIRE	9.95	3.95
CODENAME MATT II	7.95	3.25
ARABIAN KNIGHTS	5.50	2.50
FOREST AT WORLDS END	5.50	2.50
HERO'S KARN	5.50	2.50
LORDS OF MIDNIGHT	9.95	3.50
PSYTRON	9.95	3.50
SPACE SHUTTLE	7.95	3.25
GYRON	9.95	3.95

BBC

SPIDERMAN/HULK Twinpack	19.90	3.50
TARZAN	7.95	2.50
MR T SHARPE GAMES TRIPLE PACK – SEALORD/GALAXY WARS/CITY DEFENCE only	12.95	2.50
MR MEPHISTO	6.00	1.99
MUSIC SYNTH/GRAPHIC TWIN PACK	15.95	3.99
VIEWFILE	14.95	2.99
VIEWCALC	14.95	2.99
PYRAMID OF DOOM	8.95	2.50

ELECTRON

BANDIT AT 3 O'CLOCK	7.95	2.95
JET POWER JACK	7.95	2.95
GHOULS	7.95	2.95
SUPER POOL	6.95	2.99
SPACE SHUTTLE	9.95	3.25
5-A-SIDE SOCCER	6.95	2.99
ARABIAN KNIGHT	6.00	2.50
KILLER GORILLA	7.95	2.99
FLIGHT PATH 737	9.95	4.25
GREMLINS	8.95	3.95
CHUCKIE EGG	6.95	2.99

ATARI 400/800

ARENA 3000	6.95	2.99
CUTHBERT/WALKABOUT	6.95	2.99
DANGER RANGER	6.95	2.99
MR DIG	6.95	2.99
PENGON	6.95	2.99
FIGHTER PILOT	6.00	2.99
ARTIST	7.95	2.99
GOLF	7.95	2.99
GOLDEN BATON (Adv)	8.95	2.50
TUTTI FRUITTI	6.99	2.99

COMMODORE 64

	RRP	OUR PRICE
AZTEC CHALLENGE (Disk)	14.95	3.95
CODENAME MAT II	7.95	3.25
EUREKA	14.95	2.50
MAMA LLAMA	8.95	2.99
PSYCHODELIA	8.45	2.99
SHADOWFIRE	9.95	3.95
STARTREK	7.00	2.50
ARABIAN KNIGHTS	5.50	2.50
GUARDIAN	7.95	1.99
3D SCRAMBLE (like Zaxxon)	7.95	3.99
POSTER PASTER	7.99	2.99
CHINA MINOR	6.99	2.99
POSTER PASTER (D)	9.95	2.99
PIPELINE (D)	7.99	2.99
VIEW TO KILL	10.95	3.95
GREMLINS	8.95	3.95
BURGERTIME	6.99	2.99
WHEELIN WALLY	6.99	2.99

COMMODORE C16

ARENA 3000	6.95	2.99
CUTHBERT IN SPACE	7.95	2.99
CUTHBERT IN COOLER	6.95	2.99
GREMLINS	8.95	3.95
WINTER OLYMPICS	6.95	5.75
FOURPACK – Hop It, Shoot It Munch It and Climb It	14.95	7.95
FOURPACK II–Water Gr'd Prix, Auto-bahn, Vox and Apollo Rescue	14.95	9.95
GREMLINS	8.95	3.95
MOUNT VESUVIUS	6.95	5.75

VIC 20

MOLE ATTACK (cart)	9.95	2.99
FROG RUN	5.95	1.99
SPACE BOMBER/Man on Run	6.95	2.50
COSMIADS	6.95	1.99
ASTEROIDS	5.95	1.99
JUMPIN JACK	7.95	2.95
VULCAN FIGHTER	6.00	2.50
SNACKMAN	6.95	2.25
PENNY SLOT	4.50	1.99

AMSTRAD

VIEW TO A KILL	9.95	3.95
LINKWORD GERMAN	14.99	3.99
LINKWORD FRENCH	14.99	3.99
CHOPPER SQUAD	6.00	2.50
BOUNTY BOB STRIKES BACK	9.95	4.75
WARGAME	8.95	6.95
GREMLINS	8.95	3.95
CODE NAME MAT II	8.95	3.25
ARABIAN KNIGHTS	6.00	2.50
MESSAGE ROM ANDROMEDA	6.00	2.50
HEROS OF KARNS	6.00	2.50
PAWS	7.95	2.99

ACCESSORIES

ELECTRON JOYSTICK INTERFACE	£12.95
BBC JOYSTICK INTERFACE (including free game	£4.25
SPECTRUM JOYSTICK SWITCHABLE JOYSTICK INTERFACE (Compatible with all s/w and including free game)	£9.95
MEDALLIST (Quickshot II Type) JOYSTICK	£6.25

Clearance Special!!!

PROTEK MODEM WITH S/W FOR BBC/48K/CBM64/AMSTRAD – **State which you require** – £15.00

SOFTWARE UTILITIES

SPECTRUM Forth	£2.99
SPECTRUM Ex Basic	£2.99
SPECTRUM Assembler	£2.99
SPECTRUM Machine Coder II	£2.99
CBM64 ACOS+ (Commands for your CBM64)	£2.99

LATE ARRIVAL

Sinclair Spectrum Plus including six pack of software and quickshot joystick at unbelievable price of only . . .

£99.90

(The only hitch is it doesnt come with an instruction manual)

SOFTWARE BARGAIN PACKS

AMSTRAD LINKWORD GERMAN & FRENCH only £5.98 for the two
CBM64 Brian Jacks Superstars & BMX Hyper Biker New Low Price £4.95 for the two
CBM64 Select One – Twelve Great Games on one Cazette including Hunchback, Mr Wimpey, Kong & many more. Previously £12.95 now an amazing £4.95
SPRECTRUM Triple Pack–Kentilla, Jasper & Code Name Matt. Previously £9.95 now ⅓ price £4.95.

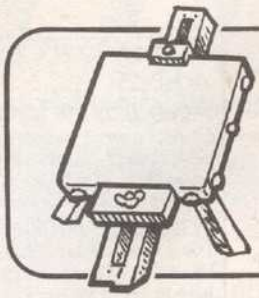
This is just a small selection of games on offer. Send now for our seven page catalogue S.A.E. please. BFPO & Overseas orders add £1 P&P per order

ALL PRICES INC VAT & P&P.
CHEQUES POSTAL ORDERS TO:
NEW FUTURE SOFTWARE
and send to:
4 Rowanburn, Canonbie, Dumfries, Scotland

AUTOMATIC FREE MEMBERSHIP TO NEW FUTURE SOFTWARE CLUB WITH FIRST ORDER OR CATALOGUE REQUEST . . . INCLUDES MONTHLY NEWSHEET WITH LOTS OF SPECIAL OFFERS & DISCOUNTS

SOFTWARE PLEASE STATE 2ND CHOICE TO AVOID DISAPPOINTMENT

TELEPHONE ORDERS ON (05415) 539



CANVAS

A new Software Development Company are looking for Z80, 6502, 6809 and 68000 programmers to work either on a freelance basis, or full time.

Our approach is to match the right programming talent with the right Software publisher. We will provide the successful applicants with design and artwork and also technical assistance if required.

Experienced programmers will command the highest rates, but we will consider anyone who can demonstrate a reasonable proficiency in Machine Code Programming but may not previously have felt confident enough to produce a finished professional product.

phone or write to

IAN WEATHERBURN
CANVAS
7 Liverpool Road, Crosby,
Liverpool, Merseyside L23 2SA.
051-924 6568 (2 lines)

Name: Pete Cooke

Tau Ceti programmer

"Like lots of other programmers I began with the ZX81 which I bought mail order around six months after it was released – it went straight back because it didn't work. On the replacement ZX81, I mainly learnt Basic. I didn't get into machine code until the Spectrum came out.

I learnt machine code bit by bit, partly by just looking up op-codes in the back of the Spectrum manual and partly with the aid of Rodney Zak's book.

I think two things are important for those trying to learn machine code programming. First it helps if the machine you're working on is fairly simple and lets you fiddle around with the processor easily – the Spectrum is good from that point of view.

Secondly you should get a good assembler from the very start, it helps enormously.

For my own programming work I use the Gens assembler on the Spectrum and the Rom-based Maxam on the Amstrad, but mostly I write my own utilities as I need them.

The people I tend to admire are those that produce high level languages and assemblers for micros – that seems to me one of the most difficult things of all to do. In that respect, I am very impressed by Hisoft, particularly its Pascal and C.

I am most proud of the shading effects I achieved in *Tau Ceti* – I developed a routine to fill a solid shape which took into account your angle towards it and the position of the sun.

My ideal program would be a sort of *Mercenary* with solid 3D graphics – a whole universe in the computer."

Name: Pete Cooke
Age: 29
Favourite Programs:

I think I play *Revs* more than anything else, though *Elite* is excellent as well. I also like *Flight Simulator 2* by Sublogic for its sheer size and breadth.

Favourite Machines:

I like them all for different reasons. I liked the ZX81 for being simple – I'd hate to try to start programming with an ST. I rate the Commodore for its sound, obviously, and I like the BBC for its graphics. On the other hand the Spectrum is a nice simple machine to use and the Amstrad is nicely documented.

Softography:

Invincible Island, Urban Upstart, Inferno, Upper Gumtree and *Ski Star 2000* for Richard Shepherd Software, then *Juggernaut* and *Tau Ceti* for CRL. I'm currently working on the enhanced disc version of Amstrad *Tau Ceti*.

Hobbies:

My main other hobby is music. I play jazz piano with some local bands. Originally that used to be my work, I was in various local bands that never got anywhere. I also like Science Fiction.

Spectrum Disk Package

BETA PLUS INTERFACE with the famous "Magic Buton". One press and programs are automatically transferred to disk. Other features include Reset Button. Sequential and Random access files, Auto boot, etc. EPSON 500k 5¼"DOUBLE SIDED 40 Track Slim-Line Disk Drive and all connecting cables. 10 DOUBLE SIDED/DOUBLE DENSITY 5¼" Disk and storage case. All inclusive price of only £222.00 Fully G'teed.

Full-Size Centronics Dot Matrix printer made under licence by PANASONIC.

PRINTER OFFER

Full Epson compatiblity, 96 c.p.s., friction and tractor feed, & true descenders. Outstanding value at £175.00 inc. Post & Package.

Order/Enquiries to:-
UK HOME COMPUTERS, 82 CHURCHWARD AVENUE, SWINDON, WILTS SN2 1NH. Tel: (0793) 695034 PD823

SOFT INSIGHT — DISCOUNT SOFTWARE

	RRP	OUR PRICE
SPECTRUM		
WORM IN PARADISE	9.95	7.00
ANY LEVEL 9 GAMES	9.99	7.46
VECTRON	7.95	5.96
FALKLANDS 82	9.95	7.46
3D GAMES	9.95	7.46
SKYFOX	8.95	6.71
TOMAHAWK	9.95	6.95
ELITE	14.95	11.21
SPITFIRE 40	9.95	6.90
WEST BANK	7.95	5.96
ELITE TUNER		1.99
RASPUTIN	7.95	5.40
TRANSFORMERS	7.95	5.40
ART STUDIO	14.95	11.00
RAMBO	7.95	5.40
MIKIE	7.95	5.40
LORD OF THE RINGS	15.95	12.00
FINEST HOUR	9.95	6.90
WINTER GAMES	9.95	6.90
3 WEEKS IN PARADISE	9.95	6.90
ZOIDS	8.95	6.20
EXPLODING FIST	8.95	6.20
ENIGMAFORCE	9.95	6.90
AMSTRAD		
ELITE	14.95	11.21
DOORS OF DOOM	9.95	7.46
RAMBO	8.95	6.71
HITCHHIKERS GUIDE	24.95	22.95
WHO DARES WINS II	8.95	6.20
LORD OF THE RINGS	15.95	5.40
SCRABBLE	9.95	7.46
ANY AMSOFT GAMES	8.95	6.71
ANY LEVEL 9 GAMES	9.99	7.60
WORM IN PARADISE	6.95	5.20
MARSPORT	9.95	7.46
NIGHT SHADE	9.95	6.95
YIE AR KUNGFU	8.95	6.71
RAID	9.95	7.46
HIGHWAY ENCOUNTER	8.95	7.00
THEY SOLD A MILLION	9.95	7.46
SPY v SPY	9.95	7.46
DYNAMITE DAN	8.95	6.71
CAULDRON	8.99	6.75
BOUNTY BOB STRIKES BACK	9.95	7.46
KNIGHT LORE	9.95	6.90
ALIEN 8	9.95	6.90
COMMANDO	9.95	6.90
BORED OF THE RINGS	6.95	5.20
IMPOSSIBLE MISSION	9.95	6.90
DUN DARACH	8.95	6.90
AIRWOLF	8.95	6.20
SOUTHERN BELLE	8.95	6.20
GRAPHIC ADV CREATOR	22.95	18.95
BBC		
CITADEL	9.95	7.46
STRIKE FORCE HARRIER	9.95	7.46
NIGHTSHADE	9.95	7.46
EXPLODING FIST	9.95	7.46
GYROSCOPE	9.95	6.46
YA KUNG FU	8.95	6.71
FLEET STREET EDITOR	39.95	32.95
ATARI		
MERCENARY	9.95	7.46
ELECTRA GLIDE	8.95	6.71
FRACTALUS	9.95	7.46
SMASH HITS (6V)	9.95	7.49
SPY HUNTER	9.95	7.46
ZONEX	9.95	7.46
WORM IN PARADISE	9.95	7.50
C64/64		
BOUNDER	9.95	6.90
DRAGONSKULLE	9.95	6.90
ANY OF US GOLD	9.95	7.46
ANY ACTIVISION	9.95	7.46
ANY LEVEL 9	9.95	7.46
GAMESKILLER	14.95	12.00
LORD OF THE RINGS	15.95	12.00
ELEKTRAGLIDE	9.95	7.46
KUNG FU MASTER	9.95	7.00
ROCK & WRESTLE	9.95	7.00
REV'S	14.95	11.00
ENIGMA FORCE	9.95	6.90
ZORRO	9.95	6.90
SPECTRUM 128		
SWEEVOS WHIRLED	9.95	7.46
ROCK HORROR SHOW	9.95	7.46
THREE WEEKS IN PARADISE	9.95	7.46
TECHNICIAN TED	9.95	7.46
GLADIATOR	9.95	7.46

ALL PRICES INCLUDE FREE FAST DELIVERY. PLEASE MAKE CHEQUES PAYABLE TO: SOFT INSIGHT, 17 Burges Grove, Greenwich, London SE10. Access orders/enquiries 01-305 0700 PD745

SPACE DOUBT
Formula One
THE ROCKY HORROR SHOW
TAU CETI

Computer Games is a volatile business. You've got to make the right decisions and work with the right people to be a success. At CRL we've been doing that longer than most Companies have been in business. If you've got a program, you'll want the worldwide distribution we take for granted and the Software Development back-up we pride ourselves in. If you're a designer, a programmer or both, get in touch.

CRL Group Plc, CRL House, 9 Kings Yard, Carpenters Road, London E15 2HD Tel: 01-533 2918

UNITSOFT

DISTRIBUTION

NEW!

ALL GAMES GUARANTEED IN STOCK

5% DISCOUNT &
FREE SECURICOR DELIVERY
ON ORDERS OVER £40.

NOW!

EASY ORDERING WITH OUR
NEW FREEPOST ADDRESS.

CBM 64		TICK	SPECTRUM		TICK	MSX		TICK
Commando	5.80	☐	Friday the 13th	5.80	☐	Road Fighter	10.50	☐
Rambo	5.80	☐	Westbank	4.90	☐	Hyper Rally	10.50	☐
Comic Bakery	5.80	☐	Zorro	4.90	☐	Soccer	10.50	☐
Back To The Future	6.50	☐	Surfchamp	9.70	☐	Ping Pong	10.50	☐
Rock 'n' Wrestle	6.50	☐	Cosmic Wartoad	4.90	☐	Boxing	10.50	☐
Koronis Rift	6.50	☐	Movie	4.90	☐	Yie Ar Kung Fu	10.50	☐
Bounder	6.50	☐	Benny Hill	4.90	☐	Yie Ar Kung Fu II	10.50	☐
Dragon Skulle	6.50	☐	Commando	4.90	☐	Tennis	10.50	☐
Revs	9.50	☐	Zoids	4.90	☐	Golf	10.50	☐
Desert Fox	6.50	☐	Mikie	4.90	☐	Track 'n' Field	10.50	☐
Yie Ar Kung Fu	5.80	☐	Enigma Force	6.50	☐	Track 'n' Field II	10.50	☐
Kung Fu Master	6.50	☐	Yie Ar Kung Fu	4.90	☐	Hypersports	10.50	☐
Time Tunnel	6.50	☐	Panzadrome	4.90	☐	Hypersports II	10.50	☐
Enigma Force	6.50	☐	3 Weeks in Paradise	6.50	☐	Athletic Land	10.50	☐
Barry McGuigan	6.50	☐	Winter Games	4.90	☐	Time Pilot	10.50	☐
Ball Blazer	6.50	☐	Back to Skool	4.50	☐	Super Cobra	10.50	☐
Nightshade	6.50	☐	Tomohawk	6.50	☐	Sky Jaguar	10.50	☐
Scaletrix	6.50	☐	Gunfright	5.80	☐	Kings Valley	10.50	☐
Arc of Yesod	5.80	☐	Gyroscope	3.50	☐	Circus Charlie	10.50	☐
Zorro	6.50	☐	Saboteur	5.80	☐	Antartic Adventure	10.50	☐
Outlaws	6.50	☐	Sweevo's World	4.90	☐	Monkey Academy	9.95	☐
Goonies	6.50	☐	Roller Coaster	4.90	☐	Mopi Ranger	9.95	☐
Transformers	5.80	☐	Impossible Mission	4.90	☐	Comic Bakery	9.95	☐
Young Ones	4.90	☐	Battle of the Planets	6.50	☐			
Critical Mass	6.50	☐	Critical Mass	5.80	☐	**Peripherals**		
Super Zaxxon	3.95	☐	Transformers	4.90	☐	Medalist Deluxe Joystick	6.25	☐
Fighting Warrior	3.50	☐	Barry McGuigan	4.90	☐	Switchable Interface	9.95	☐
Terrormolinos	3.50	☐	Terrormolinos	3.50	☐	Joystick & Interface	14.95	☐

NAME

ADDRESS

POSTCODE

I enclose cheque/P.O. for £

TELEPHONE

Send order to:
UNITSOFT,
FREEPOST,
GLASGOW G1 4BR.

NO STAMP REQUIRED

*UK ONLY

P.C.W.

3" 3" 3"
10,000 NOW IN STOCK

ONLY £32.00 per £10,00 SEND MONEY WITH ORDER FOR EXPRESS DELIVERY

$3\frac{1}{2}$" $5\frac{1}{4}$" SONY DYSAN & FUJI DISKETTES AT UNBEATABLE PRICES

Please make cheques payable to Cash Terminal Supplies and send to Cash Terminal Supplies, 11 North Street, Cavell Court, Peterborough PE1 2RA. Tel No 0733 314 525. (Cash by registered post only please).

TRADE ENQUIRES WELCOME

PD894

POPULAR Computing WEEKLY

Take out an annual subscription to *Popular Computing Weekly* and choose any one of these **Sunshine books free of charge.**

Please enter my subscription to *Popular Computing Weekly.*

	U.K.	Overseas
1 year	☐ £19.95	☐ £37.40 (airmail)

☐ I enclose a cheque or postal order made payable to *Sunshine Publications Ltd.*

☐ Please charge my Visa/Access/Am Ex card no:

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Expiry date:.....

Send my choice of Sunshine Microcomputer Book:

- ☐ **Commodore Adventures**
- ☐ **Machine Code Games on the C64**
- ☐ **The Working Commodore C16**
- ☐ **Artificial Intelligence on the Spectrum**
- ☐ **Master your ZX Microdrive**

Name:..... *Address:*.....

.....

Postcode:..... *Country:*.....

Return this coupon with your payment to:

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

HAB12

GOOD BYTE

SPECTRUM

GAME	RRP	OUR PRICE
SUPERMAN	**9.95**	**7.45**
ENIGMA FORCE	**8.95**	**6.50**
SUPERBOWL	**9.95**	**6.95**
RAMBO	7.95	5.25
GUN FIGHT	9.95	6.95
I.D.	7.95	5.95
FALKLANDS 82	7.95	5.95
SWORDS AND SORCERY	6.95	5.95
RUNESTONE	7.95	5.50
NOW GAMES II	8.95	6.50
SKYFOX	8.95	6.70
"V"	7.95	5.60
ROCK & WRESTLE	9.95	7.45
SWEEBO'S WORLD	7.95	5.50
WINTER SPORTS	9.95	6.95
ART STUDIO	14.95	11.00
EXPLODING FIST	8.95	5.99
HYPERSPORTS	7.95	5.50
TAU CETI	9.95	6.99
GYROSCOPE	7.95	5.50
TOMAHAWK	9.95	7.40
FRIDAY 13th	8.95	6.70
COSTA CAPERS	7.95	5.95
CYBERUN	9.95	7.50
COMMANDO	9.95	7.40
I.C.K.U.P	8.95	6.70
ELITE	14.95	10.25

COMMODORE

SUPERMAN	**9.95**	**7.45**
ENIGMA FORCE	**9.95**	**7.45**
QUAKE-1	**9.95**	**7.45**
BATTLE OF BRITAIN	**9.95**	**5.99**
BLADE RUNNER	8.95	6.50
ZORRO	9.95	6.95
DRAGON SKULLE	6.95	4.99
AD MUSIC SYSTEM (Disc)	39.95	29.95
WINTER GAMES	9.95	7.45
ZOIDS	8.95	6.75
ACE	10.95	7.95
IWO JUMA	8.95	6.75
BALL BLAZER	9.95	7.50
REVS	14.95	9.99
SKYFOX (cassette)	9.95	7.50
CAUSES OF CHAOS	8.95	6.70
LORD OF THE RINGS	15.95	11.20
ROCK & WRESTLE	9.95	7.45
ELECTRAGLIDE	9.95	7.45
SUPERBOWL	9.95	6.90

AMSTRAD

SUPERMAN	**9.95**	**7.45**
STRANGE LOOP	8.95	6.50
STARION	9.95	4.95
RAMBO	8.95	5.99
FA CUP	8.95	5.99
ROCKO	8.95	4.50
ROBIN OF SHERWOOD	8.95	4.95
TALES OF ARABIAN KNIGHTS	7.00	4.95
WORM IN PARADISE	6.95	4.95
GEOFF CAPES	8.95	6.50
BOUNCES	**9.95**	**7.45**
SPY v SPY	**9.95**	**7.20**
ELITE	14.95	11.00
FAIRLIGHT	9.95	7.45
BORED OF THE RINGS	6.95	5.95
ZOIDS	8.95	6.70
SABATOUR	8.95	6.50
YIE ER KUNG FU	**8.95**	**5.95**
STRIKE FORCE HARRIER	8.95	6.75
STRIKE FORC HARRIER (disc)	12.95	8.95
COMP HITS 10 (Disc)	14.95	10.95
GRAPHIC ADV.CREATOR (Disc)	22.95	16.95

C-16

COMMANDO	7.95	5.95
TOPEDO RUN	6.95	3.95
DAVEY	6.95	4.99
KUNG FU KIDD	6.95	4.99
CLASSICS II	9.95	6.99
ACE	10.95	7.99

ELECTRON

YI AR KUNG FU	**9.95**	**7.45**
WAY OF EXPLODING	**7.95**	**6.50**
BLOCK BUSTERS	7.95	5.95
GOLD RUN	7.95	5.99
TERROMOLINS	7.95	5.99
CITADEL	9.95	6.95
COMP. PRO. JOYSTICK	16.95	14.45
KONIC SPEEDSTICK	12.95	9.99

Overseas orders, please inc. 75p per tape
ALL PRICES INCLUDE P&P

PLEASE NOTE IF OUR ORDER EXCEEDS £30 YOU GET 10% FURTHER DISCOUNT

SEND CHEQUES/P.O. TO **GOODBYTE** PCW10
UNIT 10-11, IMPERIAL STUDIOS, IMPERIAL, LONDON SW6
(TEL: 01-731 4607)

PD356E

POOLSWINNER

THE ULTIMATE POOLS PREDICTION PROGRAM

Boxed, with detailed instruction booklet

- **MASSIVE DATABASE** Poolswinner is a sophisticated Pools prediction aid. It comes complete with the largest database available – 22000 matches over 10 years. The database updates automatically as results come in.
- **PREDICTS** Not just SCOREDRAWS, but AWAYS, HOMES and NO SCORES.
- **SUCCESSFUL** SELEC guarantee 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 20 (+16K), AMSTRAD, BBC B, Atari (48K), ZX81 (16K), Dragon, Apple II, ELECTRON

PRICE £15.00 (all inclusive)

NOW AVAILABLE

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

NOT JUST A TIPSTER PROGRAM, Coursewinner V3 can be used by experts and occasional punters alike. 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, tricasts 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 . . .

VISA phone 24 hrs

selec SOFTWARE

phone 24 hrs

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

(Send for full list of our software)

Up-grade kit

Product *QRAM 256K up-grade kit* **Micro** QL **Price** £99.95 **Supplier** Micro Peripherals, 3 Wade road, Basingstoke, Hants.

Product *512K up-grade kit* **Micro** QL **Price** £89.95 **Supplier** SPEM, Via Ponchielli 26/c, 10154 Turin, Italy.

Boosting the QL's 128K memory is now pretty big business with several peripheral companies offering a variety of competing solutions. The latest is a sort of DIY internal Ram upgrade which leaves the QL's left-side expansion port free and avoids the various Lego-like add-ons that until now were the only alternative to fairly expensive boards combining disc interfaces and extra memory.

At the moment, two companies – Micro Peripheral and SPEM of Turin – are selling Ram up-grade kits for QL owners with the bravery to open up their computers and start playing around with the chips.

For the less bold, Silicon Express offers a third choice: you send in your computer (and a cheque for £150) and the company returns a QL internally up-graded to 512K with a six month guarantee. New buyers can purchase a 512K QL from Silicon Express for £350 with a year's guarantee.

Repair costs

DIY enthusiasts take note: Opening the QL's case voids the Sinclair warranty so it would seem prudent to wait until the guarantee has expired before undertaking an internal up-grade. Even if the job is done perfectly, QL can be a bit temperamental and there is a real risk of unnecessary repair costs if the machine goes haywire on its own. With this in mind, the DIYers choice should – in a large part – depend upon an honest appraisal of their technical competence or the cost-effectiveness of paying for the job to be done.

Micro Peripheral's QRam is the obvious choice for the non-expert determined to go it alone. Opening the box reveals an L-shaped, 256K board fitted with 13 Ram chips and a small cabled extension.

The extension board contains 48 pins and a ribbon cable joined to the main L-shaped board with 40 connector pins at the base. There is a two page instruction sheet and diagram which is clearly written and divided into six simple steps.

The DIYer opens the QL case and removes the ZX8301 bus controller chip and the Motorola 68008 processor itself. The connector pins of the main QRam board are fitted into the sockets vacated by the ZX8301 and the small extension board replaces the 68008. The ZX8301 and the 68008 are then reinserted into the sockets provided on the QRam boards without any need for soldering or desoldering.

The job is just about as simple as it could be. Lifting out the two QL chips is a delicate business but easy enough. Nervous types should take special care with the 68008 – it's encased in a brittle ceramic and costly to replace. Once QRam is in and the chips replaced, the fits are snug and it's only a matter of refitting the case.

The up-graded QL's total memory is now 384K but, unfortunately, that's the maximum the user can have as QRam will not work with memory add-ons utilising the computer's expansion slot. Anybody wanting more than 384K has got to look elsewhere.

Ribbon cables

Things aren't quite as technically easy with SPEM's 512K up-grade although the price is attractive. The first thing on the three page instruction sheet (with circuit diagram) is the warning not to go ahead unless "you are an expert in hardware". After opening the QL's case, all similarity with QRam installation ends and potential buyers should take the warning very seriously.

Paying for the job to be done is an obvious alternative but, unless it's cheap enough, there is a point where one should consider just sending off the QL to Silicon Express for its up-grade *and* a six month warranty as well.

The SPEM kit itself consists of 16 Ram sockets, 16 HM50256 Rams and a new PAL circuit. After opening the QL's case and disconnecting the ribbon cables and loudspeaker wires, the reset button, heatsink and microdrives are taken out in a series of (careful) steps. The QL's old 128K Ram bank is unsoldered and replaced by the sockets provided. The new Ram chips are then inserted into their respective sockets. A small modification is made to the QL's ZX8301 and the new PAL circuit is installed in a series of fairly complicated solderings. Depending upon the particular QL, other small but delicate modifications may be necessary before the up-grade is complete or fully operative.

New circuit

The instructions aren't always as clear as they ought to be and there are a host of pitfalls waiting for the unwary and the non-expert – careless soldering, for example, can easily short-circuit the main board.

SPEM's kit offers a great deal of Ram for little money but it is probably only an option for the expert, or those non-experts enterprising enough to get the work done for them at little or no extra cost.

Internal upgrading, however, is probably the most rational approach to added QL Ram and both SPEM and Silicon Express deserve a great deal of credit for bringing their DIY packages on to the market at prices people can live with.

Brian Beckett

Teletext adaptor

Program *TTX2000 S Teletext Adaptor* **Micro** Spectrum **Price** £99.99 **Supplier** Volex Electronics, Lissadel Street, Salford M6 6AP.

Housed in a standard size under-the-Spectrum black box, the TTX2000 S could easily be mistaken for a modem. But its purpose is to access Oracle and Ceefax, ITV and BBC's way of making use of spare lines in TV signals, which hold text information pages, as well as a considerable amount of advertising on the commercial channels.

Strong signal

This lets a Spectrum and ordinary set receive them – it is not suitable for bulletin boards or communications – as well as downloading telesoftware directly into the micro.

The use of an identical power supply connector to the Spectrum's for the tuner creates an initial bad impression – a simple slip could put 18V into your micro. You'll also need a strong signal to receive those spare lines and I found tuning incredibly difficult.

Once I had it set up I found that it created interference on normal vision, not that this mattered much because as far as I could tell there's no way of superimposing pages (eg, containing subtitles or newflashes) over broadcasts.

After all these problems I was surprised to find that the telesoftware downloaded without problem – I received a section of *The Living Body* program.

Normal vision

However, downloading is not fast and you're limited to Channel 4 telesoftware unless a soft converter makes the BBC transmissions available too.

All in all I wasn't impressed with the products performance and see little point in investing a penny short of £100 to indulge in the delights of broadcast teletext and software when a modem and subscription to a network gives you interaction too.

John Minson

Word lines

Program *Dr Draw* **Micro** Amstrad (on CP/M) **Price** £49.95 **Supplier** Digital Research, Unit 12, Fenton Way, Southfields, Basildon SS15 6SL.

DR Draw is from Digital Research, the author of CP/M, so the quality of this graphics package is assured from the start. You'd be right in thinking, though, that the price, pedigree and presentation of the package does not recommend itself to the mere dabbler. *Dr Draw* is rather for the business person wishing to make a sober presentation.

This is not to say that it is in any way less flexible. The building block with which your pictures will be built is the 'element': thus, a circle is an element which may be added to a square, also an element. This combination now becomes a third element.

Elements may be shrunk or magnified, moved around the screen, copied, filled – anything you like.

To help your design, grids of various sizes can be drawn on-screen (though rather slowly) and line-ends, box-corners and so on 'snapped', if required, to the nearest grid point. Free-hand drawing is hardly possible, unless the user has the patience to use very short lines to build up a free-looking picture. Several text fonts are supplied with the disc, and up to three at a time can be used in a picture.

The manual is a delight to see, and is an object lesson to others, leading the user slowly and carefully from basic techniques to a deeper look at each function: there's also comprehensive set of instructions for the Amstrad user. Once the picture is finished, it may be printed on printer or plotter, or prepared for camera if presentation slides are prepared.

This last sentence should indicate that this is a package for the serious business user – as such it is excellent.

Tony Bridge

All things?

Program *Personal Assistant* **Micro** Amstrad CPC6128/ PCW8256 **Price** £94.95 **Supplier** FMP Business Software, distributed by Screens, Main Avenue, Moor Park, Northwood, Middlesex.

I imagine that this suite of six loosely related programs is aimed at busy owners of small companies who are forced to do their own secretarial duties The names of the individual modules give a hint as to their purpose: *Bankmate, Billmate, Mailmate, Wordmate, Appointmate* and, yes, *Datamate.*

The manual, produced on the *Wordmate* program, promises that the programs are compatible with the Amstrad CP/M machines – but, oh dear, they are not. And there are more bugs here than in the Insect house at London Zoo.

A few examples will suffice: the label printer works fine, except that names are not printed, only salutations and addresses (you could define the first line of the address as the name of course – simple!).

The printer menu of the *Mailmate* module refuses to accept any input, thus freezing the program and forcing a power-down (and ignoring the fact that control codes are not required for the PCW printer).

The cursor keys of the PCW don't work as promised within the *Wordmate* program, while the delete keys are also non-operative, with no mention of what might replace them.

Any references to specific Amstrad keys in the manual favour the PCW, with the 6128 owner being left to guess that many of the keys must be shifted (to be fair, Fydler tells me that there is an update sheet to the manual, but I haven't seen it yet).

On the subject of keys, the 6128 owner will find that the numeric pad is for some reason defined as an alpha pad – easily rectified from CP/M, no doubt, but an insurmountable obstacle to the naive user. Prompts within each module (for example, Y/N) are case dependent, and users believe it or not, have to set *Caps Lock* themselves: a few bytes of code would take care of that.

Another facet of this particular failing is that, in the word processor, the user naturally doesn't want to stay in *Caps Lock* but must return to it in order to proceed with saving, loading and so on.

Despite all this, is it worth persevering with the programs? The label printer, as we've seen, is totally useless and the appointment diary is slower and less attractive than the leather-bound paper variety. *Locoscript*, as every PCW owner knows, is almost unbeatable (certainly by *Wordmate*) and free, while the 6128 user has the choice of several infinitely superior progams, all of which are at least half the price of FMP's attempt. The invoice printer is okay if you don't have a VAT calculator around the office, but you're stuck with Fydler's layout which can't be re-designed.

Probably the best part of the whole package is the database module, with its commendably fast sort and fine routine – it also has limited integration with the word processor and the label printer.

The manual starts well but gets worse. On balance not recommended.

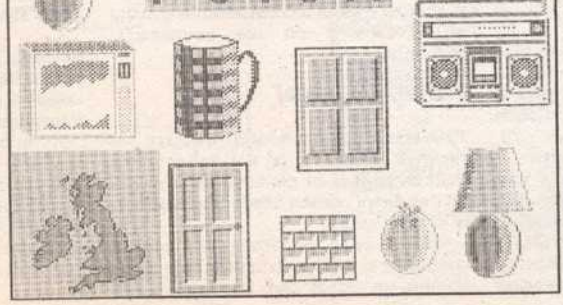
Tony Bridge

Quick draw

Program *Qdraw* **Micro** QL **Price** £12.95 **Supplier** Psion Psion House, Norcourt St, London W1H 1DT.

There seem to be an excess of graphics packages for the QL these days, which is dominated by Talent's *GraphiQl*, so what have Psion got to overthrow Talent's number one spot?

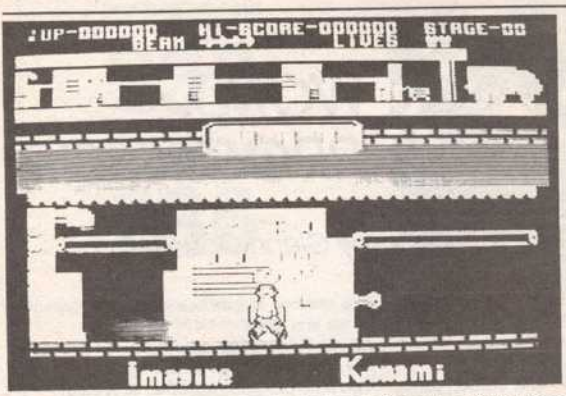
I found that the Psion package was very easy to operate, drawing pictures in both modes. The control of the Cursor is done by using the directional keys that surround the "S" key and the F4 key is used for special commands such as lines, expand, reduce, reflect and fill.



The main bulk of the documentation of this programme is spent on defining Shapes and how to manipulate them across the screen and changing their presentation in a variety of ways. This is somewhat useful to the freehand drawer, but if you plan your pictures well there is no need for such routines.

The answer to the question 'why buy this when *GraphiQl* is around' is that the *Qdraw* is a simpler package to operate and a cheaper one to buy. It is not as powerful as Talent's. I feel though, the difference in price makes up for the loss in facilities.

Matthew Palmer



Half baked

Program *Comic Bakery* **Micro** Commodore 64 **Price** £9.95 **Supplier** Imagine, Unit 10, The Park Way Industrial Estate, Heneage St, Birmingham B7 4LY.

Quite what the connection is between racoons and a bakery is beyond me I'm afraid, but that however is the subject of this tepid release from Imagine.

You are Joe, sole proprietor of this automated bakery whose job it is to bake as many loaves as possible before 5.00 p.m. in order to placate the hungry shoppers who are waiting in the front shop.

As Joe dutifully patrols up and down his conveyor belt, racoons chase around switching off the machinery or eating the bread, and the only way the baker can stop them is by spraying them with of all things a stun gun (an essential tool for any aspiring baker) which sends those pesky animals to sleep for a few moments, enabling Joe to kick them out of the place. And so it goes on . . . and on and on.

On the brighter side is a gutsy soundtrack by Martin Galway, and some nice sprites of the racoons and the baker.

As this game is a Konami tie in, I suppose arcade freaks might remember it and enjoy playing their home version as this is quite a faithful reproduction, but with only two screens to play with, eventually it does get quite boring to say the least.

Dare I say it – A stale offering.

Andy Moss

Boys in blue

Program *The Force* **Micro** Commodore 64 **Price** £9.95 **Supplier** Mind Games, Liberty House, 222 Regent Street, London.

If this game is at all realistic, the police have the most boring job in the country.

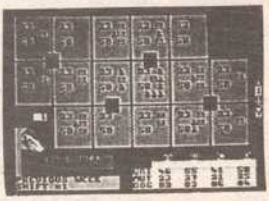
You play the part of the new superintendent responsible for allocating manpower in four police stations, in three shifts, seven days a week.

Your working week splits into two parts. The really boring part of allocating foot patrols, Z-cars, dog handlers, mounted police, and the special reserve – not a brand of port but a horde of Dirty Harry clones who give the citizens the willies. You do this for the three shifts, etc, etc.

Then you sit back for the incredibly boring part where you watch the week unfold. The most exciting bit is the ticker tape which tells you when a Post Office has been robbed.

The entire game is icon-driven, which is confusing and frustrating. Numbers are denoted by colour, so a dark blue policeman's hat means one bobby, a purple hat means two, and so on.

You can also call up lots of obscure crime statistics for each area, with the end result that the game properly involves half-a-dozen screen switches just to allocate one man. The sound is pitiful too.



In short, *The Force* is mind-numbing. No chance of disturbing the peace, but Argus could be charged for loitering without intent.

Peter Worlock

Bang bang!

Program *West Bank* **Micro** Amstrad **Price** £7.95 **Supplier** Gremlin Graphics, 10 Carver St., Sheffield S1 4FS.

This game is so simple, yet great fun to play. It's like one of those police training exercises where cardboard cut-outs pop up and you have to distinguish between villain and bystander before firing.

West Bank contains some very tasty graphics which consist of mean critters like the Dalton Brothers and Jack Vicious who are hell bent on robbing the bank. There are 12 doors and as each one opens, you are confronted either with a customer or a gunman with an itchy trigger. Your job is to despatch the desperados without shooting the customers. The real problem comes when gunman is disguised as bystander.

There are quite a few extra features to enjoy, like a high noon shoot-out and a dwarf with seven hats housing either a pot of gold or a bomb!

A really entertaining game which doesn't bog you down with instructions, just lets you pull that trigger and, at the price, it's a steal!

Andy Moss

Big top

Program *Ballyhoo* **Micro** Commodore 64 **Price** £33.50 **Supplier** Infocom (various independent stockists).

Even the merest hint of any impending Infocom release is normally enough for most adventure purists to start salivating at the prospect of doing battle with the devious minds of the American masters of adventure. Well, the rumours have turned to fact as before me is their very latest release – *Ballyhoo*.

It's another in their mystery series following on from *Deadline* and *Suspect* and is a standard-level game. It's set in the strange circus that time forgot – now, using a circus as a plot is nothing new (remember Brian Howarth's *Circus*) but don't be misled because with the Infocom treatment in terms of atmosphere, descriptive narrative and character interaction makes for a cracking story.

The basis of the plot is this – You've just seen the Big Top show and going backstage hoping to see some of the action behind scenes you overhear a whispered conversation about the kidnapping of the owner's daughter and the lack of any leads from the hired detective. You decide to help and are plunged into a mysterious circus world where corruption is centre stage.

There are some great characters to meet, like Andrew Jenny half-man half woman, each side with its own personality, a number of stunts to perform, and strange dressing rooms to explore.

Ballyhoo also has an even better parser than before (if that's possible) and a vocabulary of over 1700 words, the most advanced system yet.

All this comes in the usual superb Infocom packaging including authentic circus tickets and an official programme to the show.

Of course it's not cheap but the best never is. If you own a disc drive go out and buy it, you won't be disappointed.

Andy Moss

WORD PROCESSOR

by Glenn Counsell

This week sees the final part of the listing for a fully fledged wordprocessor for the Amstrad 464/664/6128 together with instructions for the use of its block manipulation functions.

CTRL + A – Deletes the block of text specified by the cursor position at the time of the first and second presses.

CTRL + I – The first press clears the screen below the cursor to allow text insertion at that point. Whilst in the insert mode this text is treated as a new text file allowing the use of all block functions.

CTRL + J – Left re-justifies a block of text defined by the cursor position at the time of the first and second presses. It places one space between each word and employs wordwrapping.

CTRL + P – Prints a block of text defined by the cursor position at the time of the first and second presses.

CTRL + C/CTRL + T – The cursor position at the time of the first and second presses defines a block of text. This block is then either copied (CTRL + C) or transferred (CTRL + T) to below the cursor position at the time of the third pressing.

CTRL + E – Allows exit from the block manipulation functions at any given time before the final instruction is given.

Program notes

Wordwrapping and left justification are compulsory.

The number of text lines available depends on the text width.

Amstrad's garbage collection may occasionally suspend screen output for a short time. This is no problem, just keep on typing.

If using the wordprocessor with a tape based system carry out the following alterations:

Delete lines 80, 90, 100, 160, 170, 2440, 2460, 2650, 2660, 2670, 5440, 5450

Change the following lines to:

2150 openout "!" + fln$

2590 openout "!" + q$

If your finger are worn out by now then don't worry, as copies of the program can be obtained from G. Counsell, 216a Banbury Rd, Oxford for £7 (disc) or £3 (tape). Please state also whether you require the version of the program to work on disc or tape.

```
3730 PRINT#6,CHR$(13);"delete from ";dll+tlk;" to
";tl+tlk
3740 GOTO 3760
3750 PRINT#6,tl+tlk
3760 IF tl+1>tlb THEN 3780
3770 FOR i=(tl+1) TO tlb:z$(i-tl-1+dll)=z$(i):NEXT
 i
3780 FOR i=(tlb-tl+dll) TO tlb:z$(i)="":NEXT i
3790 tlb=(tlb-tl+dll-1)
3800 IF pjfq(>0 OR btfq(>0 THEN RETURN
3810 LOCATE #2,1,1
3820 plu=tl-cpud+1
3830 plutt=dll-10
3840 IF plutt(1+infq*(n-2) THEN plutt=1+infq*(n-2)
3850 IF plu(1+infq*(n-2) OR plu>plutt THEN plu=plu
tt
3860 plb=plu+22
3870 IF plb>tlb THEN plb=tlb
3880 FOR h=plu TO plb:PRINT#2,z$(h);CHR$(18):NEXT
h
3890 IF plu+22>tlb THEN PRINT#2,CHR$(20)
3900 cpud=1+tl-plu
3910 cplr=LEN(z$(tl))+1
3920 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
3930 CLS #4:PRINT#4,tl+tlk:CLS #5:PRINT#5,tlb:CLS
#6
3940 dlfq=0
3950 RETURN
3960 ON (btfq+1) GOTO 3970,4040,4160
3970 GOSUB 4850
3980 IF ASC(a$)=3 THEN 4010
3990 PRINT#6,"transfer from ";tl+tlk;" to";
4000 GOTO 4020
4010 PRINT#6,"copy from ";tl+tlk;" to";
4020 bttl=tl+btfq-1
4030 RETURN
4040 IF tl>=bttl THEN 4120
4050 CLS #6
4060 IF ASC(a$)=3 THEN 4090
4070 PRINT#6,"transfer from ";tl+tlk;" to "jbttl+t
lk;" to ";
4080 GOTO 4100
4090 PRINT#6,"copy from "tl+tlk;" to "jbttl+tlk;"
 to ";
4100 btbl=bttl:bttl=tl
4110 GOTO 4140
4120 btbl=tl
4130 PRINT#6,tl+tlk;" to ";
4140 btfq=2
4150 RETURN
4160 PRINT#6,tl+tlk
4170 IF tl>=btbl OR tl<bttl THEN 4210
4180 btfq=0
4190 CLS #6
4200 RETURN
4210 FOR i=tlb TO tl+1 STEP -1:z$(i+btbl-bttl+1)=z
$(i):NEXT i
4220 bti=bttl:bt2=btbl
4230 IF tl+1>btbl THEN 4250
4240 bti=btbl+1:bt2=btbl+btbl-bttl+1
4250 FOR i=bti TO bt2:z$(i-bt1+tl+1)=z$(i):NEXT i
4260 tlb=tlb+btbl-bttl+1
4270 IF ASC(a$)=3 THEN 4310
4280 tlm=tlb+dll-btt1+tl-bt2
4290 GOSUB 3760
4300 tl=tlm
4310 plu=tl-cpud+1
4320 plutt=tl-btbl+bttl-10
4330 IF plutt(1+infq*(n-2) THEN plutt=1+infq*(n-2)
4340 IF plu(1+infq*(n-2) OR plu>plutt THEN plu=plu
tt
4350 plb=plu+22
4360 IF plb>tlb THEN plb=tlb
4370 LOCATE #2,1,1
4380 FOR h=plu TO plb:PRINT#2,z$(h);CHR$(18):NEXT
h
4390 IF plu+22>tlb THEN PRINT#2,CHR$(20)
4400 cpud=1+tl-plu
4410 cplr=LEN(z$(tl))+1
4420 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
4430 CLS #4:PRINT#4,tl+tlk:CLS #5:PRINT#5,tlb:CLS
#6
4440 btfq=0
4450 RETURN
4460 pjfq=0:prfq=0:dlfq=0:btfq=0
4470 CLS #6
4480 IF infq(>0 THEN 4670
4490 RETURN
4500 IF infq(>0 THEN 4670
4510 GOSUB 4850
4520 IF tlb(zdia THEN 4540
4530 SOUND 1,60,3,12:SOUND 1,60,1,0 :RETURN
4540 attl=tl:atlb=tlb:tl=tl+tlb:tlb=tlb+tlm+1
4550 infq=1
4560 PRINT#7,"insert mode"
4570 CLS #4:PRINT#4,tl+(attl-atlb):CLS #5:PRINT#5,
tlb
4580 IF cplr=(LEN(z$(attl))+1) THEN 4610
4590 LOCATE #2,cplr,cpud:PRINT#2,MID$(z$(tl),cplr,
1);
4600 GOTO 4620
4610 LOCATE #2,cplr,cpud:PRINT#2," ";
4620 cpud=cpud+1
4630 cplr=1
4640 LOCATE #2,1,cpud:PRINT#2,CHR$(20)
4650 LOCATE #2,1,cpud:PRINT#2,CHR$(95);
4660 RETURN
4670 FOR i=tlb TO (attl+1) STEP -1:z$(i+tlb-atlb)=
z$(i):NEXT i
4680 FOR i=(tlb+1) TO (tlb+tlb-atlb)
4690 z$(i-tlb+attl)=z$(i):z$(i)=""
4700 NEXT i
4710 plu=tl+tlk-cpud+1
4720 plutt=attl-10
4730 IF plutt(1 THEN plutt=1
4740 IF plu(1 OR plu>plutt THEN plu=plutt
4750 plb=plu+22
4760 IF plb>tlb THEN plb=tlb
4770 LOCATE #2,1,1
4780 FOR i=plu TO plb:PRINT#2,z$(i);CHR$(18):NEXT
i
4790 IF (plu+22)>tlb THEN PRINT#2,CHR$(20)
4800 tl=plu+infq*0:cpud=1
4810 cplr=LEN(z$(tl))+1
4820 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
4830 CLS #4:PRINT#4,tl:CLS #7
4840 RETURN
4850 btfq=0:pjfq=0:dlfq=0:prfq=0
4860 CLS #6
4870 RETURN
4880 IF tl(>1+infq*(n-2) THEN 4900
4890 SOUND 1,60,3,12:SOUND 1,60,1,0 :RETURN
4900 IF cpud>tl-1-infq*(n-2) THEN 5020
4910 plu=1+infq*(n-2):plb=plu+22
4920 plb=plu+22
4930 IF plb>tlb THEN plb=tlb
4940 LOCATE #2,1,1
4950 FOR h=plu TO plb:PRINT#2,z$(h);CHR$(18):NEXT
h
4960 IF plu+22>tlb THEN PRINT#2,CHR$(20)
4970 cpud=1+tl+plu
4980 cplr=LEN(z$(tl))+1
4990 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
5000 CLS #4:PRINT#4,tl+tlk
5010 RETURN
5020 IF cplr=(LEN(z$(tl))+1) THEN 5050
5030 LOCATE #2,cplr,cpud:PRINT#2,MID$(z$(tl),cplr,
1);
5040 GOTO 5060
5050 LOCATE #2,cplr,cpud:PRINT#2," ";
5060 cpud=cpud-tl+1+infq*(n-2)
5070 tl=1+infq*(n-2):cplr=LEN(z$(tl))+1
5080 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
5090 CLS #4:PRINT#4,tl+tlk
5100 RETURN
5110 IF tl(>tlb THEN 5130
5120 SOUND 1,60,3,12:SOUND 1,60,1,0 :RETURN
5130 IF cpud(tl-tlb+24 THEN 5260
5140 plu=tlb-22
5150 IF plu(1+infq*(n-2) THEN plu=1+infq*(n-2)
5160 plb=plu+22
5170 IF plb>tlb THEN plb=tlb
5180 LOCATE #2,1,1
5190 FOR h=plu TO plb:PRINT#2,z$(h);CHR$(18):NEXT
h
5200 IF plu+22>tlb THEN PRINT#2,CHR$(20)
5210 cpud=1+plb-plu
5220 tl=plb:cplr=LEN(z$(tl))+1
5230 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
5240 CLS #4:PRINT#4,tl+tlk
5250 RETURN
5260 IF cplr=(LEN(z$(tl))+1) THEN 5290
5270 LOCATE #2,cplr,cpud:PRINT#2,MID$(z$(tl),cplr,
1);
5280 GOTO 5300
5290 LOCATE #2,cplr,cpud:PRINT#2," ";
5300 cpud=cpud-tl+tlb
5310 tl=tlb:cplr=LEN(z$(tl))+1
5320 LOCATE #2,cplr,cpud:PRINT#2,CHR$(95);
5330 CLS #4:PRINT#4,tl+tlk
5340 RETURN
5350 CLS #7
5360 PRINT#7,(zdia-tlb);" lines left"
5370 tim=TIME
5380 WHILE (TIME-tim)<400:WEND
5390 CLS #7
5400 IF infq=0 THEN 5420
5410 PRINT#7,"insert mode"
5420 RETURN
5430 FOR h=0 TO (LEN(q$)-1):POKE (h+&A680),ASC(UPP
ER$(MID$(q$,(h+1),1))):NEXT h
5440 PEN 0:POKE &A652,LEN(q$):CALL &A681:PEN 1:CLO
SEIN
5450 RETURN
5460 q$=""
5470 aaa$=INKEY$:IF aaa$="" THEN 5470
5480 IF ASC(aaa$)=13 THEN 5580
5490 IF ASC(aaa$)<127 THEN 5550
5500 IF LEN(q$)>0 THEN 5520
5510 SOUND 1,60,3,12:SOUND 1,60,1,0:GOTO 5470
5520 q$=LEFT$(q$,(LEN(q$)-1))
5530 IF sqfq(>0 THEN PRINT#6,CHR$(&D);CHR$(&10); E
LSE PRINT CHR$(&D);CHR$(&10);
5540 GOTO 5470
5550 q$=q$+aaa$
5560 IF safq(>0 THEN PRINT#6,aaa$; ELSE PRINT aaa$
;
5570 GOTO 5470
5580 IF safq(>0 THEN PRINT#6 ELSE PRINT
5590 RETURN
5600 a$=""+aaa$+"":RETURN
```

MICRO EQUIPMENT REPAIRS

MOST HOME COMPUTER REPAIRS

£30

MOST FLOPPY DISC DRIVES (excluding print heads/actors)

£36

MOST SMALL PRINTERS (excluding print heads/motors)

£40

CONTACT US FOR CBM 3000/4000/ 8000/9000 component repairs
Price includes: UK collection delivery (mainland only), most spare parts (some exclusions) 6 mth warranty and VAT!

ALBANY COMPUTERS
ALBANY WORKS
QUEENS ROAD
THAMES DITTON
SURREY KT7 ORE
01-398 8055

MICRO EQUIPMENT SALES

COMMODORE–	all models
ACORN–	BBC series
AMSTRAD–	all models

We discount the above computers according to availability

PHONE NOW FOR OUR PRICES.

OTHER HARDWARE:

SAMLECO (similar RX80) printers	
DX85 parallel	£207.00
serial	£233.00
Commodore	£245.00
DK'Tronics interfaces etc	
Single port j/s i/f	£5.95
Dual port j/s i/f	£9.95
Keyboard	£25.00
Quickshot II std j/s	£6.95
–;– for C15/C + 4	£8.95

SECONDHAND COMPUTERS AVAILABLE
PART EXCHANGE WELCOME

E&OE

For a limited period only, every repair customer will recieve a free blank cassette. Purchasers of the first fifty computers will receive a free gift (cassette recorder, Joystick etc) suitable for use with the micro purchased. Games, business and programming software is available at discounted prices. Ask for a quote. Callers are very welcome, but please telephone first to ensure availability of stock. We are please to accept ACCESS, VISA, or cheque supported by bank card.

01-398 8055 Telephone NOW for more information 01-398 8055

PD805

FIRST NORTHERN

AMSTRAD COMPUTER SHOW

Organised by Database Publications

New Century Hall,
New Century House,
Corporation Street,
Manchester M60 4ES

Saturday, March 22 – 10am to 6pm
Sunday, March 23 – 10am to 5pm

Bring this advertisement and save 50p per person off the normal admission price of £3 adults and £2 children.

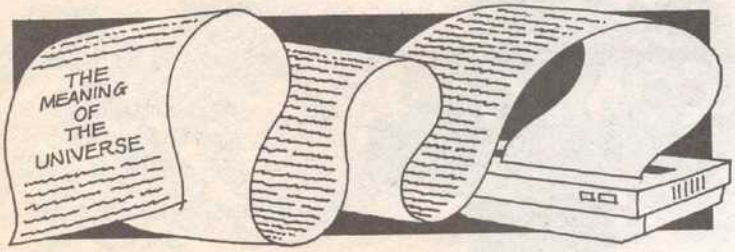
The first two Amstrad Computer Shows played to packed houses in London. Now the event comes to Manchester, and with even more to offer...

- New hardware and software products galore.
- Special offers from all the leading companies.
- Free helpful advice from the Amstrad experts.

If you own an Amstrad – or are just thinking about buying one – this is the show you cannot afford to miss!

Exhibitors booked so far include: *AMS, Amstrad, Amstrad Computer User, Amstrad User Club, Amtix, ANWUC, Amor, Beebugsoft, Bourne Educational, Cambrian Software, Caxton Software, Celcom Systems, Cirkit, Compact Software, Computer Bookshops, Computing with the Amstrad, Connect Systems, Comix, Cube International, Dart Electronics, Datastar, Design Design, DK'Tronics, EG Computer Graphics, Electric Studio, Evesham Micro Centre, Fydler, Garwood, Grafsales, GEM Distribution, Gemini, Incentive Software, Interceptor Software, Interlock Services, John Wiley, KDS Electronics, LCL, Load & Run, Micropower, Micro Simplex, Minerva, Miniature Tool Company, Newstar, Northern Computers, Pace, Palantir, Phoenix, Preston Software, Quest, Sagesoft, Saxon Computing, Screens Micro, Shekhana, Siren, Software International, Software Plus, Tasman, Vanguard Leisure, Vulcan Electronics, Zonefour.*

POP 1



SPACE PROBE

by Paul Bussey

Owing to the recent and future discoveries of the Voyager space probes, this program shows some of the aspects of these robot explorers. The program revolves around the formula; $F = (G \times m_1 \times m_2)/r^3$, where F is the gravitational force between point masses m_1 and m_2 distance r apart, with G as the gravitational constant.

In this case, one body is always stationary, this being the planetary mass. The second body is your space probe which will be affected by the gravitational pull of the planet. The aim is to direct the flight path of the probe into a certain area of space represented by a vertical or horizontal line randomly placed on the edge of the screen.

At the start of the game, the initial velocity, initial angle and y coordinate of the probe have to be input. Each division on the y axis is 25 pixels. Zero degrees is due east, negative angles giving initial flight downwards.

Each new game gives a random mass of planet, shown in proportional size on the screen. If the planet is over a certain size then a series of rings are drawn around it. At the end of the plot, an option is given for either a new game or to keep the previous set up, and try again.

Program Notes

50-170 – The main number crunching loop. Distance between point masses, component forces and acceleration of probe are worked out. Checks if plot goes off screen.

200-280 – Uses point (x,y) to check if the flight path is plotted towards the line.

500-650 – Draws planet, the destination line, the y-axis with divisions, stars and the planetary rings, if needed.

800-870 – Uses OUT 25d,n to change the border colour with speed, where n is the required colour, when mission is accomplished. Also gives endgame options.

1000-1500 – Initialisation. Uses array as to temporarily store input values. This is where the random position and size of the planet is defined. The whereabouts of the destination line is determined. The length of the line can be changed by altering LINE at line number 1045. Increasing the variable dt speeds up the plot, but the plot is less refined. Inputs are given a range check; the ranges being permitted and the prompts are stored in a data statement. The angle is converted to radians.

```
  10 REM Voyager & Gravity
  15 REM © P.Bussey
  20 GO SUB 1000
  45 REM Orbit proto
  50 LET xd=x2-x1: LET yd=y2-y1
  55 LET fg=g*m1*m2/((xd*xd)+(yd
*yd))
  60 IF x2=x1 THEN LET phi=PI/2:
 GO TO 80
  70 LET phi=ATN ABS (yd/xd)
  80 LET fx=fg*COS phi*SGN xd
  90 LET fy=fg*SIN phi*SGN yd
 100 LET ax=fx/m1
 110 LET sx=vx*dt+(ax*.5)*dt*2
 120 LET vx=vx+ax*dt: LET sy=fy/
m1
 130 LET sy=vy*dt+(ay*.5)*dt*2
 135 LET vy=vy+ay*dt
 140 GO SUB 200
 145 IF x1+sx>255 OR y1+sy<0 OR
y1+sy>175 OR x1+sx<0 THEN BEEP .
5,5: PRINT AT 0,1;a$(4);AT 0,8;"
Mission failed!": GO TO 830
 150 PLOT x1,y1: DRAW sx,sy
 160 LET x1=x1+sx: LET y1=y1+sy
 170 GO TO 50
 200 REM Check for success
 210 IF ax!=.5 THEN GO TO 250
 220 FOR n=80+c TO 80+c+line
 225 IF POINT (n,10)=1 THEN GO T
O 800
 230 NEXT n
 240 RETURN
 250 FOR n=c TO c+line
 260 IF POINT (245,n)=1 THEN GO
TO 800
 270 NEXT n
 280 RETURN
 499 REM Set up graphics
 500 CIRCLE x2,y2,m2
 510 IF ax!=.5 THEN PLOT 255,c:
DRAW 0,line: GO TO 550
 540 PLOT 80+c,0: DRAW line,0
 570 PLOT 0,0: DRAW 0,175
 580 FOR n=175 TO 0 STEP -25
 590 PLOT 0,n: DRAW 4,0
 595 PLOT RND+250,n: PLOT RND+25
0,n
 600 NEXT n
 610 IF m2<12 THEN GO TO 650
 620 FOR n=1 TO 3
 625 LET rx=RND+4+26
 630 PLOT x2-rx,y2+30: DRAW 2*rx
,-60.25: DRAW -2*rx,60,.25
 635 NEXT n
 640 NEXT n
 650 RETURN
 800 REM Mission completed?
 805 PRINT AT 0,0;a$(4);AT 0,8;
FLASH 1;"Mission Completed!"
 810 FOR n=1 TO 50: OUT 254,RND+
7
 820 NEXT n
 825 BORDER 0
 830 PRINT AT 19,6;"Space for ne
w set up";AT 20,2;"any other ke
y for new set up."
 840 LET i$=INKEY$
 850 IF i$=" " THEN CLS : LET m2
=m2/50: GO SUB 1050: GO TO 50
 860 IF i$="" THEN GO TO 840
 870 RUN
1000 REM Inputs & constants
1005 REM "line" is len of goal
exit
1010 BORDER 0: PAPER 0: INK 7
1015 CLS : DIM a$(4,31)
1020 LET m2=INT (RND*20)+5
1030 LET x2=INT (RND*178)+50
1040 LET y2=INT (RND*100)+40
1045 LET line=50: LET ax!=RND
1050 LET c=RND*(175-line)
1055 GO SUB 500
1060 LET s1=1: LET x1=10: LET y=
10: LET dt=1
1065 RESTORE
1070 FOR n=1 TO 3
1080 READ a$: PRINT AT 20,1;a$
1085 READ s,l
1090 INPUT LINE a$(n)
1095 IF a$(n)=a$(4) THEN GO TO 1
090
1100 IF VAL a$(n)<s OR VAL a$(n)
>l THEN GO TO 1090
1105 PRINT AT 20,1;a$(4)
1110 NEXT n
1120 LET y1=VAL a$(1): LET a=(VA
L a$(2))*PI/180: LET v=VAL a$(3)
1140 LET vx=v*COS a: LET vy=v*SI
N a
1150 LET m2=m2*50
1160 PRINT AT 0,1;"Plan mass:";m
2;" Vel:";v;" At:";VAL a$(2);" D
EG"
1190 RETURN
1500 DATA "Y co-ord. of probe? (
0 to 175)",0,175,"Angle? (-90 to
 90)",-90,90,"Initial velocity?
(1 to 30)",1,30
```

Popular Index

Find that article you've been meaning to read again with our 1985 index. The entries are listed by the issue number, followed by the page, eg, the Commodore Auto Bargraph listing is entered as 3, 30, which is page 30 of issue number 3.

General

Activision, 10,10
Adventure tips, 42, 17
Amsoft, 5, 9
Arrays and sorting, 8, 24
Amstrad:
  Buggy, popular, 13, 34
  Escape disable, 16, 6
Arcade Addicts Guide, 24, 12
Aylesbury Comuter Club, 7, 16
Basic Speedup, 10, 25
BBC micro, LIST disable tip, 18, 6
Buggy update, 19, 11
Buggy, reverse and spin options, 22, 6
Bulletin Board Survey, 50, 13
Carter, Roy, 48, 31
CES Show report, 3, 10: 4, 11
Christmas Micro guide, 47, 10
Commercial computer graphics, 15, 17
Commodore, 19, 14
Commodore C64:
  Centronics printer connection, 44, 21; 45, 22
  Macros, 7, 22; 9, 24
  Multiple letters poke tips, 29. 6
  Random disc access, 29, 31
  Screen pokes, 26, 35
  Speed-up poke tip, 16, 39
  Stop key disable pokes, 36, 25
  TAB poke tip, 18, 31
Computer game hisjtory, 15, 20
Computer graphics, 15, 17
Computers in control, 11, 14
Computers in the movies, 15, 11
Control, robot consturction, 11, 14
Control, robot construction, 11, 14
Creative Sparks, 13, 14
Dateline, 4, 17
Denton Designs, 18, 15
Digital Integration, 33, 13
Dragon:
  merge tip, 36, 35
  poke tips, 36, 35
Feargal Sharkey, 48, 11
Firebird, 12, 11
First Publishing, 14, 17
Fractions to decimal, 10, 55
Gargoyle Games, 48, 31
GEM, 10, 14
Graphics compression, 42, 33
Graphics tablets, 38, 14' Greer, Terry, 22, 11
Hanover Fair, 17, 1
Hubbard, Ron, 50, 11
Icons, 9, 11
Index for Volume 3, 1984, 8, 27
Interactive video, 8, 17
Languages, history of, 29, 17
LET '85, 9, 6
Level 9, 42, 14
Light pens, 38, 13
Lynx, large characters, 49, 43
Mackonochie, Jim, 39, 14
Mainframe, 2, 14
Maxwell House, 39, 14
May, David, 29, 20
Melbourne House, 36, 10
Metacomo, 31, 10
Micro music, 49, 11
Midi, 38, 14; 49, 11
Minder, 15, 39
Mouse, 9, 11
Movies, 15, 11
MUD, 21, 11
Multi-user dungeon, 21, 11
New Concepts, 45, 9
Occam, 29, 20
Oric:
  Cursor position tips, 16, 39; 50, 44
  Program protection tip, 26, 35
  Top of memory location, 16, 39
PCW Show, 37, 9
Pennell, Andrew, 50, 35
Platinum Productions, 26, 10
Pocket Micro survey, 12, 17
Poel, William, 8, 9
Printer survey, 20, 8
QL:
  Brother M-1009 printer tip, 36, 6
  Coercion of strings to variables, 10, 9; 13, 6
  Debugging SuperBasic, 37, 21; 38, 23
  JS ROM, 16, 25
  Non maskable interrupt simulation, 29, 24
  Out of memory tip, 3, 6
  Psion screen driver tips, 19, 6
  RUN tip, 24, 6
  Run-time module addresses, 8, 6
Rainbird, Tony, 49, 14
Robot, construct your own, 11, 14
Robotics suppliers, 11, 23
Robots, uses, 11, 22
Samara, Hanan, 3, 20
Simulations, flying, 33, 11
  racing cars, 33, 9
  sports, 33, 10
Sinclair Vehicles, 11, 20
Sinclair, Sir Clive, 6, 5
Spectrum:
  Auto-scroll poke, 42, 43
  Break disable poke, 40, 26
  Illegal line number, 21, 35
  Missing header tip, 4, 43
No listing tip, 13, 43
Poke tip, 18, 31
ROM test, 42, 43
SCREEN$ tips, 6, 11; 21, 35
User defined graphics, 1, 40
User defined graphics detection, 6, 11; 21, 35
Speech synthesis, 38, 12
Tasman Software, 23, 11
Tigress, 27, 12
Tramiel, Jack, 9, 5
TV's video magic, 30, 14
User Groups directory, 7, 10
White, Sandy, 49, 36
Windows, 9, 11
Ziggurat:
  A brick wall, 11, 50
  A dead language, 50, 58
  Alternative world, 49, 62
  Back to the future, 48, 54
  Confused?, 22, 46
  Correcting errors, 21, 46
  Crime and punishment, 35, 38
  Decline and fall, 18, 46
  Duck soup, 38, 38
  Goth them RS232 blues, 14, 54
  Horse power, 39, 38
  Immense power, 8, 50
  In demand, 1, 50
  In the future, 13, 54; 31, 38
  Intelligent woman, 44, 38
  Is it poetry? 47, 50
  Junk merchants, 15, 50
  Language barrier, 51, 50
  Littlie brother, 28, 46
  Mass market, 46, 50
  Masterpieces, 10, 66
  Monster creation, 32, 38
  On the horizon, 16, 50
  On the margin, 19, 46
  Optical transistor, 9, 50
  Out of focus, 26, 46
  Overskill, 36, 46
  Political leanings, 23, 46
  Questions, questions, 30, 46
  Rarified heights, 4, 54
  Stalemate, 6, 54
  Standard bearers, 43, 38
  State of the nation, 2, 50
  Subtle revolution, 40, 38
  Success at the ST, 42, 54
  Survival plan, 34, 38
  Teutonic market, 5, 62
  The IBM crash of 1995, 29, 46
  The neck verse, 41, 38
  The right stuff, 3, 50
  The upgrade blues, 7, 50
  Top-down, 25, 46
  Tower of Babel, 37, 38
  Unadventurous, 33, 38
  Untapped market, 27, 46
  Wider perspective, 45, 46
  Words and pictures, 20, 46
  Written word, 24, 46
  Wrong message, 12, 58
ZX Microfairs, 25, 11

Programs

Amstrad CPC464:
Educational,
  Chemistry, 44, 22
  Graph plot, 1, 37
  Wave interference, 18, 29
Games,
  Connect, 4, 50, 26
  Dice Throwing, 3, 26
  Fishpond, 4, 12
  Food 4 Thought, 6, 40
  Invasion, 23, 18
  Lunar Lander, 22, 28
  Man O' War, 45, 18
  Poker, 9, 20; 10, 42
  Prediction, 40, 20
  Shipwrecked, 14, 20
  Smasher, 36, 18; 37, 24
  Solitaire, 30, 20
  Space Station Zebra, 42, 30; 43, 22
  Stock Market, 17, 20
  Timer, 14, 37
Miscellaneous.
  Amcoder, 32, 24
  Artist, 27, 22
  Bank Account, 20, 30; 21, 36; 30, 6
  Christmas card, 51, 30
  Clock, interrupt driven, 19, 30
  Data scrambler, 49, 22
  Digital speech, 47, 27
  Freezer manager, 38, 24
  Linear regression, 1, 32
  Lissajous figures, 35, 23
  Microprofile, 25, 24
  Morse code, 32, 24
  Rhythm unit, 48, 23
  Sound designer, 26, 30
  3D cube, 49, 35
  ED graphics, 46, 31
  3D rotating cube, 35, 23
  3D sine wave, 48, 32
  Typing tutor, 46, 28
  VDU programs, 39, 22
Utilities,
  Background printing, 11, 32
  Character storage in memory, 28, 29
  Fast Load and Save, 29, 28
  Fast circle drawing, 12, 31

Popular Index

Function keys, 24, 31
Machine code monitor, 15, 33; 16, 30
Microfile (corr.), 2, 6
Mixed modes, 41, 24
Mixed modes, 664 change, 46, 6
ROM to tape, 5, 37
Screen dump for DMP1 printer, 7, 20
Screen dump, Brother 1009, 33, 28; 61, 34
Screen scroll, 6, 30
Screen transfer facility, Spectrum to CPC464, 34, 18
Up scroll, 2, 35

Atari: Game.
A Day at the Races, 28, 14

Commodore 64:
Educational.
Statistics, 19k, 28
Tens and Units, 6, 32
Games,
Caterpillar Race, 26, 20
Cricket's Revenge, 16, 21
Crossgram, 41, 16
Elite editor, 45, 28
Escape, 1, 10
Hi-Lo, 43, 18
Kingdoms, 13, 21
Otto, 22, 18
Kingdoms, 13, 21
Otto, 2w2, 18
Shuffle, 37, 17
Snooker Strategy, 7, 18
Trapper, 32, 16
Miscellaneous.
Address book, 18, 20
Address tags, 16, 34
Bar routine, 11, 35
Blast overpressures, 5, 34
chess grading calculator, 25, 27
Colour change, interrupt driven, 33, 18
Com file, database program, 47, 25; 48, 24; 49, 30
De-fuse, 46, 31
Exsys expert system, 30, 26; 31, 24
Hypnotism, 22, 30
Machine code music, 2, 26
Micro typer, 17, 33
Music, interrupt driven, 34, 23
Numerology, 36, 21
Roman numberals, 12, 26
Snowman's Christmas Dance, 51, 29
Sound effects, 24, 28
Spreadsheet, 20, 17
Synthesiser, 14, 34; 15, 30
Voiced numbers, 35, 24
Utilities.
Auto Bargraph, 3, 30
Character designer for MPS-801 printer, 39, 14
Chars routine, 11, 35
Code isolater, 10, 26
Colour routine, 11, 35
Disc error reader, 27, 35
Distinct REMS, 23, 30
Fill screen routeine, 11, 35
Forth screen read, 29, 31
Graphics windows, 4, 30
Hex-Aid, 40, 25
Joystick register operaiton, 46, 26; 47, 17
Line count, 50, 34
Number converter, 21, 23
Old routine, 11, 35
Pause routine, 50, 32
PBank, 7, 22; 9, 24
Relink 64, 23, 28
ROM devleopment routine, 38, 18
Screen Bank, 7, 22; 9, 24
Scroll routine, 11, 35
Search, 5, 46
Set routine, 11, 35
Status register, 28, 27
Word Count, 6, 38

Dragon 32
Games
Ballon Burster, 8, 36
Gridbase, 31, 16
Guesser, 3, 37
Lundar Lander (corr.). 3, 6
Miscellaneous
Address filing system, 6, 35
Utilities.
CGP115 screen dump, 10, 40
Flicker free graphics, 2, 33
Sound utility, 4, 34
Tape copy, 8, 35

Enterprise: Miscellaneous.
Windmill, 10, 45

Memotech: Utilities
Screen dump, 4, 37
Sprite collision detection, 48, 32

QL:
Education.
Equation solver, 23, 24
Logarithmic graphs, 28, 24
Games.
Adventure, 42, 22; 43, 24; 44, 25
Interceptor, 3, 12
Invaders, 19, 20
Jumbling along, 27, 18
Jumper, 39, 16
Light Cycle, 10, 17
Othello, 7, 27
The Hill, 51, 32
#D Maze, 33, 16
Miscellaneous.
Address merge, 13, 26; 14, 29; 17, 27
Bounce, 3, 35
Finances, 20, 26
Menu driven Boot routine, 12, 32
Namsort, 9, 34
New Boots, 45, 26
On screen note pad, 40, 18
On-screen calculator, 18, 26
One liner, 16, 32
Random workds, 48, 30; 49, 26
Sketch pad, 2, 28
Typing tutor, 41, 22
Utilities.
Alarm, 6, 25
Call bug patch, 15, 25
Colour pokes, 25, 31
Compact directory, 5, 28
dump procedure, 51, 34
Graphics routines, assorted, 49, 35
Hex dump, 21, 21
Input routine, 30, 28; 31, 21; 32, 22
Listing comparison, 22, 22
Machine code to Data statement converter, 36, 24
Mini planner, 3, 32; 4, 32
NBSET, new function, 50, 30
Number conversion, new keywords, 46, 18; 47, 20
Plot, 34, 20; 35, 20
Printall procedure, 11, 28
Printer initialisation, 26, 28; 27, 21
QL Taper, 8, 32
Seikosha GP250X screen dump, 1, 30
Systat, 24, 26

Research ML 380Z:
Miscellaneous.
Graphics, 10, 47

Spectrum:
Education.
Phase angles, 19, 32
Games.
Big Bad jake, 7, 18
Bonfire Party, 44, 16
Cycles, 29, 22
Endgame, 25, 20
Explosion, 15, 22
Grave robber, 11, 24
Lunar lander, 1, 34
Micro mania, 35, 16
Pupae Peril, 2, 10
Skippit, 38, 16
Solgor, 12, 39
Wilbur, 48, 28; 49, 24; 50, 23; 51, 22
Miscellaneous.
Adventure blank, 42, 27; 43, 20
Attribute effects, 41, 8
Character set, 48, 32
Clock display, 13, 24; 19, 6
Code storage index program, 14, 24
Filing program, 28, 23
Flower power, 26, 6
Fractal trees, 40, 22
Hi-fi input, 39, 18
Loop Ana;ysis, 7, 34
Lump sum investment, 9, 23
Moon calendar, 3, 24
Music maker, 23, 21
Numerals, 4, 36
Share portfolio, 24, 23
Sound to lifht, 12, 37
3D cubves, 2, 36
3D plotter, 49, 35
3D wave, 7, 35
Word processor, 20, 20
Wordsearch, 22, 25
Utilities.
Automatic loader, 10, 37
Basic command extension, 8, 21; 12, 6; 26, 6
Case conversion routines, 26, 26
Compiler, 17, 24; 18, 22; 19, 24
Data finder, 5, 45
Drawing utility, 30, 22
Header reader, 21, 30
Hex-Decimal-Hex converter, 51, 34
Line scroll, 50, 34
Screen clear, 1, 28
Screen compressor, 46, 30
Screen copy, 4, 24
Screen store, 13,36
Scrolling, machine code, 45, 20
Step read, 16, 29
Superfast load and save, 46, 22; 47, 22
Tasword II erase facility, 48, 6
Text animation, 5, 25
Text routine, 46, 31
Token exchange, 47, 17
Trace routine, 27, 20
User defined character generator, 6, 26
ZX!Basic. 31, 18; 32, 20; 33, 22; 34, 25; 35, 6
ZX!Basic. demo. 36, 22
ZX!Basic. sprite designer, 41, 20

Vic 20:
Games.
Base attack, 1, 36
Fuel dump, 5, 16
3D Maze, 1, 37
Miscellaneous.
Pollen, 3, 36
Trainer, 5, 47
utilities
Big screen, 50, 34
Bit change studies, 1, 23
Function key wedge, 9, 33

Book Reviews

An Amstrad CPC464 Companion, 9,35
Brainteasers for the Commodore 64, 6, 40
Commodore 64, 8, 38
Games for your Sinclair QL, 9, 35
Gateway to computing with the Commodore 16 (Book 2), 5, 47
Getting to know your Sinclair QL, 12, 40
Graphic Programming Techniques on the Amstrad CPC 464, 49, 36
Interfacing the BBC Micro, 14, 38
Learning Forth, 21, 31
Logo on the Sinclair spectrum, 16, 34
machine code for Beginners on the Amstrad, 1, 36
Mapping the Vic, 22, 31
Micro Mates: Simple Movement and Animation, 1, 36
Micro Mates: Simple Music and Sound Effects, 1, 36
Micro Mates: Simple shapes and Pictures, 1, 36
Micro Maths. 4, 36
Microholics, 49, 36
On the Road to Artificial Intelligence: Amstrad CPC$¢$, 1, 36
Peeks and Pokes for the Commodore 64, 49, 36
Quick QL Machine language, 6, 40
Supercharge your Commodore 64, 4, 36
The Art of Computer Graphics, 16, 34
The Byte Brothers Record a rob-

bery, 9, 35
The Complete MSX programmers guide, 8, 38
The On-line Handbook, 12, 40
The Which? software Guide, 14, 38
The Writer and the Word processor, 10, 47
Tim Hartnell's QL Handbook, 4, 36
Women and Computing: The Golden Opportunity, 22, 31
ZX spectrum Whizz kid, 10, 47

Hardware Reviews

ACT Fie, 28, 18
AMX Mouse, 6, 18; 44, 15
Amicron Microscribe, 51, 16
Amiga preview, 31, 12
Amstrad CPC6128, 34, 9
Amstrad CPC664, 17, 14
Amstrad LP–1 light pen, 37, 13
Amstrad PCW8256, 35, 9
Amstrad Pretel Link, 48, 17
Amstrad speech synthesiser and stereo, 8, 14
Atari 130XE, 17, 11
Atari 520ST, 21, 12
BBC B+, 19, 12
Basic extensins and Toolbox ROM (Amstrad), 29, 11
Biztek pad, 12, 21
Bright Star modem, 45, 17
Brother EP44, 20, 9
Brother HR–5C, 20, 8
Brother HR15, 20, 11
Brother M–1009, 20, 8
Brother TC600, 20, 11
CMK 49 Computer, 5, 14
CP/M 68K, 27, 9
CX5ME, 2, 18
Casio CM–100, 50, 39
Casio pocket micros, 12, 17
Centronics GLP, 20, 8
Cheetah Sweet talker, 18, 17
Commodore C–128K, 25, 18
Commodore C128, 46, 11
Computamate Q-Disk Micro QL, 5, 13
DMP–2000 printer, 48, 18
Datapad 16C, 48, 17
Digital Sound Sampler, 2, 19
Double Expander (QL), 36, 17
Enterprise 128, 23, 17
Enterprise Computer, 1, 21
Enterprise/Fidelity TV Monitor, 44, 15
Entrepo Quick Data Drive, 7, 17
Epson P–80, 20, 8
Epson RX80, 20, 11
Graphics light pen, 32, 14
Gunshot Joystick, 6, 18
Ibico LTR-1 printer, 39, 10
Interface III, 27, 10
Joystick survey, 24, 8
Juki 2200, 20, 9
Juki 6100, 20, 11
MA20 RBG interface, 22, 17
MS–2000 Mouse, 49, 20
Magic Mouse, 16, 20
Mailing List ROM (amstrad), 29, 11
Mancomp MO184, 3, 15
Mapit Mapmaker, 36, 17
Medic Disc system, 16, 17
Memory expension board (Amstrad), 50, 39
Memotech Speculator, 41, 11
Microdriver, 27, 10
Microvox Digital Sound Sampler, 45, 17
Music 500, 2, 17
Nightingale/Comnstar package, 26, 18
Opus discovery disc system, 9, 15
Plotmate plus Lincad, Linchart and Lintronic, 45, 14
Power switch, 18, 17
Precision Pixel Plotter, 27, 9
Print Technik Video Digitiser, 30, 18
Psion Organiser, 12, 20
QCom modem, 32, 13
QL RAM boards, 30, 17
Quest Executive Disc system, 16, 17
ROM board (Amstrad), 29, 11
Saga Elite keyboard (Spectrum), 38, 15
Sharp pocket micros, 12, 18
Simplex 256K RAM, 13, 17
Slomo program speed controller, 18, 17
Sound expender module (CBM 64), 51, 14
Specdrum, 44, 14
Spectrum disc Interface, 45, 14
Spectrum upgrade kit, 10, 13
Star SD–10, 20, 9
Star SG–10, 20, 11
Star SG–15, 20, 11
Syntron digidrum, 30, 17
Timatic Multi-Interface (Amstrad), 36, 17
Turbo 60 cartridge (CBM 64), 44, 14
UMI–2B Midi interface, 26, 17
Voice Master, 26, 18

Software Reviews

A Tangled Tale, 38, 10
A View to a Kill, 30, 12
AMX Utilities, 19, 17
APL, 25, 13
Abacus, 11, 12
Abu Simbel Profanation, 34, 15
Ada, 29, 14
Advanced Music system (CBM64), 48, 19
Adventure, 29, 12
African Safari, 4, 19
Air Defence, 5, 20
Airwolf, 16, 14
Alex Higgins' World Pool, 31, 9
Alien, 4, 22
American Football, 5, 21
Amsprite, 34, 13
Amstat 1, 46, 14
Amstest, 40, 12
Ancient quests, 28, 12
Android 2, 36, 13
Answer Back sport, 17, 17
Aqua Racer, 13, 12
Archive, 11, 12
Arnor Z80 Assembler, Disassember and Editor 8, 12
Artist and sprite Designer, 26, 13
Assassin, 24, 21
Assembler, 34, 14
Assembler/Monitor 64, 10, 22
Astro-Clone, 42, 13
Astrology Starter Pack, 12, 12
Atari ST Basic, 43, 9
Azimuth Alignment, 31, 8
Banjax, 12, 12
Batalyx, 47, 19
Battle for Midway, 14, 11
Battle of Britain, 47, 19
BC's Quest for Tyres, 48, 19
Beach head, 28, 13
Biology 1 O-level, 34, 14
Black Night, 7, 12
Blagger, 6, 12
Blagger goes to Hollywood, 18, 11
Blast, 29, 14
Blue Max 2001, 42, 11
Bodyworks, 16, 14
Booty, 11, 11, 17, 17
Bored of the Rings, 18, 13
Brawn Free, 19, 19
Braxx Bluff, 35, 14
Bruce Lee, 16, 11
Buck Rogers, 13, 11; 29, 13
Budget, 36, 12
California Gold rush, 1, 19
Cammac One, 51, 18
Castle Quest, 10, 20
Castle of Jascom, 10, 20
Catastrophe, 30, 13
Centre Court, 6, 12
Character & Sprite Editor, 9, 13
Chemical Formulae, 49, 18
Chemistry, 43, 14
Chicken Chase, 26, 12
Chimera, 48, 21; 50, 17
Chinese Patience, 34, 15
Classic Racing, 7, 13
Clues 'O', 5, 21
Colossal Cave Adventure, 10, 22, 19, 19
Compiler, 30, 11
Contract Bridge 86, 6, 14
Crusade in europe, 45, 12
Cryptamania, 28, 12
Crystal Frog, 32, 11
Curse of the Seven Faces, 7, 13
Cylu, 35, 13; 37, 15
Daley Thompson's Super-Test, 39, 13
Datatext, 10, 20
Death Star Interceptor, 14, 12
Deathstar, 38, 9
Decision in the Desert, 48, 19
Decision Maker, 37, 13
Desert Burner, 32, 9
Devil's Descent, 35, 14
Devil's Lair, 38, 10
Devpack 80, 28, 11
Dian, 29, 14
Dictionary use, 35, 14
Digger Barnes, 19, 18
Disassembler/Relocator, 16, 12
Discpower, 38, 10
Don't Buy This, 22, 16
Don't Panic, 25, 14
Dr Who and the Warlords, 18, 10
Dragons, 36, 14
Dragontorc, 37, 14
Dragontorc of Avalon, 12, 13
Dropzone, 22, 14
Dun Darach, 30, 12
Dynamite Dan, 27, 14
Easel, 11, 12
Editor, 8, 12
Electro, 13, 13
Elidon, 22, 15
Elite, 25, 13; 48, 20
Emerald Isle, 14, 14
Empire of Karn, 7, 13
Entombed, 19, 18
Entrepreneur, 13, 12; 36, 14
EVA, 22, 15
Everybody's a Wally, 23, 13
Everyone's a Wally, 12, 14
F-15 Strike Eagle, 5, 22
Faerie, 36, 12
Fairlight, 40, 15
Family Quiz, 1, 18
Fantasia Diamond, 5, 22
Fantastic Voyage, 16, 14
Fantasy Flight, 3, 17
Fat Man Sam, 50, 19
Fighting Warrior, 44, 10; 50, 18
File Manager, 36, 13
Finders Keepers, 6, 13,; 30, 13
First Word, 12, 12; 20, 14
Flight simulator, 41, 15
Football Manager, 3, 16
Forth, 29, 14
Frank Bruno's Boxing, 32, 10
Frank N Stein, 23, 12
Frankie Goes to Hollywood, 31, 9
French on the Run, 13, 11
Front Line, 4, 22
Galilee, 26, 14
Gardener, 41, 12
Gatecrasher, 24, 21
Gem draw, 48, 12
Gem Write, 48, 13
Genplot, 46, 14
Ghetto Blaster, 24, 21
Glass, 30, 11
Glider Pilot, 14, 12
Go To hell, 27, 14
Graham Gooch's Test Cricket, 27, 16
Grand Slam, 6, 14
GraphiQL, 19, 18
Gremline, 14, 11
Gribbly's Day Out, 18, 10
Guzzler, 8, 11
Gyroscope, 50, 20
Hampstead, 1, 17
Hangman IV, 34, 15
Happy Hour, 28, 13
Hard Hat Mack, 3, 16
Heathrow Air Traffic, 4, 19
Helichopper, 25, 12
Herbert's Dummy, 25, 12
Holy Horrors, 1, 18
Hoimebase, 5, 21
Hopper, 30, 12
Hunchback II, 3, 16
I, of the Mask, 47, 19
Ice Desk-top manager for the QL, 50, 20

Popular Index

Illustrator, 40, 12
Inter-Chart ROM, 50, 20
Inter-Sheet ROM, 48, 20
Interactive Basic Programming, 14, 14
International Basketball, 23, 12
International karate, 51, 20
Jasper, 4, 19
Jet Set Willy II, 32, 10
Jewels of Babylon, 3, 18
Jouste, 17, 18
Julius Caesar, 10, 20
Junkyard Jalopies, 18, 10
Knight Games 1, 42, 13
Knight Lore, 23, 12
Kung Fu, 8, 11
Lattice C, 46, 14
Learning with Leeper, 3, 18
Leonardo, 21, 17
Lightmagic, 18, 10
Little Computer Person, 49, 18
Lock Keeper, 8, 11
Lode Runner, 12, 14
Logo, 2, 24
London Adventure, 36, 12
Macadam Bumper, 40, 12
Mad Doctor, 34, 14
Madcap Manor, 42, 13
Magic, 42, 11
Manic Miner, 2, 25
Marsport, 42, 14
Master Tool Kit, 50, 18
Mastercalc, 20, 14
Masterfile 464, 14, 13
Masterfile Extension Package, 20, 12
Match Day, 2, 24; 39, 12
Match Point, 36, 12
Mathematics, 40, 14
Maverick, 19, 17
Mcoder II, 44, 13
MCT Basic, 22, 16
Merit Chemistry, 17, 17
Meteor Storm, 41, 14
Micro Magpie, 20, 14
Micro Office, 20, 12
Micro Wordcraft, 20, 13
Microdrive Fastload, 18, 13
Micrograph, 51, 20
Micropen, 18, 11
Microscript Word Processor, 16, 11
Microspread, 18, 11
Mighty Magnus, 16, 14
Mikie, 51, 18
Mindshadow, 19, 17
Mini Office, 14, 12; 22, 15
Mon QL, 9, 13
Money Manager, 20, 13
Monopoly, 27, 16
Monster Trivia, 29, 12
Mordon's Quest, 27, 14; 30, 13; 37, 13
Mount Challenge, 36, 14
Mountain Palace Adventure, 13, 12
Mr Ee, 24, 2j0
Mr Freeze, 22, 15
Mule, 16, 12
Multi-Basic ROM, 47, 18
Mushrooms from Mars, 14, 13
Music Composer, 11, 12
Music Construction Set, 43, 14
Music Maker, 6, 13
Music Software, 2, 21
Mystery of the Java Star, 19, 19
New Word, 48, 20
Nick Faldo Plays the Open, 34, 13
Nightmare hall, 9, 12
Nightshade, 37, 14
1985, 4, 20
North Sea Bullion Adventure, 32, 9
Now Games, 37, 13; 41, 12
Now Games 2, 51, 20
Oddjob, 50, 18
On-Court Tennis, 27, 17
On-Field Football, 27, 17
One Man and his Droid, 44, 10
Operation Caretaker, 24, 21
Orm and the Cheep' The Birthday Party, 44, 13
PFS-File, 6, 12
Paradroid, 38, 10
Pascal, 3, 17
Penetrator, 7, 12
Penguin Study Software – Julius Caesar, 10, 20
Phineas Frogg, 26, 13
Pinball Wizard, 18, 12
Plan & Design Your Garden, 1, 18
Plug It, 16, 11
Plutonium Panic, 26, 14
Poker, 31, 8
Pole Position, 18, 12; 32, 9
Pope3ye, 32, 10
Potty Profewsor, 43, 13
Project Planner, 35, 13
project X – The Microman, 29, 13
Protext, 44, 10
QC – C Compiler/Assembler/liner, 21, 17
QC, 43, 13
QL Assembler, 14, 12
QL Bank Account, 26, 14
QL Cash Trader, 22, 14
QL Chess, 26, 13
QL Integrated Accounts, 39, 13
QL Paintbox, 14, 11
QL Pascal, 25, 12
QL Sprite Kit, 13, 13
QL super Backgammon, 18, 13
QSpell, 29, 12
Qcad, 45, 11
Quack a Jack, 5, 22
Quann Tulla, 36, 13
Quill, 11, 12
Quiztimer, 9, 12
Raid on Bungeling, 3, 17
Red Moon, 34, 15
Return of the Joystick, 5, 20
Return to Eden, 2, 24
Revs, 22, 16; 49, 19
Ring of Darkness, 11, 11
Robin of Sherlock, 48, 21
Robin of Sherwood – The Touchstones of Rhiannon, 41, 14
Rocco, 30, 11
Ropland Goes Square Bashing, 10, 21
Roland's Rat Race, 25, 13
Rotating Star-sphere, 14 14
Screen Designer, 4, 20
Screenplay, 41, 14
Seaside Special, 9, 13
Select 1, 1, 19
Seventh Cavalry, 45, 12
Shades, 13, 13
Shado, r0, 14
Shadow of the Unicorn, 46, 14
Shadowfire, 17, 18
Shadowfire Tuner, 44, 13
Shoot the Rapids, 4, 20
Siege on the Volga, 16, 12
Silas, 35, 13
Sir Lancelot, 24, 20
Sky Ranger, 2, 25
Slap Shot, 11, 12
Slave, 12, 14
Smuggler's Cove, 17, 17
Snooker, 3, 18
Softaid, 19, 19
Software Star, 7, 12
Sorcery, 42, 11
Souls of Darkon, 42, 12; 47, 18
Sound Generator, 1, 19
Southern Belle, 31, 8; 41, 14
Space Shuttle, 5, 20
Spectrum Assembly language Course, 27, 14
Spectrum Simulator, 12, 13
Speech ROM, 50, 17
Splat!, 6, 14
Spy Hunter, 17, 18
Spy vs. Spy, 9, 12
St. Crippens, 32, 11
Star Strike 3D, 39, 12
Star Watcher, 10, 22
Starquake, 41, 18
Stellar 7, 6, 14
Steve Davis Snooker, 8, 11
Subsunk, 23, 13
Subterranean Striker, 43, 13
Super Pipeline 2, 18, 13
Super Zaxxon, 41, 14
Supercalc 2, 49, 17
Supercode, III, 11, 11
Superscript, 28, 11
Supertype, 28, 13
Survivor, 9, 12
Swords and Sorcery, 49, 17
Talos, 38, 9
Tankbusters, 28, 12
Tas-Spell, 49, 19
Tasword 6128, 50, 19
Tau Ceti, 46, 14
Technician Ted, 2, 25
10 Pack, 10, 21
Terra Force, 1, 17
Terrormolinos, 42, 13
That's the Spirit, 34, 13
The ADA Training Course, 24, 20
The Amulet, 32, 9
The Artist, 37, 15
The Ashes of Alucard, 39, 12
The Biz, 14, 14
The Captive, 27, 16
The Chess Game, 28, 11
The Code Machine, 23, 13
The Covenant, 31, 9
The Deeds of Glengarry Hall, 39, 12
The Epic, 40, 15
The Evolution, 49, 18
The Great American Road Race, 32, 11
The Great Space Race, 4, 22
The Hellion, 2, 25
The Hitch-Kikers Guide to the Galaxy, 6, 13
The Hobbit, 37, 14
The Hollow, 40, 14
The Investment Mnitor, 20, 14
The Island of Xaan, 5, 22
The Joffe Plan, 9, 13
The Key Factor, 26, 14
The Lords of Midnight, 10, 21
The Open – royal Birkdale, 36, 13
The Prediction Birthday File, 4, 20
The Quest for the BBC Joystick, 11, 11
The Quest for the Holy Grail, 48, 12
The Rats, 40, 15
The RefQL Database, 27, 17
The rocky Horror Show, 25, 14
The Secret of St. Bride's, 42, 12
The Tracer Sanction, 18, 11
The Way of the Exploding Fist, 25, 14
The Wild Bunch, 27, 16
Theatre Europe, 18, 12
Their Finest Hour, 50, 19
3D Stunt rider, 40, 14
Three Weeks in Paradise, 50, 17
Thrusta, 7, 13
Thunderbirds, 49, 19
Time Traveller, 6, 12
Titan, 12, 13
Tomahawk, 47, 18
Tops and Tails, 12, 13
Toy Bizarre, 8, 12
Traffic, 39, 13
Trains, 10, 22
Transact, 39, 12
Transmat, 26, 12
Trouble in Store, 1, 18
Turntaking, 26, 12
Typing Tutor, 12, 12
Unique Assembler, 12, 14
Upper Gumtree, 8, 12
Utopia, 45, 11
Vampire Killer, 17, 18
Varitalk, 13, 11
Viking Raiders, 13, 11
Vu-Calc. 1, 17
War machine, 28, 12
Waterloo, 38, 9
Wham – The Music box, 45, 11
White Knight, 42, 11
William Wobbler, 38, 9
Willow Pattern, 49, 19
Winter Games, 43, 14
Winter Sports, 51, 18
Wizard and the Princess, 37, 15
Wizard's Lair, 22, 14
World Cup Soccer, 46, 14
World Series Baseball, 14, 13
Yie Ar Kung Fu, 49, 17
Zapp, 21, 17
Zkul and West, 48, 21
Zyto, 44, 13

Organise your Discs with the latest tool from
HiSoft
Catalog

HiSoft Catalog is the ideal utility for owners of CP/M machines like the Amstrad CPC range (with discs) and the PCW8256. It allows you to keep track of all your files spread across numerous discs, with date-stamping for each disc.

Catalog lets you find each occurrence of a file or group of files, it allows you to delete and rename files and it provides handy information such as the number of records in each file.

Catalog lets you give discs multi-character labels, with a full description of each disc's usage. All your floppy discs - even your hard discs - may be maintained and kept manageable with this new program.

HiSoft programmers use it all the time to locate up-to-date versions of compilers and so on. You'll find Catalog just as useful, whether you're a programmer, a database manager, a journalist or even a manic games-player. If you have lots of discs you need HiSoft's Catalog.

All this on 3" disc for your Amstrad computer running CP/M 2.2 or CP/M Plus and for almost any Z80 CP/M machine - please call or write to check availability of Catalog in your disc format.

Catalog is only £14.95

HiSoft sells a wide variety of programming languages and tools for most computers - all the Amstrad computers, the ZX Spectrum, MSX, CP/M and many more. For details of the programs advertised here and the rest of our range, please write or call.

HiSoft **Pascal** is an almost complete implementation of the Jensen/Wirth standard Pascal and, like all our compilers, produces pure Z80 machine code as its output. HiSoft's supreme **C** compilers run on every popular Z80 computer and provide just about all the features of C detailed in the Kernighan & Ritchie 'bible' (except floats).

Devpac is HiSoft's Zilog-standard Z80 macro assembler and debugging package, adopted by many computer manufacturers as their **official** machine-code development tool.

HiSoft also supplies **The Colt** Basic compiler for ZX Spectrum and **TurboBASIC** for Amstrad CPC464, CPC664 and CPC6128 owners.

We accept Access and Visa cards and are happy to take written or telephone orders. Each product we sell comes with complete documentation, is *guaranteed for life* and is fully-supported by our highly-trained technical staff. All orders are despatched by *first-class post*. Please don't forget to say what product you want and which machine it is for. Please call for export and trade prices.

HiSoft

180 High Street North Dunstable LU6 1AT
Telephone (0582) 696421

E/D40 MEGASAVE SOFTWARE

46 THE MALTINGS, STANSTEAD ABBOTS, WARE, HERTS

SPECTRUM 48K	RRP	OUR PRICE		RRP	OUR PRICE		PPR	OUR PRICE
Lord of the Rings	15.95	11.95	Winter Games	7.95	5.45	Quake Minus One	9.95	6.95
Tomahawk	9.95	6.95	Transformers	7.95	5.45	Mercenary	9.95	6.95
Roller Coaster	6.95	4.95	West Bank	7.95	5.70	Skool Daze	6.95	4.75
Skytox	7.95	5.75	Cosmic War Toad	7.90	5.45	Bounder	9.95	6.95
Commando	9.95	5.45	Now Games II	8.95	6.50	Uridium	8.95	6.75
Gyro Scope	7.95	5.45	Movie	7.95	5.75	Sold A Million	9.95	6.95
Enigma Force	9.95	6.95	FA Cup	8.95	6.75	Zoids	8.95	6.75
Back to Skool	6.95	4.95	ID	7.95	5.75	Kung Fu Master	9.95	6.99
Zoids	8.95	6.50	Showjumping	7.95	5.75	Commando	9.95	6.99
Saboteur	**8.95**	**6.50**	Vectron	7.95	5.45	The Young Ones	7.95	5.45
Yie Ar Kungfu	7.95	5.45	Twister	7.50	5.45	Time Tunnel	9.95	6.99
Spitfire 40	9.95	6.90	**COMMODORE 64/128**			Rambo	8.95	6.50
Elite	14.95	9.95	Eidolon	9.95	6.99	Yie Ar Kung Fu	8.95	6.75
Gerry the Germ	7.95	5.75	Back to the Future	9.95	6.99	Transformers	8.95	6.50
The Young Ones	7.95	5.45	Critical Mass	8.95	6.50	Ball Blazer	9.95	6.95
Sold a Million	9.95	6.95	Lord of the Rings	15.95	11.95	Comic Bakery	8.95	6.75
Yaba Daba Doo	7.95	5.45	Rock 'n' Wrestle	9.95	6.95	Nightshade	9.95	6.95
Zorro	7.95	5.45	Goonies	9.95	6.95	Hard Ball	9.95	6.99
Rasputin	7.95	5.45	Enigma Force	9.95	6.95	Dragonskulle	9.95	6.95
Oasis Capers	7.95	5.75	Yie Ar Kung Fu	7.95	6.50	Doomadarks Revenge	9.95	6.99
Gun Fight	9.95	6.95	Gyroscope	7.95	6.50	G. Capes Strongman	7.95	5.75
B. McGuigan's Boxing	7.99	5.45	Desert Fox	9.95	6.99	FA Cup	8.95	6.75
Rambo	7.95	5.45	Winter Games	9.95	6.99	Elektraglide	8.95	6.80
Knight Rider	7.95	5.45	Koro Nis Rift	9.95	6.95	Saboteur	8.95	6.75

All prices include free fast delivery & same day despatch, when available. Personal callers welcome. 5% discount on all orders for seven or more tapes or to a value over £45. Cheques/POs/ECs payable to ED40. For up to date news on available & Access orders ring (0920) 870568. Free Game included for orders over £20 or overseas orders. P0890

commodore HORIZONS

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

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

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

P0365

RANDOM NUMBERS

by Dr R K Lowry

The SuperBasic RND function is based upon one of the most effective pseudo-random number generation algorithms I have encountered and the design of calling sequence makes it a delight to use in a wide range of situations. It therefore came as a surprise to me to find that it could not be accessed from machine code without a direct call to the Rom routine which is version dependent. Many machine code programs, particularly games, require a source of pseudo random numbers so what is the solution?

There are a couple of techniques that I have seen used. The first uses the Rom. A pointer is set to the base of the Rom and the random number routine simply returns the contents of the Rom a byte or word at a time. This works on some micros but there is a problem on the QL. The object code for the 68000 contains a high proportion of zeros, due in the main to 16 or 32 bit constants, which gives any random number routine using this method a strong zero bias.

The second method is the 16-bit 'random number' at address 2802E hex. This is *not* a random number but is in fact a counter incremented by a 50 hz interrupt service routine. Thus the sequence of numbers produced increment uniformly and it is possible to get the same value several times if the random number is sampled frequently. However, this may not be important if a subfield (eg, the least significant three bits) of the random number is used and sampling is infrequent.

Another problem with this method can be speed. Consider a loop which returns a random number in the range 256 to 512. If this is entered when 2802E contains 513, the loop will hang around for about 10 minutes until a suitable value is obtained. This may of course be coded around by taking a subfield of the random number and manipulating it. However, if the true nature of this 'random number' is not appreciated, it can take a long time before you realise why your program occasionally 'hangs'.

What alternatives are there? If you require a series of positive 16-bit random numbers (ie, random numbers in the range 0 to 32767) then the formula: NEXT = (LAST*1541 + 13849) MOD 32768 works quite well. However, the whole random number must be used and not just a subfield or the sequence of random numbers becomes extremely predictable. Likewise loops which return a random number within a specified range should be avoided.

In my opinion algorithms based upon setting a particular bit by XORing and then spinning the bits work better in the situations most commonly found in machine code programming. The assembler listing given is based upon an algorithm where a long word is shifted a single bit to the right with the most significant bit set to the result of bit two XOR bit nine. This has worked well in all but two situations.

First, the random number must not be seeded with zero or the only result possible is zero. Secondly, it is common practice to obtain a subfield of a random number by ANDing with a constant; ie, the subfield is the least significant *n* bits of the random number. If this is tested to control a program branch requiring a smaller subfield will no longer be random. For example, consider a branch which is executed when the random number ANDed with 63 returns zero. If a random number obtained in that branch is ANDed with 15 the result will always be zero. However, this can easily be overcome by reseeding – I normally use $2802E – or by using subfields other than the least significant *n* bits.

I hope this article illustrates some of the pitfalls awaiting QL machine code programmers who need random number generators. However, do not be too downhearted if you cannot work out which algorithm is best suited to your needs. My usual technique is to include several algorithms in a program, each as a separate subroutine, and select one of them as the 'work-horse'. In situations where the results are not what I require, I simply use one of the other algorithms.

```
RANDNO    DC.L        699678
*
* Subroutine Random
*
* 16-bit pseudo random number
* generator
*
* Output register
*
* D1.W - Random number
*
* D2/A0 Smashed
*
RANDOM    LEA         RANDNO,A0
*
* XOR bits 2 and 9
* Store result in extend bit
*
          MOVE.B      3(A0),D1
          ROXR.B      #1,D1
          MOVE.B      2(A0),D2
          EOR.B       D2,D1
          ROXR.B      #2,D1
*
* Place result in MSB and rotate
* long word 1 bit to the right
*
          ROXR.W      (A0)
          ROXR.W      2(A0)
*
* Return LSW as random number
*
          MOVE.W      2(A0),D1
          RTS
          END
```

THE COMPUTER DEPOT
205 BUCHANAN ST, GLASGOW G1 2JZ

C16/plus 4	RRP	OURS
Ace Combat	9.95	8.45
Beach-Head*	6.95	4.95
Light Simulator	4.99	4.25
Katus	4.95	4.25
3D Glooper	4.95	4.25
Winter Olympics	6.95	5.90
Reach for the sky	6.95	5.90
Thai Boxing*	5.95	4.95
Gremlins	9.95	3.75
Roller Kong*	6.95	5.90
Olympic Skier	6.95	5.90
Fl Path 737	6.95	5.90
Atlantis*	6.95	5.90
Cuthbert in Space	6.95	2.99
Cuthbert in Cooler*	6.95	2.99
Olympiad*	6.95	2.99
Rig Attack*	6.95	2.99
Zap Em*	6.95	2.99
3 Adventures pack	23.85	9.99
Starter Pak I	14.95	7.95
Starter Pak II	14.95	11.99
20 different	each	1.99
Dozens more	from	2.99
C16 joystick		950
Commando	7.95	6.30

ELECTRON	RRP	OURS
Beach-Head	7.95	6.75
Football Manager	8.95	7.50
The Boss	6.95	5.90
Yie Ar Kung Fu	8.95	6.75
Hampstead	7.95	6.75
Blockbusters	7.95	6.75
5a Side Soccer		2.99
Robotron		4.99
6 pack wargames	ONLY	4.99
Gremlins	9.95	3.75
Dynamic games (book)	4.95	2.99

Over 50 different in stock, all at ONLY £2.99 EACH including educational

Mined Out	1.99
Starmaze 2	1.99
Quickshot 2 joysticks	6.25
Commodore joysticks	4.95

PADDLES CBM/ATARI ..... 7.50 PER PAIR
5¼" DISKS 0.99
AMSTRAD 3" 3.95

Also in stock: Atari, MSX, Vic 20, C64, Spectrum, Amstrad etc.

ATARI PCS	RRP	OURS
Star Raiders	6.99	5.99
Solar Fox	7.95	4.99
Donkey Kong		4.99
River Raid	9.95	8.95
E.T.		4.99
Soccer/football	9.99	8.99
Pole position	12.99	11.50
Exploding Fist	9.95	8.45
Auf Wiedersein Pet	7.95	3.95
Marine Wars	4.95	3.99
Pole Yan	4.95	3.99
Dozens more from £3.99**		

COLECOVISION	RRP	OURS
Roller Controllers	59.95	19.99
Over 20 games	EACH	6.99

P + P included. Overseas add 75p airmail. ACCESS phone 041-332 3944. Immediate dispatch. Free game with order over £20. Hundreds more titles in stock from £1.99. S.a.E for full list, state machine. PD824A

ANCIENT & MODERN
Unit 111 (Rear), Washington Road, West Wilts Trading Estate, Westbury, Wilts

SPECTRUM		
SPITFIRE 40	9.95	6.99
ZOIDS	7.95	4.99
COMMANDO	7.95	4.99
RAMBO	7.95	4.99
WINTER GAMES	7.95	4.99
YIE AR KUNG FU	7.95	4.99
SABOTEUR	8.95	6.20
ELITE	14.95	9.49
GUNFRIGHT	9.95	6.99
TOMAHAWK	9.95	6.99
MOVIE	7.95	4.99
RASPUTIN	7.95	4.99
ART STUDIO	14.95	10.99
STARQUAKE	7.99	5.95
MACHINE CODER III	12.95	8.99
PARATROOPERS	5.99	1.50

AMSTRAD		
YIE AR KUNG FU	8.95	6.20
SCRABBLE	9.95	6.99
LORD OF THE RINGS	15.95	11.25
SWEEVO'S WORLD	7.95	5.95
GRAPHICS ADV. WRITER	22.95	16.99
PROTECT (disc)	26.95	21.00
GLEN HODDLE SOCCER	8.95	6.50
DEVIL'S CROWN	9.09	6.50
MASTER CHESS	8.95	3.99

ATARI		
CHIMERA	3.95	2.99
MERCENARY	9.95	6.99
SMASH HITS 4	9.95	6.99
GODNIES	9.95	6.99
EIDOLON	9.95	6.99
ELEKTRA GLIDE	8.95	6.50
LODERERS REALM (disc)	14.95	10.99
F15 STRIKE EAGLE (disc)	14.95	10.99

ELECTRON		
CITADEL	9.99	7.50
FLIGHT PATH 747	5.95	4.95
FIVE A SIDE SOCCER	5.95	2.99
3D BOMB ALLEY	5.95	2.99
STAR DRIFTER	3.95	2.99
GREMLINS	7.95	5.99
OVERDRIVE	7.95	5.99
MINED OUT	5.95	1.99
JUMP JET	9.95	6.99
YIE AR KUNG FU	8.95	6.20

COMMODORE 64		
ROCK 'N' WRESTLE	9.95	6.99
BOUNDER	9.95	6.99
BACK TO THE FUTURE	9.95	6.99
DRAGONSKULLE	9.95	6.99
TIME TUNNEL	9.95	6.99
ELEKTRA GLIDE	8.95	6.20
DESERT FOX	9.95	6.99

ZOIDS	9.95	6.99
YIE AR KUNG FU	8.95	6.20
BASILDON BOND	9.99	6.75
HARD BALL	9.95	6.75
KUNG FU MASTER	9.95	6.99
QUAKE MINUS ONE	9.95	6.50
ARABIAN NIGHTS	7.00	2.99

COM 16/PLUS 4		
THAI BOXING	5.95	4.95
TOM THUMB	6.95	5.95
WINTER OLYMPICS	6.95	5.95
GHOST TOWN	5.95	4.95
KUNG FU KID	6.95	5.50
BEACH HEAD	7.95	6.50
KNOCKOUT	3.99	2.25
JET BIRX	6.95	5.30
CLASSICS II	9.95	7.50
STEVE DAVIS SNOOKER	7.95	5.99

MSX		
HYPERSPORTS 2	14.95	10.50
YIE AR KUNG FU 1 or 2	14.95	10.50
MACHINE CODE TUTOR	14.95	11.50
ZIPPER	3.95	3.25
ALIEN 8	9.95	7.50
EDDIE KIDD	7.95	5.95
BOXING	14.95	10.50
SOCCER	14.95	10.50
JUMP JET	9.95	7.95

All prices inc. P & P. Overseas please add 75p per tape. Thousands of titles stocked. Please send for full lists stating machine. Lists also available for Dragon, BBC & Vic 20. Cheques/POs payable to Ancient and Modern, Unit 111 (Rear), Washington Road, West Wilts Trading Estate, Westbury, Wilts. PD892

PPC

****** SPECTRUM ******

GAME	RRP	OUR PRICE
VECTRON	7.95	5.25
THEY SOLD A MILLION	9.95	6.75
MOVIE	7.95	5.45
TRANSFORMERS	7.95	5.45
FA CUP	7.95	5.25
THE FORCE	9.95	6.75
MUGSEY'S REVENGE	7.95	5.25
MAX HEADROOM	9.95	9.95
IMPOSSIBLE MISSION	7.95	5.45
WEST BANK	7.95	5.25
RAMBO	7.95	5.25
HALL OF FAME	9.95	6.75
RUNESTONE	7.95	5.45
BACK TO SCHOOL	6.95	4.50
WATERLOO	9.95	7.00
COSTA CAPERS	7.95	5.25
GERRY THE GERM	7.95	5.25
RASPUTIN	7.95	5.45
SABOTEUR	8.95	6.25
KNIGHT RIDER	7.95	5.45
SIR FRED	9.95	6.25
LASER BASIC	14.95	10.50
GYROSCOPE	7.95	5.45
ELITE	14.95	9.75
ART STUDIO	14.95	11.00
ROBIN OF SHERLOCK	7.95	4.75
THREE WEEKS IN PARADISE	9.95	6.75
NEVERENDING STORY	9.95	7.00
SKYFOX	7.95	5.25
SEAS OF BLOOD	9.95	6.00
SWORDS OF SORCERY	9.95	6.75
XCEL	7.95	4.95
TOMAHAWK	9.95	6.50
ROBOT MESSIAH	7.95	5.45
ZOIDS	7.95	5.25
SWEEVO'S WORLD	7.95	5.45
YIE AR KUNGFU	7.95	4.50
ARENA	9.95	7.00
ROLLER COASTER	6.95	4.75
COMMANDO	7.95	4.50
2112 AD	7.95	5.45
AUSTERLITZ (Sequel to Waterloo)	9.95	7.00
LORD OF THE RINGS	15.95	11.75
MIND SHADOW	7.95	5.45
FORBIDDEN PLANET	7.95	5.45
BARRY McGUIGAN	7.99	5.45
WINTERGAMES	7.99	5.45
SPITFIRE 40	9.95	7.00
DESERT RATS	9.95	7.00

****** COMMODORE ******

THEY SOLD A MILLION	9.95	6.75
HALL OF FAME	9.95	6.75
FA CUP	7.95	5.25
ELEKTRZGLIDE	8.95	6.25
GEOFF CAPES	8.95	6.25
THE FORCE	9.95	6.75
MZX HEADROOM	9.95	6.75
BATTLE FOR BRITAIN	9.95	5.95
DRAGONSKULLE	9.95	6.75
DOOMSDARK REVENGE	14.95	11.00
BOUNDER	9.95	6.75
KUNG FU MASTER	9.95	6.75

GAME	RRP	OUR PRICE
CRITICAL MASS	8.95	6.25
KORONIS RIFT	9.99	7.00
ROCK'N' WRESTLE	9.95	7.00
SUPERMAN	9.95	5.00
LORD OF THE RINGS	15.95	12.25
YIE AR KUNGFU	8.95	6.25
SUPERBOWL	9.95	6.75

HARDBALL 9.95 7.00

URIDIUM	9.95	7.00
BACK TO THE FUTURE	9.95	6.75
DESERT FOX	9.95	6.75
ELITE	14.95	9.75
EIDOLON	9.95	6.75
BALL BLAZER	9.95	7.00
FIGHT NIGHT	9.95	5.95
RAMBO	8.95	6.25
SCALELECTRIX	9.95	7.00
ELECTRASOUND	14.95	10.00
LASER BASIC	14.95	10.50
MERCENARY	9.95	7.00
LITTLE COMP. PEOPLE	9.95	6.75
BATTLE OF THE BULGE	9.95	7.00
COMIC BAKERY	8.95	6.25
ZOIDS	8.95	6.25
WINTER GAMES	9.95	6.75
LITTLE COMP. PEOPLE (disk)	14.95	10.95
MIND SHADOW	9.95	6.75

****** AMSTRAD ******

RAMBO	8.95	6.25
SKYFOX	9.95	6.75
YIE AR KUNG FU	12.95	9.25
BRUCE LEE	9.95	7.00
FA CUP	7.95	5.25
MUGSEYS REVENGE	8.95	8.95
MAX HEADROOM	9.95	6.75
DESERT RATS	9.95	6.75
LASER BASIC	14.95	10.50
WORM IN PARADISE	9.95	7.00
HYPERSPORTS	8.95	6.25
YIE AR KUNG FU	8.95	6.25
BRUCE LEE (Disk)	14.95	10.50
THEY SOLD A MILLION	9.95	7.00
THEATRE EUROPE	9.95	6.75
BARRY McGUIGAN	9.95	6.75
SPITFIRE 40	9.95	7.00
ELITE	14.95	10.50
3D GRAND PRIX (disk)	14.95	10.50
HIGHWAY ENCOUNTER (DISK)	14.95	10.50
BRUCE LEE	9.95	7.00
WHO DARES WINS II	8.95	6.25
TORNADO LOW LEVEL	8.95	6.25

ALL AMSTRAD DISKS & UTILITIES ARE IN STOCK
BOX OF TEN DISKS 38.00

ALL PRICES INCLUDE P&P
OVERSEAS ORDERS ADD £1.00 P&P PER TAPE

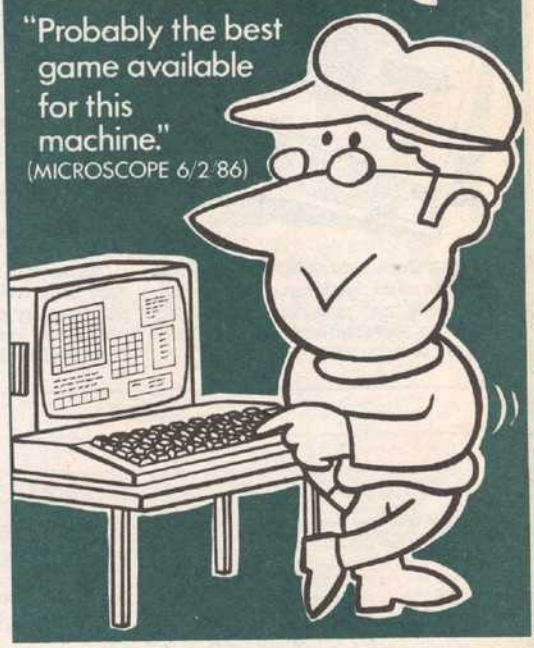
ANY TITLES NOT SHOWN CAN BE SUPPLIED AT 25% OFF RRP. PLEASE MAKE CHEQUES/POs PAYABLE TO: PPC and SEND TO:

PPC MAIL ORDER
9 BENNECK HOUSE, 100 TOLPITS LANE
WATFORD, HERTS WD1 8PZ
(0923 43855)

PD827A

NOW! COMPUTER SCRABBLE for the SINCLAIR QL

"Probably the best game available for this machine." (MICROSCOPE 6/2/86)



	AMSTRAD	BBC/B	CBM 64	EINSTEIN	SPECTRUM	QL
CLUEDO	*	○	*		*	○
MONOPOLY	*	*	*	*	*	○
SCALEXTRIC	○		* †		○	
SCRABBLE	*	*	*	*		
RRP cass	9.95	12.95	12.95		9.95	14.95 (cart)
disk	14.95	14.95	14.95	15.95		

* *Available Now!* † *CBM 64 Scalextric, £9.95 (cassette)* ○ *Available 2nd quarter.*

MAIL ORDER:
Please send cheque or Postal order to: LEISURE GENIUS, 3 Montagu Row, London W1H 1AB.

Please send me SCRABBLE®, for the SINCLAIR QL computer, at £14.95.

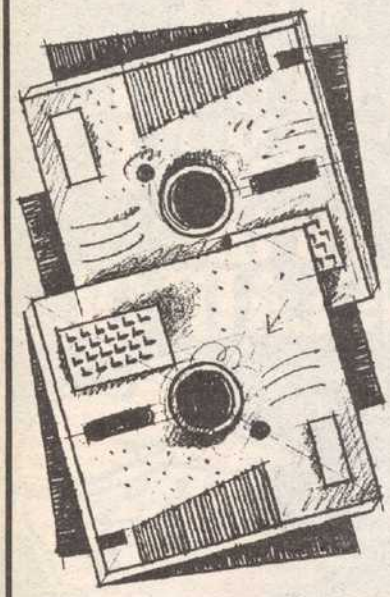
NAME _____

ADDRESS _____

POST CODE _____

CLUEDO® trade mark and copyright licensed by Waddingtons Games Ltd
MONOPOLY® is produced under license from Parker Brothers and Waddingtons Games Ltd SCALEXTRIC® is a registered trade mark of Hornby Hobbies Ltd. SCRABBLE® trade mark and copyright licensed by J W Spear & Sons PLC. All copyrights reserved LEISURE GENIUS™ is a registered trade mark of Winchester Holdings Ltd.

Software by... Leisure Genius
3 Montagu Row, London W1H 1AB.



AUTO-RUN

by W Wako

The Commodore 64, unlike a lot of the other machines on the market, does not provide for a direct means of a universal load and auto run of programs.

To overcome this oversight, the following utility was written and will load and execute programs saved to disc or tape be they in Basic or machine code.

A little understanding of the Operating System is required to understand the operation of the Loader-Run Program. When the machine is switched on and has set everything up, the machine then scans the keyboard buffer as a part of the Basic interrupt sequence. Fortunately for us, those clever "Commodore People" inserted a jump vector as part of this routine. All that is required is that when loading, this vector is altered to point to the start of the Loader Routine. After the load is completed, the system is thus directed to the start of the Loader Program which in turn loads and executes the desired program, having restored the altered vector to its original value.

The Loader Program is loaded into the Ram area from $02A7 to $02FF, so be sure that any programs to be loaded are not loaded to this area! This Ram area is right next to the Basic vectors. So it is a simple matter of altering the desired vector and saving all as part of the Loader-Run Program.

The utility provides some degree of error checking of the Data statements in the form of a checksum at the end of each line. If all is well, when the utility is Run there will be a slight delay whilst the machine code routines are set up. The utility will then issue a series of prompts one of which will be a request for a "File Name". This refers to the name of the program you wish to be loaded and run. You will also be asked for the "Program Name", which is the name assigned to the Loader Program.

For machine code programs you will be asked for a "Start Address". This refers to the logical start of the program, ie, the location to which to jump to for the execution of your program. Remember to terminate all your prompts with a carriage return.

On loading your Loader Program be sure to load it as a machine code program, regardless of whether the file it will load is in Basic or machine code.

```
5 REM *** LOAD AUTO-RUN UTILITY BY W.WAKO ***
10 POKE 52,80 :POKE 56,80 :CLR
20 PRINT"@"
30 GOSUB 2000
40 GOSUB 400
50 GOSUB 550
60 GOSUB 1000
70 SYS 32769
80 END
395 REM ..............................
400 REM          SET DEVICE TYPE
405 REM ..............................
410 PRINT
420 PRINT "SAVING TO TAPE (T) OR "
430 INPUT "SAVING TO DISC (D) ";K1$
440 IF K1$<>"T" AND K1$<>"D" THEN 420
450 IF K1$="T" THEN 490
460 POKE 679,0   :REM BOOT FROM DISC
470 POKE 32768,8 :REM SET DISC SAVE
480 RETURN
490 POKE 679,1   :REM BOOT FROM TAPE
500 POKE 32768,1 :REM SET TAPE SAVE
510 RETURN
545 REM ..............................
550 REM     SET FILE PARAMETERS
555 REM ..............................
560 PRINT
570 INPUT "FILE NAME IS ";FN$
580 FL=LEN(FN$) :IF FL>16 THEN 560
590 POKE 745,FL :IF FL=0 THEN 560
600 FOR N1=1 TO FL
610 POKE 745+N1,ASC(MID$(FN$,N1,1))
620 NEXT N1
630 PRINT
640 INPUT "BASIC FILE (Y/N) ";K1$
650 IF K1$<>"Y" AND K1$<>"N" THEN 630
660 IF K1$="N" THEN 740
670 ME$="RUN"
680 POKE 734,5    :POKE 735,13
690 FOR N1=1 TO 3
700 POKE 735+N1,ASC(MID$(ME$,N1,1))
710 NEXT N1
720 POKE 739,13
730 RETURN
740 PRINT
750 PRINT "START ADDRESS OF FILE"
760 INPUT " IS (DECIMAL) ";AD$
770 IF LEN(AD$)>5 THEN 740
780 GOTO 800
790 AD$=AD$+" "
800 IF LEN(AD$)<5 THEN 790
810 AD$="SYS"+AD$
820 POKE 734,10    :POKE 735,13
830 FOR N1=1 TO 8
840 POKE 735+N1,ASC(MID$(AD$,N1,1))
850 NEXT N1
860 POKE 744,13
870 RETURN
995 REM ..............................
1000 REM       SET PROGRAM PARAMETERS
1005 REM ..............................
1010 PRINT
1020 INPUT"PROGRAM NAME IS ";PN$
1030 PL=LEN(PN$)
1040 IF PL>16 THEN 1010  :IF PL=0 THEN 1010
1050 POKE 28960,PL
1060 FOR N1=1 TO PL
1070 POKE 28927+N1,ASC(MID$(PN$,N1,1))
1080 NEXT N1
1090 RETURN
1995 REM ..............................
2000 REM      SET UP BOOT/SAVE PROGRAMS
2005 REM ..............................
2010 MY=679
2020 LN=3010
2030 GOSUB  2220  :REM BOOT PROGRAM
2040 MY=32768
2050 LN=3210
2100 GOSUB  2220  :REM SAVE PROGRAM
2110 RETURN
2215 REM ..............................
2220 REM          SET UP ROUTINE
2225 REM ..............................
2230 FOR N1=1 TO 7
2240 GOSUB 2500
2250 NEXT N1
2260 RETURN
2495 REM ..............................
2500 REM        MACHINE CODE POKE
2505 REM ..............................
2510 A2=0
2520 FOR N2=1 TO 8
2530 READ A1      :A2=A2+A1
2540 POKE MY,A1
2550 MY=MY+1
2560 NEXT N2
2570 READ A1      :A2=A2-A1
2580 IF A2=0 THEN RETURN
2590 PRINT
2600 PRINT "DATA ERROR IN LINE ";LN-10
2610 END
2995 REM ..............................
3000 REM            BOOT DATA
3005 REM ..............................
3010 DATA 1,173,167,2,174,167,2,160,846
3020 DATA 1,32,186,255,173,233,2,162,1044
3030 DATA 234,160,2,32,189,255,169,0,1041
3040 DATA 162,255,160,255,32,213,255,120,1452
3050 DATA 174,222,2,134,198,202,234,189,1355
3060 DATA 223,2,157,119,2,202,16,247,968
3070 DATA 88,32,83,228,108,2,3,5,549
3195 REM ..............................
3200 REM            SAVE DATA
3205 REM ..............................
3210 DATA 8,120,169,168,141,2,3,169,780
3220 DATA 2,141,3,3,169,1,174,0,493
3230 DATA 128,160,0,32,186,255,173,32,966
3240 DATA 113,162,0,160,113,32,189,255,1024
3250 DATA 169,2,133,252,169,167,133,251,1276
3260 DATA 169,251,162,13,160,3,32,216,1006
3270 DATA 255,88,32,83,228,96,255,0,1037
```

CUT PRICE SOFTWARE

Spectrum	RRP	OUR PRICE
Rock & Wrestle	8.95	6.00
Monty on the Run	7.95	6.25
Elite	14.95	10.00
Vectron	7.95	6.00
Skyfox	7.95	6.00
West Bank	7.95	6.00
Starquake	7.95	5.50
Commando	7.95	5.00
Rambo	7.95	5.50
Sold A Million	9.95	7.00
Laser Basic	14.95	11.00
Yie Ar Kung Fu	7.95	4.95
Now Games II	8.95	6.25
Lord of the Rings	15.95	11.95
Enigma Force	9.95	6.50
Sounds & Sorcery	9.95	7.00
Winter Games	7.95	5.50
Gun Fright	9.95	6.50
Zoids	7.95	5.40
MOVIE	7.95	5.00
Battle of the Planets	9.95	7.00
Cybernun	9.95	6.95

Commodore		
Elite	14.95	10.00
Koronis Rift	9.95	7.25
Kung Fu Master	9.95	7.25
Superman	9.95	5.00
Bounder	8.95	7.25
Eidolon	9.99	7.45
Winter Games	9.95	6.95
Cosmic Bakery	8.95	6.25
Dragonskull	9.95	7.25
Laser Basic	14.95	11.00
Laser Basic (D)	19.95	14.00
Freeze Frame	39.95	35.95
Lord of Rings	15.95	11.00
Enigma Force	9.95	6.50
Elektraglide	8.95	6.50
Elektrasound	15.95	10.00
Back to Future	9.95	7.00
Nightshade I	9.95	7.25
Rock & Wrestle	9.95	7.00
Hard Ball	9.95	7.25
Superbowl	9.95	6.95
AMSTRAD		
Laser Basic	14.95	11.00

Laser Basic (D)	19.95	14.00
Transact	29.95	5.99
Bruce Lee	9.95	7.25
Invostat	29.95	5.99
Cyrus II Chess (disk)	13.95	10.95
Sorcery II (Disk only)	14.95	10.95
Nightshade	9.95	7.25
Elite (Jan 86)	14.95	11.00
Battle of Planets	9.95	7.25
Hypersports	8.95	6.50
Mini Office II	16.95	12.95
Sold a Million	9.95	7.00
Spy Vs Spy	9.95	6.95
Who Dares Wins II	9.95	7.25
Fighting Warrior	8.95	6.50
Lord of the Rings	15.95	11.00
Skyfox	9.95	7.25
Spitfire 40	9.95	7.25
Mini Office II (D)	19.95	14.95
Cyruss II Chess	9.95	7.25
Daleys Supertest	8.95	6.25
Zorro	9.95	7.00
Sold a Million (Disk)	14.95	10.00
Scrabble	9.95	7.00

Large selection of AMSTRAD disk s/w available at discount prices. AMSTRAD blank disks. £39.95 per box of 10.
Large range of CBM64 disk available. This is just a small selection from our stocks. Please ring for more details

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

CUT PRICE SOFTWARE, 4 Sinclesbury Hatch, Harlow, Essex CM19 4ET
Tel: (0279) 24433 (24hr ansaphone) PD743

C & F ASSOCIATES

BBC	RRP	OUR PRICE
Mini Office 2	14.95	12.45
Mini Office 2 (D)	16.95	14.95
Nightshade	9.95	7.25
Citadel	9.95	7.50
Worm in Paradise	9.95	7.25
Moonraider	7.95	2.95
Bullseye	8.95	6.95
Yie Ar Kung Fu	9.95	7.50
Ghouls	7.95	2.50
Cybertron Mission	7.95	2.95
Classic Arc. Games	5.95	4.95
Croaker	7.95	2.95
ELECTRON		
Combat Lynx	8.95	6.75
Classic Arc. Games	5.95	4.95
Yie Ar Kung Fu	8.95	6.95
The Mine	6.95	3.15
Ghouls	7.95	3.15
Electron Invaders	7.95	3.15
Diamond Mine 2	2.50	2.25
Castle Assault	2.50	2.25
Croaker	7.95	2.95

SPECTRUM	RRP	OUR PRICE
Guntright	9.95	7.25
Sweevo's World	7.95	5.95
Allen-8	9.95	7.25
Dun Darach	9.95	7.25
That's The Spirit	7.95	4.95
Monty On The Run	7.95	5.95
Back To Skool	8.95	5.50
Skooldaze	5.95	4.75
Starquake	7.95	5.95
Fairlight	9.95	7.25
Omnicalc 2	14.95	11.95
Worm in Paradise	9.95	7.25
Red Moon	8.95	5.50
Wizards Lair	6.99	4.95
Wheelie	5.95	4.75
Nightshade	9.95	7.25
Marsport	9.95	6.90
The Artist	12.95	9.25
Red Arrows	8.95	4.75
Nodes Of Yesod	9.95	5.95
Underwurlde	9.95	7.25
Rocco	7.95	5.95
Abu Simbel	7.95	5.95
Monty is Innocent	6.95	5.25

AMSTRAD	RPR	OUR PRICE
Mini Office 2 (D)	19.95	16.95
Sweevo's World	7.95	5.95
Brian Bloodaxe	8.95	5.95
Yie Ar Kung Fu	8.95	6.95
Red Moon	8.95	5.50
Rocco	8.95	5.95
Project Future	8.95	5.95
Bullseye	8.95	6.95
Frank Bruno	8.95	6.95
Red Arrows	8.95	4.75
Combat Lynx	8.95	6.75
Wizards Lair	8.95	5.95
Tasword 464	19.95	16.95
Tasword 464-D(D)	24.95	19.95
Tasword 6128(D)	24.95	19.95
COMMODORE C64		
Blackwyche	9.95	2.95
Imhotep	9.95	3.25
Wizards Lair	8.95	5.25
Red Moon	8.95	5.25
Entombed	9.95	5.95
Combat Lynx	8.95	5.75
Nodes Of Yesod	9.95	5.25

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 PD826

Evesham Micros

PRINTER OFFERS

Look at these deals on centronics printers we believe that these prices offer the best value in the country. All prices include receipted delivery, despatch is within 48 hrs of receipt of order provided goods are in stock. A printer lead is supplied to suit your micro free of charge, (please specify Amstrad, BBC, Oric, Dragon, Einstein, CBM64 or Memotech) for Spectrum or QL owners we will supply with an appropriate interface for an additional £20.00.

SMITH CORONA FASTEXT 80

Bulk purchase allows us to offer this **high quality, 80 column dot matrix printer** for an unheard of price. Buy a proper printer for the price of a thermal. Friction feed is standard and an optional tractor unit is available.

ONLY £129.95

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

SHINWA/MICRO P. CPA 80 +

NOW WITH NEAR LETTER QUALITY MODE

Improved specification makes this, the **latest version** of this popular model, the **outstanding printer buy** in it's class. As well as it's normal **superb print quality** at 100cps (better than the NLQ on many rival models) it now has an **NLQ Mode** which offers even better print quality. This can be switched in either from a **front panel NLQ switch** or from software. Other features are friction and tractor feed, external dipswitches, graphics mode, square needle print head (gives less dotty look to print) and Epson compatibility. Take a look at these unretouched actual size print samples.

New NLQ PICA print style
Standard PICA text (100cps)
True descenders on jpg etc.
ELITE mode gives 96 columns
CONDENSED mode gives 142 columns
ENLARGED mode
SUBSCRIPTS and SUPERSCRIPTS
underlines nicely
Good italic character set

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

ONLY £189.95

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

MICRO P. MP165

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

ONLY £249.00

Price includes Centronics lead to suit your micro.
Or to suit Spectrum with Kempston "E" interface £259.00

TAXAN KAGA KP810

Now in stock due to popular demand, this printer which is essentially the same as the Canon PW1080A, features 140 cps draft mode and 27 cps NLQ. Friction & tractor feed, graphics capability and Epson compatible. A super printer offered at a sensational price.

ONLY £219.95

Price includes Centronics lead to suit your micro.
Or to suit Spectrum with Kempston 'E' interface £239.95

COMMODORE OFFERS

COMMODORE 128D NOW IN STOCK, RING FOR PRICES

CBM 1541 DISK DRIVE	ONLY £149.95
CBM MPS803 PRINTER with free SEIKO wrist terminal	ONLY £189.95
CBM 128 in stock now!	ONLY £229.95
CBM 128 with 1570 Disc Drive	ONLY £399.95
CBM 1701/2 Monitor	ONLY £199.95
CBM 1901 Monitor (for 128)	ONLY £299.95
CBM 1570 DISK DRIVE in stock now	ONLY £189.95
CBM Compatible DATA RECORDER	ONLY £29.95

STAR SG10C

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

ONLY £249.00

PD891

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

EVESHAM MICROS
BRIDGE STREET, EVESHAM, WORCS., WR11 4RY.
Tel: 0386 41989

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

3D GRAPHICS

by Wail Sabbagh

The program involves using sophisticated graphic manipulation to rotate a three dimensional pyramid on three axis and clearly demonstrates the high speed of the new Atari computer as well as its graphics.

The program should be quite easy to understand, as it is divided into several subroutines:

Initialise: set the arrays and variables of the program

Background: draws the axis in ST virtual screen

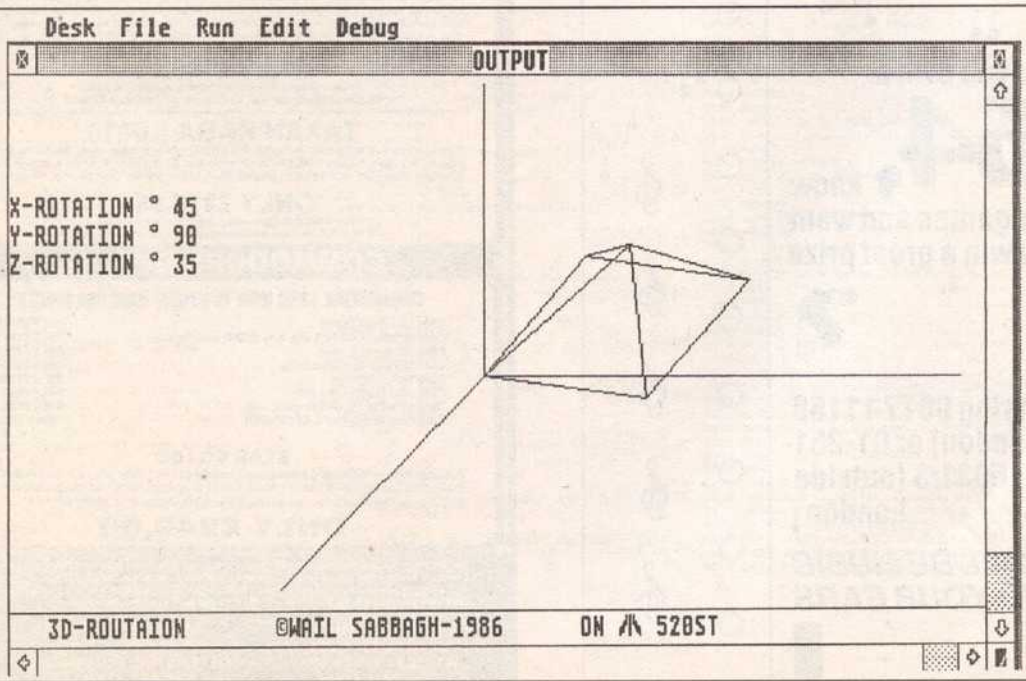
Draw: draws the actual pyramid

Rotate: updates x,y and z coordinates

GEM is turned off in this routine to speed it up.

This demonstration will prove useful for children who find it difficult to think in 3D, as well as older users who are interested in the theory behind the manipulation of 3D – plus showing off the power of the Atari ST.

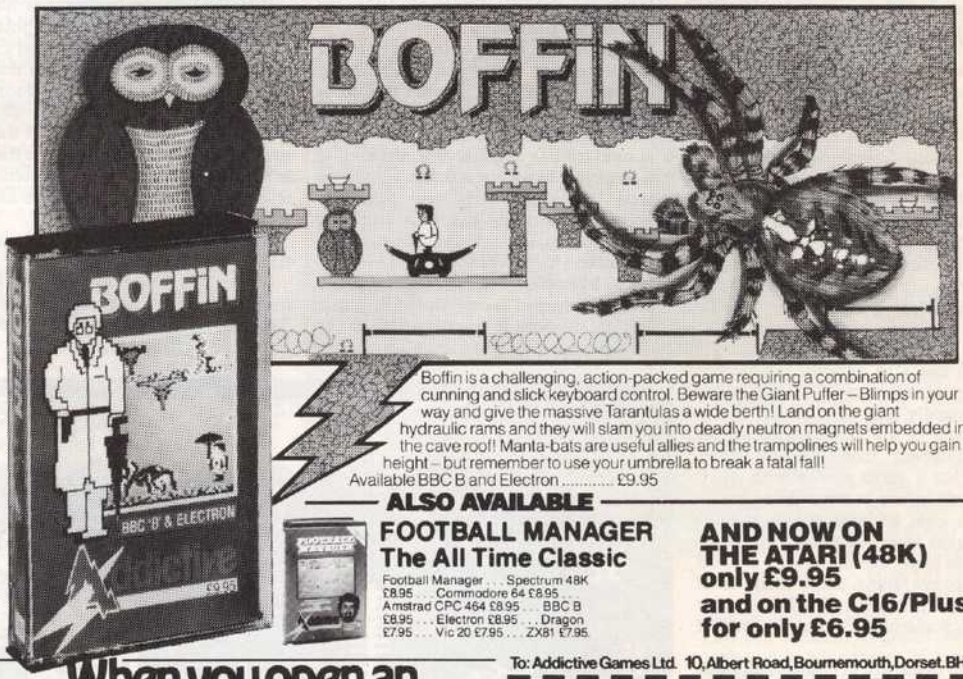
```
10    REM (C) WAIL SABBAGH 1985
20    GOSUB INTILISE:GOSUB BACKGROUND
30    DRAW:POKE GEM,0:OPENW 2:FOR X=1 TO L
40    X1=X(DR(X,1))-Z(DR(X,1))*ANG:X2=X(DR(X,2))-Z(DR(X,2))*ANG
50    Y1=Y(DR(X,1))-Z(DR(X,1))*ANG:Y2=Y(DR(X,2))-Z(DR(X,2))*ANG
60    LINEF 300+X1,180-Y1,300+X2,180-Y2
70    NEXT X:GOSUB ROTATE:GOTO DRAW
80    ROTATE:POKE GEM,1:FOR I=1 TO E:X=X(I):Y=Y(I):Z=Z(I)
90    YP=Y*CPHI-Z*SPHI:ZP=Y*SPHI+Z*CPHI:XP=X*CTH-ZP*STH
100   Z(I)=X*STH+ZP*CTH:X(I)=XP*CPSI-YP*SPSI
110   Y(I)=XP*SPSI+YP*CPSI:NEXT I:RETURN
1000  INTILISE:GEM=SYSTAB+24:POKE GEM,0
1010  F=3.141593/180:ANG=COS(45*F):E=5:L=8:DIM X(E),Y(E),Z(E),DR(L,2)

1020  CLEARW 2:INPUT "ROTATE X BY ";P:PHI=F*P
1030  INPUT "ROTATE Y BY ";T:THETA=T*F:INPUT "ROTATE Z BY ";I:PSI=I*F
1050  FOR X=1 TO E :READ X(X),Y(X),Z(X):NEXT X:FOR X=1 TO L
1060  READ DR(X,1),DR(X,2):NEXT X
1070  DATA 0,0,0,0,0,100,100,0,0,100,0,100,50,50,50
1080  DATA 1,2,1,3,3,4,2,4,5,1,5,2,5,3,5,4
1090  CTH=COS(-THETA):STH=SIN(-THETA):CPHI=COS(PHI):SPHI=SIN(PHI)
1100  CPSI=COS(PSI):SPSI=SIN(PSI):RETURN
2000  BACKGROUND:CLEARW 2:FULLW 2:LINEF 300,5,300,180:LINEF 300,180,6
00,180
2020  LINEF 300,180,300-180*ANG,180+180*ANG
2030  GOTOXY 0,4:PRINT "X-ROTATION "CHR$(248);P
2040  PRINT "Y-ROTATION "CHR$(248);T:PRINT "Z-ROTATION "CHR$(248);I
2050  LINEF 0,320,630,320:GOTOXY 0,19
2070  PRINT "   3D-ROUTAION          "CHR$(189)"WAIL SABBAGH-1986        0
N ";
2080  PRINT CHR$(14);CHR$(15)" 520ST";:RESET:RETURN
```



Can YOU avoid the fangs of a deadly spider?

BOFFIN

A Mad Professor on the Loose



Boffin is a challenging, action-packed game requiring a combination of cunning and slick keyboard control. Beware the Giant Puffer – Blimps in your way and give the massive Tarantulas a wide berth! Land on the giant hydraulic rams and they will slam you into deadly neutron magnets embedded in the cave roof! Manta-bats are useful allies and the trampolines will help you gain height – but remember to use your umbrella to break a fatal fall!

Available BBC B and Electron £9.95

ALSO AVAILABLE

FOOTBALL MANAGER
The All Time Classic

Football Manager . . . Spectrum 48K £8.95 . . . Commodore 64 £8.95 . . . Amstrad CPC 464 £8.95 . . . BBC B £8.95 . . . Electron £8.95 . . . Dragon £7.95 . . . Vic 20 £7.95 . . . ZX81 £7.95

AND NOW ON THE ATARI (48K) only £9.95 and on the C16/Plus 4 for only £6.95

When you open an Addictive Game, there's a new world of discovery waiting for you.

To: Addictive Games Ltd. 10, Albert Road, Bournemouth, Dorset. BH1 1BZ

Please send me:

☐ cassette(s) for Boffin for ..... (computer)

☐ cassette(s) of Football Manager for ..... (computer)

I enclose cheque/postal order for* £ .....

Please debit my Access card No. .....

*Delete as applicable

Name .....

Address .....

Postcode ..... Tel: .....

Access orders can be telephoned through on (0202) 296404

For overseas orders, please add £1.50

Addictive

• Addictive Games •

10 Albert Road, Bournemouth BH1 1BZ

Tel. 0202 296404

Recent hits

Despite the traditional rush to release software in time for Christmas, it seems that some of the very best games programs have been held back until now. The Commodore 64 has had some excellent pure arcade releases lately; *Uridium* from Hewson being of particular note. Ever since I saw the smooth multi-directional scrolling of *Gribbly's Day Out* I've been longing for them to use the routines for a space blast and here it is. Fast, furious and great fun. The only thing to match it is, of course, the superb *Mercenary* from Novogen and there are lots of interesting rumours about a forthcoming *Mercenary 2*. Let's hope it isn't as long appearing as the first one.

US Gold has also slipped out two of their best games to date: *Kung Fu Master* is an extremely addictive copy of the arcade game of the same name and is slightly different from other karate games in that it gives you several, very fiendish, opponents at once. *Hard Ball* is one of the best looking sports simulations I've ever seen, although a bit tricky to play. Lets hope that they make a good job of the conversions. Incidentally, BBC owners should note that US Gold is now converting some of its recent hits for that machine.

Licensing deals are of course still popular, but they seem to be settling down and actually adding something to the game other than cheesy attempts at making the sprites look like TV characters, etc. *Back To The Future* is possibly the best release to date from Electric Dreams and is an arcade adventure based on the plot of the film – different from the usual fare and with nice digitised graphics.

Battle of the Planets from Mikro-Gen, on the other hand, is a little disappointing – there is some of the smoothest and fastest 3D vector graphics yet seen and it's a good shoot up, but it lacks in plot and some of the enemy ships look like Rowenta steam irons.

Ever since the release of *Knight Lore* there have been loads of games using a similar 3D design and the whole thing has started to get a little boring. To date, only *Sweevo's World* and *Rasputin* have made any attempt at improving on the atmosphere and plot of the games. All that has changed now, with *Movie* from Imagine, a game set in the world of a 1940's Philip Marlowe detective story that is a superb complement to the 3D design.

An original story line and some nice touches such as speech bubbles have breathed new life into the Spectrum – don't miss it.

Anyway, enough of the games news for this week and on with the tips. Here's a couple of little bugs that I've picked up on the Amstrad version of *Bruce Lee*. First off, if you move to the right on to the third screen and go to the bottom right level, beneath the big hippo, by pressing the down key you will jump several screens and reappear at a much later stage in the game, missing out on some rather sticky problems.

Secondly if on the opening screen you select the option of one player against an opponent rather than against the computer, you will find that you start with nine lives rather than the usual three. The next trick is to get to the screen that has an object like a huge double Chinese lantern. Collecting this will normally give you an extra life, but if you can do it without losing one of your nine on the way you will be rewarded with a magnificent 99 lives.

I have managed to complete the game, although it needed nearly all of these lives – has anyone got a reliable system for getting through the screen that has four levels of moving platforms (you will know the one I mean, if you've got that far)?

Now we are going to return to the demon cursed depths of *Dragontorc*, to find out what has happened to poor old Maroc (this is just like *Eastenders*).

We left him underground in the cursed crypt clutching a cursed key and an ankh symbol. Find the room with another ankh symbol on the wall and some skeletons will appear. Match the two symbols before they get you and they will be stopped.

The symbol will change and fall off the wall – take it. You will find a different room with the changed symbol on the wall. Match it with the ankh and skeletons appear, match it with the new symbol and the magic is switched off and the one on the wall changes into a crown symbol and falls to the ground. Take this and find another crown symbol to match it to reveal the exit.

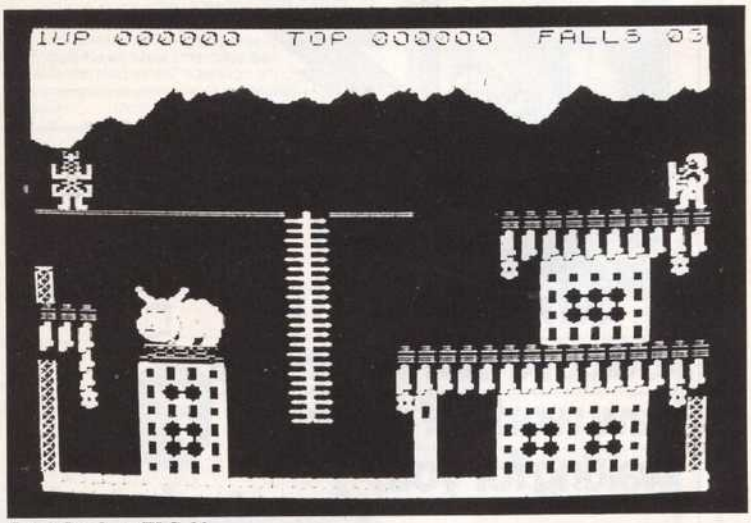
The cursed key is useful here to unlock many of the doors. Whilst you are looking around beware of invisible snakes that become visible if you touch them.

Use *Heal* if they bite or use *Mantle* to protect against all magic and poisons.

Find the small blue key and use if to unlock two blue chests. Take the spells and a door key. Open the door to the third wraith room with this. *Bane* and wraiths. Use the same key at the other end. Keep *Bane* on and search the tombs for spells. Search with the crown symbol to get the crown but avoid the hand that will fall down.

Take the crown to the anvil to destroy it.

Now place the crystal of antithought on the anvil so that it can absorb the magic. You get the message, 'Now gem can tame five legged Morag's Bane'.



***Bruce Lee* from US Gold**

Take the gem to the cursed crypt and take the hand with it. Leave the gem.

We're on the last stage now – proceed to Wyemwood which is where the evil Morag can be found at last, guarded by an evil creature that she has summoned to her side and also lots of handy elvish cannon fodder for you to use. Unfortunately that is where we are going to leave you to sweat it out for yet another week.

Tony Bridge's Adventure Corner

In vogue

Why should record buyers have all the fun when it comes to collections? We adventurers too should be able to buy tapes of several well-selected examples – and indeed, this sort of compilation tape seems to be enjoying a vogue at the moment. I hope that it continues, because, as you'll see, there are some good collections around at the moment.

Last week, we saw a pack of reasonable adventures at a reasonable price: this week, a couple more.

Pimania, after a short rest, has returned, I'm glad to say, in the form of *10 Packs*. I've seen volume three, and I imagine that it is in much the same vein as the others; that is, several arcade games together with a couple of text adventures.

In this case, the arcade games are pretty dire: in fact, ZX81ers would laugh with barely-disguised pity, although there is at least one *(Crazy Castles)* that might persuade the player to postpone more mundane amusement such as kicking the dog.

Buried amongst the dross, however, are the two adventures. *The Royal Adventure of a Common Frog* by Terry Braverman is wacky indeed. It's "rescue the princess" time again, but this time, instead of starting out on your white charger with trusty sword in hand, you begin the adventure sitting on your little lily-pad.

Yes, *you're* the frog, of course, which means that you are amphibious and can happily swim down from the pad to start your quest.

The layout is standard *Quill*'d stuff, white text on blue paper, although the adventure is *Illustrat*'d, so many of the locations have associated pictures: actually, not far from the start, you'll come across a maze, and the fact that the program draws pictures only in previously unvisited locations should help you here.

Quite a large number of locations to be visited, however, and enough to keep the player going for some while. The puzzles are quite entertaining, particularly as you will eventually be transformed from a frog to – gasp – a full-grown human (well, a prince anyway).

The second adventure on the tape is an old favourite of mine, *Here be Tygers*, from Bob Franklin. One of the few *Quill*'d adventures with absolutely no sign of a spelling blunder! It's a beautifully-written adventure, at the start of which you find your toe stuck up the tap in your suite in the Penge Hilton. Just another Saturday night really!

There are several introductory screens full of instructions, during which you learn that "Certain Parties" (again) need a volunteer . . . ahh, you've just volunteered. For what? Well, it's a case for saving the universe again, starting on planet Gekko 4: the Certain Parties *are* the eponymous Tygers of Gekko 4.

St Bride's School

After translating the instructions, which are written in ancient Sumerian, you'll know that all you have to do to solve this adventure is to, among other things, rescue the 19th iridescent owl from the flaming pit, spoken the spell of Oblivion from the lexicon of the Undead, bored the weregerbil to death, read the small print, rescued the droid's peanut butter – well, you get the picture, and after that, things start to get difficult!

The essential things in tackling *Tygers* is a warped sense of humour, a pair of jeans and a tin ear: this last requisite comes in handy when in contact with the singing obstretician, Dr Hank Wangford. A sweatshirt emblazoned with his picture is present in the first location, don't ask me what purpose it fulfills in the game, just get it and wear it! Now you know about as much as I do – just play and enjoy, but a warning: this game will pollute your computer and damage your tender little ego!

Artic has also recently issued a compilation tape, but in this case, the tape contains two arcade games on the first side, with on the second side, two adventurers, *Curse of the Seven Faces* and *Robin Hood*. I've raved over *Seven Faces* before, so I won't go into detail here, but suffice to say that it is an extraordinarily good text game, with lots of tough puzzles and plenty of humour. One day, this adventure will get the fame it deserves.

Robin Hood is *Quill*'d and *Illustrat*'d, with a spindly character set which is rather difficult to read sometimes. Quick death greets you at many turnings, but play is very quick and you'll soon work out where not to go. The occasional odd spellings don't, however, detract from the fact that there are lots of objects, treasures and locations (nicely illustrated) waiting to be explored and taken, and it is fairly easy to find the purpose of keys and other artefacts.

Although there is a bit too much of the "You see nothing special" kind of response, the adventure is satisfying to play for beginners, who will find plenty to do before becoming completely stuck: and for the expert, *Robin Hood* is a pleasant way to spend a few hours.

Finally, at last I don't have to suffer alone in reading Sensible News Releases from that seat of lunacy, I mean learning, St Bride's School. *The St Bride's Swashbuckler* will be packed to bursting with, they say, news of forthcoming games, articles about adventures and arcade games, comics and so on. What's more, teacher is offering the first issue free to anyone who sends two stamps to cover postage, to: Swashbuckler Offer, St Bride's School, Burtonport, County Donegal, Ireland.

Buckle your swash and send off as soon as you can – St Bride's is now an officially recognised industry in Ireland, and you'll be doing your bit for the economy: apart from which, why shouldn't you suffer as well?

Adventure Helpline

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

Fill in the coupon, explaining your problem, send it to us, and a fellow adventurer may be able to help.

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

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

CLASSIFIED

Semi-display — £7 per single cc (+ VAT)
Lineage — 30p per word (+ VAT)

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

SOFTWARE

WDSoftware

FOR THE QL:

JOSS — base £13

Forget that tedious, time-consuming syntax! Just move the cursor and press SPACE for all your file commands. Cursor keys or your joystick allow you to access microdrives (up to 8) and floppy discs (as many as our interface allows) with up to 150 files on each! Scroll and print directories, COPY, DELETE or PRINT any file, select TV or Monitor mode before LOADing or RUNning any program. You only use the keyboard to set the DATE or label a device when FORMATting. Easy to use with Psion and other software. No silly icons to learn – JOBS will TELL you what it's going to do! Programmer's toolkit and mass copying/printing utilities also supplied. Specify microdrive-only, Microperipheral or CST-compatible disc versions.

Ref QL7 — base £7

1300 useful QL references with ARCHIVE 2 search/print program. Too long for just one cartridge, so if you have RefQL5 just pay 2 and extra media cost to update.

Mdv Extension Cable — £5.50

Eight inches long; allows addition of extra microdrives to your QL. Twist it to put their slots facing you.

FOR THE QL: SPECTRUM; BBC; ELECTRON

WD Morse Tutor — base £4

Written to teach amateurs, now used by professionals too! Absolute beginner, or stretching your speed to 18 wpm, you won't find anything with more helpful features. What else can offer 100 random sentences as well as all the basics? Disc version unsuitable for BBC B+.

FOR THE SPECTRUM:

WordBinder (Microdrive/disc only) — base £8

For CHEATING at crosswords. Finds m-ss-ng letters, solves anagrams. 13,000 word vocabulary, so too long to share a cartridge. 10-letter word ending in ATE? No problem.

Tradewind — base £3

Sailing/trading strategy game with graphic surprises.

Jersey Quest — base £3

Text adventure in time. Background of Jersey folklore from Stone Age to Bergerac.

For export:

QL hardware and software from many sources. Ask for list/quotation.

ORDERING ADD COST OF MEDIUM, POSTAGE £1 OUTSIDE EUROPE.
Mdv or 5.25" floppy = £2 3.5" floppy = £4 Cassette = £0

Payment

By ACCESS/Eurocard/MasterCard or STERLING (UK bank cheques, Eurocheques, drafts or International GIRO) TO:

WDSoftware(WK), Hilltop, St. Mary, Jersey, C.I. tel: (0534) 81392 PL/30A

SMILING SOFTWARE = QL SOFTWARE

THE SMILING ICON TOOLKIT

‡ THE FULLY PROGRAMMABLE ICONS SYSTEM - NOT JUST FILE COMMANDS YOU CAN PROGRAM THE ICONS WITH ANY COMMANDS YOU WISH !!!
‡ PLUS OVER 23 NEW COMMANDS ARE ADDED TO BASIC INCLUDING..... SCREEN DUMPS, AN ON SCREEN NOTEPAD, A FILE SPOOLER AND A PAINT COMMAND THAT WILL FILL ANY SHAPE WITH ANY USER DEFINED PATTERN !!

ALL THIS AND LOTS MORE FOR ONLY £8 INC P+P

ALSO

B L O B Z

THE RUBBERIZED ASTEROIDS GAME ONLY £5 !!!

SEND CHEQUES/PO'S TO:-

SMILING SOFTWARE, 26 DALE ROAD, MARPLE. STOCKPORT SK6 6HA

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, Freepost, Beach Approach, Brixham TQ5 8BR. Tel: 08045 55532.

SPECIAL DEAL FOR ATARI 400/800/XL/XE OWNERS

No. 1. Hire your first two games FREE from our extensive range of software. Up to the minute releases available.
No. 2. Buy all the latest software titles at best possible prices (new releases available direct from US). Atari hardware and modems now available at discount prices.
For further details send s.a.e. to:

CHARNWOOD GAMES
30a Warwick Avenue, Quorn, Leicestershire
Tel: 0509 412604 PL/20H

HINTS – POKES – MAPS

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

C16/Plus 4 Handbook	£1.00
Amstrad Handbook	£1.00
BBC Handbook	£1.00
Commodore Arcade Handbook	£1.00
Commodore Games Review Handook	75p
Spectrum Arcade Handbook	£1.00
Spectrum Games Review Handbook	75p
The Adventures Handbook (CBM/Spec)	£1.00

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

WHAM! The Music Box

Melbourne Houses new and Revolutionary music creating program for your Spectrum. For the first time ever on your Spectrum, you can look forward to Real two-channel sound and percussion effects as you develop your very own musical tunes. Normal price £9.95. OUR PRICE £4.95 + 3 addition games absolutely free. Phone for details/ Reservations after 6.00pm or order direct from:

UK Home Computers
82 Churchward Ave
Swindon Wilts
0793 695034 PL/901A

YOUR PERSONAL CENTRONICS PRINTER

£99 plus vat
plus £8 p+p

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

128 Station Rd
Glenfield
Leicester
LE3 8BB

ROCK HALL

TEL: (0533) 313531

COMMODORE USERS
System Stretcher

Another first from Era Soft Straight from USA. 11 utilities including Ninety second copy, Hesmon, 10 second Format, Disk head Allignment + comprehensive user manual. £23.95 on disk all incl. Copyrighted, few agents required Remittance to:-

Era Soft, Edenderry Lodge
Banbridge, Co Down, N. Ireland.
Tel: 08206 24506
Includes Special Guarantee
PL/1S

MASSIVE SAVINGS ON HARDWARE
MASSIVE SAVINGS ON SOFTWARE

A great new home computer club now under way!!! Savings on software and book at 25% and up to 40% off RRP originals only, you're never committed to any makes or to buy. Every two months you get a software update and game playing tips. Savings on hardware at 15% and up to 30% off RRP. Only £15 membership fee per year. Our club is designed for all Amstrad, ZX Spectrum 48K and +, Commodore 64 and 128. *Enquiries ring* 0473 218229 Mon-Fri 9am-4pm. Makes cheques payable to T.L. Davies and post to: The T.L. Davies Home Computer Club 286 Woodbridge Rd, Ipswich, Suffolk IP4 2XU. PL/1J

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.

Here's my classified ad.

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

		Please continue on a separate sheet of paper	

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

Name .....

Address .....

.....

.....

Telephone .....

Please cut out and send this form to: Classified Department, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP. HA16

The 1st choice

EXPRESS SPECTRUM, BBC and COMMODORE REPAIRS!

2 GAMES (WORTH £10) WITH EVERY REPAIR*

WHY PAY HIGH 'FIXED' PRICES

Spectrum repairs between £9 and £20.

BBC repairs between £14 and £45.

Commodore repairs between £14 and £35.

*Spectrums only

(We do not charge you for our fancy premises by charging high 'fixed' prices!)

Reputations take time to build, we have been repairing ZX 81's, Spectrums, QL's, Apples and BBC's professionally, for 2½ years – who is coming second?

1st in all U.K. with While-u-Wait repairs! with INTERNATIONAL repair service!

1st to charge LOW PRICES for the smaller repairs! (e.g. £9 for keyboard faults)

1st FOR LOW PRICES – "My computer blew recently, I took it to **MANCOMP**, who fixed it in 8 minutes! and for less than £10! They are local, 'clued up', and blindingly efficient!" 4 HEATONS DIGEST.

1st FOR PROFESSIONALISM – "Of all the repair companies 'Sinclair User' spoke to, **MANCOMP** seemed the MOST PROFESSIONAL when it came to advice and a helpful attitude" AUG 85.

1st FOR HONESTY – We let you watch your computer being repaired and if there is nothing wrong with it, we will tell you!!!

1st FOR REPUTATION & HELPFULNESS – "I have come across a firm that will be more than willing to advise you as to how to remedy your problems. They are called **MANCOMP** and as well as repairing faulty computers, are also quite willing to discuss your problems with you and offer reasonably cheap and more importantly, CORRECT CURES" Phil Rogers POPULAR COMPUTING WEEKLY JAN 85.

1st FOR SPEED – "One firm at least can effect any necessary repairs over the counter in 45 minutes. Based in Manchester, **MANCOMP** can offer what is arguably the FASTEST turnaround in the business to personal callers" CRASH Magazine JUNE 1985.

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

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

Because we repair hundreds of computers every week, we are able to pass on our 'component-buying discount' to **YOU** in lower prices . . . Z80A cpu £1.50, 4116 50p, Upgrade *fitted* £18.95

– we bring down the prices for repairs and components!

(We may refuse to revive computers suffering from attempted D.I.Y. repairs!)

Every parcel sent by Royal Mail Recorded Post and insured for return journey!

(For next day delivery include £1.50 extra).

(Securicor by prior arrangement).

On-site maintenance for Apples, I.B.M.'s and most makes of printers also available.

Guaranteed 4hr response!

WHY DELAY – OUR ESTIMATES ARE FREE AND WITHOUT OBLIGATION. IF YOU DO NOT LIKE OUR ESTIMATE WE WILL RETURN THE COMPUTER AND REFUND THE POSTAGE INCURRED

MANCOMP LTD (Dept. PCW10)
Printworks Lane, Levenshulme, Manchester M19 3JP
Phone 061-224 1888.
OR 061-224 9888.
OPEN MON - SAT 9am to 7pm

What we do today . . . others do tomorrow!

NOTE OUR PRICES AND WATCH OTHERS FOLLOW THE LEADER

COMPUTER HIRE

TO HIRE A COMPUTER AND/OR PERIPHERALS BY THE WEEK OR MONTH RING **01-607 0157** or **01-997 6457**
WE SPECIALISE IN BBC AND ALSO HAVE A RANGE OF AMSTRAD COMPUTERS FOR HIRE.
COMPUTER HIRE SERVICES, 29A CALEDONIAN RD, LONDON N1 1BA. PL17

Computer Repair Centre

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

BBC SPECTRUM REPAIRS

★ Spectrum repairs £18.50 inc. parts insurance and p.p.
★ BBC B repairs £18.50 + parts, insurance and p + p.

Send your computer with cheque or P.O. for £18.50 and description of fault to:

SUREDATA (PCW)
Computer Service
45 Wychwood Avenue, Edgeware, Middx.
Tel: 01-951 0124 PL53

COMMODORE REPAIRS by Commodore approved engineers. Vic 20 Modulators £6.50. Vic 20 from £14.50, CBM64 etc. for more details write or tel: G. C. Bunce & Son, 36 Burlington Road, Burnham, Bucks SL1 7BQ. Tel: 06286 61696.

SPECTRUM — AMSTRAD — COMMODORE

NOBLES COMPUTER REPAIRS

* Repairs carried out by our own engineers on site.
* All repairs carry a 4 MONTH GUARANTEE

For estimates phone or send your computer to NOBLES.

Spectrum Plus ..... **£16.95** inc parts post and pack

Commodore 64/VIC 20 ..... from **£9.95** plus parts

BBC ..... from **£18.95** plus parts

Also repair specialists for Amstrad and MSX computers

NO HIDDEN CHARGES

★SPECIAL OFFER

5 FREE GAMES WORTH £25

with each Spectrum repair Trade/School and Club discounts arranged.

*For free, no obligation estimates phone or send your computer to **NOBLES** for the fastest, cheapest repairs in ESSEX.

NOBLES
14-17 Eastern Esplanade
Southend-on-Sea
Essex
0702 63377/8
63336/7/8/9
7 days a week, 24-hour Answering Service

PB50

SPECTRUM — AMSTRAD — COMMODORE

— MSX — ATARI — DRAGON — ORIC — EINSTEIN — MSX — ATARI —

— MSX — ATARI — DRAGON — ORIC — EINSTEIN — MSX — ATARI —

COMPUTER REPAIRS

NOW IT'S

YOUR CHOICE

FIXED PRICE OR QUOTATION			
SPECTRUM	£19.95	£9.95	+ PARTS
BBC	£34.95	£15.95	+ PARTS
COMMODORE	£34.95	£15.95	+ PARTS
DRAGON	£29.95	£11.95	

- **GUARANTEE:** Six months
- **EXTRAS:** None – Post, VAT & Insurance inclusive
- **QUOTE:** Mail computer & daytime contact phone no.
- **RANGE:** We also repair IBM, APPLE, OSBOURNE, SIRIUS, APRICOT + WIDE RANGE PERIPHERALS.

CALL (0423) 501679 **ANYTIME**
OMNICRON LTD., 16 HAYWRA STREET, HARROGATE HG1 5BJ

PL1L

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

PL28I

COMPUTER REPAIRS

We are the experts, having serviced Sinclair computers since the introduction of the ZX80.

Don't waste money on estimates – we repair Sinclair computers at price quoted (inclusive parts, labour, postage, VAT, irrespective of fault. No hidden charges.
Repairs guaranteed for 3 months.

Spectrum	£18.75 inc parts
ZX81	£11.50 inc parts
16 KRam	£9.95 inc parts
Microdrive	£15.95 inc parts
Interface 1-11	£18.75 inc parts
BBC	
BBC	£22.00 + parts
Electron	£19.95 + parts
XK Memory Expansion Kit	£15.95

Computer Retailers please phone for Special Trade Price.

Call or send with cheque or P.O.
T.V. Services of Cambridge Ltd.
French's Road, Cambridge, CB4 3NP
Tel. 0223 311371

DUPLICATION

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

SIMON STABLE PROMOTIONS CASSETTE DUPLICATION
Ive Knight Storage Stables, 20 West End, Laverton, Evesham, Worcs. Tel: 0386 29 2931
VAT No. 336 2372 28

PL39S

FOR SALE

ATTENTION SPECTRUM OWNER THE DOT CRAWL SUPPRESSOR ©

Do you suffer from Dot Crawl? Does your display shimmer and ripple? Do graphics change colour at the edges? Would you like a firmer, sharper display. Our Dot Crawl Suppressor (fits inside case) quick easy fitting (two solder joints) clear simple step by step instructions only £3.50 inc 1 years guarantee. 7 days delivery. Can't solder? Send complete to us, carefully packed (not power supply) we will fit and return it within 7 days, full guaranteed only £3.50 inc. Send cheque/PO to: A. SALDWIN, 11 WILLOUGHBY AVE, LEXTON, NOTTINGHAM NG7 2ET. PL1I

BLANK CASSETTES

WITH LIBRARY CASES

	C10	C15	C20	C30
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

Fully Inclusive (COD 65p extra)
Superior Tapes. Don't Settle for Less!

5¼" DS/DD DISKS

10 for £12.00 inc plastic case

3½" DISKS

"135 TPI"
10 SS/DD – £25.00
10 DS/DD – £35.00
Guaranteed. Fully inclusive
Postage/Packing etc.

RING US NOW! (0793) 695034
UK HOME COMPUTERS, 82 CHURCHWARD AVE, SWINDON, WILTS SN2 1NH PL613

C15 BLANK CASSETTES

WITH LIBRARY CASES
£20 per 100 full inclusive

UK HOME COMPUTERS (DEPT PCW)
82 Churchward Ave, Swindon,
Wilts 0793 695034. PL791

3" DISKS

£39 FOR 10
INCLUSIVE OF VAT & DELIVERY

3½" DISKS

DS135TPI ..... £35 for 10
SS135TPI ..... £25 for 10
INCLUSIVE OF VAT & DELIVERY
CHEQUES/PO's to:
MICRO RESOURCES LTD
Southfield House,
11 Liverpool Gardens,
Worthing, Sussex BN11 1RY
ACCESS/VISA WELCOME.
TEL: (0903) 213174 PL06

MAKE SPECTRUM CeNCe

Simple Computer Control for Machinery and Models using your Sinclair Spectrum.
A little black box which plugs into the expansion socket of any Spectrum and enables you to drive two small to medium stepper motors (up to 2 AMPs per phase) or up to 8 DC motors, relays, lamps or any other DC device.
Simple to program and built by an engineering firm for its own use. You can use it for CNC turning, milling or co-ordinate drilling.
Reliable: Prototype still running after three years use.
We provide interface, instructions, software, hints and examples.
Price: £94.50 inc carriage and VAT.
Power supplies and Stepper Motors available. We will be pleased to quote for larger units. PL855
P. R. PRODUCTS PARK MILL, HOBSON STREET, MACCLESFIELD, CHESHIRE SK11 8BE. Tel: (0625) 22800

NEW product – never throw your printer ribbon away!!! Saves £££'s only £3.00. Money back guarantee: Kilsoft, 32 Briarlyn Avenue, Birchenliffe, Huddersfield.

Computer Repair Centre

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

MEMOTECH COMPUTERS
AND ACCESSORIES

MTX 500 COMPUTER	£59.95
MTX 512 COMPUTER	£99.00
DMX 80 PRINTER	£175.00
500K DISK DRIVE & INTERFACE	£199.00
1MB DISK DRIVE & INTERFACE	£222.00
NEWWORD ROM	£35.00
PASCAL ROM	£35.00
SPECULATOR ROM	£35.00

All the above prices are fully inclusive. We stock the entire Memotech Range. Orders/Enquiries to:
UK HOME COMPUTERS
82 CHURCHWARD AVE SWINDON, WILTS. SN2 1NH
24-hr Phone Service 0793-695034 PL27

TELEX YOUR CLASSIFIED COPY TO:
296275 SUNRGY

HA5

SHORT OF CASH PL1U

Hundreds of local small businesses are in need of a computer service to store their accounts, files etc. "MAKE MONEY WITH YOUR MICROCOMPUTER" shows how you can cash in on this exciting opportunity working from home! Advertising; finding customers; equipment etc. all explained. Send for your copy today. £9.90 incl P&P (UK only) or further details: **ENTERPRISE BOOKS (PCW) 12 Felstead Rd., Waltham Cross, Herts EN8 7HB.** ***Money back guarantee. Prompt delivery. Sorry no callers.***

BLANK cassesttes. Top quality, high output, 20p each (p&p £1 per order) C-20 length. J. Lydon, 7 Halfleet, Market Deeping, Peterborough.

BONZO MEDDLER AMSTRAD CPC Series
A FANASTIC NEW UTILITY devoted to TAPE to DISC transfer, TRANSFERS ALL standard BASIC, BINARY, and even ASCII files. Can cope with some HEADERLESS and some FLASHLOADERS! FULL status display during transfer. "HANDS OFF" operation.
Offers EXTENDED CATALOGUE. RENAMES to suit AMSDOS.
AUTOMATICALLY RELOCATES BINARY as required.
CUTEDISC also INCLUDED ! On tape, transfers itself to disc! By return of post just . . . **5.00** inclusive from,
NEMESIS (PCW)
10 Carlow Road, Ringstead, Kettering, NORTHANTS. NN14 4DW
IDLE MEDDLER still available at **4.40 INC.** PL1V

AMSTRAD CPC 464 computer colour monitor joystick, lots of software, as new with boxes, £250 ono. Tel: (London) 01-989 8783 anytime.
AMSTRAD and BBC software for hire, extensive lists. More details write to M. Ryall, 1569 Stratford Road, Hall Green, Birmingham B28 9JA.

EARN A FORTUNE!

Make Money From Used Computers is an incredible new manual which shows how you can earn you 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 – a single sale can recoup your outlay many times over!
Make Money From Used Micros – £8.95 inc. p&p. **Distributors Wanted**

USED SOFTWARE

Used Spectrum, CBM64 and Amstrad software at half price – even current chart toppers! All titles tested before despatch and sold in excellent condition. S.A.E. for current week's list.

USED COMPUTERS

We specialise in modern used computers and accessories at silly prices. All equipment tested and covered by warranty. S.A.E. for this week's list.
Computamart (Dept.CS), 195/197 Seabourne Road, Southbourne, Bournemouth, Dorset. Tel: (0202) 433759. PL1Z

IMPORTANT ANNOUNCEMENT

TERIVIROS ANTI-STATIC FLUID

will keep your computer screens hygenicaly 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.

PL902A

Access

Book your Classified or Semi-display advert by Credit Card

AMERICAN EXPRESS

Call Jon Beales on 01-437 4343

VISA

HA2

FAST COMPUTER REPAIRS

VIDEO VAULT INTERNATIONAL
10★ REPAIR SERVICE

ACCESS WELCOME

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

24 HOUR TURNAROUND

WHILE YOU WAIT SERVICE CALL FOR APPOINTMENT

KEYBOARD FAULTS SPECTRUM ONLY £8.95

SPECTRUMS REPAIRED for only **£19.95**
including **PARTS · INSURANCE** and **P & P.**

N.B. WE DO NOT CHARGE AN AVERAGE PRICE

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 24 hrs.
- Most Spectrums repaired within 45 minutes.
- All Micros insured for return journey.
- Keyboard faults only £8.95
- School repairs undertaken - discount available.
- Free software with each Spectrum repaired.
- Over 8 years experience working with computers. All computers fully tested.

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.

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

THE LOGICAL CHOICE

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

***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 fittings + 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.)

STOP PRESS
MANCHESTER BRANCH opening **SHORTLY** inthe **City Centre.** Sorry for delay to all our Manchester customers.

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
ZTX650	0.60
Transistor ZTX 213	0.60
Transistor ZTX313	0.50
Power Supply Units	9.95
Feet (Each)	0.25
16K to 48K Upgrade Kit	17.95
Sockets 16-40 Pin	14.50p
Cassette Leads	3.50
T.V. Lead	3.50
Keyboard Membranes	5.00

Commodore 64 Chips

6526	23.00
6510	23.00
6581	23.00
901227-03	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

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

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

© Copyright Videovault Ltd. No. 151085

There's a Dealer near you . . .

BIRMINGHAM

D.G. MICROTEK ELECTRONICS
190B DUDLEY ROAD
WINSON GREEN
BIRMINGHAM
Tel: (021) 454 4697 PL644

ESSEX

CAREY ELECTRONICS
FOR
THE BBC MICROCOMPUTER
SOFTWARE MACHINES,
PERIPHERALS
7 CHURCH ROAD
WALTON-ON-NAZE, ESSEX
FRINTON-ON-SEA (02556) 6993) PL644A

H REYNOLDS
79 ORSETT ROAD
GRAYS, ESSEX
Tel: (0375) 375948 PL901

MIKES COMPUTER STORE
292 LONDON ROAD
WESTCLIFF-ON-SEA
ESSEX
Tel: (0702) 332554 PL905

ATARI

ESTUARY
PERSONAL COMPUTERS

318 CHARTWELL NORTH
VICTORIA CIRCUS SHOPPING CENTRE
SOUTHEND ON SEA
Tel: (0702) 614131 PL484

COMMUNICATION PLUS
5 HONYWOOD ROAD
(off Cranes Farm Rd)
BASILDON
Tel: (0268) 21818 PL801

COMMUNICATION PLUS
c/o KEDDIES
(first floor)
HIGH STREET
SOUTHEND
Tel: (0702) 62426 PL802

COLCHESTER COMPUTER CENTRE
3a SHORT WYRE STREET
COLCHESTER
Tel: (0206) 47242
SOFTWARE FROM £1.99
SPECIAL PRICES
ON BBC B PL907

NOBLES
14-17 EASTERN ESPLANADE
SOUTHEND-ON-SEA, ESSEX
Tel: (0702) 63377/8 PL908

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 PL868

MICROWAY COMPUTERS
39 HIGH STREET
RAINHAM, KENT
Tel: (0634) 376702 PL612

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 PL640

LONDON

LOGIC SALES
19 THE BROADWAY
THE BOURNE, SOUTHGATE
LONDON N14
Tel: 01-882 4942 PL698

VIC ODDENS
6 LONDON BRIDGE WALK
LONDON SE1
Tel: 01-403 1988 PL485

GAMES WORLD
129 KING STREET
HAMMERSMITH
LONDON W6
Tel: 01-741 4467 PL515

SOFTWARE STORE LTD
35 LONDON ROAD
LONDON SW17
Tel: 01-685 1476 PL589

LIVERPOOL

BLUE CHIP
77 ALLERTON ROAD
LIVERPOOL L18 2DA
Tel: (051) 722 3037 PL517

SUSSEX

GATWICK COMPUTERS
62 THE BOULEVARD
CRAWLEY, SUSSEX
Tel: (0923) 26240/37842 PL912

STAFFORDSHIRE

MICROTRONICS
27a MARKET STREET
TAMWORTH, STAFFS
Tel: (0827) 51480 PL911

HOME SOFT COMPUTING
1st FLOOR
81A BOLEBRIDGE ST
TAMWORTH
STAFFS
(0827) 63549 PL911A

YORKSHIRE

MICRO BYTE SOFTWARE SHOP
36 COUNTY ARCADE
LEEDS
Tel: (0532) 450 529
PL913

YORK COMPUTER CENTRE
7 STONEGATE ARCADE
YORK
Tel: (0904) 641862
PL915

MICRO BYTE SOFTWARE SHOP
19A LOWER WARREN CENTRE
LEEDS
Tel: (0924) 376656
FULL RANGE OF
TOP QUALITY SOFTWARE
PHONE FOR PRICES
PL914

S. WALES

MAPPLE MICRO ASSOCIATES
FREEPOST
PO BOX 17
CWMBRAN
GWENT NP44 3YT
PL646

WARWICKSHIRE

FAST FORWARD COMPUTER STORE
29 SMITH STREET
WARWICK
Tel: (0926) 492004
PL540

FOR POWERFUL
DEALER ADVERTISING
CALL JON BEALES
on 01-437 4343
MA17A

PROGRAMMERS

Superb opportunity for persons with creative thinking ability.

Several vacancies exist for proficient machine code programmers with an extensive knowledge of Z80 and 6502 assembly langange.

A knowledge of 68000, C and hardware would be an advantage. Slef motivation and a strong interest in home computers are essential.

PROGRAMMER/ ENGINNER

We have an immediate requirement for a Porgrammer/Engineer to provide both a maintenance service for our range of Z80, 6502 and 68000 based machines as well as undertake development projects and systems software.

Applicants should be qualified to degree or equivalent level in electronics.

Write (including c.v.) or telephone:

Mrs. Mitchell
DALALI SOFTWARE LTD
29-33 Church Street,
Croydon, Surrey CR0 1RH
Telephone: 01-681 1365

IZ

COMPLETE PIECE OF MIND FOR ONLY *3p PER DAY

VERNSOFT MICRO COMPUTER PRODUCTS LTD WILL INSURE YOUR HOME COMPUTER AGAINST BREAKDOWN FROM ONLY £10.95 PER YEAR.

YES, THAT'S RIGHT! SHOULD YOUR COMPUTER NEED REPAIRING YOUR INSURANCE WITH VERNSOFT WILL COVER ALL POSTAGE, LABOUR AND PARTS.

TOO GOO TO BE TRUE? JUST FILL IN THE FORM BELOW AND WE WILL SEND YOU FURTHER DETAILS FOR YOUR PERUSAL OR FOR INSTANT COVER JUST PHONE IN YOUR DETAILS OR SEND THE COMPLETED FORM FREEPOST (NO STAMP NEEDED) AND WE WILL SEND YOUR COVERKIT BY RETURN!

MOST MAKES AND MACHINES CAN BE COVERED INSTANTLY.

PLEASE USE THE FORM BELOW FOR A QUOTATION ON YOUR COMPUTER

Telephone your computer and credit and details for INSTANT cover.

0388 777103

Spectrum 48k	£10.95
Commodore 64	£21.95
Commodore 128	£27.95
Amstrad 464	£23.95
BBC B 32k	£36.95

PL1P

VERNSOFT MICRO COMPUTER PRODUCTS LTD FREEPOST SHILDON DL4 1BS

Please tick

— Further Information — Quotation — Immediate cover required

Name..... Computer .....

Address..... Serial No: .....

.....

Signature.....

Access/Visa NO: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

NO STAMP REQUIRED

UTILITIES

AMSTRAD

★ DISCOVERY ★

The Tape to Disc tranfer program

- Provide a quick and easy way of transferring games etc onto disc.
- Built in intelligence alters basic programs to help get software to run.
- Even handles some turbo loaders.
- Adds relocations etc.

"THE EASIEST TO USE" AMTIX!
Only **£7.95** on tape or **£11.95** on disc
Please add £1.00 for overseas orders

SIREN SOFTWARE,
76 Bridge Street, Manchester M3 2RJ
Tel: 061-796 6874

PL1W

AMSTRAD

M-DOC

The essential Microdrive utility.

Have you precious files on a cartridge which will still CAT but no longer load? M-Doc to the rescue!

● Find, load, repair and rewrite bad sectors, and hence load damaged files ● Full status reports on pinpoint faults quickly ● Monitor-type sector editing ● Full printer support of screen displays ● "Filter data" option for text files (eg Tasword) ● Separate program makes corrupted BASIC programs editable ● Only **£6.95**.

For Spectrum 48K and Plus. Available from good computer shops and Micronet 800. Also via fast mail order (UK post free, Europe add £1, overseas add £2 airmail) with 14-day "refund if not entirely satisfied" guarantee (statutory rights not affected). C-Doc upgrade £2.50 (please return cassette only). Trade enquiries welcome: phone R&R Distribution on 0977 795544.

SEVEN STARS

Seven Stars Publishing, Dept W, 34 Squirrel Rise, Marlow, Bucks SL7 3PN. Tel: 06284 3445

PL1Y

WANTED

PROGRAMS REQUIRED

Top quality games required for Commodore 64/Plus 4/ C16/128, Amstrad 464,664,6128, BBC B, Electron, Spectrum, Oric/Atmos, Einstein, Lynx, MSX, Atari (Inc ST).

Send to:

CENTRAL SOLUTIONS SOFTWARE
500 Chesham House, Regent Street
London W1R 5FA

PL1X

SOFTWARE

BACK by popular demand! The Nut-Hacker Suite will still find lives pokes and let you alter messages and graphics in Spectrum Games. A snip at £4. Cheques to P M Brannigan, 11 Morningside View, Liverpool L11 1BB.

SPECTRUM and AMSTRAD Software Library, Free membership. Latest titles. To join write to: Software Specialists, 7 Gallowhill, Croeff, Perthshire, PH7 3HF.

SELLING Spectrum Software Valhalla £4. Lord of the Rings, £10-50, Hobbit £6, Knight Lore £6, Sabre Wulf £4, Alien £4, Starion £3, Formula One £2.50, Cyclone £2.50. Phone: 0625 877936 (evenings).

MAGAZINES

DRAGON USER

To make the most of your Dragon you need **Dragon User** — the independent magazine for Dragon owners. To make sure that you receive a copy of Dragon User regularly subscribe direct to us. A year's subscription costs £14 for 12 issues (overseas rates available on application). Send a cheque or postal order made payable to Dragon User, and accompanied by your name and address, to Dragon User, Subscription Department, Oakfield House, Perrymount Road, Haywards Heath, Sussex RH16 3DH.

PL32

COMPUTER SWAP

SPECTRUM Plus. £75. VTX 5000 modem unused £40. Currah Micro Speech £20. Kempston Pro interface and joystick £15. Telephone: 01-543 2347 after 7pm (SW London)

BBC B, 400K, 40/80 track disk drive, Acorn DFS, leads, AMX Mouse, +£200 worth software including Elite, Zalaga, Roms including Beebcalc, 10 disks. £600 ono. Tel: Guildford 38560. Buyer collects.

COMMODORE 1541 disk drive, unused, unwanted xmas present, only £109, yes only £109 for a brand new 1541. Save £90. Phone: Mick Turner 021-440-4603 (Day) or 021-449-7545 (Day) or 021-449-7545 evenings or weekend.

CBM 64, cassete recorder, disc drive, joysticks, lots of software, magazines etc. £250 ono. Tel: Phil (0336) 2404. Also wanted Jupiter Ace in working order.

AMSTRAD CPC 6128 with Colour Monitor for sale. As new with manual, CP/M2.2, and DR Logo disks. 11 spare disks. £299 cash (no offers). Contact John at Week-end on Southampton (0703) 766181.

CBM 64 +2CN+£200 worth of software + mags, etc. Must sell before 16th March. Phone Nick on 0233 74385 – £150 ono.

ATARI Assembler Editor £15.00. Microsoft Basic Disc version £20.00 Book your Atari computer £12.00. Computer Wars, Submarine Commander, Solo Flight £5.00 each. Ring Rochdale 0706 351066.

SPECTRUM +, T.V., VTX5000 Modem, Printer, Recorder, Joystick and Interface, Amplifier, Spec Drum Synthesizer, Currah Speech, ribbon connector, extra keyboard, £135 of software, magazines, all boxed – £270 ono. Telephone: Warwick 491585.

SPECTRUM plus B?W TV, Quickshot M00, Kempson interface, 24 games. Costs new £370, bargain £180 (one year old) v.g.c. Must sell. Phone: Bromsgrove (0527) 32649 (after 5pm) ask for Alan.

CBM 128, 1570 disc drive, Datasette, joystick, boxed, 2 months old, guaranteed. Disc and cassette software and leads. Worth £550. Sell £400. Phone: Dave 01-319 2248. After 6pm.

SINCLAIR QL tgether with Metacomco assembler, chess and books only £140. Phone: Milton Keynes (0908) 76650 evenings.

WANTED QL software; UCSD Pascal. Also, has anyone designed an Eprom programmer/copier for the QL, suitable for home construction? Information on either please contact Steve on 01-654 3891 (weekend/evenings).

AT-HOME Station. Sinclair QL, unused, with Ver2.3 applications. Complete connunications (Databases, Prestel, BBCs) using WS2000, Q-Connect. Offers for complete system or separated. Will swop for double drives with RAM.

MANNESNANN Tally MT80 Dot Matric Printer with centronics interface for use with many different computers including BBC (leads for ORIC and Amstrad included) £175. Telephone: Chard (04606) 5036.

SPECTRUM 48k, Microdrive, Interface 1, Joystick Interface Specorum utility, plus 13 programmes including Lord of the Rings, Match Day, Yie Ar Kung Fu, and Barry McGuigans World Champion Boxing £225. Phone: Iris 01-699 7279.

SPECTRUM Plus 48k Interface One, Microdrive, Specdrum, Joystick Interface, approx sixty games all in excellent condition. All for £225. Phone: Ian on 0703 782662.

cluding Microdrive, Interface I, Cartridges, Tasword II and Masterfile, two microdrive books and printer lead, all manuals and leads excellent condition £50 ono. Tel: 0509 508864 after 6pm.

QL, mint condition, over £100 of books and software suited to the 68000 programmer: Metacomco Assembler, Advanced User Guide, 68000 books, etc. All for £199 ono. Tel: 0395 266193 evenings.

C64 cassette software originals. Many top titles inc: Hypersports Entomed.Must sell hence £3 each. SAE for list. Bpaul Brady, 27 Wykeham Street, Scarborough, North Yorkshire YO12 7SA.

EPSON FX100 F/T printer, £295 ono. Supercalc3 for Apricot, £95 ono. BCPL ROM for BBC, £45 ono. Six Acornsoft business packages, £45 ono. Toolworks C/80 compiler, £35 ono. Pascal ROM, £35 ono. Tel: Nottingham (0602) 262498.

AMSTRAD CPC464, Colour Monitor £300 of software, joystick, etc. £400 ono. Phone: Jeff, 01-654 0556.

FOR sale QL, Modem, Colour Monitor, s/ware spare disks etc. Hardly used, cost £600 will sell £400 or swap for BBC, Modem, Monitor with cash added. Tel: Shayne 01-402 3287.

FOR sale AGF Joystick Interface II for ZX Spectrum £5, 48k Spectrum software, 12 games and utilities £20. Phone Dave on Greenhithe 844629 evenings.

DRAGON 37 Computer Joystick and over 30 games including Shock Trooper and Tuxtaposhion £80 ono. Phone: Staines 56463 evenings.

AMSTRAD CPC464 + green screen, modulator, lots of software including Lord of the Rings. Also joystick, disc drive with interface and discs. Price negotiable. Phone: 381-4650 (Fulham).

AMSTRAD CPC 464 Colour monitor 6 months old, hardly used. Many games, software manual cassette. Case £190. Rugby (0788) 817029 evens.

AMSTRAD QC 464 plus colour montior plus speech syn. (dik) plus software plus joystick, books plus basic Part I £250. Tel: 01-946 9941 Wandsworth.

AMSTRAD 6128, G?S modulator, spare discs, games, magazines, joystick, 2 tape reocrders £365 ono. Also Spectrum software, 90 originals. QU4 etc. All for £140 or will split/Also mags + books £50.

ATARI Midi Interface and software by Digicomm, software will plays A.M.S. songs through Midi, Interface will connect Atari to any Midi musical instrument. Cost £60, sell £40 Basildon 284771.

FOR sale ZX Interface 1, two microdrives, thirteen cartidges, Tasword 2, Ohnicalc 2, profile 2 and Melbourne House microdrive book. All for £95. Phone: Dave on Greenhithe 844629 evenings.

BLACK Fire Mountain, Quilled Adventure for 48k Spectrum, £4.00 or £3.00 if supplying own tape. Peter Ruddick, Tree Tops, Anewood Road, Sands, High Wycombe, Bucks, HP12 4DD.

WANTED BBC 'B' any condition, working or not. Will swap for Spectrum 48k incl Camen c.g. Elite or pay cash. Phone: Phone: 0495 248226 ask for Lee.

SPECTRUM with Interface 1, Kempston Joystick £200 worth of software (games and business), numerous manuals. All for £150, ring 02774 58476 (Essex area) after 6 pm or weekends.

BROTHER HR5 printer (Centronics Interface) with power supply, paper and lead for Amstrad Micro £90. Tel: 0245 460180.

Charts

Amstrad

1	(4)	Yie Ar Kung Fu	(Imagine)	£7.95
2	(1)	Elite	(Firebird)	£14.95
3	(–)	Sky Fox	(Ariolasoft)	£9.95
4	(–)	Finders Keepers	(Mastertronic)	£1.99
5	(2)	Hypersports	(Imagine)	£9.95
6	(–)	Nonterraqueous	(Mastertronic)	£1.99
7	(7)	Who Dares Wins 2	(Alligata)	£8.95
8	(6)	Caves of Doom	(Mastertronic)	£1.99
9	(10)	Speelbound	(Mastertronic)	£2.99
10	(8)	One Man and his Droid	(Mastertronic)	£1.99

Atari

1	(3)	One Man And His Droid	(Mastertronic)	£1.99
2	(2)	Action Biker	(Mastertronic)	£1.99
3	(5)	Chimera	(Firebird)	£3.95
4	(7)	Goonies	(US Gold)	£9.95
5	(1)	Gighter Pilot	(Digital Integration)	£9.95
6	(4)	Smash Hits 4	(English)	£9.95
7	(10)	Spy vs Spy	(Databyte)	£9.95
8	(–)	King Of The Ring	(Gremlin In Graphics)	£9.95
9	(9)	Spy Vs Spy	(Beyond)	£9.95
10	(–)	Electra Glide	(Activision)	£8.95

BBC

1	(1)	Yie Ar Kung Fu	(Imagine)	£9.95
2	(5)	Strike Force Harrier	(Mirrorsoft)	£9.95
3	(2)	Way of the Exploding Fist	(Melbourne House)	£9.95
4	(8)	Repton 2	(Superior)	£9.95
5	(–)	Phantom Combat	(Doctorsoft)	£9.95
6	(4)	Citadel	(Superior)	£9.95
7	(–)	Fleet Street Editor	(Mirrorsoft)	£9.95
8	(6)	Speech	(Superior)	£9.95
9	(–)	Combat Lynx	(Durell)	£9.95
10	(5)	Computer Hits (10)	(Beau Jolly)	£9.95

Commodore 64

1	(1)	Yie Ar Kung Fu	(Imagine)	£8.95
2	(1)	Kung Fu Master	(US Gold)	£9.95
3	(2)	Eidolon	(Activision)	£14.95
4	(3)	Rock 'N' Wrestle	(Melbourne House)	£9.95
5	(–)	Lord of the Rings	(Melbourne House)	£15.95
6	(4)	Desert Fox	(US Gold)	£9.95
7	(8)	Mercenary	(Novagen)	£9.95
8	(7)	Kane	(Mastertronic)	£1.99
9	(–)	Koronis Rift	(Activision)	£9.95
10	(–)	Last V8	(Mastertronic)	£2.99

Spectrum

1	(1)	Movie	(Imagine)	£7.95
2	(7)	Commando	(Elite)	£1.95
3	(3)	Winter Games	(Epyx/US Gold)	£7.95
4	(–)	Rambo	(Ocean)	£7.95
5	(8)	Yie Ar Kung Fu	(Imagine)	£7.95
6	(4)	Barry McGuigan World Champions	(Activision)	£7.99
7	(5)	Hypersports	(Imagine)	£9.95
8	(–)	Devils Crown	(Mastertronic)	£1.99
9	(–)	Gunfright	(Ultimate)	£9.95
10	(2)	Spellbound	(Mastertronic)	£2.99

All figures compiled by Gallup/Microscope

Top Twenty

1	(1)	Yie Ar Kung Fu *(Various)*	**Imagine**
2	(2)	Formula One Simulator *(Various)*	**Mastertronic**
3	(–)	One Man and his Droid *Mastertronic)*	**Mastertronic**
4	(3)	Kung Fu Master *(C64)*	**US Gold**
5	(5)	Movie *(Spectrum)*	**Imagine**
6	(4)	Hypersports *(Various)*	**Imagine**
7	(11)	Finders Keepers *(Various)*	**Mastertronic**
8	(12)	BMX Racers *(Spectrum/C16/C64)*	**Mastertronic**
9	(18)	Action Biker *(Various)*	**Mastertronic**
10	(10)	Winter Games *(Spectrum/C64/Amstrad)*	**Epyx/US Gold**
11	(13)	Commando *(Spectrum/C64)*	**Elite**
12	(–)	Kambo *(Spectrum/C64)*	**Ocean**
13	(7)	Lord of the Rings *(Various)*	**Melbourne House**
14	(6)	Elite *(Various)*	**Acornsoft/Firebird**
15	(8)	Eidolon *(C64/Atari)*	**Activision**
16	(20)	Big Mac *(C64/C16)*	**Mastertronic**
17	(–)	Barry McGuigan World Champions *(Various)*	**Activision**
18	(–)	Rockman *(Various)*	**Mastertronic**
19	(9)	Computer Hits 10 *(Various)*	**Beau Jolly**
20	(15)	Spellbound *(Spectrum/Amstrad)*	**Mastertronic**

Figures compiled by Gallup/Microscope

Readers' Chart No 64

1	(2)	Elite *(Spectrum/C64/BBC/Amstrad)*	**Firebird/Acornsoft**
2	(1)	Commando *(Spectrum/C64/C16)*	**Elite**
3	(4)	Lord of the Rings *(Spectrum/C64/Amstrad)*	**Melbourne House**
4	(–)	Yie Ar Kung Fu *(Spectrum/C64/Amstrad/BBC/MSX)*	**Imagine**
5	(3)	Winter Games *(Spectrum/C64)*	**Epyx/US Gold**
6	(–)	Movie *(Spectrum)*	**Imagine**
7	(7)	Way of the Exploding Fist *(Various)*	**Melbourne House**
8	(–)	Tomahawk *(Spectrum)*	**Digital Integration**
9	(–)	Kung Fu Master *(C64)*	**US Gold**
10	(8)	Rambo *(Spectrum/C64)*	**Ocean**

Winnng Phrase No 64: "Amstrad Elite: no go", from Mark Lumley of Morden in Surrey, who wins.

Now voting on week 66 – £25 to win

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

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

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

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

Voting for Week 66 closes at 2pm on Wednesday March 12, 1986. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name .....

Address .....

.....

.....

My top 3: Voting Week 66

1.....

2.....

3.....

My phrase is: .....

New Releases

STUNNING

Lurking behind the rather naff cover of *Contraption* is an inventive platform and ladders game with some of the most stunningly detailed graphics ever seen on the Amstrad. Perhaps not all that surprising really since it is converted from an excellent BBC game which also featured fine graphics.

The game plays in hi-res mode and features a plot totally designed to encourage loony animation as it's chock full of wackyness as it is of alliterations (poisonous plants, bouncing bombs, pumping pistons, jiving jellyfish – that sort of thing.)

Does anyone really need to know about the plot? You have to collect some objects, step on thingys and dodge whatsits, you being a terminally mad professor (isn't everyone). Nevertheless, no matter what other bounce and jump games you own, *Contraption* is another necessary addition. Not only are the graphics superb but the 11 screens are so fiendishly planned that the game provides a challenge equal to that of the original Miner game. Highly recommended.

Program *Contraption*
Price *£7.95*
Micro *Amstrad*
Supplier *Audiogenic*
PO Box 88
Reading
Berks

TRIPLE SCORE

Great news for QL owners with another one of those rare packages that actually uses some of the power of the machine and this forms a mandatory purchase (even for those currently only using their QL for business).

Computer *Scrabble* has been around for a while and I still find the original Spectrum version one of my most frequently loaded titles. The QL version is certainly the finest so far with extra features and a larger dictionary.

Unlike other versions, the board on the QL edition is large enough (filling around two thirds of the screen) to incorporate information on double letter triple word score positions (by letters rather than square colours). The rack, displayed in the bottom of the screen, is large with a nicely designed, authentic looking, character set.

Every option you could possibly want is present; playing against the computer, skill level, speed levels, save game, even a timer for two

Pick of the week

THE PRINTED

Sticking my neck out I will predict that, in the long run, programs like *Fleet Street Editor*, will be of more practical use to more home users than a thousand home budget or spreadsheet programs. What *Fleet Street Editor* allows you to do, with a few restrictions on this version, is design a printed page. What a wordprocessor does for words, *Fleet Street Editor* does for words and pictures.

Who needs it? Small businessmen who can knock out customised ads/rate cards, people holding functions like fairs and jumble sales, clubs with a use for newssheets and booklets (computer clubs and adventure clubs spring immediately to mind), school magazines, freelance writers wanting a customised logo or heading, etc, etc.

You require a BBC B, disc drive and a dot matrix printer. It is relatively simple to configure the program for your particular set-up from within the program. As with all commands, the main options required are selected via icons – a number of printers are already listed if yours is not.

A library of graphics is held on a separate disc, there are a large number of predefined shapes and logos covering everything from elaborate illuminated manuscript style letters to a digitised Margaret Thatcher. These shapes may be 'pulled in' from the library by marking them out with a cursor driven box; they can be used in virtually any size and stored for use in the final make-up.

An alternative to using the graphics layout is to design your own shapes using a straightforward, but completely acceptable 'artists designer' package built into the package. This provides (again via icons) the usual draw, fill, expand/reduce, facilities, and again the graphic is saved for later use.

Actual layout of the page occurs via panels, this is the major restriction in the program. You must work in terms of a series of page subdivisions called panels – you have a choice of either eight (four down each

This Week

Program	Type	Micro	Price	Supplier
The Rocky Horror Show	Arc	Amstrad	**£14.95**	CRL
Swift Spreadsheet	Ut	BBC	**£29.95**	Audiogenic
Micro Maestro (Conc.t pch)	Ed	BBC B	**£14.99**	Mupados
Micro Maestro (keyboards)	Ed	BBC B	**£14.99**	Mupados
Mr Men Magic Storymaker	ED	BBC B	**£9.95**	Mirrorsoft
Mini Office 2	Ut	BBC B	**£14.95**	Database
New Consultant	Ut	Commodore 128	**£59.95**	Ariolasoft
The Berks Trilogy	Arc	Commodore 16	**£6.95**	CRL
Borrowed Time	Ad	Commodore 64	**£14.95**	Activision
Dr Who + Mines of Terror	Ad	Commodore 64	**£11.95**	Micro Power
Ark Pandora	Arc	Commodore 64	**£9.95**	Rino
Hotline Quiz	Ed	Commodore 64	**£9.95**	Chalk Soft
Iwo Jima	S	Commodore 64	**£7.95**	PSS
Cut and Paste	Ut	Commodore 64	**£24.95**	Ariolasoft
Graphic Adventure Creator	Ut	Commodore 64	**£22.95**	Incentive
Homepak	Ut	Commodore 64	**£34.95**	Ariolasoft
Movie Maker	Ut	Commodore 64	**£16.95**	Ariolasoft
New Consultant	Ut	Commodore 64	**£44.95**	Ariolasoft
New Paperclip	Ut	Commodore 64	**£44.95**	Ariolasoft
Swift Spreadsheet	Ut	Commodore 64	**£24.95**	Audiogenic
Elektra Glide	Arc	Commodore 64	**£9.95**	English
Ace	Arc	Plus 4	**£10.95**	Cascade Games
Computer Scrabble	S	QL	**£14.95**	Leisure Genius
Advanced Swords + Sorcery	Ad	Spectrum	**£14.95**	PSS

PAGE

half of an A4 sized sheet) or four (four running right across the page) or a combination. The construction of each panel is a matter of manoeuvring the graphic to the correct place and typing text in around it. The program automatically arranges the text.

Once each panel with text has been constructed, it is possible to look at the completed page in a slightly scematic form.

There are obviously a great many more procedures and subtitles including using wordprocessor files from other sources (like *View*) and a variety of body text styles. The manual includes an extensive general feature on the whole business of publishing – sections on litho printing and photocopying; nothing, though, about moving to Wapping . . .

This BBC package is the 'baby' of the Fleet Street range and suffers slightly from memory limitations, despite the extensive use of discs. Nevertheless, it is a very useful and user friendly package.

Program *Fleet St Editor*
Price *£39.95*
Micro *BBC B*
Supplier *Mirrorsoft*
Headington Hill Hall
Oxford
OX3 0BW

minutes to go, tournament rules, etc. I played the computer at a middling level and found the responses easily fast enough and intelligent enough to give me more than a run for my money (well, actually I lost). Things started badly with oozing on a double word and continued with the outrageous (but legal) toeline on a triple.

An excellent program, and astonishingly enough it costs no more on microdrive for the QL than the Spectrum original cost on tape – £14.95. For a program of this quality, that is very cheap indeed. It doesn't matter if you don't like games – pretend it's an educational tool for improving your vocabulary (perhaps it is) and hide it among the spreadsheets.

Program *QL Scrabble*
Price *£14.95*
Micro *QL*
Supplier *Leisure Genius*
3 Montague Row,
London
W1H 1AB

VISUAL PROBLEM

In the past year or so Bubble Bus has become one of the more highly regarded independent (ie, not part of US Gold) software houses with releases like *Wizards Lair* and *Starquake*.

Latest from the company is an Amstrad game called *Deathsville*. It is an arcade adventure game closely moulded on *Sorcery* with detailed multi-coloured graphics and complicated plot. I think the game lacks some of the professional finish in *Sorcery* and is a little rough around the edges.

Whilst *Deathsville* features woods and caves, boiling cauldrons and oak doors all drawn in multi-coloured detail, the graphic design makes it sometimes a little difficult to see what is what. Another visual problem is the central figure, he lacks any substance or solidity – this is definitely a mistake, since the other characters don't have this problem.

Although the controls have been reduced to up, down, left, right, pick up, drop, there are, nevertheless, a large number of complex puzzles in the game.

For addicts of this style of adventure, *Deathsville* has much to offer, otherwise you may remain unconvinced.

Program *Deathsville*
Price *£7.95*
Micro *Amstrad*
Supplier *Bubble Bus*
87 High Street
Tonbridge
Kent

CORRUPTED

Microdeal have leapt into the Atari ST market with a number of disc utilties packaged in smart, shiny, silver plastic folders. *Disk Help* is a sort of mini Disc Doctor in that it helps you recover, to some extent, corrupted programs.

There are essentially two different kinds of damage that may occur to a disc – magnetic, where the disc is physically OK but data has been corrupted, or physical, where the disc itself is damaged.

Whatever the problem the program will take a damaged disc and rewrite it byte by byte on to a fresh disc, filling in any missing data with X's. At this stage you should be able to load and correct the new version of the file.

The programs contain a couple of other utilities as well – format (without returning to desktop) and a special format that does not erase existing data since it saves it first, formats the disc and then rewrites it to the fresh disc. One final useful feature – discs formatted under this system may be used even if there is an error somewhere on the disc.

Quite a useful utility then, easy to use for the beginner and suitable for use with both single and double-sided discs and drives.

Program *Disk Help*
Price *£29.95*
Micro *Atari ST*
Supplier *Microdeal*
PO Box 68
St Austell
Cornwall

Activision, 15 Harley House, Marylebone Road, London NW1, 01-486 7588. **Ariolasoft,** 68 Long Acre, Covent Garden, London WC2, 01-836 3411. **Audiogenic,**39 Sutton Industrial Park, London Road, Reading, Berks 1AZ,0734 664646. **CRL,** CRL House, 9 Kings Yard, Carpenter's Road, London E15 2HD, 01-533 2918. **Cascade Games,**1-3 Haywra Cresent, Harrogate, North Yorkshire HG1 5Dg, 0423 504526.**Chalk Soft,** PO Box 49 Spalding, Lincs PE 11 1 NZ, 0775 69518. **Database,** Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY, 061 456 8383. **English** 50 Newton Street5, piccadilly, Manchester. **Incentive,** 54 London Street, Reading RG1 4SQ, 0734 591678. **Leisure Genius,** 3 Montagu Row, London W1H 1AB, 01-935 4622. **Micro Power,** Northwood House, Worth St, Leeds LS7 2AA, 0532 434006. **Mirrorsoft,** Mirror Group, Holborn Circus, London EC1P 1DQ, 01-353 0246. **Mupados,** Unit 11, Llambed Ind Est, Tregaron F:d, Lampeter, David SA48 8LT. **PSS,** 452 Stoney Stanton Road, Coventry CV6 5DG, 0203 667556. **Rino,** 1 Orange Street, Sheffield 4DW, 0742 755796. **System Three,** Davis House, 29 Hatton Gardens, London EC1N 8DA. **Tasman,** Springfield House, Hyde Terrace, leeds LS2 9LN, 0532 438301.

Chat lines

Do you remember the ad for business computers that emphasised their networking capabilities, and ended with the slogan, 'We should be talking to each other'? It struck me at the time that the slogan is at odds with the image of the computer hobbyist as a solitary being, staying up to the early hours either playing or programming games. Has the computer led to increasingly isolated individuals, I mused?

Then, more recently, I was given a tour of Micronet 800, the home computer user's database on Prestel, and as I shown the various facets of the network it became clear that far from being a lonely and introverted activity, computing has great and radical potential for bringing people together. So if what I say about electronic publishing refers specifically to Micronet, I hope the other networks will forgive me – the implications apply to them all, from the largest to the smallest bulletin board.

Put aside the downloading of games, the multi-player adventures and the competitions, and look instead at the chat lines. Here, for only 40 pence per hour, off peak, anybody with a computer can 'talk' to other computer users anywhere in the country in CB emulation style – that's to say that there's time to read a message then it clears for the next one. Nothing so radical in that, except that you've no idea who you're talking to – there is nothing physical to create preconceptions about a person.

Then there are the specialist areas of these open forums. Want to discuss politics? There's an area for you. What if you're gay? Micronet's most used section is their gay chatline, and though computers and affairs of the heart may seem strange partners, it makes a lot of sense, providing an opportunity to talk for those who dare not or will not come out.

Perhaps the most exciting possibility though is for the disabled. Somebody who is house-bound, for whatever reason, can suddenly find themselves part of a widespread social net, providing they can use a keyboard, and they can be sure that there won't be any adverse reactions to their disability because nobody need know. On a bulletin board, everyone is equal.

By now I was extremely excited by the possibilities of the networks. Then a doubt set in. Could people expect this idyllic state of free speech to last forever? Certainly Micronet won't censor communications. The only way to get thrown off the network is to raise the wrath of so many people that they start to complain. But free and open exchange can be a frightening thing for governments and the networks allow not only for chat-lines but also publishing. Using the Gallery pages, subscribers can write and illustrate their own electronic magazines, to be read by any other subscribers. And those magazines can contain whatever views they want.

Now I wouldn't want to suggest that our present government is censorship happy (after all, we don't even have film censors any more – while tightening up and extending their powers they made the C stand for Classification) but one day an MP looking for a cause to woo the voters will seize upon so much subversive free speech and pounce.

Bulletin boards and networks still have something of an air of mystery, an arcane area for the boffins of computing, which is sad. With the very reasonably priced modems available and highly reasonable subscription charges there's no reason why many more people shouldn't be taking advantage of the opportunity to log on and spread ideas. Yes – we should be talking to each other!

John Minson

Puzzle No 198

'Flickafree Rentavision' the television rentals firm has just come to the end of a three week sales campaign, which has resulted in a record number of new installations. Over this three week period a total of 96 TV sets have been installed, and each week was an improvement on the previous week.

When the figures for each week came to be analysed it was noted that the difference in sales between the first and second weeks, multiplied by the difference in sales between the second and third weeks, came to the actual number of sales during the first week.

How many sales were made during the *third* week?

Solution to Puzzle No 193

The dates of birth were: Simon's father 3:8:1924, Simon's mother 8:5:1929, Simon 31:7:1961, Simon's cousin 2:8:1961, Simon's sister 4:7:1969.

```
100 DIM E(22)
110 RESTORE
120 FOR N=1 TO 22
130 READ E(N)
140 NEXT
150 LET C=19
160 FOR N=1 TO 22
170 YEAR=C*100+E(N)
180 FOR M=1 TO 12
190 FOR D=1 TO 31
200 LET D$=STR$(D)
210 LET M$=STR$(M)
220 LET Y$=STR$(YEAR)
230 LET Z$=D$+M$+Y$
240 LET Z=VAL(Z$)
250 LET Q=SQR(Z):LET Q=INT(Q+.5)
260 IF Q*Q=Z THEN PRINT D$;"/";M$;"/";Y$
270 NEXT D
280 NEXT M
290 NEXT N
300 END
310 DATA 00,01,04,05,16,21,24,25
320 DATA 29,36,41,44,49,56,61,64
330 DATA 69,76,81,84,89,96
```

It is fairly well known that square numbers can only end with the digits 0, 1, 4, 5, 6, or 9. Not so well known is the fact that if the final *two* digits are taken these can only be one of 22 possible two-digit termini. These are the values used in the DATA statements, and which are used in Line 80 to generate the year values in the range 1900 to 1996.

The program generates all dates having 31 days and 12 months for each of these years, and tests the resulting figure to determine if it is a perfect square. Any found are printed out.

Winner of Puzzle No 193

The winner is I A Scott of Darlington, County Durham, who will be receiving £10.

Rules

The closing date for Puzzle 198 is April 2.

The Hackers

ANIROG

C16/PLUS 4

TOM THUMB

LATEST TECHNIQUE OF DATA COMPRESSION USED TO GIVE YOU SO MUCH FOR SO LITTLE PURE MAGIC?

£6.95

C16/PLUS 4

178 SCREENS OF ARCADE ADVENTURE

GHOST TOWN

£5.95

A HIGH RES GRAPHIC ADVENTURE C16/PLUS 4

JUMP JET

Flight Simulator & Combat Action

PLUS 4
OR
C16+16K
£9.95

C64 Version

ATLANTIS

C16/PLUS 4

£6.95

FAVOURITE FOUR FOR ALL THE FAMILY

C16/PLUS 4

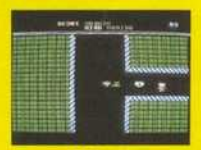
C64 Version

FLIGHT PATH 737

MOON BUGGY

£7.95

LAS VEGAS



ZODIAC

SKRAMBLE £6.95

PETCH £6.95

CATACOMBS £6.95

MINIPEDES £6.95

STAR COMMANDER
£6.95

3D TIME TREK
£6.95

TRIVIA 1400 QUESTIONS ON SIX DIFFERENT TOPICS. ALL FOR ONLY £7.95

OUT ON A LIMB

48K ONLY ARCADE ADVENTURE LOADS IN 3 SECTIONS ONLY £6.95

16K RAM PACKS AT ONLY £25

64K RAM PACKS AT ONLY £50

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

MAIL ORDER: Payment by Cheque, P.O., Visa or Access

LEGEND OF THE AMAZON WOMEN

A plane crash in the dark forests of the American sub continent, as infamous as it is unknown ... the ghostlike images of wild women disappearing into the jungle ... a quest of unimaginable combat and untold adventure set against the eerie backdrop of gripping jungle scenarios ... the mesmerising compulsion that is ... the Legend of the Amazon Women.

In the treacherous jungles of South America the rule of survival is victory against all odds.

Commodore 64/128 £9.95
Spectrum 48K £7.95

Available soon Amstrad

U.S. Gold Ltd.,
Unit 10 Parkway Industrial Estate,
Heneage Street,
Birmingham B7 4LY.
Tel: 021 3598881

IN THE MYSTICAL AMAZON JUNGLE
A FATE WORSE THAN DEATH AWAITS YOU ...

U.S. GOLD