

POPULAR Computing WEEKLY

Atari plans research facility in Europe

Details on page 6

Superbase for
the Atari ST

Communicating
on your PCW

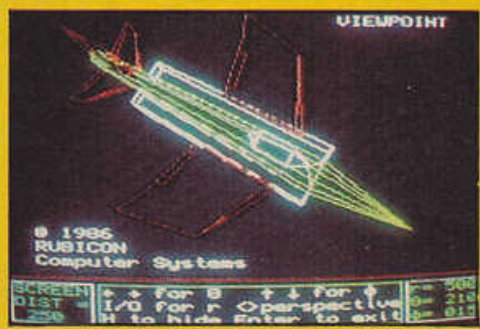
The rise and rise
of computer fraud



Superbase Personal by Precision Software

**SPECIAL
supplement**

THE QL
Desktop
publishing
Graphics



Available for BBC B
and soon for
AMSTRAD CPC SERIES
CBM 64/128
SPECTRUM 48/128



FIREBIRD SOFTWARE, FIRST FLOOR
24-26 NEW OXFORD ST, LONDON WC2

FIREBIRD IS A REGISTERED TRADE MARK
OF BRITISH TELECOMMUNICATIONS PLC

PRICED:

£14.95 CASSETTE

£17.95 DISC (CBM, BBC)

£19.95 DISC (AMSTRAD)

CHOCOL



G
GOLD

May 8-14

POPULAR Computing WEEKLY

CONTENTS

News

- 6 News Desk** Atari to invest in R and D in Europe.
- 41 Soundcheck** Mark Jenkins reports on Microdeal's venture into musical composition, Digidrum for the ST.
- 42 Communications** All the newest areas on Compunet for Commodore users to explore.

Features

- 13 Computer crime** John Brissenden looks at the growth of computer related fraud, and talks to Detective Inspector Austen of the computer crime unit attached to the fraud squad.
- 16 PCW modem** Miracle's WS4000 is now configured for the Amstrad PCWs. We try it out with Sagesoft's *Chit Chat* in support.
- 18 Superbase Personal** New for the Atari ST, Precision's database has been completely rewritten since the days of *Superbase* on the 64.

Supplement – the QL

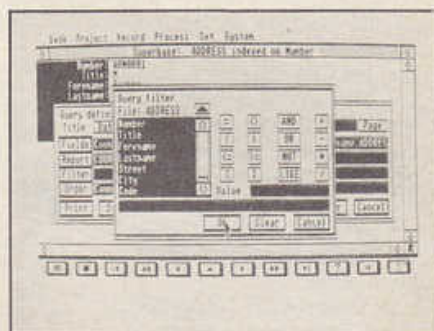
- 23 News** There is still plenty of support for the QL. Read of some of the latest developments in the field.
- 26 Desktop publishing** We test packages from Digital Precision and TK Computerware.
- 30 Graphics applications** Rubicon has brought out a CAD program, *Viewpoint*, and Eidersoft's *ICE* caters for mouse users.
- 33 Chairman of the boards** Digital Precision's IBM-style alternative keyboard.

Programming

- 20 Peek and Poke** Kenn Garroch answers your programming queries.
- 21 Learning C** In part two of our series, Kenn Garroch takes you further into the programming language C.
- 35 Listings** This week we round up the Icon Toolkit for Amstrad CPCs, bring you the first part of *Magic Maze* on the BBC, and more on those Spectrum Rom calls.
- 39 Bytes and Pieces** Short routines for you to type in.

Games

- 48 New releases** Your complete guide to all the games released this week, including *Metrocross* from US Gold, *Spectrum Sentinel*, and *Kinetik* from Firebird.
- 49 Hall of Fame** Gamestar's *Championship Football*, published by Activision, is this week's entrant to the *Popular* Hall of Fame.



Top: Detective Inspector Austen of the fraud squad's computer crime unit. Above: Superbase Personal. Below: Kinetik from Firebird.



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 **Marketing and Advertisement manager** David Osen **Advertisement executives** Jon Beales, Athena Peerman **Classified executive** Susannah King **Editorial secretary** Annmarie O'Dwyer **Credit control manager** Gabriella Piscina **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

ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Popular Computing Weekly. Tel: 01-437 4343.

In defence of the small dealer

In reply to your correspondent D W Snelson in the April 10 issue, I would like to offer a contrasting set of experiences. First of all I will admit to being a very basic user of the Commodore 64 and a regular reader of your magazine. This, perhaps, is what saved me from making the same mistakes he did.

Like Mr Snelson, I started the year with a resolve to upgrade to a 16-bit machine, and as there seemed to be only one at an affordable, justifiable, price, I also decided on the Atari 520ST.

I spoke to Silica Shop, asking what I thought were simple questions about such matters as the wattage of the power supply, (I've already had to repair the C64 PSU once, and it's on the way out again!), the frame and scan rates of the monochrome monitor, and whether the RGB output was TTL or linear. The person I spoke to didn't know. I spoke to the Atari Helpline. Nobody there knew either!

In desperation I spoke to a South East London dealer, Homeview, whereupon a service manual was opened and all my questions were answered. I was also told the answers to all Mr Snelson's questions, such as just what was bundled with the machine and the prices of all the third party disc drives, etc. I was given such a good picture that I decided not to buy yet - still waiting for the Amiga/ST battle to sort itself out a bit more. If I do buy an Atari I know where from.

I suppose the moral is the old one of let the buyer beware, and let him choose a good dealer!

F McClelland
London SE10

No printer problems here

I refer to Kenn Garroch's reply to W L Pershore in April 10 issue of *Popular*.

I have had experience with a number of QL and printer set-ups and can report that with Epson and compatible printers (eg, Shinawa CP80 and clones) there is generally no problem in running at 9600 baud if using the serial link. The most printer problems I find arise whilst attempting to configure Quill

and the other Psion programs to run with a specific printer.

The Brother M1109 used by Mr Pritchard seems to be a different kettle of fish; one of my friends recently purchased one and could not get it to work at all. The problem was resolved by making up a special cable which, I believe, had pins 4, 5, 6 and 8 linked together. This information should be checked with Brother, which my friend found most helpful. It could be Mr Pritchard has a handshaking problem if one of these lines is not connected.

The printers I have dealt with have never required these connections to make them work and I suspect a large number of printer cables sold do not incorporate them.

Tony Cox
Dunstable

Escaping from the Organiser

With reference to the Psion Organiser program, Exchange, which you published in *Popular*, April 3.

The program as listed will form an endless loop when run, which could be rather frustrating for a beginner, who may not know how to escape.

The solution is to add a Quit option to the menu on line five and tag the following line on to the end of the program, just before the ENDIF statement:

IF M%=3 : STOP

Mike O'Regan
IPSO group

Long live the Stone Age

I would like to present my response to 'Farewell to the cassettes' (Ziggurat, April 17-30).

I have owned a 48K Spectrum and cassette recorder for four years, and during that time, I have only lost two cassettes - not bad for a "prehistoric system".

In October last year, I decided to 'upgrade' to a disc system, after being 'enlightened': speed, reliability, convenience, etc.

During the six weeks that followed, I had two drives, both of which were sent back twice for a total of three weeks, programs mysteriously wiped out, valid disc commands rejected, discs formatted when I tried to

save a program, and only two programs which saved properly.

Not surprisingly, I decided to get a refund - reliability and convenience being replaced with unreliability and inconvenience!

Disc drives and discs may not be that expensive, but, for the Spectrum at least, they're about five times more expensive than cassette recorders and cassettes.

The ST and Amiga are in the business/upper home sector of the market, so who would expect them to have a cassette interface?

Last week I bought a Spectrum 128, and unless Amstrad produces a very reliable, cheap disc upgrade for compatibility with the Plus 2, I would rather wait 15 minutes for a program to load than face a possible disc drive style fiasco.

Finally, Mr Shepherd, I am not, as your article would suggest, a crazy person using a prehistoric clunker manufactured by a madman, but somebody who has had experience of both cassettes and discs and trusts cassettes more.

David Banks
Preston

Forum for discussion

I would be grateful if you could mention a magazine on cartridge for the QL.

It is called *Forum*, and issue two is available by sending 50p, a stamped addressed envelope and a blank formatted cartridge to Ian R Bruntlett at 25 The Broadway, High Branes, Sunderland SR4 8LP.

Ian R Bruntlett
Sunderland

The vanishing disc drive

The special feature on consumer rights (April 17) will have been of interest to many readers, although it gave the impression that most problems are encountered with small computer shops and mail order outlets.

My major headache concerns a high street store better known for selling aspirin than computers.

Last summer I bought a Micro Peripherals disc drive and interface for my QL. After three months of moderate use the

interface developed a fault, so I returned it to a branch of the supplier.

Over three and a half months later the unit was returned (first the interface, then the disc drive a week later) in a worse condition than when it was taken in for repair. The disc drive rattled, and would no longer read my double sided discs.

The drive is now with the chain's head office. I have been without the use of it for four and a half months out of the last eight, and can still see no prospect of a refund or replacement. Surely this is totally unreasonable behaviour on the part of a national chain store?

Michael L Jackson
Burton on Trent

The Amiga vs Atari ST debate continues

I would be grateful if you could give me some advice on the Amiga 500 vs Atari ST debate. I have £600 to spend on one of them, and require stunning graphics, great sound, and a huge amount of software to choose from.

Do the ST and Amiga 500 both have these attributes? Are they both good for playing games on? Will more software be written for them (ie, the QL died because of little interest from software houses)?

George McGuckin
Glasgow

Both the Amiga 500 and ST have graphic capabilities far superior to those on 8-bit machines. The sound chip in the Atari ST is the AY38910; while this is the same chip as in the Amstrad 464, for example, the sound potential on the ST are greater, thanks to its Midi connections. The Amiga contains a custom sound chip and also has the option of stereo output.

Neither machine has a huge software base as yet. While the list of software available is growing for both machines, in the UK at least, the ST is ahead in this respect at the moment.

The machines are both "good" for playing games on, though you should bear in mind that games playing is not entirely what Commodore and Atari had in mind when designing them. Should you wish to turn to more business-orientated applications

later, both will be suitable.

We believe that software companies will continue to write in ever increasing numbers for the Amiga and ST. Most major houses already include at least the ST in their plans for future releases, and when the Amiga 500 becomes available in the shops later this year, it should be gradually included as well in companies' plans.

Repairing points

Having read your April 10 issue, I feel prompted to write regarding a couple of points.

Firstly, the item in News Desk regarding Amstrad, the BBC and the PC1512.

I run the computer department of a large high street store. We have a PC1512 with double drive and colour monitor on display.

This machine is on from 9.00am in the morning until 5.30pm (8.00pm on Thursdays) six days a week. It has never shown any sign of overheating and we have never had any problems with it (apart from when the clock batteries were flat!).

All our customers who have purchased one from us have been satisfied and we have had no bad feedback from any of them.

Secondly, I would like to congratulate John Anderson (Letters, April 10). This man has achieved the impossible! He has actually managed to get a phone call through to Verran!

Tell me, how did you do it? Every time I phone the line is engaged. On the rare occasions that I have got through, I too have come up against the "waiting for parts" for Commodore machines, and many of those returned to me 'repaired' have gone faulty again shortly after.

Of course, the customer doesn't seem to realise that this is not my fault, so I bear the brunt of their temper.

On the whole though, I would like to say that the service from Verran is satisfactory and it is not all that often that I have to contact them.

One more point I would like to make is that Amstrad computers are by far the most reliable available at the moment. Since we started dealing with the Amstrad range, we have had none back from the PCW and PC range, and of the CPCs, we only ever had one 6128 monitor returned.

This was returned to Amstrad by us for repair, and to our surprise, a brand new monitor was delivered a week later. Surely that speaks for itself.

Name and address supplied

The battle of the computers

I am writing with regard to the test made by Alastair Watt in Letters, March 20. In his test Mr Watt stated that the Amstrad PC showed incredible timings for drawing and calculating on the screen. Well, I have done the same test with my Atari ST and GFA Basic and frankly I think the PC1512 is far from "dramatic" as Mr Watt would have you believe.

The time on my ST was 14.1 seconds. Timing for the Spectrum showed 414 seconds and the so called famous Amstrad PC 56 seconds. In other words the ST was 29 times faster than the Spectrum and four times quicker than the PC. If you

consider the fact that Basic is perhaps the worst language to use on a 16-32-bit micro (in terms of speed that is), the reaction of Tramiel in saying that PCs are more than dated is logical.

The support Amstrad has had from the British press is unequalled in any other country. And so it is not difficult to maintain a so-called majority in the British computer world.

But look, dear readers, at what kind of machines you have bought: Spectrums which are completely out of the top 10 in Europe (even MSX is outselling them many times), CPC models which use weird 3 inch discs and with very expensive options to change monitors. Not to mention all those users who had to upgrade from 464 to 664 to the 128K version to the PCW "Joyce".

I think it is time that British users come out of their "national" views of the computer industry and see what the rest of the world has to offer. MSX 2 is good and so are the Amiga and the ST. On the ST I have now five operating systems, GEM-TOS, CP/M, MS-DOS in soft(!), the Macintosh (in soft! - from Germany and far more compatible than the famous "emulator"), and OS-9.

I agree that you could stick with your old Speccy, but upgrading it for a PC is like selling a bike to use the local bus.

Now, why are there so many business users out there who stick with old MS-DOS? Well, it means they are salesmen with no knowledge on the subject. So they are buying local bus tickets for the price of a Jaguar. It's not their money of course. No, it's yours...

Benny Bosmans
Belgium

Forcing black's queen

The readers' latest move in Game Two of the *Colossus* chess tournament is to attack black's queen with their bishop, forcing *Colossus* to move its queen to e6.

Casting your vote

How would you continue the readers' attack? Send your suggested move to either Inter-Mediate (*Popular Chess*), Freeport, Sawbridgeworth, Herts CM21 9YA (no stamp needed), or *Popular Chess*, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp).

All entries must reach either address by Wednesday, May 13.

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.

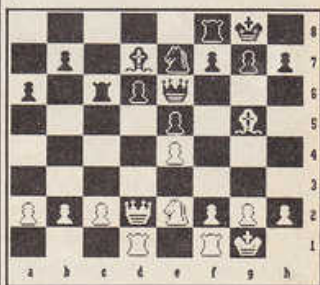
Prizes

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* will go to the most consistent entrants.

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

Game Two

- | | |
|---------------|------------|
| 1 Pe2-e4 | Pc7-c5 |
| 2 Ng1-f3 | Nb8-c6 |
| 3 Pd2-d4 | Pc5xd4 |
| 4 Nf3xd4 | Pe7-e5 |
| 5 Nd4-b5 | Pa7-a6 |
| 6 Nb5-d6+ | Bf8xd6 |
| 7 Qd1xd6 | Qd8-f6 |
| 8 Qd6-d1 | Ng8-e7 |
| 9 Nb1-c3 | Pd7-d6 |
| 10 Bc1-e3 | Ke8-g8 o-o |
| 11 Bf1-e2 | Bc8-d7 |
| 12 Ke1-g1 o-o | Re8-c8 |
| 13 Qd1-d2 | Nc6-d4 |
| 14 Ra1-d1 | Nd4xe2+ |
| 15 Nc3-e2 | Rc8-c6 |
| 16 Be3-g5 | Qf6-e6 |
| 17 ? | |



We're sorry but *Popular Computing Weekly* cannot guarantee to reply to all letters requesting a personal answer. It helps us enormously if readers are prepared to have general queries answered on these pages, so, if possible, please do not send SAEs.

Last week, we printed the first token and order form for the *Popular/Simmons Spectrum Micro Source* offer. Here is the second and last token you need to send for yours.

**Popular/Simmons
Micro Source
special offer**
Token No. 2

Atari plans research facility in Europe



The Mega ST - part of Tramiel's push into specialist technology

ATARI chairman Jack Tramiel has plans to set up a 'software centre' in the UK later this year.

This is expected to be an advanced software development unit, along the lines of Sinclair Research's Metalab, set up in 1984 to research into hardware technology.

Tramiel is believed to be in negotiation with programming

teams to staff the unit; apparently the decision has been taken to place the software centre in the UK due to the programming expertise in this country. While in the UK for the recent Atari show, he is reported to have said, "I can smell the success here".

While it is thought that the research centre will be looking

at RISC (Reduced Instruction Set Chip) technology, no details have been released yet.

Atari is also considering setting up a research and development centre in West Germany, which will concentrate more on hardware innovations, and a computer manufacturing plant in North America. The Atari range of micros is currently manufactured in Taiwan.

Jack Tramiel: "I can smell the success"



Amiga 500 on show to over 18s only

Commodore has confirmed that it will launch the Amiga 500 to the public at the Commodore show, starting on June 12.

However, the machine will be displayed in the Commodore Business and Amiga Expo suite, which is only open to those over 18 years old.

The suite is an area which will specialise in new Amiga products for serious home and business use.

Camel Eprom blower now from Alphacam

CAMEL Products' Eprom blower Bloprom-RS is now available from Alphacam.

Bloprom-RS connects to any micro with an RS232 with RTS/DIR and CTS handshake lines.



Bloprom-RS costs £189.95 from Alphacam, and is available for the IBM PC, BBC, QL and Spectrum micros. The price includes a cable and disc (micro-drive for QLs).

Details from Alphacam at The Old Maltings, 135(9) Ditton Walk, Cambridge CB5 3QD, 0223 214214.

New micros for Flash Gordon

MASTERTRONIC is converting its Commodore 64 hit *Flash Gordon* to the Spectrum, Amstrad CPC, MSX and Atari 8-bit machines. The program will be available in June at Mastertronic's MAD range price of £2.99.

Correction

LAST week, we printed a picture on page 13 which we claimed was John Speller of Micropro.

In fact, this was a dastardly lie, since it was Ray Evitts of Origin/Microprose. The real John Speller is pictured below.



Digital Research moves away from mass market

DIGITAL Research is to move away from the mainstream operating system market, and will be concentrating on vertical markets and multi-user applications, particularly with its Concurrent DOS 286 system.

However, DR's UK vice president Paul Bailey said that this move would make no difference to work on Gem, the DR operating system packaged with the Atari ST and Amstrad PC1512 machines, among others.

"We have three main markets," he said. "Multi-user micros, specialist industrial auto-

mation and graphics systems on DOS. We are totally committed to all three, although the main focus is on the multi-user markets.

"Gem is absolutely strategic to us; for example, when Atari brings out its new PC in August (see *Popular Computing Weekly*, May 1), there will be *Gem Desktop*, *Gem Paint*, and *Gem Write* on it."

Bailey also affirmed his support for Amstrad, should Amstrad bring out further versions of its PC compatibles later this year as expected.

Activision and Codemasters in Grand Prix row

A ROW is brewing between budget newcomers Codemasters and American owned Activision over a recent Codemasters release, *Grand Prix Simulator*.

It is alleged similarities between that and the coin-op *Super Sprint*, licensed by Activision, which is causing the argument.

Events started with Activision contacting Codemasters, alleging that *Grand Prix Simulator* - already a best selling title on the CPC - infringes its copyright and stating that unless the game was withdrawn from the market, a High Court injunction would be sought and damages claimed against projected loss of revenue.

Codemasters strongly denies the allegation and so far has refused to comply with Activision's demands.

Said Codemaster's David Darling, "They're both overhead racing games, but within that restriction, no specific points are the same. I'm confident that if it got to court, we'd win."

To date, both companies have put the matter into the hands of their respective lawyers, and the dispute remains unresolved.

The battle could prove something of a test case. Previous disputes over licensing copyright have usually concentrated on specific sprite design and screen layout - certainly not the case between *GPS* and *Super Sprint*. If Activision wins on the premise that the general game concept is part of the licence, the implications are enormous.

At the time of going to press, representatives from Activision were unavailable for comment.

New report cites harm from VDU exposure

THE most detailed report so far into the effects of VDUs on users was issued last week, and concludes that VDUs are harmful.

The report was commissioned by the council workers' union NALGO, and published by the VDU Workers' Rights Campaign. It examined the effects of VDU use on 3,000 employees of the London Borough of Newham, and found some startling conclusions.

Most reports of this nature have proved inconclusive. However, in the NALGO report more than three-quarters of those users who were interviewed complained of blurred vision and painful eyes. Psychological and social effects such as depression were common, particularly among women.

Further problems, such as stress, are caused by computer breakdowns and printer noise.

In other countries, for example Sweden, Norway and West Germany, VDU users are protected by statutory health and safety legislation. But in the UK there is no such legislation only employer-specific agreements.

"We can't understand the reluctance to have VDUs built in to current standards. It's vitally important that they are," said campaign worker Irene Hamilton.

Hamilton wants to see all VDUs shielded against electromagnetic radiation at the point of manufacture.

"And all equipment should come with an anti-glare screen and a detachable keyboard," she went on.

The report is available from the VDU Workers' Rights Campaign, City Centre Project, 32-35 Featherstone Street, London EC1.

SOFTWARE HOTLINES



Distractions - quite a sensible name for a new games compilation for the PCW, from veterans **Design Design** which, believe it or not, has been around now since early 1982.

The compilation contains conversions of three of its recent releases. *NEXOR*, *On The Run* and *2112AD* which, **Design Design** say, covers all the ground between shoot-em-ups and problem solvers that should "satisfy even the Mensa minds". Errr, lads, if you had a Mensa mind, would you buy a PCW?

Another sensible name, **Sensible Software**, whose previous efforts include *Galaxibirds* and *Parallax*.

Sensible is an Essex based programming duo consisting of Jon Hare and Chris Yates who have just written a great little game for Ocean, called *Wizball* (see screen shot below), in which you play the part of a wizard and his cat. What has happened is that an evil mouse has stolen all the colours out of the eight levels of the game, a situation you must rectify.

As you might guess from the title of the game, there's quite a bit of bouncy-bouncy involved, as your wizard is in ball-like form for most of the time, but there's one hell of a lot of shooting as well, with an extra-powers thing artistically inspired by *Nemesis*, et al.

The vital extra power to get is the cat, which appears as a smaller ball, following you around - but under independent control when the fire button is depressed. It's with the cat that you have to collect the drops of paint that fall to the ground when you zap certain blobs.

Out at the end of May on Commodore, Spectrum and probably Amstrad, too, it's well worth a look.

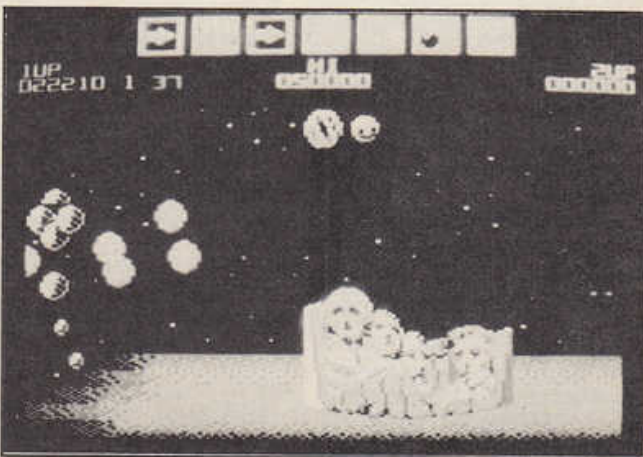
But, let's face it, there are times when nothing but a bit of gratuitous violence will do, so why not load up *Prohibition*, from **Infogrames**.

On ST now, with 8-bit versions following, you are faced with the front of a building, around which you smoothly scroll, blowing away gangsters that appear at windows, under drain covers, etc. Failure to do this within a strict time limit will result in your own demise. Good stuff.

Hey! Licensing deal of the year, the kids will love it, hot cakes will not hold a candle to the sales and it could be the saving of the whole of Argus Press Software - from **Quick-silva**, *The Tube*.

But wait. No Paula. No Jools. It's a shooter. Still, if only they can get Tyne Tees to ban it, who knows...?

John Cook



DIARY DATES

MAY

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

JUNE

12-14 June Commodore Show

Novotel, Hammersmith
Details: First public showing of A500 and A2000 Amigas
Price: £3 adult, £2 children
Organiser: Database Exhibitions, 061-456 2991

30 June-2 July PC User Show

Olympia, London
Details: Hardware and software for all users of IBM PCs and compatibles
Price: £5
Organiser: EMAP International Exhibitions, 01-608 1161

JULY

10-12 July Amstrad Computer Show

Alexandra Palace Pavilion, London
Details: Displays and demonstrations of all latest hardware, software and peripherals for Amstrad computers
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.

Off the Hook follow-up tape to aid NSPCC

A CHARITY tape in aid of the NSPCC is to be launched this summer, "probably in June".

The organisation behind the publication of the tape is being co-ordinated by Rod Cousens of Activision, as a follow-up to previous ventures, *SoftAid* and *Off the Hook*.

"The compilation is in the final stages of assembly," said Cousens. "It will include *Xeno* by Argus Press, Digital's *Night Gunner*, Realtime's *Starstrike*

(1), and Gremlin's *Monty on the Run*, so far, and there will be ten titles in all."

The compilation has been put together in conjunction with the NSPCC, which has donated packaging, and will sell the tape in its own stores. It will also be available in normal computer outlets. The compilation will be available for Spectrum, Commodore and Amstrad machines and full details will be available in the next couple of weeks.

So far, the software industry has raised more than £30,000 for the NSPCC, mainly from its InDin dinner last December. But Cousens says that about 10% of the money pledged by companies has still not been paid.

"I hope that we'll raise more than £100,000 for the NSPCC," said Rod Cousens. "That will make it the third year running that we've raised over £100,000 for charity, after *SoftAid* and *Off the Hook*."

IIGS word processor out in UK

MGA Microsystems is selling *Graphicwriter* for the Apple IIGS from Californian company Datapak.

Graphicwriter is a page layout program, incorporating word processing and drawing functions, all mouse controlled. Graphics can also be ported over from other programs such as *Paintworks Plus*.

Graphicwriter costs £149.45 inclusive. Details from MGA Microsystems, 140 High Street, Tenterden, Kent TN30 6HT, 05806 4278.

Silent Service banned in West Germany

THE simulation game *Silent Service*, by Microprose, has been banned from open sale in West Germany.

the ban comes under the Youth Dangerous Publications List legislation; apparently *Silent Service*, which simulates a World War II submarine operation is "too realistic".

The decision means that the game has been relegated to regulated outlets such as sex shops.

Microprose's president Bill

Stealey plans to appeal against the ban.

● Microprose has moved into the hardware market with the announcement of a second joint venture agreement with a US company.

Following last month's deal with Origin, Microprose has signed up with Suncom, to distribute its range of joysticks and peripherals, including monitors and accessories such as disc storage cases and printer stands.

Major Bill Stealey of Microprose with some of the company's "controversial" products



Audiogenic needs programmers

AUDIOGENIC, admitting that it is no longer in the top ten of software companies, is starting a recruitment drive for programmers.

The company is offering an Amiga 500 for any programmer it takes on whose program then makes the top ten in the Gallup software charts. An Amiga 2000 goes to any programmer whose product makes it to number one.

Audiogenic can be contacted at 12 Chiltern Enterprise Centre, Station Road, Theale, Berkshire, 0734 303663.

TECHNOLOGY SO ADVANCED ...

MEMORY

- * 512Kbytes RAM (520ST-M, FM)
- * 1024Kbytes RAM (1040ST-F)
- * 128Kbytes ROM
- * 128Kbytes external plug-in ROM option

ARCHITECTURE

- * Motorola 68000 Central Processing Unit (CPU) with a clock speed of 6MHz
- * 16-bit external data bus
- * 32-bit internal data bus
- * 24-bit address bus
- * 8x32-bit data & address registers
- * 7 levels of interrupts
- * 56 instructions
- * 14 addressing modes
- * 5 data types
- * DMA (Direct Memory Access)
- * real time clock as standard

GRAPHICS

- * full bit-mapped display
- * palette of 512 colours
- Using Atari Monitors (on 520 & 1040):**
 - * 640x400 high resolution - monochrome
 - * 640x200 medium resolution - 4 colours
 - * 320x200 low resolution - 16 colours
 - * 80 column text display (40 col low res)
- Using Domestic TV (on 520):**
 - * 640x200 medium resolution - 4 colours
 - * 320x200 low resolution - 16 colours
 - * 40 columns x 25 line text display

SOUND AND MUSIC

- * 3 programmable sound channels
- * frequency programmable 30Hz - 125KHz
- * programmable volume
- * wave & dynamic envelope shaping
- * programmable attack, decay, sustain, release
- * Musical Instrument Digital Interface (MIDI)
- * MIDI allows connection of synthesizers etc.



MOUSE

- * high precision
- * 2 button control
- * free with 520ST-FM/1040ST-F
- * non slip ball motion sensor
- * removable ball for easy cleaning

STANDARD SOFTWARE

- * GEM desktop + TOS operating system
- * ST BASIC interpreter/language system

INPUT/OUTPUT

- * MIDI out (5 pin DIN) 31.25K baud
- * MIDI in (5 pin DIN) 31.25K baud
- * audio out 1.0V DC peak to peak, 10K ohm
- * audio in 1.0V DC peak to peak, 10K ohm
- * RGB monitor 1.0V DC, 75 ohm
- * mono monitor 1.0V DC, 75 ohm
- * mono horizontal scan rate 35.7KHz
- * mono vertical scan rate 71.2KHz
- * sync 5V DC (active low) 5.3K ohm
- * modem/serial RS232C, 50 to 19.2K baud
- * floppy disk 250 Kbits/s
- * hard disk 11.3 Mbits/s
- * mouse standard Atari connector
- * joystick standard Atari connector
- * cartridge port 128K capacity
- * RF output (520ST-FM) for TV use

OPERATING SYSTEM

- * TOS with GEM environment in ROM
- * hierarchical file structure with sub-directories and path names
- * user interface via GEM, with self explanatory command functions
- * multiple windows + icons
- * window resizing, re-positioning and erasing
- * drop down menus (selected by mouse)
- * GEM virtual device interface

COMMUNICATIONS

- * RS-232C serial modem port
- * 8-bit parallel printer port
- * MIDI port (also for networking use)
- * VT52 terminal emulation

KEYBOARD

- * standard QWERTY typewriter format
- * 95 full stroke keys
- * 10 function keys
- * 18 key numeric keypad + cursor keys
- * variable auto-repeat & key click response
- * keyboard processor reduces CPU overhead

... IT'S AFFORDABLE

ONLY FROM SILICA

Finally, there's a personal computer that not only solves problems like other computers, but also solves the one problem that other computers have created. Affordability. Silica Shop are pleased to present the ST range of personal/business computers from Atari. The ST was designed utilizing the most recent breakthroughs in semiconductor technology, producing a personal computer that performs tasks with fewer parts. Which means it costs less to make. And less to buy. The latest ST computers now include built-in power supplies and built-in disk drives. The TOS operating system and GEM window environment are now on ROM chips which are already installed in the ST keyboard. This enables automatic instant booting when you switch on. Silica Shop are pleased to offer the complete Atari ST range. Our mail order department is situated in Sidcup and we have 4 retail outlets at Sidcup, Orpington, Lion House (Tottenham Court Rd) and Selfridges (Oxford Street). We have eight years experience of Atari products, longer than any other UK company, and are well established as the UK's No.1 Atari specialist. With a group turnover of over £5 million and in excess of 70 staff, we provide unbeatable service and support. We provide several facilities which you will find invaluable during your Atari computing life and most of these facilities are available ONLY FROM SILICA. We suggest that you read through what we have to offer, before you decide where to purchase your Atari ST.

FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package: * BASIC Language Disk * BASIC Manual * ST Owners Manual * TOS/GEM on ROM. If you buy your ST from Silica Shop, you will also receive: * NEOchrome - colour graphics program * 1st Word - Word Processor. In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special **ST STARTER KIT** worth over £100, which we are giving away **FREE OF CHARGE** with every ST computer purchased at our normal retail prices. This kit is available ONLY FROM SILICA, and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

DEDICATED SERVICING - Only From Silica

At Silica Shop, we have a dedicated service department of five full time Atari trained technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in their field. You can be sure that any work carried out by them is of the highest standard. A standard of servicing which we believe you will find ONLY FROM SILICA. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is also able to offer memory and modulator upgrades to ST computers.

1Mb RAM UPGRADE: Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £58.95 (inc VAT).

TV MODULATOR UPGRADE: Silica can upgrade the 1040ST-F to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any unsightly external boxes. A cable to connect your ST to any domestic TV is included in the price of the upgrade which is only £49 (inc VAT). The upgrade is also available for early 520ST computers at the same price.

THE FULL STOCK RANGE - Only From Silica

We aim to keep stocks of all Atari related products and our warehouse carries a stock of £1 million. We import many software titles direct from the USA and you will find that we have new releases in advance of many of our competitors. Unlike dealers who may only stock selected titles, we have the full range. In addition, we carry a standard of servicing which we believe you will find ONLY FROM SILICA. A range as wide as ours is something you will find is available ONLY FROM SILICA.

AFTER SALES SUPPORT - Only From Silica

Rest assured that when you buy your ST from Silica Shop, you will be fully supported. Our free mailings give news of releases and developments. This will help to keep you fully up to date with what's happening in the Atari market. And in addition, our sales staff are at the end of a telephone line to service all of your Atari requirements. If you purchase an ST from Silica and would like any programming or technical advice, we have a full time technical support team to help you get the best from your computer. Because we have both the staff and the systems specifically dedicated to providing after sales service on Atari ST computers, we are confident that our users enjoy an exceptionally high level of support. This can be received ONLY FROM SILICA.

FREE CATALOGUES - Only From Silica

At Silica Shop, we recognise that serious users require an in-depth information service, which is why we mail free newsletters and price lists to our ST owners. These are up to 48 pages long and are crammed with technical details as well as special offers and product descriptions. If you have already purchased an ST and would like to have your name added to our mailing list, please complete the coupon & return it to us. The information service is available ONLY FROM SILICA.

FREE OVERNIGHT DELIVERY - From Silica

Most orders are processed through our computer within 24 hours of receiving them. Most hardware orders are sent by the overnight METRO courier service FREE OF CHARGE to customers within the UK. This method helps to ensure minimum delay and maximum protection.

PRICE MATCH - Only From Silica

We hope that the combination of our low prices, FREE UK delivery service, FREE Starter Kit and FREE after sales support, will be enough to make you buy your Atari equipment from Silica Shop. If however, there is something you wish to purchase, and you find one of our competitors offering it at a lower price, then please contact our sales department, providing us with our competitor's name, address and telephone number. If our competitor has the goods in stock, we will normally match the offer (on a 'same product - same price' basis) and still provide you with our normal free delivery. We realise that we are not the only company who will match a competitor's price. However, if you come to us for a price match, you will also be entitled to our after sales service, including free newsletters and technical support. This makes our price match promise rather special, something you will receive ONLY FROM SILICA. We don't want you to go anywhere else for your Atari products. So shop at Silica, the UK's No.1 Atari Specialist.

SIDCUP (& Mail Order) 01-309 1111
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

LONDON 01-580 4839
Lion House (1st floor), 227 Tottenham Court Rd, London, W1

LONDON 01-629 1234 ext 3677
Selfridges (1st floor), Oxford Street, London, W1A 1AB

520ST-M

The affordability of Atari computers is reflected in the price of the 520ST-M keyboard, which is a mere £259 (inc VAT). This version of the ST comes with 512K RAM, as well as a modulator and lead for direct connection to any domestic TV. The price does not include a mouse. In addition, when you buy your 520ST-M from Silica, you will also receive the FREE Silica 'ST Starter Kit'. During 1987, many software houses will be producing games software on ROM cartridges, which will plug directly into the cartridge slot on the 520ST-M keyboard, giving instant loading without the expense of purchasing a disk drive. With the enormous power of the ST, you can expect some excellent titles to be produced, making this the ultimate games machine! If your requirement is for a terminal, then the 520ST-M can fulfil this role too. Leads are available to connect the ST to a variety of monitors, and with the imminent introduction of terminal software on ROM cartridge, the ST provides a low price terminal for business use. If you wish to take advantage of the massive range of disk software available for the ST range, you will need to purchase a disk drive. Atari have two floppy disk drives available, a 1/4 Mbyte model £149 and a 1/2 Mbyte model £199. Full details of these drives, as well as the Atari 20Mbyte hard disk are available on request. If required at a later date, the mouse may be purchased separately.

£259

520ST-FM

The 520ST-FM with 512K RAM and free mouse, represents a further breakthrough by Atari Corporation in the world of high power, low cost personal computing. This model is the latest addition to the ST family, and is not only powerful, but compact. It is priced at only £399 (inc VAT) a level which brings it within the reach of a whole new generation of computer enthusiasts. When purchased from us, it comes with the FREE Silica 'ST Starter Kit' see paragraph on the left. To make the 520ST-FM ready for use straight away, Atari have built into the keyboard a 1/4 megabyte disk drive for information storage and retrieval, allowing you easy access to the massive range of disk-based software which is available for the ST. This new computer comes with all the correct cables and connections you will need to plug it straight into any standard domestic television set. You do not therefore have to purchase an Atari monitor. If you do require a monitor however, these are available with the 520ST in the following money saving packages.

- 520ST-FM Keyboard + Without Monitor - £399 (inc VAT)
- 520ST-FM Keyboard + High res mono monitor - £499 (inc VAT)
- 520ST-FM Keyboard + Low res colour monitor - £599 (inc VAT)
- 520ST-FM Keyboard + Med res colour monitor - £699 (inc VAT)

Because the 520ST-FM has its own power transformer built into the keyboard, there are no messy external adaptors to clutter up your desk space. You are left with only one main lead, serving both the disk drive and the computer. You couldn't ask for a more stylish and compact unit.

£399

1040ST-F

For the businessman and the more serious home user, Atari have their most powerful model, the 1040ST-F with 1024K RAM. This low cost powerhouse can be introduced into a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F not only features twice as much memory as the 520ST-FM, but also includes a more powerful built-in disk drive. The drive featured on the 1040ST-F is a one megabyte double sided model. The extra memory facility of the 1040ST-F makes it ideal for applications such as large databases or spreadsheets. Like the 520ST-FM, the 1040ST-F has a mains transformer built into the console to give a compact and stylish unit with only one main lead. The 1040ST-F is also supplied from Silica Shop with a free software package and 'ST STARTER KIT'. In the USA, the 1040ST-F has been sold with a TV modulator like the 520ST-FM. However, for the UK market, Atari are manufacturing the 1040ST-F solely with business use in mind and it does not currently include an RF modulator, this means that you cannot use it with a domestic TV (Silica Shop do offer a modulator upgrade for only £49). The 1040ST-F keyboard costs only £599 (inc VAT) and, unless a modulator upgrade is fitted, will require an Atari or third party monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

- 1040ST-F Keyboard + Without Monitor - £599 (inc VAT)
- 1040ST-F Keyboard + High res mono monitor - £699 (inc VAT)
- 1040ST-F Keyboard + Low res col monitor - £799 (inc VAT)
- 1040ST-F Keyboard + Med res col monitor - £899 (inc VAT)

The 1040ST-F comes with a mouse controller and includes 1Mbyte of RAM. It has a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one main lead.

£599

ATARI ST

To: Silica Shop Ltd, Dept PCWK 0287, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME FREE LITERATURE ON THE ATARI ST

Mr/Mrs/Ms: Initials: Surname:

Address:

.....

.....

.....

.....

.....

Postcode:

Do you already own a computer

If so, which one do you own?



NEXT
WEEK

Load It

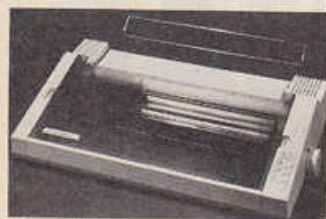
Help is at hand for all users of Commodore's C2N datasette recorder. Load It claims to solve alignment problems once and for all. Chris Jenkins checks it out.

Spectrum keyboards

Anthony Reid takes you through a DIY project to build your own Spectrum keyboard. If you're still suffering with the rubber keys, or down on your hands and knees picking up loose keys from the Spectrum Plus, this could be the article for you.

Software

Everything You Ever Wanted to Know about Graphics, the Universe and Everything on the 8256. Er... that's a product title! We find out just how comprehensive it is. Plus *Maxam II* by Arnor, an assembler and monitor for Amstrad CP/M Plus.



Amstrad DMP4000

Tony Kendle tests Amstrad's latest printer, promoted for the PC1512 range, but compatible with any micro with a standard parallel printer output.

Programming in C

Kenn Garroch continues his series on programming in C, taking you further into programming techniques.

Z88 DELAYS CONTINUE

SIR Clive Sinclair's Z88 portable machine is suffering further delays and first orders are not now expected to be delivered until mid-May. However, Sir Clive is already talking to retailers about the possibility of stocking the Z88 in the summer.

He puts the delays down to merging the software suites together as a whole. "It's still not complete - we've got the chunks, now they need to be merged into one."

Sir Clive would not reveal how many orders had been placed

for the Z88 so far, but he did add that he was setting up a second production line for the machine, in addition to Thorn Datatech.

"The deal hasn't been signed yet, so I can't name names at the moment, but the second line will be there," he said.

The Z88 - still not delivered

Locoscript II
now due in
mid-May

THE "imminent" release from Locomotive Software of *Locoscript II*, the long awaited upgrade to the word processing software bundled with the Amstrad PCW machines (see *Popular Computing Weekly*, April 17), is now scheduled for mid-May, with the first copies going out around May 12.

According to Locomotive, all those who have already ordered the program will have been informed by letter of the probable despatch date, and it was emphasised that no cheques would be cashed until that time.

RPGs in new
TV series

ANGLIA TV is to transmit a networked series on role playing games in September. The series will take the form of an actual game, *Knight Mare*, being played on air.

Although it will be screened during the late afternoon, Anglia hopes it will attract a number of adult viewers.

Computer game rights to *Knight Mare* are expected to be announced within the next week or so.

Electronic Arts
gets Batteries

ELECTRONIC Arts has acquired Batteries Included, the Canadian software house best known for its *Paperclip* word processing package.

The deal should make Batteries' products more readily available in this country - Electronic Arts recently set up its own office in the UK (see *Popular Computing Weekly*, March 27).

Mastertronic drops
Melbourne's
Gadget

FOLLOWING the move, last week, of the majority of the Melbourne House staff to the Mastertronic Paul St offices, came an announcement concerning the fate of the Melbourne House game, *Inspector Gadget and the Circus of Fear*.

Inspector Gadget, which had reached an advanced stage of production, with review copies already sent out to the press, has been withdrawn.

According to Mastertronic's Frank Herman, the reason's behind the decision were simple.

"It wasn't as good as the average Mastertronic game - so we couldn't justify asking full price for it," he stated.

Programmed by Australian software house, Beam Software - author of much of the Melbourne House output - *Gadget* was an arcade game based on a French Clouseau-like cartoon

character, and according to Herman, Beam has "accepted the decision as fair."

The software industry has not seen the last of *Gadget* however, as the licence has been maintained and another game based on the character will be written by Beam, with release around the time of the PCW Show.

Herman continued, "We're committed to producing super software from Melbourne House," adding somewhat bullishly, "It would have to be super to be as good as Mastertronic."

● The first two arcade machines from Arcadia, the new Mastertronic financed coin-op designers, have almost been completed - including a product under the name of *Rockford*. See next week's *Hotlines* for details.



Microprose, the World's leading software simulation company and creators of F-15 Strike Eagle, Silent Service, and Gunship – 'the new and ultimate helicopter simulation'.

★ ★ ★ ★ ★

Microprose invites new and original games with a view to software being published worldwide. Microprose can offer high advances and top royalty rates to the sort of people who can produce award winning software within the confines of 8- or 16-bit machines.

CAN YOU MEET THE ULTIMATE CHALLENGE?

**PLEASE CONTACT:
THE SOFTWARE DEVELOPMENT MANAGER
MICROPROSE SOFTWARE LTD
2 MARKET PLACE, TETBURY
GLOUCESTERSHIRE GL8 8DA**



RANARAMA BY STEVE TURNER
JUST ONE OF A STRING OF ORIGINAL HITS FROM

HEWSON

WE'RE GRABBING GAMES!

*We're scouring the country, we're looking everywhere.
Searching high, searching low. Under every stone, behind
every door.*

WHAT ARE WE LOOKING FOR?

Games. Computer games. Simple games, sophisticated games. Long games and short games. Quick games and quirky games. Shoot-em-ups and arcade adventures, sports games and combat games. All different sorts of games. You name it, we want it.

If you've got a game, send it to us now for an instant opinion. If we like it we'll pay you well for a good job well done. And if we like you we'll guarantee you original and/or conversion work for the future if that is what you want.

So grab yourself a piece of the action. Send your game NOW to:

**Mr Mark Whiffen,
Assistant Product Manager,
Hewson Consultants Limited,
56B Milton Trading Estate,
Milton, Abingdon, Oxon
(0235) 832939**

HEWSON



PROGRAMMERS!!

The definitive reference guide for all aspiring game programmers

FREE when you subscribe to:

POPULAR COMPUTING WEEKLY

- ★ Will help you write high-quality marketable computer games software.
- ★ Explains what qualities you need to succeed and the pitfalls to avoid.
- ★ Extensive advice on writing and marketing the software.

ORDER FORM

Please enter my annual subscription to *Popular Computing Weekly* at **£25.00 UK, £39.95 Overseas** and send me my **FREE** copy of "Success in Software"

☐ Please debit my Access/Visa/AmEx card no:

☐ I enclose a cheque made payable to:

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

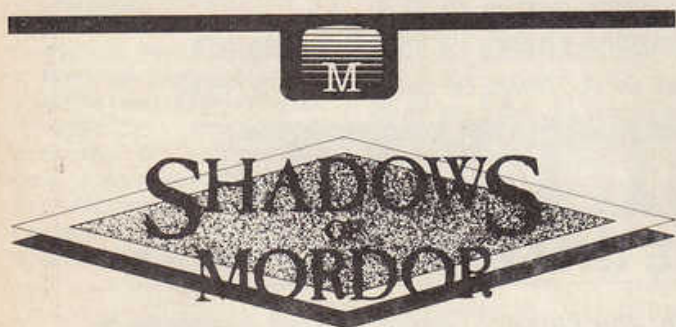
Sunshine Publications Ltd.

Expiry date: Signature:

Name:

Address:

Return this form to: PCW Subs, 12-13 Little Newport Street, London WC2H 7PP, UK.



You've played The Hobbit ...
You've played Lord of the Rings ...

Now play Shadows of Mordor ...
Lord of the Rings Game 2

THE MAIL ORDER SOFTWARE SOCIETY 'THE BEST THING SINCE SLICED BREAD'

'Try Before You Buy'

GAMES FOR

SPECTRUM - MSX - AMSTRAD - COMMODORE

BBC - ELECTRON - ATARI

IT COSTS NOTHING TO FIND OUT

Send your name, address and which computer(s) you have to:

(No stamp required)

M.S.S.

FREE POST, P.O. Box 57, Doncaster,
South Yorkshire DN4 5BR

TALENT

COMPUTER SYSTEMS SINCLAIR QL SOFTWARE

Find out about our great range of twenty-one top quality programs - utilities, graphics and games. Phone or write for a **FREE** illustrated Mail Order Catalogue **today!**

TALENT COMPUTER SYSTEMS

Dept PCW
Curran Building
101 St. James Road
Glasgow G4 0NS
Tel: 041-552 2128

CRIME AGAINST COMPUTERS

Computer crime is not an area that most people take seriously. But quite a lot of damage can be done by computer criminals, and, as John Brissenden reports, the trend is growing.

They call it "white-collar crime". A lot of people don't take it seriously until it happens to them. But the problem is growing all the time.

It used to be a blanket term for company fraud, but is now most closely linked with computer crime - fraud, theft, arson, sabotage, forgery or other misuse with, or of, computer systems.

The effects of computers are growing in all directions. There are more systems in use. Computers are handling more information. They are becoming more powerful and complicated. And more people are using computer systems.

So a major net result of all these factors is the growth of computer-related crime.

The area where most computer systems are used is within companies' business systems. So it is here that most computer crimes are committed. Some are plain fraud, committed for financial reward.

But others are more concerned with the computer system itself, and causing damage to it. This could be sabotage or malicious damage by someone outside the company, or by an insider. This could take the form of physical attack, eg, arson, or more often gaining access to restricted information, or even tampering with programs so as to cause vast and untraceable internal damage to the system - hacking. A third major area is software theft, or piracy.

Computer-related crimes are hard to define, hard to quantify, and even harder to spot. Why?

Detective Inspector John Austen is in charge of the computer crime unit of Scotland Yard. His team is part of the company fraud department of the fraud squad, and it's their job to deal with a whole range of computer-related offences.

It's the kind of crime that has a high public profile. It makes good news copy, and it's good box-office news as well - the young whizz-kid who gets caught fiddling millions of dollars out of a company, or the teenager who accidentally starts World War III on his micro.

But although the reality is sometimes nearly that spectacular, most of the time it may be mundane, or even unknown.

"It could be the case whereby a fraud has been committed, sometimes for large amounts of money, and it just so happens that a computer system is the vehicle that

just processes through the information," says Austen.

"We've had several instances where somebody's stealing money from a local

"It's the kind of crime that has a high public profile. It makes good news copy, and it's good box-office news as well"



Detective Inspector John Austen: in charge of computer crime, Scotland Yard.

government authority and they're in a department of the authority that deals with salaries and wages, and they just write out the form. Spurious form, spurious account, spurious personnel, and they'll just feed it in. Now it's open to interpretation as to whether that is a computer crime or not."

Another problem is that if a company discovers that an employee has been carrying out a fraud or other crime through the computer system, they are often reluctant to report the fact to anyone, including the police.

Some industry watchdog bodies, such as the Federation Against Software Theft, have put out estimates. FAST reckons that software theft or piracy alone is costing the industry £150 million a year. But Austen agrees that certain factors make it virtually impossible to gauge the size of the problem.

"How long is a piece of string? I think it's fair to say that there is a certain reluctance to report crime that's computer-related, more than say a person being mugged in the street or having their home broken into, because there are different considerations from the point of the victim... a certain amount of gullibility or embarrassment, which can reflect itself back on the victim, whether it be a company or a person.

"So I think that that's a fair estimation of perhaps why there is some reluctance. Although it's no good asking for hard evidence of it.

"One thing that I try to warn people about a little - I think that there are people who work in computing who are addicted to it, in the sense of they just won't leave the damn things alone.

"They'll play chess in their lunchtime, they'll go home, they sit and play *Space Invaders* all evening. There is a danger from people like that, because they hit a ceiling of boredom.

"This is the dilemma - if you want the brightest of bright young whizz-kids, he more than likely will be hooked upon his subject. But there are dangers in people who get hooked upon computing."

Do they consider the possibility of being detected?

"I don't think they do. If there is one thing that's rather unique about people who commit computer crime, it's that they tend

continued on page 14 ►

SPECIAL FEATURE

◀ continued from page 13

"The area where most computer systems are used is within companies' business systems, so it is here that most computer crimes are committed"

to be first offences. But that does tend to be rather unique with this sort of crime."

So how can the police attempt to combat computer crimes? Do the police Crime Prevention Departments have a role?

"They have given advice to companies, but the sort of crime prevention area that they cover is slightly different to ours. Whereas they will cover the physical side of securing policies, controls, etc. we tend to look and talk more about the logical and procedural side.

"It's talking about access levels, password controls, data processing procedures, encryption, what encryption to use if it's necessary, supervision of personnel.

"And I believe in sayin' and doin'. What I mean is that if I make a point, for instance about the use of passwords, we are in a position to give an example perhaps of an instance where that has led to problems.

"So it's all very well and good people talking about 'One should do this, one should do that,' but if you can show people by example, although not named example obviously, of the sort of things that have occurred, it brings it home to them.

"Even if you had a large establishment where you have a computer operator who's separate from a computer programmer, in my experience you often find that the operator is studying at night school to be a programmer anyway. And the programmer is studying at night school to be a systems analyst, and the analyst is studying to be a DP manager.

"So one never takes it for granted that because somebody is a mere data entry clerk that they don't know how to load a disc onto a machine, because they probably do.

"I decided four years ago, that if we were going to provide the public with a service in this police force that was going to give them specialist expertise in this field, that it would be necessary to put ourselves on something of a public platform, by going out and talking to people in the industry.

"We needed to make them aware of what we saw as the dangers and risks, the sorts of things to look for, to make them aware of the losses that can be sustained from determined attack on a computer system, and at the same time, to let them know that we are here not only to investigate crime, which is our primary role, but also to offer advice.

"And judging by my postbag and the telephone calls that we get, the latter has overtaken the former."

The area of computer crime that has had most coverage recently is hacking, the unauthorised access to data. Austen uses this as an example of how the unit secures convictions in this very difficult area. But is hacking as much of a danger as some people believe?

"I think that it's probably more hype. The hype that's generated tends to encourage people to try and do things that they can't do.

"Your normal teenager who's got a BBC micro and plays games on it, as quite a few of our youngsters do, gets bored with that and then they buy a modem and suddenly they're interested in public exchange networks, and probably think they have more capability than they do.

"I mean there's a lot of hype been generated about so-called secure systems like banking systems.

"Now whatever technology is produced and whatever enhancement one can put to a micro it is not possible with your BBC to start hacking into Bloggs' Bank - you can't do it.

"The Forgery and Counterfeiting Act of 1981 caters for the making of false instruments, with the intention of deceit, whether it be manual or electronic. And that's the Act upon which we prosecute hackers.

"Now what I mean by that is let's say you and I work for the same company. You have got access to our coded payroll. I haven't got access to the payroll, but I know what your password number is. Or I do a combination of things to try and get your

password.

"Immediately I attempt to do that I commit forgery of the database.

"Now this is particularly pertinent today to these ATM machines, these cash dispensers. A lot of people are under a misapprehension here. If I find a card in the street, if I don't know what the number is, there's no way that I'm going to find out what the number is. But let's just say I'm tempted to stick that card into a machine and as I don't know, I'll tap in one, two, three, four.

"What people may not realise is, that by doing that, putting in one, two, three, four, they are attempting to forge an instrument."

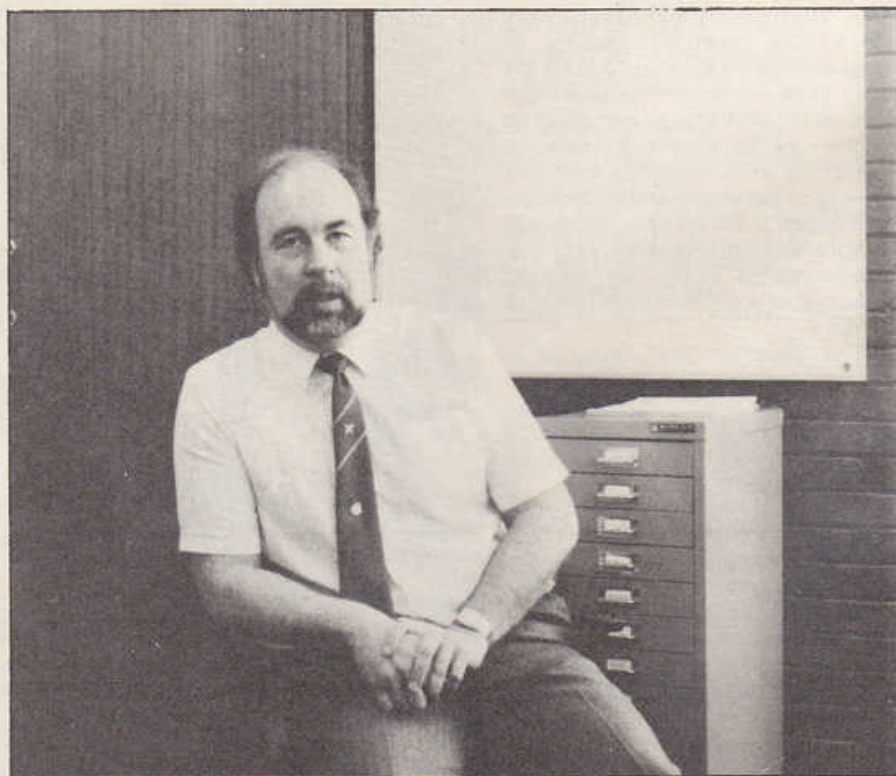
Finally, how does Austen think that people, including the police, can arm themselves against fraud or damage through their computer products or systems?

"It's knowing what to look for, there is a certain amount of knowledge obviously that has to be gained on part of the investigator to know what one is going to go for.

"I instigated a course at the National Police College specifically to train officers from other forces. The purpose of that is so that each police force in this country will have at least one officer who is computer literate.

"All we're doing is taking experienced detectives and we're topping them up with some computer knowledge sufficient, one hopes, to be able to deal with the evidential requirements of computer-related crime.

"Bearing in mind that some people spend their whole life in the industry and still don't know it all, there's no such thing as a computer whizz-kid, they do not exist."



Austen: "We are here not only to investigate crime, but also to offer advice."

DESKTOP PUBLISHING

WITH PUBLISHING PARTNER™ ON THE ATARI ST



1 WHAT IS DESKTOP PUBLISHING?

Desktop Publishing is a method by which documents can be produced using a computer, software and a printer. These documents are near professional appearance and cost only a fraction of the price which you might otherwise pay to a designer, artwork studio and printer. Because the 'middle men' are eliminated from the production process, desktop publishing allows the user to retain total control over his or her documents, making last minute updates without panic and without incurring extra charges for 'rush' work.

2 WHAT CAN I USE IT FOR?

As we all make use of the printed word in one way or another in our daily lives, the applications for Desktop Publishing are all around us. If you belong to a club or society or if you run your own business, the possibilities are endless! Our list of example applications will give you some other ideas.

Advertisements	Distribution Leaflets	Office Transparencies
Application Forms	Faire Programmes	Personal Cards
Brochures	Invitation Cards	Personal Letterheads
Business Contracts	Invoices	Presentations
Charts & Tables	Labels	Price Lists
Club Certificates	Menus	Special Offer Leaflets
Club Newsletters	Office Forms	Technical Sheets
Dance Tickets	Order Forms	Work Estimates

3 PUBLISHING PARTNER

Publishing Partner, from SoftLogik Corp™, includes all of the features which you would expect in a good Desktop Publishing package. It combines word processing, page layout and graphics facilities all in one program, allowing you to create 'stunning' documents on your Atari ST. First you can do a rough page design and start adding blocks of copy. See how it fits. See how it looks. See how it flows onto the next page. Make some changes. Try a different type style, or a different size, or some borders, some shapes, or even some pictures. Because Publishing Partner incorporates WYSIWYG (What You See Is What You Get), you'll see instantly if your new idea works or not. The computer's screen will show you just how the page will look when it prints - no more guesswork. You can adjust fonts, character sizes and even character spacing, anytime and anywhere on the page. Watch an ordinary letter transform into a professional looking piece right before your eyes, as you experiment with mixing graphics and text. And, when you want to see a 'hard copy' of your masterpiece, just send it to any one of the printers which the program supports (the list is growing all the time).



SoftLogik Corp™

SoftLogik Corp™ was set up in the USA by Shawn Fogle and Deron Kazmaier to produce quality desktop publishing software with uncompromising power and features. Publishing Partner was developed after 1½ years of research, working with typesetters and printers and the results achieved are outstanding.

4 SIMPLE, POWERFUL, AFFORDABLE

Printing and publishing is a fairly complex business which takes years of training and experience to master. You wouldn't think so with Publishing Partner, which takes full advantage of the ST's user friendly GEM environment. It is so user friendly and easy to understand, most people find they can produce their first document without even opening the fully comprehensive 159 page manual which accompanies the program. Using the mouse to manipulate the self explanatory pull down menus and windows, you can be up and running in no time, creating a variety of documents quickly and easily. In addition, the flexibility of Publishing Partner allows you to choose between mouse or keyboard operation, whichever suits your personal preference. Although simple to use, Publishing Partner is by no means a simple program. Quite the contrary. Behind the user friendliness of GEM, lies a most complex and powerful publishing tool. The combination of Publishing Partner and Atari's powerful low-cost ST computers has brought an affordable alternative to the desktop publishing systems currently available from Atari's competitors.

5 THOUSANDS OF TYPE STYLES

This is no exaggeration. Unlike most other desktop publishing software packages, which offer you 2 or 3 different fonts, Publishing Partner gives you true flexibility of over 4,000 type styles per font. Publishing Partner offers you 14 variations of each font:

BACKSLANT	MIRROR	STRIKE THROUGH
BOLD	OUTLINE	TALL
DOUBLE U/L	REVERSED	UNDERLINE
ITALICS	SHADOW	UPSIDE DOWN
LIGHT		WIDE

And you can 'mix and match' any number and combination of styles to your own requirements. The total number of possible permutations is over 4,000. And that's not all, each style can be used in any one of 216 sizes in one point increments from 1 point to 216 points! All this is achievable on an unexpanded 520ST with just 512K RAM! Other competing packages require 1024K RAM just to get the larger sizes above 72 point and still can't match all of the variations available.

Publishing Partner is a trade mark of SoftLogik Corp™.

6 WORD PROCESSING

Publishing Partner contains the power and features that you would expect to find on a dedicated word processing package. In addition it includes facilities which a professional typesetting machine would offer. For example the program can cope with 216 different type sizes, with over 4,000 style variations of each one. The following are some of the facilities you will find within the capabilities of Publishing Partner:

- * Adjust margins for any column
- * Change block to uppercase or lowercase
- * Change margin indents
- * Character spacing from -128 to +127
- * Copy text to and from the buffer
- * GEM based
- * Import and export files
- * Insert and delete pages
- * Justifies right/left/centred as you type
- * Justifies to the character/word
- * Kerning from -128 to +127
- * Line spacing/leading in ½ points from -64 to +57
- * Link columns together
- * Macros
- * Manual Hyphenation
- * Merge files together
- * Optional grid & ruler display
- * Over 4,000 type style variations of each font
- * Page numbering
- * Pica, Inches or Centimetre measuring system
- * Print to paper vertically or horizontally
- * Read & merge any ASCII file
- * Search and replace
- * Tabs for charts/tables
- * Unlimited headers & footers
- * User definable page size
- * User variable superscript/subscript characters

7 PAGE LAYOUT

Whatever you require, custom logos, unique borders, unusual letterheads etc. Publishing Partner is your solution. After all, it was specially designed by professionals who realize that there's more to your computer than just typing letters.

- * Accurate to 3 decimal places
- * Adjust character size from 1 to 216 points
- * Auto text flow between columns
- * Change columns on finished page
- * Display 15%-150% of original size
- * Display actual size
- * Display multiple pages/rulers/text routing
- * Layout multiple columns
- * Print to disk
- * Set auto text routing
- * Snap to guides
- * Superimpose text on tint or tint on text

SEEING IS BELIEVING

We have already told you how powerful Publishing Partner is and how easy it is to use. However, the recipients of your finished work will only be able to gauge the package by the end results of your work. The true test of any Desktop Publishing software is in the output it produces and it is here that Publishing Partner excels. With its graphics capabilities and the thousands of type styles it produces, there is no end to the design possibilities which you can create. And, with drivers for a variety of printers, including Postscript at no extra charge, you can be sure that you will be able to output in the quality your work deserves. The output quality is truly remarkable. But don't just take our word for it. Before you go any further with your enquiries into Desktop Publishing, return the coupon below for samples of Publishing Partner's output on a variety of printers. We will also send you details and prices of each printer as well as further information on Publishing Partner and the Atari range of ST computers. We don't expect you to take our word for it. We want you to see for yourself how Publishing Partner outshines the competition. So, complete and return the coupon today. Remember, SEEING IS BELIEVING!

8 GRAPHICS

Not only can you load any Degas, N-Vision, Neochrome or digitized pictures into your Publishing Partner files, you can also enlarge or reduce them for an exact fit. Or, you can copy just a section of a picture and then paste it into your document as many times as you want. You can still go back and resize it at any time or crop it to delete unwanted areas.

- * 3 types of line ends, square/rounded/pointed
- * 7 types of line which are all editable
- * 7 weight lines ranging from ½pt to 6pt
- * 40 fill patterns each with a border option making a total of 80 fill options
- * Ability to produce separations for 2 colours
- * Copy graphics to and from clipboard
- * Cut, paste, copy or crop graphics
- * Import graphics from third party graphic programs such as Degas, Neochrome, N-Vision or any art program that produces compatible ASCII files
- * Select colours to use and print with
- * Toolbox features include: Circles, ellipses, boxes, rounded corner boxes, horizontal/vertical lines, diagonal lines, polygons and free hand drawing

9 OUTSTANDING OUTPUT

Publishing Partner is a unique program with a large variety of printer drivers for both laser and dot matrix printers. Dot matrix is supported in both 80 column and 132 column mode, so you could even produce a tabloid width newspaper (11½" wide) on a wide body printer. Drivers are also available for the new technology 24 pin dot matrix printers which can give a fine resolution of 360×360 compared with laser printers at 300×300. The current drivers (included FREE with the program) are as follows with new ones being written on a weekly basis:

9 PIN DOT MATRIX (Various Res)

- * Atari SMM804
- * Blue Chip M120/10
- * Cal Abco Legend 880
- * C Itoh Prowriter
- * Manneeman Spirit-80
- * NEC 8023
- * Panasonic KXP
- * Star Gemini & SG

9 PIN DOT MATRIX (240×216 Res)

- * Citizen MSP
- * Epson RX/EX
- * Manneeman Tally MT
- * Star NX/SD

18 PIN DOT MATRIX (240×288 Res)

- * Okidata Microline 292
- * Okidata Microline 293

24 PIN DOT MATRIX (360×180 Res)

- * C Itoh C-715
- * Epson LQ
- * Epson SQ
- * Toshiba P321

24 PIN DOT MATRIX (360×360 Res)

- * NEC P6/P7
- * NEC XL new series

LASER PRINTERS (300×300 Res)

- * Centronics PP-8 in Epson or H.P. Laserjet mode 1½Mb RAM
- * Any other H.P. Laserjet compatible with 1½Mb RAM
- * QMS PS800 or Apple LaserWriter - Postscript
- * Any other Postscript compatible printer

OFFICIAL UK VERSION

The official UK version of Publishing Partner has a pound (£) sign as a standard part of its character set. Other versions have also been imported unofficially from the USA and have a dollar (\$) sign instead of a £ sign. These versions will not be supported by the UK distributors or their dealers. The UK version also contains clip art, different fonts and a full range of printer drivers. Ensure that you buy the official UK version, not an unofficial import with incorrect characters.

£139.00

(+VAT=£159.85)

Publishing Partner is available from Atari ST Dealers throughout the UK. If your local dealer does not have Publishing Partner in stock, it can be obtained by mail order (Postage & Packaging free) from:

SILICA SHOP Ltd, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

Tel: 01-309 1111

INFORMATION REQUEST FORM

To: Silica Shop Ltd, Dept PCWK 0587, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

Please send me further details on: **DESKTOP PUBLISHING**

Mr/Mrs/Ms: Initials: Surname:

Address:

Postcode:

I am interested in the Atari ST

I already own an Atari ST

☐ DTP



Let your PCW do the talking

Lacking an RS232 interface, the PCW hardly seems an ideal micro for communications. Peter Worlock tries out Miracle Technology's WS4000 modem, which could change all that

Computer communications has something of a suspect reputation among computer users.

Enthusiasts rate it as the best thing since the computer itself. The majority of users look on it as something potentially great – with a heavy emphasis on "potentially".

But it's easy to overlook how far things have come in a few years. It isn't so long since comms meant manually-operated modems, all operating at 300 baud, and the only thing to connect to was an enthusiastic but amateurish bulletin board.

Now there are hundreds of bulletin boards, all of them enthusiastic but the majority of them highly professional.

There is also a host of commercial services from the ubiquitous Prestel to electronic mail facilities.

And, not least, there has been constant development of the modems themselves. Today the auto-dial, auto-answer, multi-rate, "intelligent" modem is commonplace.

But some computers remain better suited to communications than others, and if you had to pick one that looked like a loser in the comms stakes, you'd probably tag the Amstrad PCW.

For one thing it lacks an RS232 interface – the primary requirement of would-be communicators. And the lack of colour and viewdata graphics put it behind the field for services like Prestel.

Now PCW owners have been given a boost by Miracle Technology. The Ipswich-based modem maker has released a special version of its award-winning WS4000 intelligent modem.

When coupled with a good software package like Sagesoft's *ChitChat* (see panel), the WS4000 allows PCW communicators to hold their heads high.

Features

Instead of the normal RS232 cable, this version of the modem has a ribbon cable terminating in an edge-connector that plugs directly into the PCW's expansion bus.

This means that fitting the modem to the micro is simple, and eliminates the need to buy an extra interface.

Miracle Technology has established a reputation for quality in the modem market, and this version of the WS4000 will do it no harm.

The modem is cased in a rather startling shade of red, but is well-built with solid connections to the serial, phone and power cables. All cables go into, and emerge from, the rear of the unit which also features a reset switch.

The modem itself is of a size and shape to comfortably accommodate a telephone on top, but the ribbon cable is of precisely the right length to give you only one possible position – immediately next to the right side of the monitor.

Since this is where 99 per cent of PCW owners will have their printers, some rearranging of the desk will be necessary.

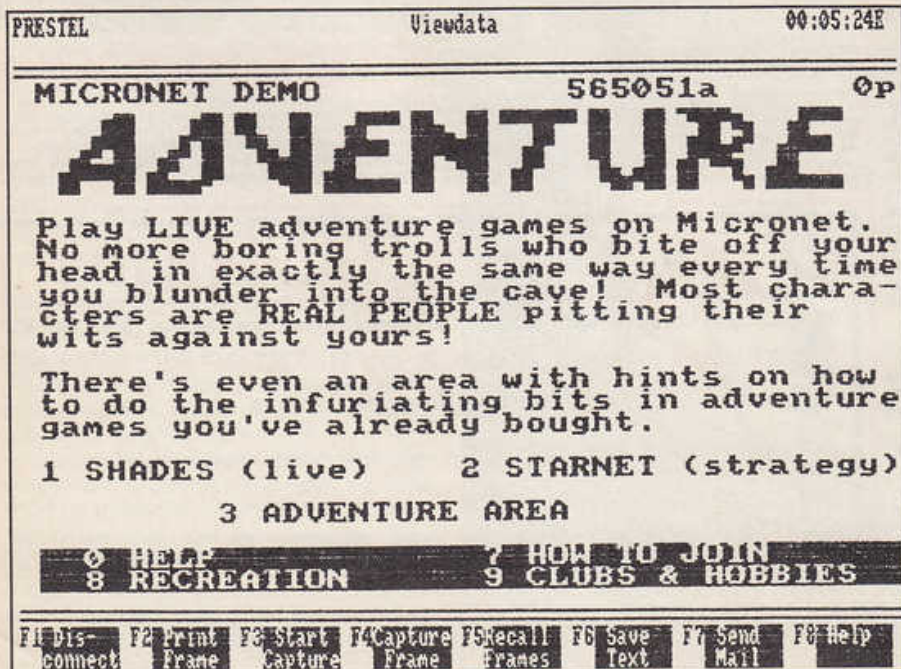
Pressing the reset switch, and turning the power on and off at the mains is as much as you can do from the outside. Everything else is controlled through software. For this reason, you'll need a decent software package to get your money's worth from the hardware.

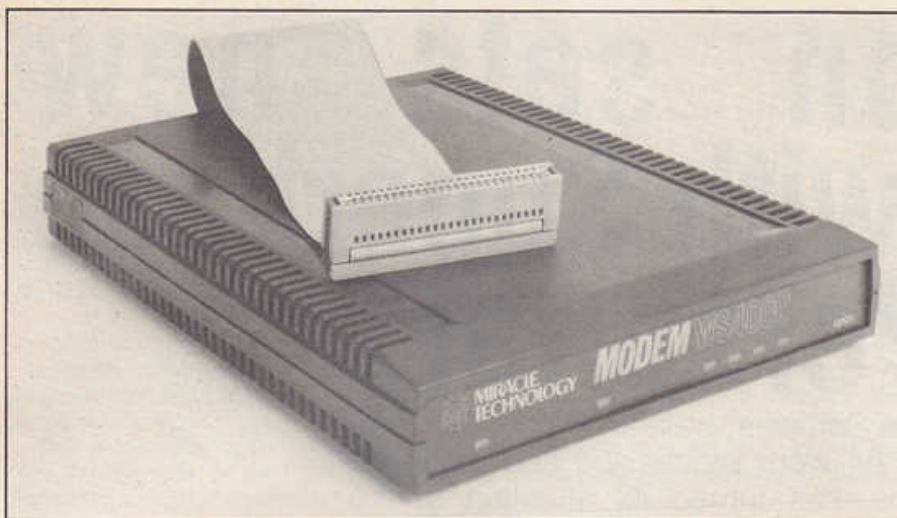
Along the front of the modem is a row of status lights. These indicate power on, high speed mode, on line, terminal ready, request to send, clear to send, carrier detect, send data, receive data, and auto-answer mode.

"Miracle Technology has established a reputation for quality in the modern market, and this version of the WS4000 will do it no harm"

These lights may be off, blinking or steady on, depending on the modem's activities. Once you become familiar with them you can determine at a glance the status of the modem, and whether it is functioning as expected.

You can watch them pushing out the number being dialled, and you'll also see





Miracle Technology's WS4000 modem

the resulting tone - ringing, engaged or unavailable - blinking once dialling is complete.

The modem itself is fully programmable - either through your own programs or through suitable software. For example, you can set the time the modem will ring a number before it gives up, how long it will wait after answering for a carrier signal, how long after a carrier is lost before the modem hangs up (useful for overcoming temporary signal losses), whether the modem should re-try an engaged number, and so on.

The WS4000 is a multi-rate modem. The model under review supports full 300 and 1200/75 protocols, and 1200/1200 half-duplex.

In auto-answer mode, you can set the number of rings required before the modem answers, and there are very powerful automatic search commands. For example, you can set the modem so that it will try and determine the speed of the incoming transmission, match to it, and complete the

connection.

The accompanying documentation is thorough and clearly-written, with a host of practical examples. In addition to the relevant user information, there's a section for potential software authors containing more detailed technical specs.

Conclusions

The WS4000 was named peripheral of the year in last year's British Micro Awards, and was a deserving winner.

There are cheaper modems around, but few match the WS4000 for features, and almost all of them require the purchase of an RS232 interface as well.

Amstrad PCW owners looking for a high-quality modem at a reasonable price should put it high on their list of potential buys.

Product WS4000 V2123 modem **Price** £195.50 **Supplier** Miracle Technology, St Peter's Street, Ipswich IP1 1XB.

Comms software: ChitChat

Although buying a full-featured software package is not an absolute essential for using the WS4000, it is recommended.

For some uses - some bulletin boards, and electronic mail facilities - the Mail232 program that comes free with your PCW system software is adequate.

However, if that is the limit of your ambition, you're probably buying too much power in the WS4000.

Accessing viewdata

To access viewdata services such as Prestel, Micronet and many "amateur" bulletin boards like the amazing MicroGnome, you will need a viewdata comms program.

For the purpose of this review we borrowed a copy of Sagesoft's *ChitChat Combo* package, and it turned out to be an admirable partner for the modem.

The *Combo* version includes both viewdata and Email facilities (they are available as separate packages) and is powerful enough to take advantage of the WS4000's features.

Directories

You can create your own directory of phone numbers, together with all necessary protocol details, log-ons, passwords, etc, and simply tell the software and modem to get you on-line.

You can also create executable files to control the more powerful features of the modem.

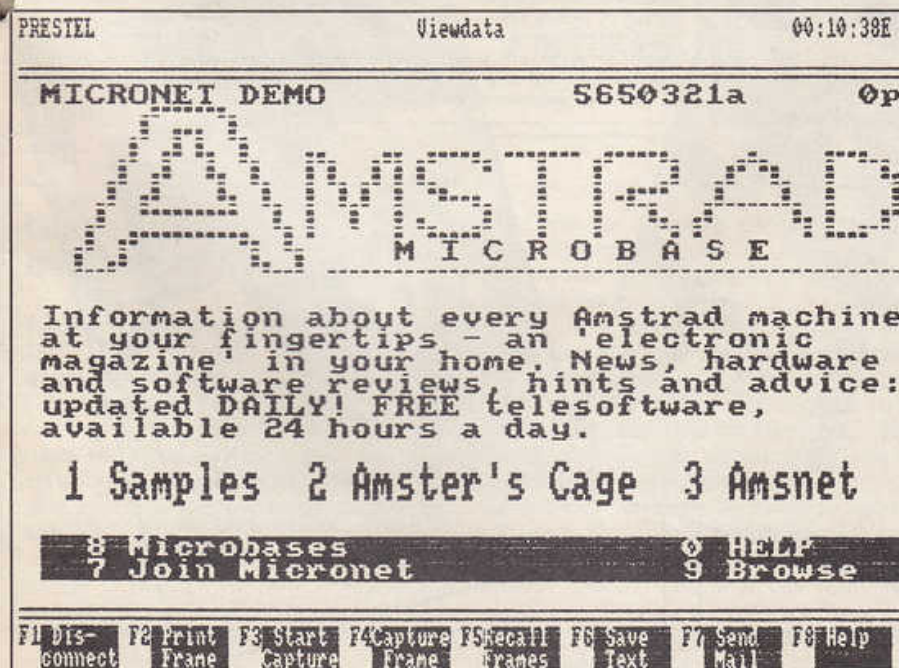
The documentation is more than adequate, especially since *ChitChat* is primarily controlled through the pre-programmed function keys which are permanently displayed on screen. This, coupled with on-screen help facilities, make the manual almost redundant once you are familiar with the features.

Prestel and Micronet

The viewdata mode is a revelation. I was dubious about the prospects for the highly colourful Prestel and Micronet screens on a green-screen monitor with a customised viewdata character set. But all of the screens were perfectly legible.

All in all, the software performed flawlessly. The combination of *ChitChat* and the WS4000 make for a perfect comms system for all applications.

Program *ChitChat Combo* **Price** £100.05 **Supplier** Sagesoft, NE1 House, Regent Centre, Gosforth, Newcastle Upon Tyne NE3 3DS.



Precision sets new records with Superbase Personal

Precision Software, best known for its Commodore 64 word processing and database programs, has turned its attention to the 16-bit machines with Superbase Personal. Christina Erskine finds it combines power with ease of use

Precision Software is probably best known for its *Superbase* and *Super-script* database and word processing packages for the Commodore 64. Therefore it would be a logical assumption to see *Superbase Personal* for the Atari ST as simply a conversion of the C64 product. Logical, but according to Precision's managing director John Tranmer, completely incorrect.

Tranmer - and he should know, his brother Simon wrote both programs - says that *Superbase Personal* has been written

entirely from scratch. The name *Superbase* being duplicated only to give the product a familiar identity with potential buyers.

Superbase Personal runs under Gem (a Gem based version is also available for PC compatibles) and uses all the familiar drop down menus, etc, running in medium and high resolution modes only.

Getting going with *Superbase* is rather deceptive; it's wretchedly simple, and belies the program's power. You might expect a menu-driven database

to be complicated by sub-menus, sub-sub-menus, and no Cancel option just where you wanted it, but all *Superbase*'s capabilities are accessed by the six menus at the top, where you would find the Gem Desktop options, and a string of easily understood icons at

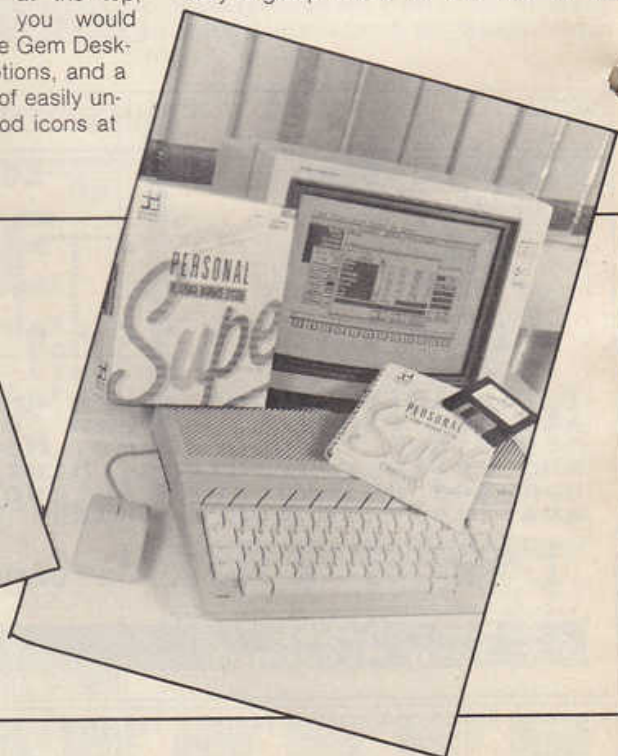
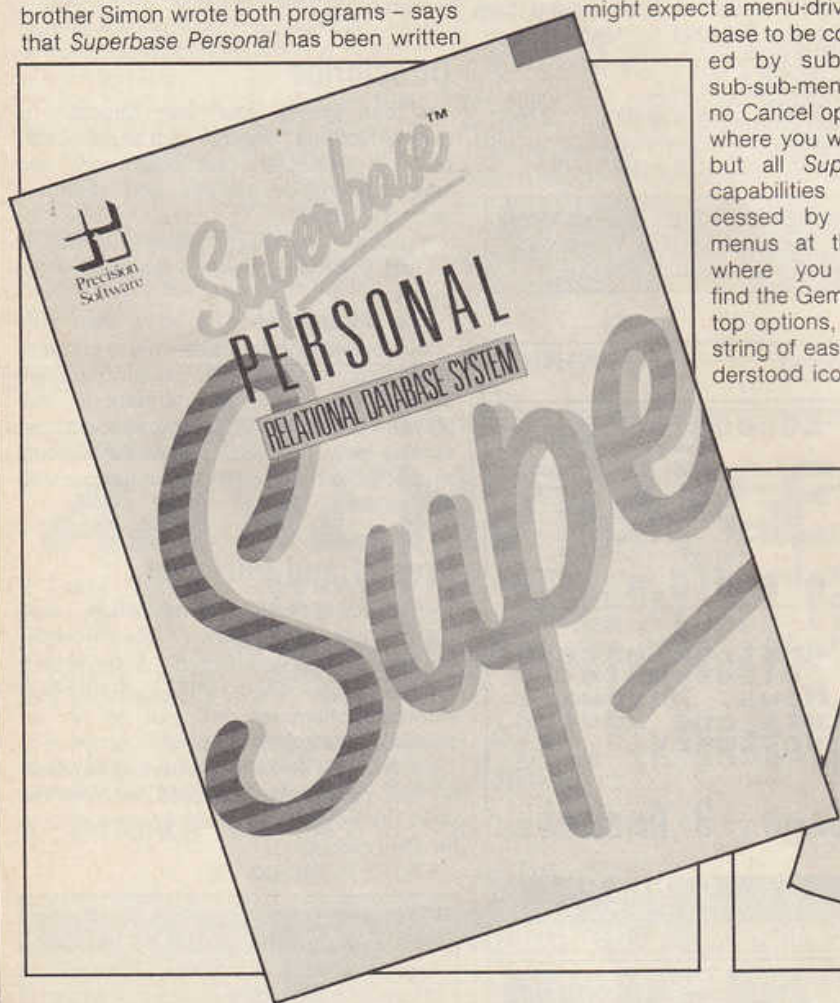
the bottom.

For instance, once loaded, *Superbase* gives you the choice of Desk, Project, Record, Process, Set and System menus.

Desk simply gives you the copyright message. Project is the menu you will need straightaway; its options deal with opening, creating, editing, etc, your files and indices. On start up, many menu options are unavailable, these are shown in tinted rather than black 'type'.

The Record menu contains options for amending your individual database records, or adding to them; Process deals mainly with importing files from other programs and printing labels; Set enables you to alter the way in which your database is laid out; System gives you printer options, a directory list, etc.

In addition to this, you get the remarkably easy-to-grasp menu at the foot of the



screen for flipping through, viewing and creating your records. The menu comprises icons bearing more than a passing resemblance to the controls on a tape recorder.

Thus > shows the next record in the file, < the one immediately previous, >> is a 'fast forward' - display all following files, << a 'rewind' - display all previous. There are also 'pause' and 'stop' buttons.

The '?' icon allows you to search for a particular file by typing one value from the field in the record you need, and the program will bring the required record up on screen. However, the key symbol for manipulating your databases is contained in the equals sign.

This is the 'filter' option, which enables you to view, use or print out your data according to a set of parameters which you determine. You select which of your fields you want to manipulate and then how you wish them manipulated. The symbols, as shown in the screen picture, are mainly self-explanatory: the same as, greater than, greater than or equal to, lesser than, lesser than or equal to.

'LIKE' applies to text strings, '=' to

numerics. You set the parameters themselves by typing in the information in the Value box; for example, 'Lastname LIKE "[A-D]*"' gives you all surnames on file beginning with A, B, C or D.

Creating files and records templates is also made easy. The number of fields is limitless; with the restriction of 255 characters per field, enough surely, for most people. Numeric data can be entered in a number of ways according to how you wish it presented on-screen, similarly with dates.

One of *Superbase*'s most attractive features is its ability to port over files from other products. For text, these must be Ascii format. More exciting, however, is *Superbase*'s ability to incorporate pictures from graphics programs - so long as they run under Gem.

The most obvious uses for this are plans, charts, or pictorial representations of statistics which you may want to incorporate in standard letters.

Conclusions

While I have talked about ease of use, it is

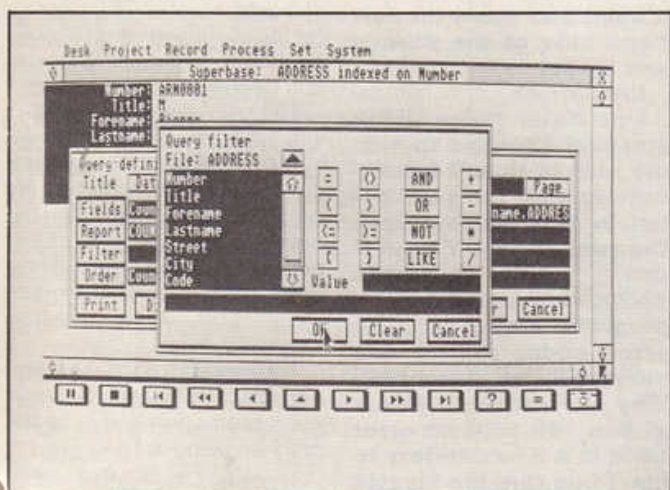
worth noting that the *Superbase* manual (which is clear and thorough, with plenty of 'tutorial' sections) does not attempt to explain databases; it assumes you know the terminology and how databases work.

This article by no means exhausts the program's options and capabilities, but attempts to give an overview of how it works and salient features.

I found it versatile and comprehensive, and incredibly easy to get into. Obviously, this is due in part to Gem and the simplicity of mouse control, but all credit to Precision for not complicating the matter.

If you feel you could do with a database program for your Amiga, PC or compatible (with Gem) or Atari ST, *Superbase Personal* is worth close investigation.

Program Superbase Personal Micros
Atari ST, Commodore Amiga, IBM PC/compatible with Gem operating system, eg, the Amstrad PC1512 **Price** PCs and ST £99.95, Amiga £149.95 **Supplier** Precision Software, 6 Park Terrace, Worcester Park, Surrey KT4 7JZ.



Screens from *Superbase Personal*. Above: note the 'tape recorder' style bottom menu for viewing your records. Right: the filter screen enables you to sort records according to a large number of criteria.



Guide to databases

A database is basically a computerised filing cabinet, used for storing records. In databases of any power whatsoever, this information can be indexed or sorted according to the various headings you've used within each record. You could, for instance, list all your friends living abroad, all customers still owing money after a year, etc.

Many databases have an integrated 'mail merge' or label printer within the package. You can then print address labels of all, or some, people on your database according to the index you have made.

File Collection of records running under the database program.

Records Similar to each file or sheet in a filing cabinet.

Fields This is the name given to the headings within each record. For example, in a simple 'address book' database, your fields might comprise 'first name', 'last name', 'address' (sub-divided into, say, street, town, district, country and post-code), 'telephone number', etc.

Relational database A database which allows you to sort your records according to multiple factors. For example: print out all records showing people whose surnames begin with F, living in Yorkshire, have 2.4 children, plan to take a holiday in Spain within twelve months, and don't own a dog.

Having the ability to print out all records with people whose surnames begin with F is not enough to qualify as relational. *Superbase* is a good example of relational database.

Integrated database A database program which can use and incorporate information from other programs - usually the database will be part of a suite of programs in one package - and whose files can be incorporated in the other programs in the suite.

Mail merge Printing standard letters, labels or forms where only the name and address, for example, need be changed from sheet to sheet. You specify whose name is to go in the 'gaps' and each letter, addressed to each individual, is printed out.



with Kenn Garroch

The Sord connection

Al Straker, of Willesden, London NW11, writes:

Q I've just bought a Sord colour monitor (second hand) which I'd like to use instead of a TV, with my Spectrum and QL.

I have now discovered that there is a different plug on the back of the monitor to my composite video phono (Opus disc) plug on the Spectrum and certainly the QL. I realise that the Opus output is monochrome and have made the well known 'tap from the modulator' modification as well. This appears as a phono socket at the side of the Spectrum.

As I got the monitor cheap, I was too thrilled to check it out. I'm not sure what type of signal the monitor expects.

I enclose a diagram of the plug which appears at the back of the monitor. The model number of the monitor is DUP-14C.

I hope that you can help me with this problem by supplying a pin for pin diagram or something that I can make into a convertor lead if that is what is needed. I'd really like to find some way of making both computers work with this monitor, but any help on either would be appreciated.

I might be able to afford the Adapt RGB Spectrum interface if necessary - will you comment on this, or suggest some other alternative?

A I don't know what the connections are for this monitor. However, there is a way of finding out by educated guesses. If the monitor is RGB, then there will be Red, Green, Blue, Sync and Ground connections. If it is composite video, there is just composite input and ground. It may, of course, have both since there are enough connections available.

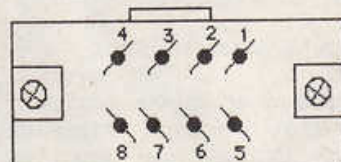
The way to find out is to take the composite output from the Spectrum, and split it into its two component wires, video and ground. If you connect the ground to the casing of the socket, with any luck, this will be ground. Next, poke the video output from the Spectrum into each of the holes in turn.

If you get a red, green, or blue screen on the monitor, then you have found the R, G, or B inputs respectively. If you get a picture, then you will have a composite input. Once you have this, poke the ground wire briefly into each of the other holes to find the ground input. The picture should stabilise when you get the correct combination.

By the looks of the socket, it is more likely to be RGB than composite so, having found the R, G AND B inputs, you need to find sync. This can be done by connecting the QL's RGB lines to the appropriate holes, and then poking around with the sync line to get a stable picture. If it is RGB only then the Adapt interface will be needed to get the Spectrum to work.

Make sure that any test connections you make are only brief, the voltages used are small and it is unlikely any damage can result if you are careful.

If all else fails, someone will, hopefully, write in and tell me what the connections really are so that I can print them.



Sord colour monitor DUP-14C socket

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.

Baffled by the BBC bytes

Don Henleys of Chippenham, in Wilts, writes:

Q I have a Master 128 with one 3½ inch disc drive, a KX1080 printer and a VDU. In the March 27 issue of Popular, you published three programs for the BBC. I have just entered the sideways print utility. Having just spent the last hour double, treble, and quadruply checking my typing, could you please clarify a couple of points of interest to me:

1) Why does the program stop at line 80 with 'Byte at line 80'?

2) On re-entering the line at 80 with LDA #CF (not &CFO), it then prints a solid line down the left hand side of the screen and stops.

I'm baffled.

One other point which you might be able to help me with is this: if I deliberately omit the semi colon in line 150 between the zero and the ? so that the line reads ?&200=0?&201=&A, the program stops with no error code, merely the message 'at line 160'. Why the machine prints at line 160 with no error code is a new mystery to me. I find that the Master does this reasonably regularly and wondered if you could offer an explanation.

A This is not really my department but, just this once, I'll help out. Your problem is mainly due to the fact that the listing is wrong. You can make it work by changing line 100 to: DEV:BPL 102, ie, drop the PLA, etc.

These commands need to be placed further down since V is corrupted by the &FFEE calls. Change line 130 to: PLA:

TAV:INV:BPL loop:out JMP &FFE7.

Line 80 reads LDX #7:LDA &CFO,V:tp3 which will only give you the byte error if you put a # before the &CFO,V. This is because it is impossible to put a value larger than 255 (&FF) in the accumulator (A).

The program works by using the *LINE command to store the string you want to print at the location pointed to by Y*256+X. So, using indirect addressing [LDA(&FE),V] each character in the string can be read.

The definition for each character is then obtained with the OSWORD (&FFF1) 10 command and stored at &CFO onwards. The character number for this call is placed at &CEF, ie, at the start of the definition buffer.

The next section of code turns each character on its side by shifting each bit of a row into a column of the definition of character number 255. Character 255 is then printed followed by a down and a left to reposition for the next one.

The use of character 255 is why you got a line down the side of the screen (Char 255 is a solid block). As it stood, the program was not converting the definition properly. The *LINE command uses the vector &200, &201 to point to the service code, normally bad command.

Your second point, concerning the 'at line' with no error code seems to be due to the program being at fault.

Usually, the no error code situation only crops up when using machine code routines from within programs.

If the machine code does something unexpected, the Basic interpreter generally hasn't got a clue as to what has caused the error and so, cannot assign an error message to the fault.

For example, if you run the sideways program so that it sets up the LINE command and the ?&A00=&40 (put an RT1 command in), and then GOTO 160, you'll find the no error situation occurs since the machine code is doing something rather unexpected.

Incidentally, if I try taking the colon out of line 150 then all I get is a syntax error at 150. This could point to a difference between the 128 and the older BBC B.

C. why it's so good

Last week, Kenn Garroch began his series of articles on programming in C. This week: putting C to work and playing games.

The easiest way to learn and understand a language is to use it, and see it in action. C programs are very structured, that's to say that they are always built up in a set framework. Probably the simplest program is:

```
main ()
{
    printf("Pretty simple eh?");
}
```

All this does is print out the message in quotes with the *printf* function. Note that commands are always in lower case and the first line is *main()*. All programs have to have *main()* if they are to compile and run correctly. The function can, theoretically, be anywhere in the program but is usually placed at the start.

The next line contains a { open curly bracket. This is used to denote the start of a section or block of instructions, in this case the start of the program. The *printf* function on the next line is used to output characters to the screen starting from the next cursor position, subsequent *printf*'s simply follow on the same line.

To get the program to move the cursor around the screen, formatting characters need to be used. These are included in the quotes and take the form \n or \f (newline, form feed or clear screen), \b is used to get a single back slash since \ by itself is a null or no character.

The end of the program is denoted by the close curly bracket } which is also used to end a section of code. The following example shows how a program can be split to make it easier to understand with a function being defined separately from the main program itself.

```
main()
{
    int t;
    t=123;

    printf("%d squared is: %d\n", t, sqr(t));

    sqr(n)

    return n*n;
}
```

Here the function *sqr* is defined separately from the main program and used in the *printf* statement. The numbers to be printed are inserted where the %d's appear in the

quotes. This gives a neat way of displaying numbers and if you insert %x instead of %d, the number is printed in hexadecimal; %c is used for characters.

The program also shows how variables are set up and used in C. *t* is defined to be an integer (a number from -32767 to +32768) and from here on in the main program is always an integer. All of the usual functions, +, -, *, /, etc. are available for use, bearing in mind that they will be non-decimal when using integer variables. For decimal numbers, the 'float' definer is used.

Other simple data types are 'char' for single characters, 'short', 'long', and 'double'. The last three depend very much on the compiler, on some they are not

```
/*Comments come inside these star slash marks*/
int seed; /* this is global so declare before main*/
main()
{
    int num, guess, games;
    seed=12345; /*Change this for different pseudo rnds*/
    for (games=1; games<6; games++)
    {
        printf("I have a number between 0 and 10 guess what.\n");
        num=rnd()/(3640);
        while(num != guess)
        {
            while((guess<0) || (guess>9)) /*0 is 48 i.e. ASCII 0*/
                guess=getchar(); /*getchar() reads the kbd */
            guess=guess-0;
            if(num==guess)
                printf("Too high\n");
            if (num>guess)
                printf("Too low\n");
        }
        printf("Correct\nThe number was %d\n\n", num);
    }
    /* rnd() is a pseudo random binary number generator */
    rnd()
    {
        seed=seed*2;
        if(((seed & 256)==256) && ((seed & 2)==2))
            seed=seed+1;
        if(((seed & 256)==0) && ((seed & 2)==0))
            seed=seed+1;
        if(seed<0)
            seed=-seed;
        return seed;
    }
}
```

implemented, others handle them in different ways and sizes.

The function *sqr* is defined after the main program and has the argument *n* which takes on the value passed to it, ie, *sqr(10)* makes *n*=10 within the function. The main thing to note about *n* is that it is defined only within the *sqr* function, ie, it is local to the function. The return command tells the computer that the value *n*n* is to be passed back to the calling program and placed in a variable. Here it is simply printed.

So far, the demonstration programs have been fairly straightforward and have performed one thing only. The *sqr* program can be easily modified to do something a little more complex like print out the squares of a series of numbers. Simply alter the line *t=123*; to *for(t=1; t<10; t++)*.

This forms a 'for' loop for the following statement, in this case the following line. If more than one line needs to be repeated, then enclose the set in {} to make them form a block. The *for* has three parameters following it. The first defines the start value of the counter, eg, *t* starts with the value 1. The next contains the inverse of the end condition, ie, keep looping until this is false.

The final part sets up the increment to be used at the end of each loop. This could be *t=t+1* but the C short cut for this is *t++* which means exactly the same thing. For decrementing, *t--* could be used.

There is no semicolon at the end of the *for* command since it starts a structure. All statements end in semicolons to make sure the compiler knows where one ends and the next one begins.

An alternative way of looping would be to use *while*. To make the program use this requires the following changes: take out the *for* and *printf* lines and insert the following in their place:

```
t=1;
while(t<10)
{
    printf("%d squared is: %d", t, sqr(t));
    t++;
}
```

In this situation, *t* must be set up before the loop begins and must be incremented within the body of the loop itself. Since there are two lines within the loop, they need to be made into a block starting with { and ending with }. The *while* command continues looping only if the argument (*t*<10) is true and, in this case, exits when *t* is equal to 10.

The other most common, and perhaps vital, structuring command is *if*. In C, this takes the following form:

```
if(expression)
    do this if expression is true
else
    do this otherwise, though this is optional.
```

The simple game program (see box) shows all of the above commands and ideas, plus a few others, in use. Notice how the AND, OR, NO, and equals differ from other languages. Logical AND is &&, bitwise AND is &, logical OR is || and the ! before = is not equal. For equals, two = signs are used so, in a test, == tests for equality, not = as is usually the case. The program will run in any C, just type it in and follow your normal compiler commands.

WALLET FRIENDLY SOFTWARE

★ AMSTRAD PC1512 ★ IN STOCK NOW!

SWOPPER £19.95 — Easy to use task swapping on a 128k QL

- Only uses 8.5k plus screen storage
- Simple "Hot Key" operation — no menus
- Fully automatic task loading & set-up
- Instant swapping/screen preservation
- Easy to follow comprehensive manual
- 128k QL: 1 Psion prog + Basic
- 640k QL: 7 Psion progs + Basic
- Permanent access to Basic
- True multitasking
- Enhanced Basic RESPR() command

MICRODRIVE COPYCAT £10.99 — Strictly not for pirates
Copies many protected programs. Sold subject to legal use. Very good value.

BOOT 128k £5.99 — the universal QL "shrink" program
Enables an expanded QL to run programs that won't normally run with extra RAM. Just insert in MDV1, reset your QL, wait... and run your "fussy" software.

1 TO 1 DUMP £5.99
Enables you to obtain true hard copy with 1:1 aspect ratio using Epson FX80.

MICRODRIVE TOOLKITS

Read and write microdrive sectors and read headers from your own Basic or assembly language programs. Full details of microdrive format in comprehensive manual.

BASIC EXTENSIONS..... £9.99
ASSEMBLY LANGUAGE..... £19.95
BOTH £24.95

MEDIC OWNERS: Add 256k for £79, 3.5" drive £119

DEALERS: Wanted for our range of QL software including the Computer One products included in this advert.



57 REPTON DRIVE,
HASLINGTON, CREWE CW1 1SA
Tel: (0270) 582301
Tlx: 265871 Quote: MAG70076

PRICES INCLUDE VAT AND DELIVERY
EXPORT ORDERS WELCOME: WRITE FOR TERMS

computer ONE

Software for the QL

A selection of quality software packages available directly from **COMPWARE**



PASCAL £39.95
FORTH £39.95
ASSEMBLER £29.95
MONITOR £24.95
TYPING TUTOR £19.95

Inclusive of VAT & P&P.

Name:

Address:

Please send me:

.....I enclose £

LIBERATION!

for all QL users



THE DEFINITIVE SUPERBASIC COMPILER

- * Many unique features
- * Now faster compilation and faster runtimes.
- * User configurable front end
- * Create your own toolkit of resident procedures with full access to parameters. ROMable code
- * Automatic integer FOR next loops
- * All this plus useful new commands, error trapping, channel sharing, PIPES and TOTAL compatibility.
- * FULLY USABLE ON 128K QL
- * Resident compiler option

Available on mdv, 3.5 disk and soon on ROM. **£59-95**
Upgrades from Rel 2, send master & £9.95

ESSENTIAL SUPERBASIC TOOLS

QLOAD QUICK LOADER FOR SUPERBASIC
No more time for cups of tea while your SuperBASIC program is loading! With QLOAD, absolutely any BASIC program can be loaded within seconds. Full portability across systems and none of the restrictions associated with similar products.

QREF RESIDENT CROSS REFERENCE UTILITY
Five indispensable procedures give you instant, sorted cross reference lists of one or more procedures, functions, variables or machine code routines. Plus a FIND function for the SuperBASIC editor. QLOAD and QREF are supplied together on mdv for only **£9-95**
Add £1 for 3.5 disk.

Prices include VAT & P&P to Europe. SAE for more details. US orders: Sharps Inc, Route 10, Box 459, Mechanicsville, VA2311.



Liberation Software

43 CLIFTON ROAD
KINGSTON-UPON-THAMES
KT2 6PJ
01-546 1795

FRONT PAGE



THE QL DESKTOP PUBLISHER



GAP SOFTWARE
17 ST. JOHN'S TCE
LONDON E7 8BX
01-552-5452

FRONT PAGE was compiled using **QL LIBERATOR**
Version 1.03 - mix text and graphics - unexpanded and expanded QL - mdv, flp, fdk, ram - A4 printout - udgs - inverse text - all QL text sizes - cut and paste - load and save screens - alternate character set - double pass print option - udg design - Epson compatible printers - line drawing - all included as standard

"A genuinely exciting product and incredibly good value" (QL World 1/87)
"Shows small companies can still make magic" (Sinclair User, 5, 11/86)
"...this stimulating program..." (Popular Computing Weekly 8/1/87)



PRICES

VISA

FRONT PAGE 1.03	£22.50	TASKMASTER	£25.00
SIDWAYS	£19.95	SIGN DESIGNER	£17.50
ASSEMBLER WORKBENCH	£24.95	GRAPHICAL+	£24.95
QFLASH (MDV)	£12.00	QFLASH (EPROM, + toolkit)	£25.00
SWOPPER	£19.95	PASCAL (COMPUTER ONE)	£39.95
Q.LIBERATOR	£60.00	EXPANDRAM 512K	£120.00
PRINTER RIBBONS	RING		

FRONT PAGE CLUB MEMBERSHIP £10.00 PER YEAR
For discounts on software, plus newsletter. Ring or write for details.

Prices include postage within Europe. Please add £0-50 per item outside Europe. Payment for export orders by Eurocheque or cheque drawn on a U.K. bank. Otherwise add £5-00 for clearing charges.

POPULAR Computing WEEKLY

SPECIAL
supplement

1987
8-14 May

THE SINCLAIR QL

INSIDE

23

News of new software releases from third party developers

26

Desktop publishing and printer fonts to turn your QL into a newsroom

30

The QL as a graphics station; ICE and CAD



packages reviewed

33

Exclusive review of Digital Precision's IBM-type keyboard

Never forget, wise computer owners say, that the QL, for all its faults, was the first affordable 68000-based micro. Apart from the Amiga, it is still the only 68000-based micro offering true multi-tasking; the Atari ST doesn't.

Support for the QL, then, is still strong, from users and a small number of third party software and hardware manufacturers.

In this supplement we're looking at Digital Precision's replacement keyboard - IBM quality for your QL? We also have an exclusive preview of the desktop publishing software package, which combines power with ease of use.

CAD software from Rubicon micros, and Eidersoft's advanced mouse systems, among many others, go to prove that the QL is far from obsolete. ◀

REVIVED

PDQL Software of Birmingham is still adding programs to its list, and now has over 20.

Recent additions include **Lazarus**, a disc recovery program which operates on all or any lost files (and not only, as the scholarly might perhaps expect, on Forth), £20, and an invoice generator for £30.

Cash Trader, a debugged, extended and speeded up version of the original Quest Cash Trader, is now available to new users at £80 as well as an update to registered users at £39.

Name And Address is now available on disc as well as microcassette, in standard Archive or ArchRTM versions. The newest

feature of this popular program is a "secure" procedure allowing data to be backed up easily before the changes are finally saved.



PDQL, 49 Frederick Street, Birmingham B1 3NH. Tel. 021 233 3042. ◀

TURBO

Athene Consultants has produced a program which re-configures Quill to speed up the cursor, which, along with other small changes, effectively speeds up the whole program and - no small matter to anyone writing more than the odd letter - increases work throughput.

QL TurboQuill costs £15 and can be ordered from Athene Consultants, 33 Holly

Grove, Fareham, Hants, who can also provide more information about the program. If ordering, please quote the version of your Quill so that a matching TurboQuill version can be provided. CONFIG_BAS does not work with TurboQuill, so all the default parameters of Quill have to be set up before the turbo program is applied - but the increase in speed is well worth this minor inconvenience. ◀



NEWS

WIFEY

Housewife is a housekeeping program from DJW Software. A real housekeeping program. Nothing to do with computing utilities. With QL Housewife, you can make up a personalised shopping list based on your usual shopping habits, and access a choice of three recipe programs, for starters, main courses and desserts. You can name any number of guests from 1 to 20, and you will be given the recipe of your choice with the correct quantity of ingredients, all quantities in metric and imperial, cooking temperatures and an option to print out.

Obviously a menu driven program! Housewife cost £4.99.

DJW Software, 11 Pound Close, Bramley, Hants RG26 5BL. Tel (0256) 881701. ◀

SANDY QL SPECIALS

— HARDWARE —

SINCLAIR QL 128K	£120.00
SINCLAIR QL 640K	£199.00
THRU-CON RAM CARD 512K	£99.00
SUPERDISC INTERFACE	£85.00
SUPERQBOARD OK RAM	£110.00
512K RAM	£200.00
SQB-MOUSE 512K RAM	£287.00
SQB UPGRADE 0-512K RAM	£99.00
SQB SUPERMOUSE UPGRADE	£87.00
SINGLE 3-5" DISC DRIVE	£125.00
DUAL 3-5" DISC DRIVE	£190.00
BARE DISC DRIVE NEC 3-5"	£80.00
MICROVITEC CUB MONITOR COLOUR	£254.00
SINCLAIR 12" COLOUR MONITOR	£178.00
QEP III EPROM PROGRAMMER	£115.00
QEP EPROM CARTRIDGE	£5.99
SCHON KEYBOARD	£54.75
SPEN VIDEO DIGITISER	£150.00
PARALLEL PRINTER CABLE	£8.50
10 VERBATIM 3-5" DSDD DISCS	£24.99
MICRODRIVE PACK OF FOUR	£6.99
NEW MICRODRIVE CART LOOSE/10	£16.65

QL SPARES IN STOCK

VISIT US AT ZX MICROFAIR 30th MAY

— SOFTWARE —

RAM DISC	£7.50
GRAM FROM Q JUMP	£29.90
QPLUS +	£14.95
CP-MULATOR	£34.95
QROM DISASSEMBLY	£35.00

★★★ SPECIAL MAY OFFER ★★★

SUPERDISC INTERFACE + SINGLE DISC DRIVE	£180.00
SINGLE 3 1/2"	£100.00
DUAL 3 1/2"	£170.00

SANDY (UK) PCP LTD

UNIT 33, MURDOCK ROAD
MANTON LANE, BEDFORD MK41 7PQ

TELEPHONE: 0234 219814 TELEX: 82392

EXPORT ENQUIRIES WELCOME

ATARI NEWS

DUAL DRIVE	£200.00
SINGLE DRIVE	£125.00
HARD DISCS	P.O.A.

PRICES INCLUDE VAT & P.&P.



BYTEBACK

THE QL

SPECIALIST

GAMES ONLY ADVENTURES ONLY

Jungle Eddie	Talent	12.50	Quill System	Gilsoft	19.00
Lost Pharaoh	Talent	12.50	Nemesis	Talent	12.50
Chess	Psion	16.00	Zkul	Talent	12.50
Match Point	Psion	12.50	West	Talent	12.50
Blocklands	Digital	8.50	Classic Adventures	Sinclair	8.00
Droidzone	Digital	8.50	Aquanaut 471	Microdeal	17.00
Super Backgammon	Digital	11.00	Mortville Manor	Pyramide	17.00
Quboids	Sinclair	8.00	Executive Adv.	Gemini	12.50
Boulder	Sinclair	8.00			
Meteor Storm	Sinclair	8.00			
QL Reversi	Sinclair	8.00			
Spook	Eidersoft	9.00			
Karate	Eidersoft	12.50			
BJ in 3D Land	Eidersoft	7.00			
BJ The Return	Eidersoft	8.00			
Citadel	Eidersoft	7.00			
Zapper and Eagle	Eidersoft	7.00			
Mister Smith	Pyramide	10.50			
Super Croupier	Pyramide	12.50			
Vroom	Pyramide	12.50			
Wanderer	Pyramide	17.00			
Othello 3D	Pyramide	17.00			
Stone Raider II	Microdeal	17.00			
Flight	Microdeal	16.00			
Lands of Havoc	Microdeal	16.00			
King	Microdeal	12.50			
Dragonhold	Rubicon	17.00			
3D Slime	Datalink	11.00			
Knight Flight	Realtime	12.50			
Steve Davis Snooker	CDS	12.50			
Scrabble	L. Genius	12.50			
Hyperdrive	English	12.50			
Bridge Player II	C.P. Soft	17.00			
Gwendoline	Labochrome	16.00			
Tank Busters	Sellasoft	12.50			

PROGRAMMING ONLY

Supercharge	Digital	43.00
Turbo (+ Toolkit)	Digital	72.00
Turbo Toolkit	Digital	25.00
Better Basic	Digital	21.00
Superforth	Digital	25.00
Basic-Ally	Talent	25.00
Assembler Workbench	Talent	21.00
Assembler Dev. Kit	Metacomco	34.00
Lisp Dev. Kit	Metacomco	49.00
C Dev. Kit	Metacomco	79.00
BCPL Dev. Kit	Metacomco	49.00
Pascal Dev. Kit	Metacomco	75.00

UTILITIES AND BUSINESS ONLY

Qimp	Talent	34.00
Ram Disk/Spooler	Talent	8.50
Sideways	Talent	17.00
QL Toolset	Talent	17.00
Cartridge Doctor	Talent	12.50
Cosmos	Talent	12.50
Super Astrologer	Digital	21.00
Pro Astrologer	Digital	51.00
Super Media Mgr.	Digital	34.00
Cart. Media Mgr.	Digital	21.00
The Editor	Digital	25.00
ICE	Eidersoft	25.00
Icicle	Eidersoft	17.00
ICE Toolkit	Eidersoft	11.00
CHOice	Eidersoft	14.50
ARTice	Eidersoft	12.50
Ospell	Eidersoft	19.00
Ospell (disk)	Eidersoft	23.00
Home Finance	Sinclair	20.00
Decision Maker	Sinclair	29.00
Project Planner	Sinclair	29.00
Cash Trader	Sinclair	54.00
Touch Typist	Sector	10.00
Tasprint	Tasman	18.00
QL Multi Task	D.S. Ent's	12.50
Ram Disk	D.S. Ent's	12.50

ART AND DESIGN ONLY

Datacad QL (for Plotter)	Datakey	9.50
Viewpoint 3D	Rubicon	17.00
PCB Designer 1	Talent	85.00
PCB Designer 2	Talent	85.00
Graphical Plus	Talent	21.00
TechniQL	Talent	43.00
Technikit	Talent	21.00
Eye-Q	Digital	25.00
Super Srite Gen	Digital	25.00
Graphic Toolkit	Pyramide	12.50
Nucleon	Pyramide	17.00
QL Peintre	Pyramide	12.50
Sign Designer	D.S. Ent's	16.00
Cad Pak	Datalink	12.50
ARTice (need ICE)	Eidersoft	12.50

HARDWARE ONLY

Joystick adaptor	4.50	4 Microdrive Cartridges	7.00
The ARCADE joystick	17.00	4 Cartridges (in wallet)	7.50
Quickshot II joystick	8.00	20 Cartridges in Transform Box	39.00
Quickshot TURBO joystick	13.00	Transform storage box	4.50
Mouse + ICE + ARTice	85.00	Miracle Expanderam 512	115.00
Mouse Mat	8.00	Miracle Centronics Interface	18.00
Miracle QL Modem	45.00	Schön QL Keyboard	52.00
Citizen 120D Ribbon	7.00	Citizen 120D printer	219.00

BARGAIN BASEMENT

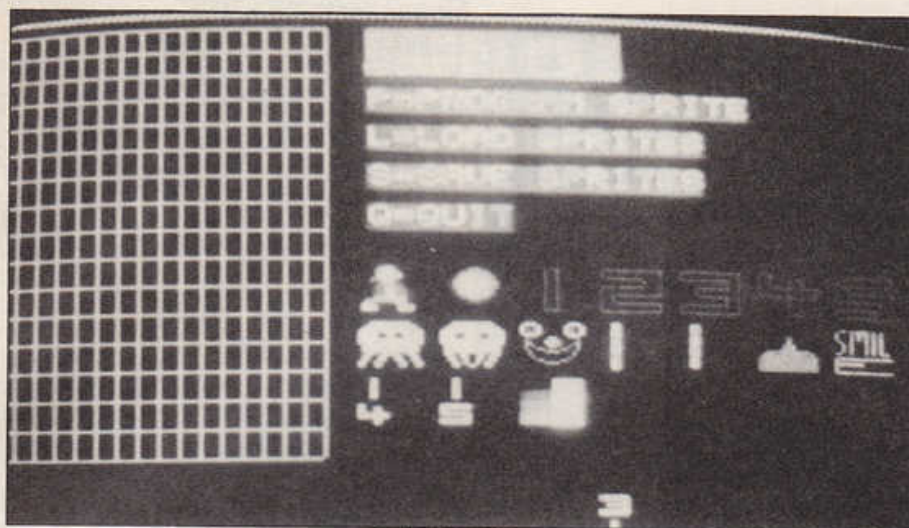
4 Game Pack (BJ in 3D Land + Citadel + Zapper + Eagle)	14.00
2 Game Pack (Boulder + Quboids) * Limited Stocks *	14.00
2 Game Pack (Droidzone + Blocklands)	15.00

Also BEST PRICES ON Atari ST Range and Software! Phone for prices!

ALL PRICES INCLUDE VAT AND FIRST CLASS POST
TELEPHONE (0636) 79097 FOR PERSONAL ASSISTANCE
Send Cheque/PO to:

BYTEBACK

20a SPRING GARDENS,
NEWARK, NOTTS NG24 4UW

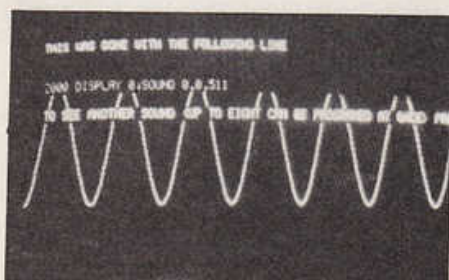


Icon Toolkit

SMILES

Smilng Software is still offering reduced prices on a range of software, including **Sound Experimenter** at £5, **Icon Toolkit** at £5, **Game Toolkit** at £5, the **Complete Toolkit** (the two Toolkits mentioned plus Character Toolkit) for £10, and the machine code "rubberised asteroids" arcade game **Blobz** for £3.

Smiling Software, 10 Fir Road, Marple, Stockport SK6 7QN. ◀



Sound Experimenter

CHAR-ED

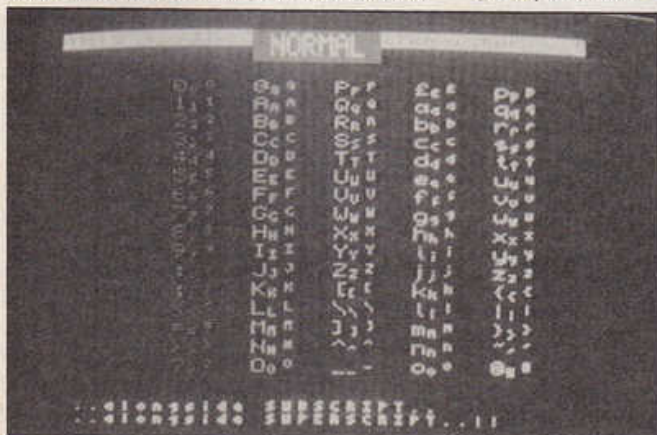
Chared, by Colin Opie of Vida Rebus, is a font editor program designed as a utility to work with Toolkit II. The Toolkit ROM allows SuperBasic users to select character sets other than those inbuilt in the QL, as well as altering the pixel block size of characters. Chared, in addition to Toolkit's own facilities, supplies extra pre-defined character sets, the creation and editing of new fonts, printer dumps and use of new creations in SuperBasic programs.

The program is designed to be easy to use, with a system of menus and prompts

such that the user can learn to manipulate it quickly without continually turning to the manual sheets, which can then be clipped away in the QL Users Manual for reference on the predefined character sets when needed. Re-defining characters and overcoming the limitations of the QL's character grid is covered in detail.

Care Electronics is also offering the **Toolkit II** of EPROM, and Liberations Software's **QLiberator** Basic compiler together for £74.

Care Electronics, 800 St. Albans Road, Garston, Watford, Herts WD2 6NL. Tel. (0923) 672102. ◀



◀ Chared - font editor program designed as a utility to work with Toolkit II

GROWTH INDUSTRY

Superplant sounds like another unlikely comic character, but is, in fact, a company which writes software on plants. Toby Hodd, a professional gardener for twenty years, found that his customers asked him such complex questions about plants and gardening that he began to feel that he needed a computer to answer them all. He was then inspired to write a series of data banks, based on the XChange Archive data base package, which would give advice on the choice and care of plant groups.

The five databases so far cover wild flowers for the garden, fruit trees and bushes, house and office plants, trees, shrubs and climbers, and flowering garden plants. Beside information about habitats, plant characteristics, soil types and plant needs, Mr. Hodd, who has a keen interest in conservation, has included notes about plants which are attractive to wildlife, and trees and hedging shrubs useful for planning environmental improvements.

The databases can be bought as a complete package for £39.00, any one of the programs with the basic gardening module for £11.95, and as additional packages for those who already have the basic gardening module for £8.00 each. The programs are available on microdrives or a choice of 3½ in or 5¼ in discs.

Superplant Software, Llangeitho Nurseries, Llangeitho, Tregaron, Dyfed, Wales SY25 6QG. Tel. 097 423 223 (from 10am to 8pm). ◀

LUCKY BAG

Pyramide Software is starting to release a library of cartridges featuring all kinds of useful programs, programming tips, mini utilities, routines and games sent in by professional and amateur QL users, particularly in SuperBasic. Called **Bag of Tricks**, the first two volumes contain respectively a character set, PEEKs and POKEs, a screen compressor, a Basic version of Pacman and various utilities (volume one) and a set of routines for tracing files, drives in use and free memory space, some games, some Graphic Toolkit out-takes, and more utilities (volume two).

Information about Bag of Tricks, and about submissions for future volumes, from:

Rio Promotions Ltd., 28 Waverley Grove, London N3 7PX. Tel. 01-349 2764. ◀

PUBLISH OR BE DAMNED

AN EXCLUSIVE REVIEW OF DP'S DESKTOP PUBLISHER BY HELEN ARMSTRONG, AND RON MASSEY ON HALLMARK'S Q-WRITER FONT CREATING PACKAGE

Put simply, the purpose of a desktop publisher is to provide text and illustrations, arrange them to make a presentable page, and allow that page to be printed. It must, at the very least, be a step up from a typed page with a photocopied doodle. I would say that the minimum step up implies graphic capture, justified and unjustified columnar layouts, and a choice of headline characters in adjustable sizes. After all, you can do a helluva lot with a good typewriter, a photocopier and some Letraset.

Desktop Publisher requires a 256 memory expansion, and incorporates twelve graphic (headline) fonts and eight QL text fonts as standard. There are 150 integral graphic symbols (including a choice of trees, for arborophiles) and 160 paintbrush styles. What this latter means in reality is that you can use any of the graphic symbols as a paintbrush, as well as the standard shapes. The way is paved for an almost bottomless supply of backgrounds, borders and patterns. The decorative fonts are proportionally spaced, but all character proportions can be redefined horizontally and vertically, pixel by pixel, and descender/ascender lengths altered. All characters and graphic fonts can be merged with AND, OR, and XOR options, inverted wholly or partly, mirror imaged, boxed, inverse boxed (wholly or partly), magnified up to 15 times in either axis (this includes the cursor path), striped or stippled, and rotated through steps of 90 degrees (sorry, no tilts...).

Extra fonts

The program travels on two cartridges which may well carry a few extra fonts. Extra fonts can be imported. Desktop Publisher will load any ASCII file, plus Quill files with non ASCII characters, in fact, say the programmers Cliff and Andrew Astrand, anything which can be translated into an uncompressed mode. All fonts can be edited, or adjusted letter by letter during makeup.

Text can be justified pixel by pixel, which allows for very accurate placement of annotations on drawings (horizontally,

vertically, sideways or even upside down) and carefully spaced text. Text can be justified, ranged left or right, or centred, made bold, italicised to the left or the right or inverted. There are four different styles of underlining, including double and single, vertical and horizontal ruled lines and boxes, columns to any width, variable line feeds on screen, and window-governed cut, copy and paste over both pages. Not only does the page scroll, but the contents of any window scroll as well. The program is completely compatible with Quill, and performs the full range of editing functions on Quill texts. DP's preferred method of generating outside text and graphics, of course, are their own programs **The Editor** and **Eye Q**, which I'll be having a brief look at. Text can be generated inside the program, and in the smallest text size and minimum line feeds (without actually overlapping) each page can handle up to 16K characters. A full page of work stores in about 96K, or one microcassette.

As well as generating patterns and line graphics, Desktop Publisher includes clip art for pinching, and can import graphics from various sources including **Easel** and (if you have one) via a digitiser, all fully editable.

There are four different styles of screen cursor (partly for accurate editing, partly for fun), and a two-cursor vertical ruler appears on the main screen. A calibrated green grid can be called up. The working area scrolls and pans, and can be joystick-controlled.

Access to designer screens is fully hierarchical, and any user who 'gets lost' or performs a wrong command inside the editing levels can get out safely and quickly via the esc. key without damaging the work or causing the program to lock.

Naturally, DP's pride and joy, the **Turbo Superbasic Compiler**, was used in writing the program, and Cliff said "We had to insert great long loops in places to stop the program from moving too fast for people to feel comfortable with. And then Freddy brought us the Turbo update, and we had to put even longer loops in." More important even than speed, to my mind, is

THE LATEST NEWS

SOFTWARE

DESKTOP PUBLISHING HITS THE QL IN STYLE

The QL software scene has been in a bit of a lull since the arrival of the QL. In fact, the only new software to appear in the last few months has been the QL. But now, with the arrival of the QL, the software scene is heating up again. The QL is a powerful machine, and it's time to see what it can do. The QL is a powerful machine, and it's time to see what it can do. The QL is a powerful machine, and it's time to see what it can do.

Joysticks are FIRE HAZARDS

Software Security Becomes Even Tighter!

From the makers of the QL, the QL is a powerful machine, and it's time to see what it can do. The QL is a powerful machine, and it's time to see what it can do. The QL is a powerful machine, and it's time to see what it can do.

STOP PRESS

It is rumored that the QL is a powerful machine, and it's time to see what it can do. The QL is a powerful machine, and it's time to see what it can do. The QL is a powerful machine, and it's time to see what it can do.

the very complete set of status reports, along with the font/graphic menus and instruction menus which are displayed to the right of the working area at all times. Although the program is fully menu-driven, nearly everything can be done with single keystroke commands instead. The cursor can be homed, and caps lock is indicated on screen.

Desktop Publisher supports two paper formats and four different print routines, printing A4 and foolscap in both landscape and portrait, with vertical and sideways printing options for either. The printer driver is as usual directed towards Epson compatibles, but is reconfigurable for most other suitable printers (ie, not daisywheel) in both serial and parallel modes, and with multiple pass printing up to five times for a sharper finish.

The two packages which are being offered alongside Desktop Publisher, **The Editor** and **Eye-Q**, have already been around for a while. DP stress that Desktop does not require either of these progs to operate but, obviously, the dedicated programs have more facilities than integral custom designers.

Eye-Q by itself costs £29.95, and is a freehand/box/rubberband style graphics generator. The basic functions are paintbrush, airbrush, erase, fill, and rubber bands in circle/ellipse, line/arc or rectangle/block. Operation is by window menu and by single keystrokes - a great many functions can be performed on the graphics screen by the latter, for instance, the size of the cursor (and therefore of the paintbrush) can be changed using CTRL W. CTRL T allows the typing of text characters over the graphics screen in various different modes, and the program incorporates a font editor.

Screens can be saved whole or in part

23 Market Square, Fleet, Hampshire.
Telephone 02529 535292.

RIPOFFS AND SONS

SURVEYORS • ESTATE AGENTS • VALUERS

OFFERS OF AROUND
£50,500 REQUIRED

Consistently located in a much sought after area, close to local shops, schools and bus services. This property is a three-story house with a large garden and a detached garage. The house is built of brick and has a tiled roof. It features a large living room with a fireplace, a kitchen with a bay window, and three bedrooms. The bathroom is modern and has a separate shower. The detached garage is large and has a concrete floor. The property is in excellent condition and is ready to move into.

(window selected), compressed or uncompressed. Screens and fonts can be saved to Basic as well as to storage media, and with any extended QL more than one Eye-Q can be run at a time.

Status information is displayed on an unobtrusive status line at the top or bottom of the screen.

The Editor, now £29.95 (\$39.95 for the expanded QL version) is a not-a-word-processor. It is a text generator which can handle any kind of text file, document, program, as well as a range of special characters for handling ASCII and control commands as if they were normal text.

The great advantage of The Editor, apart from its flexibility of application, is speed. The advance old age suffered by users waiting for certain wordprocessors (including the vaunted Amstrad PCW, much used in this office) to scroll through, delete or move blocks of text is not a problem.

The program does not impose its own format on the text, except as the user specifies, and no 'control' data travels with the output, which is then clean to be handled by another formatting source, such as Desktop Publisher. Files can thus be generated for final embellishment elsewhere, or brought in from other WPs (Quill in particular) for bulk alteration and reformatting.

At the moment, Desktop Publisher will not take photographs or make the coffee, but they're working on it. It certainly will do almost everything you want from a DTP package, and in conjunction with Digital Precision's other programs forms a very impressive system. ◀

Price: £69.95, with Eye-Q £94.95, with Editor £104.95, with both £129.95.
Supplier: Digital Precision, 222 The Avenue, London E4 9SE, 01-527 5493.

Usable as either a stand-alone program or as a background job serving a text editor, the current edition of *Q Writer* is supplied with ten distinctive font styles and in two configuration versions on one master microdrive cartridge.

Users of QLs without RAM expansion can configure the main program module so that only one or two selected fonts are held in memory at any one time. Fonts are loaded with the **NLQ_LOAD**

drive_fontname,font_number command. Whenever a new font is loaded using a current font number, the previous font is cancelled.

Alternatively, users of expanded machines may opt to use the special main program module, with eight of the fonts built in, and may load up to a total of 32 fonts at any one time, each of which is identified with its own number code.

Switching between fonts is done by using appropriate codes and can include any other printer control codes supported by the *Q Writer* system. Printer commands are initialised with *Q Writer's* port emulation mode by adding a line to *Quill's* or *The Editor's* boot program: **NLQ_USE device** (ser or par).

Changes of typeface in SuperBASIC are made by sending *chr\$* control codes to the printer, initialised by the number two. Starting a particular typeface, such as *Q Writer's* Roman font number five would be done by inputting, in SuperBASIC: **Open#3, NLQ/5.**

All subsequent font changes are made by prefacing the font number required with the number "2". Typically, a command from SuperBASIC for changing from one font style to font four, a particularly good Olde English typeface, is made by inputting: **Print#3; chr\$(2); chr\$(4).**

If used with an extension toolkit supporting BPUT, font styles and any of the printer control commands supported by *Q Writer* may be sent to the printer from SuperBASIC by prefacing a block of text in a particular typeface with the command: **BPUT#3, 2 font no.**

Users of *The Editor* can produce an equivalent control code insertion in a block of text by inputting characters **<CTRL> <SHIFT> <C>** (producing *The Editor's* own character "T", with an over-score), 2,font no., followed by any other *Q Writer* control characters required.

Other commands supported directly

by the *Q Writer* system include codes for the printer bell (7), tabulation (9, plus two additional numbers indicating tabulation spacing), form feeds (12), select and deselect proportional printing (20 and 19, respectively).

Q Writer's definition of unproportional spacing is that, when selected, the spacing of each character is equal to the widest character in the font. Selecting another font cancels the unproportional spacing option selected by a previous font.

Of particular interest is a facility for selecting and deselecting character space out (17 and 18, respectively) and another facility for selecting either normal width or double width (15 and 14, respectively). The latter facility produces a typeface width increase of $2\frac{1}{2}$ times than that of the normal width.

Q Writer's fonts may be used with any Epson compatible printer either directly from SuperBASIC or from within text-management programs such as Psion's *Quill* or Digital Precision's *The Editor*.

The only real limitation encountered with *Q Writer* is that, if two or more jobs are running concurrently in the QL, they will remove all data from the

Olde English in unexpanded.

Olde English expanded.

Expanded Olde English, with Space Out.

Standard Data font example.

Unexpanded Data Font with Space Out.

Expanded Data Font.

Expanded Data Font, with Space Out.

NLQ queue, sometimes producing unpredictable results.

An omission from review copy of *Q Writer* is that it did not include a font editor for users having particular font or special symbol requirements, although Hallmark have promised to provide a character editor for *Q Writer* within the next three or four weeks.

A well thought-out, easy to get on with program, my only criticism of *Q Writer* is its rather minimal documentation. Of its nature, *Q Writer* is not a difficult program to get to grips with, quite the contrary. But, as with so many programs of this type, it is easy to overlook useful applications. ◀
Supplier: TK Computerware, Stone Street, North Stanford, Ashford, Kent CT25 6DF, 0303 81 2801.



TURBO V1.14

THOR
COMPATIBLE

"Dramatic . . . bug free . . . an excellent program . . . a great advance on Supercharge . . . more capable (than the latest version of QLiberator) . . . the fastest SuperBASIC compiler so far . . . mind-bending . . . takes SuperBASIC and the QL into a new era . . . With TURBO we should start to see programs which are unthinkable on any other small micro"

Up to 100X speedup on BASIC! QL WORLD, April 1987

- ★ Supremely fast – even QL World's independent benchmarks, which do not use TURBO's speed-optimisation options (which give a further 100% – 150% speed increase), show a 230% (yes – TWO HUNDRED AND THIRTY!) speed increase over the latest version of QLiberator. We can demonstrate speed improvements that are far greater, and the speed of compilation itself is typically 100% + more than on QLiberator.
- ★ Supremely concise – even QL World's size benchmarks, which do not use TURBO's size optimisation or diagnostics off options (which yield a further 40% saving in code space), show that TURBO generates more concise tasks than QLiberator!
- ★ Supremely compatible – TURBO compiles virtually anything you care to throw at it. Full auto-corrector built in, takes interpreter bugs in its stride, warns you if you've been too naughty.
- ★ Supremely easy to use – a beautiful front-end, on-screen help, instant abort, no LENSLOCK, window adjustable during compilation, multitasking while compiling, adjustable buffer size/window copying/DATASPACE from front-window, user configurable to avoid boring keyboarding, adjustable report file (to screen/printer/file etc.) in full or condensed format, etc.
- ★ Supremely flexible task communications – use PRINT and INPUT to communicate between any number of multitasking jobs – even arrays can be passed, and channels can be shared! Option strings can be passed as parameters of EXECUTE.
- ★ Supremely free from restrictions – you can use procedures or functions in any task from any other task! Generate tasks as large as the QL's 640K RAM – or go down the modular route (we supply a program to help you) and instantly link any number of modules.

★ Supremely Servile (!) – TURBO lets you choose between switching diagnostics on/off (off = shorter code), and between setting optimisation to global speed/localised speed (on a statement block basis) ★ size ★ size with localised speed ★ none, a total of 15 options. You are in the driving seat. If you slip up, we give you a report that pinpoints your mistake, exact to the character!

★ Supremely feature-filled: Virtual arrays, rubber arrays, implicit datatypes (accelerated, fully re-entrant integer FOR loops and integer/STRING SELECT on all QL's), full WHEN – ERROR trapping of any error on any QL version to a single point (error handlers – you can have any number of them, hierarchically laid out – have full access to line and error numbers, and you can RETRY or CONTINUE/RESTART as you choose) even when in another task, parameter passing by reference as well as by value, 9 digits of displayed accuracy, etc.

★ Supremely powerful TOOLKIT included, with ONE HUNDRED AND EIGHTY (!!!) really useful commands, utilities and functions for the BASIC programmer. There is no space to even begin to list them – suffice it to say that TURBO TOOLKIT's most 'comprehensive' rival has little more than half as many features. The TOOLKIT (which is RAM based) is designed to complement existing toolkits (e.g. the Supertoolkit) as far as possible.

★ Supremely documented – a THREE HUNDRED AND FIFTY A4 PAGE, lucid, illustrated user encyclopedia.

★ Supremely generous – there are no royalty restrictions on TURBO'd programs

The TURBO System costs £99.95 COMPLETE

TURBO IS BRILLIANT. PRESS COMMENT FROM EVERY SOURCE IDENTIFIES IT AS THE MOST OUTSTANDING BASIC COMPILER FOR ANY MICROCOMPUTER.

The TURBO TOOLKIT is perfectly usable as a stand-alone toolkit, and costs just £29.95. This amount will be credited if you subsequently purchase THE TURBO SYSTEM.

"You are getting good value, and there is a lot more . . . TURBO TOOLKIT is a comprehensive product which will not leave you wondering where your money went – it offers a wide range of facilities to everyone – whether or not they own a compiler!" . . . QL World, December 1986

BETTER BASIC EXPERT SYSTEM

This does what its title implies, and its use is in analysing, correcting and annotating programs written in SuperBASIC or programs in other BASICs to be translated into SuperBASIC. BETTER BASIC is user-configurable and very easy to use.

"Excellent – a 5 star program" SINCLAIR USER, December 1986

"Intelligent – does well what it sets out to do" QL World, Jan. 1987

BETTER BASIC costs £24.95 complete with manual

£5 OFF if you are also ordering TURBO or SUPERCHARGE

THOR
COMPATIBLE

★★★★★ GAMES ★★★★★

There is a misconception among those who don't own a DP game that because DP produces the best "serious" software, DP can't also be good at games. We strongly disagree!!

BLOCKLANDS £9.95 "DP Classic" QL WORLD

"An addictive game . . . at twice the usual speed" QL WORLD

DROIDZONE £9.95

"mind-numbing" SINCLAIR USER

"For sheer blasting you would be hard pushed to beat DROIDZONE"

SUPER ARCADIA £9.95

QL WORLD

"We flipped over SUPER ARCADIA" HOME COMPUTING WEEKLY

SUPER REVERSI £9.95

Did you think Psion Chess was strong?

SUPER BACKGAMMON £12.95

"Brilliant" QL WORLD

Any 3 for £24, any 4 for £30, all 5 for £36!!

SUPERCHARGE V1.19

The old favourite – this acclaimed system automatically translates slow SuperBASIC into fast multitasking machine code. Ideal for those who do not need the full power of TURBO. "Superfast, Super compact and Super flexible – produces minor miracles – a superb utility – a 5 star program – a Sinclair User Classic (the highest award given to any program)" SINCLAIR USER

"The best professional applications package available . . . extremely impressive . . . the quality speaks for itself" POPULAR COMPUTING WEEKLY

"The claimed speed increase over SuperBASIC was substantiated . . . QLiberator lacks Supercharge's finer features and is generally slow" . . . ZX COMPUTING

"A runaway success – SUPERCHARGE is dangerously close to being a completely over-the-top raver . . . performance is simply dramatic . . . the final spark that sets the QL software scene alight" . . . SUPERCHARGE really shows that you can do things on a QL that you can't on other machines"

YOUR SINCLAIR

"The claims made by DP are completely factual and in some cases understated. I was astonished with the speed . . . incredible . . . it really does what it says. The QL is at last forced to live up to its original specification" QUANTA

£49.95 with 110 page A4 Manual.

SUPER MEDIA MANAGER V1.12

An essential program for anyone who uses microcartridges and/or disks to store things of value! No more need you fear for the safety of your programs & data. Super Media Manager provides a host of device management tools in one integrated, fully menu-driven unit – an unbelievable 350K of programs!

- ★ Selective directory, copying, and erasing of files
- ★ Sector loading and viewing (cursor controlled)
- ★ Sector editing – Hex, and ASCII input allowed
- ★ Automatic reports when mapping sectors
- ★ Sector copying to sector, file, device, etc.
- ★ Viewing, printing, or saving of drive map details
- ★ Automatic (semi-auto on disks) recovery of deleted files
- ★ Bulk recovery of corrupt files to new files
- ★ Header block or Disk type information display
- ★ String searching by sector or file – ultrafast
- ★ Full directory sort facility, by name/size/type/date etc.
- ★ Control upto 256 separate cartridges/disks – DIRECTORY OF DIRECTORIES
- ★ Direct file copying from other disk formats (PC-DOS, MS-DOS, CP/M, Acorn DFS etc. etc.) – sector copying to other disk formats.
- ★ Text file translation utility – expands tabs, converts CR/LF to LF intelligently: converted files may be imported to Quill.
- ★ Disk sector editing for both QL & non-QL disks, with all the usual features
- ★ Full error reporting with automatic recovery
- ★ Hexadecimal calculator
- ★ System configuration

THOR
COMPATIBLE

"SMM has every possible facility . . . it's got to be a world beater" QL WORLD, November 1986

£39.95 COMPLETE WITH 98 A4 PAGE MANUAL OR £24.95 FOR A CARTRIDGE ONLY VERSION



PROFESSIONAL ASTROLOGER V1.5

NEW FASTER VERSION (TURBOCHARGED)

THOR
COMPATIBLE

- ★ Amazing Astrology system ★ Supplied with 140 A4 page Manual which assumes no knowledge of astrology ★ Gives 10 A4 pages of personality/character delineation ★ Gives 6 A4 pages of day-to-day and year-to-year personalised text predictions ★ Gives 3 A4 pages of text comparisons between two people ★ Massive 300K of user adjustable text files (450K for disk users) supplied together with machine code editor ★ Incredibly fast – 0.5 seconds/computation ★ One minute accuracy this century ★ Exact hardcopy on all options – 16 print modes, user definable astrological glyphs and printer driver ★

"One-of-a-kind . . . every requirement provided for . . . descriptions such as superb, ultimate, excellent are barely adequate" QL World

"The most powerful & complete astrology package on any micro . . . provides everything that a present day Nostradamus will need . . . the ultimate astrology package . . . a 5-star (★★★★★) program – a Sinclair User Classic (the highest award given to any program)" SINCLAIR USER.

"The best Astrology program of them all" PREDICTION Europe's leading astrological magazine.

"Fascinating . . . unrivalled accuracy . . . excellent value . . . the most comprehensive astrology program ever produced" LIVERPOOL ECHO.

PROFESSIONAL ASTRONOMER is £10 extra for users of Professional Astrologer. ASTRONOMER has a full planetarium display, a choice of 5 coordinate systems, Moon/Mercury/Venus/Mars actual face display with real shadows and eclipses, automatic parallax correction (only NASA has this!), solar system display in parallel projection with zoom, tilt, freeze, autoincrement, etc. If not bought at the same time as Astrologer, the price is £12.95.

£59.95 Complete with huge manual, or £69.95 with Astronomer

SUPER
ASTROLOGER
£24.95

"Incredibly fast . . . unnervingly accurate even on default files . . . a powerful tool . . . easily the best & most powerful astrology program for any micro . . . I would strongly recommend it" QUANTA

"An invaluable tool – an excellent package – a 5 star (★★★★★) program" SINCLAIR USER

A fun-filled package for beginners – ideal for parties, friends, entertainment.

"Succeeds very well . . . an excellent program . . . you certainly will not find as good an astrology program as this on any other home computer" QL USER/QL WORLD



DIGITAL PRECISION DESKTOP PUBLISHER



THOR
COMPATIBLE

A Full Function Machine Code Desk Top Publishing System! No more need to suffer constant file updating, primitive graphics, achingly slow screen updating, occasional lockouts... DESKTOP PUBLISHER's specification, speed and performance equals or exceeds those of packages costing hundreds or thousands of pounds... Total user control ★ Fully WYSIWYG (What You See Is What You Get) ★ Extreme user friendliness ★ 12 integral graphic fonts ★ 8 integral QL text fonts ★ 150 integral graphic symbols ★ 160 integral paint brush shapes ★ 10 non-integral fonts supplied ★ decorative fonts ★ All fonts can be adjusted both horizontally and vertically ★ Borders and margins generated from a graphics menu ★ all proportions redefined pixel by pixel ★ centre and true descender editing of characters ★ merging with AND-OR-XOR ★ whole and partial inversion ★ mirror imaging ★ Switchable grid ★ separately adjustable X & Y axis magnification and reduction ★ up to 15 zoom ★ Stipples ★ Stripes ★ rotation ★ importing of text and non-text documents from the Editor ★ Importing of text documents from any word processor (even Quill!) ★ Importing of screens/part screens/compressed screens/part-colour screens from EYE-Q, the finest graphic package available ★ Importing of full screens saved by any graphics package ★ Freehand drawing of screens with restriction free mixing/overlapping/combining of text and pictures ★ Full cut and paste facility ★ selective save ★ hierarchical escape-undo function - you will not lose things accidentally ★ 960 × 800 pixel drawing area (×2 if you have a fully expanded

QL, and cut/copy/paste over 2 pages) ★ 80×160 lines×columns ★ full device independence ★ Epson-compatible hard-copy output in either A4 or foolscap ★ Upright or sideways printing facility built in ★ UDGs on (8×8) (16×16) ★ Full-feature integral font editor ★ Full-feature integral graphics generator ★ Left, right and centre justification - **PIXEL BY PIXEL (!)** ★ Bold & italics left & italics right ★ pixel by pixel or character by character movement ★ perfectly usable with a cartridge-only system ★ 4 different cursors ★ 4 different underline styles (single/double/plain/stipple) ★ Cursor-dragged, user-definable boxes ★ columns to any width (multiple justifications allowed!) ★ Variable line feeds ★ fully menu driven ★ Screen pans and scrolls ★ Window pans and scrolls ★ Text/picture within window pans and scrolls ★ Direct entry of text with full range of editing & movement commands ★ clip art ★ caps lock indicator ★ Horizontal & vertical rulers ★ Full status reports on-screen ★ help facility ★ Single key stroke commands ★ Extremely - even unbelievably - fast ★ Reconfigurable printer driver ★ multiple pass printing (up to 5 passes) ★ PAR & SER Printers ★ Alteration by block + line + word + character + pixel ★ Check question before any drastic action ★ Large & Lucid A4 illustrated manual - with an index ★ Needs at least 256K expansion RAM (DP will supply a full 640K expander (external, with plug through connector) for £109.95) ★ Easy creation of A5/A4 booklets, cards, letterheads, posters, bulletins, newsheets, newsletters - even newspapers or magazines.

DESK TOP PUBLISHER COSTS £69.95

FULLY MULTITASKING

While Desktop Publisher is a stand-alone program, to get the very ultimate in flexibility we recommend:

DESK TOP PUBLISHER + EYE-Q COSTS £94.95

DESK TOP PUBLISHER + THE EDITOR SPECIAL EDITION COSTS £104.95

DELUXE DESK TOP PUBLISHER (including EYE-Q + SPECIAL EDITOR) COSTS £124.95

READ THE RAVE
PREVIEW IN THIS ISSUE

THE EDITOR V1.15/V1.16 SPECIAL

"Superb... it exceeds feature specifications found in even the best word processors presently available... natively multitasking... you will actually look forward to using Editor (this never happened with Quill!)... you are in complete control... seldom have I ever come across a program which positively scintillates with such due care and attention"... QL World, January 1987.

The Editor is amazing - a few of its features are summarized below:
★ Speed improvements of the latest edition of the EDITOR over Quill are simply ridiculously good - load-time improvements of 25 times, block-handling improvements of over 100 times, deletion improvements of 50 times, searching improvements of 100 times.

paging improvements of 100 times, copying improvements of over 1000 times, etc...

★ Flexible - Editor can load and handle text, Quill documents, SuperBASIC programs, listings in assembler or high level languages, QL screens, data files, machine code object files, alien format files caught by Media Manager, even Editor itself (!) - and you choose your own fonts too.

★ Feature-packed - an independent count of features yielded QUILL 14, METACOMCO ED 17, EDITOR 65 (!) (Ask DP for a factsheet if you are a sceptic)

★ Here's a mind blowing option - Editor allows you to create

command files (using ANY/ALL of the 102(!) commands) for subsequent execution. In the SPECIAL EDITION, these command files can have up to nine parameters each... pause & think what can hence be accomplished!

★ Friendly - with full on-screen help and a very flexible configurator giving you access to everything (screen shape, size, position, three ink colours, three paper colours - even the characters to act as delimiters for word searching or replacing).
★ Now with a new all-singing, all-dancing printer driver - lets you start where most Editors stop!

★ Lucidly documented - new larger manual.

There are two versions of EDITOR - one that will work on any QL, and a SPECIAL EDITION with dozens of additional features but which needs at least a 128K RAM expansion



EDITOR costs £29.95

SPECIAL EDITION EDITOR costs £39.95 complete

NEW

THOR
COMPATIBLE

EYE-Q V2.0 The Definitive QL Graphics/CAD System

Fully driven by pop-up menus ★ single key entry ★ several zooms ★ windowing ★ proportional movement ★ paint/fill ★ rubber bands ★ arcs ★ ellipses ★ circles ★ lines ★ files ★ replicable sprites ★ horizontal & vertical stretch ★ reflect ★ invert ★ transfer ★ pan/scroll ★ undo (ie, whoopee!) ★ font design editor ★ automatic anti-aliasing ★ graphic screen compression ★ offset display ★ on-screen help ★ XOR/OR cursor with variable width ★ paste ★ recolour ★ magnify ★ reduce ★ text inclusion ★ freehand movement ★ localised save/load/scroll/pan/recolour/zoom ★ directory handling ★ full range of QDOS colours & stipples available through paintbox ★ user-definable defaults ★ 2 fonts supplied ★ amazing 4 colour airbrush ★ user definable printer driver (user sets proportionality, graphic mode, density etc) - hundreds of printers supported ★ improved fill and compress ★ 3 text modes plus toggle off ★ rubber band boxes and own screens ★ full compatibility with SUPERCHARGE, TURBO, SSG V4.0, joysticks + TURBO TOOLKIT ★ monochrome save ★ localised options on all full-screen operations ★ user switchable resolution ★ SuperBASIC extensions supplied free

Two artistic but provocative demo screens supplied - prides stay clear!!

"Includes every conceivable drawing option... is simple to use... a powerful CAD system of monumental proportions... outstanding... a brilliant concept, highly innovative... accuracy is superb... very well produced, incorporating the best features of other graphic programs... very original, useful, highly innovative functions..." QL WORLD

"Digital Precision is right, this is the definitive QL art package - go out and get it. This program wins, no problem!" SINCLAIR USER

"Up to now, the last word in graphics packages for the QL has been from Talent. EYE-Q has more features, is considerably easier to use, and is also about half the price!"

POPULAR COMPUTING WEEKLY



EYE-Q costs £29.95 complete with lucid A4 documentation

EYE-Q is fully compatible with DP's new DESKTOP PUBLISHER

The GIGA mouse version of EYE-Q costs £34.95

THOR
COMPATIBLE

SUPER SPRITE GENERATOR VERSION 4.0 DE LUXE

Superb games designer in its final form. New manual, up to 256 multicoloured sprites, up to 256 planes, up to 16 frames each, windows with screen 1 and 2, 100% flicker free, individually variable speeds, hundreds of special effects. Works with keywords from SuperBASIC or machine code (new faster integer keywords supplied) - easily compiled with SUPERCHARGE or TURBO.

"A well-designed & carefully planned utility - invaluable - simply excellent" QL USER.
"The sprites produced are very good" POPULAR COMPUTING WEEKLY

"Excellent" THE U.S. QL REPORT

"The results that can be achieved are excellent" ELECTRONICS & COMPUTING

Most QL games on the market are written using Super Sprite Generator... now you can get the same effects!

£29.95 COMPLETE, OR £24.95 IF BOUGHT WITH EYE-Q

TERMS & CONDITIONS

- UK delivery costs are all-inclusive. Europe add 5%, elsewhere 10% to cover airmail costs.
- Program upgrades can be obtained by sending us the original cartridge (NOT the packaging or documentation) plus £10 (£12 Europe, £15 elsewhere).
- SUMMER BONUS - £1 off if you buy 2 programs, £2 off on 3, £3 off on 4, etc.
- A deluxe stand-alone keyboard is available for £89.95 (it has numeric and cursor keypads) - or just £174.95 if bought together with TURBO. Or get TURBO + ICE £119.95 - or £129.95 including CHOICE.
- The GigaMOUSE system and the GigaSOUND system cost £89.95 each - 10% discount if bought with any DP program

SUPERFORTH V2.0

The full multitasking, stand-alone, high speed FORTH-83 system is now supplied with an extremely powerful compiled Othello (beat the 1983 World Champion program from MOII). This latest version has new, extended documentation and full string handling. Now fully compatible with 68000 code & QDOS.

"Succeeds very well" QL WORLD

"The Definitive FORTH... excellent... very fast..."

user-friendly... the best! QUANTA

SUPERFORTH costs £39.95 complete with 100 page A4 manual

Coming soon
MASTER BRIDGE PLAYER

DIGITAL PRECISION

To: DP, 222 THE AVENUE, LONDON E4 9SE

(Or use the Credit Card Hotline 01-527 5493)

Please rush me

Name Address

Postcode

Enclosed ☐ Cheque ☐ Cash ☐ P.O. ☐ Access/Mastercard ☐ Visa/Barclaycard

for the amount of £..... Number

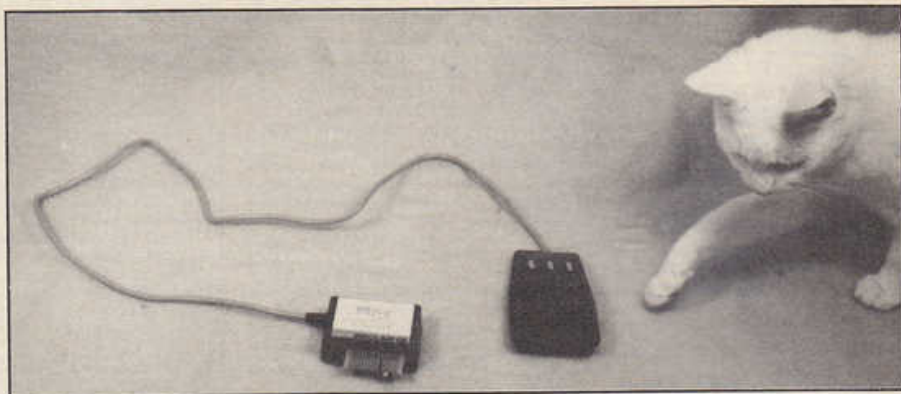
Expiry date

Please indicate if you have ☐ 3½" disks ☐ 5¼" disks ☐ Microdrives only

If you have disks, do you get ☐ 720 sectors ☐ 1440 Sectors

Signature

COOL LOOK AT CAD



EIDERSOFT'S WIMP SYSTEM AND RUBICON'S VIEWPOINT USE THE QL'S GRAPHICS IN DIVERSE WAYS. DENNIS LEEK ASSESSES THEIR STRENGTHS AND WEAKNESSES

Eidersoft's ICE has become such a standard fitting for serious QL users that not a few of us would have to think twice if the machine booted up first thing in the morning without the dustbin in the right hand corner. Icon Controlled Environment, for the information of the others, is a WIMPS-type icon-driven front-end program which allows you to LOAD, FORMAT, COPY, RENAME, etc. etc. your files without having to type out "mdv1_" and the rest every time. The lazy/sensible person's command list. ICE is installed in a plug-in ROM cartridge, so it boots virtually automatically, and it supports a variety of other icon software such as ChoICE, which allows five way multi-

tasking, among other things, and ICE Toolkit, which incorporates ICE features in your own programs, all at a reasonable price.

Last year Eidersoft consolidated ICE's usefulness by bringing out a mouse controlled version, along with two grades of mice. Icon-driven menus are ideal for people with a steady hand and no keyboard skills. Being the opposite, I generally prefer not to use them, but once you are committed to icons or indeed anything which can't be set up for single-keystroke commands, a mouse is a godsend.

The ICE mice have the basic ICE system already installed in the interface,

an alternative to buying the mouse and fitting it to a previously owned ICE. There are two versions, the Mouse at around £40 and the "fully ball raced" Supreme Mouse at around £60. Both our samples worked pretty well, especially considering the adverse conditions on my working surface, which is not usually configured for mice.

Having tested the mice on ICE and ChoICE, and quickly getting used to moving the cursor around via the desktop, I went on to try out Eidersoft's ArtICE freehand graphics package. It was here that I had my first grouse with the handbook which, like many other user documents, is perfectly clear if you know in advance what you are supposed to be

T rue three dimensional computer aided design for the Sinclair QL" says the subtitle on Viewpoint's smart black and white packaging. Elsewhere in the comprehensive handbook, it reminds you that it makes sense to plot out drawings of any complexity on graph paper first. Apart from the neatness of the final output, CAD packages are only an advantage if they are flexible enough to make real savings in time and trouble. Viewpoint's handbook takes considerable care to orientate the user so that, without contracting any false sense of security, I found that I could start screen drawing without tears.

As it was a while since I had used a CAD package, I went for the demos first. Pressing C gave me a blue wire frame cube with the x, y and z co-ordinates in yellow and red. I wasted time trying to remember what r, ϕ and θ meant, but once I dropped that and did as the instructions told me, I found that it was easy to rotate, zoom in and zoom out around the cube in larger or smaller jumps.

Using ALT with the cursor keys gives much larger increments, but with the alphanumeric keys it stops any further

progress, so that rotating can be done in large jumps, and zooming in slightly more modest steps. I idly enlarged the cube right off the screen, and then had a tedious job on my hands to bring it back again before I had realised that I could zoom it much faster by using P. All the movements can be repeated by holding the keys down. Reconstruction of a complex drawing after each movement in mode 8 graphics is by no means slow, but it becomes tiresome if you are doing a lot of manipulation, so the screen can be toggled to mode 4, where redrawing takes place very quickly.

The second demonstration is a set of spherical polar co-ordinates which can be tumbled about to get a clearer picture of what different axes and co-ordinates mean in practice.

Constructional screens can appear either in VIEWPOINT mode or in entry mode, and can be toggled (from entry mode only, although it affects either screen) between mode 4 and mode 8 graphics. Entry mode accepts the instructions which build up the figure. For simple three dimensional shapes this is easy: the program provides a number of standard shapes: box, circle, sphere,

rectangle, line and a polygon with any number of sides between 3 and 10. There is also a mirror image command which speeds up the building of symmetrical forms, but must be treated with caution if you don't want to end up with a mirror image in the wrong plane - and although there is an immediate delete function, I haven't yet succeeded in 'undoing' a mirror image.

Other commands which speed up drawing are Join, which joins two numbered co-ordinates with a straight line, and Search, which enables co-ordinates to be accurately 'grabbed' and identified in the lower left hand subscreen (and also identifies the real whereabouts of the cursor, which by the very nature of the process is quite easy to lose track of).

Other commands display a set of xyz axes over the drawing, or alternatively superimpose a calibrated grid in the same plane as the cursor. (T)ranslate moves the whole drawing along one of the axes, and O(rigin) moves the cursor instantly back to the screen centre, which can be an essential move if another manipulation has moved the cursor suddenly off-screen. W(rite text) allows text to be overwritten on the drawing. The text does not become

doing. The quibble, for instance, that it isn't entirely clear WHICH of the three programs prefixed BOOT you are supposed to operate can be answered by saying that only a noddly would run the wrong file. But a user book should guide even a noddly through a loading sequence without confusion. Throughout the rest of the manual, too many steps are referred to vaguely or out of sequence.

The mice replace manual ICE's double-click/single-click operation with the centre/left hand buttons on the mouse. In ARTICE, the left hand button is used only to change the ink colour during drawing.

The QL's processing power means that it can handle complex graphics quickly. The mouse enables quick and accurate (depending on how steady your hand and eye is) freehand cursor movement. Booting ArtICE puts you straight into a black screen with a tuppenny-sized white dot for a brush. This is the experimental screen for new users, where you can practice painting broad strokes while scrolling through the ink colours using the right hand mouse button, and turning the ink on and off with the left one.

However, these are the only two choices which can actually be made within the drawing screen. All other changes have to be made through the main icon menu, which entails much cursor shifting and clicking to and fro, which slows down the whole process. To take a simple example,

doing a 'duck on a pond' scribble, the 'fill' function has to be reselected from the main menu for every change of ink colour.

Using the crosshair brush, the colours can be changed pixel by pixel. The $\times 7$ screen magnifier is helpful here, but it can be done on the full screen if you have patience and good eyesight.

As well as plain ink (the usual eight colours in mode 8 and four in mode 4) two colour effects, airbrush and stipples/stripes can be obtained from the menus. Airbrush simply gives a random stipple in the track of the brush, with a choice of five stipple densities. The INK menu (which does give you visual indication of which ink colour you are changing to - you just have to go through two menus to find it) allows a choice of plain, or any two colours mixed in regular stipple or one-pixel bars, plus their inversions.

Aborting the last operation is done via the Undo menu, a window which appears on the drawing screen when the main menu is selected by pushing the middle button on the mouse.

RECOL(our) allows changing of all or any of the colours over the whole or part of a screen. Selecting a part of the screen is done via cursor-set pull down windows. This is useful for altering one colour in a small area, such as the colour of a piece of text. Unfortunately, the process is made more cumbersome because an

"alternative" colour has to be selected for all eight colours every time RECOL is used, even where only one colour is actually going to be changed.

COPY allows areas of the screen to be bodily transferred, duplicated and saved individually as files for future use. This includes an IGNORE function so that you can discard one colour, such as an unwanted background, from a block before you move it.

The manual refers several times to the fact that ArtICE uses all the available memory on an unexpanded QL, but this fact notwithstanding I would still have liked to see some status information, for instance, ink number and x/y cursor position, on the drawing screen to save a lot of clicking and cursor-leaping about.

Fast graphics, slowed down by the select procedures – but I still found ArtICE enjoyable and straightforward to use, even though the manual is like a jigsaw puzzle. (The manual index gives eight entries, all concerning the mouse, in the first three pages, and only two entries for the other twelve pages!). And at £14.95 it is good value and an attractive add-on to ICE and the MICE. There is also the non-mouse version with only minor differences to the mouse one – ideal if you have a talent for drawing curves with the cursor keys! ◀

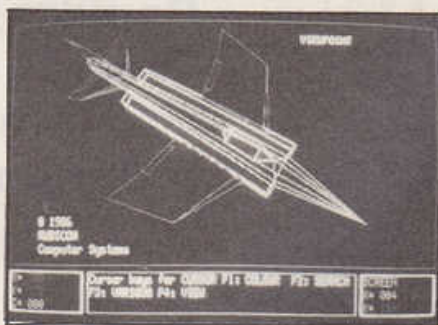
Supplier: Eidersoft, The Office, Hall Farm, North Ockendon, Upminster.

part of the drawing, but remains (and prints out) at the screen position where it was entered. It can be removed wholesale by CTRL W, but not edited.

Colour is deployed by the cursor, and the colour of the next piece of the drawing to be laid down can be reselected at any time via function key 1 and a menu. There is no colour fill function, and personally I found the colours more distracting than helpful on complex drawings. They occasionally helped to establish perspective – this is a matter of personal taste.

Colours already laid down in either mode can't be deliberately changed (although switching modes automatically causes the usual changes). Indeed, once it is on the screen, nothing further back than the last command can be altered without re-starting the entire drawing. D(elete) removes the last operation (this is effectively limited to the standard library shapes and the Join function), but CTRL D removes the lot, and the user's manual firmly reminds the user to Save the drawing regularly.

Solid three-dimensional figures (as opposed to wire outlines) are achieved by hidden line removal using back surface



elimination, which only works fully for single convex polygons. Counting the vertices and storing the co-ordinates is a tedious process, but once this is done the hidden line function can be toggled. According to the handbook, a cheese is a single convex polygon and a jet aircraft isn't, so the hidden lines work less well for more complex drawings. Hidden lines can be selected, viewed and saved by stages, which assists in reaching the desired effect without fouling up.

Finished drawings can be saved as three-dimensional co-ordinate files, and printed out as they appear on the screen from the f5 menu. A reasonable amount of information is given on printer control codes in the handbook, with examples for

Epson codes. On-screen images can also be saved to a machine code subroutine for use with other SuperBasic programs, and detailed instructions are given for doing this.

Viewpoint is not a professional CAD package. There is no facility for devising your own library shapes for inclusion in other drawings, and the grid calibrations are not accurate to the nearest micron; boos from my electrical drawing department, and serve him right for being a cheapskate, because you can't buy that sort of package for less than several hundred pounds.

Viewpoint is very neat and tidy, the screen resolution is good even on my low-resolution screen, and the handbook has been written with great thoughtfulness and so far as I can see very few and very trivial mistakes.

This original version of Viewpoint from November 1986 is loaded into a permanent memory position, but Rubicon tells me that there is a newer version which will exec alongside other programs in the QL's memory. ◀

Price: Cartridge £19.95, disc £20.95.
Supplier: Rubicon Micros, 11
Bannerdale Road, Sheffield S7 2DJ.

AT LAST!
A REAL KEYBOARD
FOR THE QL
THE RAINBOW
KEYBOARD

A PROFESSIONAL 'FEEL', SEPARATE
 KEYBOARD WITH 81 FULL TRAVEL
 KEYS INCORPORATING CURSOR AND
 NUMBER PADS. SIMPLE TO INSTALL.
 FULLY COMPATIBLE WITH ALL
 SOFTWARE.



£89.95 inc. VAT

PLEASE ALLOW 28 DAYS FOR DELIVERY
 Special offer Rainbow Keyboard and Digital Precision Turbo £175.00

QL REPAIRS

FROM **£17.95**
 Phone for quote

BATTERY BACK UP FOR REAL TIME CLOCK
 Maintains the date and time while the
 QL is off

KIT **£19.95**
 FITTED **£26.95**

640K MEMORY UPGRADE

KIT **£110.00**
 FITTED **£125.00**

Overseas enquiries welcome



BUSINESS & HOME COMPUTER REPAIRS
 Clark House, Haxby, York YO3 8HU. Tel: (0904) 768853

POPULAR
Computing
WEEKLY



- Word Processor
- Database
- Spreadsheet
- Graphics

Subscribe now to
Popular Computing
Weekly and we'll send you
 your own **Mini Office**
 program **FREE**.

MINI OFFICE

ORDER FORM

Please enter my annual subscription to *Popular Computing Weekly* at **£25.00 U.K. £39.95 Overseas** and send me my **FREE MINI OFFICE** program as indicated below.

Send me **MINI OFFICE** for: ☐ Amstrad ☐ Commodore ☐ Spectrum
☐ Electron ☐ BBC

☐ Please debit my Access/Visa/AmEx card no: ☐ I enclose a cheque made payable to
 _____ Sunshine Publications Ltd.

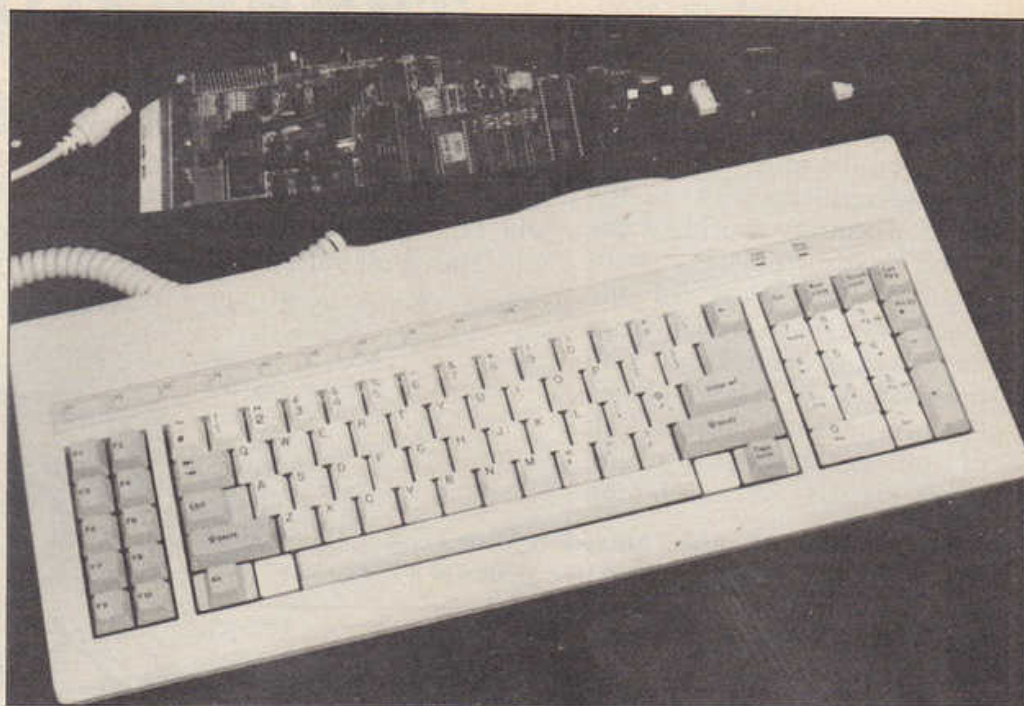
Expiry date: _____ Signature: _____

Name: _____

Address: _____

Return this form to: PCW Subs, 12-13 Little Newport Street, London WC2H 7PP, U.K.

HELEN ARMSTRONG
REVIEWS THE
LATEST QL
REPLACEMENT
KEYBOARD, AND
CONCLUDES THAT
DIGITAL
PRECISION'S
IBM-TYPE UNIT MAY
WELL BE WORTH
THE MONEY



CHAIRMAN^{OF} THE BOARDS

The QL is a natural for a replacement keyboard - many of its 'full travel' keys seem to have a one way ticket, the resulting black holes remaining as sharp-edged elephant traps for unwary fingers, transforming the would-be touch typist into a frustrated twitch typist.

ABC Elektronik's **Deluxe** keyboard, marketed by Digital Precision, is an extension (rather than a replacement) keyboard. The Deluxe started its design life as an IBM PC-XT device, which means that, with the interface provided by DP, your QL is graced with a professional quality keyboard.

There are ten functions keys to the right of the main keypad, which correspond to F1-F5 and SHIFT F1-F5 on the QL, and are also user definable. On the left of the keyboard is a standard numeric keypad complete with centering blip on the 5. And there is - oh joy - a backspace key which deletes the character to the left without using CTRL. The whole unit is about 28mm high, and there is a pair of strong integral fold-down supports at the back of the base for better keyboard tilt. And they won't fall off.

The key feel is fairly light but not loose or spongy, and no bounce. Trying it for speed, I found that the screen input kept up with the fastest typing speed I could manage, and stopped when I stopped. Freddy Vachha of DP was prepared to be a bit less namby pamby, smacking the keyboard vigorously with the flats of both hands a few times. The input got well ahead of the screen, but the buffer coped

admirably and spent the next 20 seconds or so quietly catching up.

"The Schon keyboard was a valiant attempt, but it costs thousands just to set up a mould for injection moulding, so they have had to opt for vacuum moulding. Why make the thing yourself when you can buy a high quality, industry standard injection moulded keyboard from someone who already has a production line, and concentrate on the interface?"

Installation is not difficult, but it requires a certain amount of care. Having opened the QL, ribbon cables which connect the present QL keyboard must be disconnected and the 40-legged 8049 must be eased gently out of its multiway socket and the new chip carrier, an integral part of the interface, carefully located in the socket without missing and bending any of the legs. Once correctly located and driven firmly home, the 9049 goes back into the new socket, and the interface becomes a permanent part of the computer. The interface board is designed to fit over and around the present components without bending anything aside, and with or without the aluminium plate under the keyboard in place.

The interface goes through any available port or a purpose-cut slot in the case - the ROM port is recommended, as there is a plastic pillar just inside round which the cable can be made fast before fixing the connector in place.

The new lead connects via a 5 pin DIN socket to the corresponding plug on the end of a coiled lead, to the keyboard.

Apart from the aforementioned keys, there are one or two which do nothing (a by-product of their IBM-style provenance). The Sys Req key locks out the keyboard input. A full system reset can't be done from the extension keyboard, as the RESET button on the QL acts directly on the internal hardware. All the QL's characters are supported. Caps lock and Number lock (for the keypad) both have LED ON indicators.

The draft of the user documentation which we saw is well up to normal DP standards of obsessive detail, including instructions for ridding yourself of static before opening the QL, and advice about what to do if an excess of peripherals causes overheating in the QL, including an offer to replace the voltage regulator as a lasting solution. This is sound practice for anyone with a QL or a Spectrum, incidentally, and in the QL it doesn't even require soldering.

DP stresses the Deluxe's full compatibility with QDOS and with all makes of disc drives, memory expansions, printer interfaces, mice, etc. With the keyboard which is available in black, as well as the usual beige/grey, they are also giving away a Giga Basic cartridge.

Despite Saga Systems' plans to launch cheaper QL replacement keyboards, it may well be that if you want the best the Deluxe keyboard may be the one for you. ◀

Price: £89.95.

Supplier: Digital Precision, 222 The Avenue, London E4 9SE, 01-527 5493.

ATTENTION ALL OL ADVENTURERS! CAN YOU BECOME THE HERO OF THE 'PRINCELANDS'
IN THE ENTHRALLING NEW EPIC

THE HEART OF GERN?

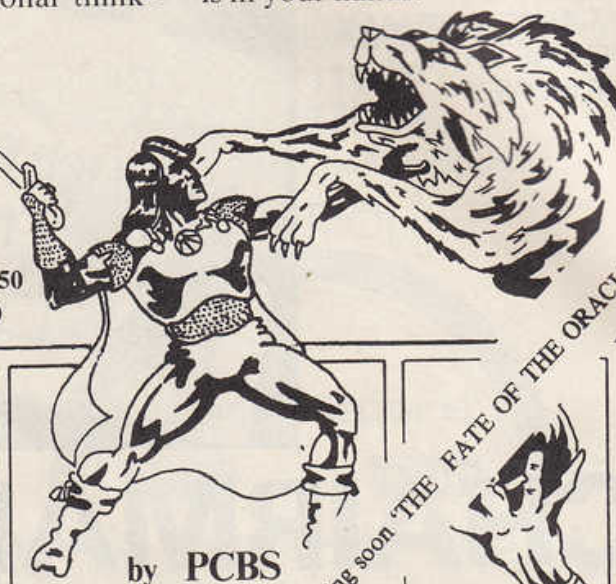
© 1987

The "Heart of Gern" is the first of a challenging series of adventure games devised to test even the most battle scarred adventurer. Set in the magical fantasy world of the 'Princelands' you Tirac must continue the quest for the black jewel which imprisons the evil spirit-wolf, Gern. You must reach the Heart before the brotherhood, an evil cult of wolf worshippers whose aim is to release Gern. Hidden

away in a secret vault protected by guards, traps and magical deceptions it will take more than luck to succeed, it will take skill, determination and above all rational thinking.

Will this be the dawn of a new dark age or can the evil brotherhood be thwarted? The fate of the 'Princelands' is in your hands.

Now available in four formats:- Microdrive Mode 4 or 8 @ £15.50
(Please specify format required) 3 1/2" Disc Mode 4 or 8 @ £17.00



by PCBS

Coming soon 'THE FATE OF THE ORACLE'

Send your cheques, P/O to: PCBS, Studio 204, Seedhill
Offices, Paisley PA1 1JN. Please allow 28 days for delivery.

Available soon for Spectrum, Commodore 64 and Amstrad

CST

Cambridge Systems Technology

CST

24 Green Street, Stevenage, Herts SG1 3DS
Telephone: Stevenage (0438) 352150

Thor 20 Computer Range
Thor 20 Computer Range
Thor 20 Computer Range

68020

Three times faster

Newly released this month the Thor 20 and Thor 21 Computer Systems are available at a special introductory price when ordered before 30th June 1987. For full details contact sales on 0438 352150.

CST

QL Expansion

Qdisc Interface (state 3.5" or 5.25" disc)£79.95
RAM-Plus 512K QL Memory£139.95
CST Dual 3.5" Cased Floppy Drives£219.95

Package A:

Qdisc + Dual 3.5" Drives£275.00

Package B:

Package A + RAM-Plus£405.00

CST

Spectrum Rom Calls

Russell Thomas

More of the System Variables are detailed along with 2 editing commands.

Editing commands

Now something purely for 128 owners. Those extra editing commands available with the keypad can be found on the keyboard. I've compiled a list but if you know of others then let us all know.

23658 FLAGS2..... POKE 23658, 8=CAPS LOCK ON 0=OFF
 23659 DF SZ..... Size of the lower part of the screen.
 23660 S TOP..... The No. of the line which will appear at the top of the screen in autolistings.
 23670 SEED..... The starting point for *RND*. Its value is set by the *RANDOMIZE* command.
 23672 FRAMES..... Three byte frame counter that counts the number of frames sent to the TV since power up. To *PEEK* a three byte number use the following: *PEEK X+65536*PEEK(X+1)+256*PEEK(X+2)* where X is the starting address.
 23679 P POSN..... Redundant (?) column number of printer position. Kempston use this location to set the printing width (*cpl*) for their Centronics E interface.
 23681 YOURS..... That's right. It's empty, use it for anything you like.
 23692 SCR CT..... Scroll counter. If you want to stop 'scroll?' being printed, use... *POKE 23692, 255* in your main loop.
 23728 YOURS2..... Another empty one, although only due to a nice little bug in the Rom.
 23736 TAPE..... Not really a SV although *POKING* it with 181 prior to saving a program, stops the start tape message and instantly saves the program. Great for saving blocks and blocks of data.
 Worth a mention... *VARS-PROG=PROGRAM LENGTH*.

(GR=GRAPH MODE, SS=SYMB SHIFT, EX=EXTENDED MODE)

GR V move to top of last page
 GR W move to top of first page
 GR X move to end of current line
 GR Y move to start of current line
 GR Z switch screen formats
 SS I move down half page
 EX M move to end of current line
 EX W delete to end of current word
 EX E delete previous word
 EX K delete from cursor to start of line
 EX T move to top of last page
 EX I move to previous word
 EX J delete from cursor to end of line
 EX N move to top of first page
 EX P move up half a page
 EXSS 2 move to start of line
 EXSS 8 switch screens
 EXSS J move to start of next word
 EXSS K delete char under cursor

Some of these commands allow you to abort editing so far. The manual is in correct when it says you will not be allowed to leave an incorrect line. For instance, if you have

just deleted half of a perfectly good line, if you use *EX N* and then return, your original line will still be there! This can work the other way around of course. If you have just

edited out a bug in a line and fail to press enter and use *EX N* instead, your new line will be forgotten and your old line put back.

PROGRAMMING: C64

Expanded Characters

Robin Davies

When displaying text on the Commodore 64 you are stuck with a standard size character set. The

following routine will allow you to print text at double width, making each letter 8x16 pixels wide. The program is written entirely in Basic so adding it to programs of your own should prove to be easy.

```

10 REM EXPANDED CHARACTERS
11 REM POKE53272,21 : NORMAL CHARACTERS
12 REM POKE53272,29 : EXP CHARACTERS
13 REM
14 A=53248 :REM MAIN POKE LOCATION
15 B=1024 :REM TOP SCREEN LOCATION
16 C=55296 :REM TOP COLOUR LOCATION
17 POKEA+32,0 :REM BORDER BLACK
18 POKEA+33,0 :REM SCREEN BLACK
19 PRINT" " :REM CLEAR SCREEN
20 POKEA+24,29 :REM EXPANDED ON
21 REM
22 REM NUMBERS BELOW ARE CODE NUMBERS
23 REM FOR THE LETTERS (5=E, 24=X ETC.)
24 REM
25 DATA 05,24,16,01,14,05,04,32,03,06
26 DATA 01,18,01,03,20,05,18,19,32,04
27 DATA 05,13,15,32,06,15,18,32,32,32
28 DATA 16,46,03,46,23,46,32,02,25,32
29 DATA 18,15,02,09,14,32,04,01,22,09
30 DATA 05,19,32,06,15,18,32,25,15,21
31 REM
32 E=82:F=12944
33 FORD=1TO2 :REM LINES TO PRINT
34 FORG=1TO30 :REM NUMBER OF LETTERS
35 POKE1,55:POKE56334,1
36 FORH=0TO1:POKEB+G+H*40,E
37 POKEC+G+H*40,1:E=E+1:NEXTH
38 READI:POKE56334,0:POKE1,51
39 FORH=0TO7:K=PEEK(A+(I*8)+H)
40 FORJ=0TO1:POKEF,K:F=F+1:NEXTJ,H,G
41 POKE1,55:POKE56334,1
42 B=B+120:C=C+120:NEXTD
43 FORA=1TO2000:NEXTA:PRINT" "
44 POKE53272,21 :REM EXPANDED OFF

READY.
```

PROGRAMMING: AMSTRAD CPC

Icon Toolkit

Simon Goodwin

The final instalment in the Icon Toolkit series includes an icon designer.

This program allows the user to design 5 icons at a time. These groups of icons can then be merged together to form

a larger file consisting of up to 255 icons. On loading the program a 16 x 16 grid is displayed along with a menu. The cursor is moved using the cursor keys. Pressing the space bar fills a block with the current pen. Selecting the f2 key turns erase mode on or off. In erase mode pressing SPACE erases the current block. Other menu options allows the user to change the pen or ink colours. Icon designs can also be inverted

or mirrored. Finally files containing 5 icons can be loaded or saved to tape or disc.

To use more than 1 set of 5 icons in a program type:

```
10 memory [address-1]
20 load "set0", [address]
30 load "set1", [address]+(1*320)
40 load "set2", [address]+(2*320)
```

The variable [address] can be a number from 368-40999.



```
10 REM .....
.....
20 REM ..... I C O N D
E S I G N E R .....
30 REM ..... by Simon.
T.Goodwin .....
40 REM .....
.....
50 MODE 1
60 GOSUB 860:GOSUB 660
70 TAG
80 GOSUB 270
90 WHILE 1
100 IF INKEY(1)=0 AND x<240 THEN GOSUB 2
70:x=x+16:a=a+1:GOSUB 270
110 IF INKEY(8)=0 AND x>0 THEN GOSUB 270
:x=x-16:a=a-1:GOSUB 270
120 IF INKEY(2)=0 AND y>144 THEN GOSUB 2
70:y=y-16:b=b-1:GOSUB 270
130 IF INKEY(0)=0 AND y<374 THEN GOSUB 2
70:y=y+16:b=b+1:GOSUB 270
140 IF INKEY(47)=0 THEN IF ERA=1 THEN GOSUB 300:ELSE IF ERA=0 AND TEST(x+4,y-8)=0 THEN PLOT -5,-5,col:GOSUB 300
150 IF INKEY(5)=0 THEN COL=COL+1:IF COL=4 THEN COL=0:TAGOFF:LOCATE 10,20:PRINT "PEN.":COL:TAG:ELSE TAGOFF:LOCATE 10,20:PRINT "PEN.":COL:TAG
160 IF INKEY(13)=0 THEN GOSUB 330
170 IF INKEY(14)=0 THEN FOR n=1 TO 50:NEXT n:IF ERA=1 THEN ERA=0:SOUND 1,100,20:ELSE ERA=1:SOUND 1,100,20
180 IF INKEY(12)=0 THEN GOSUB 400
190 IF INKEY(4)=0 THEN GOSUB 500
```

```
200 IF INKEY(20)=0 THEN GOSUB 920
210 IF INKEY(10)=0 THEN GOSUB 1140
220 IF INKEY(11)=0 THEN GOSUB 1300
230 FOR qw=1 TO 100:NEXT qw
240 WEND
250 END
260 :
270 PLOT -5,-5,3:MOVE x,y:PRINT "^":RET
URN
280 RETURN
290 :
300 IF ERA=0 THEN MOVE X,Y:PRINT CHR$(143):;Q(sp,B,A)=COL:PLOT 542+(A*2),94+(Y/16)*2+(SP*48),COL:RETURN
310 IF ERA=1 THEN Q(sp,B,A)=0:TAGOFF:LOCATE 1,1:PRINT CHR$(23):CHR$(0):PLOT 542+(A*2),94+(Y/16)*2+(SP*48),0:LOCATE 1,1:PRINT CHR$(23):CHR$(1):TAG:F=TEST(X+4,Y-8):PLOT -5,-5,F:MOVE X,Y:PRINT CHR$(143):RETURN
320 :
330 SP=SP+1:IF SP=6 THEN SP=1
340 TAGOFF:LOCATE 2,20:PRINT "ICON.":STR$(SP):PRINT CHR$(23):CHR$(0):WINDOW 1,16,1,17:CLS:WINDOW 1,20,1,25
350 t=17:TAGOFF:PRINT:FOR u=16 TO 1 STEP -1:LOCATE 1,t:t=t-1:FOR i=1 TO 16:PEN q(sp,u,i):PRINT CHR$(143):NEXT i,u
360 GOSUB 800:GOSUB 750:PRINT CHR$(23):CHR$(1):TAG:GOSUB 270
370 PEN 1
380 RETURN
390 :
```

```
400 GOSUB 1120:FOR n=1 TO 255:CALL &BB1B:NEXT:TAGOFF:WINDOW 21,39,22,22:INPUT "Filename";f$:CLS:WINDOW 1,40,1,25:TAG:IF f$="" OR LEN(f$)>8 THEN 400
410 GOSUB 1050
420 H=0
430 FOR screen=50260 TO 49300 STEP -240
440 FOR N=0 TO 1:FOR C=0 TO 7:FOR g=0 TO 3:POKE 30000+H,PEEK(screen+g+(2048*C)+(N*80)):H=H+1:NEXT g,C,N
450 NEXT
460 SAVE "!" + f$,b,30000,640
470 PAPER 0
480 RETURN
490 :
500 FOR n=1 TO 255:CALL &BB1B:NEXT n:TAGOFF:WINDOW 21,39,22,23:INPUT "Filename";f$:CLS:WINDOW 1,40,1,25:TAG:IF f$="" OR LEN(f$)>8 THEN 500
510 GOSUB 1050
520 PAPER 0
530 MEMORY 29999:LOAD "!" + f$,30000
540 H=0
550 FOR screen=50260 TO 49300 STEP -240
560 FOR N=0 TO 1:FOR C=0 TO 7:FOR g=0 TO 3:POKE screen+g+(2048*C)+(N*80),PEEK(30000+H):H=H+1:NEXT g,C,N
570 NEXT
580 FOR n=1 TO 5
590 FOR u=1 TO 16 STEP 1:FOR i=1 TO 16 STEP 1:q(n,i,u)=TEST(542+(u*2),144-(i*2)+(n*48)):NEXT i:NEXT u
600 NEXT n
610 t=17:TAGOFF:PRINT:FOR u=16 TO 1 STEP
```

<pre> -1:LOCATE 1,t:t=t-1:FOR i=1 TO 16 STEP 1 620 PEN q(sp,u,i):PRINT CHR\$(143);:NEXT i,u 630 PEN 1 640 TAGOFF:PRINT CHR\$(23);CHR\$(0):GOSUB 660:TAG:GOSUB 270:TAGOFF:PRINT CHR\$(23); CHR\$(1):TAG:RETURN 650 : 660 : 670 GOSUB 800 680 PLOT 330,128:DRAW 638,128:DRAW 638,3 88:DRAW 330,388:DRAW 330,128 690 PLOT 1,100:DRAW 638,0:DRAW 0,-100: DRAW -638,0:DRAW 0,100 700 PLOT 338,134:DRAW 170,0:DRAW 0,248 :DRAW -170,0:DRAW 0,-248 710 TAGOFF:LOCATE 23,4:PRINT "M E N U":T AG 720 RESTORE:TAG:FOR n=20*16 TO 11*16 STE P -20:READ a\$:MOVE (22*16)-8,n:PRINT a\$: :NEXT:TAGOFF 730 GOSUB 1050 740 TAGOFF 750 FOR n=22 TO 24:PEN 1:LOCATE 3,n:PRIN T "PEN";n-21;":":PEN n-21:PRINT STRING\$ (3,CHR\$(143));:PEN 1:NEXT n:PEN 1 760 LOCATE 2,20:PRINT "ICON.":sp;" PEN." ;col 770 RETURN 780 : 790 : 800 PLOT -5,-5,1:FOR n=128 TO 263+135 ST EP 16:PLOT 1,n:DRAW 16*16,0:NEXT n 810 FOR n=1 TO 17*16 STEP 16:PLOT n,128: DRAW 0,8*32:NEXT n 820 RETURN 830 : 840 : 850 GOSUB 660 860 COL=1:SP=1:DIM q(5,16,16),m(16,16):x =160:y=158:a=11:b=15 </pre>	<pre> 870 PRINT CHR\$(23);CHR\$(1) 880 BORDER 13:INK 0,13:INK 1,0:INK 2,4:1 NK 3,19 890 RETURN 900 : 910 : 920 WINDOW 20,39,22,22:CLS 920 WINDOW 20,39,22,22:CLS 930 penn=1:inkk=1 940 FOR n=1 TO 255:CALL &BB1B:NEXT: 950 TAGOFF 960 INPUT "PEN NO.":penn 970 IF penn>3 OR penn<0 THEN 960 980 INPUT "INK no.":inkk 990 IF inkk>26 OR inkk<0 THEN 980 1000 INK penn,inkk 1010 WINDOW 1,40,1,25 1020 TAG 1030 GOSUB 1050 1040 RETURN 1050 TAGOFF:PLOT -5,-5,1:PRINT CHR\$(23); CHR\$(0):TAG:FOR n=90 TO 16 STEP -16:MOVE 19*16,n:PRINT STRING\$(20,CHR\$(207));:NE XT:TAGOFF:PRINT CHR\$(23);CHR\$(1); 1060 PRINT CHR\$(22);CHR\$(1); 1070 LOCATE 23,21:PRINT "I C D N"; 1080 LOCATE 23,23:PRINT "D E S I G N E R "; 1090 PRINT CHR\$(22);CHR\$(0); 1100 TAG 1110 RETURN 1120 TAGOFF:PLOT -5,-5,1:PRINT CHR\$(23); CHR\$(0):TAG:FOR n=90 TO 16 STEP -16:MOV E 19*16,n:PRINT STRING\$(20,CHR\$(207));:N EXT:TAGOFF:PRINT CHR\$(23);CHR\$(1);:TAG:R ETURN 1130 DATA f1..Next,f2..Erase,f3..Pen,f4. .Inks,f5..Save,f6..Load,f7..Mirror,f8..I nv 1140 FOR n=1 TO 16:FOR i=1 TO 16:m(n,i)= q(sp,n,i):NEXT I,N 1150 FOR N=1 TO 16 </pre>	<pre> 1160 z=17 1170 FOR I=1 TO 16 STEP 1 1180 z=z-1 1190 m(n,1)=q(sp,n,z) 1200 NEXT 1210 NEXT 1220 FOR n=1 TO 16 :FOR i=1 TO 16 STEP 1 :q(sp,n,i)=m(n,i):NEXT I,N 1230 t=17:TAGOFF:PRINT:FOR u=16 TO 1 STE P -1:LOCATE 1,t:t=t-1:FOR i=1 TO 16 STE P 1 : PEN q(sp,u,i):PRINT CHR\$(143);:NEX T i:PRINT " ";:NEXT u:PEN 1: 1240 LOCATE 1,1:PRINT " "; 1250 GOSUB 800:GOSUB 750:TAG:GOSUB 270 1260 TAGOFF:PRINT CHR\$(23);CHR\$(0); 1270 FOR u=1 TO 16 STEP 1:FOR i=1 TO 16 STEP 1:PLOT 542+(u*2),144-(i*2)+(sp*48), q(sp,i,u):NEXT i:NEXT u 1280 PRINT CHR\$(23);CHR\$(1);:TAG 1290 RETURN 1300 FOR n=1 TO 16 1310 FOR i=1 TO 16 1320 IF q(sp,n,i)=0 THEN q(sp,n,i)=1 ELS E q(sp,n,i)=0 1330 NEXT i,n 1340 t=17:TAGOFF:PRINT:FOR u=16 TO 1 STE P -1:LOCATE 1,t:t=t-1:FOR i=1 TO 16 STE P 1 : PEN q(sp,u,i):PRINT CHR\$(143);:NEX T i:PRINT " ";:NEXT u:PEN 1: 1350 LOCATE 1,1:PRINT " "; 1360 GOSUB 800:GOSUB 750:TAG:GOSUB 270 1370 TAGOFF:PRINT CHR\$(23);CHR\$(0); 1380 FOR u=1 TO 16 STEP 1:FOR i=1 TO 16 STEP 1:PLOT 542+(u*2),144-(i*2)+(sp*48), q(sp,i,u):NEXT i:NEXT u 1390 PRINT CHR\$(23);CHR\$(1);:TAG 1400 RETURN </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.

Magic Maze

Mark Weatherill

Magic Mazes is an arcade game spread over 12 screens, each of which contains a number of items which you need to collect to finish the game. It's not that easy though as some screens are guarded by ferocious creatures which will drain your life energy.

Disc users will need to set Page to &1200 before typing in the longer listings and, indeed, running the program. Next week sees the final instalment of the listings.

If you can't bear the wait then send £2.00 (cassette) to 18 Kingsland, Aylesbury, Bucks HP21 9SY.

```
2650.nosho INX:CPX#11:BNE olop:RTS
2660.mv STX:STY
2670LDX#0
2680JSRpeeks
2690LDAX:CMPI:1:BNE tlf
2700LDAR:BNE tlf:JSR GR
2710.tlf LDAX:CMPI:255:BNE tup
2720LDA I:BNE tup:JSR GL
2730.tup LDAY:CMPI:255:BNE tdn
2740LDA u:BNE tdn:JSR GU
2750.tdn LDAY:CMPI:1:BNE ttt
2760LDA d:BNE ttt:JSR GD
2770.ttt RTS
2780
2790.keys LDY#0
2800DEC ki:LDaki:BNE ttt
2810INCkc:LDakc:CMPI:4:BNE nsk
2820LDA#1:STAKc:.nsk
2830LDA#6:STAKi
2840.nikk
2850LDA#17:JSR&FFEE:LDakc:JSR&FFEE
2860LDA#40C:STAKx:LDa#40D:STAKx+1
2870LDA#410:STAKy:LDa#411:STAKy+1
2880.klop LDA(kx),Y:CMPI:255:BEQ nek
2890LDA#31:JSR&FFEE:LDa(kx),Y:JSR&FFEE:
LDA(ky),Y:JSR&FFEE:LDa#228:JSR&FFEE
2900.nek INY:CPY#5:BNEklop:RTS
2910.hitk LDY#0
2920LDA#40C:STAKx:LDa#40D:STAKx+1
2930LDA#410:STAKy:LDa#411:STAKy+1
2940.hklp
2950LDA(kx),Y:CMPI:255:BEQ nokk
2960CLC:ROLA:STA x
2970LDA(ky),Y:STAY:DECy
2980LDXx:CPX NX:BEQ xkok
2990INX:INX:CPX NX:BEQ xkok
3000LDXx:DEX:DEX:CPX NX:BEQ xkok
3010.nokk INY:CPY#5:BNE hklp:RTS
3020.xkok LDA NY:CMPI:Y:BEQ gotk
3030DECy:LDa NY:CMPI:Y:BEQ gotk
3040INCY:INCY:LDa NY:CMPI:Y:BEQ go
tk
3050JMPnokk
3060.gotk LDA#31:JSR&FFEE:LDa(kx),Y:JSR
&FFEE:LDa(ky),Y:JSR&FFEE:LDa#32:JSR&FFEE:
LDa#255:STA(kx),Y:STA#420:DEC#42C:RTS
3070J:NEXT:P#&A80:M#&900:(UPT2
3080.sdat EQUW &900:EQUW &920:EQUW &940
:EQUW &960
3090EQUW &980:EQUW &990:EQUW &9A0:EQUW
&9B0:EQUW &9D0:EQUW &9F0:EQUW &A38:EQUW
&A58
3100J:ENDPROC
```

```
3110DEFPROCLOAD
3120*LOAD alldata 4000
3130*LOAD sprdata 900
3140*LOAD objdata 5600
3150ENDPROC
3160DEFPROCCTX(x%,y%,M%)
3170x%=32*x%:y%=1024-32*y%
3180FOR L#1 TO LENM%:M%>70:ASC MID$(M%,
L%)
3190VDU23,250
3200A#10:X#&70:Y#0:CALL&FFF1
3210FOR Y#1 TO 8:C#=(Y%>70)AND&5A:VDU
C#:NEXT
3220VDU23,251
3230FOR Y#1 TO 8:C#=(Y%>70)AND&A5:VDU
C#:NEXT
3240VDU5
3250GCOL0,3:MOVE x%,y%:VDU250
3260GCOL0,1:MOVE x%,y%:VDU251
3270x#x#+64
3280NEXT:VDU4:ENDPROC
3290 IFERR=17 RUN
3300 REPORT:PRINT;" at line ";ERL
>
10REM MAGIC MAZE by M Weatherill
20REM ** Listing 2 **
30REM SCREEN/SPRITE DATA
40REM SCREEN DATA &4000 - &4EFF
50REM SPRITE DATA &4F00 - &51D0
60REM poke and save as block of RAM
70 HIMEM=&5000
80 RESTORE:C#=0
90 FORQ#0 TO &11D0
100 READ Z#:C#<C#+Z#
110 Q#&5000=Z#:NEXT
120 IFC#<&42786 PRINT"ERROR IN DATA":
END
130 PRINT"Ready to save ALLDATA":REPEA
TUNTILGET
140 *SAVE alldata 5000 61D0 4000 4000
150REM save from &5000+ but make it re
load at &4000+
160 END
170 DATA 224,224,224,224,224,224,224,2
24,0,224,224,224,224,224,224,224,0,0
,0,0,0,0,0
180 DATA 0,0,0,0,0,0,0,0,224,224,0,0,0,0
,0,0,0,0,0,0,0,0,224
190 DATA 224,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,224,224,0,0,0,0,0,0,0
200 DATA 0,0,0,0,0,0,0,0,224,224,229,0,2
26,229,226,229,0,229,226,229,226,0,0,225
,225
210 DATA 224,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,224,0,0,0,0,0,0,0
220 DATA 0,0,0,0,0,0,0,0,0,224,0,0,0,0,0
,0,0,0,229,229,0,0,225,225,225
230 DATA 224,226,229,226,229,226,229,0
,0,0,0,0,0,0,0,0,224,0,0,0,0,0,0,0
240 DATA 0,0,0,0,0,0,0,0,0,224,0,0,0,0,0
,0,0,229,229,0,0,225,225,225,225
250 DATA 224,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,224,224,224,0,0,0,0,0
260 DATA 0,0,0,0,0,0,0,0,0,224,0,224,0,0
,0,229,0,0,0,0,225,225,225,225,225
270 DATA 224,0,224,224,224,0,0,0,0,0,0
,0,0,0,0,0,0,224,0,0,0,0,0,0
280 DATA 0,0,0,0,0,0,0,0,0,224,0,0,0,0,0
,0,0,0,0,0,0,0,0,0,0
290 DATA 224,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,84,104,101,224,83,116,97,114
300 DATA 116,224,224,224,224,224,224,2
24,229,229,229,229,229,229,229,229,2
29,229,229,229,229,229,229
310 DATA 229,0,229,0,229,0,229,0,229,0
,0,0,0,0,0,229,229,0,229,0,229,0,229,0
320 DATA 224,0,0,0,0,0,0,0,224,224,0,0,0
,229,0,229,0,229,0,0,0,0,0,0,229
330 DATA 229,0,0,0,229,0,229,0,229,0,0
,0,0,0,0,229,229,0,0,0,0,0,229,0
340 DATA 229,0,0,0,0,0,0,0,229,0,0,0,0,0
,0,229,0,229,0,0,0,0,0,0,0
350 DATA 0,0,0,0,0,0,0,0,229,229,229,0
,0,0,0,0,229,0,0,230,0,230,0,0
360 DATA 0,0,229,229,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,229,229,0,0,0
370 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,229,229,0,0,0,0,0,0
380 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,229,229
390 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,229,0,0,0,0,0,0,0
400 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
,0,0,0,0,0,0,0,0,0
410 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,229,0
,0,0,0,230,0,230,0,230,0,230
420 DATA 0,0,0,229,229,229,0,0,0,230,0
,230,0,230,0,230,0,0,229,229,229,229
,0
430 DATA 224,224,224,224,224,224,66,11
1,117,110,99,101,114,115,224,224,224,224
,224,224,224,224,224,224
440 DATA 224,224,224,224,224,224,224,2
24,224,0,0,0,0,0,0,0,0,0,0,0,0,224
450 DATA 0,224,0,0,0,0,0,0,0,0,0,0,0,0,0
,224,0,0,0,224,0,0,0,0,0
```

Fail Safe

Keith Irving

This interrupt driven Spectrum routine provides a secondary break facility for those machine code programmers

that find their code trapped in an endless loop. Turn it on with *RANDOMIZE USR 65000*, and off with *RANDOMIZE 65010*.

To break out of a program press *Symbol Shift* and *Break* together to return to Basic.

```
10 REM POKE "FAIL-SAFE" CODE INTO MEMORY
20 CLEAR 64999
30 FOR N=65000 TO 65000+69
40 READ X: POKE N,X: NEXT N
50 DATA 62, 253, 237, 71, 237, 94, 201, 0, 0, 0, 62, 63, 237,
    71, 237, 86, 201, 0, 0, 0, 0, 0, 6, 254, 0, 0, 0, 0,
    0, 229, 213, 197, 245, 255, 243, 62, 127, 219, 254,
    230, 3, 40, 7, 241, 193, 209, 225, 251, 237, 77, 241,
    193, 209, 225, 251, 1, 0, 128, 11, 120, 177, 32, 251,
    17, 190, 20, 195, 153, 18
60 REM SAVE THE 70 BYTES OF CODE FROM ADDRESS 65000 ONWARDS
70 REM RELOAD WITH "CLEAR 64999: LOAD "name"CODE 65000
80 REM INTERRUPT ON = RANDOMIZE USR 65000
90 REM INTERRUPT OFF = RANDOMIZE USR 65010
100 REM TO CALL THE ROUTINE PRESS SYMBOL SHIFT+BREAK
```

Sound Sampler

Keith Irving

This Spectrum program lets you sample sound for up to four seconds. Sampled speech is reasonably intelli-

gible but could be greatly improved by the use of an external filter.

Press *R* to record the sample and *P* to play it back again.

```
10 REM POKE "SAMPLER" CODE INTO MEMORY
20 CLEAR 64999
30 FOR N=65000 TO 65000+67
40 READ X: POKE N,X: NEXT N
50 DATA 33, 232, 128, 14, 253, 243, 6, 8, 219, 254, 7, 7, 203,
    18, 16, 248, 0, 0, 0, 0, 114, 35, 124, 185, 194, 238,
    253, 251, 201, 0, 33, 232, 128, 14, 253, 58, 72, 92,
    15, 15, 15, 230, 7, 95, 243, 126, 15, 15, 15, 87, 6, 8,
    122, 179, 211, 254, 203, 10, 16, 248, 35, 124, 185,
    194, 21, 254, 251, 201
60 POKE 23658,8: CLS
70 PRINT FLASH 1;AT 11,6;"PRESS";FLASH 0;"R TO RECORD"
80 PRINT AT 13,12;"P TO PLAY BACK"
90 IF INKEY$="R" THEN PRINT FLASH 1;AT 11,12;"R": RANDOMIZE USR
    65000: GO TO 70
100 IF INKEY$<>"P" THEN GO TO 90
110 PRINT FLASH 1;AT 13,12;"P": RANDOMIZE USR 65030: GO TO 70
```

Selective Copy

Adrian Short

This routine for the Spectrum and any ZX Printer compatible emulates the *COPY* command, except that it allows you to copy any part of the screen.

When reloading the routine use *CLEAR 61135* first. To use the routine enter *POKE 61137, top line, POKE 61139, number of lines* and then *RAND USR 61136* to perform the copy.

```
10 REM SELECTIVE COPY
20 REM BY A.SHORT 14/4/87
30 CLEAR 61135
40 FOR A=61136 TO 61182
50 READ U: POKE A,U
60 NEXT A
70 SAVE "SELCOPY"CODE 61136,47
80 DATA 38,0,46,24,229,124,205,
    158,14,205
90 DATA 227,238,225,36,45,200,
    195,212,238,62
100 DATA 8,17,0,91,1,32,0,245,2
    37,176
110 DATA 213,17,224,0,25,209,24
    1,51,254,0
120 DATA 194,232,238,205,205,14
    ,201
```

COMPUNET TO MOVE TO NEW MAINFRAME

Compunet is always changing and adding new areas of interest to subscribers. Now, as Graham Edkins reports, they are preparing for their biggest change yet.

Compunet could never be accused of being a static network, and from the very beginning it has been adding new ideas. The fact that the access software can be changed so easily by a simple automatic download of the latest code makes any innovations that much easier to implement.

Compunet is now working on its biggest change yet, moving to a new mainframe, which means that the latest ideas are having to wait their turn. However, the new mainframe is still on schedule (unusual in the computer world) for its summer launch.

As the users can create their own directories and make their own new areas, the work on the new mainframe has not affected the growth of information, special interest groups (SIGS) or programs available. In fact Compunet seems to have grown every time that you log-on, so it is easy to get used to one particular area or even a few areas and miss the changes going on in others.

Routes to others are given at the bottom of each directory to encourage you to 'jump' to a different, maybe un-explored part of the network, with the touch of a function key. Alpha gotos, similar to those which Prestel has just introduced, also make it easy to move around from one area to another and avoid the long slog through directory after directory.

Even with such ease of movement it's very tempting to settle down into a set pattern so I decided to take a good look around and see what's happening. In my next report on Compunet I'll tell you what I found in the Demos area, where I'll concentrate on the ones that are not to be missed. This time however we'll look at some of the areas on the rest of system, many of which are new to me, although many are old friends which deserve another look.

I would guess that most people start their on-line session by hitting GOTO in the duckshot and typing NEWS. This is where the editor of Compunet writes about the latest new pages to see. Many of these have been given quite a short life by the

person that uploaded them and so the news itself only remains for a couple of weeks at the most and there is normally an updated news two or three times every week.

others are very prolific in Shockwave (GOTO SHOCK). Further entertainment with a science fiction edge to a lot of it is in COSMOS where you will find well developed areas like Hitch Hikers, Astronomy and Dr Who (GOTO HHG, ASTRO & WHO).

Over in the Labyrinth Dir. There is everything to do with role playing games, the multi-user game MUD of course and VALLEY which is a small section of MUD which can be used on weekend mornings for just 50p per hour but you will also find things like the Play by Mail directory (GOTO PBM) and the armoury where Zagger gives instructions for making a mace, a sword or an axe! As the word labyrinth is too long for a keyword they have given it the goto 'CAVES'.

There are many places to look on the system apart from NEWS to find the latest uploads, try 'GOTOS' which is a list of page adverts or the

Chat-on-line area (GOTO CHAT) where many Compunetters promote their uploads. INDEX gives you a good starting point for any voyage around the network and also lists many of the Alpha Gotos.

If all of this travelling around what has now become a very large database, considering that it is currently dedicated to only one micro, has proved too much for you, then I can recommend settling down to a good and thought provoking read in the Arena area (GOTO ARENA) where other 'netters have so far given their views on such controversial topics as religion, the channel tunnel, women in computing, AIDS education and South Africa. You may well find yourself duty bound to express your own opinion by uploading into its directories!

I hope that there has been something mentioned on this page that will in the future be added to your own list of 'calling places'. If you can't wait until the next Compunet article to tell you about the demos, for which Compunet has become so well known, then I'll direct you to Demo Reviews on Page 222306 and KKY TV Demo World on Page 224724.



It is very difficult for the editor to see every new upload so if you feel that your latest masterpiece deserves a mention then drop a line to her on the ID FEEDBACK.

If you like your news to be about micros, hardware, software and computer gadgets then the place to look is the large (and growing) directory from JML1, it goes by the unusual title of The Electric Frog Plate, but GOTO 'FROG' will take you straight there.

Amateur Radio enthusiasts have their needs catered for in the RADIO area, this is a Closed User Group but a small one off payment allows you entry to this area started by G4PYR. Aviation news can be found in AVCOM and other news alpha gotos like MAGS and COMMS are also available. You'll probably find an area covering just about every minority, or for that matter majority, interest that you could think of but if you don't then you can always start one!

If you prefer to be entertained instead of educated then there are a couple of other new gotos to try, VICAR will lead to the Vicar's Trainset from RSB3 while JT12 and

2-Bit drumkit for the ST

2-Bit Systems released a drum package for Atari 8-bit micros some time ago. Now it has revised that package to work with the ST. Mark Jenkins looks it over.

A few months ago we looked at 2-Bit Systems' drum package for the Atari 8-bit micros. Now the company has modified the package to work with the ST, and has taken the opportunity to launch several options for different musical applications.

2-Bit has also thrown in its lot with Microdeal, which will be distributing the ST Digidrum both here and in the States. No doubt this will give the company much wider exposure, which is bound to be a good thing.

The subtly-coloured Digidrum box (it's bright purple actually, you can't miss it) contains just one disc and a handbook, and the optional Sample Disc 1 has a leaflet listing the sounds contained thereon. There are 41 sounds included, which for the sake of completeness we list below:

1 Buash	15 Ehihat	29 Orch 2
2 Cellos	16 Ehitom	30 Sax 1
3 Choir	17 Elephant	31 Sax 2
4 Clave	18 Elotom	32 Sax 3
5 Coconut	19 Epeow	33 Sax 4
6 Computer	20 Esnare	34 Softbass
7 Cork	21 Hiconga	35 Stick
8 Cowz	22 Hissnare	36 Tambour
9 Cuero	23 Indian	37 Timpani
10 Dogyap	24 Locongong	38 Transpor
11 Ebass	25 Machgun	39 Trunk
12 Eclap	26 Majorgan	40 Whistle
13 Eclaps	27 Monster	41 Glass
14 Ecymbal	28 Orch 1	

You can arrange these sounds into two complete kits – for instance, using all the E-prefixed sounds to create a Simmons-like electronic kit, or using the trunk, buash, congas, clave and so on to create a Latin kit.

A total of 16 sounds can be loaded and there are several sounds on the main disc to start you off. Incidentally, you can run the program on a 520ST or 1040ST with a colour or monochrome monitor or TV (in the case of the 520STFM).

The instruction handbook is a little on the concise side (in fact it's just four sides long) and is a bit imprecise in some areas. For instance, it's not strictly true that Digidrum will "turn your Atari ST into a high quality sampling drum machine".

You can't do any sampling yourself – you need the optional Replay sampling system which has been used to create the sounds supplied, sampling at around 20KHz.

The default kit on the main disc consists

of bass, snare, open and closed hi-hat, cowbell, lo and high tom, low and high bongo and clap. 99 patterns can be stored and these can have between 4 and 32 beats; patterns can be entered in step time or real time and linked together to produce a song of up to 70 patterns.

To increase the possible length of a song, you can also repeat a single pattern within the song or loop a whole sequence, and of course everything can be saved to disc.



If you do have the ST Replay cartridge you can connect its phono out socket to your hi-fi – otherwise you're limited to listening to samples via your monitor. If you auto-run "Drum PRG" you'll hear a demo song and you can use the alternate key to select monitor or hi-fi (via the Replay cartridge) sound output.

The package doesn't use much of the Gem environment and in fact works without a mouse. The cursor arrow keys are used to move along the top-of-the-screen options, which are speed, tempo, edit song, play song, edit pattern, load, save and info, the last of these simply repeating some of the specification from the handbook.

Some of the terminology in the other options is very poorly chosen. What 2-Bit chooses to call "speed" is actually sampling rate, which can be set to 20KHz for the highest quality or 10KHz for the longest time. All samples are described as being "16KHz in length" – perhaps this means 16KB?

When we do get on to what you and I might call speed – or Tempo, if you like – we find that 2-Bit has made it variable from one to 49. But is 49 faster or slower than one? Well, logically enough (?), it's slower – the logic being that the tempo setting indicates the number of 50Hz counts taken between beats.

Edit song is a slightly more sensible option, calling up a long list of 70 patterns together with the number of times they should be repeated and a suitable tempo. Figures are entered using the numeric keys and you have to go along a whole line, once you've reached it using the cursor keys – in other words, you have to enter the pattern number again even if you only want to change the number of times it repeats.

You can wipe a complete song using the edit song menu and have the same option on the pattern menu. Patterns are entered on a grid offering any 16 sounds matrixed against up to 16 beats. The Digidrum package can sound two voices simultaneously and these must have samples assigned to them as voice one and voice two; if you attempt to play the same channel twice then the first entry will be deleted.

Granted, the demos do show that you can come up with quite complex patterns using just two voices. If you prefer to enter beats in real time, just go to the real time option and you can enter beats by tapping F1 (for whatever sound is currently assigned to voice one) and F2 (for voice two).

You can load and save a voice, a kit of voices, a pattern or a song, so the method of assigning sounds to songs is quite flexible. There are a few disc error messages, mainly dedicated to announcing the fact that your disc is full, 16 samples taking 260K of disc space.

During playback the package sounds pretty good, and you can create long and complex songs quite quickly with reasonably bright, crisp sounds. However, I'd be very surprised if there were any musicians on the 2-Bit team – the tempo assignment, method of pattern entry into songs, lack of pitch control for the tuned sounds, neglect of the mouse and inaccuracy of the handbook are all regrettably unprofessional.

Digidrum costs £19.95 and Sample Disc 1 costs £14.95; more information from Microdeal at the address below.

Microdeal UK, PO Box 68, St Austell, Cornwall PL25 4YB, 0726 68020.

If you have any queries or tips for this column, please write to Mark Jenkins at Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.

MICRO-FILE

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

SOFTWARE

ATARI 520 *STFM*

NOW IN STOCK
FOR ONLY

£359.95

SPECIAL OFFER

Atari 520 STM complete with mouse,
1 meg disc drive 400

£429.95

Complete with manuals and demos

SPECIAL OFFER

Atari 520 STM complete with mouse; SF354 (500K) disc drive;
SM125 mono monitor; 1st Word processor

£449.95

WHILE STOCKS LAST

AMIGA A500

- ★ 68000 Chip with 512K Ram
- ★ Mouse controller
- ★ Built in speech
- ★ Built in 880K 3 1/2" disc drive
- ★ 4096 colour and stereo sound
- ★ Please phone for details

£539.95

PRINTERS

- Panasonic 80-col, 120 cps NLQ mode£218
- Canon A60 80-col, 200 cps, 100 cps NLQ mode.....£479
- Panasonic 1092 80-col, 180 cps NLQ mode.....£375

10 3 1/2" discs£14.00

ST SOFTWARE AT GIVEAWAY PRICES

Pawn	19.95	Pinball Fact	19.95
Starglider	19.95	Karate Kid	19.95
Typhoon	15.95	T.T. Racer	19.95
Winter Games	19.95	Arena	24.95
World Games	19.95	Kings Quest II	24.95
Phantasie II	19.95	Sky Fox	19.95
Int. Karate	15.95	Trivia Challenge	15.95
Silent Service	19.95	Spitfire 40	15.95
Trailblazer	19.95	Rogue	19.95
Tenth Frame	19.95	Moonmist	24.95
Q-Ball	14.95	Tee Up Golf	15.95
Leaderboard	19.95	2 on 2 Basket	19.95
Music Studio	27.95	Little Comp People	29.95
Eden Blues	19.95	Goldrunner	19.95
Harrier	19.95	Xevious	19.95
Super Huey	15.95	Plutos	11.95
Toolkit	24.95	Arkenoid	11.95
Pro Sprite Designer	29.95	Metro Cross	19.95
Space Pilot	16.95	Balance of Power	26.99
Mercenary	19.95	Championship Football	19.95
Wrestling	19.95	Shanghai	19.95
ST Karate	14.95	Turbo ST Racer	13.95
Karate Master	9.95	ProSound Designer	41.95

ATARI 520 STFM

Includes: mouse controller, manuals, language disc plus demos.

SOUND N VISION

11 Silk St, Leigh, Lancs WN7 1AW. Tel: (0942) 673689

Cheques and P/Orders payable to: Sound N Vision

P.&P./VAT INCLUDED

VISA



(215)

CLASSIFIED ADVERTISING RATES:

Line by line: 35p 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.

SOFTWARE

MAY SPECIAL OFFERS

BOOKS

COMMODORE 64	SPECTRUM	AMSTRAD
Hit Pak 2.....£6.95	Hit Pak.....£6.95	Hit Pak 2.....£6.95
Nemesis/Warlock £6.00	Nemesis/Warlock £5.50	Cobra.....£6.25
Samurai Trilogy.....£6.95	Auf Wiedersehen.....£6.95	Head Over Heels.....£6.25
Great Escape.....£6.25	Monty.....£5.50	Mercenary.....£6.95
Auf Wiedersehen.....£6.95	Krakout.....£5.50	Leaderboard.....£6.95
Monty.....£6.95	Head Over Heels.....£5.50	Nemesis.....£6.25
Five Star.....£6.95	Enduro Racer.....£6.95	Bombjack 2.....£6.25
Games 2.....£6.95	World Games.....£6.25	Nemesis.....£3.95
Delta.....£6.95	Paperboy.....£5.50	Bobby Bearing.....£3.95
Shockway Rider.....£6.95	Nemesis.....£5.50	Tajad.....£3.45
Bombjack 2.....£6.95	Ransarna.....£6.25	Combat Lynx.....£3.45
Durrell Big 4.....£9.95	10th Frame.....£6.25	Avenger.....£3.95

AMSTRAD PC 1512

Winter Games.....£15.95	Fleet Street Editor.....£11.95
Alex Higgins Snooker.....£15.95	Book Worker.....£14.95
Piriprop 2.....£15.95	1st Word Plus.....£6.25
Mean 18 Golf.....£15.95	P.C. Four.....£6.95
Summer Games 2.....£15.95	Supercalc 3.....£5.95
Cyrus 2 Chess.....£15.95	Superbase.....£7.95
Jewels of Darkness.....£15.95	Ability.....£6.95
Trivial Pursuit.....£19.95	Sidekick.....£2.95
	Touch 'n' Go.....£2.95

ATARI 520 STE

£369.95

Includes: keyboard, built-in drive, mouse controller, Basic language book, U.K. language disc, owner's manual, 5 free public domain software discs.

**AS ABOVE BUT WITH
SM 125 MONO MONITOR
£459.95**

ST SOFTWARE

Strike Force Harrier.....£19.95	Balance of Power.....£24.95
International Karate.....£15.95	Arkanoid.....£11.95
World Games.....£19.95	Plutos.....£11.95
Leaderboard.....£19.95	Trailblazer.....£19.95
Winter Games.....£19.95	Metrocross.....£19.95
Star Glider.....£19.95	Turbo GT.....£12.95
MST.....£19.95	Gold Runner.....£19.95
Checkmate.....£11.95	Mean 18.....£24.95
Xenious.....£11.95	Shuttle II.....£19.95
10th Frame.....£19.95	

SINCLAIR/QL

Profiting From The Sinclair QL, Making The Most Of The Sinclair QL, Word Processing On The Sinclair QL, Desk Top Computing On The Sinclair QL, Introduction To Superbasic, Database Management On The QL, Introducing The Sinclair QL.

ALL SEVEN FOR ONLY £10.95

ANY THREE FOR £5.00 or SIX FOR £9.00
Creating Adventures On Your Spectrum, 60 Games And Applications On Your Spectrum, Basic Made Easy For Your Spectrum, Educational Programs For Putting Your Spectrum To Work, Spectrum Handbook, Hacker's Handbook, Illustrating Computers Without Jargon, Computer Programming In Basic, Discover Your Spectrum, Creating Arcade Games On Spectrum.

ANY TWO FOR £4.75 OR FOUR FOR £8.75
Artificial Intelligence C64, DIY Robotics & Sensors C64, Matching Code Master C64, Power Plays On The Commodore 64, Graphic Art On The Commodore 64, Programming Your ZX Spectrum, Graphic Adventures - Spectrum, Delving Deeper Into Your Spectrum.

BARGAIN BASEMENT

BARGAIN BASEMENT

BARGAIN BASEMENT

PROGRAMMER'S REFERENCE GUIDE C64 £4.95	INTERNATIONAL SOCCER CARTRIDGE C64 £4.95	CRYSTAL CASTLES SPECTRUM £1.99	FOOTBALL MANAGER COMMODORE 64, 16, SPECTRUM, ELECTRON, AMSTRAD £2.99	TRAILBLAZER COMMODORE 64, AMSTRAD, SPECTRUM £3.99	HARDBALL COMMODORE 64 £3.95	CHEETAH 125+ JOYSTICK £6.95		
PENTAGRAM SPECTRUM £1.99	GUNFIGHT SPECTRUM £1.99	HOTSHOTS COMPILATION 4 GAMES: MINDSHADOW, GYRON, SHADOWFIRE, FIGHTING WARRIOR, SPECTRUM £1.99	LIGHT FORCE COMMODORE 64 AMSTRAD £3.99	SKY RUNNER COMMODORE 64 £3.95	DANDY SPECTRUM £1.99	PSI 5 TRADING COMPANY COMMODORE 64 £3.95		
NEOS MOUSE/CHEESE CASSETTE COMMODORE 64 £24.95	COMMODORE C2N CASSETTE UNIT £34.95	SIMONS BASIC CARTRIDGE £9.95	1 ONLY ATARI COLOUR MONITOR	AMSTRAD CF2 BLANK DISCS BOX 10 £26.95	ATARI VCS 2600 JOYSTICK 2 GAMES £29.95	1 ONLY D.K. TRONICS TV TUNER AMSTRAD MONITORS £54.95	2 ONLY ATARI SM 125 MONO MONITORS £115.00	1 ONLY COMMODORE 1541 DISC DRIVE £149.95

MAIL CENTA

17 Campbell Street, Belper, Derbyshire DE5 1AP. Telephone: 077 382 6830

Telephone orders using Access welcomed. Post and packing free on all orders over £5.00 to U.K. mainland. Under £5.00 please add 50p. Overseas please add 75p postage.

BRADWAY SOFTWARE (PCW)

LETTA-HEAD PLUS - The most versatile Spectrum utility program for designing and printing business and personal stationery, receipts, letterheads, labels, posters, etc. Create the design on screen using inbuilt graphics or load any SCREENS from an arts package, add text from the library of 25 different fonts, select the required output format and print all the copies you need.

Price only £9.00

DUMPY 3 - Fast becoming the de facto standard screendump program, producing all the screen dumps you will ever need for your Spectrum. No need to understand assembler, DUMPY's code GENERATOR creates the screendump, relocates it, and saves it ready for use in your programs. Over 1000 different size, shape and density screendumps, anywhere in RAM! Price less than 1p per dump!!

Price £8.50

LIN-O-TYPE - Add style to your written word. Print out on any wordprocessor file on tape, microdrive or disc in high density NLQ in a choice of 25 fonts, or turn your Spectrum into a full WYSIWYG electronic typewriter, superb for addressing envelopes, filling in forms or writing short notes.

Price £8.50

ASTRUM + New!! The very best Z80 assembler and monitor package for the Spectrum: exceedingly versatile, powerful and easy to use; full wordprocessor style editor; unlimited source code; assembly using microdrives or the Opus Discovery; command driven monitor with multiple breakpoints, single stepping, slow run etc.

Price £13.50 (state microdrive or Opus version)

DISC MANAGER Newest!! A brand new utility for users of the Discovery drives; full disc sector editor and file management program; erase, rename, copy groups of files; examine, modify and understand disc directory information; examine, modify and recover damaged data; backup and restore discs to tape.

Price £10.50 including 3 1/2" disc only

Bradway Software programs drive most (currently 16 different) interfaces; Letta-Head, Dumpy & Lin-O-Type require an Epson compatible printer and are compatible with Microdrive, Wafadrive & Disc. Prices are for cassettes, include full instructions and P&P. within Europe. Please add £2 per program worldwide airmail postage. £1.50 for microdrive cartridge or disc.

Send for further details:

(231)

33 Conalan Avenue, Sheffield S17 4PG

SUPERBASIC?

SUPERTRACE - IT

"Following the success of trace V.1 and 2#"

SUPERTRACE offers the ultimate in QL superbasic tracing. Trace straight into running basic by pressing CTRL-T and whole basic lines, not just line numbers, are printed into screen 0 or any pre-specified channel.

CTRL-A arrests programme, displaying next line in trace window. This is executed when any key is pressed setting up single step mode. Trace can be started and stopped with CTRL-S.

Speed of tracing can be altered during trace.

Single Step mode can be set off before running.

Trace can be output to any superbasic channel.

CTRL-U untraces via interrupt.

Trace and untrace are extensions to superbasic and can be used within programmes.

UNDERDEVELOPMENT! Supertrace*

Basic variables monitor - available midsummer. Free upgrades for existing customers SAE + cartridge please.

SUPERTRACE On MDV - £15.00 inc. P&P.

* Still available at original price.

STACK SOFTWARE

Parsonage Farm, Great Wolford,
Shipston-on-Stour, Warwickshire CV36 5NQ
Tel: 0608 74369

(240)

★ **QL SOFTWARE** ★★ **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).

OVER 400 QL & ST GOODIES NOW AVAILABLE.
E.G. ATARI 520 STFM £360. WRITE FOR 14 LISTS NOW!

Send cheques or P.O.s to:

SMILING SOFTWARE

10 Fir Road, Marple, Stockport SK6 7QN

(218)

QL GOODIES

512K EXPANDERAM	£80
CENTRONICS INTERFACE	£17
QL MODEM	£45
QMS400 SOUND BOARD	£50
SCHON QL KEYBOARD	£53
10 MICRODRIVE CARTRIDGES	£17
ICE CARTRIDGE	£23
ICE WITH MOUSE	£63
TURBO WITH TURBO TOOLKIT	£80
SUPERCHARGE	£42
THE EDITOR	£26
SUPER MONITOR	£17

The above are just a small selection of the QL GOODIES now available all at low, low prices! Why not write for our full lists?

ST GOODIES

520 STFM	£360
520 STFM + MONO MONITOR	£450
520 STFM + LOW RES COLOUR MONITOR	£530
520 STFM + MED RES COLOUR MONITOR	£620
1040 STF	£550
1040 STF + MONO MONITOR	£640
1040 STF + LOW RES COLOUR MONITOR	£730
1040 STF + MED RES COLOUR MONITOR	£820

ALL THE ABOVE STs COME WITH A BUILT IN DISC DRIVE, A MOUSE AND TEN FREE DISCS, EIGHT OF WHICH CONTAIN SOFTWARE.

ATARI-5 MEG DISC DRIVE	£140
ATARI 1 MEG DISC DRIVE	£185
CUMANA 1 MEG DISC DRIVE	£140
ATARI 20 MEG HARD DISC	£630
ATARI MONO MONITOR	£130
ATARI SMM804 80 CPS PRINTER	£180

THIS IS JUST A SMALL SELECTION OF OUR ATARI HARDWARE, HUNDREDS OF SOFTWARE PACKAGES ALSO AVAILABLE ALL AT LOW PRICES e.g.:

R.R.P.	OUR PRICE
£19.95	£16.00
£24.95	£21.00
£34.95	£28.00
£39.95	£30.00
£49.95	£40.00
£99.95	£80.00

WRITE NOW FOR OUR LISTS OF OVER 400 QL + ST GOODIES

SEND YOUR ORDERS TO:

SMILING SOFTWARE

GOODIES DEPT, 10 FIR ROAD, MARPLE, STOCKPORT SK6 7QN

(233)

BEST SOFTWARE

SAXON SOFTWARE

BEST PRICES

ATARI ST

Star Trek	£14.95
Goldrunner	£21.95
The Pawn	£19.95
Karate Kid II	£19.95
Pinball Factory	£19.95
Jewels of Darkness	£14.95
Starglider	£19.95
Enchanter	£24.95
Sorcerer	£16.95
Spellbreaker	£21.50
Skyfox	£19.95
Shuttle II	£19.95
World Games	£19.95
Winter Games	£19.95
Rogue	£19.95
Zork Pack (I, II, III)	£49.95
Leaderboard	£19.95

AMIGA

The Pawn	£22.95
Marble Madness	£24.95
Leather Goddesses	£29.95
Little Computer People	£29.95
Tass Times	£19.95
Skyfox	£24.95
Arctic Fox	£24.95
Jewels of Darkness	£19.95
Hitch-hikers Guide	£24.95
Deep Space	£34.95
Arena	£29.95
Bratacus	£34.95
Music Studio	£29.95
Borrowed Time	£19.95
Hacker	£19.95
Hacker II	£19.95
Shanghai	£19.95

SEND FOR FREE ST
SOFTWARE AND HARDWARE
PRICES

AMIGA A500 & HARDWARE
COMING SOON

ATARI 520 ST-FM INCLUDING 1/2 MB DRIVE (BUILT IN)
POWER SUPPLY & R.F. MODULATOR (BUILT IN)
MANUALS, LANGUAGE DISC AND MOUSE

ONLY £349.95 inc. P.&P.

TOO GOOD TO BE TRUE? TRY US!

The price you see is the all inclusive price. Please quote this magazine when ordering. Send cheques & P.O.s to:

**SAXON SOFTWARE, P.O. BOX 98
HAYES, MIDDLESEX UB3 1SZ**

Send S.A.E. & 50p for full lists for
Atari 8-bit, IBM/PC1512

(234)

EScape Software

★★★ Special Introductory Offer ★★★

QL SPELLING TUTOR

A menu-driven package that teaches spelling using a variety of proven techniques. Suitable for 5-year-olds to adults. Use built-in graded vocabulary of over 3100 words or build up your own word lists. Also included are Hangman, Anagram and Word-Search games.

QL SPELLING TUTOR was compiled using QLBERATOR

Offer price: **£11.50 inclusive**

Send cheques or P.O.s to:

EScape Software

2 Henley Road, Ilford, Essex IG1 2TT

Telephone: 01-478 8281

Overseas orders add £1

**SPECTRUM COMMODORE 64
AMSTRAD CPC****COMPUTER GAMES - TRY BEFORE YOU BUY**

Review the latest games at home

- ★ One week's review
- ★ Latest titles
- ★ Lowest rates
- ★ Free 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 (0785) 211150 ANYTIME!

(232)

FREEZE WE'VE GOT YOU COVERED DUST COVERS

For all computers and equipment

- ★ 100% washable proofed nylon, static inhibited in a choice of 5 colours to suit you: red, blue, green, black, grey.
- ★ Stylish contour design, piped in a contrasting colour.
- ★ Huge range eg. Atari ST, (M) (SM) 1040 (STF) 4 piece set just £10.50.
- ★ Below just some of the machines we cater for:
- ★ Atari ST range. 4 piece set - £10.50.
- ★ Amiga. 4 piece set - £10.95.
- ★ PC 1512. 3 piece set - £9.00.
- ★ PCW range. 3 piece set - £8.95.
- ★ C&C range. 2 piece set - £8.00.
- ★ Commodore C64. 1 piece - £3.50.

Also covers made to your specification for any computer or device. Write or phone for details.

Please state make and model numbers of computer, monitor and printer and disc drives.

Stop Press Latest offers on 3-5" blank discs SS/DD. 135TPI. 10 for £13.90 inclusive of P&P. Postal orders and cheques made payable to:

Concept Covers, 24 Wolstenbury Road
Rustington, West Sussex PM16 3LB
Tel: 0903-782945

QL QL QL QL QL QL QL QL

CORRUPT MDV masters... WHY?

LOCKSMITHIE a VERY fast MDV copier with 3 copiers in one. Deals with more than just "most software", it "keys" for all without exception.
4MATTER copies mdv to floppy with as much success as most MDV only clones + free 128 shrink as below.
SHRIVEL Shrink expanded machine for naughty software (any size in 64K steps). NEW
MDV TOOLCHEST toolkit to read, write and verify sectors etc. Writes your own doctor prog in basic. On line manual with extensive mdv info.
MULTISPOOL tasks behind Quill etc (expanded machine) giving up to 32000 doc's from 1 disc access. NEW
LOCK = £10. 4MAT + LOCK = £18. MSPLE = £10. SHRIV = £5. MDV TOOLCHEST = £8
Prices inc. P&P. Cheques/POs to:

Steve Jones, ZITASOFT UK, 93 FOXBOURNE ROAD, LONDON SW17 8EN.
Outside Europe add £1 (129)

PUBLIC DOMAIN SOFTWARE FOR IBM PC COMPATIBLES

Massive selection of discs available from only £3.00 per disc.
NO MEMBERSHIP FEES
Send 15p stamp for free catalogue.
PC-STAR
P.O. Box 164, Cardiff CF5 3YB. (220)

STupid

Original ST Software at the
silliest prices
S.S.A.E. FOR LISTS

MIKE JERVIS, 19 Portree Drive, Rise Park,
Nottingham NG5 5DT (227)
Secondhand ST software, hardware + midi synths. wanted

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 autorun 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 "Freezer" 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)

SPECTRUM I/F 1 with 2 micro-drives and 70+ cartridges, £150 o.n.o. QL/JS disc printer and joystick interfaces, books including technical manual, languages, utilities, £200 o.n.o. Tel: 021-358 7572 between 7.30 p.m.-10.30 p.m.

BBC MICRO USER 1.1 to 4.1, 4.5-4.8, offers £45; Acorn user 2-57, offers £60; QL-user complete set, offers £30; Crash First, 2 volumes, offers £30. Tel: 021-358 7572 between 7.30 p.m. and 10.30 p.m.

QL/JS, disc i/f, printer i/f, J/S converter, books including technical manual, languages, utilities, £200 o.n.o. 48K Spectrum, Saga keyboard, joystick i/f, i/f III, games, utilities, books, Alphacom printer plus paper, £200 o.n.o. Tel: 021-358 7572 between 7.30 p.m.-10.30 p.m.

YOU CAN TURN your micro-computer into a money making machine. Free details from: Oasis Books (CW4), 7 Cortis Avenue, Worthing, Sussex BN14 7BQ.

MAY MADNESS ON 3 1/2" DISCS

10 branded 3 1/2" DS/DD discs with a lifetime warranty
£13.95 + 95p P.&P.

"QL Turboquill is essential"

Sinclair QL World 1987

QL Turboquill
£9.95 + 55p P.&P.

And for expanded memory QLs only
QL Turboquill +
£12.95 + 55p P.&P.

Taskmaster
£25.00 inclusive

Mailmaster
£23.95 inclusive

ATHENE CONSULTANTS

33 HOLLY GROVE
FAREHAM
HANTS PO16 7UP
Tel: 0329 282083

(239)

SPECIAL OFFER FOR THE MONTH

AMSTRAD PC1512 SDMM £460.00

AMSTRAD PC1512 DDCM £730.00

AMSTRAD PC1512 HD20CM £1090.00

Price includes VAT. Please add £10 for P&P

★ CPC 6128 (colour) £360.00
★ PCW 8512 £510.00
★ PCW 8256 £407.00
★ DMP 2000 (printer) £162.00
★ DMP 3000 (printer) £173.00
★ FD-1 (disc drive) £90.00
★ 3" Floppy discs (box of 10) £25.95
★ Interface for PCW or CPC £53.00
★ Printer Ribbon for DMP 2000 £5.30
★ Cable for extra drive (FD-1) £8.30
(★ Please add £5 for P.&P.)

AMSTRAD CPC SOFTWARE

Mini Office II (disc) £14.50
Protext (disc) £17.85
Tasword 6128 (disc) £18.35
Masterfile III (disc) £28.90
Tas-Spell (disc) £13.45
Mastercalc 128 (disc) £27.50
Plan It (disc) £14.50

AMSTRAD PCW SOFTWARE

Supercalc 2 £38.95
Dr Draw/Dr Graph £34.00
Protext w/p (+6128) £54.00
Tasword-8000 £18.75
Masterfile-8000 £34.00
Tas-Spell-8000 £12.50
Touch-n-Go £19.00
Scrabble £14.95
Popular Accounts (Sagesoft) £64.90
Tomahawk £15.35
Trivial Pursuit £15.35
Fair Light £11.50
Jewels of Darkness £15.35
Prospell £18.00
Silicodream £14.35

AMSTRAD PC1512 SOFTWARE

Supercalc 3 (ele. spreadsheet) £56.95
Wordstar (word processor) £56.95
Reflex (database) £56.95
PC Four (PSS) £63.60
Sidekick (utility) £22.95
Touch 'n' Go (tutorial) £19.00
Trivial Pursuit £15.35
Spillies Ace £15.25

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) 400305

(142)

ANCIENT & MODERN

77 Northumberland Avenue, Reading, Berks
(please note new address)

All following £8.95 r.s.p. games at A&M £5.99

MARBLE MADNESS Sp, GAUNTLET Sp, BAZOOKA BILL Sp,
JUDGE DREDD Sp, AZIMUTH HEAD ALIGNMENT sp,
LIGHTFORCE C64, ALLEYKAT C64, FIRELORD C64, COBRA
C64, YIE AR II C64, KNIGHT GAMES Ams.

All following £9.95 r.s.p. games at A&M price £6.99

LEADERBOARD Sp, ACE Sp, HOT WHEELS C64, SCOOBY
DOO C64, ASTERIX C64, TARZAN C64, AMERICA CUP C64,
XEVIOUS C64, CRYSTAL CASTLES C64,
TAU CETI Ams.

No lists. No overseas. UK postage included. Cheque/POs with order to above address. (222)

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 (C.O.D. £1 extra)

DISKS

10 5 1/2 DS/DD	£6.50 inc. case
10 3 1/2 SS/DD	£16 inc. case
10 3" AMSOFT	£26 inc. case

MEMOTECH COMPUTERS AND ACCESSORIES

MTX 512 COMPUTER	£65.00
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

BRANDED DISCS Incredible prices

All discs supplied in original packing and fully guaranteed

Prices per box of ten

3.5" Verbatim Datafile SSDD 135tpi MF350	£21.75
3.5" Sony SSDD 135tpi OMD3440	£19.45
3.5" Memorex DSDD 135tpi MX3480	£24.30
5.25" Verbatim Datafile SSDD 48tpi MD525	£12.75
5.25" Verbatim Datafile 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

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 - £20.58. Tints as above: 500 - £15.20, 1000 - £24.65, 2000 - £34.36.

CASSETTE LABELS - On tractor feed backing. Rolls of 500 labels, White - £14.86, 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)

AMIGA JUMPDISK

Best selling American monthly magazine on disc now available in UK. Every issue contains at least ten programmes and ten articles. To receive the current issue please send cheque for £8.50 to:

GEORGE THOMPSON SERVICES LTD,
OLD REIGATE ROAD,
BETCHWORTH,
SURREY RH3 7DR
TELEPHONE: 073 784 4675 (208)

DESKTOP

CFZ AMSOFT DISCS



£25 for 10
£13 for 5
+ £1 P.&P. All
individually cased.

CF2 Storage Box



ONLY
£4.95
+ £1 P.&P.

(£4.50 with 10 discs)

We will undercut any cheaper prices in this magazine!
(All prices include VAT)

FREE CATALOGUE

PCW/PC software labels,
paper, 5 1/4" discs etc.
Phone for copy

Send for details or order from:
Desktop, 11 West Street, Hett, Co. Durham DH6 5LS
Telesales 0388 767244/813035 (24 hours - 7 days)

YOUR NO.1 CHOICE

PCW Ribbon..... £4.75

PCW Quality Dust Cover
Set £19.84

PC1512 Quality Dust Cover
Set £19.84

3" Storage Box - holds 25
CF2 discs £8.50

All + £1 P.&P.

0388 767244

Order by phone - pay later

**SAME DAY
DESPATCH**

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**,
PO Box 20, Ashford,
Middlesex, TW15 3QE (152)

FABRIC RIBBON RE-INKING

Introductory offer: £1.50 each

Send cassettes and payment to:

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

We will advise normal price for your ribbon

Tel: 08907 50965 (172)

DUPLICATION

DATA/AUDIO cassette duplicating from 23p: blank or printed labels/cassettes, inlays: IBMPC/etc. disc duplication and blanks: An erasure and rerecording service from 12p. (196)

Price list from:

SIMON STABLE PROMOTIONS, 20 Westend,
Launton, Nr. Bicester, Oxon OX6 0DF.
Tel: 0869 252831 8.15am-8.30pm Mon.-Fri.

SERVICES

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

COMPUTER REPAIRS Fixed Super Low Prices!

Inclusive of parts, labour and VAT



**FIRST AID
FOR
TECHNOLOGY**

1 week turnaround
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

(182)

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

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)

400/800

XL/XE

LOOK

NOW

ST

ATARI OWNERS

Are you having difficulty finding suitable software. If so, then look no further. We have available for both hire and purchase one of the largest selections of both UK and American titles to choose from. Games and Utilities for all ages. Hardware and add-on utilities at discount prices and special deals regularly being offered. If you would like further information please send a large s.a.e. to:-
CHARNWOOD PRODUCTS AND GAMES
30A Watford Avenue, Gorse, Loughborough
Leicestershire LE11 0NS
Tel: 0509 412504

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 400305 (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)

FOR SALE

PUT COMPUTERS TO WORK! Make yourself independent. S.A.E. gets full details. Mail now to DataScene, Boscombe House, Southend, Essex SS2 5JD.

SINCLAIR USERS - send a first-class S.A.E. for **FREE** details of probably the most popular and genuine scheme for making money, working from home: Mr O'Brien, 1 Lorn Road, Dunbeg, Connell, Argyll PA37 1QB.

ATARI ST utilities disc (A201), includes 410K, 820K formatter, Ramdisks, directory, printer, print spooler, file squeezer, all public domain. Sell for £7. From Abax K. P.O. Box 24, London E10 6HR.

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.

BBC, Beep-planner, version 8, CPA program, Time Analyse 250 activities, calculates project cost, three calendars, various reports, uses sideways Ram, £39.95. E. Sheffield, 8 Langdon Close, Camberley, Surrey GU15 1AQ. S.A.E. for details.

ATARI 520 STM plus 1/2 meg. drive, £200 worth of software, only three months old. Sell for £450. Tel: (Ripley) 813940. After 4pm.

AMIGA 512K as new with loads of software, including, Sinbad, Flight Simulator, Pawn, Spacequest and more. Sell for £850. Tel: 01-302 5052 anytime.

IRON MAIDEN ADVENTURE GAMES, on one cassette, The Rock, Spectrum 48/128. Sell £5. From Karl Crawford, 90 Westfield Avenue, Redcar, Cleveland TS10 1HG.

COMMODORE 1571 disc drive, new in box, must sell now. £165 o.n.o. Call today, leave message. Tel: 01-878 5579.

COMMODORE 128, 1570 drive, C2N cassette, dust covers, disc box, large selection of disc software, pristine condition. Sell £390. Tel: Gish 0895 72727.

ATARI ST USERS: Huge public domain software library at the best prices anywhere, a monthly magazine, hardware and software at special prices, all from UK-ST-Club. Write to UK-ST-Club, Swans Nest, Westerfield, Ipswich IP6 9AJ.

AMSTRAD, COMMODORE, SPECTRUM, BBC software for hire, latest titles, extensive catalogues, details from M. Ryall 1569 Stratford Road, Hall Green, Birmingham.

ATARI accessories/software, as new, boxed, 1027 printer and 1050 disc drive £70 each. Many bargain disc games, adventures, wargames for 800XL and 520ST. Tel: 051-653 5698 (Birkenhead).

SYSTEM FOLDER, Macpaint, Macwrite, list of compatible Mac programs and assorted Atari software. Phone Philip Bunce on 0932 226152 anytime. Complete system £849.

GFA BASIC compilers and interpreters for the Atari ST at only £54.95! GFA is the best Basic around for the ST. Send for info or send £54.95 stating compiler or interpreter to Bibliotechnic, Dept PW1, 178 Green Lanes, Palmers Green, London N13 5UE or phone 01-882 7954 anytime.

WANTED! Owners who want to earn money with their computers. Hours to suit you. No programming. Interested? Send S.A.E. Barleycorn Marketing (PCW1), 65 Capsey Road, Ifield, Crawley, Sussex RH11 0UF.

SPECTRUM 48/125 Farm Simulation, Plant, harvest, avoid disasters. Make big Money. Machine/basic, memo driven: 50% profits to charity. £3.50. R. Buckley, 40 Upper Valley Road, Sheffield S89HB.

ATARI STM, 1 megabyte Ram, two 1 megabyte disc drives, lots of software, only £480. Epson LX80 printer with Atari or BBC lead only £100. Tel: 05827 69152.

COMMODORE 64 with colour monitor, printer, disc drive, cassette, joystick, includes many tapes, games, discs etc, perfect condition, offers invited. Tel: (0727) 34339.

ATARI ST utilities disc (A201), includes 410K, 820K formatter, Ramdisks directory, printer, print spooler, file squeezer, all public domain for £7. From Abax K, PO Box 24, London E10 6HR.

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.

BBC, Beep-planner, version 8, CPA program, Time Analyse 250 activities, calculates project cost, three calendars, various reports, uses sideways Ram, £39.95. E. Sheffield, 8 Langdon Close, Camberley, Surrey GU15 1AQ. S.A.E. for details.

ATTENTION G.A.C. USERS. Improve your adventures with fancy loader, personnel character, set and screen dump inc., Spectrum only. Details: Deltacom Consultants, 16 Second Avenue, Bearsden, Glasgow G61 2LR.

WORD PERFECT library software, brand new £80 o.n.o. Tel: 0494 20518.

HOW TO DESIGN, develop business systems, a practical approach to analysis, design, implementation. S.A.E. details, DataScene, Boscombe House, Southend, Essex SS2 5JD.

HIGH QUALITY daisy-wheel printer. £250. Tel: Gosport 503789.

YOU CAN TURN your micro-computer into a money making machine. Free details from: Oasis Books (CW4), 7 Cortis Avenue, Worthing, Sussex BN14 7BQ.

WANTED BBC B with disc drive. Tel: 01-654 5101 (Croydon).

COMMODORE 64 MUSIC SYSTEM: computer, disc drive, monitor, superb Melodian music keyboard, £200 software. £450. Tel: 01-981 6085 (Poplar).

DUAL APPLE MAC/ATARI computer system, consisting of Atari 1040STF, SM125 monitor, Robtek McEmulator cartridge version 4.0, Macintosh Roms, Apple Finder and system folder, Macpaint, Macwrite, list of compatible mags, programs and associated Atari software. Phone Philip Bunce on 0932-226152, anytime. Complete system, £849.

ATARI 800XL, 1050 drive, 1010 recorder, over £600 utilities, games, manuals, mags, only £300, o.v.n.o. Tel: Ian, daytime, 01-469 2233; evenings, 01-310 0640.

ACORN ELECTRON in excellent condition, complete with two books and lots of software. Only £50. Please phone: Alan on Beith (05055) 2491 after 4.30.

QL COPY UTILITIES. Fast Micro-drive duplicator. Directory Manipulator, Editor, Sorter, etc. File string, device changer 20K+ machine code £8.90 including p&p. A. J. Spencer, Windynook, Wentworth Road, Kilnhurst, Rotherham, South Yorks.

ATARI SF354 1/2 meg drive £80. Degas £15. Superhugy, Supercycle, Timebandit, £9. Skyfox, Xevious, £10. Casio CZ101 synth £199, buyer collects. Tel: Chris, Witney 5382.

SPECTRUM AMX mouse, interface 1, microdrive VTX 5000, modem, interface 3, Currah Speech, 45 games, 10 microdrive cartridges, books, cost over £600, sell £300 o.n.o. Tel: Wearside 5226115. Will sell separately.

ATARI 800XL with laser enhanced disc drive, plus over 500 titles of software; also 130XE. £200 for 800XL set-up, £70 for 130XE. Tel: (Deeside) 0244 817542. Ask for Geoff.

ATARI 520ST service manual, cost £35, sell £25. Toshiba HX10 package, plus books, software, etc, cost £280, sell £110. Poolswinner program for Atari XL/XE £8. Tel: Basil-don (0268) 284771.

COMMODORE 64, Atari 800, BBC-B tapes and discs for sale at very low prices. All originals. BBC Roms like View, Printmaster; also cheap sideways Rom board, £25. Phone Mike 01-476 7546 after 6.30 p.m.

BBC-B (Issue 7) with 0.9 DFS. and replay Ta-to-Di fitted, complete with Kempston joystick, many original games, books and magazines all boxed and excellent condition. £280 o.v.n.o. Phone Mike 01-476 7546 after 6.30 p.m.

COMMODORE 128D, excellent condition, £360; MPS1000 printer, £150. Quickdisc plus, Magic Voice, Superhelp, £10 each; Mouse, £20. Books, £20. Phone Derby 511345, ask for John. Must collect!

SPECTRUM PLUS, joystick, interface, plus magazines, 40 games, all original, including Paperboy, Lightforce etc, in perfect condition. All for £220 o.n.o. Tel: Armagh 526324/522350 (N. Ireland).

SPECTRUM, joystick, cassette recorder, mags, books, £400. Original software £130. Wafadrive £20. Specmate £15. Doubler £7. Also Commodore sound sampler for C64, £35. Also C64 games. Phone Richard 0934 412444.

Dealers

BIRMINGHAM

AMIGA

A500 :- £573.00

A1000 (512K) £1098.00

ATARI 520STFM
inc. FREE DISKS £379.95

ALL PRICES INCLUDE VAT

ALLEN JAMES COMPUTERS

831 STRATFORD ROAD, BIRMINGHAM.

021 778 5737

ESSEX

ESTUARY
PERSONAL COMPUTERS

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

PL484

Dealers

GLASGOW

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

PL795

GLASGOW COMPUTER CENTRE

Atari appointed dealer
and Service Centre
Specialists in Atari ST Computers
VIRGINIA GALLERIES
(1st FLOOR)
33 VIRGINIA STREET
GLASGOW G1 1TU
TEL: 041-552 1522

(136)

Dealers

LEEDS

MICROPOWER

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

PL583

Dealers

LONDON

GALLERY SOFTWARE
1st FLOOR
THE ARNDAL CENT,
WANDSWORTH,
LONDON SW18
Tel: 01-870 4941

27PL29

NEW RELEASES

Amstrad CPC

Program *Five Star Games Type*
Compilation **Price** £9.95 **Supplier**
Beau-Jolly, 29A Bell Street, Reigate,
Surrey RH2 7AD.

Dandy, *Cauldron II* and *Alien Highway* star, with *Doomsday Blues* and *Frostbyte* as curios.

Dandy, you might remember, is *Electric Dreams*' answer to US Gold's *Gauntlet*, programmed by Ram Jam.

Played in a maze of dungeons filled with monsters, monster generators, food, doors, keys, the game had distinctive mono graphics – rather gothic in nature, if anything. One or simultaneous two player, it was considered a good quality hack.

Alien Highway is a variation of the original *Highway Encounter* from Vortex. It played on roughly the same themes and stuck to the same style of graphics, but was a worthy follow-up, requiring sharp arcade skills and a keen brain to succeed.

Cauldron II is another follow up, but was very different from Palace's original. In this you play the part of a bouncing pumpkin, out to topple the very witch you controlled in *Cauldron I*. The witch's palace (where the action takes place) is big all full of hazards, natch. Not at all bad.

Frostbyte is a game released when Mikro-Gen was going through its mid-life crisis, so didn't sell too well – a shame because it's the first ever arcade adventure to feature in the starring role, a Slinky. (At least, it looks like a Slinky.)

Lastly, *Doomsday Blues* from French company Ere Informatique. This is a weird arcade adventure that has you breaking out from prison and zapping round the environs. It's quirky, visually attractive and very French.

Altogether, the five pack represents excellent value – especially considering that none of the games are over a year or so old.

Program *Wonderword Type* Application **Price** £7.50 (tape), £9.00 (disc) **Supplier** Bit & Byte Software, Moneymore, Oranmore, Co Galway, Ireland.

Homebrew WYSIWYG wordprocessor for the CPC with a Light Cycle game on the flip side.

Program *Krakout Type* Arcade **Price** £8.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.



Another *Breakout*/*Arkanoid* variant. It's good and another fiver will get you the Construction Kit if you ever manage to solve the 100 screens.

Program *Mario Brothers Type* Arcade **Price** £8.95 (tape) £14.95 (disc) **Supplier** Ocean Software, 6 Central Street, Manchester M2 5NS.

Atari ST

Program *Xevious Type* Arcade **Price** £24.95 **Supplier** US Gold,

Units 2/3 Holford Way, Holford, Birmingham B6 7AX.



Very disappointing conversion to the ST. The colours are insipid and dull, and control is via joystick only... whereas a five star job would have used mouse control with separate mouse buttons for bomb and fire.

Program *Mousetrap Type* Arcade **Price** £14.95 **Supplier** Tynesoft, Addison Industrial Estate, Blaydon upon Tyne, Tyne & Wear NE21 4TE.

Platforms and Ladders on the ST, but it's a lovely implementation with some great touches of humour as you move your mousey character from screen to screen. Completely charming – and it's not costing an arm and a leg.

Atari XL/XE

Program *Wizard's Crown Type* Arcade Adventure **Price** £00.00 **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

Atari XL/XE disc based role-playing adventure from SSI, which includes a tactical combat section so the party can really get to grips with the monsters.

BBC B

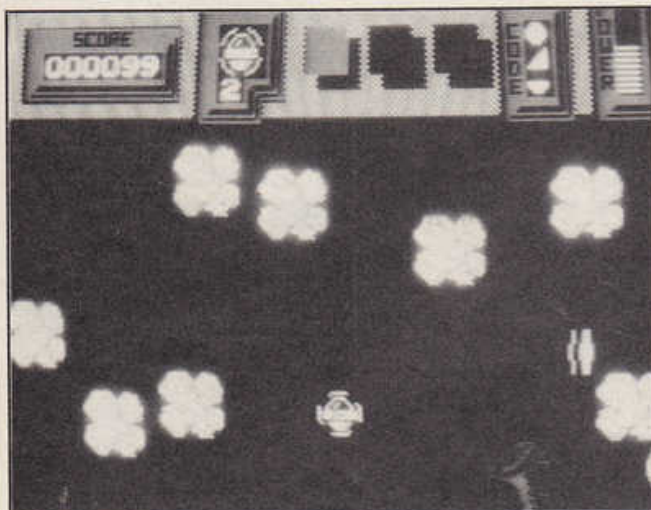
Program *Computer Mind Type* Strategy **Price** £9.00 (disc only – mail order) **Supplier** Mosaic Software, 4/15 The Grange, London SW19 4PS.

Two way Mastermind style game with you against the computer.

Commodore 64

Program *Samurai Trilogy Type* Arcade **Price** £9.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield.

continued on page 51 ►



It's interesting how taking a sideways look at a particular game format and just changing one single aspect it can make such a difference to the gameplay.

Jasdan Joerges has taken the simple arcade adventure/maze game – and played around with the gravity and friction aspects of the movement with *Kinetik*. As your hydro-craft moves from screen to screen (there are 43 'zones' in total), instead of the constant downward pull of gravity that dominates in most games, gravity and friction vary in each room.

In one room, for instance, there are two centres of gravity – one placed on the left of the screen, one on the right – which makes manoeuvring kind of difficult. In others, intense atmospheric friction means that moving is like making your way through treacle.

It is your mission to sort out this abnormal state of affairs by collecting the three letters that spell out the 'word of peace' (the mind boggles!) and then delivering them into the hands of the great kinemator – wherever it may be – who will put things to rights.

As in most games of this type, things may be picked up and used to aid you – like a chemical spray that will blast away all the nasties, a deflector shield that will fend them off and best of all, the EZ control thrusters that will nullify the weird effects of the strange gravity.

You've got three lives – and as soon as your power gauge goes down to zero, that's one life gone. Some static objects will kill at the slightest contact though – so a deft touch with the joystick is essential.

Released on the full price Firebird label, written by lone West German programmer Jasdan Joerges (aided only by a 48K Spectrum, would you believe), out on Spectrum, Amstrad CPC and Commodore 64.

Kinetik is not a classic – but if you like this kind of arcade puzzle solving, it offers enough that is new to make it worth buying.

John Cook



10-HUT!

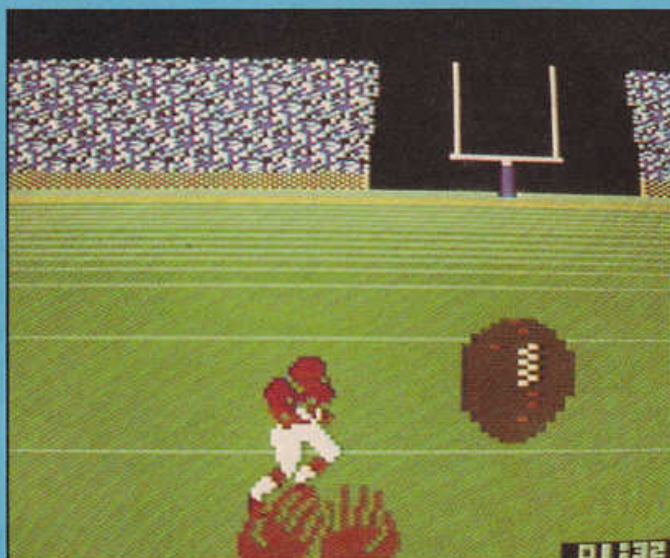
Activision has timed the release of Gamestar's *GFL Championship Football* perfectly. Perfectly wrong that is. With the Superbowl a fading memory and the new American Football season many months away, interest is not running high at the moment. Hopefully this will not count against Gamestar's product as it features a style of graphics not seen before in a game of this type.

I speak of a three dimension view from down on the gridiron. Here you get to play the wide receiver and the running back, the man in the special team going for goal with time running out.

Before you get into the action, you must go through the preliminaries of selecting the number of players, which teams to use (from 28, all rated differently), and how long each quarter should last (four or seven minutes!).

That dispensed with, it's down to pitch and the kickoff. After struggling to return the ball you are presented with a fairly long list of options for your first offensive play. The choice of running plays includes trap, draw, blast, power, sweep and pitch, left or right. Trap and draw can usually be relied upon for small gains while the sweep and pitch options are riskier but can reap greater rewards.

After selecting your choice the opposition makes theirs and you get to play it out. The quarterback grunts the calls unintelligibly, real sampled grunting as well, and passes the ball to you. This is the moment of truth because you have to know exactly where to run to break through the melee at the line of scrimmage. If you are lost a



"Having broken free, you can stomp down the field – sticking out an arm, if you time it right, to fend off the desperate tackles. Should you manage to plough your way through the defense, then the end zone looms up and the crowd starts cheering"

couple of arrows at the bottom of the screen guide you in the right direction but by then it'll be too late to make a big gain.

Having broken free you can stomp down the field sticking out an arm, if you time it right, to fend off the desperate tackles. Should you manage to plough your way through the defense

then the end zone looms up and the crowd starts cheering.

The alternative to the effort of a running play is of course to throw the ball. There are a total of 22 options (11 left, 11 right) to choose from, from short sharp passes to bombs far down field.

The mode of operation here is to wait for the quarterback to

finish grunting and then execute a precise number of steps in set directions. A long out left, for example, requires six steps forward, five to the left and one back. It has to be done exactly right and at the right time otherwise when the quarterback throws the ball you won't be there to meet it. Oh, that it were that simple. You also have the defense to contend with.

While the graphics are decidedly chunky they are presented in a clear 3D format, and the animation is quite reasonable. The sound, though, is pretty good, with the sampled sounds of the quarterback and commentator adding to the atmosphere.

With a choice of teams to play against, or a friend, *Championship Football* could keep you playing until the season really does start in September.

Hints box

- Until you know the pass plays off by heart, try running the ball most of the time.
- The shorter passes are easier to use, so don't try a flag or post until you really need it.
- Try to outthink your opponent by working out what your obvious move is and what their response would be. Then try something different that takes advantage of their response.
- Concentrate on timing your runs in pass plays so that you start moving after the quarterback calls the play but before the direction arrows appear.
- Each team in *Championship Football* has weak points. Try using plays designed to exploit those weaknesses most of the time.

Duncan Evans

HSV COMPUTER SERVICES LIMITED

All our prices include carriage & VAT
— No extras to pay!

Branded Discs Maxell and Athana (Boxes of 10)

MAXELL			ATHANA		
3.5"	SSDD	£23.95	3.5"	SSDD	£21.95
3.5"	DSDD	£31.95	3.5"	DSDD	£26.95
5.25"	SSDD	£11.95	5.25"	SSDD	£7.95
5.25"	DSDD	£14.95	5.25"	DSDD	£8.95
5.25"	DSDD	£17.95	5.25"	DSDD	£13.95

UNBRANDED LIFETIME GUARANTEE

		QUANTITY	10	20	30	40	50	100
3-5	SS/DD	135TPI	15.50	30.00	44.00	57.00	70.00	135.00
	DS/DD	135TPI	17.50	34.00	50.00	65.00	80.00	155.00
5-25	SS/DD	48TPI	5.95	11.00	16.00	21.00	25.00	45.00
	DS/DD	48TPI	6.95	13.00	19.00	25.00	30.00	55.00
	DS/DD	96TPI	7.95	15.00	22.00	29.00	35.00	65.00

ALL DISCS SUPPLIED IN CARDBOARD BOXES WITH WRITE PROTECT TABS, LABELS AND ENVELOPES AND COME WITH OUR NO QUIBBLE MONEY BACK OR REPLACEMENT GUARANTEE.

Also best prices for ribbons, stationery, labels and various other products.

CREDIT CARD HOT LINE!
(0256) 463507



HSV COMPUTER SERVICES LIMITED,
23 HAMPSTEAD HOUSE, TOWN CENTRE,
BASINGSTOKE, HANTS RG21 1LG

HSV

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 1986/7. 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

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



phone 24 hrs

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

(Send for full list of our software)

AT LAST . . . the magazine ST owners have been waiting for

The magazine devoted exclusively to the Atari ST - ST graphics, ST music, ST programming, ST games and ST software.

In the pilot issue you'll find:

- Special feature on ST flight simulators
- Introduction to programming the 68000
- Four word processors compared
- Six graphics packages reviewed
- N-n-n-nineteen of the very best games
- Dozens of music packages appraised
- Nearly 300 software packages detailed
- (No partridge in a pear tree but . . .)

Special offers worth £17

Exclusive to readers of ST Update: save £12 on the cost of Aaronfay's excellent Datacom communications software and £5 on the price of Metacomco's MCC Assembler

If you own an ST - if you're thinking about owning an ST - don't think about missing ST Update. ON SALE NOW!



◀ continued from page 48

Impressive graphics in this multi load bash which has you taking various tests in order to become a Samurai Warlord. Three sections are Karate, Samurai sword play and Kendo. Looks good.



Program Zap Pak Type Arcade Compilation **Price** £4.95 (disc only) **Supplier** Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

Budget disc software from Players – just under a fiver for two games. The two on the Commodore disc are *Fruity* and *Fungus*... neither state-of-the-art, but you might like to give it a try.

Program Twin Tornado Type Arcade Flight Simulator **Price** £9.95 (tape) £11.95 (disc) **Supplier** Dpcor Soft Simulations, PO Box 66, East Preston, West Sussex BN16 2TX.

Simulator that lets you link two Commodores together – giving full two player with independent views of the action.

Program Gemstone Healer Type Role Playing Arcade Adventure **Price** £14.95 (disc only) **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.



SSI import that takes the *Hall of Things* type concept to the limit.

Program Pass Your Driving Test Type Application **Price** £8.95 (tape) £11.95 (disc) **Supplier** Audiogenic Software, PO Box 88, 34-36 Crown Street, Reading, Berks.

Learning program based on the book: "Are you ready for your Driving Test?" by Mike Nathansen – prequel to the best selling, "Then please start your engine and turn left at the lights."

Program Rings of Zilfin Type Role Playing Arcade Adventure **Price** £9.95 (disc only) **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

Huge quest for mystic rings – looks like it has tremendous depth to it, but don't expect to be knocked out by the graphics.

Program Shard of Spring Type Role Playing Arcade Adventure **Price** £9.95 (disc only) **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

Party based role-playing, with tactical bits, all involved in a sacred quest.

All this newly arrived SSI stuff isn't bad, but it was generally agreed that *The Bard's Tale* (Electronic Arts) is still the best RPG system on the 64.

Program Five Computer Hits Type Compilation **Price** £6.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

Hmmmm – I didn't know *Kettle* ever was a hit.

Program Rogue Trooper Type Arcade **Price** £9.95 (tape) £14.95 (disc) **Supplier** Piranha, 4 Little Essex Street, London WC2R 3LF.



The genetic infantryman reaches the Commodore 64 at last.

Program Mario Brothers Type Arcade **Price** £8.95 (tape) £12.95 (disc) **Supplier** Ocean Software, 6 Central Street, Manchester M2 5NS.

Coin-op conversion of a Nintendo

game of 1984 vintage. It involves platforms, and turtles. You knock out the turtles then kick them. Crabs and Fighter Flys also make an appearance.

OK if you like that sort of thing.

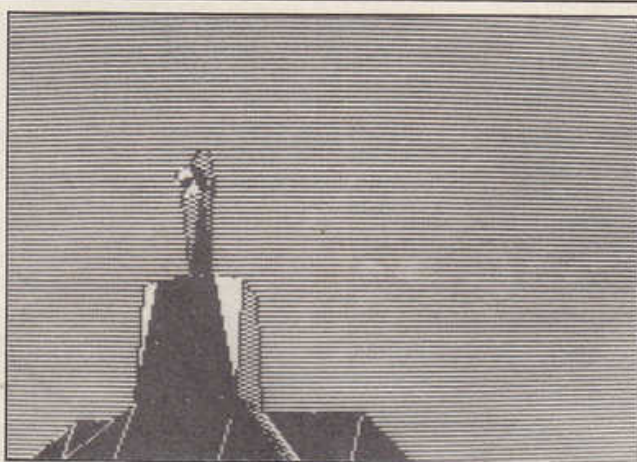
PC and Compatibles

Program The Fourth Protocol Type

Strategy **Price** £19.99 **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2E 9JH.

Conversion of the innovative three part strategy icon driven adventure based on the Forsyth best seller.

You play the part of John Preston from M15, with the task of tracking down a group of Russian agents



"They said it couldn't be done – but we did it." So said one Richard Kaye of Software Creations, one of the up and coming newer software outfits, with the broadest of grins on his face. Richard is a happy man, and playing *Sentinel* on the Spectrum, you can see why.

The thing has been done by Software Creations as well as it possibly could have been on that format and has given thousands of Spectrum owners the chance to experience what the computer press in general have been raving about since last autumn, when the BBC version was released.

In case you missed any one of the several rave reviews in *Popular* (tut, tut), *Sentinel* is an abstract game of conflict set in a *Marble Madness* style environment – but instead of looking on from outside the landscape, you are dramatically placed right inside it. Your opponent is a figure placed on a plinth high above the stark surroundings – the sentinel.

The game is all about energy. Your ultimate task on each level (and there are 10,000, yes, ten thousand) is to destroy the sentinel by absorbing its energy. To do this, you must find a way to get higher than it. To do that, you have to create stacks of boulders (costing you two energy points each), then create a new robot 'being' and transfer yourself into it.

You now absorb your old self (gaining three), and look for trees to absorb (plus one) to replenish your energy supplies to make your next move. All the time this going on, the sentinel is slowly rotating like a deadly lighthouse, draining energy from you if you should fall within its gaze. Get the idea?

With a single sentinel, it's a stimulating exercise in three dimensional visualisation, when there are six – it's blind panic.

Of the four existing versions, Amstrad CPC is probably the best, but the mono display on the Spectrum (and you can change that colour at will) is pleasing enough and well drawn.

In all, it's a great little implementation of Geoff Crammond's original – highly recommended for anyone that's finding the jumpy-jumpy, shooty-shooty a little bit tedious.

John Cook

continued on page 53 ▶

Verran

MICRO-MAINTENANCE LIMITED

TRADE OFF ALL
\$5 PRICE

EUROPE'S LEADING COMPUTER REPAIR CENTRE

TELEPHONE (0276) 66266

TRADE ENQUIRES (0276) 62677

TELEX 858199 Verran G



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

Z80 CPU	2.50
ULA 8C001	7.00
Power Supply	6.50
ROM	7.00
4116 RAMS	.75
ZTX 650	.40
ZTX 213	.40
Keyboard Membrane	
Spectrum	3.00
Spectrum Plus	8.00
Metal Templates	3.00
Keyboard Mats	2.00

COMMODORE SPARES

6510 Processor	12.00
6526 CIA	12.00
6581 Sid Chip	15.00
901225 Graphic ROM	10.00
901226 Basic ROM	10.00
901227 Kernel ROM	15.00
906114 House Keeper	10.00
6569 - VIC	18.00
4164 RAMS - Memory	1.00
Power Supplies	
C64	19.50
C16X	15.00

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

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.

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 Std Bnd 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.



MICRO-MAINTENANCE LIMITED

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



SPECIAL OFFER REFERENCE - POP 107

◀ continued from page 51

who plan to detonate a nuclear device in mainland Britain.

I lent it to a friend – and was bombarded with phone calls for the next week. Conclusion; it's addictive.

Spectrum

Program Army Moves Type Arcade
Price £7.95 **Supplier** Imagine Software, 6 Central Street, Manchester M2 5NS.



Program Chimera Type Arcade
Adventure Price £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

3-D perspective arcade adventure – not bad for under two quid.

Program Pass Your Driving Test Type Application **Price** £7.95 **Supplier** Audiogenic Software, PO Box 88, 34-36 Crown Street, Reading, Berks.

See Commodore 64 listing for comment.

Program Think Type Strategy
Price £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.



Old Ariolasoft title, if you haven't already got it, buy immediately.

It's a very clever variant of Connect 4, and will stretch the brain without stretching the pocket. Go.

Program Yankee Type Strategy
Price £9.95 **Supplier** CCS, 14 Langton Way, Blackheath, London SE3 7TL.

Two battle from the American Civil War – Gettysburg and Chickamauga. Uses the recently developed Corps Commander system and hidden movement. What more do you want from a wargame?

Program Red Scorpion Type Arcade
Price £8.95 **Supplier** Quick-silver, Argus Press Software, Victory House, Leicester Place, London WC2H 7NB.

Vector graphics shooter with a considerable number of frills. The Red Scorpion is the code name for your Multi-Role Infantry Combat Capsule – and as a Terran Star Commando you have to take out the evil aliens, collect the goodies and buy fast food.

Looks OK – but I've seen smoother.

Program Mario Brothers Type Arcade
Price £7.95 **Supplier** Ocean Software, 6 Central Street, Manchester M2 5NS.



See Commodore listing for comment.

Program World Games Type Sports Simulation **Price** £9.95 **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

Eight sports to compete in around the world, with lots of local colour. Weightlifting in Russia, Sumo Wrestling in Japan, Cliff Diving in Mexico, etc.



Program Five Star Games Type Compilation **Price** £9.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

Includes Quazatron, Alien High-

way and Cauldron II, three very classy titles.

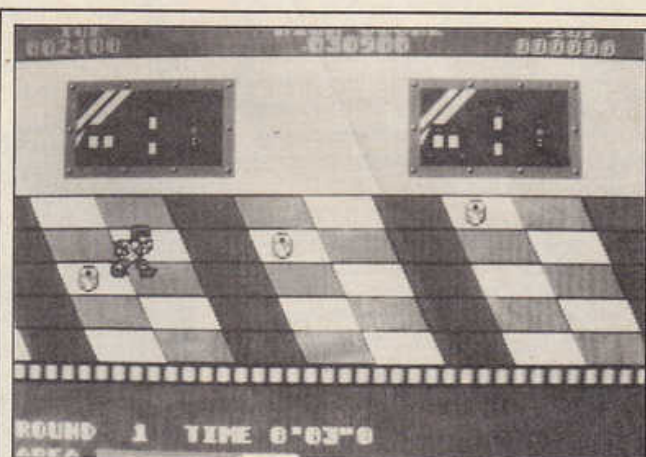
Quazatron was always a particular favourite of mine, written by Steve Turner – with a little inspiration from his partner in crime, ace 64 programmer Andrew Braybrook. In fact, Quazatron is a 3-D version of Paradroid, a superlative combination of arcade and strategy.

Convinced?

Program Five Computer Hits Type Compilation **Price** £6.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

An interesting mix on this one – Killer Tomatoes, Mantronix, 2112AD, Starstrike II and Wizard's Lair.

Top Twenty charts will return next week



Metrocross is one of the recent arcade conversions of which I have not had the pleasure of playing the Namco original. This, at least, has the advantage that the game can be criticised in its own right rather than in terms of how well it has been converted. On those grounds, it's fab. At £24.99, though, the ST version is pricey.

Rather like Boulder or Trailblazer, Metrocross is set in a surreal landscape of chess-board squares and hallucinatory hazards, and your task is to speed through the landscape without being clobbered. In this case the screen scrolls horizontally, your player is a little roller-skater, and there are twenty-four levels to complete.

Racing against a timer, you have to avoid hazards including pits, rolling formations of Coke cans, giant washers, rotating cubes, rats which fasten themselves to your shoulders and have to be shaken off, green squares which slow down your progress, and exploding mantraps. To aid you there are skateboards which can increase your speed, trampolines which allow you to leap long distances (if your timing with the fire button is correct) and cans which can be kicked or jumped on to gain points or slow the timer.

Probe's conversion is colourful, fast, and very playable. Like many ST games, the scrolling seems to flicker when there are a lot of animated objects on the screen, but it's nothing serious. Good use is made of the ST's graphics, though the sound and music are average.

Commodore 64, Spectrum and Amstrad versions forthcoming; it will be interesting to see how they measure up to the excellent ST version.

Keep it simple

I was rather disappointed – to say the least – when I found that my copy of *Leather Goddesses of Phobos* didn't contain an inflatable doll (of the masculine kind, of course). It's the least one could expect from such a lewd and licentious game. Not even a whiff of leather pants!

Instead, I had to content myself with a pair of 3D glasses, a scratch n' sniff card and a 3D comic, which made my eyes go cross-eyed whether I was wearing the specs or not. As for the scratch n' sniff card it just made me feel nauseous. Such is life.

Though *Leather Goddesses* is typical of Infocom adventures, it also represents a distinct trend in computer games. No sooner do you open a computer games package these days than a miscellany of extraneous matter (the less generous would say 'garbage') leaps out at you.

Somewhere beneath the copious play-guide, the iron-on logo, the A3-sized poster, you eventually find the cassette or disc – yes, that's right, the reason you bought the package in the first place.

Woe betide you, however, if you're ever foolish enough to expect everything to go back in the box just as you found it. The package designers, it's clear, go to amazing lengths to ensure that what they include in the package automatically expands on opening. Consequently, it's just about impossible to get everything back in!

Take *Brian Clough's Football Fortunes*, for example. The board is a brilliant piece of lateral thinking. But after one has divided all the player cards where the hell does one put them?

And if it's not novelty it's novellas, the kind that Rainbird, for example, is so fond of. Now Rainbird adventures are some of the best, but their novellas? Pass me the waste paper bin quickly.

What's even more infuriating is that you have to flip through these turgid literary imposters just to get into the game. (Come back, Lenslok, all is forgiven.)

So the question that must be addressed to the computer games industry is this. Are all these extra bits and pieces really necessary?

The answer is bound to be ambivalent. In *Hollywood Hijinx* (one of Infocom's more recent adventures), for example, enclosed in the package is a letter from Aunt Hildgarde and a signed photo of the famous Buddy Burbank. But what one is supposed to do with the plastic tree that is also included – stick it in a cocktail?

Some would argue that such material helps to give credence to the fictional world of the game, and there's a certain amount to be said for that. Such material definitely helps some players feel their way into their assigned role. But without novelty or novella would it not be possible to buy these already expensive games that much cheaper?

The fact is, whether *Leather Goddesses* contains a blow-up doll or not, it's the game itself that gives value for money and not all the accessories that come with it!

Julia Runcieman



Puzzle No 256

Jamie was investigating the properties of 'nearly equilateral triangles'. A 'nearly equilateral' triangle is one in which the sides, instead of being equal in length, differ by just one unit. In addition, he was only interested in those triangles that had an area of an exact number of square units.

The smallest such triangle, therefore, is one with sides of 3, 4, and 5 units, and an area of 6 square units. 'But surely', you will argue, 'a triangle with such dimensions is nowhere near an equilateral triangle'.

To this argument Jamie would agree, but the next largest triangle in the series, and remember we are only interested in those triangles with areas of an exact number of square units, is one with sides of 13, 14, and 15 units. By the time we reach the third triangle in the series, having sides of 51, 52, and 53 units, only close measurement would differentiate it from a true equilateral triangle.

Can you determine the fourth triangle in this interesting series?

Solution to Puzzle No 251

Jim was born in 1949, when Bill was 36 years of age. Bill's birth year was in 1913, when his father, Joe, was also 36. Therefore Joe was born in 1877.

Starting with the current year as Jim's year of birth, Bill's age is calculated using the loop M. X possible ages are then subtracted from Jim's date of birth to find Bill's date of birth. This date is then tested in the subroutine for primality. If it passes this test, the procedure is repeated with all possible 'square' ages for Joe.

The first set of figures with all dates prime and both differences square are printed out.

Winner of Puzzle 251

This week's winner is Helen Truby, of Chester, who will receive £10.

Rules

The closing date for Puzzle 256 is May 28. Answers should include a program listing if possible.

```
100 JIM=1967
110 Z=JIM:GOSUB 280
120 IF FL=1 THEN 260
130 FOR M=4 TO 8 STEP 2
140 AGE=M*M
150 BILL=JIM-AGE
160 Z=JIM:GOSUB 280
170 IF FL=1 THEN 250
180 FOR N=4 TO 8 STEP 2
190 AGE=N*N
200 JDE=JIM-AGE
210 Z=JDE:GOSUB 280
220 IF FL=1 THEN 240
230 PRINT JDE;"JIM";"JILL";"JOE";"JIM"
240 NEXT N
250 NEXT M
260 JIM=JIM-2
270 GOTO 110
280 FL=0
290 FOR F=3 TO SQR(Z)+1
300 IF Z/F=INT(Z/F) THEN FL=1:F=F+1
310 NEXT F
320 RETURN
```

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 Programmers

We will soon be starting new games as part of our continuing expansion programme and are looking for several new programmers to join our London-based team.

The people we are looking for will need to have some degree of programming experience on the Spectrum, Amstrad or Commodore 64. Ideally you will already have completed at least one game, preferably arcade-style, but (at the very least) be able to demonstrate a degree of knowledge.

You will be working under the supervision of highly experienced games designers and alongside a talented artist and musician. Our offices are in Central London. Starting salary will be based on previous experience, and in addition royalties will be paid on sales of games. Applicants should be 20 years or above.

If you are interested phone Pete Stone on 01-278 0751.

Freelance Commodore 64 Programmers

We need experienced C64 programmers to begin work immediately on projects which are now at the design stage. You will be helping talented artists and designers to make their ideas work and will need to have at least one completed arcade-style game under your belt.

We can offer you an attractive advance and a good royalty rate paid on sales of games.

If you are interested phone Mathew Tims on 0622-813131

Designer/Programmer Teams

We are keen to publish the highest quality games produced by independent design/programmer teams.

If you have exciting and original ideas and the skill to see them through to a finished game, we would be very interested in talking to you.

If you are interested phone Matthew Tims on 0622-813131



**PALACE
SOFTWARE**

HYDROFOOL

"...Worth shelling out for..."
The Woolwich Arsenal Times

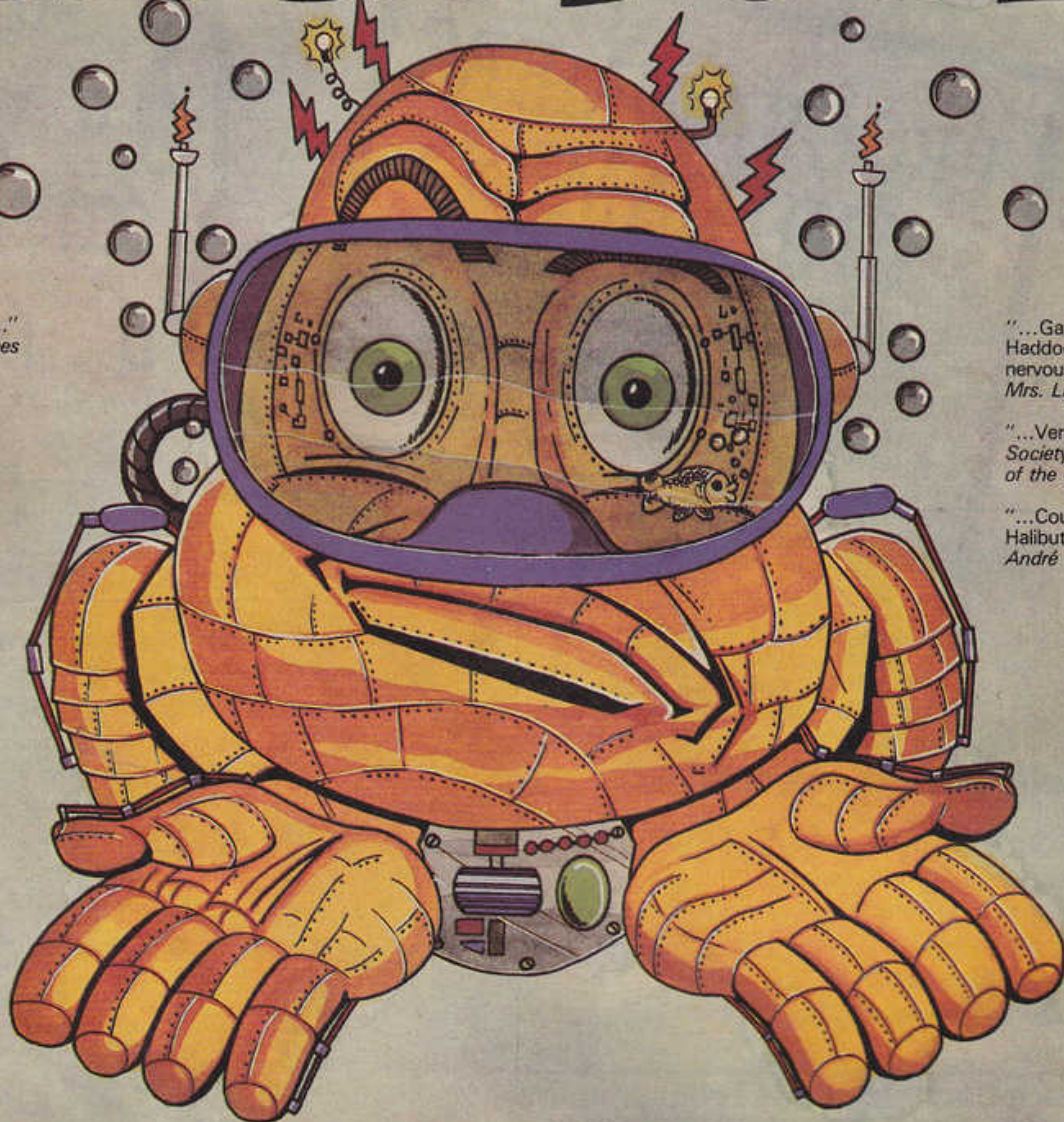
"...A game for the hard
of herring..."
'Hearsay' Magazine

"...Whale Kipper Whelk
home in the Eel-side..."
Cardiff Choir News

"...Gave me a ball of
Haddock and made me a
nervous wreck..."
Mrs. Lighthouse

"...Very fishy..."
*Society for the Preservation
of the Obvious.*

"...Could have filled the
Halibut Hall..."
André Prawn



Featuring...



SPECTRUM £7.95

AMSTRAD £8.95

AVAILABLE MID-MAY

Fresh from his dismal triumph on Knutz Folly, Sweevo is thrust onto the watery world of **DEATHBOWL**, a planet which, for no good reason, has been converted into a gigantic aquarium.

Will Sweevo succeed in his mysterious mission — or will the Great Bowl-Keeper pull the plug on him?

HYDROFOOL is a fast, 3-D, seek, chase, puzzle and laugh game, featuring the fabulous but irrelevant **HYDROMATION**.