

POPULAR Computing WEEKLY

Only 50p.

13-19 March 1987

Vol 6 No 11

Low cost PC clones: now Commodore gets in on the act

NEWS DESK

Amiga 500
launched
in London

Price and UK
availability
details inside

SOFTWARE

ST Art Studio

Mini Office II
on Commodore

PCW Masterfile

Sub £500 model PC1 announced
Details on page 4



RIDERS GO FULL CIRCLE...



SHOCKWAY RIDER

SPECTRUM £7.95

AMSTRAD & COMMODORE £8.95

FTL
FASTER·THAN·LIGHT

FTL FASTER THAN LIGHT, CARTER FOLLIS GROUP OF COMPANIES.
SEDGLEY ROAD EAST, TIPTON, WEST MIDLANDS DY4 7UJ. Tel: 021-557 2981 (4 lines)

◀ SOFTWARE

12 Mini Office II

Database's low cost suite of business programs has been converted for the Commodore 64. Word-processing, database, spreadsheet and communications software, all for under £10.

13 AMX Pagemaker

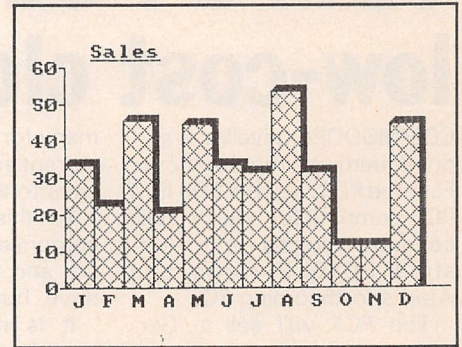
Desk top publishing packages on small micros are all the rage. Tony Kendle looks at *Pagemaker* for the Amstrad CPCs from a comparative veteran in the field, AMS.

14 Masterfile

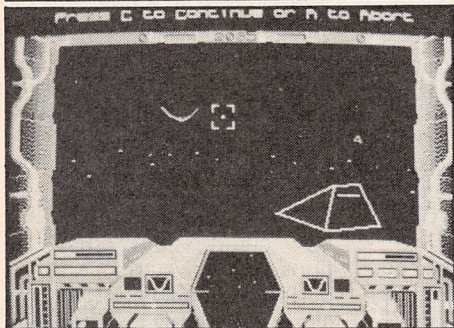
The ever popular *Masterfile* is now available on the Amstrad PCW machines. Easy to use and flexible, Tony Kendle discovers that it has stood the test of time.

15 ST Art Studio

Another conversion of a famous program – this time to the Atari ST. Chris Jenkins notes that the latest implementation of *Art Studio* has undergone something of a transformation.



GAMES ▶



16 Reviews

The coin-op conversions are still in force, with *Nemesis* (at last!) from Konami and *Elevator Action* from Quicksilva.

Plus *Thrust II* from Firebird and the black and green version of *Starglider*, for the PCWs.

21 Arcade Action

Commodore 64 owners stop here. Tony Kendle has tips galore for some of the best Commodore games. Plus this week's Gallup Top Twenty.

22 Adventure Corner

Tony Bridge checks out some of the new adventure fanzines around.

◀ PROGRAMMING

25 Amstrad CPC

Cheer up your disc drive with this set of utilities.

25 Spectrum

Merge or overlay your screens, courtesy of Dave Nash.

26 QL

Helpful routines from Douglas Pine.

28 Commodore 64

Part one of *Xedion*, an all-action arcade game.

30 Bytes and Pieces

33 Peek and Poke

Kenn Garroch helps out with programming queries.

REGULARS ▶

4 News Desk

Atari and Commodore in the battle of the new machine launches at the Hannover Fair.

In the Tramiel corner, the Mega STs and Atari PC, over at Commodore, the new Amigas, and a PC surprise.

10 Letters, Puzzle

Includes the second token in our *Image System* offer.

11 Chess Tournament

35 Soundcheck

37 Communications

Steve Gold looks at Micronet's Sunday Extra section.

44 New Releases

46 Ziggurat, Hackers

Editor Christina Erskine News editor John Brissenden Features editor John Cook Technical editor Duncan Evans Production editor Michelle Beauchamp Supplements editor Christopher Jenkins Supplements designer Barbora Hajek Advertisement and Promotions manager Simon Langston Assistant advertisement manager David Osen Advertisement executives Jon Beales, Rodney Woodley Classified executive Susannah King Editorial secretary Annmarie O'Dwyer Administration Geraldine Smyth Managing editor Peter Worlock Publishing director Jenny Ireland. Published by Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 296275 Fax 01-439 0681 Typeset by Magazine Typesetters, 6 Parnell Court, East Portway, Andover, Hampshire. Printed by McCorquodale Magazines, Andover, Hampshire. Distributed by S M Distribution, London SW9, Tel 01-274 8611, Telex 261643. © Sunshine Publications Ltd 1987. ISSN 0265-0509

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.

CBM's PC1 joins low-cost clones

COMMODORE unveiled a surprise item at the Hannover Fair, the PC1, a sub-£500 IBM PC compatible which will compete directly with Amstrad PC1512 range and Atari's forthcoming PC.

The PC1 will sell in Ger-

many for DM 1,295, which at current exchange rates, translates to around £430.

At this price, the system comprises keyboard, processor and 5¼ inch floppy disc drive, but not a monitor.

It is not yet clear when

exactly Commodore plans to introduce the PC1 in Europe but it should become available here during the summer. The price looks likely to be £449-£499, but Commodore may decide to add a monitor for the UK market.

Mastertronic moves into LPs

MASTERTRONIC is setting up its own record label, entitled Mastersound.

Mastersound will concentrate on compilation albums. The first LP is called *Heat of Soul*, and will include currently popular tracks such as *Stand by Me*, *When a Man Loves a Woman* and *Soul Man*.

Heat of Soul will be sold at £3.49.



Tramiel: Atari's PC is "inferior" to STs

ATARI demonstrated just two models of its IBM PC clone at Hannover, in a stand crowded with Mega STs and the 1040STF. The company is treating the launch of the Atari PC in a low-key manner, and stresses that the machine does not form a major part of Atari's plans.

Indeed, the exact configuration for the UK version of the Atari PC has yet to be finalised.

In the US, Jack Tramiel, Atari's chairman, says that the PC will be sold in two versions. Both will have 512K Ram, one built-in 5¼ inch floppy disc drive, EGA graphics board, and serial and parallel ports. Each also has MSDOS 3.2, GWBasic, and Gem, with *GemWrite* and *GemPaint*. However, one will be sold without a monitor at \$499, and one with a colour monitor at \$699.

But in the UK, it may well be different. Bob Gleadow, Atari UK's general manager, is thought to be considering selling both versions with a monitor, but selling one model without the EGA facility and one with.

Jack Tramiel, was dismissive about exact specifications for the Atari PCs. "It's perfectly possible to do the clone differently. If Gleadow wants the EGA distinction, then he can have it.

"If we have to be in the clone market at all, we will do it better and we will be the best. We will produce what the mass market wants."

Tramiel is determined, however, that Atari's PC should not detract attention away from the new STs.

"The IBM range is old-fashioned and inferior technologically to the STs. But if people

continued on page 5 ▶

UK release date for Mega STs

MUCH of Atari's stand at the Hannover Fair was devoted to the Mega ST machine, its first public showing in Europe.

The Mega ST is essentially a larger memory ST machine, with added facilities making it suitable for specific scientific and engineering markets.

"It is aimed at the higher end of the personal computer market," said Jack Tramiel. Two versions are expected in the UK, one with 2mb on-board memory, and one with 4mb.

In addition to the 520 and 1040 models, the Mega ST has the blitter chip built-in, a maths co-processor, and open bus for plug-in expansion cards. The keyboard and

processor are housed in separate units, and a 3½ inch disc drive is built-in as standard.

Monitors will be available as extras and Atari will be selling the RGB colour SC1224 and black and white SMM 804 monitors for the Mega ST.

The Mega ST is also to be sold as part of Atari's desk top publishing system, together with the company's new laser printer and driver software.

Atari plans to release the Mega ST in the UK in June. Prices have not yet been fixed for the system, but the company says it will be between £700 and £1,200 in the UK.



Commodore's A500 will sell for under £600

COMMODORE last week finally launched the new Amigas, the A500 and A2000. In a simultaneous announcement in London and Hannover. The good news is that the A500 will retail at £587 inclusive, while the A2000, with a 1081 monitor, will retail at £1,641 inclusive.

The bad news is that although the A2000 will be available in April or May, the A500 won't be available until "at least June", according to a Commodore spokeswoman. The first public showing will be at the Commodore show in June.

The A500 utilises much of the technology of the A1000. It is supplied without a monitor, although a Pal TV modulator will be available at a "nominal" charge.

It features the standard Motorola 68000 plus 3 chip wordprocessor system with 512K Ram. This can be expanded internally to 1mb, and externally to 8mb. There is one built-in 880K 3½ inch floppy drive on the right hand side of the unit, with a possible two additional drives to be added. A mouse comes as standard.

The A500 has PC-compatible parallel and serial ports and Amiga system bus expansion capability.

The machine can not only handle games and graphics, with stereo sound, but is also suited to multi-tasking in a similar way to the A1000.

Kaday confirmed that both new machines will be up-



wardly and downwardly compatible with "anything that will run under AmigaDos".

At the dual presentation Commodore UK managing director Chris Kaday described the A500 and its business-oriented sister machine, the A2000 as "the ultimate" home and business computers.

He went on: "Our main target audience will be the upgrade market from existing 64, Spectrum, BBC and Amstrad 464 users who are seeking a greater level of so-

phistication and facilities than cheap MSDos machines can offer."

The Amiga A2000 (see *Popular Computing Weekly*, March 6) runs on the 68000 at 7.14MHz, supported by three co-processors. It has 1MB of Ram, internally expandable to 9MB. There are eight interfaces as standard, including serial and parallel ports, plus and interface for the keyboard.

An optional extra to the A2000 is the A2088 IBM board, with which the A2000

has full IBM compatibility. There is room on the A2000 to add a 5¼ inch disc drive or hard disc drive to use with the IBM board.

Prices start at £1288 inclusive for an A2000 with single 3½ inch 880K floppy drive, 1mb Ram, keyboard and mouse, to £1,641 inclusive for the A2000M, with 1081 monitor.

In addition, all component A2000 parts are available separately, and a 1081 monitor costs £410 and A2088 PC bridgeboard costs £351.

PC is "inferior"

◀ continued from page 4

want to buy our PC compatible, then they can. However, we will tell them that they are buying the wrong machines, that they should be buying an ST."

Tramiel justifies the move to producing an IBM standard machine as one of providing what the public wants.

"Atari has done a fairly

good job with brand new technology and not copying what is old. We've sold well without a PC clone, but we will produce machines which the public wants, and there is a demand for low cost PC clones," Jack Tramiel said.

Atari has not yet put a specific date on the PC's arrival in the UK. "You'll see it in the summer," was all Tramiel would say.

Blitter upgrades in summer

THE long awaited blitter chip will be offered as an upgrade to all ST owners later this year.

The first blitter chips off the production line will be built into the Mega STs, and Atari president Sam Tramiel doesn't expect the upgrade service to be available until

June or July.

Tramiel also stressed that the upgrade would only be carried out by authorised dealers. "We certainly won't be offering it as a DIY job", he said.

The blitter, a block image manipulator, is a processor designed to move blocks of data in the screen memory very quickly, leaving the main processor free to concentrate on other tasks. Its effect is to speed up graphics operation considerably.

PCW desktop publishing war

IT'S official – the race is on between Mirrorsoft and The Electric Studio for the first desktop publishing system for the Amstrad PCW 8256/8512.

The Electric Studio has slated its *Newsdesk International* for release in two weeks' time.

This system may well pip Mirrorsoft's *Fleet Street Editor Plus* to the post. FSEP, long delayed in its PCW version, is also due for release at the end of the month.

A Mirrorsoft source said the company was "worried" by the news, particularly after the delays its system has suffered in development.

Add to that the fact that *News International* undercuts *FSEP* by £20, and Mirrorsoft's reaction is understandable.

Martyn Hodges, sales director for The Electric Studio, says that the company has

specifically designed *Newsdesk International* for the PCW. *Fleet Street Editor Plus*, on the other hand, exists in versions for several machines, the latest being the Atari ST, due next week (see *Popular Computing Weekly* for review).

"We decided to bring our system out, because everybody else said they were going to, and nothing appeared," says Hodges.

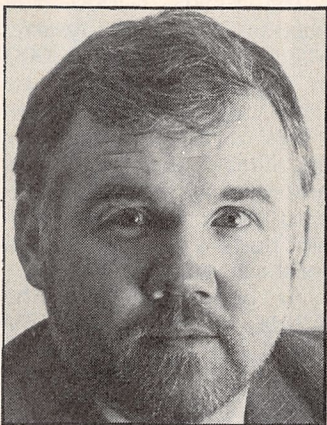
"We've got three people working flat out to complete the system, the manual and the packaging, and it should be released in two weeks."

The Electric Studio's *Newsdesk International* will cost £49.95, and can be used with the company's mouse, light pen and digitiser. Details are available from The Electric Studio, 13 The Business Centre, Avenue One, Letchworth, Herts SG6 2HB (0462) 834864.

Borland appoints new MD

TOM Cahill, Deputy Managing Director of Ashton-Tate, has been appointed managing director of Borland, which specialises in low-cost business software.

Cahill commented: "To take up the reins of a major software company with the greatest potential for growth of any in the UK is clearly a very exciting prospect. I knew that Borland's product price/



performance ratio could not be matched and its installed user base is the envy of the industry."

Speller for Micropro

MICROPRO International has announced the appointment of a new managing director for its UK subsidiary.

John Speller, who has been marketing director for four years, replaces Robin Oliver, who died recently.

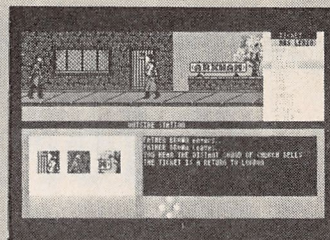
Software Hotlines

WHAT would you do if two hundred and fifty thousand pounds landed in your sweaty little paws? Blow it on a five star trip round the world? Renationalise British Telecom? Buy everyone in Canada a penny chew? Not so the **Softek/Edge** conglomerate.

They've got £250 000 to spend on programmers. Interested? Tim Langdel is the man to contact – and although he's looking primarily for 68000 programmers, he's also on the prowl for 8-bit talent, particularly on the Commodore 64.

Tim is looking for "serious people – people interested in working on serious projects", but in return would be willing to supply equipment (new machines, hard discs, etc) to someone "really competent." Most of the 68000 stuff is well into the future though, although the latest release from **The Edge**, *Warlock* (see below) will have Amiga and ST conversions "in the fullness of time."

Apart from Garfield's *Big Fat Hairy Deal*, forthcoming Edge attractions include a Commodore 64 sideways scroller, *R.I.S.K.*, written by the author of **Melbourne House's** *Knucklebusters* and Commodore and Amstrad conversions of *Shadowskimmer*. The 64 version will be smooth scrolling, rather than flip screen (as it was on Spectrum) and it is hoped the CPC



version can incorporate this feature, too. Expect both titles around April.

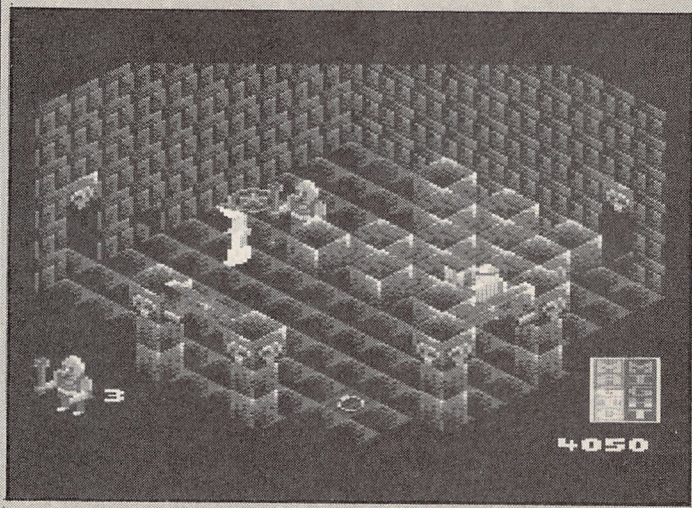
News from **Melbourne House**, with two new programs, *Mystery of Arkham Manor* (see above) and *Doc the Destroyer*, the latter an interesting mix of adventure and arcade combat. However, if you ever wanted to experience the ups and downs of investigative journalism, maybe *Mystery of Arkham Manor* is for you.

Set in the twenties, your editor receives a letter from Colonel Fortescue (respected Arkham resident, almost certainly based on *The Archers* beau of the over-sixties, Col Danby) reporting dark things afoot.

In the course of your investigations you must send telegrams to the ed, write articles, take pictures, all displayed on screen. Looking good in demo form, expect to see it on C64, Spectrum and CPC about mid-May.

Finally, I've just seen what must be the ultimate in *Darius* from **Taito** is a sit-in, which not only has three ultra high res. screens – one or two player, but you plug your walkie headphones into the console for extra sound effects! One step closer to the 'insert brain here' coin-op. I give it ten years.

John Cook



THE OFFICIAL



FA Cup 87

FOOTBALL



This new up-dated version of last season's best selling official FA Cup Football incorporates every league club's form for the 1986 season as well as new manager's questions to test your judgement.

FA Cup Football 87 is a text based simulation of the FA Competition that allows you to take 10 teams to success. You make decisions about tactics during play and answer which contribute to your teams victories.

The game has been developed with the full endorsement of the Football Association and the form that gives such realistic results has been provided by sports writer Tony Williams (author of the Official FA League and Non-League Directories).

Available for Spectrum 48/128, Commodore 64/128, and Amstrad CPC computers. All versions are on cassette only and cost £7.95. Available from all good software shops from 24 February 1987 or directly from Virgin Games.

- Spectrum 48/128
- Commodore 64/128
- Amstrad CPC

£7.95

£7.95

£7.95

Please tick the version you require and send this tear-off to: **Virgin Games Mail Order, 2/4 Vernon Yard, Portobello Road, London W11 2DX.** Make cheques or crossed postal orders payable to **Virgin Games Limited.** Please do not post notes or coins.

NAME

ADDRESS

MONEY ENCLOSED

Atari announces record profits

ATARI also took the opportunity at the show to announce record sales and profits in its financial results for 1986 and for the three months to December 31, 1986.

Sales revenue in 1986

WHS speaks out on Atari

WH SMITH has scotched claims made by Atari recently that the stationery chain had committed itself to stocking the ST and 65XE games console.

When asked to confirm the claims made by Atari marketing manager Paul Welch, WH Smith hardware buyer John Rowland said: "Well, he would, wouldn't he?"

"We haven't signed anything yet - nor have we made any concrete moves towards stocking Atari's machines," he went on. "But they do seem to be coming back into the mass market, which is good news."

Would other machines have to go if Atari items were stocked?

"We'd have to look very closely at other lines. It's a question of space, and since most of our business comes from newspapers, magazines and stationery, our computer hardware space is obviously limited. Recently we've been having great success with software, but less in terms of hardware."

He admitted that the chain's sales of Amstrad CPC machines had been dropping, but categorically refuted suggestions that the Spectrum was taking the place of the CPC, saying that "Spectrum sales have remained constant."

"If anything, it is the fact that the U.K. market for the CPC has reached saturation point, although they still sell terrifically well on the continent."

reached \$258,131,000 (about £172 million), compared with sales of just under \$142 million (about £95 million) in 1985. In 1986, profits totalled \$25,050,000 (£17 million) compared to a 1985 loss of over \$14 million (£9 million).

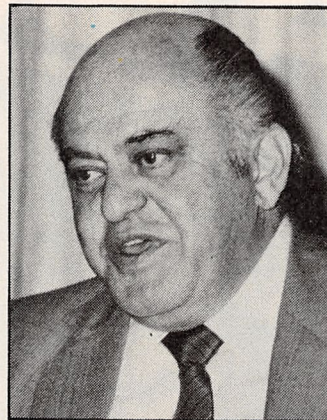
In the three months to December 1986 alone sales increased 41.8% from the corresponding period in 1985, from \$65,350,000 to \$92,567,000 (£44 million to £62 million), with a fourth quarter profit of just under \$12 million (£8 million).

This set of results are the best for Atari since Jack Tramiel bought the ailing company from Warner Brothers in 1984.

Tramiel himself is particularly pleased at the turnaround in the company's fortunes in the last two years. "It

is the first time since running a company that I have had money in the bank. With the other company (Commodore), we borrowed. Now we are debt-free and have \$70 million in the bank."

Jack Tramiel: "It is the first time since running a company..."



PCW ribbons service

DON'T throw that Amstrad PCW ribbon away, it's worth £120! That is, if users have their ribbon re-inked, rather than throw it away.

Just such a service is now available from the aptly-named A Simple Concept. Angela Gonzalez-Diez and Ricardo Maragna have set up this service, and for £2 they will re-ink your old PCW ribbon.

The pair claims that each ribbon can be re-inked up to sixty times before any loss of

print quality can be detected. Two ribbons sent together earn a further discount of 10 per cent, thus saving even more.

Maragna says that if the service is a success they hope to go into software, and it is to be hoped that their software ideas are as original as this one. Further details are available from A Simple Concept, Top Floor, 2 Llanbleddian Gardens, Cathays, Cardiff CF2 4AT, (0222) 35820.

Uchi Mata recalled

SPECTRUM users take note: the first production run of *Uchi Mata* on the Spectrum contains an early, preview version.

Several copies are affected by the error, which is apparent at the end of the game, when the sources do not return to zero, but continue to rise.

Martech will issue new copies, and refund postage, to all purchasers of affected

copies of the game.

A Martech spokesman apologised for the error, and said: "We can only hope to relieve the situation by sending out new copies of the game as quickly as possible."

Anyone who has bought one of these copies should return it to Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE, or contact David Martin at Martech: (0323) 768456.

DIARY DATES

MARCH

20-22 March

The Electron & BBC Micro User Show

UMIST, Manchester

Details: Software, hardware and peripherals for Acorn's micros

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

APRIL

11 April

Dragon Computer Show

Ossett Town Hall, nr Wakefield, W Yorks

Details: Software, hardware and demonstrations for Dragon users

Price: £1 adults, 50p children and OAPs

Organiser: John Penn, 04203 5970

24-26 April

The Atari Computer Show

Novotel, London W6

Details: First chance for Atari to show off exciting new strategy

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

MAY

2-3 May

First Ideal Microcomputer Show

Kensington Exhibition Centre

Details: Software, hardware, peripherals for consumer users

Price: £3 on door, £2 in advance

Organiser: RAMCO International Exhibitions, 01-906 3363

8-10 May

The Electron & BBC Micro User Show

New Horticultural Hall, London

Details: Software, hardware and peripherals for Acorn's micros

Price: £3 adult, £2 children, £1 discount for advance booking

Organiser: Database Exhibitions, 061-456 8835

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

**YOU NEED A GOOD SENSE OF HUMOUR
TO BUY FROM COMPUMART...**

**WITH OUR LOW PRICES YOU'LL BE LAUGHING
ALL THE WAY TO THE BANK!**

Boxlever

DON'T MISS THESE
SPECIAL INTRODUCTORY
PRICES.... **Order Today!**

DD 50L - £7.95
DD 100L - £10.95
MD 100L - £9.95
AMS 20L - £9.95

**POST
FREE!**

ALL PRICES INC. VAT AT 15%
PRICES AND DELIVERY SUBJECT TO AVAILABILITY

'Box Clever'

When it comes to 'boxing' you'll find
ours a KNOCKOUT!
Excellent quality Perspex, lockable,
& with dividers



AMS 20L

Holds 20-3"
Disks & Cases

DD 50/100L

5 1/4" Disks
DD 50L - Holds 50
DD 100L - Holds 100



MD 100L

Holds 100-
3-5" Disks

**5 1/4" BLANK
DISKS**

10	SS~ £5.95	+£1P&P	FREE Plastic Case per 10
	DS~ £7.95	+£1P&P	
50	SS~ £29.95	+£2P&P	FREE Lockable Storage Box per 50
	DS~ £39.95	+£2P&P	
100	SS~ £49.95	+£2P&P	Strong card boxes in Tens
	DS~ £59.95	+£2P&P	

Top Quality - Fully Guaranteed

Individually Certified - Envelopes - Labels - Write Protect - Labels etc...

SAVE
UP TO
25%

**ALL Disks
at**

LOWER PRICES!

**Amsoft
3" CF2
MICRODISKS**

From the U.K.'s LARGEST Supplier

Individually packed in
Plastic Cases - Boxed in
5s or 10s

ONLY
5-£14.95/10 £26.95
PACK +£1 p&p / PACK +£1 p&p
SAVE £3

Phone for Quantity Discounts

**3-5" Blank
Disks**

Announcing NEW
LOW PRICES...

10	SS~ £12.95	+£1P&P
	DS~ £16.95	+£1P&P
50	SS~ £59.95	+£2P&P
	DS~ £79.95	+£2P&P
100	SS~ £109.95	+£2P&P
	DS~ £149.95	+£2P&P

Boxed in Tens, User Labels
Top Quality - Fully Guaranteed

How to Order...



Simply post your order stating:
Name and Full Address, with
either a Cheque or Postal Order
(Made payable to Compumart)
to the address opposite.

Phone any of our 3 Order Lines
(24 Hours) and place your order
using your Credit Card.

All Disks are usually
despatched SAME DAY by First
Class Post. Hardware by
Parcel Post.

For a **SPEEDY NEXT DAY**
Secure Delivery just add £2
to Postage (e.g. £3 p&p), add
£2. Send £5).

Overseas Orders: Please
deduct 15% (VAT), then add
10% (for Air Mail and Insurance)

We accept Official Purchase
Orders from Government and
Educational Establishments.

ALL Products are covered
by the Compumart Guarantee!

Compumart

A GREAT DEAL MORE - FOR A GOOD DEAL LESS!

**3 ORDER LINES
(OPEN FOR 24 HOURS)**

☎ ☎ ☎ ☎ 262259
(0509) 233893
266322

Please Send Cheques/P.O.'s to...

**COMPUMART - Dept PCW - Unit 8 - Falcon Street
Loughborough - Leics - LE11 1EH**

Still waiting

In *Popular Computing Weekly*, December 11, you stated, in a news article, that Maros Computers had been helpful in chasing down Johnson Enterprises for non-delivery of software.

However, I placed an order with Maros Computers at the beginning of January. When nothing arrived, I phoned them again and was told my parcel had been posted on January 7. They apologised and said another package would be made up and forwarded to me.

A week later, I phoned again, and was told the software had been sent the day before.

Two weeks ago, when I had still received nothing, and my Barclaycard statement showed a debit to Computerworld of £20.87, dated January 23, I wrote to them and said that if a satisfactory conclusion had not been reached within 10 days I would inform you. I have still heard nothing.

*C W Hoggard
Poole
Dorset*

A satisfied customer

I am writing this letter to say thank you to Maros Computers. I have in the last two years lost a large amount of money due to firms not sending out my orders or going out

of business.

I had put in an order for some items from Maros and as I had not heard for some time I was thinking, "there goes another lot of money", so I sent a letter to the director, who was most concerned. He was very helpful and within 48 hours, I had my order.

I can only say many thanks and I know where my recommendations lie now.

*D W Wright
Telford*

Commodores in Ireland . . .

Readers may be interested to learn about a new Commodore user group, called the Northern Ireland Commodore user group.

Users of all Commodore machines, not just the C64, are invited to join, and despite our title, we welcome members from anywhere in the UK.

We hope to distribute a bi-monthly magazine covering subjects such as games, hardware, software reviews, communications and interfacing and programming in Basic and machine code.

Most of the articles are written for beginners and so assume no previous knowledge of the subject. We may also be able to arrange discounts on Commodore hardware for members.

For the more serious user, we will also cover DIY hardware projects and computer repairs. Technical advice will be available to members.

Anyone interested should contact me at 3 Toberhewny Lane, Lurgan, Co Armagh BT66 7EE, Northern Ireland. Please enclose an S.A.E., or two first class stamps.

*P Gilchrist
NICUG*

. . . and in Karachi

I am pleased to have the opportunity to write to you to say that we have started a Commodore Users' Club in Karachi which provides free books and magazines, etc, to its members.

We have members in Saudi Arabia, USA, Australia and India. Membership is free for anyone who owns a Commodore 64. We also publish a weekly newspaper *Commodore News*. You can subscribe to this paper free if you become a member. If anyone is interested, write to us at D5 Maisam Plaza, Block 3, Gwshan-e-Iqbal, Karachi 47, Pakistan, for a membership form.

*Adnan Ahmed Qureshi
Pakistan*

Really WACCI

WACCI, the Europewide Amstrad CPC Users Club, announced this month

that the UK circulation of its club magazine, *The WACCI Newsletter*, has smashed through the 100 barrier.

The club, founded in September 1986, now has active branches in both Spain and West Germany, and plans are afoot to extend this coverage into France and Belgium in the near future.

Any CPC user who would like details of the club plus a free introductory copy of the club magazine can obtain one by sending a large (A4) self-addressed envelope to WACCI, 75 Greatfields Drive, Hillingdon, Uxbridge, Middx UB8 3QN.

WACCI

Liars and thieves

I am writing to inform you that the Commodore 64 program Rockfall which you published, starting February 12, was previously printed in *Your Computer*. It appeared in the September 1985 edition and was credited to Paul Hammond.

I fully realise that you constantly warn your readers not to send in other people's programs, as not only are they ripping off the original author, but they are also breaking copyright laws. I frankly regard people who do this as liars and thieves.

*Darren Milburn
Aylesbury
Bucks*

Puzzle

Puzzle No 249

I have six dice, marked not with the usual spots, but with the numbers 2, 3, 5, 7, 11 and 13. With these six dice there are 46,656 different throws possible. For example, if I were to add up the faces of the dice thrown, I would score 12 only once in 46,656 throws (on average).

Other scores, of course, would occur more frequently. Can you discover which score you would be most likely to throw with the six dice, and say what the probability is of getting this score?

Solution to Puzzle No 244

On a grid size 19 by 19, there are 164 differing sets of measurements.

On a grid of any size it is only necessary to test those distances from a corner dot to each of the other dots on the grid, since this will cover all smaller combinations of pairs of dots.

The distance between any two dots can be

calculated if the horizontal and vertical displacement between the dots is known, the distance being the same as the hypotenuse of a right-angled triangle with sides equal to the two displacement values. On a grid of order 19, these displacements will be from zero to 18.

This is computed by using the two loops X and Y. The direct distance (H) is calculated and is stored in the array. To save time and to avoid problems with using the square root, the value stored is actually the square of the required distance.

The array holds the squares of all 360 distances from a corner dot to each of the other dots on the grid. Lines 80 to 140 of the listing then scan the array for duplicated values, any being found has one of the pair cancelled.

Finally, the array is scanned again to count those values which remain.

Winner of Puzzle 244

This week's winner is D Pitts of South Cerney,

Gloucs, who will receive £10.

Rules

The closing date for Puzzle 249 is April 3. Answers should include a program listing if possible.

```

10 DIM D(361)
20 GRID=19
30 FOR X=0 TO GRID-1
40 FOR Y=0 TO GRID-1
50 H=X*X+Y*Y
60 D(X*GRID+Y)=H
70 NEXT Y
80 FOR F=1 TO GRID*GRID-1
90 FOR G=F+1 TO GRID*GRID
100 IF D(F)<D(G) THEN 140
110 IF D(F)=0 THEN 130
120 IF D(F)=D(G) THEN D(G)=0
130 NEXT G
140 NEXT F
150 C=0
160 FOR F=1 TO GRID*GRID
180 IF D(F)<>0 THEN C=C+1
190 NEXT F
200 PRINT "Grid size:";GRID;" Connections:";C
210 END
    
```

The Atari alternative

I noticed, whilst reading through *Popular*, February 26, that in your Peek and Poke section, one of the enquiries was about using a third party monitor with the Atari ST. The reply given was that it was believed that only Atari's own hi-res monitor could be used.

This isn't actually true as a firm in Southend can provide a multi-frequency monitor that will work in all three resolutions. My understanding of the monitor is that the vertical hold has to be retuned after switching between mono and colour and that the mono screen is not quite as good as the Atari model due to the screen being of the masked rather than etched type, as used by Atari.

The up-side of this, though, is that the colour display is much better than Atari's colour monitors, being of such a high resolution. The major drawback to all this wondrousness is that it costs about £650.

The firm in question is A S and T, 87 Bournemouth Park Road, Southend-on-Sea, Essex SS2 5JJ, Tel: 0702 618201.

Mark Annetts
Richmond
Surrey

Our mistake

I would like to comment on the review in the Hardware section of *Popular*, February 12. The item being reviewed was a graphic tablet for the Atari ST or Amiga.

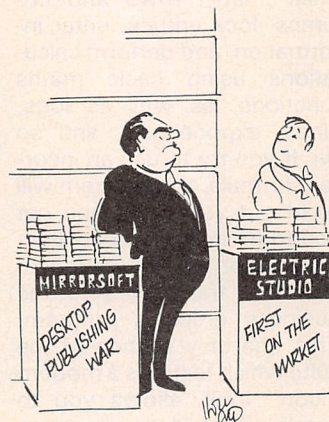
I was a bit surprised to see that the picture at the bottom left of the pages was one that I had drawn and uploaded on to Compunet a few weeks earlier.

Anyone reading the review would think that the picture had been done using the graphic tablet and an Amiga or ST, whereas it was actually done on a Commodore 128, using *Paint Magic* and a joystick.

I am sure, however, that the picture would have been a lot better drawn with an Amiga or ST. Any offers, Commodore or Atari?

L Grant
Manchester

Our apologies to L Grant. The gremlins had a field day and the screen pictures which appeared with the Hardware review of the Pro Draw graphics tablet were indeed from Compunet and used in error.



Help for the Lynx user

Regarding the question in Peek and Poke, February 26, about the Lynx micro from P M Volsing: believe it or not, there are still Lynx users' groups dotted around the country. I belong to NUTLUG (Newcastle Upon Tyne Lynx User Group) and I may be able to help answer P M Volsing's queries.

Software? Phoenix Software at Unit 70, Marsh Lane, Frodsham, Cheshire WA6 7BX, Tel: 0928 35525, has lots of software, including *Jet Set Willy*. It has also just brought out a Spectrum loader, and sells parallel printer interfaces. You can run a printer via the serial port with the appropriate lead.

CP/M will only run on the 128K Lynx, mainly because

A castling move

Back to Game One this week for the Readers and *Colossus's* choices at moves 13 and 14 in our chess tournament.

The Readers, playing black, opted for a castling move. *Colossus*, playing white, has replied by moving its f-column pawn (see diagram below for details).

Black is back

Now we need your suggestions for the next Readers' move. Send your suggested move to either Inter-Mediate (*Popular Chess*), Freepost, Sawbridgeworth, Herts CM21 9YA (you do not need to use a stamp with this address), or *Popular Chess*, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp). Please note that if you use Freepost, your entries must be posted promptly - Freepost is slower than paid-for mail. All entries must reach either address by Wednesday, March 18.

The move which gets the most votes will be entered into the game. Results and *Colossus's* response will be published in two weeks' time.

Prizes

A British Museum reproduction Arran chess set will go to

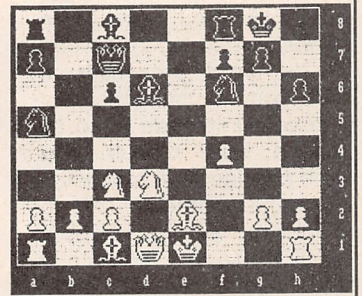
the person suggesting the most accepted moves at the end of the game. Five copies of *Colossus Chess 4* (available for most popular micros) will go to the most consistent entrants for the duration of the game.

Next week, we return to Game Two, where the Readers are playing white.

Game One

The moves so far:

- | | | |
|----|---------|--------------|
| 1 | Pe2-e4 | Pe7-e5 |
| 2 | Ng1-f3 | Nb8-c6 |
| 3 | Bf1-c4 | Ng8-f6 |
| 4 | Nf3-g5 | Pd7-d5 |
| 5 | Pe4xd5 | Nc6-a5 |
| 6 | Bc4-b5+ | Pc7-c6 |
| 7 | Pd5xc6 | Pb7xc6 |
| 8 | Bb5-e2 | Ph7-h6 |
| 9 | Ng5-f3 | Pe5-e4 |
| 10 | Nf3-e5 | Bf8-d6 |
| 11 | Pd2-d4 | Pe4-d3 |
| | | (en passant) |
| 12 | Ne5xd3 | Qd8-c7 |
| 13 | Nb1-c3 | Ke8-g8 o-o |
| 14 | Pf2-f4 | ? |



the 128K machine has an 80 column VDU display, whereas the 96K/48K have only 40 columns.

There are still disc drives about, although these, as far as I know, will be second hand either from Phoenix or the 128K CP/M Lynx User Group.

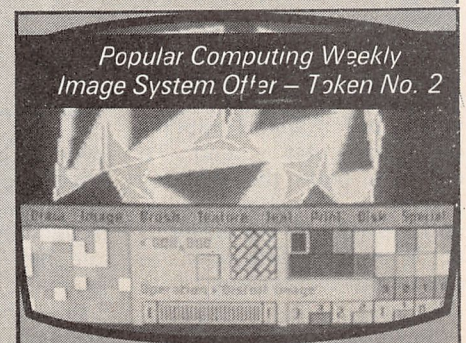
On monitors, we currently have one of our members using an Amstrad green screen monitor with both his 128K and 96K Lynxes.

This should answer most of the questions P M Volsing asked.

Colin Smith
Newcastle upon Tyne

Here is the second token in the *Popular* special offer on *Image System*. For full details, along with the first token and order form, see last week's issue.

We hope to bring you more special offers in the future, so be sure to keep buying your favourite magazine - *Popular!*



Business program of the year

Voted last year's best business program by Popular readers, Database's *Mini Office 2* has now been converted from the BBC to the C64.

Mini Office 2 is an integrated, menu driven business utility featuring a word processor, database, spreadsheet, business graphics package, label printer and communications program. It comes with a neat spiral-bound 80 page manual, and apart from a few oddities proved easy and enjoyable to use. Each program is loaded separately from a main menu; let's look at each part in order.

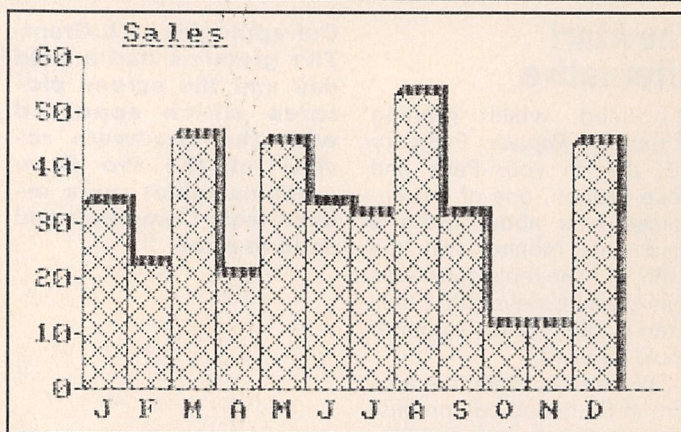
The word processor is a full-spec 40-column package, supporting MPS and Epson-compatible printers. Unlike, say, *Easy Script*, which operates largely by using commands embedded in the text, *MO2*'s word processor allows you to use either embedded commands or to set options from menus. Features provided are character/word/line delete, insert or overwrite, screen colours, keyclick on or off, block copy, search and replace, block move, convert case, page number, headers and footers, tab set, justification, screen preview, line spacing, page length, and, if you have a suitable printer, double-height or -width text. There are also some handy extras such as a constant word-count, time since start dis-

play, and a WPM count.

Control codes allow you to work with non-standard printers, while the mail merge facility works with the database. Overall the word-processor is fine, and since the package includes a converter program for old *Mini Office* files, it's attractive for users who want to upgrade. However, there are too many two-key control options to remember - why use CTRL, CBM, and the function keys to access different functions?

The database allows you to define a file structure with up to 20 fields of alphabetical, numeric, integer, date or other types of information. Having saved your form and centred your records - say a club membership list - you can move through the records, amend or delete, mark a set of records to produce a sub-file, sort files alphabetically by any field, and even perform simple calculations using integer contents of specified files. The database is, again, very easy to use once you have grasped the basic principles.

Spreadsheets have always been a bit of a mystery to me; basically they consist of a series of rows and columns in which you place numerical data. The computer can then be programmed to perform complex calculations, enabling you, for instance, to work out your annual budget, plan a holiday or calculate the cost of buying your children a



decent education.

MO2's spreadsheet allows you to set the length of each "cell", label rows and columns, lock entries, enter information, and perform calculations using basic maths functions, as well as logs, sines, exponentials, and so on. If you try to use an incorrect formula, the program will point out your error and get you to try again. Spreadsheet information can be saved to disc and transferred to the business graphics program. This, the only section of the suite which features a modern "icon" look, allows you to handle three sets of up to twenty labels and values. From these you can produce titled bar charts of either one, two or three information sets compared; line charts; or pie charts with optional emphasised slices in a selection of patterns. Very easy to use and great fun, but printing out on an MPS-801 is slow work.

The comms package uses either an RS-232 or Compu-net type modem at 300 or 1200 baud. Default settings allow you to access Microlink and Telecom Gold, while you can define buffer, protocol and display options for other

systems.

Finally, the label printer option can be used with the word processor, or on its own, to print out labels at definable sizes, spacing and format. The manual includes a summary of commands for this, as well as all the other programs in the collection.

Mini Office 2 is reasonably easy to use, very comprehensive, and offers all the facilities most home users would ever want. The manual is good, apart from a lack of information for beginners on formatting and using data discs. Apart from the odd bit of sloppy programming - such as exploded pie charts overprinting the key beside them - the whole system seems to work well, and offers excellent value for money. I can't think of a better collection of C64 programs of this type at the price.

Chris Jenkins

Program *Mini Office 2*
Micro C64 Price £16.95
 (tape), £9.95 (disc) **Supplier**
 Database Software,
 Europa House, 68 Chester
 Road, Hazel Grove, Stock-
 port SK7 5NY.

Desk top publishing made easy and fun

Page-makers are of course programs designed to let you create facsimiles of newspapers and magazines by mixing text (in a variety of fonts) and graphics on a computer screen. To create a page the working screen is somehow 'enlarged', usually by the ability to scroll in four directions, to match the dimensions of an A4 page.

By tradition the software is

"AMX is generally easy to use and capable of high quality output"

worked by a mouse and you therefore have to put up with the inevitable 'cheese' - a collection of mystifying little graphic icons that are supposed to make it all easier to use. Once completed the pages are printed out in as

high a quality as your printer can manage.

There is quite a saga associated with the history of page-makers on the CPC. AMS and Mirrorsoft have been thrashing it out for well over a year to see who would be first to

release their program and many wildly optimistic claims were made in adverts and at shows. It has to be said that AMS were guilty of far more incidents of 'optimism' than Mirrorsoft. Perhaps they needn't have bothered because theirs is now out and there is still no sign of *Fleet Street*.

But cynicism aside the AMX package is generally **continued on page 13 ▶**

◀ continued from page 12

very easy to use, powerful within the limitations of the hardware, and capable of high quality output.

The graphics options provided are really quite good, although a mouse is needed to get the best from them. Specialist drawing utilities or a digitiser can be used instead though, to produce higher quality pictures. You are provided with an option to convert any screens into mode two suitable for inclusion. Once loaded a picture can be copied, scaled or defaced. Special modes exist for mixing and merging graphics, or text and graphics, to get all

sorts of clever effects.

No matter how good the graphics options are, they still rely on the talent of the user. One of the points that the original *Fleet Street* had over *Pagemaker* on the BBC was that the former came supplied with almost no clip art (ready drawn pictures which you can use to decorate your page). The CPC *Pagemaker* has a considerably improved selection, you don't get many pictures but some have been produced by a digitiser and are very good indeed. More support discs are promised.

Pagemaker has always scored over the equivalent *Fleet Street* in the flexibility of

its text positioning. Text can be typed in at the keyboard in the current font or read from a word processor file. The CPC version has a very clever option for the latter where the words automatically 'flow' into the available space bounded by any lines on screen – rather like a graphics 'fill' command. Very clever displays are made simple by this option. There are a wide range of fonts in varying sizes supplied – these can be scaled up or down if you wish but tend to lose clarity if you do so, although a zoom option allows you to tidy these up somewhat.

Printing can be in draft, high quality or very slow ultra high quality mode. One nice touch is that pages can be produced in A4 or A5 size or you can obtain a simple dump of the current screen.

Pagemaker was originally written for the BBC and memory limitations meant that the program was released on Rom form. The CPCs can also support Rom software but the market is limited to those who have

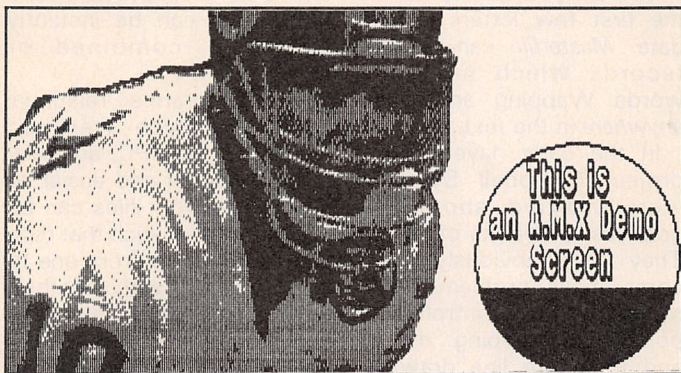
invested in a suitable extension board. AMS have therefore taken the decision to make the program available only to those who have a disc drive and 128K memory. More proof that a DKtronics Ram board is an essential purchase for 464/664 owners.

The *Pagemaker* release I saw had one or two minor bugs left in it. There is no point about detailing them since I understand that the company is well aware of them and offers an upgrade service to existing purchasers.

I admit to being frivolous but I find this program has a dangerous fascination. It is versatile yet not complex and produces output easily good enough for schools, clubs or just brightening up the office.

Tony Kendle

Program AMX Pagemaker
Micro Amstrad CPC
Price £49.95 Supplier
 Advanced Memory Systems, 12 Wilderspool Causeway, Warrington.



Back in the North!



The 15th Show in the record-breaking series!

- ☆ See – and try – the latest home, education and business software
- ☆ Find out about the new hardware additions that will expand the power and versatility of the Electron, BBC Micro, Master and Compact.

Renold Building
UMIST
Sackville Street
Manchester
 (5 minutes from Piccadilly Station)

Friday to Sunday,
March 20 to 22

Doors open 10am
Close 6pm Friday and
Saturday,
4pm Sunday

SAVE
50p

Bring this coupon to the Show to get 50p per person off the normal admission price of £3 (adults), £2 (children). Valid for up to four people.

50p
OFF



10am-6pm, Friday, 20 March
 10am-6pm, Saturday, 21 March
 10am-4pm, Sunday, 22 March

Renold Building
UMIST, Manchester

POP 1

The masterly Masterfile

Masterfile is easily the best database available on the CPC micros short of some £400 CP/M monoliths. I've waited a year to see *Masterfile 8000* on the PCW – now that it is here has it lived up to my expectations?

Databases fall into two broad categories. There are those, like dBase, that can be programmed like a computing language.

They allow the user to create specialist applications to suit particular needs. The second type, like *Masterfile*, is essentially based on a card index file – simpler to use, but less flexible.

Beyond these classifications the programs are more variable than people suppose. The basic capabilities of a word processor are fairly predictable, but many people have spent a lot of money on a database only to find that it doesn't do what they need. They have different maximum record sizes, different methods of storing information, different abilities for presenting and printing data, different options for manipulating the information.

To be fair I must first note *Masterfile's* statistics and its one or two weak points. Firstly it does not allow you to easily automate any regular updating process, although changes to data are now very easily achieved by editing the data as it is displayed. Printing options are vastly

improved over the older versions of the program but, unlike some databases, you can only do mail merge etc, if you use a word processor as well.

Masterfile's maximum file size depends on the size of your memory drive; 110K on an 8256, maximum record size is just over 2K, there are up to 80 fields per record and the maximum field size is 250 characters.

Having lost the few readers to whom these minor limitations are critical I can confirm that for the rest of us *Masterfile 8000* is a *tour de force* that will spoil you for any other program. For months I have searched in vain for a PC utility that can do the same things that *Masterfile* can on the PCW.

Masterfile stores all of its data in Ram which makes it lightning fast when sorting or searching. Particularly clever is its ability to store information of variable length without wasting any space.

The other feature I cherished from the original was its data search. Not only do you have the standard options, such as Name=Smith or Age>18, but there is a very powerful global string search. Say you want to find a name and address but you can't remember all of the details ('Dave Somebody – lives in Wapping!'). The name will probably be filed Surname first and the address with the number and street-name first.

EXAMPLE 01: BOOK COLLECTION

```
-----5555555-----
06: Format Review
Insert element.....I
Change this one....C
Erase this one.....E
Show next.....N
Move menu.....M
Show in stages.....S
Toggle data zones..Z
Printer options....P
Display mode.....D
Exit.....X
```

Small collection of Children's Books.

An author has two formats, in addition to Format 0, Format 1 shows Author and Title, one record per line. Details of a book, 1 record per screen. From Format 1, at any record. Then [R] to switch to Format 2, to see that book. This is a useful 'trick' to incorporate into the panel which gives a key to the Date Suffix.

This is defined as a heading when constructing the format, and is useful in explaining constant codes or notations that you use in your data.

Why not sort the displayed fields into Title sequence? From menu 01, [D] then rotate [R] to Format 1. Then [K]. Specify data name 2, then [ENTER]. Give a key length of 10. After a few seconds, the sorted data will be displayed.

Drive:A File:X01BOOKS Records:00107 Selected:00107 Key:Author Format:5

Most databases will only find a record if you can reproduce the first few letters of the data. *Masterfile* can find all records which have the words Wapping and Dave anywhere in the text.

In the early days of this project Campbell Systems were worried about the graphics limitations of CP/M. They have obviously overcome these problems. The program is now controlled by pop-up overlapping menus and there are line drawing, large text and fill options for decorating your data display. Some of the demonstration files are almost cheeky in the way they flaunt these new abilities.

One minor irritation of the original versions was that you had to define a display format before you could review the data you had typed in. A new option is a simple, permanent, format that lists the data. Other brand new features include a calculation function whereby new data can be produced from existing figures using a mathematical formula. Date records are also allowed now which can be another useful way of searching the data.

One field in the file can be set as a key by which the data is automatically sorted. You can at any time re-sort by another field, something else that, as far as I know, is unique to *Masterfile*.

Masterfile has always been flexible at selecting a working set of data. Any record that meets your search criteria can be added to, or removed from, the currently active display. This option has been greatly improved by the ability to define up to eight sets

of active records, based on any criteria you wish, and these sets can be instantly switched, combined or redefined.

The program's relational features, which were so unique on the CPC, are now more powerful and easier to use. Up to eight files can be linked together such that data can be extracted from one to be displayed with another. For example a file of customer names and addresses need only be typed in once but can be read and displayed by a file of orders, a file of dispatches, a file of customer complaints and so on.

The disc comes with ten example databases that are very useful demonstrations of the program's options, and cover a wide range of typical uses so they can be immediately cannibalised for your own use. To underline *Masterfile's* flexibility: the readme file, giving latest information, a file full of troubleshooting tips and an index for the manual are all provided in the form of databases.

The final feature I cannot overemphasise is that the new *Masterfile* is fundamentally easier to learn and use than the old versions. It has been substantially rethought to be quicker and more obvious to use. It also holds more data, has more power, and I've no doubt it will have many more satisfied customers.

Tony Kendle

EXAMPLE 02: CLASSICAL RECORD COLLEC

03: Display Options

```
Steer using.....+
Alter data.....M
Erase data.....DEL
Assign to set.....A
Unassign set.....U
Calculate.....C
First page.....B
Next page.....ENTER
Back one record...ALT
Find (key = or )...F
Go to record number...G
Print screen number...P
Print single record...D
Erase record.....E
Insert new record...I
Show re-sequenced...K
Rotate format.....R
Go to search.....S
Exit to main menu...X
```

This example uses two Secondary files - one for performer. See Format 1. Note that you would different tack for cataloguing larger musical works and so on. You would probably design a record per screen, and using extra Data Names (Conductor, Choir Name, Tenor, for example).

Note that the records are displayed in Record N of the Primary file. Try sorting on Composer Key wrong place because JSB sorts after BAR (for Ba

To ensure that you understand how Secondary File add a composer to the Composer file, then add a refers to it onto this file.

Drive:A File:X02CLASR Records:00005 Selected:00005 Key:Record Number Format:5

Program Masterfile Micro Amstrad PCW Price £49.95, Supplier Campbell Systems, 7 Station Road, Epping, Essex CM16 4HA.

Advancing the art of Atari

The most impressive sensibly-priced Atari ST graphics package, Rainbird's *Advanced Art Studio* bears little resemblance to the versions for other micros.

The program was originally conceived as a sprite designer but, as well as offering marvellous design facilities for games programmers, also has animation, drawing and colour cycle facilities unavailable in packages costing twice as much.

The main screen is the sprite design area, where sprites from 8x8 to 64x64 pixels can be created. The sprite grid is on the left, and forty function icons on the right. Some rival products, like *Degas Elite*, use text labels for functions. Some, like *Paintworks*, use incomprehensible icons. *AAS* provides the best of both worlds by having a few lines of explanatory text popping up in a window each time you select a new function icon, making the program easy to use while retaining the facility of icons and eliminating the need for pull-down menus.

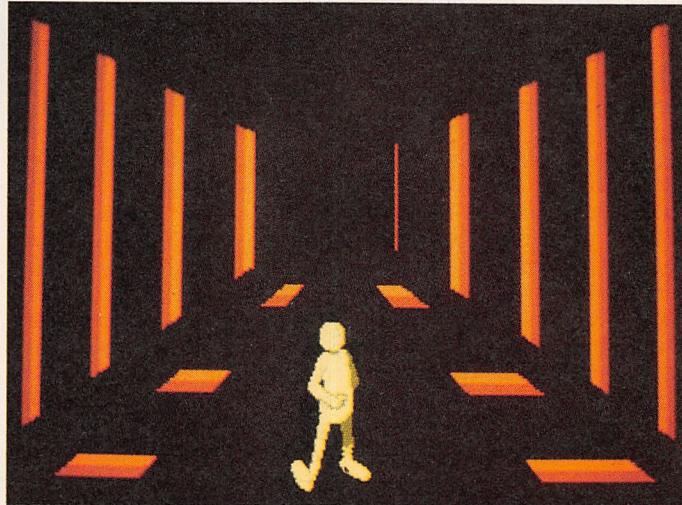
If you need to work in normal drawing mode rather than magnify mode, there are two blank screens available. One can be used as a "scratch-pad" to create brush shapes, which can be transferred to the other screen, or to the

magnify screen for further editing.

Below the icon boxes is the brush area. This displays all the currently available brush shapes and is also used to set the colour palette. You can also click on different points

copy, rescale, fill, cut and paste and undo. Advanced facilities include "anti-aliasing", which allows you to create soft-edged effects by merging colours within a definable boundary.

The best part is that these



Take a walk on the wild side, but . . .

on the brush menu to set the start and end colours, or brush shapes, for colour cycling or sprite animation. Each brush is in fact a sprite (and vice versa), making it possible to produce amazing effects like brushes changing shape as you draw, combined colour cycling and animation, and so on.

Conventional drawing facilities include freehand, line, box, circle, polygon, outline,

facilities operate not only on the drawing screen, but also on the magnified window, too. This simple facility puts *Art Studio* leaps and bounds ahead of its rivals.

If you prefer to work in normal mode there are two simultaneous work screens to play with: they are completely blank and you can create designs on them and transfer to the magnify page easily. You can even edit the

control screen, drawing yourself new icons or setting new default brushes and modes.

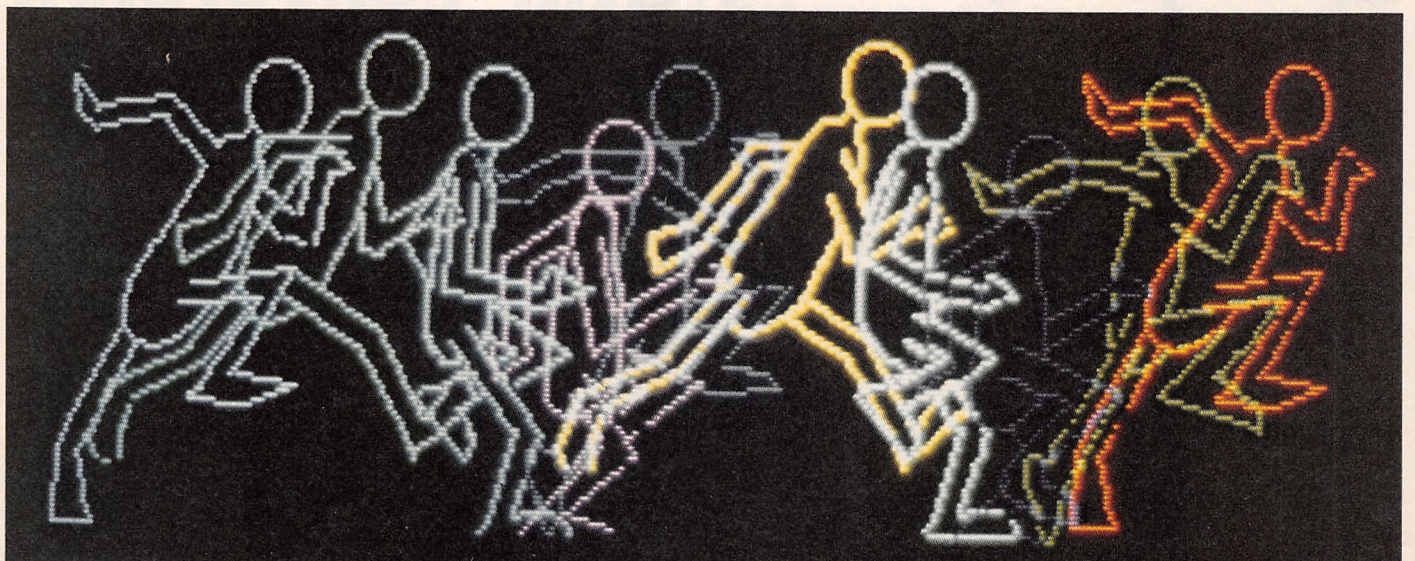
Art Studio is Neochrome file compatible, and despite not having some of the mono exotic (and unnecessary?) features of *Art Director* such as scrape and melt, is an incredibly good package both for "painters" and programmers. Sprite files can be downloaded into your own programs via RS232 - you could even use *Art Studio* to design sprites for a Spectrum, Commodore 64 or Amstrad, given the technical details included in the manual.

Although Mirrorsoft's *Art Director* offers more facilities, and *Degas Elite* is very simple to use, the ST *Advanced Art Studio* beats them both on price and, in many ways, performance. The finished package will come with a comprehensive manual and plenty of sprite, font and brush files on the program disc.

For programmers, doodlers and serious artists, Rainbird's *Advanced Art Studio* looks like the most desirable ST graphics package yet.

Chris Jenkins

Program *Advanced Art Studio Micro* Atari ST
Price £24.95 **Supplier**
 Rainbird, 64-7 New Oxford Street, London W1A 1PS.



. . . Run (don't walk) to your nearest Art Studio supplier

Smooth moves

Strange to think that just one minute ago I was blasting strange, bird-like craft out of the sky on the same green screen that I'm now using to write this review. Strange too, that Alan Sugar's first specifically non-games machine has turned out to have such amazing leisure potential.

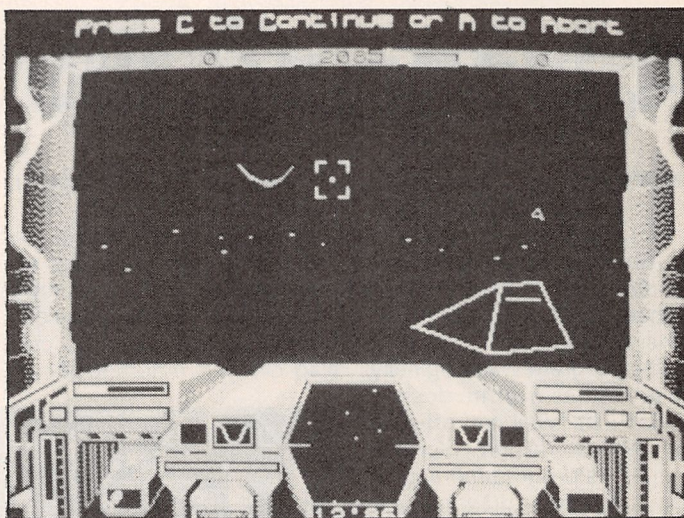
For anybody who doesn't know about *Starglider*, I have only one thing to say – where have you been all this time?

Not enough? Okay then, *Starglider* is described by Rainbird as a simulation, though you might quibble about whether you can simulate something that is pure science fiction. But the fact remains that it's a fine combination of air to ground and air combat with some of the complexities of a flight simulator and a definite need for strategy thrown in.

While there are a handful of controls to be learnt, and a lot of reading if you want to deduce every detail of what's going on, using the enclosed novella, *Starglider* remains addictive because of its speed and the smoothness of its 3D line graphics.

Congratulations, therefore, to conversion programmers, Real Time, who have retained all of those elements that keep the adrenalin flowing, and have even managed to squeeze some sound effects out of the Joyce's puny buzzer. The vector 3D is crisp and clear, and the care that's been taken is seen in the way that objects become brighter as they come closer.

Care has also been taken with the controls. The keyboard layout is sensible, but can be re-defined. Owners of AMX or Kempston mice are also catered for, and Kemp-



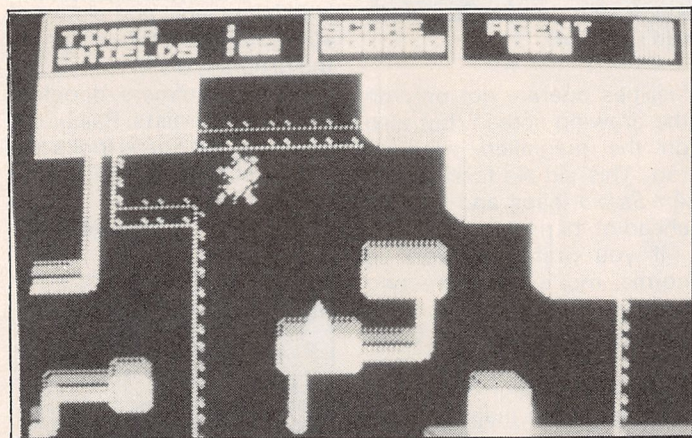
ston or Joyce-stick players can control both elevation and speed without recourse to the keys, thanks to an option which lets you to use the stick with and without fire to different ends.

This conversion is far better than anybody could have dared expect. Any Joyce owner in search of an intelligent shoot 'em up, set in the eerie green depths of PCW

space, will have a field day here. Now it's out with Loco-script and back to the action for me!

Popular Appeal ♦♦♦♦♦
John Minson

Program Starglider Micro
PCW 8256/8512 **Price**
£24.95 **Supplier** Rainbird
Software, Wellington
House, Upper St Martins
Lane, London WC2H 9DL.



Thrusting forward

And lo, it came to pass that Captain Berk dragged himself from the USS Spectrum's main VDU and ordered a sequel to his favourite game with the immortal words, "More Thrust, Snotty!"

And more *Thrust* is just what he's got, with enough new features to guarantee that even if you mastered the original, you'll have a hell of a time on the planet P2112.

As before, the ship has just three controls for rotation and thrust but to make life really tricky, the orbs that you're collecting are of different

masses, so it's only when you've picked one up that you can tell how it will affect the craft's handling.

The orbs are also unstable, so you can't hang around or they'll explode while you're still carrying them. The problem of fuel consumption has gone, but don't rejoice for too long because it's been replaced by alien androids, who bounce up and down and float around and make the underground installations of P2112 a generally unhealthy place.

Keep an eye open for boxes of chemicals though. They

may prove efficacious against certain androids. Once you've picked up the correct agent you can use it as a sort of smart bomb to eradicate the relevant alien once and for all.

The landscape itself is very similar to the original's, packed with treacherously difficult corners to drag the swinging pods round, and the whole program is as fiendishly difficult as before. There's

more play value in this than some full price games I can think of. Don't hesitate to buy it!

Popular Appeal ♦♦♦♦♦
Paul Varsky

Programs Thrust II Micro
Spectrum 48K/128K
Price £1.99 **Supplier**
Firebird 64-76 New
Oxford Street, London
WC1A 1PS.

Star conversion

An excellent conversion of the Atari 8-bit original, *SunStar* has a touch of several familiar games about it, while managing to remain quite original.

Taking place on a special grid presented in realistic perspective, *SunStar* is all action. It involves you guiding a ship around the grid collecting white energy pulses; first chase them down using your local scanner and grid map, then zap them, then run over the resulting green crystals.

To complicate things there are impenetrable walls, fuel limits, and the odd rogue energy pulse which will sizzle your circuits.

To progress to the next level you will have to pass through the moving entrance to the warp gate, and shoot the warp extruder inside; then it starts all over again.

Fast, colourful, quite difficult; it would have made an excellent budget game, but at £8.95 I think the initial excitement may wear off before you have your money's worth.

Popular Appeal ♦♦♦♦♦
Chris Jenkins

Program SunStar Micro
CBM 64 **Price** £8.95
Supplier CRL, 9 King's
Yard, Carpenter's Road,
London E15 2HD.

Shoot the reds

With old Ronnie in difficulties at the moment it's nice to see the software industry doing some PR work to help him out. The program of which I speak is *SDI*, the latest in Mindscape's Cinemaware series.

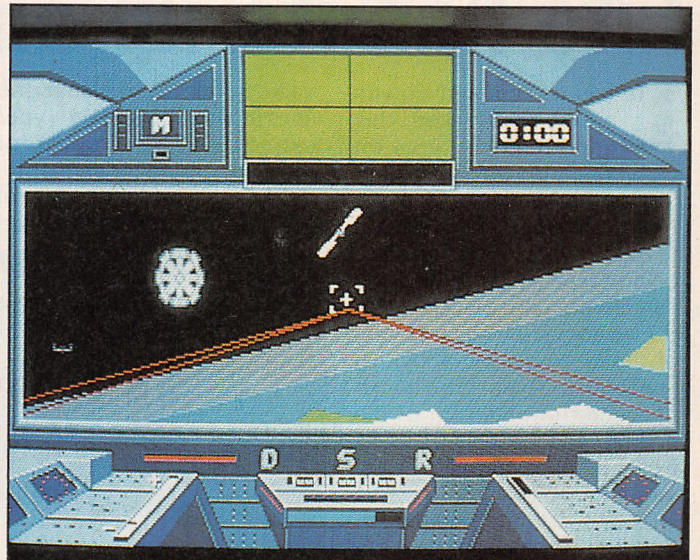
The storyline casts you as a young General, at the time when *SDI* goes operational. The KGB, not liking this, decide to stage a coup in the Soviet Union and then launch fighters to attack your orbiting lasers. Having knocked out a few lasers they launch their missiles to finish off the good old US of A.

Your part in this drama is quite large. Single-handedly you must go forth in your spaceship and blast the commie fighters, all presented in a sort of 3-D perspective. Unfortunately, the animation and graphics are fairly poor, your ship lurches about all over the

place.

Whilst flying about you can repair or replace damaged lasers, and dock with either the US or the USSR space station. After beating off most of the Russian fighters it's back to the US station where you get to direct laser fire at the incoming missiles. This section would look all right as a Vic 20 program.

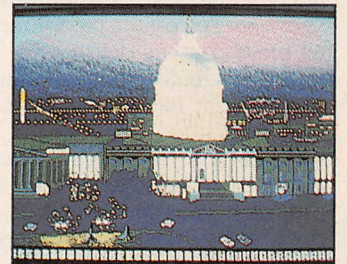
If you manage to fend off enough missiles you receive a call for help from the Soviet space station. This is where a third of the arcade section comes in with, and I quote, "A heroic mission to rescue your Russian lover from a barbaric KGB torture squad." Budding Rambos must then dock with the space station and fight their way through hordes of KGB operatives in another 3-D sequence which, although quite pretty from a graphics point of view, is about four years out of date



as a game.

SDI features a few good graphic backgrounds but falls down completely, ignoring the politics of the plot, on the actual game sections which are simply dismal.

Program *SDI* **Micro** Atari
ST Price £45.95 **Supplier** Mirrorsoft, Maxwell House, 74 Worship Street, London EC2A 2EN.



Popular Appeal ♦♦
Duncan Evans

Komani meets its Nemesis

Komani have been brave to try and go it alone with their coin-ops – first *Jail Break* (creditable on some formats, not on others) and now the Big One, *Nemesis*.

In the arcades, *Nemesis* was a development of the old classic *Scramble*, with extra features and hi-res graphics. It did phenomenally well there, but does it convert to the home format?

Again, the performance on different format varies greatly. On the CPC, although the

design has been captured well with some impressive animated graphics in parts, at times the horizontal scrolling leaves a little bit to be desired, and the game slows right down. As for the collision detection, on CPC it seems to have been done by the character square, which means those pixel perfect manoeuvres don't always work.

The Commodore 64 version is much better – generally faster and smoother – but even so has the odd glitch

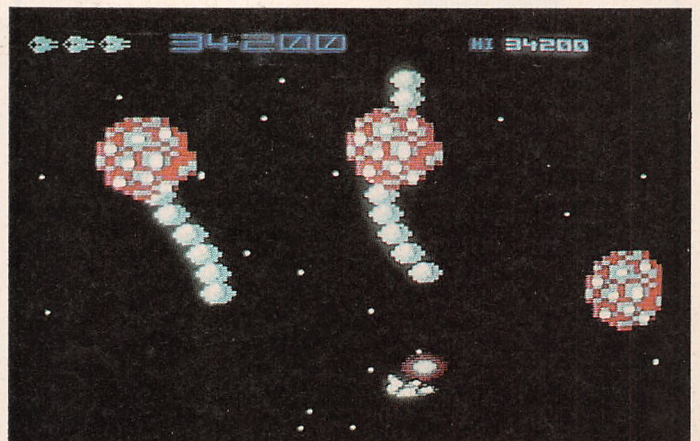
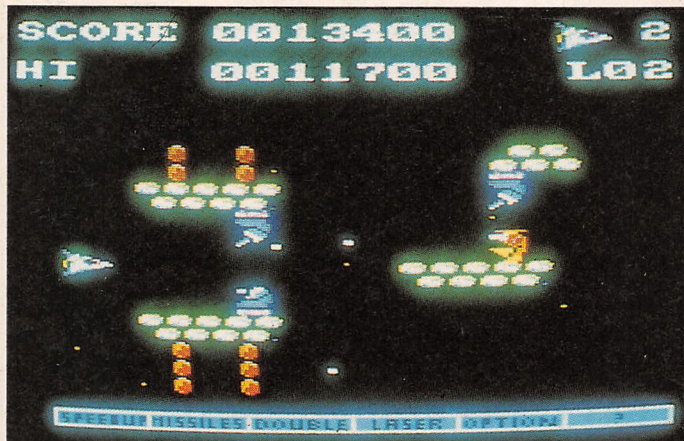
that you wouldn't expect; just after you die you get a quick flash of the undefined screen, for instance. Nothing fatal though – and the action can get addictively furious.

A nice effort by Simon Pick, except for the fact I recently saw the new *Thalamus* game, *Delta*, in its final stages. It is a *Nemesis/Salamander* clone... and regretfully for Komani, it's a lot better. Even faster. Even smoother. Even better designed. In fact, they've out Komani'd Komani.

On Spectrum and CPC, however, given the limitation of the machines, *Nemesis* isn't bad – more of a respectable conversion than a classic, though.

Popular Appeal ♦♦♦
John Cook

Program *Nemesis*
Machine Spectrum/CBM 64/CPC **Price** £7.95 (Spectrum), £8.95 (other)
Supplier NMC, PO Box 67, London SW11 1BS.



Life has its up and downs

Life has its ups and downs and I really liked this unpretentious coin-op conversion on the Spectrum. But the C64 version hits a real trough. It looks like it's been rushed out, with no real care being taken to reproduce the earlier version's playability.

Elevator Action boasts one of those simple but addictive scenarios. Agent Otto has to descend from the roof of the enemy HQ, stealing plans from behind certain doors, while shooting the guards who are all out to get him. Success depends on fast reactions, as you only get to see what lies on the next floor as the lift moves down.

With its music and graphics capabilities, this should have been a natural on the C64. Instead it's a mess. The doors Otto has to enter aren't red, as it says in the instructions – they flash. According to those same instructions, Otto enters a door when you push down – in fact it's up. There's an enemy agent who

walks in thin air. At least one lift refuses to obey your instructions. The layout of secret doors never varies.

Need I continue? All of these failings are magnified

by comparison with the Spectrum version, which even featured nice touches such as Otto descending to the roof by helicopter at the start. I suspect that the Commodore

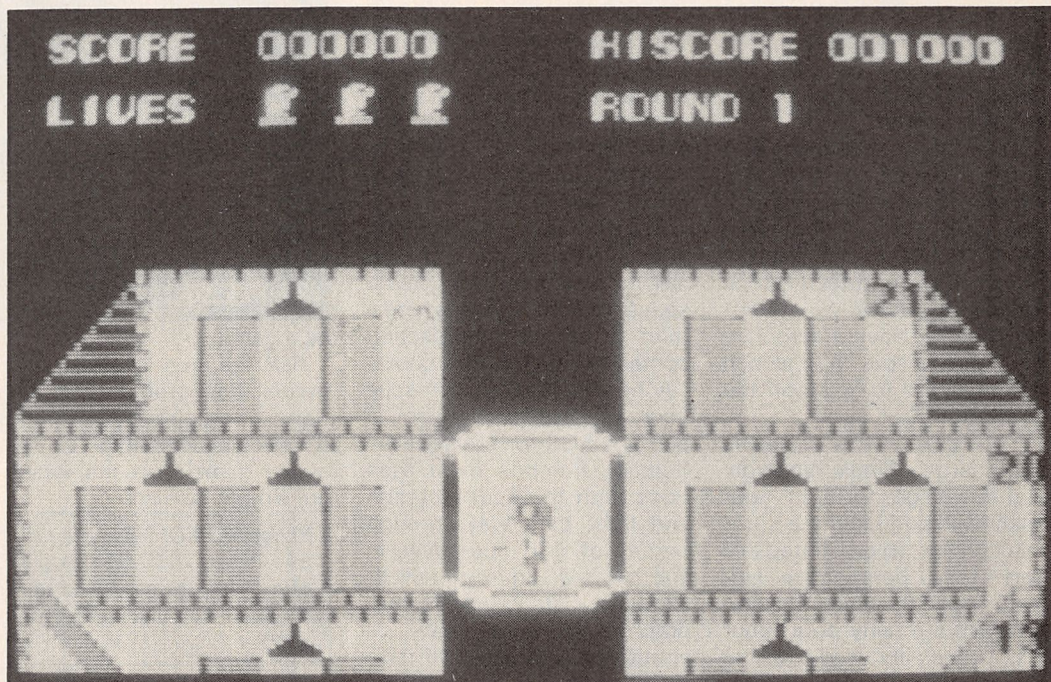
conversion team was infiltrated by the enemy.

Popular Appeal ♦

John Minson

Program *Elevator Action*
Micro C64 **Price** £8.95

Supplier Quicksilva, Victory House, Leicester Place, London WC2H 7NB.



MIRROR Soft

is looking for a PRODUCT MANAGER

Mirrorsoft is expanding fast, so we're looking for a lively and creative product manager to take responsibility for the acquisition and development of games for the UK and international markets.

The successful candidate will be:

- An experienced manager, preferably with a track record of developing successful games
- Able to negotiate contracts and work within defined time schedules
- Up to date with market requirements for both 8 and 16 bit entertainment software
- In continuing contact with a wide spectrum of designers, developers, and programmers

Mirrorsoft is part of the Pergamon Press Group, which includes the Sphere Corporation (Spectrum Holobyte and Nexa) in the USA and PSS and Microdealer International in the UK, and has a long term commitment to the software market.

A good starting salary is offered, and there are considerable opportunities for future career development. Please apply in the first instance to:

The Product Director, Mirrorsoft Ltd, Maxwell House
74 Worship Street, London EC2A 2EN Tel: 01-377 4842

SILLY

PRICE

SALE

We are moving, hence our Silly Price Sale to clear stocks. Items listed below are reduced by ridiculous margins and once sold out can never be offered at these prices again.

BBC LIGHTPEN with LED indicator and switch. Supplied bundled with a pack of 4 cassettes including art drawing software, a sprite generator/editor/ animator and a teletext screen creator/editor.

Our Silly Price ONLY £13.95

BBC TRACKERBALL complete with drawing software on disc only. These are precision instruments using optical sensing and have a large 2.25in. heavy ball rolling on hardened steel bearings. Please don't confuse these with potentiometer types which rapidly wear out and do not spin freely. Works with BBC B, B+ and Master 128. 40-track 5.25in. disc supplied.

Our Silly Price ONLY £23.95

AMSTRAD TRACKERBALL. Same specification as above but with software supplied on 3in. 40-track disc. Also runs joystick operated games directly giving amazing arcade-like action! Suitable for the 464,664 and 6128 computers.

Our Silly Price ONLY £24.95

Offers available only while present stocks last. Please send your order with cheque, P.O. or Access number to the address below, including £1.05 to help towards P.&P. All orders executed in strict rotation, regret no telephone orders accepted on these offers.

DATAPEN MICROTECHNOLOGY LTD,
Kingsclere Road, Overton, Hants RG25 3JB

Evesham Micros

ALL PRICES INCLUDE VAT & DELIVERY

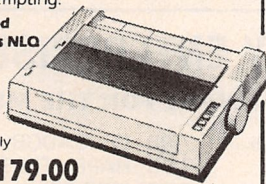
PRINTERS

Look at our special prices on top quality selected printers. Prices quoted include VAT, insured receipted delivery and parallel/Centronics printer cable to suit your micro (please state type when ordering). Spectrum or QL owners please add £20.00 to price for supply of Centronics Interface.

Panasonic KXP1080

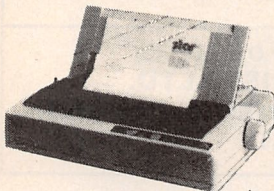
Fantastic quality and value. A truly reliable printer at a price that is very tempting.

- Friction and tractor feed
- 100 cps draft and 20 cps NLQ
- Epson compatible interface
- Wide range of print styles



You could pay a lot more than this for a lot less printer
Only **£179.00**

THE star
PRINTERS FOR BUSINESS



NL-10

WHICH MAGAZINE BEST BUY

- Automatic single sheet handling
- Tractor feed built in
- "Front Panel" mode selection
- Double and Quad height characters
- 120 cps draft and 30 cps NLQ

In a group test with other popular printers such as Epson, Citizen and OKI What Micro magazine described the NL10 as

'the Rolls Royce of this group'.
Automatic cut sheet feeder available as an option for **£63.25**

Don't buy any other sub £300.00 dot matrix printer until you have seen this one. Combines many unique features with **superb reliability, styling and print quality.** Interchangeable interface cartridges mean it will suit any computer; ideal for Commodore owners who may wish to change later. State Parallel/Centronics, Commodore, or IBM cartridge, when ordering.

Only **£249.00**

THE star
PRINTERS FOR BUSINESS

NX-15

Wide carriage version of the NL10, similar features and same high quality with 134 column capability.

- Elite and proportional NLQ
- 4K buffer
- Combined IBM/Epson interface

Automatic cut sheet feeder available as an option for **£159.00**

Only **£349.00**

THE star
PRINTERS FOR BUSINESS

POWERTYPE DAISYWHEEL PRINTER

If you want the quality of printing that only a daisywheel printer can provide then this is the printer for you. 132 column with many easily selected options.

This is a real quality machine at a very down to earth price.

Only **£219.00**

DON'T FORGET ALL PRINTER PRICES INCLUDE VAT, CARRIAGE AND CABLE
MANY OTHER MODELS STOCKED AT COMPETITIVE PRICES, e.g.:

AMSTRAD DMP3000	£189.00
MICRO P MP165	£219.00
JUKI 6100	£289.00

THE

EVESHAM ENHANCER 2000

For COMMODORE Computers

The Evesham Micros version of this reliable and compact disc drive has a **new ROM** to ensure a **very high** degree of compatibility with disc turbos and protection schemes.



FEATURES

- Handles Disc Turbos
- Direct Drive Motor
- No Overheating
- 1 Year Guarantee
- Highly Compatible
- Very Reliable
- Compact Size
- Very Quiet

IMPORTANT: ONLY THE EVESHAM MICROS VERSION OF THIS DRIVE HAS THE NEW ROM THAT WILL HANDLE DISC TURBOS AND LOAD OVER 98% OF PROTECTION SCHEMES.

THREE PURCHASE OPTIONS —

OPTION 1
Evesham Enhancer with free s/ware.
ONLY £149.95

OPTION 2
Evesham Enhancer with free s/ware and Quickdisc + cartridge.
ONLY £159.95

OPTION 3
Evesham Enhancer with free s/ware, Freeze Frame cartridge and 10 discs.
ONLY £179.95

WITH NEW COMPATIBLE ROM

COMMODORE PRODUCTS

	PRICE		PRICE
FREEZE FRAME . . . The leading back-up cartridge for the 64/128. Transfer your tape software to disc (including multi-loads) and reload them in less than 40 secs. VERY easy to use. ONLY	£39.95	1541C DISC DRIVE . . . See Enhancer for a better offer ONLY	£189.95
QUICKDISC+ . . . Fast LOAD/SAVE plus utility cartridge. User friendly and includes reset button ONLY	£19.95	POWER PACK . . . Suit 64 Vic-20 ONLY	£24.95
NEOS MOUSE/CHEESE . . . The best mouse for 64 software on tape and disc. ONLY	£42.95	CBM 64 COMPENDIUM PACK Plus joystick and 4 games ONLY	£189.95
		CBM 64C CONNOISSEUR'S COLLECTION . . . ONLY	£239.95
		DISC NOTCHER	£6.95

ATARI ST

520 STF	£399.00
520 STF c/w mono monitor	£499.00
520 STF c/w Philips 8501 colour monitor	£599.00

1040 STF — call for prices

FREE: PAWN or STARGLIDER with all ST purchases

Special Offer

SF354 Disc Drive **£119.00**
(Get your second drive now)

Cumana 1mb single	£155.00
Cumana 2mb double	£249.00

P.C. COMPATIBLE

AMSTRAD 1512 — most models now in stock.

Special Offer

ASCII PC Compatible 640K twin drive	£425.00
With Philips mono monitor	£475.00
With Philips colour monitor	£575.00

HARD DISK

EASycARD drive on a card suits Amstrad single- or twin- drive models. 20mb storage. Easy installation and highest quality (as used by Compaq) **£499.00**

DISCS + BOXES

	ONLY
3" Box of 10	£29.00
3 1/2" Box of 10 DS/DD in plastic library case	£19.95
5 1/4" 25 bulk packed DS/DD disks with w/p tabs and labels	£13.95
25 disks as above with 50 capacity lockable box	£22.95
25 disks as above with 100 capacity lockable box	£24.95
50 capacity lockable box	£10.95
100 capacity lockable box	£13.95

AMSTRAD 1512 MEMORY UPGRADE

This kit with **ultra detailed fitting instructions** will allow you to expand the memory of your 1512 to 640K. That extra memory is really useful when using GEM and it really is straight forward to fit.

Only **£27.00**

ORDERING INFORMATION

ALL PRICES INCLUDE VAT AND FREE DELIVERY WITHIN U.K. (Despatch within 24 hours whenever possible)

By Post

Send cheque, P.O., or ACCESS/VISA details to our Evesham address

HOW TO ORDER

By Phone

Call our Evesham branch and quote your ACCESS/VISA details

EVESHAM MICROS, 63 BRIDGE ST, EVESHAM, WORCS. WR11 4SF. TEL: 0386 41989

CALLERS WELCOME

Also at: 1756 Pershore Road, Cotteridge, Birmingham B30 3BH. Tel: 021 458 4564



All items subject to availability. E.&O.E. Orders from Government and Educational departments welcome. Goods shipped anywhere within Europe at advertised price



POOLSWINNER

THE ULTIMATE POOLS PREDICTION PROGRAM

- **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 ALWAYS, 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.



Boxed, with detailed instruction booklet

PRICE £15.00 (all inclusive)

NOW AVAILABLE

FIXGEN 86/7

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 1988/7. Simply type in the date, and the full fixture list is generated in seconds. Fully compatible with Poolswinner. Yearly updates available.

POOLSWINNER with FIXGEN £16.50 (for both)

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, tricast etc. The database includes vital course statistics for all British courses. You can update the database - never goes out of date.

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

ALL PROGRAMS AVAILABLE FOR: AMSTRAD CPCs, AMSTRAD PCWs (ADD £3.00), All BBCs, All SPECTRUMS, COMMODORE 64/128, ATARI (48K+), SINCLAIR QL. Supplied on tape (simple conversion to disc) - except PCW (on 3" disc) and QL (on microdrive)

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



phone 24 hrs



phone 24 hrs

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

(Send for full list of our software)

COMPUTER REPAIRS (UK)

REPAIRS TO ALL MAKES OF MICROCOMPUTERS AND PERIPHERALS

SPECTRUM	£20.00
COMMODORE 64	£30.00
BBC	£30.00
ELECTRONS	£24.00

- ★ 48 HOUR TURN ROUND
- ★ ALL REPAIRS GUARANTEED
- ★ TRADE CONTRACTS WELCOME
- ★ DISCOUNTS FOR EDUCATIONAL ESTABLISHMENTS

COMPUTER REPAIRS LTD.

2 AUSTINS PLACE
HEMEL HEMPSTEAD, HERTS HP2 5HN
Tel: (0442) 217624

FACULTY ENTERPRISES LTD.

SOFTWARE FOR THE MSX:

WHO DARES WINS II	7.95	CRUSADOR	11.95
FUTURE KNIGHT	7.95	HAPPY FRET	9.95
BATMAN	8.95	PICO PICO	8.95
GREEN BERET (CART)	15.95	MAXIMA	3.99
BMX SIMULATOR	1.99	HOT SHOE	3.99
STORM	1.99	NIGHT SHADE	3.99
FIRE HAWK	1.99	GUN FRIGHT	3.99
SEA KING	1.99	INT. KARATE	4.99
TRAIN SIMULATOR	11.95		

SEND CHEQUES AND P.O.'s TO:

FACULTY ENTERPRISES LTD.

7A SHERWOOD CRESCENT, MARKET DRAYTON, SHROPSHIRE.

MSX LIVES! TEL. 0630 57465

MASTERFILE 8000

FOR ALL AMSTRAD PCW COMPUTERS

MASTERFILE 8000, the subject of so many enquiries, is now available.

MASTERFILE 8000 is a totally new database product. While drawing on the best features of the CPC versions, it has been designed specifically for the PCW range. The resulting combination of control and power is a delight to use.

Other products offer a choice between fast but limited-capacity RAM files, and large-capacity but cumbersome fixed-length, direct-access disc files. MASTERFILE 8000 and the PCW RAM disc combine to offer high capacity with fast access to variable-length data. File capacity is limited only by the size of your RAM disc.

A MASTERFILE hallmark is the provision of multiple, user-designed display formats. This flexibility remains, but now it's even easier. With MASTERFILE 8000 you design your formats "live"; no more questionnaires, just move your format effects around the screen using the cursor keys!

Record updating is even easier than before - just steer your cursor to any field on the screen and then insert/erase/alter as required.

Special options are provided for handling dates and surnames, and column totals can be generated.

All screen work is done graphically - and hence we offer unique panel, box, and ruled line options. Choose the line spacing at pixel resolution - you will be amazed how much clearer 9-pixel lines are than the usual 8-pixels. (Study the picture.) And all this faster than CP/M normally lets you paint the screen! PCW printer functions, under menu control, are provided.

Keyed files are maintained automatically in key sequence, with never any need to sort. You can have unkeyed files too, where records can be inserted at any point in the file.

Any file can make RELATIONAL references to up to EIGHT read-only keyed files, the linkage being effected purely by the use of matching file and data names.

Ref	Maker	Model	Specification	MSX Display Options
C0901	Epson	7705	100cps 40x100 80col	Steer display
C0902	Epson	7710C	100cps 40x100 132col	Steer data
C0903	Epson	80100	100cps 132col	Erase data
C0904	Epson	12100	100cps 232col 80col	Change to opt
C0905	Epson	10100	100cps 40x100 80col	First page
C0906	Epson	101000	100cps 60x100 132col	Next page
C0907	Epson	121000	100cps 80x100 132col	End page
C0908	Canon	450	100cps 40x100 80col	Set record number
C0909	Canon	855	100cps 40x100 132col	Print
C0910	Juki	5510	100cps 40x100 80col	Print single record
C0911	Juki	5520	100cps 40x100 80col	Erase record
C0912	Juki	6100	15cps daisywheel	Insert new record
C0913	Juki	6200	30cps daisywheel	Right format
C0914	Juki	6300	35cps daisywheel	Up to search
C0915	Juki	6400	22cps daisywheel	Exit to main menu
C0916	Philips	DK	200cps 50x100 132col	
C0917	Canon	LBP101	8 page min A4	£1,795
C0918	Canon	LBP102	8 page min A4 graphics	£2,700
C0919	HP	Laser	8 page min A4	£1,500
C0920	HP	Laser+	8 page min A4 graphics	£2,650
C0921	Taxan	KP-810	140cps 50x100 80col	£285

You can import/merge ASCII files (e.g. from MASTERFILE III), or export any data (e.g. to a word-processor), and merge files. For keyed files this is a true merge, not just an append operation. By virtue of export and re-import you can make a copy of a file in another key sequence. New data fields can be added at any time.

File searches combine flexibility with speed. (MASTERFILE 8000 usually waits for you, not

Megaglomerate Ltd

Sales Contact : Martin McManis

Telephone : 0245 654321

Reference : MCL

Date of last order : 14 Aug 86

Value to date : £31,455.00

Mega House
143-145 London Road
Chelmsford
Essex CM12 5EG

Be sure to allow at least 10 working days delivery time when ordering close to Christmas. Ask for Martin for urgent attention.

File: A File: 005111 Records: 00001 Selected: 00001 I: Customer Name Format: I

the other way around.) You can even assign subsets of a file into one or more of seven pigeon-holes for subsequent reference or further manipulation.

FIELD-TO-FIELD CALCULATION is available, using any mixture of terms and arithmetic operators + - * / () .

MASTERFILE 8000 is totally menu-driven, fully machine-coded, and comes with example files and a detailed manual. We claim (modestly) that you will not find another filing system with such power, flexibility, and friendliness.

MASTERFILE 8000 costs £49.95 including VAT and P&P to anywhere in Europe. Elsewhere please add 20% for air-mail service. ACCESS/VISA/MASTERCARD orders are welcome, written or telephoned, quoting card expiry date. Make cheques payable to "Campbell Systems".

Our normal response is return of post, 1st class.

CAMPBELL SYSTEMS (Dept POP), 7 Station Road, EPPING, Essex CM16 4HA, England. Tel: (0378) 77762/3

The galaxy of Commodore games

Tony Kendle passes along C64 tips from reader Martin Pugh



Good news for Commodore owners! This week we are going to concentrate on the promised tips from Martin Pugh which cover many of the very best games released for that computer over the last year.

Up 'n' Down (US Gold)

Type *Load* to get the game loader into the computer. When *Ready* appears type:

POKE 1011,248
POKE 1012,252
RUN

The game will now finish loading and the computer will reset allowing you to enter the following poke.

POKE 36103,173

for infinite lives.

SYS 64738

to start.

Speed King (Mastertronic)

POKE 43,3: *Load*

When *Ready* appears type:

POKE 43,1

Then enter the line

20 IF F=3 THEN POKE 35863,234 : POKE 35864,234 : POKE 35865,234 : SYS 34816

Then enter *Run* to load and run the game. The sprite to sprite collision has been turned off allowing you to go through the other bikes without crashing – like the computer bikes do.

Booty (Firebird)

POKE 43,3 : *LOAD* to load the game loader. When *Ready* appears type:

POKE 43,1

Then enter this line to turn off sprite to sprite collision:

120 POKE 22224,234 : POKE 22225,234 : POKE 22226,234

Enter this line for infinite lives:

121 POKE 21003,234 : POKE 21004,234 : SYS 16373

Run to load and run the game.

The Demons of Topaz

POKE 43,3: *Load* to load the loader.

When *Ready* appears type:

POKE 43,1 : POKE 808,237
NEW

Now enter this listing:

1 POKE 32776,0 : *LOAD*
2 POKE 32776,0 : *LOAD*
3 POKE 32776,0 : *LOAD*
4 POKE 32776,0 : *LOAD*
5 POKE 32776,0 : *LOAD*

When *Ready* appears, enter *Run* to load the game.

SYS 64760
POKE 10519,255

for 255 lives

(SYS 14336)

then press *Run/Stop* and *Restore* to start.

Flash Gordon (Mastertronic)

These are not strictly cheat pokes but they do offer a feature that is not included in the game – the opportunity to practise *Stage 2* and *Stage 3*.

When on the stage you wish press *Run/Stop* and *Restore* to get the *Ready* message.

Then enter:

SYS 0

Then

SYS 16384 for *STAGE 2* or
SYS 32768 for *STAGE 3*

You only need include the SYS 0 the first time you try this. For subsequent games it can be omitted.

1985 (Mastertronic)

Load the game and then reset the computer.

POKE 24011,169

POKE 24012,254

POKE 24013,234

These pokes turn off the sprite to background collision detection allowing you to fly through the landscape without loss of life.

Psi Warrior (Beyond)

Type in and *Run* this listing. When the *Tape* message appears play the game tape.

1 SYS 63276 : POKE 783,1 : POKE 831,255 :
POKE 832,2 : SYS 62828

2 POKE 749,226 : POKE 750,252 : POKE 770,167 : POKE 771,2 : POKE 776,167

When this has finished type:

POKE 8984, (0-255)

Initial Psi and Id energy

SYS 12288

to start.

Galaxy

Type in and *Run* this listing. When the *Tape* message appears play the game tape.

1 SYS 63276 : POKE 783,1 : POKE 831,255 :
POKE 832,2 : SYS 62828

2 POKE 749,226 : POKE 750,252 : POKE 770,167 : POKE 771,2 : POKE 776,167

When this has finished loading type:

POKE 2706, (0-255)

for the number of lives.

SYS 2061

to start.

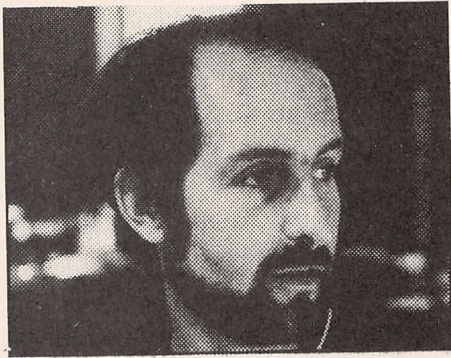
Charts

Top Twenty

- 1 (-) Bomb Jack 2
- 2 (1) Gauntlet
- 3 (2) BMX Simulator
- 4 (3) Paperboy
- 5 (6) Ninja
- 6 (13) Feud
- 7 (10) Leaderboard
- 8 (5) Konami's Coin-op Hits
- 9 (8) 180
- 10 (7) Footballer of the Year
- 11 (11) Computer Hits Vol 3
- 12 (6) Ollie and Lisa
- 13 (14) Hit Pack
- 14 (9) Fist II
- 15 (-) Five Star Games
- 16 (-) Cobra
- 17 (15) Agent X
- 18 (-) Arkanoid
- 19 (16) Space Harrier
- 20 (12) Park Patrol

All figures compiled by Gallup/Microscope

- Elite
- US Gold
- Code Masters
- Elite
- Mastertronic
- Bulldog
- Access/US Gold
- Imagine
- Mastertronic
- Gremlin Graphics
- Beau Jolly
- Firebird
- Elite
- Melbourne House
- Beau Jolly
- Ocean
- Mastertronic
- Imagine
- Elite
- Firebird



The magazine scene

Tony Bridge leafs through the various adventure game-specific magazines now on the market

Every so often I take a look at the adventure magazines that are around at the moment. I say "at the moment" because they tend to come and go fairly rapidly. The most important ones manage to survive for several reasons. The most important one is that the people running them don't seem to be out for personal glory or gain (as some are) and they don't talk down to the readership. A necessary part of a successful magazine is to involve the readership, and the more successful magazines are the ones that do just that.

One pair of magazines that I personally enjoy are *Adventure Probe* and *Adventure Contact*. Edited by Pat Winstanely and Sandra Sharkey, they are published monthly and cost £1 each.

Adventure Probe is the one to buy if you're having trouble playing adventures. You'll find reviews, letters from fellow sufferers, hints, maps and solutions. If, on the other hand, you are into writing adventures, then it's *Adventure Contact* you're after. The 50-odd pages here cover all the questions you may have regarding marketing and presentation of your game, as well as inside information on the *Quill* and *GAC*.

If you want to get in touch with the editors of either magazine, the addresses are given at the end of this article.

From magazines to books: one that has been around for some while is *The Adventurer's Handbook* from H&D Services of Manchester. This started life as a few slim pages of typed hints and tips, and has now blossomed into a very glossy, 78-page encyclopaedia, beautifully bound in shiny card. It has been renamed *What Now?* and contains step-by-step solutions for a veritable A-Z of adventures (from *Aftershock* to *ZZZ* along with reviews, news and a number of special offers on software. Recently, H&D have been expanding their field of interest and now include reviews of strategy and war games. The price is a bit steep, but it is certainly an extensive effort and will offer you hours of reading. I hesitate to repeat things about "stunning value", but the address is given below if any of you are tempted.

Magazines aren't just printed on paper these days, and if you're looking for something a bit unusual, there is *The Spectrum Adventurer* available on tape. I know I've mentioned them before, but I've just been sent Tape No.9 and it's

worth talking about. For just £3, you get hints, news items (though they really aren't anything new), a quartet of reviews and a bit of chat from the man who produces the thing, Andy McGregor. I still hold hope that more use will be made of the medium, but so far there are only a few special effects (rising and falling beeps, and selected words repeated up and down and across the page). I was hoping for some screen shots from graphic adventures, or quotes or some other snazzy graphics. The format does mean that quite detailed hints and solutions are offered (most of them from John Wilson who also appears in many other adventure magazines), though in this edition they cover only four games. So there isn't anything that cannot be found elsewhere in the (cheaper) paper magazines.

Except, that is, for the adventure included on the tape. Dr. Goo is a time lord played by you who is sent to find the

once-good-now-turned-evil Dr. X. The story doesn't have a flashy title screen, but the character set looks good. It's *Quilled* (and credited) with Ram save/load, there are (almost) no spelling mistakes and it is well presented and laid out. I haven't delved too deeply into the game itself, but for an adventure to be included with all the rest, for £2 you can't go far wrong. I hope that in the future Andy starts to use the medium to its full potential, but in the meantime, this is a good tape to have handy for those awful times when you get stuck.

Adventure Contact, 13 Hollington Way, Wigan WN3 6LS.

Adventure Probe, 78 Merton Road, Wigan WN3 6AT.

What Now?, 1338 Ashton Road, Higher Openshaw, Manchester M11 1J6.

The Spectrum Adventurer, 4 Kilmartin Lane, Carlisle, Lanarkshire ML8 5RT.

Adventure Helpline

Knight Tyme on Amstrad CPC. Put in co-ordinates for transporter but reply is always broken down. Unable to go any further. S. Jackson, 7 Nut Tree Close, East Huntspill, Somerset TA9 3PN.

Action Biker on Atari. Cannot get past drag race. Gary Cox, 27 Green Lane Estate, Pudding Norton, Norfolk NR21 7LT.

Spiderman on BBC B. How do you defeat Hydroman and how do you run printing press? Alex Meyer, Leaton Hall Farm nr. Bomere Heath, Shrewsbury,

Salop SY4 3AD.

Lord of the Rings on Spectrum +2. How do I get into the ferry and cross the river? Hayden Price, 96 Manor Road, Deal, Kent.

Fourth Protocol on C64. Any help on Part One appreciated. Terry Crimbleby, 18 Downfield Avenue, Hull HU6 7XF.

Spy Trek on Amstrad CPC. What do I do at the ski lift? Mark Griffiths, 327 Tarbock Road, Nuyton, Merseyside L36 0SD.

Adventure Helpline

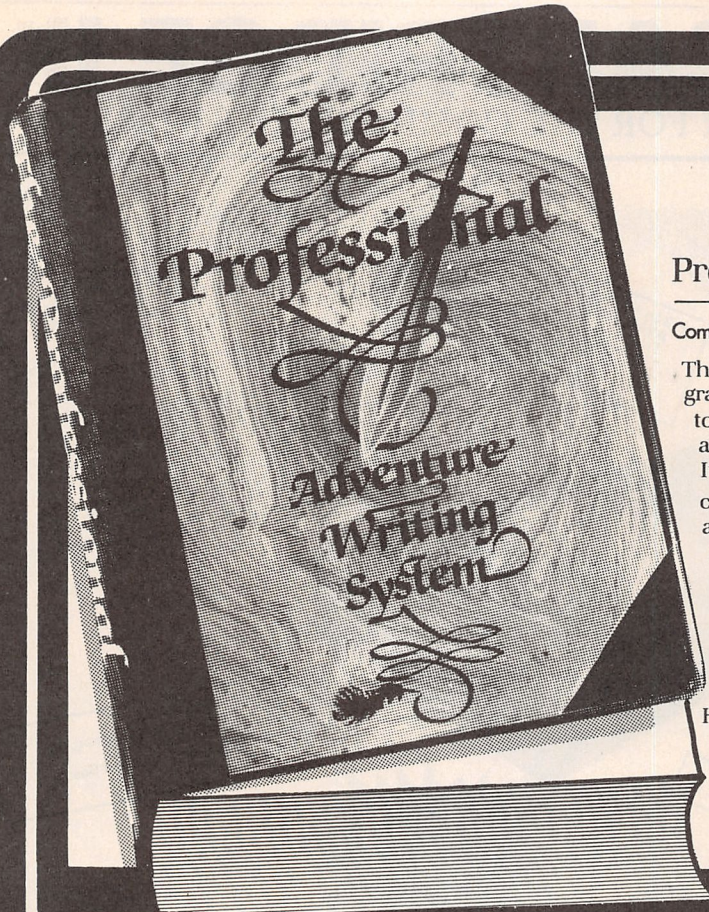
Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair - help is at hand.

Fill in the coupon, explaining your prob-

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

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

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



PAW

Professional Adventure Writer

Spectrum 48K. Plus. 128. Plus 2

Coming soon for Commodore / Amstrad

The Professional Adventure Writer is a state-of-the-art graphic adventure writing system, which allows you to design, write and illustrate, fast machine code adventures with ease.

It provides a powerful sentence parser which allows complex chained commands to be decoded automatically.

Simple to use multiple process tables allow characters and problems to be created for your adventures

Versatile graphics editor provides 'rubber banding', high speed shading, scaled subroutine's etc etc.

Allows impressive illustrations to be created quickly and easily.

Has many other outstanding features making it probably the most advanced authoring system available yet.

Makes full use of all the memory on the 128K machine

£22.95



GILSOFT
INTERNATIONAL LTD.

2 Park Crescent, Barry, South Glam. Tel: 0446 732765

The Adventurers Club Ltd.

64c Menelik Road, London NW2 3RH.

Telephone: 01-794 1261

**£1,000
PRIZES
ON OFFER**



**SPECIAL
OFFER**

ADVENTURER! JOIN OUR CLUB!!! (NOW IN ITS 3RD YEAR)

WE OFFER:

- ★ Monthly 24-page Member's Dossier with reviews, tips, solutions, new releases, etc . . .
- ★ The Master Adventurer Trophy Competition
- ★ Unlimited help through our phone-in helpline
- ★ Discounted software
- ★ Contact Column, Free Swap/Sell facilities
- ★ AND MANY OTHER SERVICES

£10.95 Join now to get a **£1 ACL Credit Voucher** redeemable against any service of our Club

(OVERSEAS RATES ON REQUEST)

- ★ **YOUR MONEY BACK IF NOT SATISFIED!!!** ★
- (Less 50p charge. Details with your first Dossier)

Please complete coupon or give us a ring for our FREE leaflet or any other information.

Name:.....

Address:.....

I apply for membership of the Adventurers Club - I enclose a cheque/postal order for £10.95.

The Adventurers Club Ltd. run by Professionals for ALL the Adventurers!

WHAT DO THEY SAY ABOUT US?

* **TONY BRIDGE** in *Popular Computing Weekly*:

- If you are serious about your adventuring, then it's well worth joining ACL as it is one of the best. (6 November 1986)

- Excellent mail order service . . . Worthwhile and authoritative help . . . Wealth of information for the adventurer.

(9 January 1986)

* **MIKE GERRARD**:

- I can recommend them even more than I did a couple of months ago. (*Dragon User* - October 1985)

- The news that Pete Austin's just agreed to be their President is a feather in their cap, so if you fancy reading his monthly column in the Club Dossier, give them a ring on 01-794 1261. (*Your Sinclair* - May 1986)

- The Club does give very good value for money.

(*MSX Computing* - April/May 1986)

* **KEITH CAMPBELL**:

- ACL can once again be recommended to C+VG readers interested in software discounts, in-depth hints and tips, reviews, and the general chat that adventurers get up to.

(*Computer & Video-Games* - February 1987)

Disc Utilities

Simon T Goodwin

This program provides the programmer with four new commands for Amstrad basic, to enable the Amstrad disc drives to be used to further effect. To get the commands up and running just type in and run the BASIC listing. If the program stops with an error then re-check the data statements. Lines 800-1000 of the listing give a small example of the kind of uses the commands can be put to. The machine code is located at 42000 but it is not relocatable. The commands are:

:Read, address of buffer, drive, track, sector

This command takes a sector from the disc (512 bytes long) and places it at the specified buffer address. The track (0 to 39), and sector numbers must also be specified. System format sectors are numbered &41 to &49, whereas data format sectors are numbered &C1 to &C9. The drive number should also be specified (0 for drive A or 1 for drive B).

:Write, address of buffer, drive, track, sector

Performs the opposite task to the :Read command. Takes the data from the buffer address and writes them to the disc at the specified track and sector

positions.

a%=0= :Type,@a%

Returns the format of the disc in the drive. If a disc is data format *a%* should be between 190 and 200. If a disc is system format *a%* should be between 60 and 70.

:ZIPDISC

Speeds up the disc drive by 20-30%. For example **Sorcery** loads in 6 secs instead of 9 secs.

:HELP

Gives a list of the commands and their syntax.

If readers do not want to type in the listing, I will provide it on tape or disc for £2.00 or £5.00 respectively.

```
>10 REM -----
20 REM  DISC PROGRAMMERS UTILITIES
30 REM  by Simon.T.Goodwin 1987
40 REM -----
50 REM
60 count=0
70 MEMORY 41999
80 FOR n=42000 TO 42500
90 READ a$
100 POKE n, VAL("&n"+a$)
110 count=count+VAL("&n"+a$)
120 NEXT
130 IF count<>49208 THEN PRINT "Error in
data statements":END
140 CALL 42000: REM INITIALISE COMMANDS
150 REM
160 DATA 00,00,00,00,01,1D,A4,21
170 DATA 10,A4,C3,D1,BC,2E,A4,C3
180 DATA 47,A4,C3,67,A4,C3,87,A4
190 DATA C3,9B,A4,C3,C9,A4,52,45
200 DATA 41,C4,57,52,49,54,C5,5A
210 DATA 49,50,44,49,53,C3,54,59
220 DATA 50,C5,48,45,4C,D0,00,21
230 DATA D5,A5,CD,D4,BC,22,D6,A5
240 DATA 79,32,D8,A5,DD,6E,06,DD
250 DATA 66,07,DD,5E,04,DD,56,02
260 DATA DD,4E,00,DF,D6,A5,C9,21
```

```
270 DATA D1,A5,CD,D4,BC,22,D2,A5
280 DATA 79,32,D4,A5,DD,6E,06,DD
290 DATA 66,07,DD,5E,04,DD,56,02
300 DATA DD,4E,00,DF,D2,A5,C9,21
310 DATA CD,A5,CD,D4,BC,22,CE,A5
320 DATA 79,32,D0,A5,21,C0,A5,DF
330 DATA CE,A5,C9,DD,6E,00,DD,66
340 DATA 01,E5,3E,00,32,51,BE,21
350 DATA C9,A5,CD,D4,BC,22,CA,A5
360 DATA 79,32,CC,A5,32,BF,A5,1E
370 DATA 00,16,00,DF,CA,A5,1E,00
380 DATA DF,BD,A5,E1,3A,51,BE,77
390 DATA C9,CD,1D,A5,21,28,A5,06
400 DATA 1C,CD,15,A5,CD,1D,A5,21
410 DATA 44,A5,06,14,CD,15,A5,CD
420 DATA 1D,A5,CD,1D,A5,21,58,A5
430 DATA 06,27,CD,15,A5,CD,1D,A5
440 DATA 21,7F,A5,06,28,CD,15,A5
450 DATA CD,1D,A5,21,A7,A5,06,08
460 DATA CD,15,A5,CD,1D,A5,21,AF
470 DATA A5,06,0E,CD,15,A5,CD,1D
480 DATA A5,CD,1D,A5,C9,7E,CD,5A
490 DATA BB,23,10,F9,C9,3E,0A,CD
500 DATA 5A,BB,3E,0D,CD,5A,BB,C9
510 DATA 44,49,53,43,20,50,52,4F
520 DATA 47,52,41,4D,4D,45,52,53
530 DATA 20,55,54,4C,49,4C,49,54
```

```
540 DATA 49,45,53,2E,28,63,29,20
550 DATA 53,69,6D,6F,6E,2E,54,2E
560 DATA 47,6F,6F,64,77,69,6E,2E
570 DATA 7C,52,45,41,44,2C,62,75
580 DATA 66,66,65,72,20,61,64,64
590 DATA 72,65,73,73,2C,64,72,69
600 DATA 76,65,2C,74,72,61,63,6B
610 DATA 2C,73,65,63,74,6F,72,7C
620 DATA 57,52,49,54,45,2C,62,75
630 DATA 66,66,65,72,20,61,64,64
640 DATA 72,65,73,73,2C,64,72,69
650 DATA 76,65,2C,74,72,61,63,6B
660 DATA 2C,73,65,63,74,6F,72,7C
670 DATA 5A,49,50,44,49,53,43,7C
680 DATA 54,59,50,45,2C,40,66,6F
690 DATA 72,6D,61,74,25,6C,C5,00
700 DATA 2D,00,64,00,01,04,0A,01
710 DATA 03,87,00,00,00,82,00,00
720 DATA 00,85,00,00,00,84,00,00
730 DATA 00,28,63,29,20,53,54,47
740 DATA 20,31,39,38,36,00,00,00
750 DATA 00,00,00,00,00,00,00,00
760 DATA 00,00,00,00,00,00,00,00
770 DATA 00,00,00,00,00,00,00,00
780 DATA 00,00,00,00,00,00,00,00
```

Programming: Spectrum

Screen Merge

David Nash

This is a machine code program to merge together two pictures on screen which are stored as *Screen\$* files on tape. It is 100 bytes long and stored at address 65000. An assembly listing is given, but this is not necessary unless it is to be typed into an assembler.

To use the program, first type in the Basic program and run it. Provided no errors are found, the machine code is

now in memory. To merge together two screens, enter the command *Randomize Usr 65000*. The computer will now behave as if it were loading a screen but note that the filename does not appear on screen. When the first screen has been loaded, the computer will wait for the second one. This should now be played from the tape, but will not appear on the screen as it is going into higher memory. After this has loaded it will automatically be brought onto the screen whilst being merged with the one already

there.

The attributes (screen colours) of the final composite picture are those of the first one. The program, however, contains facilities to change this to either merging the attributes using a binary *Or* function on each byte, or filling the entire screen with one set of colours eg all black on white. These can be effected by *Poke*ing numbers into locations 65024, 65035, and 65046 before calling the machine code. The correct numbers are shown in the table below.

Programming: Spectrum

65024	65035	Effect
32	201	Attributes from screen one
36	201	Attributes merged
doesn't matter	0	Attributes set to value POKEd into address 65046

BASIC program for Screen Merger

```

100 REM *****
110 REM **Screen merger**
120 REM * D.Nash,1986**
130 REM *****
140 CLEAR 54999
150 LET add=65000
160 LET len=101
170 LET tot=0
180 FOR n=add TO add+len-1
190 READ b
200 POKE n,b
210 LET tot=tot+b
220 NEXT n
230 IF tot<>10704 THEN PRINT "Error in
data somewhere": BEEP 1,20: STOP
240 PRINT "All data correct"
250 PRINT : PRINT "To merge two screens
use" : RANDOMIZE USR 65000 : "Then pla
y two screens from tape."
1000 DATA 33,0,64,229,205,26,254,33,216,
214,229,205,26,254,17,0,64,33,216,214,6,
192,197,6,29,26,182,18,35,19,16,249,193,
16,243,201,1,255,2,17,1,88,33,0,88,54,56
,237,176,201,62,0,55,221,33,0,91,17,17,0
,205,86,5,56,2,207,26,221,33,0,91,221,12
6,0,254,3,32,243,55,62,255,221,33,0,91,2
21,86,12,221,94,11,225,221,225,229,205,8
6,5,48,221,201

```

Programming: QL

Coder

Douglas Pirie

The usual way of presenting machine code programs is as a series of Data statements, with a suitable Basic procedure to load the bytes back into memory. Coder takes all the hard work out of this by taking bytes in memory and creating just such a program on some output device.

```

100 WINDOW 448,240,33,16
110 BORDER 2,4
120 PAPER 0:CLS:INK 7
130 INPUT "Start address of data ? ";start$
140 INPUT "\Address of last item ? ";last$
150 start=dec(start$)
160 last=dec(last$)
170 INPUT "\\To device / File name ? ";dev$
180 PRINT "\\Save code from"!start$!"to"!last$!"to file"!dev$
190 PRINT "\Go? (Y/N)"
200 IF INKEY$(-1)=="Y" THEN do_it
210 INK 7
220 INPUT "\\Again ? ";ag$
230 IF ag$(1)=="Y" THEN RUN:ELSE STOP
240 :
250 :
260 DEFine FuNction dec(num$)
270 IF num$(1)<>"$" THEN RETURN num$
280 decimal=0
290 FOR hex=2 TO LEN(num$)
300 IF num$(hex)!="A" THEN
310 inc%=CODE(num$(hex))-55
320 ELSE
330 inc%=num$(hex)
340 END IF
350 decimal=decimal*16+inc%

```

```

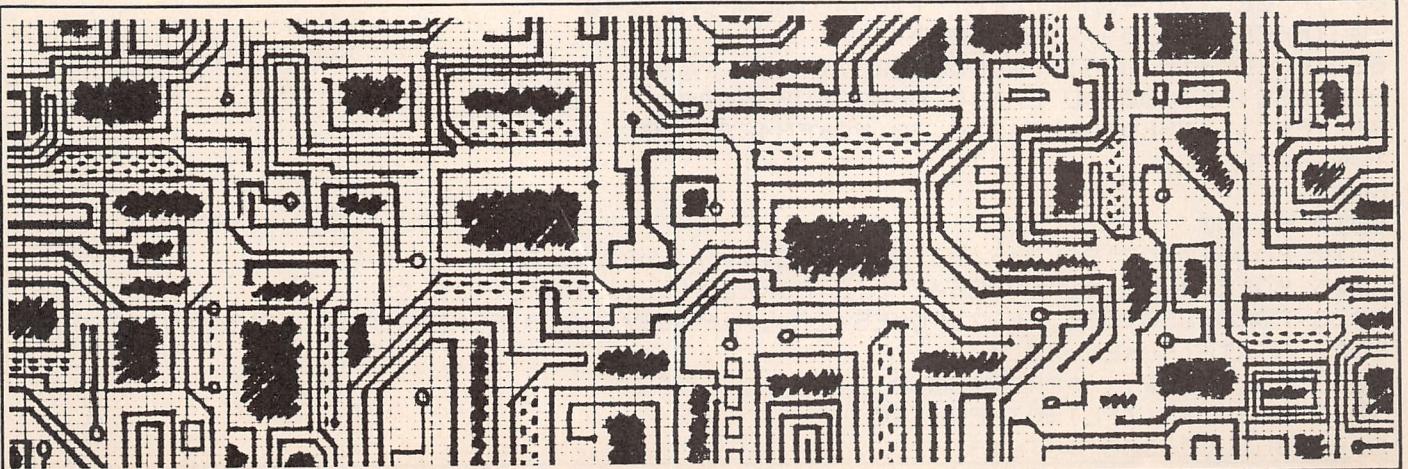
360 NEXT hex
370 RETURN decimal
380 END DEFINE
390 :
400 :
410 DEFINE PROCEDURE do_it
420 INPUT \"Delete first? ";d$
430 IF d$=\"Y\" THEN DELETE dev$
440 OPEN_NEW#4;dev$
450 PRINT#4;"100 c=RESPR(";last+1-start;)"
460 PRINT#4;"110 FOR a=c TO c+";last-start;" STEP 16"
470 RESTORE
480 FOR lines=1 TO 16
490 READ line$
500 PRINT #4;line$
510 NEXT lines
520 count=0:num=270:check=0
530 INK 4
540 FOR byte=start TO last
550 IF INKEY$=\"Q\" THEN done:RETURN
560 printaddr
570 IF (count MOD 16)=0 THEN
580 num=num+10
590 IF count>0 THEN PRINT#4;' ',';check:check=0
600 PRINT#4;num!'DATA ";
610 END IF
620 count=count+1:pk%=PEEK(byte)
630 check=check+pk%
640 PRINT#4;dat$(pk%);
650 NEXT byte
660 done
670 END DEFINE
680 :
690 :
700 DEFINE FUNCTION dat$(val)
710 IF (val DIV 16)<10 THEN
720 hex$=val DIV 16
730 ELSE
740 hex$=CHR$((val DIV 16)+55)
750 END IF

```

```

760 IF (val MOD 16)<10 THEN
770 hex$=hex$&(val MOD 16)
780 ELSE
790 hex$=hex$&CHR$((val MOD 16)+55)
800 END IF
810 RETURN hex$
820 END DEFINE
830 :
840 :
850 DEFINE PROCEDURE printaddr
860 AT 17,0
870 PRINT "Saving location"!byte
880 END DEFINE
890 :
900 :
910 DEFINE PROCEDURE done
920 PRINT#4;' ',';check
930 CLOSE#4
940 END DEFINE
950 :
960 :
970 DATA "120 check=0:READ a$,ch"
980 DATA "130 FOR b=1 TO LEN(a$)-1 STEP 2"
990 DATA "140 n=dec(a$(b))*16+dec(a$(b+1))"
1000 DATA "150 POKE a+(b-1)/2,n"
1010 DATA "160 check=check+n:NEXT b"
1020 DATA "170 IF check=ch THEN"
1030 DATA "180 NEXT a"
1040 DATA "190 ELSE"
1050 DATA "200 PRINT#0;'Checksum error at line'!"
(a-c)/1.6+280"
1060 DATA "210 STOP"
1070 DATA "220 END IF"
1080 DATA "230 DEFINE FUNCTION dec(h$)"
1090 DATA "240 IF h$<'A' THEN RETURN h$:
ELSE RETURN CODE(h$)-55"
1100 DATA "250 END DEFINE"
1110 DATA "260 : "
1120 DATA "270 : "

```

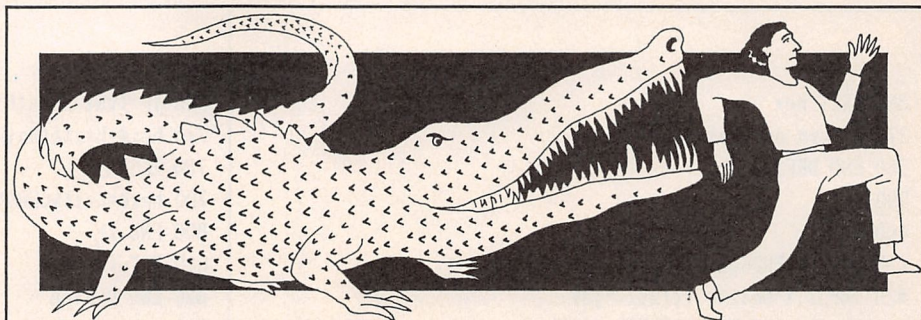


Xedion

Mark Cullimore

The object of Xedion, is to destroy the aliens before they reach the quadrum bar and drain your energy, by moving the sights over them and blast them with your triple lasers.

Or, you can kill them by priming the defence bar, by pressing the fire button. The sights need not be on the target and



are moved by a joystick in port 2.

More of this three parter next week.

For a copy on cassette send £2.50 (or

£4.00 on disc) to Mark Cullimore, 5 Heol Sant Bridget, St Brides Major, Bridgend, Mid Glamorgan CF32 0SL.

READY.

```

0 REM POKE808,232:REM THE ABOVE POKE DISABLES RUNSTOP/RESTORE
1 GOSUB50000
2 POKE54296,47:POKE54295,1:POKE54294,255:POKE54278,255
4 POKE54276,129
5 AQ$="*~!@#%&'()*+,-./:;<=>?[]^_`{|}~"
6 BQ$=" "
7 CQ$=" "
8 DQ$=" "
9 EQ$=" "
10 HI=1000:HI$="MARK CULLIMORE":PRINTCHR$(8):POKE53272,21
11 POKE53280,0:POKE53281,0:PRINT" "
15 FORN=0TO62:READX:POKE832+N,X:NEXT
16 FORN=0TO62:READX:POKE896+N,X:NEXT
17 FORN=0TO62:READX:POKE960+N,X:NEXT:GOSUB40000:PRINT" "
18 GOSUB30000:GOSUB19999:GOSUB27000:GOSUB25000:GOSUB61000
19 POKE54272,10
20 POKEEN,251:POKEY+39,1:POKEY+40,0:SYSM1:POKEV,39:POKEV1,100
25 POKEY+16,7:POKEY+2,64:POKEY+3,100:POKE2040,13:POKE2041,15:POKEY+41,0
26 POKE2042,14:POKEY+28,6:POKEY+37,15:POKEY+38,0
27 GOSUB35000
30 S=NOTPEEK(56320)
35 IFS<>-128THENPOKE54276,81:POKE54273,1:POKE54272,LE
40 IF(SAND1)THENPOKEYV,75
45 IF(SAND2)THENPOKEYV,160
50 IF(SAND4)THENPOKEYV,75
60 IF(SAND8)THENPOKEYV,160
62 IF(SAND16)THEN10000
65 IFS=-128THENPOKEYV,128:POKEYV,128:POKE54273,0
66 POKEY+3,PEEK(V1)
67 IFPEEK(V)>40ANDPEEK(V+16)=3THENPOKEY,40
70 IFPEEK(V+16)>7THEN50000
80 IFPEEK(197)=4THENGOSUB62000
90 IFS<>=50000AND EXT=0THENGOSUB55000
95 IFAC>14THENPOKE54276,33:POKE54273,10
100 GOTO30
5000
5010 SYSM0
5012 FORA=0TO7:POKEYV+A,128:POKEYV+A,128:NEXTA
5015 POKE54276,33:POKE54273,2:POKE2041,11:POKEY+28,2
5020 FORA=255TO0STEP-2:POKE54294,A:POKEY+38,A:POKEY+37,1:POKEY+37,0
5022 NEXTA:POKEY+28,4
5025 POKEY+37,1:POKEY+38,0
5030 LI=LI-1:IFLI=0THEN5100
5040 GOSUB25000:GOTO19
    
```

```

5100 GOSUB25000
5110 POKEEN,0:POKEYV+16,0:FORA=0TO15:POKEYV+A,0:NEXT
5112 FORA=0TO7:POKEYV+A,128:POKEYV+A,128:NEXT
5115 FORT=0TO150
5120 PRINT"#####GAME OVER"
5130 C=C+1:IFC>1THENC=0
5135 POKE646,C
5140 NEXTT
5142 PRINT"#####"
5145 IF6C>HITHEN5200
5150 FORA=0TO39:PRINT"@"SPC(A);A0$;:POKE646,A:NEXT:FORA=0TO39
PRINT"@"SPC(A);B0$
;:NEXT
5155 PRINT"J":POKE54276,129:GOTO18
5200 :
5201 HX=4:HY=7:POKE54276,32:POKE54294,200
5202 FORA=0TO39:PRINT"@"TAB(A)D0$;:NEXT
5203 FORA=39TO0STEP-1:PRINT"@"TAB(A)E0$;:NEXT
5205 PRINT"##### A B C D E F G"
5207 PRINT"##### H I J K L M N"
5210 PRINT"##### O P Q R S T U"
5212 PRINT"##### V W X Y Z . &"
5214 PRINT"##### + * ! / # @"
5216 PRINT"#####-----"
5217 PRINT"#####GREAT SCORE,ENTER YOUR NAME"
5218 PRINT"#####USE + TO CLEAR"
5219 PRINT"#####AND @ TO END"
5220 S=NOTPEEK(56320)
5225 IF(SAND1)ANDHY>7THENHY=HY-2
5230 IF(SAND2)ANDHY<15THENHY=HY+2
5235 IF(SAND4)ANDHX>4THENHX=HX-2
5240 IF(SAND6)ANDHX<16THENHX=HX+2
5242 A=PEEK(1024+HX+40*HY)
5250 POKE1024+HX+40*HY,A:POKE54273,55
5252 POKE1024+HX+40*HY,128+A
5253 POKE1024+HX+40*HY,A:POKE54273,100
5254 IF(SAND16)THENS300
5257 A=0
5260 GOTO5220
5300 :
5305 IFA=61THENL=113:GOTO5340
5310 IFA=63THENL=115:GOTO5340
5315 IFA=31THENWD$=""
5317 IFA=31THENPRINT"#####"
5318 IFA=31THENS220
5320 IFA=0THENHI$=WD$:HI=60:GOTO5150
5325 IFA>=1ANDR:=26THENL=A+64:GOTO5340
5330 L=A
5340 WD$=WD$+CHR$(L)
5342 IFLen(WD$)=14THENHI$=WD$:HI=60:GOTO5150
5345 PRINT"#####"WD$
5350 GOTO5220
9999 :
10000 POKEYV,128:POKEYV,128:POKEYV+3,PEEK(V1):POKE54276,
129:POKE54273,PEEK(V1)
10001 IFFEEK(V+16)=3THENPOKEYV+16,7:GOTO10100
10002 IFFEEK(V+16)=2THENPOKEYV+16,6
10010 POKEYV+21,255:POKEYV+4,75:POKEYV+5,PEEK(V1)
10020 FORA=40TO0STEP-12:POKEYV+4,A:POKE54294,A:NEXT
10030 IFFEEK(V+16)=7THENPOKEYV+16,3

```

Go Label

Stephen P Hamer

This C64 routine allows programs to *Goto* labels as well as line numbers. Simply assign a value to a variable, say *Thin=330*, and then *Goto Thin*.

```

10 PRINTCHR$(147)
20 FORI=8TO38:READD:T=T+D:POKE49152+I,D:NEXT
30 IFT<>4896THENPRINT:PRINT"CHEXSUM ERROR!":
PRINT:STOP
40 PRINT:PRINT"GO LABEL NOW ACTIVATED":PRINT
50 SYS49152
100 DATA169,11,141,8,3,169,192,141
110 DATA9,3,96,32,115,0,201,203
120 DATA240,6,32,121,0,76,231,167
130 DATA32,115,0,32,138,173,32,247
140 DATA183,32,163,168,76,174,167
    
```

Replace\$

Adam Wright

Another C64 routine from the prolific Adam Wright. This one will search a string for a character and replace it with another, either globally or selectively.

The syntax for the command is *Sys 49152, string, character to replace, character to replace with, globally (G) or selectively (S)*.

<pre> 0 REM SEARCH/REPLACE# 1 DATA 32,253,174,32,241,174,32,166 2 DATA 182,134,250,132,251,133,253,162 3 DATA 0,138,72,32,253,174,32,158 4 DATA 173,32,166,182,201,1,240,3 5 DATA 76,72,178,160,0,104,170,177 6 DATA 34,149,254,232,224,2,208,225 7 DATA 168,0,133,252,32,253,174,32 8 DATA 121,0,201,71,240,7,201,83 9 DATA 240,5,76,72,178,230,252,160 10 DATA 0,177,250,197,254,240,7,200 </pre>	<pre> 11 DATA 196,253,208,245,240,8,165,255 12 DATA 145,250,165,252,208,235,32,115 13 DATA 0,96 15 SR=49152:OK=0:FOR A=SR TO SR+97 20 READ D:POKE A,D:OK=0:0:NEXT A 30 IF OK<>14298 THEN PRINT "ERROR":STOP 40 A\$="INSTALLED" 50 SYS SR,(A\$),"L",",",0 60 PRINT A\$ READY. </pre>
---	--

Textpack

Jonathan Temple

This program consists of two machine code routines for the BBC which will compress and decompress a string. *X%* and *Y%* hold the *LSB* and *MSB* of the address of the string. Use *Call pack* to pack it and *Call unpack* to print the unpacked version.

A short demo program shows how the routines work.

<pre> 10 pack=&A00 20 CX=0:FOR MZ=0 TO 72 STEP 4 30 READ B#:BZ=VAL("&"+B#) 40 CX=CX+BZ:MX!pack=BZ:NEXT 50 IF CX<>&C5BE57B0 PRINT"Error":END 60 unpack=pack+&2B 65 : 70 PRINT 80 \$&900=" Bytes & Pieces !" 90 PRINT "Packed from ";LEN(\$&900); 100 XZ=0:YZ=&9:CALL pack </pre>	<pre> 110 PRINT " to ";LEN(\$&900);" bytes" 120 XZ=0:YZ=&9:CALL unpack 130 END 140 : 150 DATA 71847086,728500A9,72A47385 160 DATA C84870B1,20C970B1,72E607D0 170 DATA 30800968,73A46801,72E67091 180 DATA 0DC973E6,8660E0D0,A0718470 190 DATA AA70B100,E3207F29,80298AFF 200 DATA 20A905F0,C8FFE320,D00DC98A 210 DATA 60EB </pre>
--	---

We want your programs!!

Yes, this is your chance to get rich and famous. Well, famous anyway, as *Popular Computing Weekly* is looking for contributions to the Programming pages.

What sort of thing are we looking for? You name it – anything original from games to utilities, applications and the like, written in Basic, machine code or anything else you can think of.

Programs for any computer will be considered, not just the old faithfuls

(Spectrum, Amstrad, QL, Commodore, etc), so send those listings in. What we need is a working copy of the program on tape or disc, plus an accompanying article or documentation that you would anticipate going with the piece, normally not over 2000 words.

Alternatively, send in your short programs to the Bytes and Pieces page – what could be easier?

In return, we'll pay the princely sum of £25/page for the main programming

pages and £10 for each Bytes & Pieces contribution we publish. Plus the fact that your name will be indelibly carved in the *Popular Programming Hall of Fame* till time immemorial. What more could any true programmer ask?

Just send your masterpieces in to **Duncan Evans, Technical Editor, Popular Computing Weekly, 12-13 Little Newport St, London WC2 7PP** and he'll assess them post haste.

PROGRAMMERS WANTED

**2 Programmers
are sought to become part of a team,
in a new venture.**

We are looking for imaginative, hard working people who are capable of producing high quality games.

Applicants must have Arcade Games Programming experience in Z80 or 6502 (Spectrum/C64).

If you want more than a programming job, one which offers more involvement, fantastic prospects and high returns, send your c.v. and a demo tape to:

Ras Jacobi,

124 Arthur Court,
Queensway, London W2 5HP.
Tel: 01-727 4629

FOOTBALL MANAGEMENT

3 Classic Football Management Strategy Games. Each of these Quality games is packed with **GENUINE FEATURES** to make them the most **REALISTIC** available.
PREMIER II - A COMPREHENSIVE LEAGUE GAME. Play all teams home and away. Full squad details all teams, Injuries, Team styles, In-match substitutes, Named & recorded goal scorers, Comprehensive transfer market, 5 Skill levels, Financial problems, Job Offers, Morale, Save game and MORE!
Price - 48/128K Spectrum £6.95
Also available on the 64/128K Commodore - **PREMIER LEAGUE** - Includes many of the features of Premier II - Price £6.50.

WORLD CHAMPIONS - A COMPLETE WORLD CUP SIMULATION - From the first friendlies, qualifying stages, four matches and onto the FINALS - Select from squad of 25 players, 2 In-Match substitutes allowed, Discipline table, 7 Skill levels and MUCH MUCH MORE! Includes a full text match simulation with Injuries, Bookings, Sending off, Corners, Free kicks, Match timer, Injury time, Extra time, Goal times and MORE!
Price - 48/128K Spectrum £6.95 64/128K Commodore £7.95.

EUROPEAN II - CAPTURES THE FULL ATMOSPHERE OF EUROPEAN COMPETITION - Home & away legs, Away goals count double (if drawn), Full penalty shoot out (with SUDDEN DEATH), 7 Skill levels, 2 subs allowed, Pre match team news, Discipline table, Full team & substitute selection, Disallowed Goals and MUCH MUCH MORE! Plus FULL TEXT MATCH SIMULATION.
Price - 48/128K Spectrum £6.95 64/128K Commodore £7.95.

FANTASTIC VALUE Buy any 2 games Deduct £2.00 from total
Buy all 3 games Deduct £3.00 from total

All games are available for IMMEDIATE DESPATCH by 1st Class Post and include FULL Instructions. (add £1.00 outside UK)

From: E & J Software Room 7, 37 Westmoor Road, ENFIELD, Middlesex EN3 7LE



COMMODORE 64 AMSTRAD CPC

COMPUTER GAMES - TRY BEFORE YOU BUY

Review the latest games at home

- ★ One week's review
- ★ Latest titles
- ★ Lowest rates
- ★ Fast postal service
- ★ Free membership

Special discount prices less review charge to members who decide to buy

Contact:

MICROGAME

12 Bagots Oak, Stafford, Staffs ST17 9RS
or 'phone Stafford 211150 ANYTIME!

E.C.S. SOFTWARE

Bexfield House, 720 Galleywood,
Chelmsford, Essex CM2 8BY

Tel: (0245) 263317 (24 hour answerphone service)

Write or phone for free price list, overseas prices available

P.C.	RRP	OURS	P.C.	RRP	OURS
VP INFO IBM	99.00	90.00	D BASE II	119.00	103.00
VP PLANNER IBM	99.00	90.00	TURBO PASCAL	80.44	72.00
MULTIPLAN IBM	201.25	180.00	TURBO PROLOG	80.44	72.00
WORDPERFECT JUN.	99.0	87.00	TURBO LIGHTNING	80.44	72.00
SAGE:			TURBO CAD	99.00	85.00
BOOK KEEPER	113.85	105.50	TURBO PENS	19.95	19.00
ACCOUNTANT	171.35	160.50	P.C. GAMES		
ACCOUNTANT PLUS	228.85	215.50	MEAN 18 GOLF	19.95	17.50
COMPSOFT:			PITSTOP II	19.95	17.50
DELTA 4.3	99.95	85.00	DECISION IN DESERT	24.95	21.00
BOOKWORKER	199.95	170.00	CRUSADE IN EUROPE	24.95	21.00
CAMSOFT:			PSI 5 TRAD COMPANY	19.95	17.50
FINANCE MANAGER	149.95	129.00	HITCHERS GUIDE	29.95	26.00
TAS PLUS	79.35	68.00	LEATHER GODS	29.95	26.00
TAS PLUS DEV	228.85	199.00	CHAMP GOLF	19.95	17.50
COMPACT ACCOUNTS	199.99	170.00	P.C.W.		
CAXTON:			ACCOUNTS	199.99	170.00
CARD BOX	59.99	49.99	POP ACCOUNTS	99.99	89.00
CONDOR JR.	99.99	84.99	SUPER COMBO	199.99	170.00
STRATCH PAD PLUS	59.99	49.99	ACCOUNTS	149.00	120.00
BRAINSTORM	49.99	42.99	AT LAST	29.95	25.00
MIGENT ABILITY	113.85	99.95	MONEY MANAGER	29.95	25.00
MAP:			LIGHT PEN	79.95	69.00
INTE ACCOUNTS	149.00	125.00	CARDBOX	59.99	52.00
JOB COSTING	99.00	85.00	LOCOMAIL	39.95	34.95
			LOCOSPELL	39.95	34.95

ALL PRICES INCLUDE VAT AND POSTAGE AND PACKING

PLUS MANY MORE NOT LISTED
ALL ENQUIRIES WELCOMED

CARRINGTONS COMPUTER CENTRE

193/195 High Street, Cowdenbeath KY11 5QE
Telephone: 0383 510176

Moonraker 1 Joystick.....	£4.99
Quickshot 2.....	£8.99
Quickshot 2 Turbo.....	£12.99
VIC 20 Cartridges.....	£1.99
Atari 2600 Cartridges.....	£5.99
Spectrum Interface.....	£7.99
Spectrum Powerpack.....	£13.99
Spectrum Repairs	
All faults.....	£17.99
Upgrades 16K to 48K.....	£17.99
48K to Spectrum Plus.....	£28.99

COMMODORE
POWER PACK
£13.99

All cheques made payable to:
Carringtons Computer Centre
Add £1.00 post and packing

SPECTRUM
POWER PACK
£13.99

IF YOU WANT TO BE KEPT INFORMED OF THE LATEST PRICES FOR FLOPPY DISKS, STORAGE BOXES, AND ASSOCIATED PERIPHERALS...

SEND YOUR NAME AND ADDRESS TO...

DISCOUNT COMPUTER SUPPLIES

47 SPUR ROAD - ORPINGTON - KENT.
TELEPHONE 0689-62103

EXAMPLE: A PACK OF 25 DOUBLE SIDED, DOUBLE DENSITY (80 TRACK) DISKS WITH LABELS AND W/P TAGS, AND A FULL LIFETIME GUARANTEE COSTS JUST £11.95 INCLUDING VAT AND DELIVERY.

EXAMPLE: 100 DISKS AND A LOCKABLE STORAGE BOX £49.95 INCL!

Verran

MICRO-MAINTENANCE LIMITED

£5 OFF ALL TRADE PRICES

EUROPE'S LEADING COMPUTER REPAIR CENTRE

TELEPHONE (0276) 66266

TRADE ENQUIRES (0276) 62677

TELEX 858199 Verran G



OVER 3500 PRODUCTS REPAIRED EACH DAY...

At our Head Office in Camberley, Surrey, we provide repair facilities for leading companies such as Amstrad plc, Commodore Business Machines, Sinclair Research, Rank Xerox, Dixons, Currys, Boots, WH Smiths, John Menzies and many more. Now we are going to offer you the consumer high quality repair services at **TRADE PRICES**.

In the UK we employ 200 staff to fulfil our customers requirements in a quick and efficient manner. Factory space of 32,000sq.ft. and offices in Switzerland and Germany now make us the largest and most advanced computer repair centre in Europe. Your computer and software is worth hundreds of pounds - send it to Verran and you will undoubtedly receive the best service available.



FULLY COMPUTERISED TEST AND PROCESSING PROCEDURES

Automatic Test equipment is used to assist in the repair of all leading computer products. Many of these have been designed and built by Verran and subsequently sold throughout the world. The advanced technology allows us to offer our repair services at rock-bottom prices to all our customers. No one can match us in performance and price.

Guaranteed reliability is one of the most important points in the selection of who should repair your computer. We are proud to offer our **SIX MONTH GUARANTEE**. Within the first three months we will repair any fault **FREE**. From three to six months only half the quoted trade prices would be charged if your computer developed a fault.

To record the safe receipt and despatch of your computer we have invested in the most advanced computer system available. Each customer unit is logged and checked before return. Whilst your computer is in our possession, or in transit to you, our insurance provides comprehensive cover.

To be assured that the service you get is the best available - use Verran. We always remember that **QUALITY IS NEVER AN ACCIDENT, IT IS ALWAYS THE RESULT OF INTELLIGENT EFFORT**.

SOAK RACK TESTING subjects your computer to a rigorous series of tests over a period of between 2-8 hours. Stringent quality procedures like the *soak rack* ensure the high standard of service our customers have come to expect.

UNBEATABLE DISCOUNT ON ALL COMPONENTS

Over £500,000 worth of components currently in stock. Unfortunately we are unable to display our complete range, if you require items not displayed just give us a call on 0276-66266 and we will be pleased to quote including delivery by first class post.

SPECTRUM SPARES		COMMODORE SPARES	
Z80 CPU	2.50	6510 Processor	12.00
ULA 6C001	7.00	6526 CIA	12.00
Power Supply	6.50	6581 Sid Chip	15.00
ROM	7.00	901225 Graphic ROM	10.00
4116 RAMS	.75	901226 Basic ROM	10.00
ZTX 650	.40	901227 Kernal ROM	15.00
ZTX 213	.40	906114 House Keeper	10.00
Keyboard Membrane		6569 - VIC	18.00
Spectrum	3.00	4164 RAMS - Memory	1.00
Spectrum Plus	8.00	Power Supplies	
Metal Templates	3.00	C64	19.50
Keyboard Mats	2.00	C16X	15.00

All the above prices include VAT but please enclose a further £1.50 post and packing on all component orders.

FANTASTIC LOW PRICES ON ALL LEADING COMPUTERS

Spectrum Trade Price 19.95 NOW £5 OFF 14.95	Commodore 64 Trade Price 24.00 NOW £5 OFF 19.00	BBC B Sid Brd Trade Price 30.00 NOW £5 OFF 25.00
Amstrad 664 Trade Price 30.00 NOW £5 OFF 25.00	Electron Trade Price 25.00 NOW £5 OFF 20.00	

To obtain a quotation on any other product just call (0276) 66266 quoting the advertisement reference number.

(See bottom/left)

TO OBTAIN THE BEST REPAIR SERVICE AVAILABLE JUST FOLLOW THESE STEPS-

1. Send your computer securely packed, accompanied by cheque, postal order (made payable to Verran Micro-Maintenance Ltd) or quote your Access or Barclaycard Number.
2. Quote the special offer reference number displayed at the bottom of this advertisement for your £5.00 DISCOUNT on the trade prices.

LETTERS FROM OUR CUSTOMERS

"I really felt I must write and thank you for the excellent service I received."

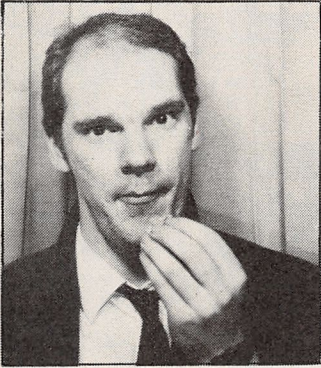
Mrs. J. Gilbert, Plymouth.

"I am extremely delighted and would like to thank you again for the quick and efficient service of your company". Paul Donald, Aberdeen.



UNIT 2H & 2J · ALBANY PARK · FRIMLEY ROAD
CAMBERLEY · SURREY GU15 2PL

SPECIAL OFFER REFERENCE - POP 107



with **Kenn Garroch**

64 sprites

A Collins of Northwich, Cheshire, writes:

Q I have just obtained a Commodore 64, secondhand, and would like to know how to use the sprites. A simple demo program will do.

A The sprites on the 64 are accessed from the VICII chip. To use them you have to do a little setting up. There are a number of key locations that need to be Poked. The first is the definition and for convenience, this can be put in the cassette buffer at 832. The sprite definition takes up 64 bytes which are arranged as 21 rows by three bytes, the first three bytes being the top row, the second three the next and so on. The next memory location that is needed is the sprite definition pointer. On power up, these are located at 2040-2047 for the eight sprites. The sprites are numbered 0 to 7 and the sprite pointer for sprite zero is at 2040. For the sprite definitions, the memory is split into 64 byte blocks so 832, where the definition is, is the 13th block and 13 is poked into 2040.

The next step is to set up the VIC chip which holds the information needed for the X, Y position, the colour, and the enable, to switch the sprite on.

For sprite zero, the X position is held in 53248 but, since this only holds a value between 0 and 255, and the screen is 320 pixels across, an extra bit is held in a register at 53264 giving a possible position from 0 to 511 (9 bit

binary number). Bit zero of 53264 is the most significant bit of the X position for sprite zero, bit 1 for sprite one etc.

The Y (vertical) position of the sprite is held in a VIC register at memory location 53249. The vertical size of the screen is only 200 pixels and so a value between 0 and 255 is ample to define the Y sprite position. Some of the values that can be given to the sprite position are off the screen for an unexpanded square, these are outside the following rectangle: $24 < X < 320 - 50 < Y < 229$.

The colour of the sprite is set with a register at 53287. Poking a value between 0 and 15 this defines the foreground colour.

To enable the sprite, the VIC register at 53269 is used. This is set out in the same way as the high bit register for the X position with bit zero being set to one to enable sprite zero, bit one to enable sprite 1 etc. There are also other registers in the VIC chip that alter the way in which the sprites are displayed. 53277 contains the horizontal expansion bits which, when set, double the width of the sprite by doubling the width of each pixel that is displayed. Location 53271 is the vertical expansion register and operates in the same way as 53277. The sprite multi-colour register at 53276 defines whether a sprite is to be displayed as a multi-coloured object. If it is, then the data is interpreted in a different way and the sprite multi-colour registers are used to define the foreground colours 1 and 2. In fact, when the 64 is switched on, the VIC registers are preset in such a way that some of them don't need any attention such as expansion, multi colour, and the high bit of the X position, all of which are off.

After all that, a little program to demo the sprites is:

```
10 FOR T=0 TO 63
20 POKE 832+T,255
   :REM DEFINE A BLANK
   SQUARE
```

```
30 NEXT
40 POKE 2040,13
   :REM SET UP THE
   SPRITE DEF POINTER
50 POKE 53248,100
   :REM X POSITION
60 POKE 53264,0
   :REM X POSITION HI
   BIT
70 POKE 53249,100
   :REM Y POSITION
80 POKE 53287,0
   :REM COLOUR BLACK
90 POKE 53269,1
   :REM ENABLE SPRITE 0
100 DX=1:DY=1
110 X=100:Y=100
120 X=X+DX:Y=Y+DY
130 IF X<24 OR X>320
   THEN DX=-DX
140 IF Y<50 OR Y>229
   THEN DY=-DY
150 POKE 53248,X-INT
   (X/256)*256
160 POKE 53264,X/256
170 POKE 53249,Y
180 GOTO 120
```

Working with the system

Alan Burroughs of Avonmouth, Avon, writes:

Q I have recently become interested in communications with my micro. I have a modem and have contacted a few bulletin boards and things are going fine. I wonder if you could explain how modems work with the telephone system.

A The word modem stands for Modulator Demodulator and is a device that does exactly this. The RS232 signal from the computer is fed into the modem and modulated, ie turned into a frequency that depends on its voltage. RS232 uses signals at two voltages, ± 12 which are converted into two frequencies and are alternated depending on the bits sent. These frequencies are then sent down the telephone line as a series of beeps which you can hear if you pick up the phone and listen to them. At the other end, another modem picks up these frequencies and converts them back

into voltages, ie it demodulates them. These voltages are then converted to RS232 values, and sent to the computer that is receiving them.

Most modems these days work at 2 speeds, 300/300 and 1200/75. At 300/300, the data is sufficiently slow so that the telephone lines can handle bi-directional communications or full duplex. At higher speeds, the bandwidth of the lines comes into play. The bandwidth is the range of frequencies which the lines will transmit. At higher data rates, the frequencies used need to be higher since the rate at which the data is switched from one frequency to another approaches the modulation frequency. This causes problems since it is impossible to distinguish between the modulation frequency and the data if the data rate is too high.

The 1200/75 rate used by systems such as Prestel is a trade off that allows data to be sent quickly to the subscriber and replies to be sent during that transmission, albeit at a lower speed, and remain within the constraints of the telephone line. Some modems will allow 1200/1200 communication but this is only half duplex, ie only one modem can talk at once, the other has to receive.

To obtain higher data rates, other measures such as phase shifting need to be used. Here the data is not just modulated, it is separated into sections which are delayed very slightly so that the peaks of the waveform are moved slightly back from the last others allowing more information to be sent and received. Speeds up to 9600 baud can be achieved this way but the modems are more expensive and error checking on the data needs to be implemented since, with higher speeds, more errors are generated by the telephone line noise.

One way to ensure good transmission and reception is to use a 'leased line' system. BT will connect you directly to the other modem via a special telephone line capable of higher speed and cleaner signals. Needless to say, this does cost a teensy bit more than a normal telephone line.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem Peek it to Kenn Garroch and every week he will Poke back as many answers as he can. The address is Peek & Poke, PCW, 12-13 Little Newport Street, London WC2H 7PP.

The thinking micro's editor

Mark Jenkins reviews Hybrid's Casio Editor

Two weeks ago we began to look at *CZ-Android*, the Atari ST-based editing system for the Casio CZ synthesizers. Those of you who thought they'd heard of the system under the name *CZ-Droid* were right — Hybrid decided to avoid any possible legal problems with the George Lucas/Star Wars corporation by changing the program's name at the last minute.

The change of name doesn't allow you to forget, however, that one interesting aspect of the program is its artificial intelligence; if you're frustrated by your efforts to create new sounds, it will make up a few of its own for you.

The program itself operates from two main screens, and has a certain graphic content as well as a straightforward indexing function. It works with all Casio synths — the CZ-101, CZ-1000, CZ-3000, CZ-5000, CZ-230S, and flagship model CZ-1 which, unlike the others, features velocity and pressure sensitivity. If you're using a CZ-1, all you have to do is select *CZ-1 Parameters* from the *Edit* menu to enable these functions. The CZ-230S only has four editable memories and no memory buffer, so its Voice 96 is used by *CZ-Android* as an editing space and the sound in this memory will be erased in use.

CZ-Android is divided into two main parts; the Librarian and the Editor. The Librarian desktop loads first. On this screen you have four windows, Workbank A and B (two banks of 16 sounds each in the computer's memory), the CZ internal bank (the patch bank in the synthesizer) and the workspace, which is large enough to contain just a single sound and allows you to drag sounds out of the synth or computer memory to edit them.

Each sound is given a name (a facility you'll find useful on the CZ-101 and all other models (other than the CZ-1) which don't allow you to name your own sounds) and you can copy single sounds or whole banks to or from the synth simply by dragging individual names or the *All* indicator to the appropriate location. *CZ-Android* is pretty good at helpful dialogue, including asking "Are you sure you want to do this?" at appropriate moments, so it's easy to copy a whole Workbank to disc by selecting for instance *WB A* —> *File* from the File menu.

"If you're frustrated by your efforts to create new sounds, CZ-Android will do it for you"

Other options on the File Menu include *File* —> *WB B* which allows you to load from the disc, via a disc directory, to the Workbanks. On the Edit Menu you'll find the option "Begin Edit", which takes you to the other main section of *CZ-Android*, the Editor. This page displays the name of the sound at the top of the screen (at first it's loaded with a "blank" sound called ****init****) and shows every parameter of the voice on one screen. Sections are included for DCO 1/2 Envelope, DCW 1/2 Envelope and DCA 1/2 Envelope, (these define the changes in pitch, waveform and volume during the course of a note for each of the two "lines" of DCO-DCW-DCA available on the synth) with settings for all eight stages of all six envelopes shown. The points at which each envelope sustains and ends is shown by the small abbreviations (wait for it) *sus* and *end*.

Also on the page are listings for Key Follow (DCW 1/2 and DCA 1/2), Vibrato Wave/Delay/Rate and Depth, Detune Direction/Octave/Note and Fine, DCO 1/2 start and end waves (with both graphic and numeric representation), Line combination, Octave, and Modulation On/Off. That's a pretty comprehensive representation of the Casio voice, but of course you'll have to experiment with combinations of voices yourself on the CZ-3000, CZ-5000 and CZ-1 which can all layer sounds. *CZ-Android* communicates instantly with the connected synth, so any change you make to the screen display can instantly be heard by playing the synth's keyboard.

If you click on one of the *Envelope* icons you'll get a complete graphic representation of all the programmed stages with Full Mode showing the whole envelope and the scroll mode showing only part of it at any one time for more precise editing. A small box appears at the start of each envelope stage and you can drag the around in order to change to envelope to your



satisfaction; those familiar with the layout of the Casio or other synths will realise that the envelopes applied to the pitch, waveform and volume will largely define the type of sound produced. If you need a printout of an envelope the usual Alternate/Help combination will produce one.

The other two main editing options are *distort*, which automatically generates smallish variations on the original sound, and *android*, which creates a completely new voice generally of a musically useful kind and update the screen display at the same time. Once you have a sound you like you can save the edited voice to the workspace and return to the librarian section to name it, file it away or transfer it to the synth.

CZ-Android can be operated from the mouse or from the computer keyboard, with "Undo" being particularly useful if you get stuck, and holding Shift will allow parameters to be incremented in 10's rather than units. All parameters "wrap around" from their maximum to minimum levels.

The Edit Menu includes the Midi data Edit Monitoring option which can be switched off to speed up response if you're not actually connected to a synth. If you're using more than one synth they can be set to different Midi channels and selectively edited using the Midi channel select option.

It's important to realise that *CZ-Android* will only handle parameters already available on the synth, so you'll occasionally find yourself unable to drag an envelope stage in a particular direction, or (as on other CZ editors on the market) find the digital quantisation of envelope lengths becoming visible and causing strange effects at short envelope times.

Other limitations which stem from the synth's design include an inability to choose one of the "resonant" waveforms on both oscillators simultaneously, and the inability to use Ring or Noise modulation on some combinations of Lines. However, you do have the facility to compare an edited voice with the original so it's easy to find out if you're making any progress.

Syndromic Music, 24-26 Avenue Mews, Muswell Hill, London N10 3NP, 01-444 9126.

What Now?

The Adventurers Handbook

The **80** page monthly magazine devoted totally to Adventure and Strategy.

Issue 15 is available now.

Solutions, Maps, Hints, Articles, & Reviews.

Each and every month at only £1.50

Subscription Rates:

3 issues - £4.25, 6 - £8.25, 12 - £16.00

Issues 1-14 of the Adventurers Handbook covering over 250 adventures are still available at £1 each or all **14 for only £10.**

(overseas please add 25% P/P)

Arcade Players!

We also cater for the players who play arcade games. Our monthly mags are full with Pokes, Maps, and Hints.

The mags are available for the following machines:

C64/128, C16/Plus 4, BBC, Amstrad and Spectrum.

For only **£1 each**

Subscription Rates:

3 issues - £2.75, 6 - £5, 12 - £9.
(overseas please add 25% P/P)

Available from:

H & D Services (PCW)
1338, Ashton Old Rd
Higher Openshaw
Manchester
M11 1JG.

Please ensure that all cheques/PO's are made payable to:

H & D Services

MODE 0 SCREEN DUMP FROM CPC 6128 TO EPSON COMPATIBLE PRINTER. DIGITISED FROM VIDEO AND PRINTED ENTIRELY BY VIDEO.



NOW AVAILABLE FOR THE PCW AT £99.95

RING ROMBO PRODUCTIONS ON (0506) 39046 FOR FREE INFORMATION PACK

THE BEST VIDEO DIGITISER FRAME GRABBER FOR CPC-64/64646 88, COMES COMPLETE WITH VIDEO CABLE AND SOFTWARE DISC. CHECK OUT WITH ORDER! C: ROMBO PRODUCTIONS, 107 FAEBURN HILL, LIVINGSTON EH54 8PH. 17404E AND EXPORT ENQUIRIES WELCOME.

VIDEO — £89.95

COMMODORE

CASSETTES

at £1.95 each

Twin Kingdom Valley, Jumpman, Toy Bizzare, Basilidon Bond, Lunar Outpost, Rock 'n' Bolt, Doughboy, Master of Lamps, World Cup II, Web Dimension, Juice, Chimera, Willow Pattern, Suicide Strike, Thunderbirds, Supergran, Dummey Run.

at £2.95 each

One on One, Match Fishing, Staff of Karnath, Touch Type, Arc Pandora, Grog's Revenge, Beamrider, Potty Pigeon, Skoolkaze, Crazy Comets, Monty Mole, Zaxxon, The Real You by Collins, Kong Strikes Back, Tapper, Spiderman/Hulk, Bombo, Who Dares Wins II, Gyroscoper, Fighting Warrior, Flak, Motocross, Dark Tower, Star Trooper, Jet Set Willy, Monty on the Run, Beachhead, Starion, Rock 'n' Wrestle, Mugsy's Revenge, David and Midnight Magic, Zorro, BC's Quest for Tires, Manic Miner, Spellunker, Duque Mirus I, Journey, Eddie Kidd, Geoff Capes Strongman, Frak, Drehs, Moebius, Ghost Chaser, Imhotep, Blackwyth, Outlaws, Pitstop, Combat Leader.

at £3.95 each

Dragonkulle, Fight Nite, Tigers in the Snow, Knights of the Desert, Law of the West, Congo Bongo, Mermaid Madness, Wizardy, Moon Cresta, Space Shuttle, Critical Mass, Questprobe Adventure, Amazon Women, Ball Blazer, Red Arrows, Macadam Bumper, Thing on a Spring, Zoids, Bounder, William Wobbler, Redhawk, Paradox, Combat Lynx, World Series Baseball, Hampstead, Time Tunnel, Bridge Player II, Pinball Wizard, Bounces, Vicom 84, Adventureland/Secret Mission, Pirate Adventure/Voodoo Castle, Biggles, Surfchamp, Chuckie Egg II.

at £4.95 each

Devs ex Machina, The Force, Little Computer People, Thai Boxing, Hig Alley Ace, Jet Set Willy II, Adventure Quest, Kettle By Alligata, Lords of Time, International Soccer, Forest of Doom - Book and Tape.

at £5.95 each

Winter Games, White Lightning, Superbowl, America Cup, Dragon's Lair.

at £6.95 each

Q-Bert Cartridge, Azimuth Head Alignment, Golf Construction Set.

COMMODORE 64 DISCS

at £3.95 each

Zork I, Zork II, Zork III, Starcross, Deadline, Suspended, Railboss, Superman, Arcade Ext 5 Games, Monty on the Run, Galactic Controller, High Flyer, Number Builder/Puzzler/Chaser.

at £4.95 each

Logo, Ultima III, Chimera/Willow Pattern, Redhawk, Fighting Warrior.

at £5.95 each

Master of Lamps, Decathlon, Red Arrows, River Raid, Rescue on Fractalus, Park Patrol, Pitfall II, Thing on a Spring, Pastfinder, William Wobbler, Web Dimension, Beamrider, Tracer Sanction, Designer's Pencil, Ballblazer, Ghostbusters, Starion.

at £7.95 each

Sold A Million, Critical Mass/Combat Lynx, Murder by the Dozen (RRP £24.95).

BARGAINS FROM 1st PUBLISHING

8 BOOKS FOR JUST £9.95 + £2.50 p&p
Normal RRP over £50.00.

BARGAINS FROM THE FOLLOWING £10.95 EACH.

First Word, Word Prop, First Base, Basic 64, Pascal Lang, Ada Training Course.

C64 UTILITY DISCS BY 1st SEPT SOFTWARE

G-Base The Data Base Management System £7.99
One Step Utility Cartridge £14.99
Home and Business Card File £7.99
Personal Spreadsheet £7.99
Master Word £7.99
Family Tree £7.99

UTILITIES & PERIPHERALS

Neos Mouse RRP £69.95
OUR PRICE CASSETTE £24.95
OUR PRICE DISC £29.95
Include £1.00 P.&P.
Fassem m/c Lang assembler
RRP £14.95 - OUR PRICE £2.95

Easy File Disc £9.95
Easy Script Disc £9.95
Easy Spell Disc £9.95
Future Finance £9.95
Assembler Tutor £4.95
Programmers Utilities £4.95
64 - Music Maker Keyboard £7.50
64 - Prog. Reference Guides £3.95
Macro Assembler Development £4.95
Simon's Basic £20.00
Simon's Basic Exp. (disc/cassette) £4.95

SPINNAKER SOFTWARE

ALL AT £1.95 EACH.
Fraction Fever, Make A Face, Ranch, Story Machine, Alpha Build, Dance Fantasy, Alphabet Zoo, Logic Levels, Number Tumblers, Sea Speller, Song Maker, Alf, Aegean Voyage.

SPECTRUM

SOFTWARE

at £2.95 each

Chess By Sinclair, Teach Basic on 2X, Covenant, Starbike, Who Dares Wins II, Psytraxx, Jet Set Willy, BC's Quest For Tires, Beachhead, Manic Miner, Match Fishing, Hacker, Sir Lancelot, Potty Pigeon, Ghostbusters, Mugsy, Pole Position, Gyroscoper, Fighting Warrior, Toy Bizzare, Talos, Alien 8, Nightshade, Kong Strikes Back, Showjumping, Monty on the Run, Bounty Bob Strikes Back, The Train Game, Eddie Kidd, Zorro, Monty Mole, Bizzicom (RRP £14.95), Spiderman/Hulk, Chimera, Thunderbirds, Chicken Chase, Robin of Sherlock, Geoff Capes, Mugsy's Revenge, Project Future, Brian Jacks, Galaxians, Valhalla.

at £3.95 each

River Raid, Adventureland/Secret Mission, Pitfall II, Enduro, Twister, Spy vs Spy, Surfchamp, Cyberun, Zoids, Supersleuth, Wham Music Box, Bounder, Starstrike II, Superchess 3-5, Moon Cresta, Rescue on Fractalus, Realm of Impossibility, Panzadrome, Think, Valkyrie 17, Death Star Int, Hampstead, Gunfight, Skyfox, Frank Bruno's Boxing, Nomad, West Bank, Sam Stoat Safbreaker, I of the Mask, Mindshadow, Rocco, Revolution, Metalbols, William Wobbler, Riddlers Den, Winter Sports, Ballblazer, Quartzatron, Nightgunner, Falklands '82, Int. Karate, Equinox, Stainless Steel, Cop Out, The Planets, Frost Bite, Chucky Egg II, Battle of the Planets, Sir Fred.

at £4.95 each

Colossal Adventure, Adventure Quest, Jet Set Willy II, Abersoft Forth, Vectron 3D, Amazon Women, Huru, The illustrator, Off the Hook, Never Ending Story, Arcade Hall of Fame Compilation, The Hobbit, Gerry the Germ, Rasputin, Costa Capers, Runestone, Tau-ceti, Hot Shots Compilation, The Young Ones, Red Arrows, Mini Office.

SPECTRUM SOFTWARE - continued at £5.95 each

Pacman (Atarisoft), The Ket Trilogy, Superbowl, Dragon's Lair, Masters of the Universe, The Eidolon, Highlander, Tarzan, Prodigy, Crystal Castles, Sold A Million, Terra Cresta.

SPINNAKER SOFTWARE

ALL AT £1.95 EACH.
Kinder Comp, Make a Face, Ranch, Dance Fantasy, Logic Levels, Number Tumblers, Up and Addem, Aegean Voyage, Alphabet Zoo, Fraction Fever, Kids on Keys.
PADDINGTON PACK - THREE TITLES FOR £7.95
Hill McGibbon Pack (4 titles) £7.95.

SINCLAIR UTILITIES AND PERIPHERALS

Curran Micro Slot £2.95
Speedrums £25.00

ADDITIONAL DRUM KITS
Latin £3.99
Afro £4.99
Electro £4.99

Alphacom Paper (5 rolls) £9.95 + £1.00 P.&P.
Sinclair Flat Screen TVs - Half RRP at £49.95 + £1.00 P.&P.

A.M. - F.M. Trivial Music Challenge £9.95 + £1.00 P.&P.

Spectrum 48K/128K Power Supplies £9.95 + £1.00 P.&P.

P.&P. 1-3 Titles 75p
3 or more £1.00
Overseas £1.20 per tape

Cheques payable to:

LOGIC MAIL ORDER LTD.

Department 1, 17 Leofric Square,
Eastern Industry, Peterborough, Cambs
Tel: 0733 313870

The Sunday World of Micronet

Popular is, by reason of logic, for and about computers. The reader buys each issue (we hope) with a view to being entertained and amused by the latest happenings on the computer scene. For those computer owners with access to a modem, Micronet 800 offers a similar daily fare, but for every day? Here, Steve Gold takes a look at the seventh day offering from Micronet and finds there's more to computing on a Sunday than computers . . .

In the early days of home computing, the Sinclair ZX81 and Spectrum home computers were advertised by mail order in the colour supplements. This was an early indication, perhaps, that the average 'coloursupp' reader was a target buyer for Sir Clive Sinclair's computers.

Some six years on, we've come full circle, and now Micronet members can look at the Prestel/Micronet version of

the colour supplement online with their modems. Sunday Extra is here.

When Micronet was first conceived back in 1982, and subsequently launched in the early part of 1983, its typical audience was seen as a micro

computing-crazy teenager with a (relatively) high disposable income plus computer with a propensity to try anything new, so long as it included computers.

So it was that Micronet 800 concentrated on supplying a daily 'fix' of all things computerate, to their growing membership.

Times have changed since 1983 however, and Micronet have found there is no such thing as a typical Micronetter. Instead, Micronet membership spans a broad spectrum of society, ranging from affluent kids to the young-at-heart adults. These users need something other than a diet of pure computing to keep them happy and healthy.

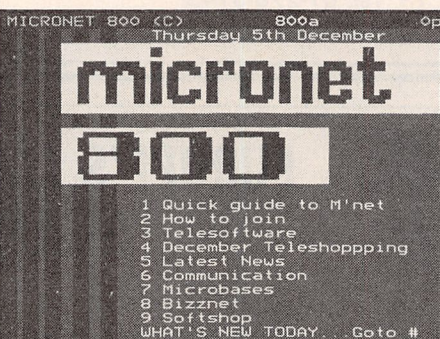
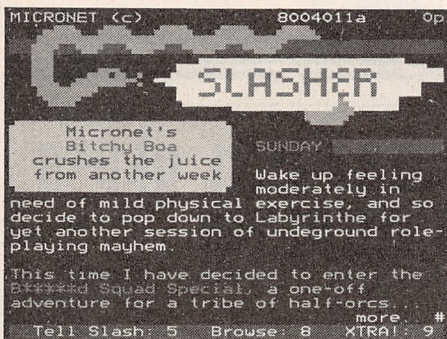
In the middle of 1986, Micronet's editor Sid Smith and his recently appointed assistant Chris Bourne, brought 'Sunday Extra' to the Micronet membership (Aided, I should add, by a lot of hard work from all of Micronet's staff). Sunday Extra is the embodiment of the Sunday heavyweight's colour supplements on the small screen. Features, news, and reader feedback, in the form of a letters page and chatlines, combine to make a non-computer-orientated electronic magazine pitched at the computer literate.

"What we want to do is to branch out from computing on Micronet, and give our readers a taste of the world at large," Wrote Micronet when they introduced the service. Now, after several months of almost imperceptible evolution, a typical Sunday Extra provides a good hour's (and more) worth of entertainment on a variety of subjects.

Features on topics as diverse as music, video, and the arts are mixed in with a tongue-in-cheek attitude to life, to produce what Sunday Extra editor Chris Bourne calls "the right balance that appeals to our readers."

A typical day's features are listed below, and, as you can see, the variety of topics caters for all tastes.

Welcome to the new style
of Sunday news and gossip
- via your micro



From the Micronet files: more than you thought

continued on page 38 ▶

◀ continued from page 37

Sunday 15th of February, 1987

Features: St Valentine's Day Quiz
Gossip: Slasher's slap and tickle
Letters: Read 'em/Write 'em
Media: Small Screen – The Zircon Affair. News – Sherlock sleuths again. Books – The purple cloud
Music: Mel Croucher reviews. The latest singles. The latest albums plus – Top ten and Dead ends.
Celebrity Chatline – Ursula Kenny, features editor of Mizz magazine answers questions on Valentines day.

Micronet's small band of dedicated full-time staff rely upon external input to the magazine to add flavour and variety. Graphics editor Anna Smith provides the colourful viewdata graphics to liven up the text, but, ultimately, it's the written word that catches the reader's eye.

Out of 20,000 subscribers, Micronet has a vociferous minority who add colour and spice to the letters pages, and who, if their palms are crossed with sufficient silver, will put hand to keyboard and pen their own article for the membership to read. Ironically, it is the very computer fanatics – the hardest of the hard-core Micronetters – who produce some of the most interesting

articles.

Often, their day to day lives and non computer-orientated hobbies make fascinating reading for Micronet Sunday Extra viewers. Whilst the chatlines (a sort of computer version of radio cb, where users can chat to each other via the keyboard and modem) are usually heavily computer-orientated, members are often unaware of their contact's background lives. By writing an article in the viewdata medium, Micronetters are able to express themselves more freely than using a mere word processor. In essence, Micronet is an interactive medium, as members can instantly respond via letter (mailbox) or chatline, if they think a particular article is poorly-written or presented.

An hour spent online to Micronet, at cheap local call rates works out at about 60 pence. Compared to a typical Sunday paper and magazine, Sunday Extra offers colour and feedback on a scale that newspapers cannot hope to meet. For an overhead of £1 a week, members can call the service as often as they wish and 'look in' on a daily diet of news and views. Sunday Extra is the seventh day 'rest' entertainment for Micronetters. All computers and no play makes Jack (and Jill) a dull boy (or girl).

Micronet 800, 8 Herbal Hill, London EC1R. Tel: 01-278 3143.

Once connected to the telephone using a modem, a computer owner is faced with two distinctly different methods by which data is displayed. On the one hand, straight text (ASCII) as seen in a word processor, clearly gets the story across, whilst on the other hand, pictures paint a thousand words.

Between the two extremes – pure text and pretty pictures – lies viewdata. Perhaps the most common example of viewdata in everyday life is in its TV equivalent – Oracle and Ceefax teletext. The TV services, however, only have a few hundred pages to look at. Micronet, available to modem owners on Prestel, has several tens of thousands of such screens of information, changing all the time.

Since 1983, Micronet has grown to more than 20,000 members and supports several computers, including the BBC Micro range, Commodore C64 and Amiga, Sinclair Spectrum and Amstrad CPC and PCW series.

To demo Micronet, call up Prestel on its national access number (021-618-1111) and key an ID of ten fours (4444444444) and a password of four fours (4444). For most areas of the UK, Prestel is available for the price of a local call. This demo will give you a taste of Micronet's many features.

**SOFTWARE
EXPRESS**
COMPUTER SYSTEMS LTD

**EUROPE'S LARGEST MAIL ORDER
ATARI DEALER**



THE ONE STOP ATARI SHOP



ATARI 8 BIT XL/XE 520STFM/1040 PHONE 2MEG 4MEG & ATARI PC ATARI

WE ARE THE SPECIALISTS!

SOFTWARE - HARDWARE - PRINTERS - MONITORS - CABLES - DISKS - BOOKS - ACCESSORIES - ETC.

ATARI MAIL ORDER - WE ARE THE FASTEST - PHONE (021-328 3585)

ATARI SHOWROOMS - WE HAVE THE LARGEST - 9.30 to 5.30 - 6 DAYS A WEEK

ATARI SOFTWARE - WE HAVE THE BEST!! - UK AND USA - IMPORTED

**514-516 ALUM ROCK ROAD,
ALUM ROCK, BIRMINGHAM
B8 3HX
PHONE: 021-328 3585**

PLEASE SEND ME YOUR LATEST PRICE LIST

NAME

ADDRESS

.....

I OWN XL XE 520STM 1040

CLASSIFIED

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

CALL SUSANNAH KING on 01-437 4343 FOR SEMI/DISPLAY ADVERTISING

★ **QL SOFTWARE** ★
KEEPING THE PRICES LOW

★ **CHARACTER TOOLKIT £5** ★

This package contains all you need to create and use your own character sets on your QL. It also contains routines that allow you to print characters of an infinitely variable size anywhere on the screen. To help you design your characters sets we have even included a special designer program which makes it even easier.

★ **ICON TOOLKIT £5** ★

This package contains all you need to turn your QL into an Icon controlled super micro — takes the tedium out of typing; unlike some systems, ours is fully programmable. You can program the Icons to do anything you like — you can of course redesign the Icons themselves and we have even included a special designer program to make the task that bit easier.

This toolkit also contains lots of new graphics commands, all of which have the ability to draw using user defined patterns, not just solid lines. There is even a new fill command that will fill any shape with any user defined pattern (features like these are normally only to be found in the most expensive of drawing programs). We even throw in a special pattern designer so that you can design your own new patterns at leisure.

There are also 2 Epson compatible screen dumps, a print spooler and an on screen notepad.

★ **GAME TOOLKIT £5** ★

This toolkit contains everything you need to create fast animated arcade games on your QL. It also contains extra routines to allow you to produce multi-tasking tunes (like the ones found in all the best arcade games). You can have up to 32 sprites all of which can have up to 16 frames of animation. Collision detection is also provided and of course it goes without saying that our sprites are some of the fastest and smoothest around. A sprite designer is also included.

★ **COMPLETE TOOLKIT £10** ★

All three toolkits on one cartridge offering a substantial saving — probably the best toolkit ever!!!

★ **SOUND EXPERIMENTER £5** ★

This is probably one of the most original and interesting packages ever written for the QL. Using this package you can turn your QL into a sort of primitive digital synthesiser. The package actually allows you to draw sounds on your QL screen and then play them back either forwards or backwards in whole or in part, so if you're at all interested in sound synthesis or you just like making silly noises then this is the package for you, and there is also a special program included to help you get better acquainted with the super basic beep command (saves hours of messing about trying to find the sound you want).

★ **BLOBZ £3** ★

THE RUBBERISED ASTEROIDS GAME — ADDICTIVE ARCADE ACTION

Send cheques or P.O.s to:

SMILING SOFTWARE

10 Fir Road, Marple, Stockport SK6 7QN

(89)

BRAND NEW
10 meg HARD DRIVES
for PC 1512. Complete
and ready to go — **£275**
inclusive of VAT and P.&P.
PC 1512 Memory upgrade
— **£27.50**

Brand new 3in. disc drive
for BBC, Amstrad and all
Spectrum interfaces
complete **£69**

SILICON SYSTEMS
Trafford Technology Centre,
43 Elsmore Road,
Manchester M16 0WG
Tel: 061-848 8959

(176)

**CLASSIFIED
ADVERTISING
RATES:**

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

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

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

For phone bookings
Ring Susannah King on 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, plus VAT....., so I owe you £.....

Name.....

[Please add 15% to these rates for VAT]

Address.....



I enclose a cheque for this amount
or please charge my Access/
Visa credit card number:

Telephone.....

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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

FOR SALE

SPECIAL OFFER FOR THE MONTH
AMSTRAD PC1512 DDCM £746.35
Price includes VAT. Please add £10 for P.&P.

★CPC 6128 (colour)	£365.00
★PCW 8512	£510.00
★PCW 8256	£407.00
DMP-2000	£152.00
DMP-3000	£173.50
FD-1 (disc drive)	£90.00
FD-2 (disc drive for PCW)	£125.00
3" Floppy discs (box of 10)	£28.00
RS232 (interface for 464 & 6128)	£53.00
CPS 8256 (interface for PCW)	£53.00
DK Tronics T.V. tuner	£63.00
Competition PRO 5000 joystick	£13.50

AMSTRAD CPC SOFTWARE

Mini Office II (disc)	£14.50
Protex (disc)	£17.85
Tasword 6128 (disc)	£16.35
Masterfile III (disc)	£28.90
Tas-Spell (disc)	£13.45
Mastercalc 128 (disc)	£27.50

All prices include VAT and delivery in U.K. only.
We specialise in Amstrad hardware and software.

Please ring for details or send an S.A.E. for our catalogue. Customer make cheques payable to:

CHILTERN COMPUTER CENTRE

100 HIGHTOWN ROAD, LUTON, BEDS LU2 0DQ (UK)

TEL: (0582) 455684

(142)

AMSTRAD PCW SOFTWARE

Supercalc 2	£40.00
Dr Draw/Dr Graph	£34.00
Protex w/p (+6128)	£64.00
Tasword-8000	£18.75
Masterfile-8000	£34.00
Tas-Spell-8000	£13.90
Touch-n-Go	£19.25
Scrabble	£15.35
Popular Accounts (Sage)	£64.90
Tomahawk	£15.35
Trivial Pursuits	£15.35
Fair Light	£11.50
Jewels of Darkness	£15.35
Mastercalc	£27.50
Praspell	£18.00

AMSTRAD PC1512 SOFTWARE

Supercalc 3 (ele. spreadsheet)	£56.00
Wordstar (word processor)	£56.00
Reflex (database)	£56.00
C.P. Promise (database)	£56.00
Sidekick (utility)	£23.00
Touch 'n' Go (tutorial)	£19.00
Accountant (accounting)	£140.00

DESKTOP

- 10 Amsoft CF2 3" £25.00
 - 5 Amsoft CF2 3" £13.70
 - 10 5.25" Banana discs £9.95
- (Suit all 5.25" drives)

All + £1.00 P.&P.

Prices include VAT

PRINTER RIBBONS ★ STORAGE BOXES ★ PAPER ★ SOFTWARE

Send for details of all products and software

Desktop

Dept. PCW3, 11 West Street, Hett, Co. Durham

Tel: (0388) 767244

(175)

SAME DAY DESPATCH

Have you got an ST, Amiga or QL

Have you ever had a copy of an expensive piece of software go faulty?

Have you ever driven a car over an expensive piece of software?

Don't let it happen again.

Phone us NOW!!!

MPC SOFTWARE,

72 Julian Road,

West Bridgford, Nottingham NG2 5AN

Tel: 0602 820106

(164)

SPECTRUM, QL AND ATARI ST OWNERS SPECIAL OFFERS

Second-hand Microdrive Cartridges (Used once by Psion)

- 5 for **£5.00 + £1.00 P.&P.**
- 10 for **£9.50 + £1.25 P.&P.**

High Quality Cartridge Case for 20 Cartridges - £5.99 + 95p P.&P.

DISCS FULLY GUARANTEED

- ICL Premium Quality DS/DD 3½" discs, box of 10 - £23 + 95p P.&P.
- ICL Lockable Disc Filing Box, capacity 50-80 discs - £29 + 95p P.&P.

QL SOFTWARE

- QL Turbo Quill: Speed Enhancer for Quill (2.3 & 2.35) £9.95 + 55p P.&P.
- TASKMASTER: The 'Rolls Royce' of Multi-Tasking Control Programs. This NEW VERSION now includes a Note Pad and Code Sharing (tel: for info) - £24 + 95p P.&P.
- Both programs - £33 + 95p P.&P.

Cheques/P.O. to:

ATHENE COMPUTERS

33 Holly Grove, Fareham, Hants PO16 7UP

Tel: Mbx/(0) 329 282083

(186)

★ 99p each ★

THE COMPUTER DEPOT

205 Buchanan Street,
Glasgow, G1 2JZ
041-332 3944



- C64:** Breakdance, Shamus Shamus, Neutral Zone, Ollies Follies, Scrolls of Abaddon, New York City, Sentinel, T.V. Mastermind
- Spectrum:** Printer Paper, Willow Pattern, Thunderbirds, Chicken Chase, Chimera, Secret of Levitation, Henry's Hoard
- C16:** Gnaaher, Tank Attack, Oblido, Space Pilot
- Amstrad:** Chimera, Willow Pattern, Obsidian, Aladdin's Cave, Minimum 5 items and less with other purchase

****Spectrum £1.99**

- Pole Position
- Play Cards Right
- Pacman
- Toy Bazaar
- Galaxian
- Beamrider

****Spectrum £2.99**

- Haro
- Pitfall 2
- River Raid
- Impossible Mission
- War On Want
- Fantastic Four
- Hunchback III
- Moon Cresta

****MSX Carts £10.00**

- Track and Field I
- Ping Pong
- Tennis

****C64 Disc £4.99**

- Ping Pong
- Yie Kung Fu
- Upidium
- Way of the Tiger
- Zzap Sizzlers
- Batally
- Adventure Construction

****C64 Discs £3.99**

- Super Zaxxon
- Zork I, II or III

****Plus 4 Discs £4.99**

- Zork I, II or III suspended

****Amstrad Discs £7.95**

- Yie Kung Fu
- Ping Pong
- Morty on the Run
- Zoids
- Corruption

****C16 £1.99**

- Rescue Zylon
- Cuthbert in Space
- Arena 3000
- Bongo
- Mansion
- Adventure I
- Jerusalem II
- Williamsburg III
- Ultimate Adventure IV

****C16 £3.99**

- World Cup
- Classics 4

****Atari £1.99**

- Shamus
- Ollies Follies

****C64 £17.95**

- Magic disc kit

ROBCOM HEAD ALIGNMENT KIT £3.99

AMSTRAD 3" DISC £3.25

£29 BOX OF 10

STORAGE BOX LOCKABLE £9.95

BOX DISC DRIVE 4075/5 £45.00

40/80T SWITCHABLE £120.00

C64, Vic20 power supply ONLY £17.50 incl p&p

Post Free on orders over £5. Add 50p if under £5. Airmail order under £10, add £1. Send SAE for full list, state machine. Also C16/+4, BBC, Electron, C64 discs, and lots, lots more. TRADE ENQUIRIES INVITED.

DUPLICATION

SIMON STABLE PROMOTIONS CASSETTE DUPLICATION

Competitively priced service of DATA-DUPLICATION. Comprehensive facilities includes blank or printed cassettes, discs, labels, inlays; also bar-code printing. PRICE LIST FROM:

The Knightsbridge Stables

20 West End, Launton, Oxon OX6 0DF.
Tel: 0869 25 2831 (73)

jbs records COMPUTER PROGRAMS

REAL-TIME or HIGHER-SPEED professional Cassette Duplication and Blanks 1 to 1,000+. Computer printed cassette labels, BBC & PC Disk copying 1 to 500+. Fast Security Delivery Service.

FILTERBOND LTD. - JBS RECORDS DIV.
FREEPOST, 19 Sadlers Way, Hertford SG14 2BR.
0992 500101 17

COMMODORE C64, 1541 disc drive, C2N cassette, Superbase, Superscript, Basicalc, Future Finance, joystick, games, adventures, books, all original discs, dust covers, £300 o.n.o. Tel: 061-437 5788.

CBM 64, C2N cassette, 1541 disc drive, B and W monitor, expansion board, joysticks, many games and business software plus lots of instructional books etc. Best offer over £275. Tel: Tony 01-504 3364 evenings.

SPECTRUM PLUS, £35. Interface 1, £25. Microdrive, £25. Brother HR5, £50. QL Cash Trader, offers (unused) 15. 14 Madin Street, New Tupton, Chesterfield S42 6EH.

EINSTEIN 80K Tatung colour monitor, printer lead, BBC Basic WDPRO, Spreadsheet, Tasword, Tasprint, Basic Tutor (on disc). 6 games, Home Budget, Graphics, Dump, User magazines, all manuals etc., etc. £220. Tel: 097 883 4013.

MONITOR. Philips CM 8533 composite video, RGB linear, RGB/RGBI TTL input, audio input, green screen switch. Medium resolution colour. As new, warranty, next day delivery nationwide, £200. Includes leads Atari, Sinclair QL. Tel: 0454 318928.

I.C.L. O.P.D. complete with mono monitor. Xchange version 2-3 plus all usual OPD features. As new, £400. Tel: 01-952 9104.

SWAP Ferguson green screen monitor c/w lead for QL, for a QL compatible printer or any peripherals e.g. memory expansion for QL. Tel: Airdrie (023 64) 51359 ask for Jim.

AMSTRAD CPC 6128 with colour monitor. Five disc games, Tasword, Mastercalc, spare discs, basic course, joystick, cassette lead. £295 o.v.n.o. Tel: Dunstable 0582 607126 evenings/weekends.

AMSTRAD 6128 in excellent condition, + disc drive, + tape recorder, + accelerator, 80 + games, lots of utilities (Laser-Basic, Laser-Compiler, Music-System, Genesis, Discovery-Plus) etc. Cost over £600, sell to first £250. Bargain price, in original box + £100 of magazines. Tel: 0555 71911.

FOR SALE

BLANK CASSETTES

WITH LIBRARY CASES

	C10	C15	C20	C30
20	7.50	7.70	7.90	8.70
50	16.00	16.20	16.90	18.50
100	29.00	30.00	31.00	35.00

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

DISKS

10 5 1/2 DS/DD £6-50
inc plastic case
10 3 DS/DD CF2 £26
10 3 1/2 SS/DD £16

MEMOTECH COMPUTERS AND ACCESSORIES

MTX 512 COMPUTER	£75.00
DMX 80 PRINTER	£150.00
RS232	£35.00
PASCAL ROM	£35.00
SPECULATOR ROM	£35.00
1/2 mb. DISK DRIVE & INTERFACE	£170
1 mb. DISK DRIVE & INTERFACE	£175

All the above prices are fully inclusive. We stock the entire Memotech Range. Order/Enquiries to:

UK HOME COMPUTERS
82 CHURCHWARD AVE, SWINDON,
WILTS SN2 1NH
24-hr Phone Service 0793 695034

NEW! SEAL 'N' TYPE NEW!

Removable, re-washable, re-usable!

TYPE-THROUGH PROTECTIVE KEYBOARD COVER FOR AMSTRAD PC AND PCW
£7.50 plus £1.25 P.&P.

Watch this space for other models. Patent pending, registered design

From: **KADO**, Kilmorey Court,
279 St Margarets Road, Twickenham,
Middlesex TW1 1PN (152)

ATARI ST PUBLIC DOMAIN

Why reinvent the wheel? We have a large selection of languages, demo's, utilities, comm's and games etc. available. A s.a.e. for our list will save you hours of frustration.

Discs from **£3.95 to £4.95 inc.**

MCSOFT
9 Abingdon Gardens, Bath,
Avon BA2 2UY (178)

USED COMPUTERS

Quick cash for modern used home computers and accessories, Amstrad PCW hardware and software, job lots etc. Bring or phone for quote. Sorry, no lists available.

COMPUTAMART
195 Seabourne Road, Southbourne, Bournemouth
Tel: (0202) 433759 (181)

Atari 800 XL / 130 XE Essential Utilities

Transdisk Version 3.0

The most powerful tape to disc system for the Atari now made even better. Transfers commercial, machine code, "boot" cassette games or any other software to disc. Single, multi-stage and now even non-standard format tapes present no problem to Transdisk. Plus, enjoy the convenience of loading and running your newly transferred software from an auturon disc menu. No other tape to disc utility for the Atari is as powerful or successful as this! £19.95 inc. Supplied on disc with instructions.

The Freezer!

An amazing new utility for the Atari! "Freeze!" programs while they are RUNNING on your computer. The Freezer then takes over control and allows you to make a back-up copy of the frozen program. The back-up copy will load, and restart from the frozen point on ANY Atari XL/XE computer, independent of The Freezer! Freezes disc OR tape programs even those that are heavily protected! Easy to use - hit one key to freeze the program in memory then insert a blank disc and hit another key to save it - that's it! £19.95 inc.

Send an S.A.E. or phone for more details of these utilities.

Special offer order both programmes for £35.00

Make Cheque or P.O. payable to DIGICOMM and send your order to:

DIGICOMM

170 Bradwell Common Boulevard, Milton Keynes, Bucks MK13 8BG. Tel: 0908 663708. (121)

BRANDED DISCS Incredible prices

All discs supplied in original packing and fully guaranteed

Prices per box of ten

3.5" Verbatim Datalife SSDD 135tpi MF350	£21.75
3.5" Sony SSDD 135tpi OMD3440	£19.45
3.5" Memorex DSDD 135tpi MX3460	£24.30
5.25" Verbatim Datalife SSDD 48tpi MD525	£12.75
5.25" Verbatim Datalife DSDD 48tpi MD550	£15.35
5.25" Verbatim Verex SSDD 48tpi MD200	£11.00
5.25" Verbatim Verex DSDD 48tpi MD250	£12.45
5.25" Maxell DSDD 48tpi MD2-D	£15.00

All inclusive prices. No extra to pay. Government and educational orders welcome.

Please make cheques or postal orders payable to:

ORIOLE LIMITED

Dept. OBV, P.O. Box 297, London N3 2TS

SPECIAL OFFERS

AMSTRAD 1512 640K upgrade **£20**
Spectrum 24 line shaded colour COPY, most printers/interfaces **£5**
Spectrum repair expert system and Editor for **ONLY £5**
Spectrum 64 char. BB terminal program (XMODEM) **£9**
All programs 48/128K
Prices inc VAT & post in UK (187)

STEPHEN ADAMS, 1 Leswin Road,
London N16 7NL. 01-254 1869

FABRIC RIBBON RE-INKING

Introductory offer: **£1.50 each**

Send ribbons and prepayment to:

ALADDINK (Dept PC)
4 Hukur Crescent, Eyemouth
Berwickshire TD14 5AP

We will advise normal price for your ribbon

Tel: 08907 50965 (172)

QL KING

For one to ten players - a dangerously addictive simulation of life in medieval England.

Cheques and postal orders for £6 + £1 P.&P.
To: **H. C. BILLINGTON, SAMPSON SOFTWARE,**
NEWNHAM COLLEGE, CAMBRIDGE (185)

Self Adhesive Disk & Cassette Labels

DISK LABELS - 3" & 3 1/2" Disk labels, 71 x 69 mm, on tractor feed backing for computer overprinting. White: 500 - £15.55, 1000 - £22.05, 2000 - £25.69. Tinted labels in - Blue, Pink, Grey, Cream, Yellow, Orange, Green: 500 - £21.35, 1000 - £31.05, 2000 - £43.63.
5 1/4" Disk, 95 x 36 mm, White: 500 - £12.75, 1000 - £17.75, 2000 - £20.56. Tints as above: 500 - £15.20, 1000 - £24.65, 2000 - £34.36.

CASSETTE LABELS - On tractor feed backing. Rolls of 500 labels, White - £14.66, Tinted - £16.90. A4 sheets, 12 labels per sheet, 100 labels - £3.50, 200 - £6.00, 1000 - £21.85
All prices are inclusive of VAT & carriage.

We are specialist computer label makers and can provide printed labels in 24/48 hrs. For price list and sample brochure of our full range of self adhesive micro computer labels plus details of quantity discounts
Sittingbourne (0795) 28425 (24 hrs)

Industrial Process
Unit A4 Smeed-Dean Centre Sittingbourne Kent ME10 3RN
Self Adhesive Labels - **SUPERFAST**

AMSTRAD SOFTWARE SALES AND HIRE

DISCOUNT PRICES 100s OF TITLES FAST EFFICIENT SERVICE
Details from:

K & M COMPUTERS, 40 FAIRSTEAD, BIRCH GREEN, SKELMERSDALE, LANCS WN8 6RD (163)

ULTRAMON is a multi-purpose AMSTRAD CPC

utility which gives real control over your machine with more than 50 different commands and comprehensive "front panel" display.

Ultramon contains a machine code monitor, disc utilities, tape utilities (inc. Spectrum) etc.

£14.95 from Department P, BUBBLEBUS SOFTWARE, 87 High Street, Tonbridge, Kent TN9 1RX Tel: 0732 355962 (162)

QL COMPUTER cub colour monitor, 1mb D/D 3 1/2 disc drive, software, mags, books, etc. £300 the lot! No offers. Contact Steve, 64 Mandela Way, Southampton, Hants.

AMSTRAD OWNERS: DUEL, stunning arcade game for CPCs. Tape £5, disc £7. Cheque/P.O. payable to: Tony Vassiliou, Orders to: Tony Vassiliou, 11 Priory Gardens, Wembley, Middlesex HA0 2QG.

SPECTRUM GAC 'RECLAIMER'. Free memory locked-up in unused word entries left after editing. £2.75. Kelsoff (PCW), 28 Queen Street, Stamford, Lincolnshire PE9 1QS.

ATARIST, public domain discs full of utilities, games, languages etc. S.A.E. for lists, +ST-Club infopack: ST-Club (PCW187), P.O. Box 20, Hertford SG13 8NN.

BIG MONEY FROM YOUR MICRO. Make 1987 the start of a new exciting (and profitable!) life for you. Manual (£10) gives step-by-step instructions. Send S.A.E. today for full details. Bookmark (PCW2), 14 Truro Close, Conington CW12 3BD.

PLUS 4 graphic adventure. Over 60 full colour high res. screen. Tape £2.50, disc £3. Also Commodore 128 disc £3. Inc. P.&P. Send no money pay C.O.D. Tel: 061-835 2301.

EP44 with Spectrum and QL leads. Roll paper feed. Two mains adaptors. £75. Tel: Proxima on 01-240 3666 9am-5pm.

1541 OWNERS. Use both sides of your discs without cutting holes in them. Fitted in seconds using only a screwdriver. Send only £4 to: Panda-soft (1), P.O. Box 185, Reading RG6 4EA.

ATARI 1029 UTILITY, print normal, inverse and control characters from standard or custom fonts using 'list', 'print' or 'put' commands. £5 disc. From G. McDonald, 43 Disraeli Road, Ealing W5.

MAKE MONEY WITH YOUR MICRO. Don't just peek, poke and play with your mighty micro. Turn it into a money-making machine. Send for FREE details: AMREX Promotions (C1), FREEPOST, Colchester CO1 1BR. No stamp required.

POWER CLEAN plug with four way trail socket. Protects computers and programs. Unused, still wrapped, £20 only. Tel: 0635 48362 days.

48K SPECTRUM, microdrive, DK-keyboard (parallel, R.G.B.), interfaces, speech synthesiser, data recorder, extensive software. Cost £500, accept £100. Tel: 0566 2112.

COMPUTER SWAP

Computer Swap entries are limited to 30 words. All entries cost £2.50. Please enclose a cheque or postal order or give Access or Barclaycard No in the box provided. Only text appearing in the grid will be printed. Send the form to: Computer Swap. Popular Computing Weekly. 12-13 Little Newport Street, London WC2H 7PP.

PLEASE NOTE All software offered through computer swap must be in original condition and for private sale only. No advertisements for lists of software will be accepted.

It cannot be swapped.
Warning: It is illegal to advertise pirated software.

COMPUTER SWAP

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

Name

Address

..... Telephone

Please charge my Visa Access card no:

FAULTY SPECTRUM?

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

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

Send your faulty computer **DIRECT**

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

CALL OR SEND WITH CHEQUE OR P.O.

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

28TV

SPECIALIST COMMODORE REPAIRS

COMMODORE 64	£22.00
1541 LOGIC FAULT	£25.00
1541 ALIGNMENT	£20.00
SX64 COMPUTERS	£50.00
CBM MODEM	£18.00
COMMODORE C16	£20.00
COMMODORE +4	£20.00

OTHER COMMODORE HOME COMPUTERS AND PERIPHERALS REPAIRED ON REQUEST
 TRADE ENQUIRIES WELCOME

ALL PRICES FULLY INCLUSIVE (NO HIDDEN EXTRAS).
 WITH OVER 3 YEARS WORKING ON COMMODORE HOME PRODUCTS.

TEL. CORBY (0536) 69454
I. BATEMAN SPECIALIST COMPUTER REPAIRS
24 HOUR ANSWERING SERVICE.

(143)

COMPUTER BROKEN?

FIXED PRICE REPAIRS ON ALL POPULAR HOME COMPUTERS

SPECTRUM/PLUS	£17.00
INTERFACE 1	£18.00
MICRODRIVE	£18.00
SPECTRUM 128/+2	£30.00
OL	£30.00
AMSTRAD 464/664	£30.00
BBC A OR B (NOT PSU)	£30.00
AMSTRAD PCW/1512	POA
ELECTRON	£26.00
CBM 64	£26.00
C16, VIC-20	£22.00
DRAGON 32/64	£30.00

DISC DRIVES + PRINTERS ALSO REPAIRED. PLEASE ADD VAT TO ABOVE PRICES. SEND CHEQUE OR POSTAL ORDER WITH COMPUTER OR SEND NO MONEY C.O.D. SERVICE AVAILABLE.
 ZX SPECTRUM EXPANSION SYSTEM (INCLUDES MICRODRIVE, INTERFACE 1, 4 TAPES) - £50.
 SECOND ZX MICRODRIVE £30. ACORN SPEECH UPGRADE FOR BBC £12.00.

MICROMEND

THE OLD SCHOOL, MAIN STREET, FARCET, PETERBOROUGH PE7 4DB.
 TEL: (0733) 241718

(54)

COMPUTER REPAIRS

Fixed Super Low Prices!
 Inclusive of parts, labour and VAT



FIRST AID FOR TECHNOLOGY

1 week turnround
Free collection/delivery available for local area

★ INTRODUCTORY OFFERS ★

SPECTRUMS	£14 inc. + Free Game
C64	£22 inc. + Free Game
C16	£18 inc.
VIC20, C+4	£22 inc.
BBC	£32 inc.
ELECTRON	£19 inc.
AMSTRAD 464	£32 inc. + Free Game
C & N CASSETTE UNITS	£19 inc.
C64 P.S.U. FOR SALE	£20 inc.

Please enclose payment with item - 3 month warranty on repair
 Please enclose advert with repair

W.T.S. ELECTRONICS

5-9 Portland Road, Luton, Beds LU4 8AT. Tel: 0582 458375. Telex: 265871

(182)

FOR FAST RELIABLE REPAIR

SPECTRUM..... **£16.00**
 ORIC..... **£25.00**

Prices inc. parts, VAT, P.&P.
 We give 3 months warranty on repair. Please send computer with details of fault and cheque made out to:

CHILTERN COMPUTER CENTRE
 100 Hightown Road, Luton, Beds LU2 0DQ
 Tel: 0582 455684

(184)

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
 294A CALEDONIAN ROAD
 LONDON N1 1BA

(9)

400/800 NOW
LOOK ST
 Atari Owners
 Are you having difficulty finding suitable software. If so, then look no further. We have available for both hire and purchase one of the largest selections of both UK and American titles to choose from. Games and Utilities for all ages. Hardware and add-on utilities at discount prices and special deals regularly being offered. If you would like further information please send a large a.s.e. to:-
 SHAWWOOD PRODUCTS AND GAMES
 30A Warwick Avenue, Queens, Loughborough
 Leicestershire LE12 5HD
 Tel: 0509 418804

FAST COMPUTER REPAIR CENTRE - IN LONDON

*BBC Micro, Commodore, Spectrum
 *Amstrad, Others
 *We sell spare parts
 *Used Micros bought and sold
 *Eprom Programming Service
 Phone: 01-863 7166

PROMPT ELECTRONICS
 Unit 4, 15 Springfield Road,
 Harrow, Middx HA1 1QF
 (entrance in Amersham Road) (70)

SPECTRUM REPAIRS

From £3-£19 incl. all parts, labour and 3 month Guarantee.

Phone for free quote
MICRO FARE

296 Gloucester Road, Horfield, Bristol. Tel: 0272 46575

PUBLIC DOMAIN/SHAREWARE for IBM-PC compatibles from only £3 (disc). No membership fees. Send 18p stamp for catalogue. PC-Star, P.O. Box 164, Cardiff. Tel: 0222 568924 evenings/weekends.

CASSETTE LABELS PRINTED. Self adhesive or plain paper, high quality, letterpress printed, your wording, small quantities welcome. Samples/prices. Tel: 0326 313605

NAME YOUR OWN INCOME. Use your micro to make lots of cash in your spare time. No experience needed. Send S.A.E. for free details. Bookmark (PCW3), 14 Truro Close, Congleton CW12 3BD.

COMMODORE, AMSTRAD and BBC software for hire. For more details, write to: M. Ryall, 1569 Stratford Road, Hall Green, Birmingham B28 9JA.

ATARI ST software titles are A Mind For Ever, Voyaging, Deep Space, Brattcas and many more! Tel: Syresham 384 after 7pm ask for Stephen.

FOR SALE

MODEMS TOO EXPENSIVE?

Want to make new contacts? For details send S.A.E. to: S. Baxter, Friendships, Dept (PC), 26 Chestnut Walk, Silcoates Park, Wakefield WF2 0TX.

CASH PRIZE if you are the first to complete Quest for Zea on the Spectrum. Available for £2.50 from: A.S. Software, 8 Larkswood, Kibworth, Leicester LE8 0SB.

WANTED for Epson HX20, Intext, Spreadsheet, other manuals and software. Tel: Martin 01-240 9905.

AMSTRAD 6128 colour monitor. As new, still boxed. Unwanted Xmas gift. Accept any reasonable offer. Buyer collects. Tel: Leics 557076.

COMMODORE 64/128. Listings of any basic program (cassette or disc), printed in letter quality. Send £1 to Mr. A. Spilsbury, 29 Ashleigh Road, Solihull, West Midlands B91 1AF.

QL, THERMAL PRINTER, Metacomco 'C', plus books £100. Spectrum, micro drive, cassette recorder, various languages, games, adventures, Flight Simulator, £80. Wanted Lattice 'C' for ST. Tel: Mike 0272 713091 evenings.

APRICOT XI, packaged as new, 5MB hard disc estimating program included, £2,050. Cost new £4,500. Deliver East Anglia. Also Commodore 64, colour monitor, printer, disc drive, £250. Tel: Bury St. Edmunds, Suffolk, 0284 86512.

ATARI 520 ST, two 1MB drives, mono monitor, bundled software, monitor and drive stand, address book, Laserbase, £500. Vippem Int. £175, Easydraw £50. Printlaser Art Gallery 1-2 £50, Dbase II £75. Tel: 01-407 5892.

SHARP disc drives wanted for MZ80B, interface not needed. Also wanted, software for MZ80B. Please contact M. Bamford, Nant-y-Brithyll, Llangynyw, Welshpool, Powys SY21 0JS.

FOR SALE. Spectrum software! Inc. Starglider £8.50, Dandy £4.50, Quill, Illustrator, Patch £14.95. Artist £4.50. Tomahawk £4.50. Kemp. Int. £5. FREE! postage and packing orders over £10. Tel: Rick, 0239 78379 after 6pm.

SPECTRUM + computer plus demo tape, manuals, plus Tatung cassette recorder, plus joystick. Quick sale, £65. Tel: John 01-863 1435.

WANTED. Expansion box to turn Advance Technology 86A micro into 86B. Must be perfect. Tel: 0909 721654.

BROTHER M1009 dot matrix printer with centronics interface - excellent condition - includes manual, all boxed, £110. Tel: 01-644 9759 (Sutton area).

FOR SALE RS232 daisywheel printer, brand new and working. Tel: 0782 637259 evenings for details.

BBC B (issue 7). Solidisc 64K/swr, STL/DFDC, DF S/ADFS21 (excluding disc drive), analogue joystick. Roms - G+R/Rom, Fileplus and manual. Watford S.D. DFS and manual, Com/Con. Graphic, discs include Elite, Micro-Aid Account, etc. £400 o.n.o. Tel: Raymond 0247 458855.

BPS1101 CBM daisywheel printer plus extras £199. Superbase 64 £35. Superscript £35. Quill £7. Elyte £7. Battle for Normandy £7. Tel: 0506 411634.

COMPSWAP

CBM 64, 1541 disc drive with Dolphin Dos cassette deck, printer, sound expander and keyboard sound sampler. Lots of software and books. £500. Tel: 01-595 9315.

QL PONTOON. Play Pontoon against your QL. Plays a real mean hand. Send £1.50 for listing or £2.50 plus mdv cart to T. Moore-Read, 33 Beech Road, Callington, Cornwall PL17 7JA.

FOR SALE. Spectrum +, data recorder, joystick, interface. Hundreds of games and magazines. Spare keyboard. Everything in very good condition and a snip at £180. Tel: 01-947 7911 and ask for Ian.

WANTED Paperboy on Amstrad 464. Will swap Infiltrator or Winter Sports and Caves of Doom, Into Oblivion and Formula 1. Tel: Beaconsfield 71050 and ask for Daniel.

WANTED. Knowledgeable game players to review computer games for club publication. Any major machine. Send £1 for full details. Chic Computer Club (PCWK), P.O. Box 121, G.X., Bucks SL9 9JP.

BBC B, 5 $\frac{1}{4}$ " 100K drive + discs, cassette + £320 worth of games, twin joysticks, b/w portable, 3 volumes Micro User. All v.g.c., worth £1000+, sell £450 o.n.o. Gary, 90 Lyndhurst Road, Corringham, Essex SS17 7SN.

ATARI ST public domain software service. Hundreds of titles. For details send stamped S.A.E., or for list send disc and stamped S.A.E. to: ST U.K., 2 Marina Gardens, Cheshunt, Herts EN8 9QY. Large S.A.E. please.

COMMODORE 128, 1570 disc drive, freeze frame cartridge, C128 programmer's reference guide, joystick, £140 worth of software. Sell for £300. Tel: Basildon (0268) 26159.

ATARI 130XE, 1050 disc drive, plus summer games, Archon, Ballblazer, Hacker, all originals. Also Go Forth with manual, mapping the Atari XE version, magazines. Tel: Ian, 0992 445202 with offers.

BBC B computer, built-in DFS and Econet, ready for disc drive and networking with tape recorder, manual, leads, all vgc. Cost £550. Bargain £250. Tel: 01-440 5711.

ATARI 130XE, 1050 disc drive, X12 data recorder, discs, F-15 Star Raiders II, Icoronis Rift, Ballblazer, Silent Service + many more. £260 total. Tel: Darren 0602 636948 after 6pm.

GAC USERS! Novice or expert, "Adventure Contact" can help you! Plotting, writing, marketing, evaluation, playtesting, magazine, free help, friendly group! Sample pack £1. Adventure Contact, 13 Hollington Way, Wigan WN3 6LS.

ADVENTURE WRITERS! Learn all you need to produce and sell your games. Monthly magazine, comprehensive support, friendly group. Sample pack £1 from: Adventure Contact, 13 Hollington Way, Wigan WN3 6LS.

CBM 64 software to swap over 1000 titles including all modern releases, disc or tape. Write to C. J. Birch, 31 Lancaster Road, Great Yarmouth, Norfolk NR30 2NQ.

COMMODORE 128, 1541 disc drive, MPS 803 printer, tape deck, 150 discs, 80 tapes, mouse, freeze frame, Quickdisc+, plus other bits. Sell for £650 o.n.o. Will consider splitting. Good condition. Tel: Greg, Crayford 59941.

COMMODORE 64, disc drive, MPS 803 printer, CN2 cassette deck, joystick, plus over £800 of games on disc/cassette. £400 the lot. Tel: 01-804 8761 after 5pm.

BBC B, Acorn DFS, twin 40/80 disc drive, Taxan KP810 printer, Philips monochrome monitor, analogue joystick. £575 the lot. Tel: Eddie Lister, 01-961 0175 (not mornings).

AMSTRAD 6128 Protext and Prospell discs, excellent programs upgrading to CPM version. £32.50 the pair. Tel: Nick, Chelmsford (0245) 355505 evenings.

BBC B issue 7 less than 2 years old. Data recorder. 20+ original games + utilities. 8 books on basic + machine code. Total as new £500+, selling for only £200-£250. Tel: Kevin 01-551 2947 after 5.30pm.

COMMODORE 128, 1570 drive, C2N, two joysticks, music software, £200 of games including Pawn, Gauntlet, Sanxion etc. Manuals, leads. Cost £600 will take £480 o.n.o. Tel: 01-598 8693 after 5pm Mon.-Fri.

CPC 464 colour monitor, hardware, software, mags., books, storage systems. Worth over £1000. Will anyone give me a modest £450. Tel: Chris (0924) 828222 ext. 2210 9am-4pm. Are you curious?

MCP 40 colour printer with Oric interface, complete with coloured pens and paper. Scarcely used in original packaging, £70 o.n.o. Tel: Dumfries (0387) 52656.

WANTED for Transtec business computer 5 $\frac{1}{4}$ " operating disc also instruction manual. Houghton, Birds Road, Thurston, Suffolk IP31 3RJ. Tel: 0359 70696.

ZX SPECTRUM + for sale and 3-channel sound synthesiser, joystick, software, only £60. Tel: Chris, 0772 717607 after 4.30pm.

COMMODORE 64C and mouse and software, tape recorder. Still under guarantee, £180 o.n.o. or will swap for Einstein + extras. Also high resolution monochrome monitor £35 o.n.o. Tel: Sheffield 551782.

FOR SALE. Island logic music system for BBC B micro (disc version), only used once. Cost £30. Sell for £15 + £1 P.&P. Tel: 0388 772497 after 6pm.

NEW STYLE Commodore 64C, hardly used. Full guarantee plus C2N joysticks, mouse, software worth over £200 including G.A.C., Cheese, Speech Rom. 3 months old. £425 o.n.o. Tel: 01-464 5458.

SPECTRUM software utilities and games including Trap Door £3, Lord of the Rings plus book £5. 16K, ZX81 software and books £30, Currah speech unit £10. Tel: 0977 84719 evenings.

HITACHI MS-DOS PC with Wordstar Professional or Multiplan £395. 8088, 128K memory, twin discs, monochrome monitor, GW Basic. Runs some IBM PC programs, other hardware and software, e.g. 512K memory. Tel: Hertford 0992 582439.

COMMODORE 64, cassette, joystick, games. Boxed £160 o.n.o. 1541 disc drive, little used £130 o.n.o. 1571 disc drive, 3 months old still under guarantee £175 o.n.o. Selection of original games from £1. Tel: Lurgan (N.I.) 07622 27692.

ATARI 800XL with 1050 disc drive and 1010 recorder. Various games and magazines £200. Also 130XE with faulty keyboard (new keyboard only £21), £50. Tel: Barnsley 0226 750710.

SPECTRUM 48K/128K software utility. Lets you identify, duplicate, protect, autoprinter etc. £4.99 inc. P.&P. Tel: Runcorn 701873.

CBM 64 plus numerous software items. Willing to swap for Yamaha MSX computer plus keyboard and music software or cash deal for either. Tel: 024026 2209.

COMMODORE 128, 1541 disc drive, 1701 colour monitor, 803 printer, 2CN cassette recorder, neos mouse, freeze frame, 3B joysticks and lots more. Quick sale needed so £550. Tel: 04203 89849.

SPECTRUM 48K with over £200 of software including Boggit, Dynamite Dan, Knight Tyme, Jet Set Willy, Doomdark's Revenge, etc. £100 the lot. Buyer collect. Tel: 0625 585465.

Dealers

BIRMINGHAM

NOW IN STOCK

ATARI 520 STFM

ONLY £379.95

INCLUDING V.A.T. & CARRIAGE U.K. MAINLAND.

For Catalogue - Send S.A.E.

ALLEN JAMES COMPUTERS

831 Stratford Rd., Birmingham, B11 4DA.

Tel: (021) 778 5737

GLASGOW

THE COMPUTER DEPOT
205 BUCHANAN STREET
GLASGOW G1 2JZ

Tel: (041) 332 3944

PL705

GLASGOW COMPUTER CENTRE

*Specialists in
Acorn and Atari ST Computers*

VIRGINIA GALLERIES
(1st FLOOR)
33 VIRGINIA STREET
GLASGOW G1 1TU
TEL: 041-552 1522 (136)

Dealers

ESSEX

ESTUARY
PERSONAL COMPUTERS

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

PL484

NOBLES

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

PL008

Dealers

LEEDS

MICROPOWER

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

PL683

LIVERPOOL

Microbyte

We talk business, not bits & bytes
NO. 1 ON MERSEYSIDE FOR
ATARI AND AMSTRAD
71 SEAVIEW ROAD, WALLASEY,
MERSEYSIDE L45 4QW
(051) 630 6933/638 1420
10 am - 6 pm

MAIL ORDER
SERVICE AVAILABLE



(31D)



Dealers

LONDON

GALLERY SOFTWARE
1st FLOOR
THE ARNDALE CENT,
WANDSWORTH,
LONDON SW18
Tel: 01-870 4941^{27PL29}

YORKSHIRE

**YORK
COMPUTER CENTRE**

★ Specialists in Atari
★ Mail order service available



9 Daveygate Arcade
York

Telephone:
(0904) 641862

(170)



New Releases

John Cook looks through this week's new arrivals

Amstrad CPC

Program *Riding the Rapids*
Type Arcade **Price** £1.99
Supplier Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

Program *Marble Madness - The Game*
Type Arcade Construction **Price** £9.95 **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston-upon-Thames, Surrey KT1 4DB.

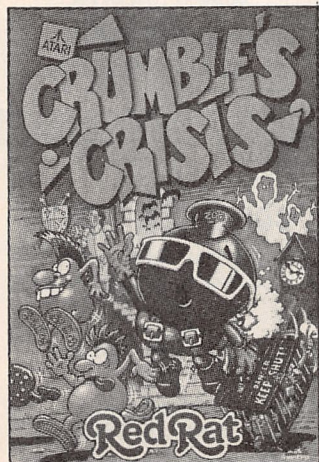
Here you have not only the *Marble Madness Construction Set* - which is pretty neat if you are into Marble Madness style action - but also some thirty odd screens already made up for you to get through. Not bad.

Program *Strike Force Combra*
Type Arcade Adventure **Price** £9.95 **Supplier** Piranha, 4 Little Essex Street, London WC2R 3LF.

Atari XL/XE

Program *Robot Knights*
Type Arcade Adventure **Price** £7.95 (tape), £9.95 (disc), **Supplier** Red Rat Software, 11 Fennel Street, Manchester M4 3DU.

Program *Crumble's Crisis*
Type Arcade Adventure **Price** £7.95 (tape), £9.95 (disc) **Supplier** Red Rat Software, 11 Fennel Street, Manchester M4 3DU.



Two arcade adventures for software starved XL and XE owners - *Crumble*, having particularly good graphics.

Atari ST

Program *ST Protector & Space Station*
Type Arcade Double Pack **Price** £24.95 **Supplier** Eidersoft, Hall Farm, North Ockendon, Upminster, Essex RM14 3QH.

Program *War Zone & Fire Blaster*
Type Arcade Double Pack **Price** £24.95 **Supplier** Eidersoft, Hall Farm, North Ockendon, Upminster, Essex RM14 3QH.

Eidersoft has recently re-packaged four of its arcade games into two double packs. Good value at this price.

Program *Pro-Sprite Designer*
Type Utility **Price** £39.95 **Supplier** Eidersoft, Hall Farm, North Ockendon, Upminster, Essex RM14 3QH.

The second ST sprite designer to come in recently, the other being from Microdeal. I think I feel a comparative review coming on.

Program *Techmate Chess*
Type Chess **Price** £19.95 **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Program *Skyfox*
Type Arcade **Price** £24.95 **Supplier** Ariolasoft, 68 Long Acre, London WC2E 9JH.

Long awaited conversion - but we decided that zapper/flight sim award still goes to *Strike Force Harrier*.

Program *Zoomtracks II*
Type Application **Price** £69.95 **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Interesting relational database, produced under licence in the UK from Quickview Systems in the States, where it was very well received. Cut down version available for £39.95.

Pick of the week

Phantastic, too

Program *Phantasie II*
Type Strategy Role Playing **Micro** Atari ST/Commodore 64/Apple II/Atari XL/XE (disc only) **Price** £24.95 (ST) £19.95 (other) **Supplier** SSI, via US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

Playing games all day isn't all fun. If anything, it has a tendency to put you off them for life - and there are times when after a hard day's zapping, all you want to do is go home and lie down in a darkened room. Yup, those aliens can sure get to you, space cadet.

And as for weekends, well, there's nothing we like better, here at *Popular*, than to spend our 48 hour respite from saving the Universe walking the car, changing the oil on the dishes and washing the dog - whiling away some time on those little domesticities that we'll all come to know and love. Not this weekend.

I've had a total of nine hours' sleep, eaten three times and that's about it. The problem is, of course, *Phantasie II*.

Phantasie II is the follow up to the obvious, itself a role playing game that had entranced one member of staff for a couple of weeks (the time it took to solve it, working almost full time). It looks like I'm the one to be hooked on the follow up.

The game system is almost identical. You start by building up a team of six adventurers, who can virtually be any race or character class with the Quest to free the island of Ferronah from the evil clutches of Nikademus, the gent whose butt you may or may not have kicked in *Phantasie I*.

Having been evicted from Gelnor, old Nick is up to his old tricks elsewhere, and it's up to you to do the right thing by Pixiedom. Having created your party, you must explore the world, find dungeons, rescue princesses, fight eight beasts of Pluto to gain eight amulets, so as to present the Sacred Orb to the Ice Dragon, that it and its power be destroyed.

To anyone familiar with



D&D and its derivatives, the plot (which I've already given away a little too much of) may sound a bit clichéd - but SSI execute it so well.

Your party of six (who start off knowing nothing of the above) really do seem to develop their own personalities, despite the limited program/player interaction. How my brave lads fought, so that Drivein (now 12th level Dwalven Wizard) could be resurrected and rejoin the group, when he met with an unfortunate accident.

The puzzles within the game are largely logical, with clues scattered around the world which must be painstakingly pieced together. I got a lucky break early in the game - but I don't know how anyone else is going to find the gate into the Netherworld without one hell of a lot of leg work.

But I digress. The point is that this is a fantastic game. I played it on an ST, but it looks to be similar on the other formats. It is disc based, you'll note - there's no other simple way to make games that big - and although many of you may not have a disc system, I make no apologies for going on about it at such length.

Just like there'll always be an England (ignoring the rugby for a moment), there'll always be a shoot-em up. But the style of game that can combine some kind of action with an element that stretches the grey matter - there the future lies.

Program Shuttle II Type Arcade Simulation **Price** £24.95 **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Long awaited from Microdeal, this is not the super complex simulation we'd been hoping for – rather four arcade sequences joined together. Still, not totally without merit.

Program Typhoon Type Arcade **Price** £24.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.

Everyone's writing for the ST nowadays, aren't they? This is Gremlin's first offering, licensed from Germany, and there's no doubt about it, it looks good. Sounds good too – lots of digitized sound effects, like *Starglider*. However, even though the backgrounds are pretty, the bottom line is that this is a pretty unimaginative shooter lacking the speed and responsiveness that would normally make that forgivable. Bets that Gremlin will do better than this, and Mastertronic will soon be bringing out something similar for a tenner.

Program Liberator Type Arcade **Price** £12.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

Competent shooter with vertical scroll. Nicely designed graphics, fairly original design – not as flash as *Typhoon*, but only costs half as much.

BBC & Electron

Program Plan B Type Arcade **Price** £2.99 **Supplier** Bug Byte, Argus Press Software, Victory House, Leicester Place, London WC2H 7NB.

Program Ice Hockey Type Arcade **Price** £2.99 **Supplier** Bug Byte, Argus Press Software, Victory House, Leicester Place, London WC2H 7NB.

Sports arcade action from the author of existing BBC hits, *Tennis* and *Cricket*.

Program Savage Island (Part 1) Type Adventure **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

Program Savage Island (Part 2) Type Adventure **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

C16/Plus 4

Program Battle Star Type Arcade **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

OK, so it's *Uridium* on the C16... but where else are you going to get *Uridium* on the C16? Buy.

Program Savage Island (Part 1) Type Adventure **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

See Commodore 64 listing for comment.

Program Savage Island (Part 2) Type Adventure **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

See Commodore 64 listing for comment.

Commodore 64

Program Savage Island (Part 1) Type Graphic Adventure **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear, NE21 4TE.

Scott Adams adventure that certainly doesn't break any new ground in the

field, but knowing the author, will certainly have its fair share of puzzles and conundrums.

Program Savage Island (Part 2) Type Graphic Adventure **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

Part Two of the above. Considering the trend towards packaging multi-partners together – *Murder off Miami* for instance – you might find the fact that both of these add up to around 16 quid, rather offputting.

Program Ranarama Type Arcade Strategy **Price** £8.95 (tape), £12.95 (disc) **Supplier** Hewson, Hewson House, 56b Milton Trading Estate, Milton, Abingdon, Oxon OX14 4RX.

Mervyn the Sorcerer's apprentice has been mixing his potions again, and has found himself transformed into a frog, in the middle of a dungeon complex full of Evil Warlocks. I have days like that.

A classy arcade game with a fair element of strategy, drawing well heavily from other Hewson titles, such as *Paradroid*, without blatant plagiarism.

Difference is that Andrew Braybrook is a Commodore expert, while whoever did this conversion from the Spectrum (programmed by Steve Turner himself), isn't.

Despite the relatively poor turn out on this format however, still well worth a look. Out March 23.

Program Street Sports – Basketball Basketball **Price** £9.99 (tape), £14.99 (disc) **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Not as played in the gym – but it's out there on the streets, kids, where we all know it's rough, tough and full of doggie number twos.

Program Strangeloop Type Arcade **Price** £2.99 **Supplier** Bug-Byte, Argus Press Software, Victory House, Leicester Place, London WC2H 7NB.

This was state-of-the-art arcade stuff in the pre-*Knight Lore* days. Lots of things moving about on the 250 screens, fair bit of zapping to do and, whoops, look out for the razor sharp industrial waste. Probably just about worth the budget price in 1987 – but haven't you got it already?

Program The Big KO Type Arcade **Price** £7.95 **Supplier** Tynesoft Computer Software, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

2-D boxing game converted from the Beeb with nice cartoon graphics – but on the 64 it's just not worth the money.

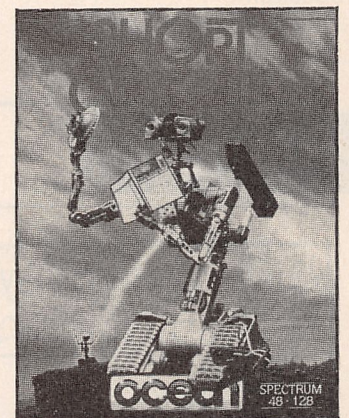
Spectrum

Program Short Circuit Type Arcade Adventure **Price** £8.95 **Supplier** Ocean Software, 6 Central Street, Manchester M2 5NS.

Very impressed with the CPC version, so it's nice to see the Spectrum coming up to the same mark.

Neat two part arcade adventure – one in colourful perspective 3-D, the other not – that captures the spirit of the film nicely.

Certainly not one for the hard core, but as a none too exerting amusement, it succeeds.



Program Savage Island (Part 1) Type Graphic Adventure **Price** £7.95 **Supplier** Tynesoft, Addison Industrial Estate, Blaydon Upon Tyne, Tyne & Wear NE21 4TE.

For comment see Commodore 64 listing.

Applying the full Spectrum

Many programs have tried to stretch the 48k and +2 versions of the ZX Spectrum to its limits. There are however features of the machine which, I suspect, are not fully utilised by the vast majority of owners.

If you program in Spectrum basic you may have used the mathematical functions *sin* and *cos* to draw radii of circles. When did you last use *Asn*, *Acs*, *Tan* or *Atan*? Would you know what combination of key presses are required to get these keywords?

Unless you are interested in mathematics it is unlikely that you would know how to use them. I have seen some program listings which use *LN* and *EXP* in a sort routine.

Tasword Three, the word processor, makes use of just about every combination of key presses. Those which would produce keywords in Basic actually control various functions of the program. This program also makes full use of the microdrives.

Tasprint uses an uncommon symbol, the tilde character (~). How often do you use it, or the square and curly brackets? What about the back slash (\)?

The addition of *Interface One* and microdrives further increases the potential of the Spectrum.

Several new commands are

available as soon as *Interface One* is connected. Most are useless without microdrives.

You can add your own commands to the Basic. A knowledge of machine code and a bit of imagination are required to develop this asset.

Interface One can take up to eight microdrives. How many Spectrum owners use that many? I use two and don't personally know anyone that uses more than two.

Linking two or more Spectrums using the networking facility opens up a lot of possibilities. Two, used in conjunction with an assembler like Picturesque's *Editas*, make a useful development system for machine code games and routines.

The assembled code can be sent from one Spectrum to the other over the net and tested on the second. This avoids having to constantly save the code, reset the computer, load the code and then test it.

Up to 64 Spectrums can be linked using the network. I know several people with *Interface One* who have never used the facility. I have yet to hear of anyone who has experience of being on a net with several Spectrums, let alone 64.

Education would be an obvious use for a net and would surely have been used in this field if the BBC was not the

most common computer in schools.

The RS232 port enables the Spectrum to be connected to external devices. The most common use for this is probably to connect a full size printer. A Centronics interface connected to the expansion port is an easier option, although it may be more expensive than the cost of making up the right RS232 lead.

A full size printer used with word processing software such as *Tasword* can be a great asset if you write a lot. It is up to the user to make the most of all the facilities such a set up offers.

The same is true with programs like *The Artist*. You must experiment with the functions to realise their full potential. The Spectrum expansion port enables other peripherals to be connected to the computer. Each one increases the uses to which a Spectrum can be put.

I realise that factors preventing owners from exploiting their Spectrums to the full include lack of spare cash and not having the necessary knowledge. It will be interesting to see if the 128 and +2 versions of the Spectrum will be used to the full. Only time will tell.

A Campbell Black

NEXT WEEK

SPECIAL SUPPLEMENT

The Spectrum

All the latest news and reviews for your Spectrum. Hardware developments - what of the forthcoming Spectrum Plus 3? Budget software - quality games-playing without breaking the bank. Plus Gilsoft's *PAW*, the *Professional Adventure Writer*.

Cholo

Can you free the human race trapped beneath the city of Cholo? John Minson accepts the challenge from *Firebird Gold*.

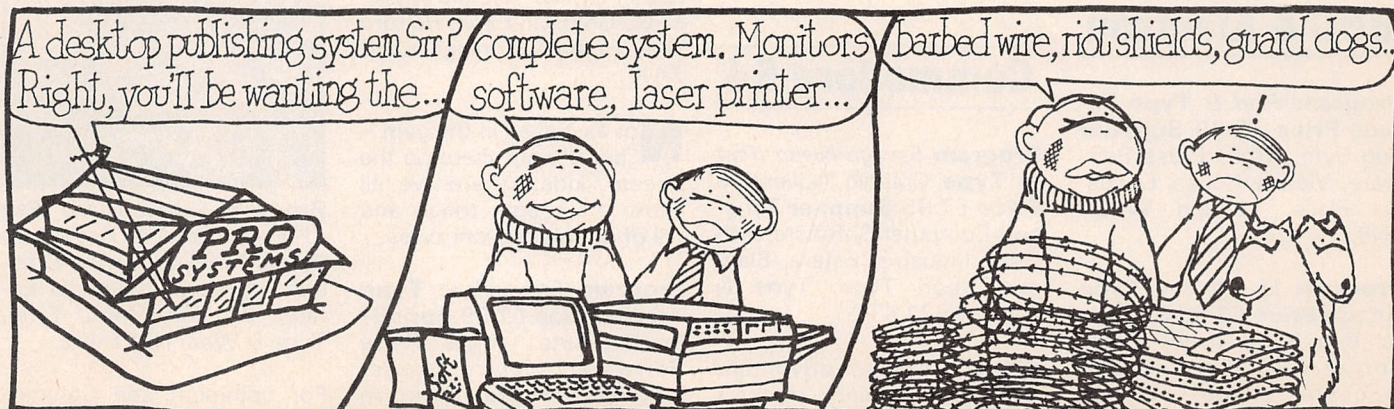
Fleet Street Publisher

True desk top publishing on your Atari ST? Chris Jenkins tries out *Mirrorsoft's* most sophisticated *Fleet Street* yet.

ST hard disc

All things being equal, we'll bring you *Eidersoft's* ST hard disc as promised last week.

Hackers



Do you want your work published throughout the world by a company dedicated to creating imaginative software of the highest quality?

Palace offer generous advances and top royalty rates to talented and experienced programmers and designers with original ideas.

**PROGRAMMERS
AND GAMES
DESIGNERS
REQUIRED**



Full-time Senior Programmer

We need an experienced C64/Spectrum/Amstrad games programmer to team up with one of our artists to form a new in-house design/programming team.

The job involves working together to see games from the initial conception of an idea through design, programme structuring and the overseeing of programmers.

You will need to be fully experienced in both 6502 and Z80 machine code and have already had arcade/action games published for the relevant machines. A good eye for games design is essential as well as a friendly personality and sense of humour!

The job is based at our central London offices. Salary will be based on previous experience. In addition a royalty is paid on sales of games. Applicants should be at least 19 years of age.

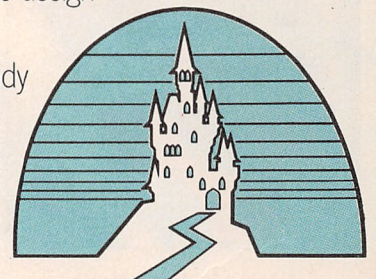
Phone Pete Stone on 01-278 0751.

Freelance Programmers and Designers

We are very interested in publishing games written and programmed by freelance design and programming teams.

You will probably be working within the business with involvement in games already published by other companies and now want to further establish your name and reputation. You will need to have the experience to see projects through from initial idea to finished programme.

If you feel you are a talented and experienced programmer/designer – working as an individual or a team – with exciting and original ideas, we would like to talk to you. **Phone Matthew Tims on (0622) 813131**



**PALACE
SOFTWARE**

THE METEORS™

The Final Challenge



Launching soon on:

Spectrum £7.95
Amstrad, Commodore tape £8.95
Amstrad, Commodore disc £14.95

For mail order enquiries please write to:

NMC Limited, PO Box 67
London SW11 1BS
or call on 01-228 6730