40 Rock C

Only 50p.

POPULAR Computing WEEKLY

7-13 August 1986 Vol 5 No 32

Commodore denies dropping C128

SPECIAL supplement

Full story inside

ATARI

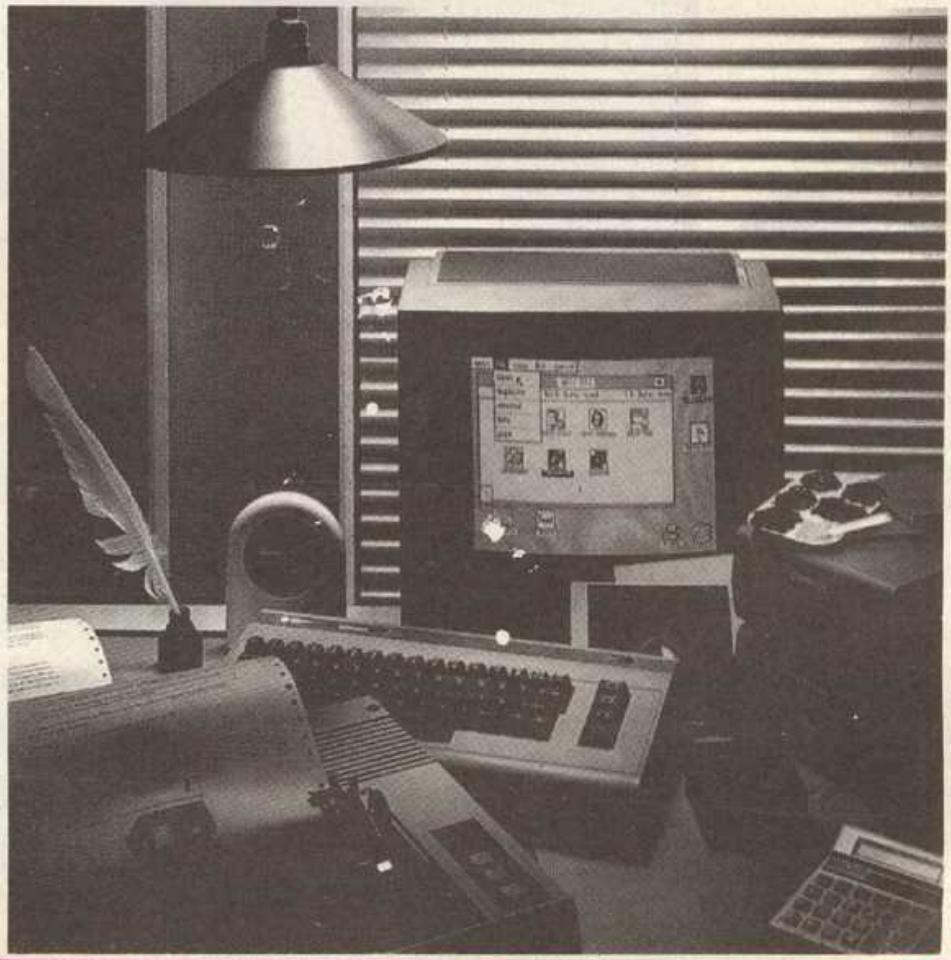
Astounding graphics on both 8-bits and STs

The ST — a supreme games machine?

One in a Marillion — ST music software

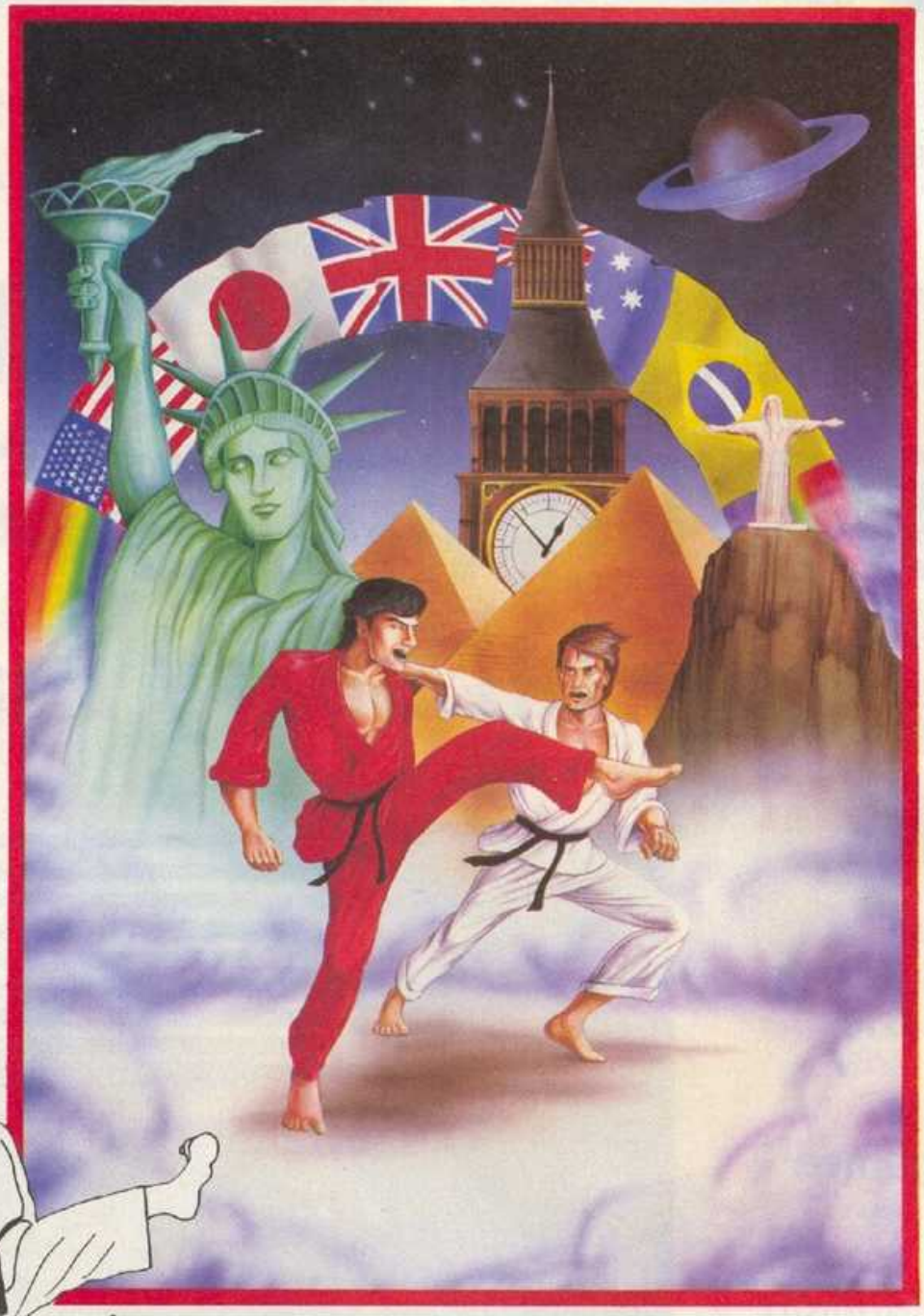
GEOS

Full preview starts this week on page 6



INTERNATIONAL

KARATE



'...AND YOU THOUGHT YOU'D SEEN A KARATE GAME.'

SPECTRUM
£6·50

C16/+4
£6·95

CPC 464/664/6128
£7·95 (DISC £12·95)

MSX
£7·95

ENDURANCE GAMES LIMITED 28 Little Park Gardens, Enfield EN2 6PG

◀ SOFTWARE

6 Geos feature

Peter Worlock evaluates Geos, the Commodore 64 Wimp operating environment, by Berkeley Softworks, which Commodore has licensed for bundling with the forthcoming C64C

38 Setting up in business

David Ridge concludes his observations on the trials and tribulations of running a small software company.

GAMES ▶

12 Arcade Action

Tony Kendle waxes lyrical about CRL's *Room Ten* and offers tips for the *Incredible Shrinking Fireman.*

Tony Bridge is on holiday, Both the Corner and Adventure Helpline will be back next week.

◀ PROGRAMMING

28 Peek and Poke

30 Bytes and Pieces

31 Atari ST

Wail Sabbagh's number manipulation listing continues.

32 Commodore 64

High resolution windows for your 64.

33 Spectrum

An entertaining arcade style game from Ian Grainger.

34 BBC

Part one of a three part series, Mark Ward's Space War.

REGULARS ▶

5 News Desk

SPECIAL SUPPLEMENT ATARI

i Atari graphics extravaganza

vi Games on the ST — making full use of the machine's capabilities.

viii DB-Calc — a new database from Robetk

x Making music with Marillion

POPULAR COMPUTING WEEKLY APOLOGISES

We're sorry that this issue is so severly reduced in content and that many regular features are missing.

This is due to circumstances entirely beyond our control, as our typesetters went into liquidation last week. Everything should be back to normal next week.

Editor Christina Erskine **News editor** John Lettice **Features editor** John Cook **Technical editor** Duncan Evans **Production editor** Michelle Beauchamp **Supplements editor** Christopher Jenkins **Supplements designer** Barbora Hajek **Advertisement and Promotions manager** Simon Langston **Assistant advertisement manager** David Osen, **Advertisement executive** Jon Beales **Classified executive** Rodney Woodley **Editorial secretary** Annmarie O'Dwyer **Administration** Geraldine Smyth **Managing editor** Peter Worlock **Publishing director** Jenny Ireland.
Published by Sunshine Publications Ltd, 12-13 Little Newport Street, London, WC2H 7PP. Tel: 01-437 4343 Telex 296275 **Typesetting and Production by** Artext Limited, 12 Stephenson Way, London NW1 2HD. Telephone 01-388 9564, Data Modem 01-387 6702. **Printed by** McCorquodale, Andover, Hampshire, **Distributed by** SM Distribution, London SW9. Tel: 01-274 8611, Telex 261643.

©Sunshine Publications Ltd 1986.

Popular Computing Weekly. Tel: 01-437 4343

ABC

How to submit articles Articles which are submitted for the publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copywrite 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.

CENTRAL SOLUTIONS LIMITED

SPECTRUM 48K – 0.99p

CSC 1	The Philosopher's Stone	Graphic Adventure
CSC 2	Father of Darkness (2 part)	Graphic Adventure
CSC 3	Classroom Chaos	Graphic Adventure
CSC 4	Prelude	Graphic Adventure
CSC 5	The Curse of Shaleth	Graphic Adventure
CSC 6	Desperado	Graphic Adventure
CSC 7	A Picture of Innocence	Graphic Adventure
CSC 8	Countdown	Graphic Adventure
CSC 9	Brian the Bold	Graphic Adventure
CSC 10	Survival	Graphic Adventure
CSC 11	Escape from Devil's Island	Graphic Adventure
CSC 12	Murder	Text Adventure
CSC 13	Barchou	Arcade Game
CSC 14	The Greatest Show on Earth	Arcade Game
CSC 15	Dungeon Dare	Arcade Game
CSC 16	Antteroo	Arcade Game
CSC 17	Just Imagine...(Strategy)	Plus Free Arcade Game
CSC 25	Podder	Arcade Game
CSC 26	Trick of the Tale	Arcade Game
CSC 27	Devil's Descent	Arcade Game
CSC 28	Valley of the Dead	Arcade Game

COMMODORE 64 – 0.99p

CSC 18	Groovy Garden	Arcade Game
CSC 19	Liberte	Text Adveture
CSC 20	HMS Atlantis	Text Adventure

AMSTRAD CPC 464 – 0.99p

CSC 21	Barchou	Arcade Game
CSC 22	Battlefront	2 Player Stratergy Game
CSC 23	Surprise Surprise	Arcade/Adventure Game
CSC 24	Mansion	Single Text Adventure

10 GAME PACKS 48K – £4.95

CSGP 1 10 Different Adventure Games
CSGP 3 5 Graphic and 5 Text Adventures + free C15 blank

DOUBLE PLAY ADVENTURES – 2 GAMES ON 1 CASSETTE £1.99

DPA 1	Hidden City (Arcade) – The Sealed City	DPA 7	The Hexagonal Museum – A Tangled Tale
DPA 2	Rifts of Time – The Traveller	DPA 8	The Wizards Scrolls – Dragon Slayer
DPA 3	Time Quest– Crystal Quest	DPA 9	Orc Island – The Swamp
DPA 4	Urquahart Castle – The Golden Rose	DPA 10	Murder Hunt – Last Will and Testament
DPA 5	Sea of Zirun – Eye of Vartan	DPA 11	Commando – Operation Turtle
DPA 6	The Moreby Jewels – To The Manor Born	DPA 12	Earth Bound – Alter Earth

PS: LIMITED STOCKS OF SOME DOUBLEPLAY ADVENTURES

TEL: (0438) 811730/813106

FULL TRADE PRICES AVAILABLE
★ AVAILABLE DIRECT OR THROUGH DEALERS

121 London Road
Knebworth, Herts SG3 6EW

TRADE ONLY – PLEASE SEND DIRECT FOR
£0.99 Cassettes
— Box of 50 @ £35.00 incl VAT & postage
— Box of 100 @ £60.00 incl VAT & postage

£1.99 Cassettes
— Box of 50 @ £55.00 incl VAT & postage
— Box of 100 @ £100.00 incl VAT & postage

PHONE ALSO FOR COMPREHENSIVE PRICES ON MANUFACTURING AND PRINTING. 24 HOUR TURNAROUND

Commodore denies 128's death

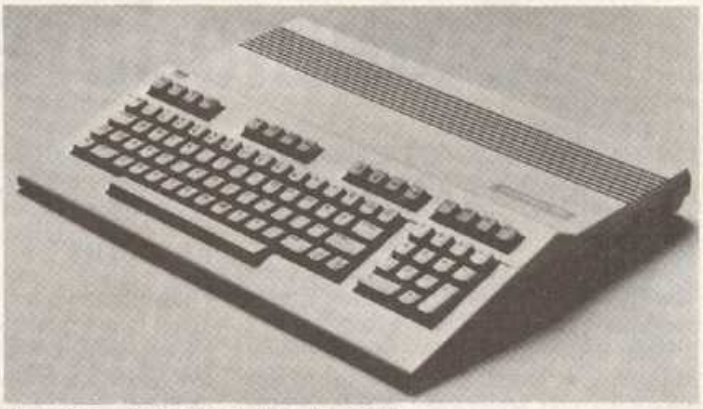
COMMODORE last week strongly denied allegations that the C128 was being dropped. Acting general manager Chris Kaday told *Popular Computing Weekly* that the machine was still in production.

The machine is however being heavily discounted in the high streets, with prices of £150-£160, in some cases with bundled hardware and software, becoming increasingly common. A spokesman for London computer dealer Vic Oddens was meanwhile adamant that he had been told Commodore was abandoning the machine, claiming only the 128D was now being made.

"Our Commodore rep has told us that they have dropped the 128 altogether and that they have discontinued the 1570 disc drive", he said.

Lasky's, Smiths and Boots have all now dropped thge machine, with a Smiths spokeswoman blaming lack of software support for disappointing sales. The compnay cleared stocks with a price cut to £169 in July.

The 128 was launched only a year ago, and at that time was billed as a direct successor and upgrade to the Commodore 64. Sales have however been patchy, with the 128D with built in disc drive performing better, and the launch of the 64C by Commodore US seems to have been a recognition that the 128 was not a best-seller.



The 128 — forgotten but not gone?

Even if Commodore is not to drop the 128 immediately it now seems likely that more effort will be put behind the 64C and its Geos operating system, with the Amiga and the PC series accounting for the company's efforts further upmarket.

Amstrad PC launch date confirmed

AMSTRAD'S PC is to be called the PC1512, and is to be launched on September 2, the eve of the *PCW* Show. Recent reports confirm information first published in *Popular Computing Weekly* on May 29 that the machine will come in four models, with a start price of £399 excluding VAT, and will run DR's Gem.

The machine will run the Intel 8086 processor, the go-faster version of the 8088 used in the IBM PC, and will have 512K Ram expandable to 640K. Models will have monochrome or colour monitors and single or double 5¼ inch disc drives, and will cost £399, £499, £549 and £649 (all these prices exclude VAT) depending on specification. This gives a retail price of £763.50 for a twin disc machine with colour monitor, and signs of impending ecstasy on the Stock Exchange notwithstanding this is no longer particularly remarkable in a PC compatible.

The machines will use both MSDOS and Dos Plus operating systems, and Microsoft intends to support them by issuing cheaper versions (£50-£100) of its IBM PC programs.

Memotech's new £198 CP/M micro

MEMOTECH has followed up its successful return from the grave with the launch of a £198 CP/M system. The new model is a development of earlier Memotech models, and is snappily titled the Memotech CP/M 2.2 system. It's basically a 64K machine with built-in 1Mb 3½ inch disc drive and a 512K silicon disc.

The machine comes bundled with an 80 column card, *New Word*, *SuperCalc* and communications software, so although it lacks printer and monitor its pricing is comparable to the Amstrad PCW machines. One oddity of the new Memotech is its ability to take a Ram disc expansion up to 4Mb. Keith Hook of Syntaxsoft, which is heavily involved in Memotech software development , explains that a large Ram disc of this sort could be used for databases, backed up to floppy at the end of a session.

Acornsoft plans games comeback

ACORN has linked up with Superior Software to prepare the ground for the launch of its new machine, the Baby BBC, this Autumn. The two companies intend to launch what is claimed to be "a wide range of quality — produced software games" under a joint logo.

Acorn software products manager Richard Morris said that "the consolidation of (Acorn's) technical skill and Superior's publishing experience will provide a comprehensive range of entertainment software.

The link-up wil be of crucial importance to Acorn, as BBC software will need some conversion if it is to run on the Baby. The latter uses Atari-style digital joystick ports rather than the BBC-style analogue, although it has Rom emulation to get round this problem. Similarly it will only take 3½ inch disc software, and is only ADFS compatible, although a DFS transfer routine is being worked on. Basic programs will run, but Rom calls and vectors have been altered so machine code programs will virtually all need some alteration. The keyboard however conforms to the Electron layout, so it may well run some Electron software.

Robtek links up with US firm

ROBTEK has linked up with US company Shanner International in a cross-licensing deal for ST products. Robtek will release *Real Time Clock* cartridge at the PCW Show as first fruit of the deal, while Shanner will release Robtek's *DB Calc* in August. Further releases will follow.

New Metacomco Basic ready for ST

A NEW Basic should be bundled with the Atari ST within the next few months, and the odds are on Atari selecting one specially written for it by Bristol software house Metacomco.

According to Metacomco product manager Andrew Spencer, Atari approached his company with the suggestion that it should tender for the contract, "to produce a better Basic". Metacomco's evaluation copy was recently delivered to Atari Corporation in the US.

The company is also to launch several new products for the Amiga and the Atari ST at the *PCW* Show. The ST products will be the languages Cambridge Lisp, an intepreter with integral compiler priced at £149.95, and BCPL compiler, price £99.95, along with the utility *Metacomco Make*, costing £49.95. The Amiga products are *Metacomco Toolkit*, *Macro Assembler* and *Metacomco Shell*.

Commodore's little gem

Peter Worlock reviews Geos, the operating environment packaged with Commodore's 64C, in the first of a two-part article

Back in the summer of 1984 I was privileged to see a pre-production version of Digital Research's Gem operating system.

Gem, DR's Graphics Environment Manager, was an independent answer to Apple's Lisa and Macintosh operating systems which employed the now-famous WIMP (windows, icons, mouse, pointer) interface.

Although Gem was originally designed to run on expensive business computers, and the Mac was selling at more than £2,000, what made WIMPs so impressive was the idea that, one day, all computers might work that way. Since then, many software companies have released products that use the WIMP concept to a greater or lesser degree. Advanced Memory Systems' *AMX* products are perhaps the best known.

However, with the exception of Atari which commissioned a 68000-version of Gem for its ST series, no other home computer manufacturer has employed a WIMP operating system on its machines (the Amiga doesn't count as a home machine).

However, later in the year Commodore 64 which will feature a new WIMP product called Geos.

Geos – standing for Graphic Environment Operating System – comes very close to turning the 64 into a Mac or ST. Obviously it isn't as fast, nor as powerful, but within the constraints of a 64k memory and an 8-bit processor it succeeds admirably.

Features

The version under review was the standalone implementation of Geos which runs on any 64 or C128 in 64 mode. It will be available in a few week's time and should be identical to the version bundled with the new 64C.

The package comes in three parts: the Geos operating system itself; *GeoPaint*, an excellent graphics program; and *GeoWrite*, a word processor. This week we'll be looking at Geos, and next week's issue will feature *GeoPaint* and *GeoWrite*.

Geos comes on a double-sided disc. Side one contains the operating system files, the applications programs and a number of "desktop accessories". Side two contains files for different typefaces and printer drivers, plus a communications package for a US database service called QuantumLink.

Geos is controlled by moving an on-screen pointer under joystick control. You can't operate Geos from the keyboard, and while mouse-support is promised in updates of the software, it isn't present in the current version. So you'll have to buy a joystick.

It works very well on the desktop, but from within *Geopaint* and *GeoWrite*, the joystick is a pain.

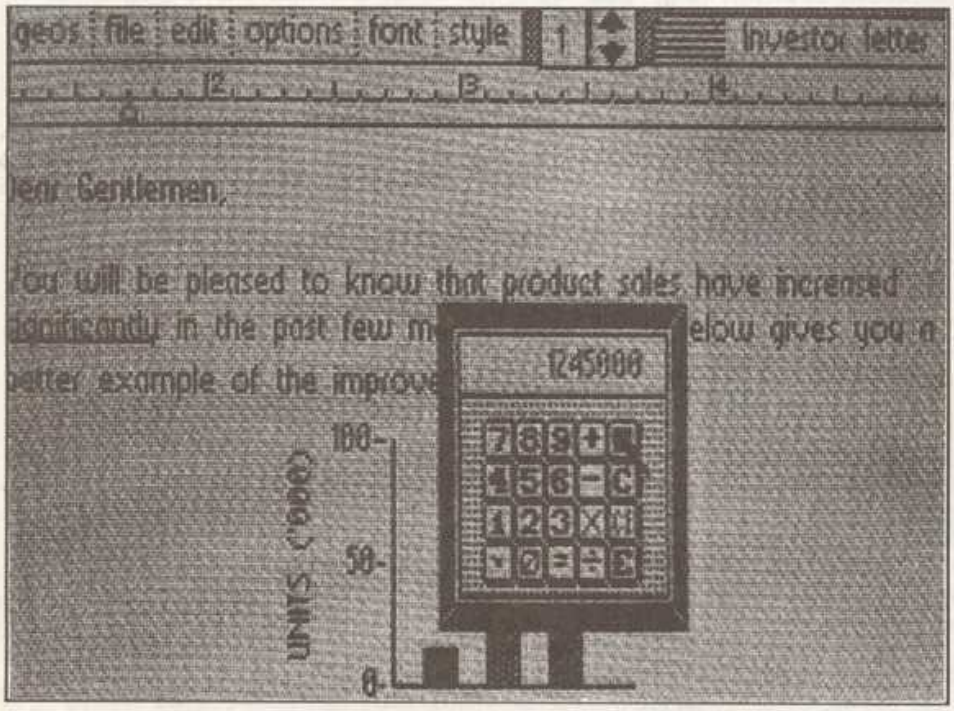
After booting Geos, the screen displays the desktop. The active disc is represented as a notebook with each file shown as an icon – a small pictograph. At the bottom-left of the on-screen pointer here, press the mouse or fire button, and a new page appears showing more disc files.

> *"An essential accessory is the Preference manager which allows you to set up the desk top to suit yourself"*

To delete a file, simply pick up a copy of its icon and move it to the wastepaper basket. Copying files is as easy – in theory. Pick up the file from one disc, move it to another, and that's it. In practice, unless you have a twin-disc system, you can't do this and file-copying from the desktop is a laborious process.

Printing a document is also straightforward. Again, pick up the file, carry it to the printer icon, and let go.

Geos will support a range of printers including the Commodore MPS 801 and MPS 1000, Star, Epson and Okidata printers. If there is no specific driver for a given model, you'll generally find that one of the standard drivers will work after a little experimentation.



Desktop accessories

Unless you're familiar with the Macintosh, or the ST, or with products like Borland's *Sidekick* on IBM PCs, the concept of desktop accessories will be new.

The idea is that they replace useful articles found on genuine desktops, so you'll find a clock and calendar, a calculator, notepads and folders for holding documents.

They are available from the desktop, or from within *Geopaint* and *GeoWrite* The most useful are the scrapbooks for pictures and text. By using these, you can build up files of often used pictures, diagrams and special text (such as letter headings) and pass them into word processing and *GeoPaint* documents as you wish.

The last accessory, and an essential one, is the Preference manager which allows you to set up the desk top to suit yourself. You can change the foreground and background colours, the speed at which the on screen pointer moves, and even re-design the pointer itself.

One of the drawbacks of software like Geos is that it often interferes with other programs. Fortunately, Geos is better-behaved than most packages.

Generally, there are two ways to deal with other programs. First, you can quit Geos and load them as normal. Second, you can simply select the program icon from the desktop and Geos will auto-boot it.

When you're finished, pressing the *Restore* key will re-boot Geos from the disc drive.

While this is a less than satisfactory way of working with your fine new operating system, it will have to do until more companies produce software that supports the Geos environment.

How many companies will do so remains to be seen. One of the reasons for the success (in software terms) of the Mac and the ST is that their WIMP interfaces are part and parcel of the machine, so software companies have little choice but to use windows and icons. On the 64, 128 and 64C this won't do anything unless, a) they have to, or b) there's a lot of money in it – don't expect too much Geos support from third-party companies.

However, it's not all gloom. The producer of Geos, Berkeley Softworks, has already proved its capabilities with *GeoWrite* and *GeoPaint*. Other software is promised and, given the obvious attractions of the Geos envronment, other companies may find they'll have to support it or lose out to Berkeley's own products.

Conclusions

WIMPs are the way of the future. What started with the Lisa and the Mac has gradually worked its way down into the lower end of the personal computer market. The Atari STs, and the Apple II range in the US, are consolidating the position of WIMPs, and Geos may do the same.

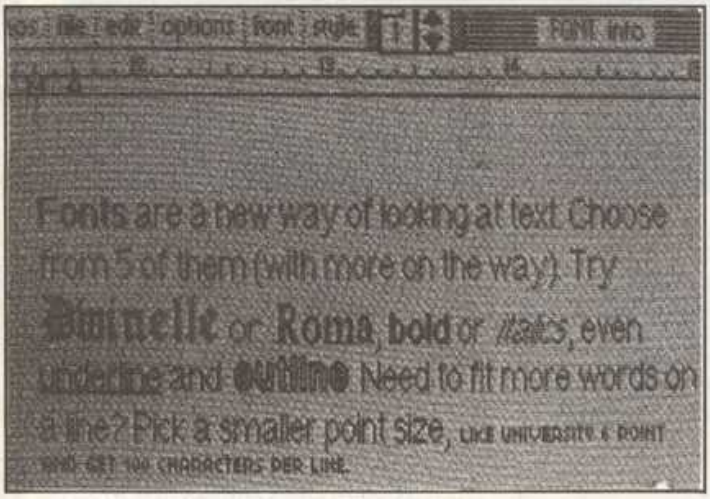
It transforms the 64 into a much friendlier system to work with, so much so that reverting back to the 64's own operating system after using Geos is downright irritating.

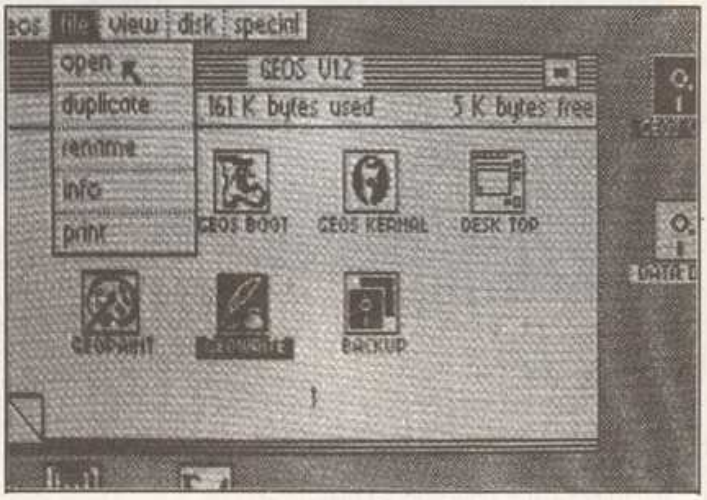
Not that it's perfect. The 64's memory is really too small to do Geos justice. It cries out for a mouse and one should really be bundled with the package, and although Geos uses some clever software techniques to speed up the disc drive, it ought to be supplied in Rom – on cartridge for the 64 and 128, and built in to the firmware of the 64C.

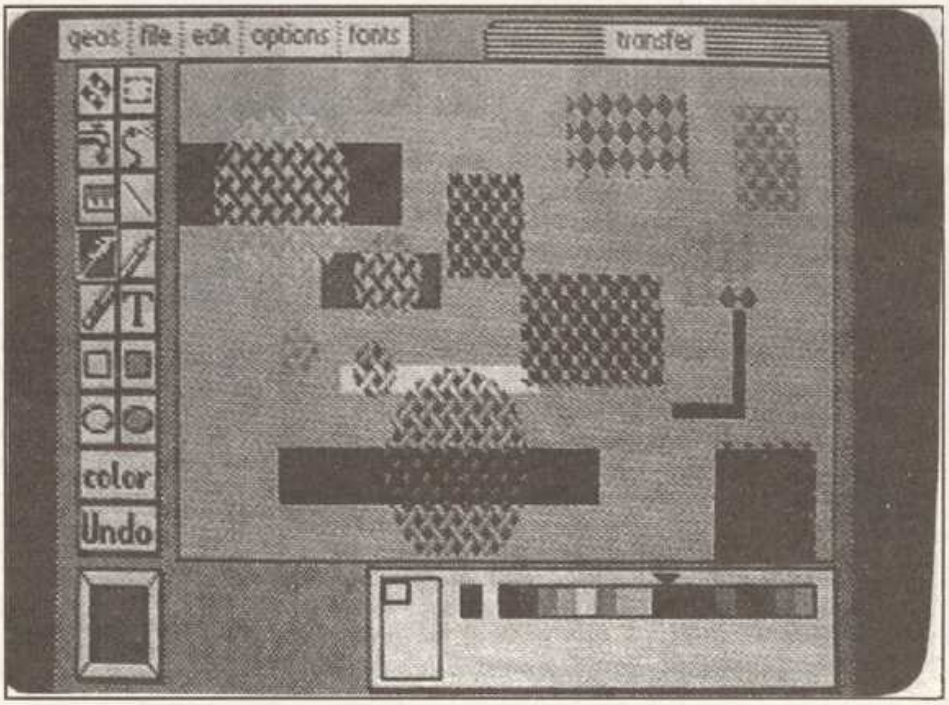
Moreover, there is no support whatsoever for cassette users. The only way to deal with tape-based software is to dump Geos completely.

Some of the drawbacks will be remedied soon. Berkeley says it is writing mouse drivers, as well as extra applications software. A dedicated version for the 128 should be forthcoming by the end of the year and that should really show off the power of both Geos and the 128.

But even given the questions about how Geos performs as a new operating system, it still represents a worthwhile investment as a software product – thanks to *GeoPaint* and *GeoWrite* – of which, more next week.







Above left: Geo Write: A word processor with five fonts.

Above right: Desk Accessories, controlled by a preference manager.

Lower left: Desk top: The graphic interface to Geos.

Lower right: A full featured colour graphics workshop.

THESE STICKERS COST US £300,000 IN RESEARCH AND DEVELOPMENT

...you can have them for £79.95

Our £300,000 was well spent. Our Voyager range of Modems – which are fully compatible with just about any micro – has now passed the rigorous BABT test and is fully approved – even for PBX use. So with Voyager, it's Anywhere, Any Micro: Approved!

Your £79.95 (ex VAT) will be well spent. You can pay twice the price for a modem and still not get these features: ● Multi Speed – including 300/300, 1200/75, 75/1200 full duplex, and 1200/1200 half duplex. ● Full Function LED Display. ● More software support than any other modem – and the best.

Voyager Software – All Auto Dial/Auto Answer.

● **Spectrum:** VTX 711 Software/Interface £39.95 ex VAT Multispeed, Auto Log On, Prestel Frame Editor, Restoring Windows, X-Modem, X-On/X-Off – and much much more!

● **Amstrad:** CPC Range Software and Interface on ROM £39.95 ex vat. Full colour Prestel/Viewdata emulation, X-Modem etc. PCW software available £75.00 ex VAT – the most powerful and best selling pack.

● **BBC:** Commsoft ROM £29.95 ex VAT. "...one of the best I've seen..." Steve Gold (Telelink May/June '86)

● **Commodore 64:** Mustang 32 Cartridge £49.95 ex VAT. The magnificent Mustang: Micronet recommend Mustang software.

All major business machines supported including: Apple, Apricot, IBM, Sirius and many more.

Special Introductory Offer: Buy a complete package – Modem and Software – at a very special price. Fill in the coupon, then stand by to access mainframes and micros – worldwide and multispeed.

MODEMHOUSE

THE SINGLE SOURCE SOLUTION

Modem House, 70 Longbrook Street, Exeter, Devon EX4 6AP

As stocked by Boots *(Except BBC Software)*

Please send me:-	(Tick which required)
Voyager 7 Modem – only –	£91.94 (inc VAT) ☐
Complete Modem/Software package for:	
AMSTRAD CPC range (including Voyager 7)	£119.90 ☐
AMSTRAD PCW (inc. Voyager 11 and serial interface)	£199.95 ☐
BBC (Commsoft ROM and Voyager 7)	£103.40 ☐
SPECTRUM (VTX 711 and Voyager 7)	£119.90 ☐
COMMODORE 64 (Mustang 32 and Voyager 7)	£119.90 ☐

I enclose cheque/PO payable to Modem House for £ _____

or My Access No is _____

NAME _____

ADDRESS _____

_____

_____

Post to:- Modem House, 70 Longbrook Street, Exeter, Devon EX4 6AP Tel: (0392) 213355 PCW/8/86

Terminal emulation in C

Leon Heller follows his recent introduction to the C programming language. Here, he shows how to turn your micro (the QL, in this case) into a 'dumb' terminal

In my recent article in *Popular*, June 5, I outlined the main features of the C programming language. The following program, which turns the QL into a simple "dumb" terminal, should take you a stage further, as it is a simple example of the sort of program for which C was originally intended, which would normally be written in assembly language.

It shouldn't be very difficult to adapt this program to run on other machines, with other compilers, and it would be a useful exercise if you are learning C, and can't think of a suitable application. I originally wrote the program for my CP/M system, and got it working on the QL within a few minutes. The basic form of a full-duplex terminal emulation program is as follows:

i) If a key is pressed, send the character to the remote system.
ii) If a character has been received from the remote system, display it.
iii) Repeat 1 and 2.

The *while* loop in the main part of the program performs the operations described above. We need to be able to get out of the loop somehow, and one way to do this is to test for the *Escape* key, and quit the program if it has been pressed.

A difficulty with "standard" C as described in Kernighan and Ritchie is that all the input functions wait until a character has been received, whereas we need to be able to alternate rapidly between the keyboard and serial port, so as not to miss characters, hence the need for a *poll* function (provided with the GST QC compiler), which indicates if a key has been pressed.

A similar function for serial input has not been provided, so I had to write one *(Serin)*. All I/O on the QL is bufffered, so the *Fflush* function has to be used, to flush the buffers, otherwise nothing will be displayed until a new line character is received, or the buffer is full. *Fflush* shouldn't be needed when using CP/M.

If you use this program on the QL to communicate with another QL, there shouldn't be any problems, provided the two baud rates are the same, and the machines are connected directly, not via modems and the telephone system. The QL tends to lose characters on input, when connected to a simple modem, and a "smart" modem, with buffering, is needed, or a device like the Qcode Modaptor, between the modem and QL. Problems might also rise if the QL is connected to another machine, which uses different codes for new lines – for instance, the QL uses 0A (hex) whereas CP/M machines use a 0A/0D (hex) or CR/LF pair for end of line. This is quite easy to fix, just modify *Serin*, so that incoming CR/LFs are changed to CRs, and add *Serin* code to the main *while* loop, so that outgoing CRs have an LF added.

Once you have the basic program working, a good way of developing your C programming expertise would be to add additional features to it. Some ideas are file upload/download; baud rate selection; input/output character translation; half duplex option (characters are displayed as they are transmitted, not when received from the remote system); automatic log on.

```
/*
**                          term
**
** simple "dumb" terminal program for the QL written in
** C for the QC compiler.
*/

£define ESC 27      /* escape key code */

£include <stdio.h>

int *fd;            /* file descriptor for serial port */

main()
[
   char c;

   /* clear screen and enable cursor */
   cls(0);
   cursen(1);

   /* open channel for serial I/O */
   if ((fd = fopen("serleir", "w")) == 0)
   {
      puts("Serial port channel open error");
      exit(0);
   }

   /* this piece of code does all the work */
   while (1)
   {
      if ((c = poll(0)) != 0)       /* check for key press */
         if (c == ESC)              /* quit if <ESCAPE> */
            exit(0);
         else
         {
            putc(c, fd);            /* send to serial port */
            fflush(fd);
         }
      if ((c = serin()) != 0)       /* check serial port for incoming */
      {                             /* character */
         putchar(c);                /* display it */
         fflush(stdout);
      }
   ]
]

/*
** serin  - serial input routine
** check for pending input at serial port
** return 0 if no input
** otherwise return character
** uses QDOS traps as described in GST QC documentation
*/
serin()
{
   int regptr[8];
   char c;

/* check for pending input */
   regptr[0] = 0;
   regptr[3] = 0;
   regptr[4] = *fd;
   trap3(regptr);
   if (regptr[0] < 0) return(0);

/* get character from serial port and return it */
   regptr[0] = 1;
   regptr[1] = 0;
   regptr[3] = -1;
   regptr[4] = *fd;
   trap3(regptr);
   c = regptr[1];
   return(c & 0X7F); /* mask off msb */
]
```

A special preview of Supersoft's Rhythm King

Mark Jenkins with micro music news from the British Music Fair...

Apologies to those of you who expected a review of the Steinberg Pro 24 package for the Atari 520 in last week's issue. The person responsible has been made to transcribe "Barry Manilow's Greatest Hits" for the Oric Atmos, and you should find the article in this week's supplement.

Steinberg were one of the many companies exhibiting at the British Music Fair, but most of the new software seen at the show was of a highly specilised nature.

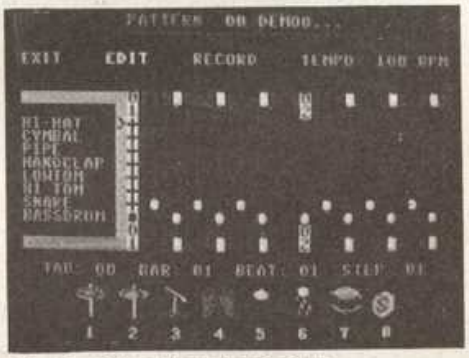
Akai, for instance, was showing a package imported from America which allows you to visually edit and combine sounds on their S612 Sampler. The S612 costs around £800 with disc drive, is operated over Midi (so you'll need a Midi computer interface or keyboard to play it) and is six-note polyphonic with velocity sensitivity. It's very fast to use and so is a good bargain if you're after computer-controlled sampled sounds; if you have less money to spend but still want near-professional quality I generally recommend the monophonic Microvox sampler for the C64 which also has Midi.

> "Some inexpensive micro music packages offer advantages which dedicated instruments can't always offer"

What the new package adds to the Akai Sampler is the visual editing capability of the Microvox – you can see the wave shape of a sampled sound, edit it with a cursor to remove certain parts or clean up clicks and clunks, and merge several samples together. The package was being demonstrated on an SX-64, which is of course the ideal micro for the musician on the move – if you can still get one.

That example shows how some inexpensive micro music packages have advantages which dedicated instruments can't always offer. Compositional software such as C-Lab and Steinberg's Pro-16 on the C64 and Pro 24 on the Atari have comprehensive screen displays which tell the musician what is going on (in terms of tracks being full or empty, memory space remaining and so on) at all times. Dedicated sequencers such as Roland's new MC500 can do all this, but it sometimes takes a while to work out which shifted function brings up the information you need in the LCD display!

We mentioned the Microvox earlier and its manufacturers Supersoft now have their latest release, the Rhythm King. It's a Commodore 64/128 cartridge producing sampled drum sounds from a phone socket for connection to a hi-fi or mixer, and has similar menu-driven operation to the Microvox itself (eventually they'll be file-compatible too). Once you've loaded the program disc (it's also available on tape) you'll realise that there are in fact two load-up options giving different drum kit sounds. There are also several alternative demo patterns, but it wouldn't be fair to comment on either sounds or patterns here since neither were final on the copy we saw. Suffice it to say that the finished sounds will probably be pretty impressive, as will the patterns if a spot more imagination is shown.



Rhythm King from the inside...

The four function keys and return (or a joystick) do most of the work and the three main options are Live Play, File Handler and Recording Studio. Live Play allows you to tap out eight sounds from the number keys, the screen going blank as you do so to help with correct sound processing. File handler is pretty straightforward, allowing you to load and save individual patterns and whole songs.

The Recording Studio allows you to create 64 patterns and 16 songs up to 85 steps long (250 on the C128). Mega-Songs can be formed from linked songs to create compositions up to 255 steps long.

Pattern creation is on a helpful grid layout and can be done in real time or step time, although in real time you have to hit the beat very closely to get the note to enter. Quantisation (automatic correction of your playing), tempo, bar length and number of bars are all programmable, so you can have 5 or 7 beats in a bar if you like, the limit being 24 bars of 32 beats in a single pattern.

A timing click is generated to help you with real time programming and every song can be named during saving. There's a small pot on the cartridge to adjust output level to match your hi-fi or mixer.

Overall the Rhythm King seems a pretty good product, but in terms of development it's some way behind the Tron Digidrum, which now has stacks of impressive sounds including metallic and glass kits, Midi capability and a lot more. Once the Rhythm King with its final sounds is in the shops it'll be easier to give a comparative assessment based on price and performance.

Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middx HA3 7SJ, 01-861 1166.

Akai UK, 12 Silver Jubilee Way, Haslemere Heathrow Estate, The Parkway, Hounslow, Middlesex TW4 6NF, 01-897 6388

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.

...and the outside.

"THE ADVENTURERS HANDBOOK"

The monthly book no self-confessed adventurer should be without.
"Stunning value" – Tony Bridge, PCW issue 10 available now!

44 pages of adventure help and news for just £1

FOR EVEN BETTER VALUE
TAKE ADVANTAGE OF OUR SUBSCRIPTION RATES

3 issues for £2.75
6 issues for £5.00
12 issues for £9.00

Issues 1 to 9 are still available and cover hints, maps and solutions to over 150 adventures (issues 1-6 for £5, issues 7, 8 and 9 £1 each).

ARCADE PLAYERS

If you enjoy arcade games why not take a look at our other handbooks – £1 each – back copies and subscriptions as for Adventurer.

Spectrum Arcade Handbook – issue 10
Commodore Arcade Handbook – issue 10
Amstrad Handbook (including adventures) – issue 10
BBC Handbook (including adventures) – issue 10
C16/Plus 4 Handbook (including adventures) – issue 10
Send cheque or PO to:

H&D SERVICES
1338 Ashton Old Road
Higher Openshaw,
Manchester M11 1JG
Tel: 061-370 5666

PD604

WE needs the ORIC-CALLS

WE has lots of goodies for the

ORIC

Please contact us

W.E. (SOftware), Foley Bank, Worcester Road
Great Malvern, Worcestershire WR14 4QW
Telephone (06845) 69059 Prestel MBX 684569059

32PD986

W. E. (Software)
U.K. Agents for Eureka Informatique – Oric Products International

MACSOFT DISCOUNT CLUB

48K SPECTRUM

Molecule Man	£1.65
Video Olympics	£1.85
Lap of the Gods	£1.85
Octagon Squad	£1.75
Incredible Shrinking Fireman	£1.75
Master of Magic	£2.50
Conquest	£2.50
Back to Skool	£4.50
Ninja Master	£1.65
Spiky Harold	£1.75
Green Beret	£5.90
Rambo £5.70	
Batman	£5.70
V	£5.70
Sky Fox	£6.75
The Master	£1.60
Mutant Monty	£1.50
Spitfire 40	£7.50
Legend of the Amazon Women	£5.70
Primary Arithmetic	£5.00

Offer valid for 4 weeks
UK orders only. P&P Inc.

32PD801

NO OBLIGATION

- Join the club by buying 4 of these titles at these special prices and including a small membership fee.
- Membership fee only £2 for one year.
- Your £2 back as credit if you buy 6 cassettes in the first 6 months of your membership.
- A selection of great titles at discount prices every month.
- Information each month to help you choose your software.

Send Cheque/P.O. to
MacSoft Discount Club
4 KELVIN VIEW
TORRANCE
GLASGOW G64 4HQ

Virgin

GAMES CENTRE

and

virgin games

Dare you to accept the challenge with the VIRGIN ATLANTIC CHALLENGE GAME

On the 29th of June 1986, Richard Branson won the BLUE RIBAND title for Britain
Can you do the same?

CBM 64/128 only **£8.95**

SPECTRUM 48K/128 only **£7.95**

AMSTRAD CPC 464/664/6128/ only **£8.95**

With a FREE poster of Virgin Atlantic Challenger II
While stocks last only at Virgin Games Centre

the **no. 1** choice for **games**

ABERDEEN 172 Union Street ■ **BIRMINGHAM** 98 Corporation Street
BRIGHTON 157/161 Western Road ■ **BRISTOL** 18 Merchant Street
BROMLEY 140/144 High Street (in Burton Menswear)
GLASGOW 28/32 Union Street ■ **LEEDS** 94/96 Briggate
PLYMOUTH 105 Armada Way ■ **LONDON** 100 Oxford Street
TOP MAN Oxford Circus.

How to rescue your shrinking fireman

Tony Kendle looks at CRL's Room 10, gives tips for The Incredible Shrinking Fireman and continues with advice on entering game pokes.

The games that have been giving me VDU eyes for the last week or so are the excellent *Leader Board* golf simulation and *Room 10* from CRL.

Leader Board, as good as it is, has some problems in that it is following on the footsteps of at least three very superb golf programs in the last few months, the latest being Ariolasoft's *Golf Construction Set*. *Room 10* on the other hand, despite references to *Pong* in the reviews, is like nothing that we've seen before. Like *Think!*, it is an incredibly simple but completely addictive game that could not exist anywhere except on a computer. It may represent the future of computer games as mass appeal family entertainment much more than the introverted and complex arcade adventures.

What is particularly outstanding about *Room 10* is that it is possible to play it with skill, and that's not such a facile statement as it sounds. The early days of perspective 3D games such as *Ad Astra* were actually most difficult because it was impossible to judge accurately when the various objects were lined up – it seemed as if the resolution and graphics abilities of home computers weren't really up to the task. *Room 10* proves all that wrong, as by a clever use of changing size and moving shadows it creates the illusion that you really do see a ball coming towards you. Anyway, if you haven't seen it do so as soon as possible.

> *"Room 10 creates the illusion that you really do see the ball coming towards you"*

This week we have a very welcome letter from S Jeffrey of Marsden, South Shields, for all those puzzling over Mastertronic's *Incredible Shrinking Fireman*. "First of all ignore all objects except the ID card, the red key, yellow key, blue key, the set of keys, the skeleton key, and the five parts of the rack. All of the other objects in the game will just enable you to pass through more screens but only the ones listed actually contribute to you being able to solve the game.

"The complete solution is as follows:

"First travel one screen right and pick up the ID card. Travel nine screens right and pick up the skeleton key. Travel one screen right and three screens up and you can pick up part five of the rack.

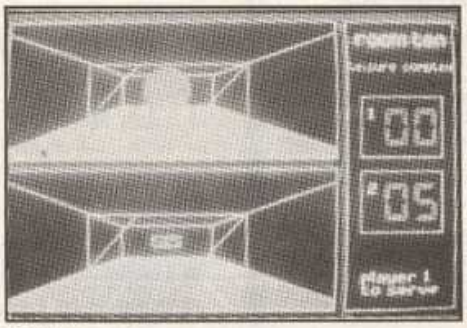
"Now go three screens down again, eight screens left, one screen up, two screens left, one screen up and pick up the set of keys. Travel one screen down, two screens right and drop the skeleton key. Travel one screen right and pick up the yellow key. Travel one screen left, one screen down, nine screens right and drop the set of keys. Pick up the blue key.

"Now go one screen up and pick up part two of the rack. Go back down one screen, six screens left and drop the ID card. Travel five screens left and pick up the red key.

"Travel one screen left, one screen up and drop parts two and five of the rack! Travel two screens right and pick up part four of the rack. Now go one screen down, one screen right, one screen down, two screens right and pick up part three of the rack. Travel two screens left, one screen down, six screens left, one screen up and drop the red and yellow keys. Pick up parts two and five of the rack. Hey Presto! You have now unshrunk Fireman Sid!"

Now to carry on with our beginner's guide to pokes and hacking. Last week we finished with some jargon that explained what machine code was and what we were trying to do with the pokes that are entered, ie, change the number for how many lives you have in the game to as many as possible.

An alternative method to use when hacking a game is to try to stop the game from realising when you have lost a life. To do this involves tracking down the sequence of instructions that work to remove a life and to replace them with some instructions that do nothing at all. Later on in this series you will learn exactly how to do that for yourself in your own games.



CRL's Room 10

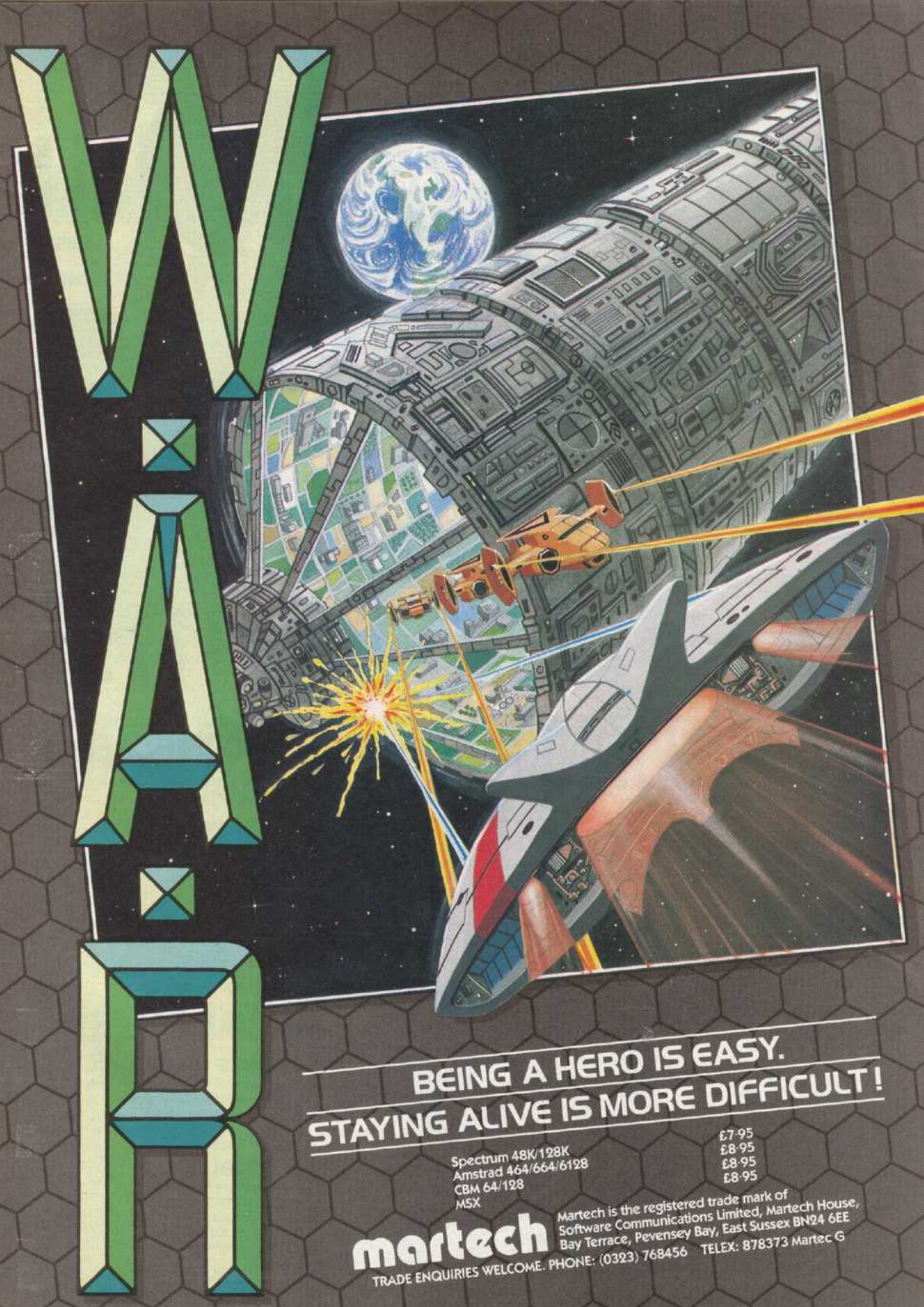
However before we get on to such advanced stuff there are one or two things that we have to sort out about getting pokes in. You will recall from last week that a machine code game consists of a series of instructions to the computer that have to be executed in the correct order, and that this means that the game has to be started from the correct memory address.

Most games you buy for home computers consist of at least two parts. Part one is a short loader program, normally written in Basic, that does the job of reading the machine code in from tape or disc and which also starts it running by a *Call* to the correct start location.

Unfortunately the situation is slightly complicated by the fact that not all computers use the same versions of the Basic language – on the Commodore 64 for example the command that is used to start a machine code program is *Sys* (address) whilst on the Spectrum machines it is *Randomise User* (address) or *Print User* (address). However *Call* is most common and the overall principle is the same.

> *"An alternative to use when hacking a game is to stop the game realising when you have lost a life"*

To get a poke into a game it should be self evident that you must load the machine code in memory and then make any changes you want to before the game has started running. The obvious way to do this is of course to make changes to the Basic loader if there is one, normally which would involve just editing one of the lines, or adding a new line, to insert your new pokes. To achieve this it is necessary to be able to load the Basic part into the computer and then to stop it running on to load and begin the game. This can often be easier said than done and will occupy our attention for a while to come.



BEING A HERO IS EASY.
STAYING ALIVE IS MORE DIFFICULT!

Spectrum 48K/128K	£7·95
Amstrad 464/664/6128	£8·95
CBM 64/128	£8·95
MSX	£8·95

martech

Martech is the registered trade mark of Software Communications Limited, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE

TRADE ENQUIRIES WELCOME. PHONE: (0323) 768456 TELEX: 878373 Martec G

CASH-IN ON YOUR TALENT

Richard and David Darling – top selling games writers, Programmers of the Year 1984, USA Award winners 1985, over 1.5 MILLION games sold to date, including their latest hits – Last V8 and Master of Magic . . . are now expanding their operation and marketing games through their own label.

"We will pay £2500 advance royalties for high quality original games.

We are programmers – we know what makes a good, top selling game. If you can write good games, or conversions, we can help you make some real money. We can give any programming assistance you might need and supply music, graphics etc.

If you want to cash in on your talent, contact us now."

D-I-G-I-T-A-L

Digital Computers Ltd., Unit 1,
Beaumont Business Centre,
Beaumont Close, Banbury, Oxon. OX16 7RT
Tel: 0295 68426 Fax: 0295 58770

POOLSWINNER

THE ULTIMATE POOLS PREDICTION PROGRAM

Boxed, with detailed instruction booklet

- **MASSIVE DATABASE** Poolswinner is a sophisticated Pools prediction aid. It comes complete with the largest database available – 22000 matches over 10 years. The database updates automatically as results come in.
- **PREDICTS** Not just SCOREDRAWS, but AWAYS, HOMES and NO SCORES.
- **SUCCESSFUL** SELEC guarantee that Poolswinner performs significantly better than chance.
- **ADAPTABLE** Probabilities are given on every fixture – choose as many selections as you need for your bet. The precise prediction formula can be set by the user – you can develop and test your own unique method.
- **SIMPLE DATA ENTRY** All team names are in the program. Simply type in the reference numbers from the screen. Or use FIXGEN to produce fixture list automatically (see below).
- **DISC/MICRODRIVE COMPATIBLE** Tapes supplied with conversion instructions.
- **PRINTER SUPPORT** Full hard copy printout of data if you have a printer.

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

NOT JUST A TIPSTER PROGRAM, Coursewinner V3 can be used by experts and occasional punters alike. You can develop and test your own unique winning system by adjusting the analysis formula, or use the program in simple mode. Coursewinner V3 uses statistical analysis of major factors including past form, speed ratings, course statistics, prize money, weight, going, trainer and jockey form etc, etc. It outputs most likely winners, good long odds bets, forecasts, tricasts etc. The database includes vital course statistics for all British courses. You can update the database – never goes out of date.

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 . . .

VISA phone 24 hrs

selec SOFTWARE

phone 24 hrs

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

(Send for full list of our software)

SPECTRUM — AMSTRAD — COMMODORE

NOBLES COMPUTER REPAIRS

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

For estimates phone or send your computer to NOBLES.

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

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

BBC ..... from **£18.95** plus parts

Also repair specialists for Amstrad and MSX computers

NO HIDDEN CHARGES

★SPECIAL OFFER

5 FREE GAMES WORTH £25

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

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

NOBLES
14-17 Eastern Esplanade
Southend-on-Sea
Essex
0702 63377/8
63336/7/8/9

7 days a week, 24-hour Answering Service

P850

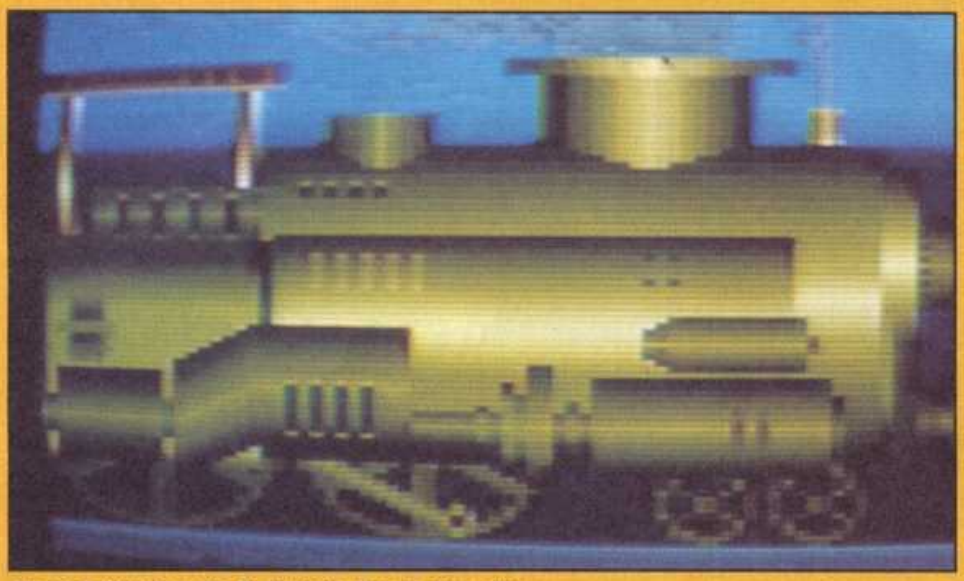
SPECTRUM — AMSTRAD — COMMODORE

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

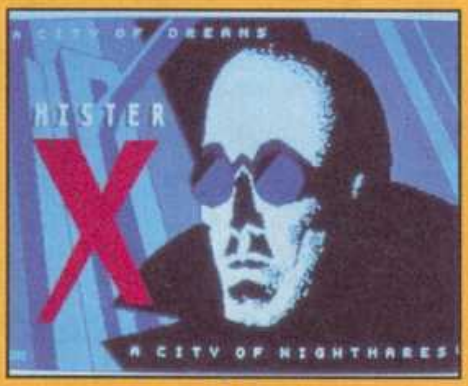
— MSX — ATARI — DRAGON — ORIC — EINSTEIN — MSX — ATARI —

POPULAR Computing WEEKLY
SPECIAL supplement
1986
August 7-13

THE ATARI MICROS



Steam Engine from the Technicolor Dream demo disc



Comic character Mr X by DEGAS

Colourspace with NeoChrome image

The Atari machines, both eight-bit and sixteen-bit, offer unrivalled graphics capabilities, superior even to those of the powerful Commodore 64. Technical limitations always seem to compromise the quality of graphics seen in arcade games, so the machines are only seen at their best when used with sophisticated hi-res graphics software.

Packages like **Degas** and **NeoChrome** for the ST, the light synthesiser **Colourspace** for the 8-bit machines and ST, and **Technicolour Dream** for the eight-bits really show off the capabilities of the micros.

Technicolour Dream, from Red Rat Software, was launched at the April Atari Show, and is an excellent starter program, though with some odd omissions.

With an initial colour range of 256 shades plus 128 filters, the full palette is remarkable. The colour mixing effects are achieved by using a pair of interlaced screens, one for colour and one for luminance. This gives the pictures an interesting grainy quality which makes them appear almost like real oil paintings.

The program can be controlled using a joystick or touch tablet, which is used initially to choose a colour option from the palette of 256 shades produced on screen. To draw, you press the space bar to access the graphics screen. Both the palette and a help screen can be accessed at any time.

Options available on the drawing page include line draw, screen fill, luminance change, and the filter options which can help to produce very realistic shading and shadowing. Oddly enough there are none of the usual "circle, box, ray, brush"-type commands which are familiar from many other art packages. In that sense Technicolour Dream is not very user-friendly. But the demo pictures, some of which are shown here, testify to the quality of the graphics which can be produced with practice.

The manual includes a technical section which explains the principles behind the special effects routines. ◄

NeoChrome's option page icon menu

On the more sophisticated side is **D.E.G.A.S.** for the 520ST, from Batteries Included via Ariolasoft. This is a very straightforward and powerful painting program with a host of advanced functions.

The Design and Entertainment Graphic Arts System, to give it its full title, is remarkably simple to use and comes with a 50-page manual which summarizes all the commands. The program has one major options menu, with a host of submenus which allow you to define your own colour palette, brush shapes, fonts, airbrush type, reflections, and so on.

The drawing functions are arranged into several groups on the main menu. At the top is a sixteen-colour selection bar, which can be varied by changing the red-green-blue balance using the "set colours" option. Below this is a selection of sixteen brush shapes, ranging from small dots to bars, wedges and diamonds. Again, you can define your own shapes if you require.

The thirty-nine main options

Voted best database (with calculating possibilities) in Holland and Belgium

Power without Price

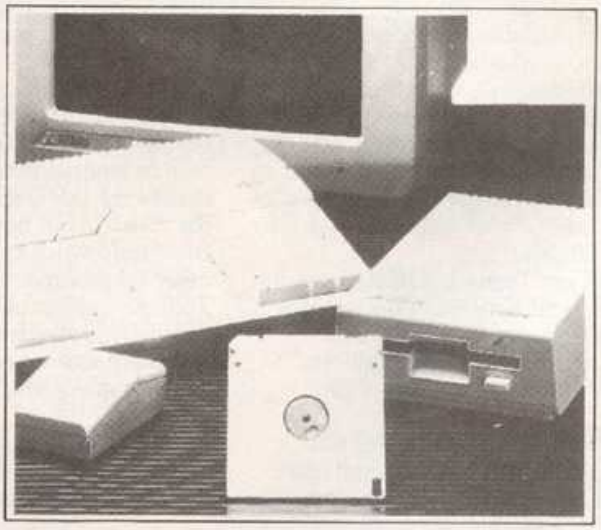
Atari DB-CALC 520 ST, 520 ST Plus, 260 ST & 1040 ST

Why spend hundreds of pounds organising your home or office life when you can do it for **£49.95.**

So simple to use no technical knowledge is needed.

An excellent easy to use database with built in calculating facilities specially designed to take full advantage of the Gem Environment and other elegant features built into your ST computer.

- Compatible with the mouse.
- Suitable for customised reports, mailing labels, memberships, sales statistics, stocklists, office and personal records, financial statistics, etc.
- Designed for half megabyte and one megabyte versions – if you upgrade you don't need to create new files as you can expand your existing ones and there is no need to buy more expensive software packages.
- Ready made files for:– Addresses, break even point analysis, cash book, labels, quantity discounts, print lists, statistics.
- Unlimited number of fields per record.
- Superfast sort and an ever faster search on a field.
- Selects on any combination of fields.
- Built in text editor which integrates with mailmerge.
- Allows all printer control functions.



- Built in calculator to help you work out difficult mathematical formulae.
- Comprehensive manual which can easily be understood.

For further information contact:–

Robtek

Robtek Ltd., Unit 4, Isleworth Business Complex, St. Johns Road, Isleworth, Middx. TW7 6NL. Tel: 01-847 4457.

include all the drawing functions you will ever need; lines, boxes, circles, fill, drawing speed, text entry, block copy, airbrush lightness, shadowing, mirror, and a full range of load and save functions. The best thing about DEGAS is that practically everything is user-definable if you do not want to be limited by the preset options. Selected options appear inverse.

Moving to the drawing screen by pressing the right-hand mouse button, a cursor appears and you are free to draw away. All the drawing and fill functions are remarkably fast; functions like the automatic shadowing effect, which can produce shadows of any colour in one of eight directions at a variety of distances form the original, are particularly useful. Also remarkably good is the ability to define your own text fonts, and insert text in a number of sizes on the screen, and the fill pattern definition. There's also a magnify mode which blows up the area of a small box to fill the whole screen for high definition work.

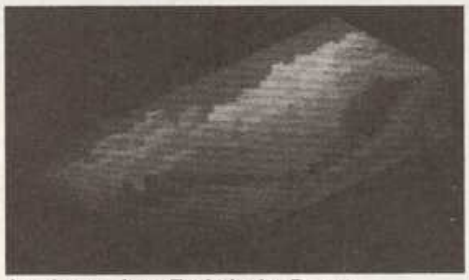
D.E.G.A.S. packs a great deal into a very user-friendly program, and demonstrates the abilities of the ST to great advantage.◀

More NeoChrome splodges

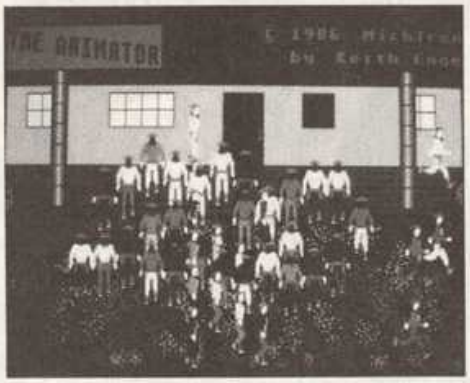
Less advanced, but more familiar (since it now comes bundled with the ST) is Atari's own **NeoChrome**. This is a much simpler program which features icon selection of functions. The left side of the main menu shows the tools available in a 3 × 5 grid (although not all of the functions are implemented). The menu can occupy the lower half of the graphics screen, which can save time if you have to switch options frequently, or it can be switched off to devote the whole screen to the picture.

Any of the ST's 512 colours are available, and can be chosen by dragging the colour map from side to side through the colour palette window. Alternatively, you can alter the RGB balance.

The selection of tools is fairly limited; draw, erase, line, fill, brush, spray, text, copy, and various save and load options. The biggest disappointment is that the spray can does not function in the way D.E.G.A.S.'s does, by building up a pattern as you hold the mouse button down; with NeoChrome, is just plops the pattern onto the screen, and is therefore more difficult to use for realistic shading effects. There are also none of the shadowing, font definition, reflection, or many other effects from D.E.G.A.S., but NeoChrome does feature a colour palette animation feature which can scroll through a selection of colours to give an illusion of movement, particularly useful for fire or water effects.



Landscape from Technicolor Dream



Demo from The Animator

NeoChrome is still under development, but at the moment serves only as an introduction to the ST's graphics abilities.

Interestingly, at least two ST products have already been designed with NeoChrome in mind. One is **Colourspace ST**, Jeff Minter's epoch-making light synthesiser, the other MichTron's **Animator**.

Many of you will have seen Colourspace demonstrated at computer shows. It's a psychedelic light-synthesiser which allows you to use the mouse to move a cursor around the screen, select patterns, colour palettes, reflections, gravity effects and backgrounds to create mind-blowing graphic displays. Colourspace is NeoChrome compatible; you can load a Nechrome file into Colourspace to use as a background, then do your own thing with the mouse over the top (or underneath, or around the side . . .) it's also possible to merge, reduce, reflect or distort the pictures, then save them out again, so Colourspace acts as a "picture processor" as well as a light synth. It's zarjaz, as Jeff would say.

From MichTron via Microdeal comes **The Animator**, a complex program which allows you to combine frames and backgrounds created with NeoChrome into cartoon-style animations. You can also convert files from other art packages into NeoChrome format.

The Animator first requires that you create an outline box in which to define your object. This must be a rectangle outlined in white whose interior width is a multiple of 16 pixels. From your master drawings you must produce three masks, one for the details which always remain the same, one for the transparent and opaque parts of the outline rectangle, and one for the area of the outline rectangle to be coloured by the base colour. If that sounds complicated – it is.

The masks are arranged over three copies of the master image, and used to create a mask file. Once saved, you are now ready to animate.

There are ten special animation commands, which allow you to define the order in which the frames appear, how long it appears on the screen, its plane depth, (there are 255 levels available), and its horizontal and vertical position on the screen. The actual speed of the animation is defined at a later stage, once the "movie" has been finished, checked and filed, and you want to display it to the world.

The Animator is NOT remarkably easy to use, and does NOT give staggeringly sophisticated results. But, if you're disappointed by the motionless nature of your graphics package yet can't handle complex programming, it might be the best way to inject some life into your art.◀

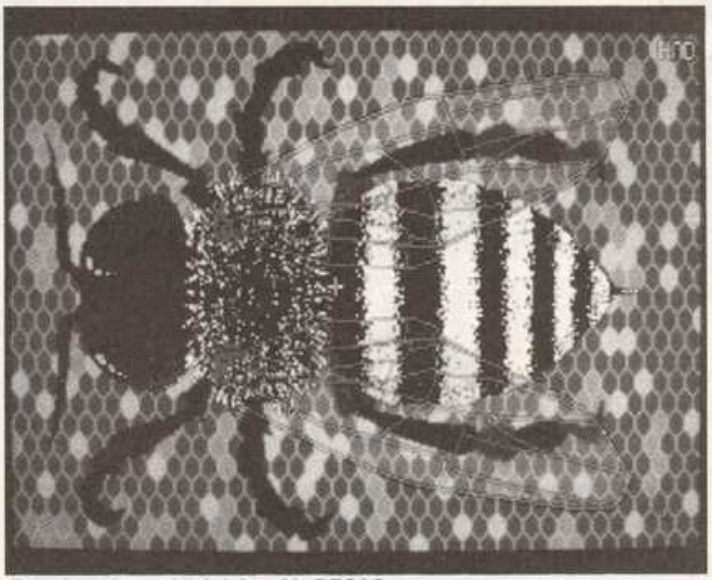
Red Rat Software, 11 Fennel Street, Manchester, M4 3DU, 061-835 1055

Ariolasoft, 68 Long Acre, Covent garden, London, WC2, 01-836 3411

Atari, Atari House, Station Road, Slough, 0753-33344.

Llamasoft, 49 Mount Pleasant, Tadley, Hants, 07356 4478

Microdeal, PO Box 68, St Austell, PL25 4YB, 0726 65422



Busy bee drawn by Ariolasoft's DEGAS

SUPERTEC ATARI USER OFFERS

NEW JUST ARRIVED!
CUMANA DOUBLE DENSITY DRIVES FOR ST
Telephone for details

COMPLETE SYSTEMS!
Huge Range to choose from call for details and prices

ATARI 8 BIT ALSO SUPPORTED!
850 INTERFACE IN STOCK!

SOFTWARE PUNCH

ATARINET (order Ref 02) Minimum three stations £160.00 +VAT per station

BOFFIN (order Ref 03) Word Processor with graphics £99.00 +VAT

MODEMS by Miracle Technology

WS2000 (Order Ref 06) £108.70 +VAT

WS 4000 Auto-dial/ Auto-answer. (Order Ref 07) £130.39 +VAT

LARGE RANGE OF ST SOFTWARE
Including:
KUMA - HABA - ATARI
SOFTWARE PUNCH
BATTERIES INCLUDED
PHILON - CASHLINK
. Call for details and prices

PERSONAL SHOPPERS WELCOME
MON-FRI 9am — 5pm

BULLETIN BOARD
0268 293639
(24 HOURS)
300 BAUD

DISCS

5¼" (Pack of 10) (Order Ref 04) £7.50

3½" (Order Ref 05) £2.50 EACH

SUPERTEC LTD.
CORNWALLIS HOUSE,
HOWARD CHASE,
BASILDON, ESSEX, SS14 3BB Tel: 0268 282308

POST YOUR ORDER OR CALL TONY DWYER ON 0268 282308

ALL PRICES INCLUDE P&P

Please send me the items marked. I enclose Cheque/Postal order for the full amount, including VAT £.....

Access OR Debit my Access Card Number:.....

PC7/8

Ref	Qty	Price (exc) Incl VAT
01		£1026.71
02	min 3 stns	£184.00 (per station)
03		£113.85
04		£7.50 (Pkt 10)
05		£2.50
06		£125.00
07		£149.95

Name _____

Address _____

_____

_____ Postcode: _____

Signature: _____

PLEASE ALLOW 28 DAYS FOR DELIVERY

TROWBRIDGE COMPUTER SHACK

YOUR **ATARI** DEALER
RETAIL SHOP **WEST OF ENGLAND** MAIL ORDER
ATARI ST

★ **WE CHALLENGE YOU TO FIND A BETTER DEAL ANYWHERE** ★

PART EXCHANGE: FINANCE: REPAIRS: UPGRADES: DRIVES: PRINTERS

IN FACT
EVERYTHING FOR YOUR ST

WE PERSONALLY DELIVER INSTALL YOUR ST, ANYWHERE ON UK MAINLAND

★ ★ ★ ★ ★ ★ ★

SOFTWARE

IF ITS AVAILABLE AND ITS GOOD THEN WE WILL HAVE IT IN STOCK

8 Timbrell Street
Trowbridge, Wiltshire Tel (02214 67299)
PRESTEL MBX NUMBER 221467299

MEGASTREAM LIMITED

WE GUARANTEE BEST TITLES AT DISCOUNT PRICES

AMSTRAD	RRP £	Our Price £
SPINDIZZY	9.95	6.75
BATMAN	8.99	5.90
TOMAHAWK	9.95	6.75
COMMANDO	9.95	6.75
SUPERSLEUTH	8.95	6.75
WORLD CUP		
CARNIVAL	9.95	6.75
SHOGAN	9.95	6.75
JUMPJET	9.95	6.75
SLAPSHOT	9.95	6.75
COMPUTER HITS 10 (VOL 2)	9.95	6.75
REMBRANDT	13.95	10.75
ULTRA BASE	14.95	11.75
ARNHEM	9.95	6.75
STEVE DAVIS' SNOOKER	7.95	5.90
COLOSSUS CHESS 4	9.95	6.75
SNOOKER	8.95	5.90
BRUCE LEE	9.95	6.75
ZORRO	9.95	6.75
WEST BANK	8.95	5.90
ELITE	14.95	11.75
KUNG FU MASTER	9.95	6.50
GREEN BERET	8.95	5.90
BIGGLES	9.95	6.50
KNIGHT GAMES	8.95	5.90
WINTER GAMES	9.95	6.50
MELTDOWN	8.95	5.90
HEAVY ON THE MAGICK	9.95	6.50
5th AXIS	9.95	6.50
COMMODORE 64		
INT. KARATE	5.90	4.75
V	8.95	5.90
WORLD CUP		
CARNIVAL	9.95	6.75
ACE	9.95	6.75
BACK TO THE FUTURE	9.95	6.75
GHOSTS & GOBLINS	9.95	6.50
HEAVY ON THE MAGICK	9.95	6.75
URIDIAM	8.95	5.90
ELITE	14.95	11.75
MUGSY'S REVENGE	8.95	5.90
FLOYD THE DROID	9.95	6.50
CAULDRON II	8.99	5.90
KNIGHT GAMES	8.95	5.90
WAY OF THE TIGER	9.95	6.75
GREEN BERET	8.95	5.90
LEADERBOARD	9.95	6.50
SHOGUN	7.95	5.90
SABOTEUR	9.95	6.75
NEXUS	9.95	6.75
TIMETRAX	9.95	6.75
SILENT SERVICE	9.95	6.50

BBC	RRP	Our Price
COMMANDO	9.95	£6.75
BRUCE LEE	9.95	6.75
COSMIC BATTLE ZONE	9.95	6.75
YIE R KUNG FU	9.95	6.75
CITADAL	9.95	6.75
REPTON 2	9.95	6.75
SPEECH	9.95	6.75
AIRWOLF	9.95	6.50
STRIKE FORCE HARRIER	9.95	6.50
THRUST	7.95	5.90
SPECTRUM		
BATMAN	7.95	5.90
GREEN BERET	7.95	5.90
QUAZATRON	8.95	5.90
THE PLANETS	9.95	6.75
STARSTRIKE 2	7.95	5.90
WAY OF TIGER	9.95	6.75
BIGGLES	9.95	6.75
BACK TO FUTURE	9.95	6.75
WORLD CUP CARNIVAL	9.95	6.75
BALL BLAZER	9.95	6.75
WINTER SPORTS	7.95	5.90
HYCUPS (coming soon)	8.95	5.90
MUGSY'S REVENGE	7.95	5.90
BATTLE OF THE PLANETS	9.95	6.75
DR. WHO	14.95	11.75
BOUNCES	9.95	6.75
RAMBO	6.95	5.75
KNIGHT RIDER	7.95	5.90
STREET HAWK	7.95	5.90
REDHAWK	7.95	5.90
MANTRONIX	7.95	5.90
SPINDIZZY	9.95	6.50
PENTAGRAM	9.95	6.50
THEATRE EUROPE	9.95	6.50

HARDWARE (P&P inc)

AMSTRAD 6128 Green Screen	£299.00	£280.00
AMSTRAD 6128 Colour	£399.00	£375.00
COMMODORE 128	£269.95	£250.00
COMMODORE 64 Compendium Pack	£199.95	£180.00

BLANK DISKS (add £1 for postage)

10 Datalife 5¼" S/S D/D 40 track	£18.50
10 Datalife 5¼" D/S D/D 40 track	£22.00
10 3" D/S CF2	£55.90
10 Datalife 4½" S/S D/D 80 track	£20.00
10 Datalife 4½" D/S D/D 80 track	£26.50
10 Datalife 5¼" D/S D/D 40 track	£32.50
10 Datalife 5¼" D/S D/D 20 track	£29.95

Verbatime data box (plastic case included)

WE ENSURE A FAST AND EFFICIENT SERVICE

Please specify machine **S.A.E. for full list.**

Please add 50p Postage & Packing. Overseas orders add 75p per title. Mail order only. Cheques or postal orders (sterling only). Made payable to

Megastream Limited

Dept. PCW. 1st Floor, Commerce House
146/150 Commercial Street, London E1 6NU

ATARI ST

Power Without The Price!

FREE SOFTWARE

When you buy one of the new Atari ST computers from Silica Shop, you will receive a large and varied software package free of charge. This package covers several applications and comprises a total of nine titles. All STs now have TOS/GEM on ROM, and the total list of free software is as follows:

1) GEM - *DR Desktop environment with WIMP (in ROM)*
2) TOS - *Tramiel Operating System (in ROM)*
3) 1st WORD - *Word Processor by GST using the GEM environment and multiple windows*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) DOODLE - *Simple paint/doodle drawing package (works on mono or colour systems)*
7) MEGAROIDS - *Asteroids type game by Megamax*
8) NEOCHROME - *A powerful colour paint and graphics package (only useable with colour systems)*
9) CP/M EMULATOR - *Allows the use of DR's Z80 C/PM software to run on any ST system*

3rd PARTY SUPPORT

The power and potential of the ST range of computers is causing a flood of new software titles, peripherals and accessories from third party manufacturers. Titles range from word processing to spreadsheet programs, from graphics and games to database management - all with those easy drop-down menus and windows. With the list of companies producing ST software including dozens of top names, you can expect some first class titles for the new ST range. The following includes a selection of the third party manufacturers who have developed, or are working on, products for the ST range:

ABACUS	EXTENDED S/W	MICRO-ED INC	ROBINSON SYS
ACADEMY	FIDELITY	MICROPRO	SCARBOROUGH
ACCOLADE	FIRST BYTE	MICROPROSE	SIERRA ON LINE
ACTIONSOFT	FIRST PUBNG	MICROPRO ENG	SM SOFTWARE
ACTIVISION	FLIP 'N' FILE	MIDGRAPH INC	SOFTEK
ADVENTURE INT	GLENTOP PBNG	MILES COMP	SOFTLABS
ANTIC	GST SYSTEMS	MIRACLE	SOFTLOGIK
AMERICAN COVERS	HABA	MIRAGE	SOFTWARE COMS
ARTWORX	HAYDEN	MIRRORSOFT	SSCS
ASHTON TATE	HIPPO	MONARCH DEV	SOFTWARE PUNCH
ATI	HISOFT	MOSAIC	SOFTWORKS
AUDIO LIGHT	INFOCOM	MULTIFORM	SORCIM/IUS
AZTEC	INSIGHT	MULTIMATE	SPINNAKER
BATTERIES INC	INSOFT	OCEAN	SST SYSTEMS
BAYVIEW	ISLAND LOGIC	ODIN	STONEWARE
BECKEMEYER	KNOWLEDGWARE	OMNITREND	SUBLOGIC
BETTER WORKING	KUMA	OSS	SUNDATA SERVICES
BLUE CHIP	LASERSOFT	OTHER VALLEY	SUNSHINE BOOKS
BOS	LEHRNER	OZXI	SUPPLEMENTAL
CASHLINK	LEVEL 9	PAPERLOGIC	SYSTEMATICS
CHANG LABS	LIONHEART	PARADOX	TALENT
CHELTEK SYST	LLAMASOFT	PENGUIN	TDI
CHIPSOFT	LONGMINSTER	PHILON	TELARIUM
COMPUTE!	MAINTHINK CORP	PLANNER	TK COMPUTER PRO
CROSSBOW MUSIC	MAP COMPUTERS	PLANTIR	TOP EXPRESS
DATABENCH	MARK of UNICORN	PROGRESSIVE	TOWNGATE
DATACODE SYS	MARK WILLIAMS	PROSPERO	TYNESOFT
DATA SYSTEMS	MARTIN CONSU	PRYORITY	UNISON
DELTRON	McGRAW HILL	PSION	VIP
DILITHIUM PRESS	MEGAMAX	PSYGNOSIS	WASON MICROCHIP
DRAGON GROUP	MEMOREX	QUICKVIEW SYS	WHITENDALE
DUFOSE PUBNG	METACOMCO	RAINBIRD	WINDHAM CLASSICS
ELECTRONIC ARTS	MICHTRON	REGENT	WORD or GOO COM
EXECON	MICRODEAL	RISING STAR	XLENT

520ST-M

NEW 512K 520ST-M KEYBOARD: The new 520ST-M keyboard costs only £346.96 (+VAT=£399) and is yet another price breakthrough for Atari Corporation. The keyboard now includes both an RF modulator and cable, allowing you to connect it to an ordinary domestic television set. In addition, the keyboard is supplied with 512K RAM, a mouse and a free set of 3½" disks containing applications software. The TOS operating system and the GEM graphics package are now supplied on 192K ROM chips which are already installed in the keyboard. This means that the operating system will automatically boot in when you switch the power on. In addition to the keyboard, you will also need to purchase either a ½Mbyte disk drive (RRP £130+VAT) or a 1Mbyte disk drive (RRP £174+VAT). Either disk drive will provide you with fast information retrieval and a vast amount of storage space. If you prefer not to use your own TV set, you may connect your ST to a monitor. You may purchase the Atari SM124 monochrome monitor (RRP £130+VAT), or one of Atari's two Thomson colour monitors. Alternatively, you may choose one of the many third party colour monitors which are available.

NEW 1024K 520ST-M+ KEYBOARD: In addition to the standard 520ST-M, we have a new keyboard which we are calling the Atari 520ST-M+. The M+ is a 520ST-M keyboard which has been enhanced by a third party RAM upgrade to 1 megabyte of memory. The 520ST-M+ is available from Silica at a retail price of only £433.91 (+VAT=£499). This product will provide you with an alternative to the 1040ST-F, but at a lower price. Additionally, it features the advantage of the 520ST-M's built in modulator.

£347

1040ST-F

For the businessman and the more serious home user, Atari have introduced the 1040ST-F, a low cost powerhouse which can be introduced to a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The new one megabyte 1040ST-F enhances Atari's 'value for money' reputation in the marketplace as it is the first personal computer available with one megabyte of memory for less than £800. You can purchase the 1040ST-F as a monochrome or colour system. The price of the monochrome system is £799 (+VAT = £918.85), with the colour system at only £999 (+VAT = £1148.85). The new 1040ST-F not only features twice as much memory as the 520ST-M, but also includes a one megabyte double sided disk drive and mains transformer, both built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied with a free software package. Unlike the 520ST-M, the 1040ST-F was manufactured solely with business use in mind and as such is supplied with a monitor. It does not include the RF modulator or lead. We now have stock of the 1040ST-F at all four branches of Silica Shop. Call into your nearest branch for a demonstration.

1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
117 Orpington High Street, Orpington, Kent, BR6 0LG
Lion House (1st floor), 227 Tottenham Court Rd, London, W1
Selfridges (1st floor), Oxford Street, London, W1A 1AB

£799

THE ATARI EXPLOSION!

If you read the specialist computer press, you will have noticed that there is one company which is getting a large slice of editorial space at the moment, that company is Atari Corporation. Atari have been making the news since the launch of their new 16/32 bit range of ST computers. Led by the powerful figure of Jack Tramiel and under the banner 'Power Without The Price', Atari are manufacturing new computers at unheard of prices, with the power to challenge firmly established market leaders. With the introduction of IBM compatibility, a CP/M emulator, a powerful networking system and a communications package for their new low cost powerhouses, it doesn't look as if it will be long before there is an explosion of the magnitude which will see Atari placed firmly besides such names as IBM and Olivetti in the personal computer marketplace. Read on for more details of what Atari are doing, and how they are putting their 'Power Without The Price' computers beyond the reach of the competition.

FREE CP/M EMULATOR

This newly annouced CP/M Emulation Package, will enable software written under Digital Research's Z80 CP/M operating system to be run on the ST family of computers. There are several thousand applications written for CP/M in the UK alone, and several of the major CP/M software development houses may convert their programs to 3½" disk format for the ST range. The CP/M emulation package is supplied FREE OF CHARGE by Silica Shop with all ST computers.

IBM COMPATIBILITY

To make the ST available to those businesses who currently run IBM systems and are looking for a low cost expansion method, Atari have announced a co-processing unit for ST computers. This processor will open the ST range to all IBM or IBM compatible software applications. The unit, which attaches to the ST computers via the DMA (Direct Memory Access) port, contains an Intel 8088 processor with 512K of RAM and will accept a 5¼" disk drive. In it's ST mode, the unit will also act as a second disk drive, offering the user an additional 500K of memory. The IBM co-processing unit should be available in late Summer 1986. If you would like to be informed when it is released, please complete and return the coupon below. We will send you further details as soon as we have them.

20Mbyte HARD DISK £739

The new Atari hard disk for the ST range has just been released. All ST computers already have a hard disk interface built into them so there is no external interface required. The memory size of the disk is a massive 20 megabytes (unformatted) with a data transfer rate of 1.33 Mbytes per second. At a price of £739 (+VAT=£849), the 5¼" hard disk offers massive storage with fast access at a very reasonable price.

NEW ST SOFTWARE PACKAGES

There are now hundreds of software packages which have been announced for the Atari ST range. Titles available now include DB Man, a DBase 3 clone as well as H & D Base, a DBase 2 clone. In addition, PC Intercomm is a VT100 emulator which enables you to use any ST keyboard as a terminal connected to a mainframe or mini. Other programs include a Lotus 1-2-3 clone (see paragraph below)

VIP PROFESSIONAL - LOTUS 1-2-3™ CLONE

This is probably the most impressive program to have been released so far for the ST range. VIP Professional is an extremely easy to use, integrated spreadsheet, database and graphics program which is identical both in features and commands to Lotus 1-2-3™. The same spreadsheet analysis, information management and extraordinary business graphics are all combined in one easy to learn, affordable package. What's more, VIP Professional not only has all the features of 1-2-3™, you can also type the same commands to do the same things. Probably the most surprising feature of VIP Professional is not its total compatibility with Lotus 1-2-3™, nor its ease of use, but its price. Lotus 1-2-3™ for the IBM PC/AT costs £395 (+VAT=£454.25), whereas VIP Professional for the ST is a mere £169 (+VAT=£194.35). That's less than half the price! If you would like further details of VIP Professional, please return the coupon below.

SILICA SHOP

WE ARE THE UK's NO1 ATARI SPECIALISTS

At Silica we have been successfully dedicated to Atari ever since their products first appeared on the UK market. We can attribute our success largely to the Atari specialisation which we practice and to the user back-up we provide. Rest assured that when you buy a piece of Atari hardware at Silica you will be fully supported. Our mailings giving news of software releases and developments will keep you up to date with the Atari market and our technical support team and sales staff are at the end of the telephone line to deal with your problems and supply your every need. With our specialist bias, we aim to keep stocks of all the available Atari hardware, software, peripherals and accessories. We also stock a wide range of Atari dedicated books and through us, the owners on our list can subscribe to several American Atari dedicated magazines. We can provide a full service to all Atari owners and are now firmly established as the UK's NUMBER ONE Atari specialists. Here are just some of the things we can offer to our customers.

★ FREE POST & PACKING ON MAIL ORDERS
★ FREE NEXT DAY DELIVERY
★ INFORMATION MAILING SERVICE
★ TECHNICAL SUPPORT TEAM
★ HIGHLY COMPETITIVE PRICES
★ AFTER SALES SUPPORT SERVICE
★ REPAIR SERVICE ON ATARI PRODUCTS

If you would like to be registered on our mailing list as an Atari computer owner, or as a person interested in buying an Atari machine, let us know. We will be pleased to keep you up to date with new Atari developments free of charge. So, return the coupon today and begin experiencing a specialist Atari service that is second to none.

SILICA HOTLINE 01-309 1111

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

SEND FOR FREE ATARI ST LITERATURE

To: Silica Shop Ltd, Dept PCWK 0 86, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME FREE LITERATURE
ON THE NEW RANGE OF ATARI ST COMPUTERS

Mr/Mrs/Ms: ..... Initials: ..... Surname: .....

Address: .....

.....

.....

.....

Postcode: .....

Do you already own a computer
If so, which one do you own? .....

The ST, supreme games machine

JACK ROSEBURY ON STATE-OF-THE-ART GAMES, INCLUDING *THE PAWN*, THE FORTHCOMING *STARGLIDER*, AND U.S. CONTENDERS *SUNDOG* AND *HEXES*

Few programs demonstrate the capabilities of the ST better than **Sundog – The Frozen Legacy.** A testing combination of strategy, adventure and arcade action, Sundog comes from FTL Software, a Californian outfit.

Sundog incorporates a game principle called ZoomAction. In effect, all this means is that each time you enter a new section of the game, a window opens to show you the interior of the current environment. Before you start, though, you must design a character.

Like many an adventure game, Sundog assigns your character several attributes – intelligence, luck, strength and so on – and you can distribute the points available amongst these attributes. You can also name your character. Games can be saved and reloaded from any point, and since Sundog is so complex you will inevitably need to use this facility.

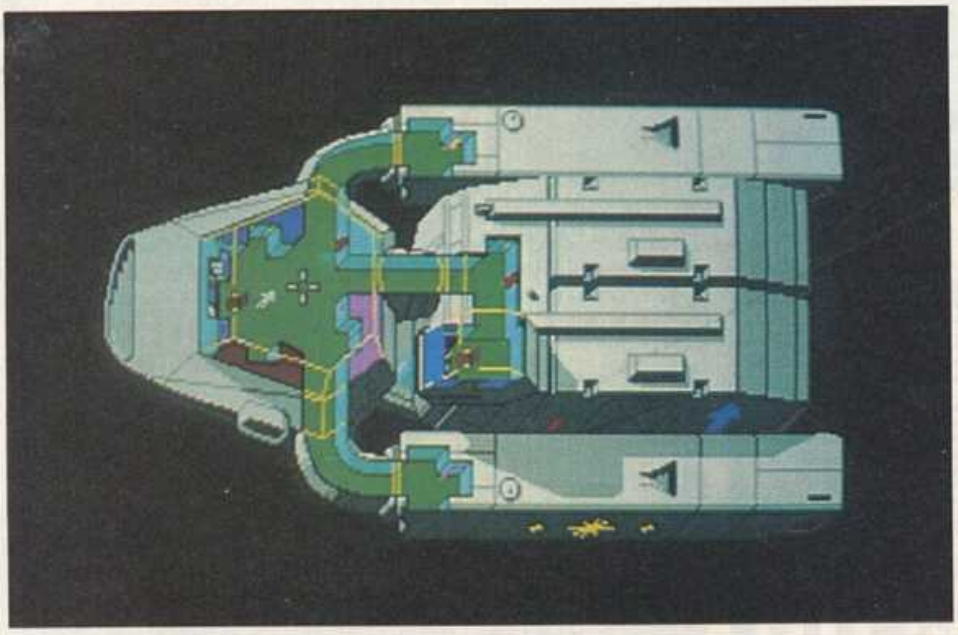
All the functions can be controlled by the mouse, which controls a cross-sight on the screen. The left button is used to select screen options and move your character in the direction of the sight, while the right-hand button returns to the previous screen or shows your personal status.

The game opens in the interior of your ship, Sundog. An inheritance from your uncle, the ship is a battle-scarred trading vessel. Your other inheritance is a mission to deliver a cargo of "cryogens" – frozen colonists – to their intended destination. First you have to find the colonists – then you have to find the colony, which could be part of any one of several cities.

Moving around the city is achieved by controlling the cross-hair sight, which your character will follow. Many of the colourful buildings you encounter are just scenery, so it's a matter of trial and error, testing them all to see which you can enter. You will need to find a bank to get some ready cash, an eatery to cater to your bodily needs, and often a police post if you are attacked.

Various shady characters will approach you on the street, at which a window opens allowing you to choose whether to zap them, talk to them or beat a hasty retreat. You can lose a good deal of money trying to get information from ignorant beggars, but at the same time you shouldn't take the risk of missing important information.

Eventually, the game will require you to leave the planet. You will have to find your way back to your ship, make sure it's fuelled up, and take off for another star system, using long and short-range ▼



Still holding its own in the ST market is **The Pawn,** a sophisticated text-and-graphics adventure which sets new standards in both technical achievement and game complexity.

Set in the mythical land of Kerovnia, the game concerns, among other things, your attempt to remove from your arm a mysterious wrist-band. In your quest you are helped or hindered by an eccentric cast of characters including The Devil, an unruly Princess, a gaggle of ambitious politicians and a morose snowman.

Although many of these characters will promise you help, you will soon find that most merely want to manipulate you to their own ends – hence the title. However, it's possible to have great fun with The Pawn without actually achieving anything. There are several sub-adventures which you need not complete to finish the game.

What makes The Pawn stand out is the quality of its "parser", the input interpretation routine. Unlike some games which can only accept verb-noun constructions, or which fail to recognize inexact phrases such as "pick *it* up", The Pawn can deal with very complex sentences in straightforward English. It can also deal with multi-part instructions – "Pick up the key and put it in the hat on the tree stump then of around 150

► scanners, weapons systems and various monitors to navigate your way through sub-space to your destination, fighting off pirates all the way. Sundog is not a game

words, but it's the quality of the parser which makes you almost forget that you are simply playing computer game. Not to be ignored are the impressive graphics screens, which can be scrolled up and down in windows. The sheer detail and artistic quality of the graphics have to be seen to be believed, although game authors Magnetic Scrolls like to regard them as a bonus in what is basically a very sophisticated text adventure.

The Pawn is infused with a sense of humour which continuously sends up the whole adventure game genre, but which has apparently gone over the heads of some reviewers. Seasoned adventurers and tyros alike should get a lot out of it in any case.

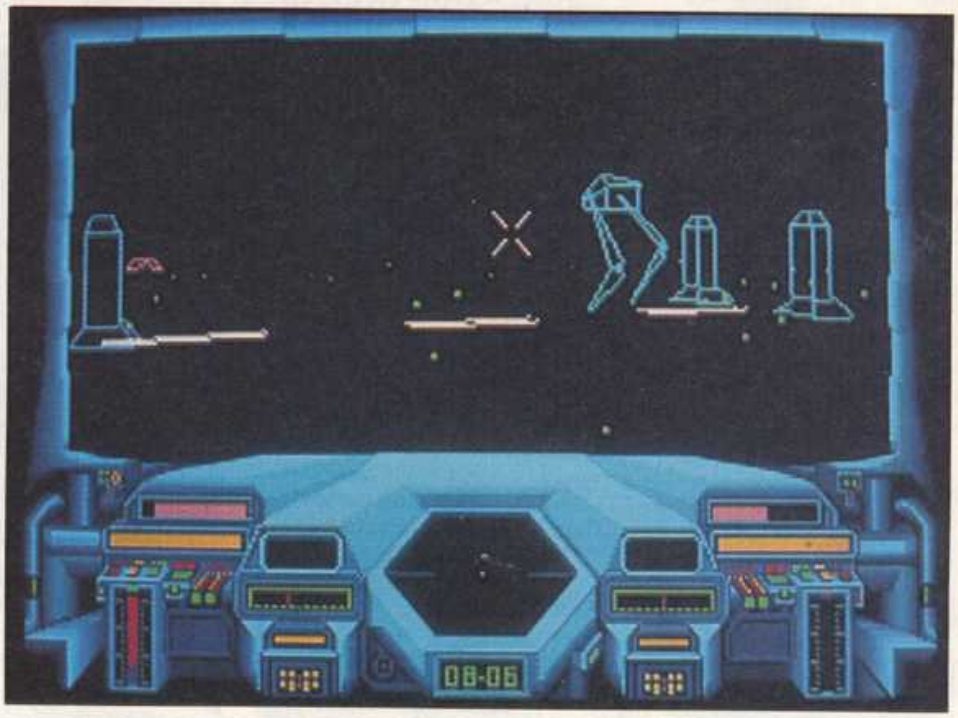
The Pawn is the first adventure I've come across where the player is not continually frustrated by the limitations of the parser. Versions for ST, QL, Amiga, CBM 64/128, and other machines are available now or on the way.◄

for the faint-hearted – the sheer scope is immense. The combination of styles means, though, that it is easy to get into and difficult to stop playing.◄

Coming up from Rainbird is what will surely become a classic arcade game for the ST, **Starglider.**

Author Jez San of Argonaut software has collaborated with writer James Follett, of "Earthsearch" fame, to produce a scenario in which an intrepid space pilot returns to his home planet to find it overrun by aliens.

Your aim is to destroy the Starglider, flagship of the aliens, but to do this you must combat huge Walkers, which stalk menacingly across the landscape, and several varieties of ground and air attackers. You have laser weapons and missiles to protect you, but four missiles must be used to destroy the Starglider – and you can only carry two at a time.



The game will include a novella setting the background, but the action is pure arcade excitement, rather than complex strategy.

Starglider relies on 3-D vector graphic animation with full hidden line removal and perspective. From your cockpit viewpoint you will be able to approach any of the alien artifacts from any angle, and still get an accurate representation on your "viewscreen".

Starglider includes challenging refuelling and rearming sequences, in which you must pilot your ship very precisely while under heavy enemy fire. Together with sophisticated sound effects, sampled speech and full control panel read-outs, Starglider, scheduled for an August release, looks like being a winner. Conversions for 6502 and Z80-based micros are also on the way.◄

Less impressive perhaps in the graphics stakes, but still a challenging strategy game, is **Hexes** from Mark of the Unicorn. On first sight this looks very much like a version of the arcade game Q*Bert, with a 3-D board made of coloured hexagons and a series of players moving around it. In fact, Hexes relies on strategy rather than quick reactions; you take alternate goes with the computer, in your attempt to turn all the hexagons one colour.

You control a unicorn, which leaps from hexagon to heaxagon with enviable grace.In opposition to you are a variety of unusaal creatures; a triceratops, a jellyfish, a scorpion, a dodo, and so on, according to the difficulty level.

At the earlier levels, the game is quite straightforward. Leaping on a hexagon changes its colour according to a sequence shown at the top left of the screen. At some points hexagons will only change colours if you complete a whole section in order.

At higher levels things get more complex. The hexagons change colours according to more abstruse principles, and various magic spells come into use. Your enemy can take control of your player for one go, or split into two or even three places, or conceal the colour of a hexagon. You also have magic spells with which you can fight back.

Overall, Hexes is a combination of traditional mind games like Solitaire and principles more familiar to computer games players - very much like EA's tactical arcade game Archon. Hexes is a thinking game rather than a reflexes game, but takes advantage of the ST's graphics capabilities to produce some very impressive player graphics.◄

Data sorted by Robtek

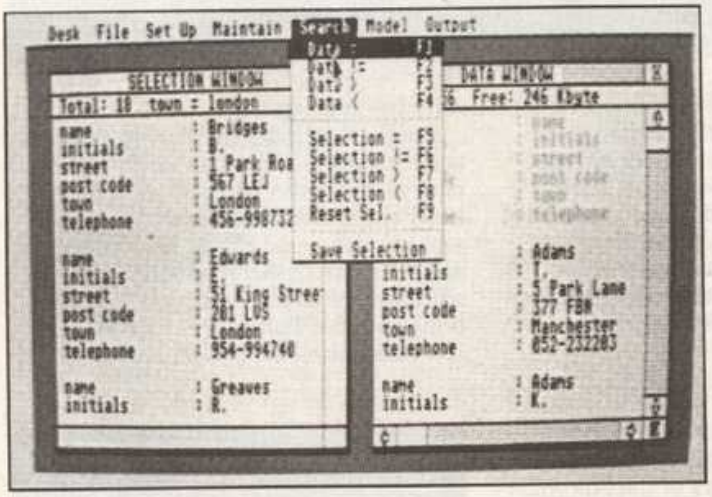
POWER WITHOUT THE PRICE IS THE PROMISE OF ROBTEK'S DB-CALC FOR THE ST. FERGUS CARPENTER PUTS IT TO THE TEST

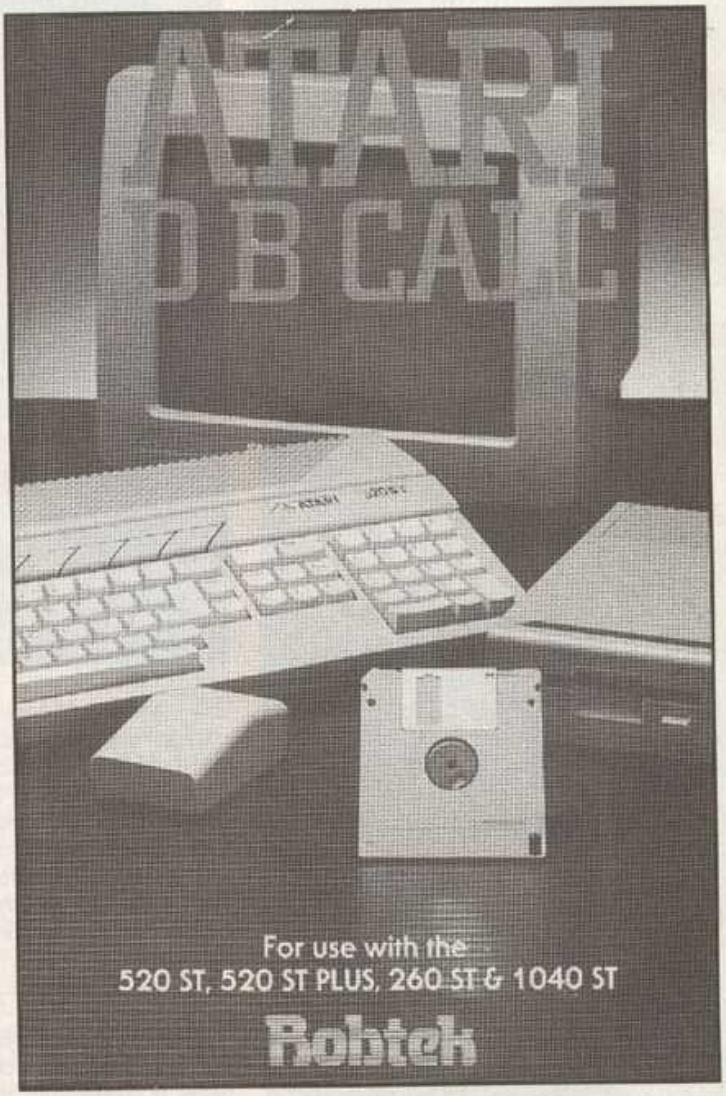
The speed, power and memory capacity of the ST make it the ideal database machine, but up until now suitable software package for the home or small business user have been discouragingly expensive. Robtek's **DB-Calc** aims, like Atari itself, to offer power without the price.

DB-Calc is, as its name suggests, a database with calculation functions. It takes full advantage of mouse control and the GEM environment, with menu selection, pull-down windows, error messages and resizable windows.

Flexible

DB-Calc is a fairly straightforward "card-box"-type database, but has a remarkably flexible calculation facility. With standard desk accessories loaded, the memory capacity is around 50K – so 2500 records of four lines each would be a typical set-up. On the 1040, the memory space available is over 380K.





The main display consists of two work areas, Selection and Data, and seven menu headings. The File heading allows you to load, append to, save files, or quit. The next, Set Up, gives you the choice of inserting or deleting a field, or returning to start condition. Choosing Add Field brings up a window which allows you to enter the name and position of your new field.

The next menu, Maintain, allows you to sort data by field name, edit the data file, or delete selected records. You could, for instance, specify LONDON as the sort parameter for the TOWN field, producing a list of all your contacts in London.

You can also sort by numerical parameters using the hash symbol, and wildcards can be used either numerically or alphabetically – for instance you could sort for N* in the NAME field to find all your contacts whose names started with N.

The Search menu allows you to specify upper and lower parameters for your data search. The Model facility allows you to enter text – say a form letter – and merge it with information from the main data file. It's a simple form of mail merge which could save lots of time and energy in producing standard letters to specific clients.

You can make calculations within the model, using the extensive calculation facilities. The special commands used are entered as text input in the same way that you would "program" a more complex spreadsheet. Numbers are shown in floating point notation, the largest being 9.22 E18, the smallest 1.08 E-19.

Variables

You can also use letters as variables, a principle which should come easily to Basic programmers, to produce complex calculations in conjunction with the eleven available mathematical operators; power, multiply, divide, rest after dividing, add, minus, smaller than, larger than, equal to, different to, and assignment. Many standard functions such as square root, log, exponent and so on are also available in DB-Calc.

Apart from the mathematical functions, which would probably baffle the complete tyro, DB-Calc offers ease of use, speed and flexibility. There are several example files provided on the disc, including a cash book, address list, discount log and so on. These make the manual (translated from Dutch, and a little short on practical exercises) much easier to understand.

Overall DB-Calc seems to serve its purpose well; it's powerful enough to satisfy many ST users without costing too much or getting bogged down in complexity.◀

Product: DB-Calc
Micro: Atari 520/1040 ST
Supplier: Robtek, unit 4, Isleworth Business Compplex, St John's Road, Isleworth, Middlesex, TW7 6NL, 01-847 4457
Price: £49.95

HOMEVIEW

520ST, 520STM, 520STM+
400, 800, 600XL, 800XL, 130XE
CALLERS WELCOME
ACCESS & VISA

520STM.....£375
520STM+.....C.W.O.ONLY....£465
520STM INC AST1000.....£465
520STM INC .5M/B DRIVE.....£440
520STM INC 2 * .5M/B DRIVES PLUS HIGH RES B/W MONITOR (ATARI)..C.W.O.ONLY....£690
AST 1000.....£ 99
CUMANA 1meg Drive.....£169
PHILIPS 8533 Med Res Col Mon..... £279

BATT BACKED CLOCK FOR 520STM
£39.95

16BIT SOFT

BRATACCAS.....£34.95
THE PAWN.....£24.95
BUNDOS.....£29.95
TIMEBANDITS.....£27.95
WINTERGAMES.....£24.95
LEADERBOARD.....£27.50
MEAN 18.....£43.50
CARDS.....£14.95
ROGUE.....£39.95
TEMPLE OF APSHAI.....£39.95
PAINTWORKS.....£34.95
THE MUSIC STUDIO.....£28.95
K SPREAD.....£47.50
LAZERBASE.....£95.00
DISK LIBARAY.....£49.95

3.5 DD/DS DISK'S BOX OF TEN £24.50
3.5 SD/DD DISK'S BOX OF TEN £21.50

8BIT SOFT
TO MANY TO LIST PLEASE PHONE

Dealer For Computer Support & A.S.T Products

Prices Include VAT & P+P-Overseas Orders Welcome

CREDIT CARD HOT LINE
01-691-0207

296 BROCKLEY RD, BROCKLEY, LONDON SE4 2RA

SUNARO

DISKS	Price £	DISKS	Price £	BUDGET CASSETTES	Price £
SPY VS SPY II	12.75	SUPERSCRIPT	59.95	ACTION BIKER 48K	1.95
BOULDERDASH II	12.75	ATARIWRITER PLUS	44.95	ONE MAN DROID 48K	1.95
TAIL BETA LYRAE	12.75	BALLYHOO	25.95	THE LAST V8 48K	2.95
MR ROBOT	12.75	ALTERNATE REALITY	16.95	AMERICANA 48K each	2.95
AZTEC	12.75	MOVIE MAKER	14.95	COLLAPSE 48K	1.95
PLAR PIERRE	12.75			CLOAK OF DEATH 48K	2.95
SMASH HITS 4	10.95			ZAXXON 16K	2.95
MERCENARY	10.05	CASSETTES		CHIMERA 48K	3.75
RESCUE ON FRACTALUS	12.75	SPY VS SPY II 48K	8.50		
KORONIS RIFT	12.75	BOULDERDASH II 48K	8.50		
BALLBALZER	12.75	TAIL BETA LYURAE 48K	8.50	ST SOFTWARE	
GT AMER. ROAD RACE	12.75	AZTEC 48K	8.50	LANDS OF HAVOC	16.95
THE MUSIC STUDIO	16.95	POLAR PIERRE 48K	8.50	K-SPREAD	44.95
SIDEWINDER	12.75	COLOURSPACE 48K	6.75	HABAVIEW	69.95
ARCHON II ADEPT	10.95	MERCENARY 48K	8.50	PASCAL COMPILER	76.95
RACING DESTRUCT SET	12.75	SECOND CITY 48K	5.75	MUSIC STUDIO	39.95
CRUSADE IN EUROPE	16.95	SIDEWINDER 48K	8.50	DEGAS	37.95
APSHAI TRILOGHY	12.75	PITFALL II 48K	8.50	TIME BANDITS	26.95
SOLO FLIGHT II	12.75	RESCUE FRACTALUS 48K	8.50	WINTER GAMES	42.95
WARRIORS OF RAS	12.75	PRICE OF MAGIK 64K	8.50	THE PAWN	21.95

HARDWARE/PERIPHERALS AVAILABLE
CASSETES FROM £1.95 – DISKS FROM £4.75
NEW TITLES AVAILABLE IMMEDIATELY ON RELEASE
TELEPHONE 0625 25228
Send cheques/PO:- Prices include VAT & Postage

SUNARD SOFTWARE (PCW)
PO Box 78, Macclesfield, Cheshire SK10 2PF

32PD781

ED40 FREEPOST (no stamp required)

46 THE MALTINGS, STANSTEAD ABBOTS, WARE, HERTS SG12 8BR

SPECTRUM 48K	RRP	OUR PRICE		RRP	OUR PRICE		RRP	OUR PRICE
Pentagram	9.95	6.99	Theatre Europe	9.95	6.95	Ghosts and Goblins	9.95	6.95
Starstrike II	7.95	5.75	Action Reflex	7.95	5.75	Timetraxx	9.95	6.95
Way of the Tiger	9.95	6.95	Mantronix	7.95	5.75	Touchdown Football	9.95	6.99
Splitting Images	7.95	5.75	Batman	7.95	5.75	Superbowl	9.95	6.95
Bobby Bearing	7.45	5.75	Bounder	7.95	5.75	Trap	9.95	6.99
Cauldron II	7.95	5.75	Ghosts and Goblins	7.95	5.75	Nomad	8.95	6.60
Cyberan	9.95	6.99	Red Hawk	7.95	5.75	Southern Belle	7.95	5.75
Stainless Steel	9.95	6.99	Spindizzy	9.95	6.99	Knight Games	8.95	6.60
Rock n Wrestle	8.95	6.60	Planets	9.95	6.99	Solo Flight II	14.95	11.50
Heavy on the Magick	9.95	6.95	Quasatron	8.95	6.60	Green Beret	8.95	6.60
ACE	9.95	6.99	Toad Runner	8.95	6.75	Mercenary II	8.95	4.50
Jack The Nipper	7.95	5.75				Titanic	9.95	6.95
Graph AD Creator	22.95	16.95				Lazer Genius	14.95	11.95
Bomb Jack	7.95	5.75	COMMODORE 64/128			Silent Service	9.95	6.95
Green Beret	7.95	5.75	PSI.FI	9.95	6.95	Doomdarks Revenge	9.95	6.99
Kung Fu Master	7.95	5.75	Tau Ceti	7.95	5.75	Equinox	9.95	6.99
Equinox	9.95	6.99	Golf Construction Set	12.95	9.95	Saboteur	8.95	6.75
Killer Tomatoes	7.95	5.75	Tubular Bells	9.95	6.99	Thrust	1.99	1.99
Boggit	7.95	5.75	Shogun	9.95	6.99	Int. Karate	6.50	4.95
Biggles	9.95	5.75	Starquake	8.95	6.75	Cauldron II	8.95	6.60
Lazer Genius	14.95	11.95	Way of the Tiger	9.95	6.95	Sam Fox	8.95	6.60
Tan Talus	7.95	5.75	Biggles	9.95	6.99	Spindizzy	9.95	6.99
Pyracurse	7.95	5.75	Germany 85	9.95	6.95	Split personalities	9.95	6.99
Sam Fox	8.95	6.60	Nexus	9.95	6.99	Bored of the Rings	8.95	6.50
Iwo Jima	7.95	5.95	Trap	9.95	6.99	Price of Magick	9.95	6.99

All prices include free fast delivery & same day despatch, when available. Personal callers welcome. 5% discount on all orders for seven or more tapes or to a value over £45. Cheques/POs/ECs payable to ED40. For up to date news on available & Access orders ring (0920) 870566. Free Game included for orders over £20 or overseas orders. Send SAE for free lists

31PD911

The Only Publication Dedicated Exclusively To The Atari ST

One thing is known about ST owners – they are dedicated, and that's why all ST owners should read ST User the only publication dedicated exclusively to the Atari ST. Concentrating on software reviews and articles discussing how to make using the ST more productive, the magazine is the best guide you will find to this new age of powerful computing. From graphics routines to accounting software all aspects of the ST are explored and in a depth previously never seen in computer magazines. Software reviews are large and detailed and really help to make purchasing decisions a less risky business. However, don't take our word for it either subscribe or send £1.95 for a sample copy and, if your not entirely satisfied, we will refund your money completely.

Issue Seven will be available in the third week of August and back issues are available singly at a cover price of £1.95.

12 Issue Subscriptions: UK —£18.00
Europe —£23.00 (airmail)
World —£36.00 (airmail)

Send Cheques or Postal orders made payable to:
SY User, 43 South Street, Chichester, West Sussex PO19 1DS.
Tel (0243) 783932.

One in a Marillion

MARILLION'S MARK KELLY IS ONE OF MANY USERS OF STEINBERG'S PRO-24 MIDI SOFTWARE FOR THE ST. MARK JENKINS EXPLAINS

Over the last year or so, Steinberg has established itself as one of the most proficient producers of music software in the world. The achievements with the pro 16 package for the Commodore 64 were unprecedented, but for truly professional purposes the Commodore has proved itself a little limited.

The requirements for a music computer are pretty similar to those for a business machine. Reliability is a factor, but speed is every bit as important – while lost time means lost money for the businessman, for the musician it means lost inspiration. There's nothing more frustrating for the composer than a long wait for a disc to load before being able to record his latest brainwave.

So a fast, reliable computer such as the Atari 520ST/1040ST has been needed before a genuinely professional music package could be developed. In the US the Apple Macintosh has been popular for a while, but the ST actually comes out better in benchmark tests, shares the advantage of the mouse-driven control system, and is of course much cheaper.

The fact that the Atari computers also include a MIDI interface for direct control of musical instruments, is a bonus, although it has some drawbacks in that add-on MIDI interfaces usually include sockets for footswitches, drum machine synchronisation, tape synchronisation and so on. These facilities will probably be added on to the Pro 24 package with a hardware option at a later date.

24-track

So what does Pro 24 offer the musician? The system's laid out as a 24-track tape machine – there are only 16 different channels available via MIDI, but it's useful for various reasons to have a few spare tracks available. For instance, you could record several "takes" of a melody, keep them all separately, and decide which one you wanted to use during the final stages of composition.

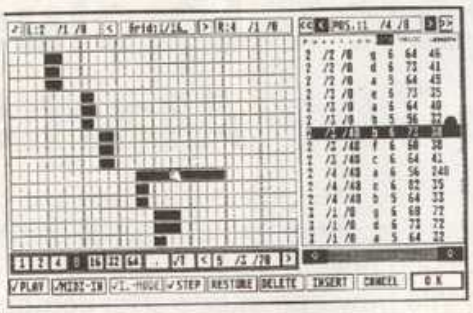
Most computer composition packages, including Pro 16 and the very impressive C-Lab package for the C64, depend on the repetition of short sections of music with various mutes and transpositions. In practice these can become quite lengthy, but Pro 24 operates in a slightly different way. The longest section recorded can be as much as 999 bars long, and can be edited in many ways; further sections are laid over it, with each MIDI channel controlling one polyphonic synthesizer, expander or drum machine.

Each of the 24 tracks is marked with a square at the top of the main screen and each can be put into record mode and set to play or remain silent. The mouse selects Record status and notes are then played from the synthesizer; you can choose to play them back exactly, or with various quantisation (rime correction) values.

Tempo is completely variable, as is time signature, and all recorded tracks can play back as further ones are recorded. If you use a Casio CZ101 or other "Multi-timbral" synthesizer, you can play back several different sounds on several MIDI channels simultaneously from one synth.

Display

One of the wonders of Pro 24 is the amount of information squeezed into the display, which is why a high resolution monochrome monitor is needed (a medium-res colour update will be available free to uses after the British Music Fair). Tempo, Beep (metronome) status, Master Tempo track on/off, Synchronisation status, Memory remaining, Recording Start and End point, Channel and Pattern number, Bar and Beat number are all on display constantly – an enormous help to the composer.



There are also various items of information which the user can enter – such as the name of each piece, the name of each synthesizer connected, and the MIDI Mode and type of note release used for each synth.

Pull-down menus include Desk, File (for song and pattern saving), pattern, Track, MIDI (for creating the basic MIDI setup saved as part of each song), Edit (to go onto the Edit page), and Fast Access for the most important parameters.

The Edit page consists of a grid which indicates every MIDI event which has been recorded. A big chord with lots of pitch bend may fill up the page, whereas simple repeated notes may fit onto the edit page by the dozen. This page also allows you to enter notes in Step Time, although this won't often be necessary considering the power of the real time quantisation function.

Thanks to the Left and Right locater boxes, it's possible to drop in and record at any point to correct mistakes, and the computer will drop out again at a pre-programmed point. The Track Info box gives detailed information about the contents of each track, showing whether the velocity of recorded notes has been altered and whether the track has been set to record just one or two different MIDI channels to deal with either half of a split-keyboard sound.

Synthesizer sound changes can be recorded as part of a pattern, as can volumes on some synths such as the Yamaha DX7. Tracks or sections of tracks can be copied and appended to by name, and there's a good selection of error messages if you're trying to record over an existing track or call up a non-existent track.

Marillion

As we mentioned, there are some problems synchronising Pro 24 to tape, and professional users are buying the Roland SBX-80 unit, costing around £800, to convert SMPTE codes to MIDI clock signals which Pro 24 can follow. There's a cheaper Hi-Tec tape sync unit also available, but it's probably cheaper still to clock Pro 24 from a MIDI drum machine synchronised to tape, or to wait for the add-on hardware interface to turn up.

Professional users of Pro 24 such as Mark Kelly, keyboardist for Marillion, have been very pleased with its performance. Although the system seems imposing at first, apparently it's very fast to use after a little experience, offering a choice of mouse or keyboard control. Its capacity is vast, running to tens of thousands of notes on the 520 and even more on the 1040, which of course has the advantage of an integral disc drive.

It's easy to create a complete song with synthesizers and MIDI samplers using Pro 24, although of course you'll need to have the system synchronised to tape if you want to record vocals, guitars or other instruments. But as a complete professional music package, Pro 24 has few rivals in the world at the moment, and virtually none at the price. ◄

Product: Pro 24
Micro: Atari 520/1040 ST
Price: £250
Supplier: Oxford Synthesizer Company, 68 Wilsdon Way, Kidlington, Oxford 08675 5277

pride utilities

UNIT 14, WHITE HILL HOUSE, 6 UNION STREET, LUTON, BEDS LU1 3AN
THE UTILITY PEOPLE TEL (0582) 411686

FOR YOUR AMSTRAD 464-664-6128

ODD JOB £12.95 DISC £19.95 ROM

STILL THE BEST DISC UTILITY PACKAGE

A complete disc utility with all the programs YOU have told us you wanted all together in one amazing package. A total of 39k of disc space used.

Just look at some of the features:

- A complete directory editor with which you can examine the disc directory and easily alter the contents.
- Recover erased programs.
- Hide programs from the directory.
- A complete sector editor to examine and/or alter the contents of files in HEX or ASC11.
- Map out your disc and locate where files are on the disc.
- Prevent programs from accidentally being erased.
- An intelligent disc copier that can copy those damaged/non standard sectors on a single or twin drive system.
- Format in half the time on either drive. Ideal for 5.25 inch second drives.
- Transfer your little used programs/files from disc onto tape to reclaim expensive disc space.
- Increase the speed of your disc drive by up to 20%.
- Load and list protected BASIC programs.
- All instructions are supplied on disc on a separate help menu.
- Simple to use with single key selection.
- Makes full use of the disc drive. A to A, A to B, B to A, etc.
- Compatible with all Amstrad CPC computers.

All this for the incredible price of £12.95 on disc only

ODDJOB is constantly upgraded — checkwith us the current version No. and if you wish, return the disc with £2 for upgrade.

NOW A ROM VERSION ODDJOB AVAILABLE — £19.95.

TRANSMAT £7.95 CASS £11.45 DISC

Easy tape to disc transfer. This professionally used and respected utility has set the standard in tape to disc transfer that others attempt to mimmick. Rated highly by the computer press.

Transmat's many features include

- Easy Operation
- Auto or non auto modes
- Relocator for programs which overwrite the disc area
- Erase
- Catalog files
- Rename
- Disc header reader
- Select user area
- A or B drive working
- Transmats itself.

Also available on ROM only £19.95.

SPIRIT £5.95 CASS

The perfect advanced software complement to Transmat for those knowledgeable in computing—Spirit offers all the tools you need in one economic package to transfer those genuine headerless programs onto disc.

To use Spirit you need a dissassembler and some knowledge of machine code.

PRINTER PAC 11 £7.95 CASS £11.45 DISC

The screen copier. The complete printer utility for most popular dot matrix printers, including the DMP 2000

- Full proportional shading
- Full size dumps
- Variable buffer option to release the computer
- Text dumps
- all models catered for.

NEW!

FIDO NEW! £11.95 DISC

A general file and disc organiser. If you have a lot of discs and you can never find the program you want, then FIDO is your answer. Its many features will allow you to completely organise all your files/discs and manipulate them using a specially designed database. This menu-driven disc can store up to 200 discs Or 2150 programs

- Full disc utility section
- Security password system (to protect your database)
- Separate programs runner
- Will search and list
- Sort into alphabetical order
- Printer option
- Find free space
- Very easy to use
- Well up to Pride's usual high standards.

SUPER SPRITE NEW! £7.95 CASS £11.45 DISC

Creates fast moving animated games easily. An extremely powerful and versable piece of software ata realistic price. SUPER SPRITE is a menu-driven friendly program which will offer you hours of enjoyment designing your own sprites. Included is a demo to show you the possibilities of designing and writing your own animated software. The complete instruction book gives examples of how to create and animate sprites for your own programming.

IF YOU'VE WRITTEN A UTILITY UP TO OUR HIGH STANDARDS PLEASE CONTACT US.

PCW ORDER FORM

All prices include VAT and P & P. For Europe add £1 title. For Australasia add £1.75 per title. For rest of world £1.50 per title. INC AIR MAIL. Europe C.O.D. add £3.00

NAME _____

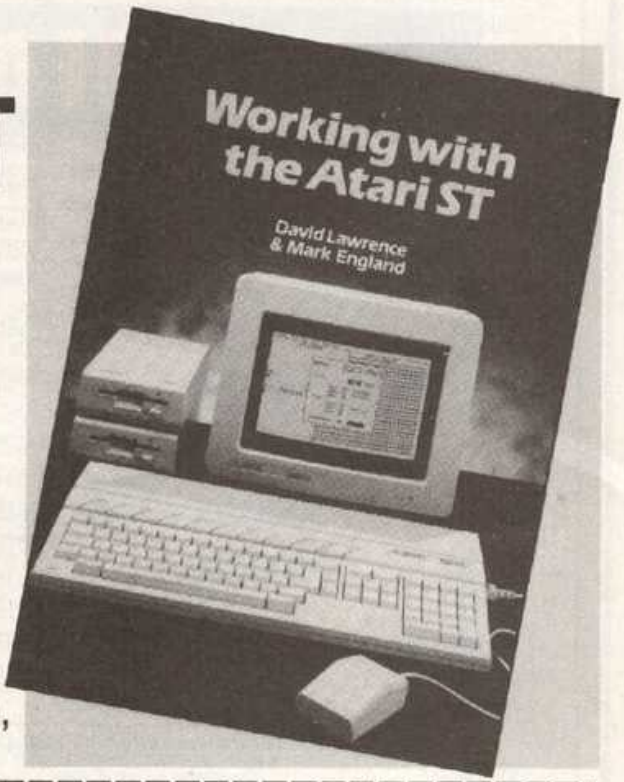
ADDRESS _____

	Cass	Disc	Rom
TRANSMAT			
SPIRIT			
FIDO			
PRINTER PAC II			
SUPER SPRITE			
ODDJOB			

STATE OF THE ART

Working with the Atari ST by David Lawrence and Mark England shows you how to harness the considerable computing power of the Atari ST, getting the 'power without the price' working for you.

- Topics include the ST's main system, GEM, BASIC, LOGO and the BOS Operating System.
- The Atari offers considerable computing power that was previously only available on much more expensive machines. If you want to learn exactly what use that power can be put to, then read this book.



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

Please send me_____copies of Working with the Atari ST ISBN 0 946408 89 0 at £7.95 (plus 90p p + p) per copy

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

Alternatively please debit my Visa ☐ Access ☐ American Express ☐

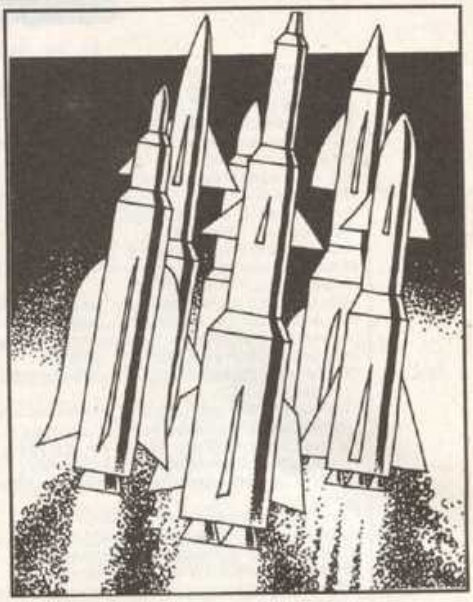
Account Number _____ Expiry Date _____

Signed _____

Name (capitals please) _____

Address _____

Space War on BBC



by Mark Ward

This is the first part of a three week listing of Space War. Next week features more of the listing plus the first part of the instructions.

If you can't face typing it all in then send £3 to Mark Ward, 43 Wordsworth Road, Hampton, Middlesex for a copy of the game on cassette.

Your home world lies in ruins, destroyed by the Zargoids, and you and your thirty ships are the only survivors of the attack. For many desperate months you have tracked the marauding aliens across the length of the galaxy. Now you have finally brought them to battle in a remote rim section of the galaxy, where few stars are left to light the night sky. This is your chance for revenge . . . or oblivion. Only you can put an end to the evil Zargoid menace.

The two fleets are fairly evenly matched. Each consists of thirty ships, although the make-up of each fleet is different. The Zargoids for instance have more H.Q. ships than you. Your only hope of winning the battle is to seek out and destroy the enemy H.Q. ships. Be careful though, the Zargoids have the same thing in mind!

There are seven types of ship in all, each with it's own graphic character.

Listing 1

```
10REM   SPACE WAR
20REM    M.WARD
30ENVELOPE1,1,0,0,0,0,0,0,126,-2,0,-4
,126,126
40VDU23,224,3,6,12,255,255,12,6,3
50VDU23,225,0,49,111,226,255,226,111,
49
60VDU23,226,0,7,4,12,252,12,4,7
70VDU23,227,0,16,51,126,198,126,51,16
80VDU23,228,0,31,8,216,254,216,8,31
90VDU23,229,31,127,244,102,102,244,12
7,15
100VDU23,230,0,31,36,90,217,90,36,31
110VDU23,232,192,96,48,255,255,48,96,1
92
120VDU23,234,0,224,32,48,63,48,32,224
130VDU23,236,0,248,16,27,127,27,16,248
140VDU23,237,248,254,47,102,102,47,254
,240
150VDU23,238,0,248,36,90,155,90,36,248
160VDU23,239,216,108,54,223,223,54,108
,216
170VDU23,240,1,7,31,63,127,127,255,255
180VDU23,241,128,224,248,252,254,254,2
55,255
190VDU23,242,255,255,127,127,63,31,15,
3
200VDU23,243,255,255,254,254,252,248,2
40,192
210VDU23,244,28,114,137,133,77,158,72,
56
220CHAIN""
```

Listing 2

```
30MODE1:VDU19,1,4;0;19,2,3;0;19,3,1;0
;
40DIMsh%(60),ps%(60),ty$(7),mi%(20),o
b%(18)
50*FX4,1
60PROCinit
70PROCscr
80A%=1
90PROCmove
100PROCcheck(1,30,31,60)
110PROCmm
120A%=2
130PROCauto
140PROCcheck(31,60,1,30)
150PROCmm
160GOTO80
170DEFPROCmove
180GCOL3,3
190MOVE510,550:PRINT"Your go"
200FORn=1TO4000:NEXT
210MOVE510,550:PRINT"Your go"
220FORm%=1TO30
230IFsh%(n%)=0GOTO520
240B%=0:C%=0:D%=0:T$=ty$(ABS(sh%(n%)))
250PROCs_up(T$)
260GCOL3,3:*FX21,0
270mv%=VAL(MID$(T$,10,1))
280E%=FNx(n%):F%=FNy(n%)
290G%=E%:H%=F%
300REPEAT
310G=GET
320I%=ps%(n%)
330IFG=136ANDG%>24ps%(n%)=ps%(n%)-1
340IFG=137ANDG%<1224ps%(n%)=ps%(n%)+1
350IFG=138ANDH%>174ps%(n%)=ps%(n%)-31
360IFG=139ANDH%<1014ps%(n%)=ps%(n%)+31
370IFG=72ANDVAL(MID$(T$,11,1))<>0PROCh
y
380IFG=77ANDVAL(MID$(T$,13,1))<>0PROCm
i
390MOVEI%MOD31*40+24,I%DIV31*40+174
400PRINTFNsp(T$,n%)
410MOVEFNx(n%),FNy(n%)
420PRINTFNsp(T$,n%)
430G%=FNx(n%):H%=FNy(n%)
440UNTILG=135
450PROCle
460IFJ%=0VDU7:GOTO300
470FORm%=1TO30
480IFm%=n%GOTO500
490IFps%(n%)=ps%(m%)J%=0:m%=30
500NEXT
510IFJ%=0VDU7:GOTO300
520NEXT
530MOVE510,550:PRINT"Go over"
540FORn=1TO4000:NEXT
550MOVE510,550:PRINT"Go over"
560ENDPROC
570DEFPROChy
580IFB%=1ENDPROC
590K%=1
600D%=VAL(MID$(T$,11,1))+RND(2)-2
610FORm%=1TOD%
620IF(ps%(n%)-D%+m%)MOD31=0K%=0
630NEXT
640FORm%=1TO30
650IFm%=n%GOTO670
660IFps%(n%)-D%=ps%(m%)K%=0:m%=30
670NEXT
680IFK%=0VDU7:B%=1:ENDPROC
690ps%(n%)=ps%(n%)-D%
700MOVEI%MOD31*40+24,I%DIV31*40+174:PR
INTFNsp(T$,n%)
710MOVEFNx(n%),FNy(n%):PRINTFNsp(T$,n%
)
720I%=ps%(n%):E%=E%-(D%*40):B%=1
730ENDPROC
740DEFPROCmi
750IFC%=1ENDPROC
760IFL%>19ENDPROC
```

Amstrad Alert

SUNSHINE

If you're the owner of an Amstrad CPC 464 or 664 micro and would like to learn more about either machine code programming or musical applications, then send off for one of these exciting new Sunshine books today.

Ian Waugh has written **Making Music on the Amstrad CPC 464 & 664** to show you how to take full advantage of the excellent sound facilities of the Amstrad. These include no less than three sound channels and the ability to program your own volume and tone envelopes into the sound generator — you can produce sound effects, drum kits and even program your Amstrad to write its own compositions following the rules you give it. And if you can't face typing in the longer programs, there's a cassette available with all the program listings on it.

With machine code you can really get your Amstrad working. In **Master Machine Code on your Amstrad CPC 464 & 664** Jeff Naylor and Diane Rogers how to begin to program in machine code, building up to the development of a complete database program which illustrates most of the relevant machine code techniques. There's a chapter on adding your own custom-made commands to Locomotive BASIC, and the authors show you how to make the best use of the excellent firmware routines in the Amstrad ROM.

Send off today and see a new side of your Amstrad.

Please send me

_____ copies of Master Machine Code on your Amstrad @ £6.95

_____ copies of Making Music on the Amstrad @ £6.95

_____ copies of cassette for Making Music on the Amstrad @ £5.95

☐ I enclose a cheque/postal order for £_____ payable to Scot Books Limited

☐ Please charge my Visa/Access card no._____

valid from_____ expires end:_____

Signed:_____

Name:_____

Address:_____

Send to: Sunshine Books, 12-13 Little Newport Street, London WC2H 7PP.

MICRO MAIL

53 FENNEL STREET
MANCHESTER M4 3DU
TEL: 061 834 5780

AMSTRAD

	RRP	OUR PRICE
CPC 6128 – Colour	£399	£379
CPC 6128 – Green	£299	£284
PCW 8256	£459	£439
PCW 8512 – NOW IN STOCK	£574	£549
RS 232 for 464/664/6128	£49.95	£44.95
RS 232 for PCW 8256/8512	£69.95	£59.95
DMP 2000 – NOW IN STOCK	£159.95	£149.95
SSA1 Speech Synthesiser	£29.95	£26.95
MP2 – Modulator	£29.95	£26.95
JY2 – Joystick	£14.50	£12.50
Modem –	£136.85	£126.00
PCW 8256 Modem & Sage Software	£189.95	£172.00
	each	Box of 10
CF2 3" Discs	£3.99	£37.50
	each	Box of 10
CF200 3" Discs – NOW IN STOCK	£5.99	£55.00
FDI – 2nd Disc Drive	£89.95	£84.95
DDI – Disc Drive	£159.95	£149.95

AMSTRAD CPC6128/PCW 8256/ PCW 8512 SOFTWARE

Personal Assistant	£94.95	Touch 'n' Go	£24.95
Pocket Wordstar	£99.95	Mastercalc 128	£34.95
(please state whether for 6128 or 8256)		Pyradev	£29.95
Flexifile/Flexiwrite	£49.95	Protext	£26.95
Supercalc 2	£49.95	Promerge	£24.95
3D Clock Chess	£19.95	Prospell	£24.95

SHOWROOM NOW OPEN

Name: .....

Adress: .....

.....

.....

SAGESOFT			**CAMSOFT**
Pop. Accounts	£99.99	ALL	Stock Control £49.95
Pop. Accounts/ Payroll	£149.95		Payroll £49.95
Pop. Accounts Plus	£149.95		Invoicing £49.95
Payroll	£69.95	LESS	Database £49.95
Invoicing/Stock Control	£69.95		PSIS Stock, Inv. & Sales £99.95
Database	£69.95		PSIL Stock, Inv., Sales, Pur, Nom. £149.95
Chit Chat E. Mail	£69.95	10%	**CAXTON**
Chit Chat Viewdata	£69.95	DISCOUNT	Cardbox £99.99
Magic Filer	£69.95		Scratchpad Plus £69.95
Retrieve	£69.95		Brainstorm £49.95
Accounts Super Combo	£199.95		Touch 'N' Go £24.95
HISOFT			Smartkey £49.95
Pascal 80	£39.95		**DIGITAL RESEARCH**
Devpac 80	£39.95		DR Draw £49.95
"C"	£39.95		DR Graph £49.95
			Basic Compiler £49.95
			Pascal MT+ £49.95

Keyboard Tutor	£24.95	Printer Extension Cable 8256/8512	£12.95
Pocket Cash Trader	£99.95	Covers	
Masterfile II	£33.00	8256/8512 set	£12.95
Microfile/ Microword	£49.95	6128 set	£12.95
Bridge Player	£19.95	464 set	£12.95
Hitch Hikers' Guide to the galaxy	£28.95	256K Expansion kit for 8256	£49.95

ALL DISC GAMES LESS 10% OFF RRP.
JUST SEND YOUR CHEQUE OR P.O. WITH A NOTE STATING WHICH TITLE YOU WANT.

Post and Packing: ***FREE.*** **ALL** Computers ADD £6 for value **UNDER £250**
All payments cheque or P.O. to: **I M PRIESTLY**
ALL PRICES INCLUSIVE OF VAT

Acess/Barclaycard No.

Signature: .....

With Kenn Garroch

Three Amstrad queries

P J Long of Bedminster, in Bristol writes:

Q Firstly, can I use an Amstrad 464 with a 6128 monitor by ignoring the disc lead?

Secondly, I read an article that said the Commodore 64 disc drive is sure to break because the protection on the disc hits the reading head, in time pushing it out of position. Is this true of the Amstrad disc drive?

Thirdly, bearing in mind that I would like to stay with Amstrad, would you recommend that an upgrade to the 6128 is a good move with a view to the future?

A Three questions in one, eh? Well, here goes.

Firstly, yes you can use the Amstrad CPC 464 with the CPC 6128's monitor as both the green screen and colour monitors have the RGB Din and power leads coming out of them. With regard to your last question, if funds allow, it may be an idea to obtain a colour (if you have green screen) or green screen (if you have colour) monitor with the upgrade, to give you the best of the Amstrad for both business and pleasure.

Secondly, the nasty 'Brrdddd' that the Commodore disc drive makes when it comes across protection may put it out of line eventually but it will take a while. As far as I know, at the moment, protection routines and disc drives for the Amstrad drives work in a different way to those of the Commodore and don't do nasty things to the drive.

Thirdly, what you will have to consider when upgrading with the Amstrad is what you are upgrading for. If you want to use some of the business packages then you may need to consider the 8256 or 8512 machines. If it's just for games and faster loading times, the 6128 is the better bet. Bear in mind that three weeks into August should see the launch of Amstrad's IBM PC which should be quite cheap. There is a lot of software available for PC clones (if they are truly compatible) both business and games so you might want to wait and see.

Communications via VIA chips

S Hughes, of Llandudno, in N. Wales, writes:

Q I have a BBC micro, and i want to connect it to the outside world by means of the VIA chip in the user port. There are a number of registers only some of which I know enough about to use (see page 437 of the user guide). Could you give me some more information on the 6522 VIA chip and what the various registers do.

A On the BBC, the 6522 is situated at FE60-FE6F giving access to all 15 of its internal registers. To perform simple I/O, only port B and its controls need be used. If you want to use the chip to its fullest extent, you'll need to get a book on the subject (there's not enough space here to detail the complex workings of all the various registers). The basic port B controls are:

Reg 0&FE60: I/O register B, can be written to or read, depending on the contents of data direction register B (DDRB). Simply *V= ?&FE60* or *?&FE= 192.*

Reg2&FE62: DDRB, sets the direction of I/O port B. Bits set to *1* denote output, *0* is input. The lines on port B can be a selection of both input and output, eg, *?&FE62= 15* sets the bottom four lines for output, the top four for input.

Page 503 of the user guide shows the pin connections for the user port. All you need to do is buy the appropriate connector and some prototyping board (Maplin and Tandy both sell this; it allows wires and components to be plugged in, taken out, tested etc). the main thing to watch out for when experimenting is that you don't connect the 5V output line of the BBC to ground. this blows one of the BBC's internal fuses.

For more information of the 6522 VIA in conjunction with the BBC, get a copy of the *Advanced User Guide for the BBC Micro,* (publishers' details to come).

Disassembler on the BBC

D Charles of Cardiff, in S. Wales, writes:

Q For some time now, I have been wanting to write a machine code disassembler for my BBC micro. Could you give me some hints on how to go about it? I understand and know how to use the assembler so machine code is not too much of a problem.

A Since speed is not really a problem with a disassembler, its easier to write it in Basic. The first thing to notice about 6502 machine code is that each instruction has its own particular identifying number eg CPM #10 is C9 (hex). A disassembler program needs to know the addressing mode as well as the mnemonics and their value, since this then tells it how many bytes need to be extracted from the code being disassembled, eg LDA &1234 extracts three bytes. The first is the opcode &AD (defines LDA Absolute) the following two give the address in low byte, high byte format. So, the code the disassembler would see is: AD3412.

A simple method to do this would be to create a string array 255 long (one for each of the 256 possible mnemonics plus invalid instructions, use ERR or INV) and a corresponding numeric array with a code for the addressing mode. The disassembler would then look at the first byte and get the mnemonic from the string array. Then, from the numeric array, extract a code which can be used to jump to a subroutine to extract the address and format the output to the screen. The subroutines you will need are, one for each addressing mode ie Immediate, Zero page, Zero page X, Absolute, Absolute X, Absolute Y, (Indirect X), and (Indirect Y). In addition, you will need a routine for branches (and extra here would be to put labels in the output).

One thing to be aware of is that if you start the disassembler in a random position, say in the middle of data, the output will not make a great deal of sense and you will get either a number of invalid codes, or gibberish. There are a number of books that will provide the appropriate descriptions, values, addressing modes etc for 65402, one such being 6502 User's manual by Joseph J Carr from Prentice Hall. I hope there is enough information here to enable you to get to get a bit further with your program.

By the way, the same method can be used for any microprocessor so if you need a disassembler for the Z80, just follow the same system, it's only a little more complex.

Muddled by MUD

M Saunders, of Cannock, Staffs writes:

Q I have just obtained a modem for my computer and have heard about an adventure called the Multi User Dungeon. Could you give me details on how to get in touch with it, and how much it costs.'

A MUD is run by a department of British Telecom called New Information Services. You can have a quick go on MUD by dialling 01-997 9433 for 300/300 baud modems, or 01-998 8899 for 1200/75. When the system asks you for your identity, type in MUDGUEST and then enter the password PROSPECT. The system is only available from 1800 to 0750 hours which is, perhaps, a vain attempt to help you keep your telephone charges down. It costs about £1.75 an hour to play and there is a joining fee as well. There are occasionally special offers on this fee. If you want to join, write to MUSE Ltd, 6 Albermarle Way, London EC1V.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW,* 12-13 Little Newport Street, London WC2R 3LD

CUT PRICE SOFTWARE

(Under New Management) (new Fast Service) (New Price Structure)

SPECTRUM	RRP	OUR
The Hobbit	9.95	7.25
Theatre Europe	9.95	7.25
Green Beret	7.95	5.50
Kung Fu Master	7.95	5.50
Big Cave Adventure	7.95	5.50
Bomb Jack	7.95	5.50
Bobby Bearing	7.95	5.50
R.M.S. Titanic	9.95	6.95
Price of Magick	9.95	6.95
Pentagram	9.95	6.95
Jack the Nipper	7.95	5.95
Laser Genius	14.95	10.95
Sold A Million II	9.95	6.95
Ghost N Goblins	7.95	5.50
Ace	9.95	7.25
Heavy on the Magick	9.95	6.95
Atlantic Challenge	7.95	5.50
Dan Dare	9.95	6.50
Toadrunner	8.95	6.50
Pyracurse	9.95	6.95
Batman	7.95	5.50
Turbo Esprit	8.95	6.50
Quazatron	8.95	6.50
Sam Fox	8.95	6.50

COMM 64/128	CASS	DISK
Infiltrator	7.25	10.95
Bombjack	6.95	10.00
Solo Flight +	8.95	11.95
Floyd The Droid	7.25	N/A
Ghost & Goblins	6.95	N/A
Sold a Million II	6.90	10.00
Touchdown F/Ball	7.25	N/A
Atlantic Challenge	6.50	N/A
Mercenary 2	5.00	7.25
Silent Service	6.95	10.95
Sam Fox	6.50	9.50
Expert Cartridge 2		26.95
Hunchback Advent	6.60	N/A
Pal Trading	6.95	10.95
Price of Magick	6.95	N/A
Ex Fist 2	6.95	10.95
Knight Games	6.50	9.95
Way of the Tiger	7.25	10.95
Golf Construction	9.95	11.95
Green Beret	6.50	10.00
Leaderboard	6.95	10.95
Knights Desert	7.25	10.95
Trap	6.95	N/A
The Boggit	5.50	N/A

AMSTRAD	CASS	DISK
Jack the Nipper	6.50	N/A
Batman (8256/8512)	N/A	11.95
Transact	5.99	N/A
Shogun	6.95	10.95
Invostat	5.99	N/A
Green Beret	6.50	10.00
Sam Fox	6.50	9.95
Way of the Tiger	6.95	10.95
Elite	11.00	17.00
Sold A Million 2	6.95	10.00
Alien Highway	6.50	9.50
Mini Office 2	12.95	14.95
Room 10	5.50	N/A
Bomb Jack	6.95	N/A
Monopoly	6.95	10.95
Scrabble	6.95	10.95
Atlantic Chall.	6.50	N/A
Winter Games	6.95	10.95
Tau Ceti	6.95	10.95
Heavy on Magick	6.95	10.95
Batman	6.50	9.95
Toadrunner	6.50	N/A
'V'	6.50	N/A
Price Magick	6.95	N/A

Full range of Mastertronics and Firebird budget range now available. Amstrad blank disks. £36.95 per box of 10. This is just a small selection from our stocks, please ring for more details. *P&P included. Overseas orders add 75p per tape. For Mail Order please send Cheques/PO payable to CPS Visa/Access Card orders by phone welcome, to:*

CUT PRICE SOFTWARE, (Dept L) Unit 6, Stort House
Riverway, Harlow, Essex, CM20 2DW
Tel: (0279) 24433 (24hr Ansaphone) Or 31956 During Office Hours

31D901

GOEL COMPUTER SERVICES

45 BOSTON ROAD, LONDON W7 3SH Tel: 01 579 6133

SPECTRUM		
Cauldron II	8.99	6.60
Pentagram	9.95	7.00
The Worm in Paradise	9.95	7.50
Turbo Esprit	8.95	6.50
The Comet Game	7.95	5.70
Ghost 'n' Goblins	7.95	5.70
Batman	7.95	5.70
I.C.U.P.S.	8.95	6.50
Vaction	7.95	5.70
Theatre Europe	9.95	7.10
Elite	14.95	10.25
Hi jack	9.99	7.10
Bounces	9.95	7.00
Siege on Volga	14.95	7.00
Kung Fu Master	9.95	7.00
Jack the Nipper	7.95	5.70
Biggles	9.95	7.00
Doomdark's Revenge	9.95	7.00
Robin of the Woods	9.95	7.00
Toad Runner	8.95	6.50
AMSTRAD		
Soccer 86	9.99	7.10
Saboteur	8.95	6.50
Kung Fu Master	9.95	7.20
Biggles	9.95	7.00
Quads	9.95	6.25
Runestone	7.95	5.70
Rambo	8.95	6.50
Elite	14.95	10.50
Music System	15.95	11.95
Shadowfire	9.95	7.00
Knight Games	8.95	6.60
Turbo Esprit	8.95	6.50
Jack the Nipper	8.95	6.60
COMMODORE 16/+4		
LEGIONAIRe	7.95	5.75
FRANK BRUNO BOXING	7.95	5.75
Bombjack	7.95	5.70
Hyperforce	6.95	5.20
Jet Set Willy	7.95	5.75
Saboteur	8.95	6.60
COMMODORE 64		
Silent Service	9.95	7.00
Green Beret	8.95	6.50
Shogun	9.95	7.00
Doomdark's Revenge	9.95	7.00
Empire	9.95	7.00
Ghost 'n' Goblins	9.95	7.00
Bombjack	9.95	7.00
Biggies	9.95	7.00
Knight Games	8.95	6.50
Way of the Tiger	9.95	7.00
Elite	14.95	10.25
I.C.U.P.S.	8.95	6.50
Bounces	9.95	7.00
Split Personalities	8.95	6.60
Floyd the Droid	9.95	7.50
Revs	14.95	10.50
Music System	14.95	10.50
Leaderboard	9.95	7.95
Solo Flight 2	9.95	7.00
MSX		
Lazy Jones	9.95	7.30
Mr Wong's Loopy Lndry	7.95	5.85
Ice King	6.95	6.00
Way of the Tiger	9.95	7.30
Way of Exploding Fist	9.95	7.30
APPLE II		
Elite	19.95	15.00
Legacy of Llylgamyn	36.00	28.50

COMPUTER REPAIRS ... 2 YEAR COVER FOR ANY BREAKDOWNS FROM £35 (SPECTRUM). OTHER MACHINES COVERED ARE COMMODORE 64/128, BBC, ELECTRON, AMSTRAD, APPLE IBM AND COMPAQ – WRITE FOR DETAILS.

This is just a small selection from our stock. Most titles can be supplied at discounts of 30% +. Just write the titles required with a second choice and enclose the RRP less 30% eg, £9.95 @ 7.00, £8.95 @ 6.50, £7.95 @ 5.70. All prices include delivery. Overseas orders add 75p per tape. Please send POs, cheques payable to Goel Computer Services, 45 Boston Road, London W7 3SH.

IF YOUR'RE LOCAL WHY NOT COME ALONG TO OUR SHOP, YOU CAN BE SURE OF FRIENDLY ASSISTANCE AND ADVICE. BRING THIS AD FOR DISCOUNT PRICES.

32PD304

ANCIENT & MODERN

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

SPECTRUM	RSP	A&M
GHOST AND GOBLINS	7.95	4.99
KUNG FU MASTER	7.95	4.99
GREEN BERET	7.95	4.99
THE BOGGIT	7.95	4.99
ANY FIREBIRD SILVER	1.99	1.60
GYRON	9.95	3.99
MANTRONIX	9.95	6.99
CAULDRON II	8.99	6.50
WORLD CUP CARNIVAL	9.95	5.50
SCRABBLE	14.99	4.99
WHO DARES WINS II	7.95	4.99
ZOIDS	7.95	3.99
HEAVY ON THE MAGICK	9.95	5.99
PRICE OF MAGIK	9.95	6.50
ARC OF YESSOD	7.95	2.99
EVERYONE'S A WALLY	9.95	2.99
HERBERT'S DUMMY RUN	9.95	2.99
BATTLE OF THE PLANETS	9.95	5.99
KILLER TOMATOES	7.95	4.50
STARQUAKE	7.95	2.99
FOURMOST ADVENTURES	7.95	4.99
IWO JIMA	7.95	3.99
BACK TO THE FUTURE	9.99	3.99
LASER GENIUS	14.95	9.99
GRAPHIC ADV. CREATOR	22.95	14.99

COMMODORE 64	rrp	disc
LEADER BOARD	9.50	9.99
GHOST & GOBLINS	6.90	N/A
GREEN BERET	6.50	9.99
SECOND CITY	4.50	7.99
MERCENARY	6.99	9.99
SILENT SERVICE	6.50	9.99
TIME TUNNEL	4.99	8.99
HARDBALL	4.99	8.99
OTHER US GOLD	5.99	9.99
CAULDRON II	6.25	N/A
RAMBO	4.99	N/A
SPLIT PERSONALITIES	5.99	N/A
LITTLE COMP PEOPLE	5.50	9.99
EIDOLON	5.50	9.99
GRAPHIC		ADV.
CREATOR	14.99	15.99
LASER BASIC	9.50	9.99
LASER COMPILER	11.99	16.00
OFF THE HOOK	6.99	6.99
AMSTRAD		
GREEN BERET	6.50	9.99
NEXUS	6.50	N/A
WORLD CUP CARNIVAL	5.50	9.99
THE MUSIC SYSTEM	9.99	13.99
GHOST & GOBLINS	6.90	9.99
MELBOURNE DRAW	10.99	15.99
WINTER SPORTS	6.99	9.99
TAU CETI	6.99	9.99

COMMODORE 16	rrp	A&M
MICRODEAL		
SUPERHITS	6.95	4.99
JET SET WILLY	7.95	4.99
WIMBLEDON	7.95	4.99
BERKS TRILOGY	6.95	4.50
THE HULK	7.99	2.99
SPIDERMAN	7.95	2.99
COMMANDO	7.95	3.99
SPACE PILOT	6.95	4.99
MXS		
YIE AR K. FU 1 or 2	14.95	9.50
NIGHTSHADE	9.95	5.99
THE BOSS	6.95	4.50
HYPERSPORTS 1 or 2	14.95	9.50
GUNFIGHT	9.95	5.99
MACADAM BUMPER	8.95	5.99
DATABASE	19.95	12.50
ATARI		
SECOND CITY	5.95	4.50
SMASH HITS 1, 2, 3, 4	9.95	6.99
AZTEC	9.95	6.99
ASYLUM	9.95	6.99
BALL BLAZER	9.99	5.99
WHIRLYNURDS	9.95	5.99
COHEN'S TOWERS	6.95	4.50

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

32PD1002

INTERNATIONAL KARATE

MSX – TAPE 7.95 AMSTRAD – TAPE – 7.95 DISC – 12.95

LIMITED AMOUNT SO PLEASE ORDER EARLY

SEND FOR AMSTRAD BUSINESS SOFTWARE LIST, ORDER EARLY TO AVOID DISAPPOINTMENT

FACULTY ENTERPRISES LTD
29 Rutland Court, Ponders End
Enfield, Middx EN3 4BJ 01-805 8054

32PD801

Evesham Micros

PRINTER OFFERS

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

SHINWA/MICRO P. CPA 80 +
NOW WITH NEAR LETTER QUALITY MODE

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

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

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

ONLY £189.95

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

PANASONIC KX P1080

Now available at a really competitive price. This printer has a R.R.P. of £245 + VAT. Features are, 100cps; Friction and tractor feed; easy access "dip switches"; easy change long life ribbon and superb switch selectable NLQ mode.

A sample of the impressive N.L.Q.
from the Panasonic KX P1080
N.L.Q. available in Elite (12cpi)
and italic modes.
Superb value from Evesham Micros
High quality from Panasonic
Two names you can trust

ONLY £199.95

Price includes Centronics lead to suit your micro.
Or to suit Spectrum with Kempston "E" Interface £219.95

SUMMER SPECIALS

ATARI 1040ST mono	£799.00	ATARI 1040ST colour	£999.00
(these prices INCLUDE VAT)			
ATARI 520STM c/w SF354 Disk Drive		£449.00	
FREE "THE PAWN" WITH ALL ATARI'S			

OPUS DISCOVERY 1	£114.95	SS/DD £11.95	DS/DD £14.95
CBM 128 computer	£229.95	or in plastic library case	
CBM 128 compendium pack	£279.95	SS/DD £12.95	DS/DD £15.95
CBM music pack	£149.95	3.5"3M DISCS (packs of ten)	
CBM MPS803 printer	£149.95	SS/DD £29.95	DS/DD £39.95
5.25" 3M DISCS (packs of ten)		3" DISCS (suit Amstrad)	
		BOX OF TEN	£39.00

STAR NL10

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

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

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

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

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

Locoscript Wordcount on Amstrad PCW

by Peter Worlock

The accompanying utility provides a simple word count for Locoscript files of up to 6,600 lines – about 100 pages.

The file to be checked should be saved in ASCII format (make a copy of the file because Locoscript will not reload ASCII files). You should then load and run Basic, followed by this program.

It recognises words by trailing spaces and tabs. Lines 180-220 do the checking, discounting double spaces and tabs, and blank lines.

Obviously it's a lot of hassle for short files but for longer documents, it saves time and is accurate to about one per cent.

The £ symbol on line 110 should be a # incidently.

```
10 FOR i = 1 TO 10: down$ = down$+CHR$(10): NEXT
20 home$ = CHR$(27)+"H"
30 cl$ = CHR$(27)+"E"+CHR$(27)+"H"
40 PRINT cl$
50 INPUT "Which file";file$
60 DIM word$(6600)
70 OPEN "i", 1, file$
80 entries = 0
90 WHILE NOT(EOF(1))
100 entries = entries + 1
110 INPUT £1, word$(entries)
120 WEND
130 CLOSE 1
140 words = 0
150 FOR i = 0 TO entries
160 IF LEN(word$(i)) = 0 THEN 250
170 FOR j = 1 TO LEN(word$(i))
180 t$ = MID$(word$(i),j,1)
190 t1$ = MID$(word$(i),j+1,1)
200 IF t$ < CHR$(33) AND t1$ < CHR$(33) THEN 220
210 IF t$ < CHR$(33) THEN words = words + 1
220 NEXT j
230 words = words + 1
240 PRINT home$ down$ "Total words = " words
250 NEXT i
```

Hires on C64

by David McGlynn

The following program when run and called via a *Sys 49152* command, will place the C64 into high resolution mode.

The screen starts at 8192 decimal or 2000 hex. It finishes at 16191 decimal or 3F3F hex.

To change the address of the screen just *Poke 49153, low byte of address*, and *Poke 49158, high byte of address*.

The screen colour can be changed from cyan to whatever you wish by using *Poke 49210, no 0-15* and *Poke 49227, name same number*.

```
20 REM *** HIRES (C) DAVID MCGLYNN ***
40 PRINTCHR$(147):Q=0
50 PRINT"ENTER SYS 49152 TO RUN CODE"
60 FORX=49152TO49238
70 READA:POKEX,A:Q=Q+A:NEXT
80 IFQ<>12613THENPRINT"■ERROR IN DATA"
90 END
100 DATA169,29,141,24,208,169,187,141,17
105 DATA208,169,0,133,252,169,32,133,253,160
110 DATA0,169,0,145,252,200,208,251,230
120 DATA253,165,253,201,63,208,239,160,0
130 DATA169,0,153,0,63,200,192,64,208,248
140 DATA169,0,133,252,169,4,133,253,160
150 DATA0,169,3,145,252,200,208,251,230
160 DATA253,165,253,201,7,208,239,160,0
170 DATA169,3,153,0,7,200,192,232,208,248
180 DATA96,0,0
```

Future Set on Amstrad

by Pete White

The following routine produces a futuristic character set which can easily be incorporated into your own programs. The characters are based on the Data 70 set which frequently crops up in films using 'computer print'.

```
30 SYMBOL AFTER 32
40 SYMBOL 65,126,66,66,126,98,98,98,0
50 SYMBOL 66,126,66,66,124,98,98,126,0
60 SYMBOL 67,126,64,64,96,96,96,126,0
70 SYMBOL 68,254,66,66,98,98,98,254,0
80 SYMBOL 69,126,64,64,120,96,96,126,0
90 SYMBOL 70,126,64,64,120,96,96,96,0
100 SYMBOL 71,126,64,64,102,98,98,126,0
110 SYMBOL 72,66,66,66,126,98,98,98,0
120 SYMBOL 73,60,16,16,24,24,24,60,0
130 SYMBOL 74,126,8,8,24,24,24,120,0
140 SYMBOL 75,68,68,68,120,100,100,100,0
150 SYMBOL 76,64,64,64,96,96,96,126,0
160 SYMBOL 77,126,74,74,98,98,98,98,0
170 SYMBOL 78,98,82,74,102,98,98,98,0
180 SYMBOL 79,126,66,66,98,98,98,126,0
190 SYMBOL 80,126,66,66,126,96,96,96,0
200 SYMBOL 81,126,66,66,98,98,106,126,4
210 SYMBOL 82,126,66,66,126,106,100,98,0
220 SYMBOL 83,126,64,64,126,6,6,126,0
230 SYMBOL 84,126,16,16,24,24,24,24,0
240 SYMBOL 85,66,66,66,98,98,98,126,0
250 SYMBOL 86,66,66,66,66,66,36,24,0
260 SYMBOL 87,66,66,66,98,106,106,126,0
270 SYMBOL 88,102,102,36,24,36,102,102,0
280 SYMBOL 89,66,66,126,16,24,24,24,0
290 SYMBOL 90,126,4,8,16,32,64,126,0
300 SYMBOL 97,0,0,126,6,126,70,126,0
310 SYMBOL 98,96,96,96,126,98,98,126,0
320 SYMBOL 99,0,0,126,96,96,96,126,0
330 SYMBOL 100,6,6,6,126,70,70,126,0
340 SYMBOL 101,0,0,126,98,126,96,126,0
350 SYMBOL 102,60,48,48,120,48,48,48,0
360 SYMBOL 103,0,0,126,70,70,126,6,126
370 SYMBOL 104,96,96,96,126,98,98,98,0
380 SYMBOL 105,24,0,24,24,24,24,24,0
390 SYMBOL 106,6,0,6,6,6,6,6,126
400 SYMBOL 107,96,96,102,108,120,108,102
,0
410 SYMBOL 108,24,24,24,24,24,24,24,0
420 SYMBOL 109,0,0,126,90,90,66,66,0
430 SYMBOL 110,0,0,108,114,98,98,98,0
440 SYMBOL 111,0,0,126,102,102,102,126,0
450 SYMBOL 112,0,0,126,98,98,126,96,96
460 SYMBOL 113,0,0,126,70,70,126,6,6
470 SYMBOL 114,0,0,108,114,96,96,96,0
480 SYMBOL 115,0,0,126,96,126,6,126,0
490 SYMBOL 116,24,62,24,24,24,24,30,0
500 SYMBOL 117,0,0,102,102,102,102,126,0
510 SYMBOL 118,0,0,102,102,102,60,24,0
520 SYMBOL 119,0,0,66,66,90,90,126,0
530 SYMBOL 120,0,0,198,104,16,104,198,0
540 SYMBOL 121,0,0,102,102,102,126,6,126
550 SYMBOL 122,0,0,126,12,24,48,126,0
560 SYMBOL 50,126,2,2,126,96,96,126,0
590 SYMBOL 51,126,2,2,30,6,6,126,0
600 SYMBOL 52,96,96,96,96,104,126,8,8
610 SYMBOL 53,126,64,126,6,6,6,126,0
620 SYMBOL 54,126,64,64,126,98,98,126,0
630 SYMBOL 55,126,2,4,62,16,32,64,0
640 SYMBOL 56,126,66,66,126,66,66,126,0
650 SYMBOL 57,126,66,66,126,6,6,6,0
660 SYMBOL 48,126,102,110,118,102,102,12
6,0
670 SYMBOL 95,0,255,0,0,0,0,0
```

Graph-ST

by Wail Sabbagh

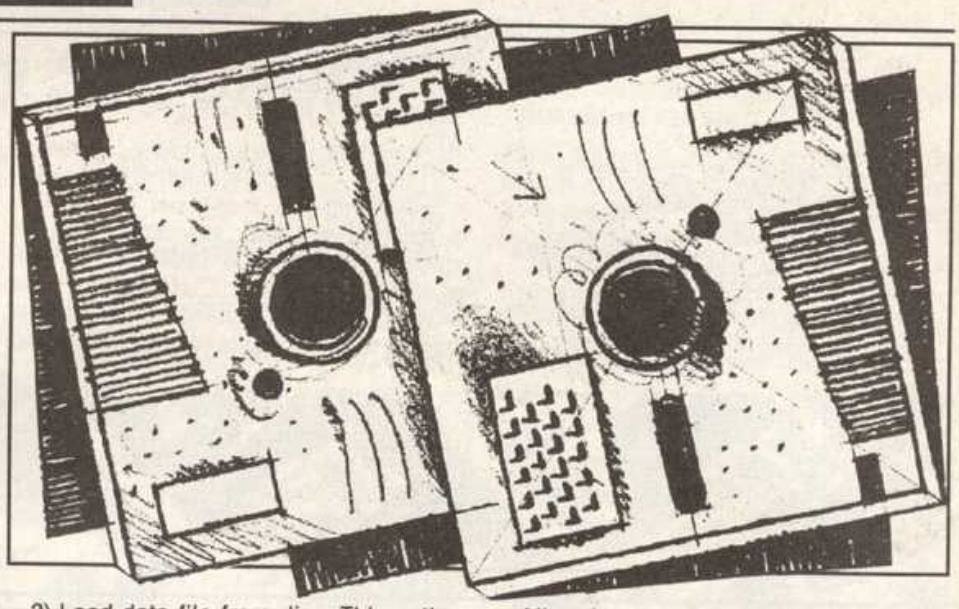
Here is part two of the three week Graph-ST listing plus instructions for using the data entry menu.

This menu is concerned with defining or loading the data file format, and offers the following options –

1) Define data from keyboard. This option must be selected by first time users as there is no data file yet stored on the disc. Once selected the following information is requested :

a) Number of blocks required (maximum of five). Each block can be analysed separately or with a combination of other blocks.

b) The name of each block.



2) Load data file from disc. This option loads a previously defined data file into memory.

All options are selected by clicking the mouse in the option box.

```
   3526  GOTOXY 2,4:PRINT STRING$(14+LEN(NAME
$(SL)),"-")
   3530  REM **FIND TOTALS**
   3540  EX=0:EX2=0:
   3550  FOR X=1 TO COUNTERX(SL)-1
   3560  EX=EX+ITEM(SL,X)
   3570  EX2=EX2+ITEM(SL,X)^2
   3590  NEXT X
   3600  GOTOXY 4,6:PRINT "NUMBER OF ITEMS
 ";COUNTERX(SL)-1
   3610  GOTOXY 4,7: PRINT "TOTAL OF ITEMS
 ";EX
   3620  XBAR=EX/(COUNTERX(SL)-1):GOTOXY 4,8:
PRINT "AVARAGE              ";XBAR
   3630  GOTOXY 4,9:PRINT "STANDARD DEVIATION
 ";SQR((EX2/(COUNTERX(SL)-1))-XBAR^2)
   3640  GOTOXY 4,10:PRINT "VARIANCE
 ";((EX2/(COUNTERX(SL)-1))-XBAR^2)
   3650  MAX=ITEM(SL,1):MIN=ITEM(SL,1)
   3660  FOR Y=1 TO COUNTERX(SL)-1
   3670  IF MAX<ITEM(SL,Y) THEN  MAX=ITEM(SL,
Y)
   3680  IF MIN>ITEM(SL,Y) THEN  MIN=ITEM(SL,
Y)
   3690  NEXT Y
   3700  GOTOXY 4,11:PRINT "MAX VALUE
 ";MAX
   3710  GOTOXY 4,12:PRINT "MIN VALUE
 ";MIN
   3720  X=90 :Y=260:L=450:H=50:GOSUB BOX
   3730  GOTOXY 7,16:PRINT "LEFT/RIGHT MOUSE
BUTTON FOR BLOCK SELECTER/MENU"
   3740  GOSUB 12000:IF BU=2 THEN GOTO MENU
   3750  IF BU=1 THEN GOTO ARITHMATIC
   3760  GOTO 3740
   4000  REM ************EDIT DATA IN BLOCK**
*********
   4010  CHANGE:GOSUB SELECT:CLEARW 2
   4020  IF COUNTERX(SL)-1=0 THEN ER$="NO DAT
A IN BLOCK SELECTED ":GOSUB REPORT
   4025  GOTO 4110
   4026  REVIEW:CLEARW 2
   4030  GOTOXY 0,0:PRINT ,,CHR$(3)" BLOCK: "
NAME$(SL);" " CHR$(4)
   4040  PRINT ,STRING$(45,CHR$(223)):FOR X=1
TO COUNTERX(SL)-1
   4050  PRINT USING "###|";X;:PRINT USING "-
######.##   |";ITEM(SL,X);
   4055  IF INT (X/60)=X/60 THEN GOSUB HITM:C
LEARW 2:GOTOXY 0,0
   4090  NEXT X:PRINT
   4100  PRINT:A$=CHR$(14)+CHR$(15):FOR Y=1 T
O 40:PRINT A$;:NEXT Y:GOSUB HITM
   4110  clearw 2:X=20:Y=40:H=250:L=570:GOSUB
 BOX :FILL 1,1
   4120  GOTOXY 16,3:PRINT "^^^EDIT^^^"
   4130  GOTOXY 15,4:PRINT STRING$(14,CHR$(22
3))
   4150  GOTOXY 8,7:PRINT CHR$(17)". ALTER VA
LUE(S)"
   4160  GOTOXY 8,8:PRINT CHR$(18)". CHANGE B
LOCK NAME"
   4170  GOTOXY 8,9:PRINT CHR$(19)". REVIEW B
LOCK DATA"
   4180  GOTOXY 8,10:PRINT CHR$(20)". EXIT ED
IT"
   4190  GOTOXY 12,13:INPUT"PLEASE ENTER YOUR
 CHOICE ":A$
   4200  IF VAL(A$)<1 OR VAL(A$)>4 THEN 4190
   4210  A=VAL(A$):IF A=4 THEN GOTO MENU
   4220  IF A=3 THEN GOTO REVIEW
   4230  IF A=2 THEN GOTO CNAME
   4240  CLEARW 2:X=45:Y=50:H=100:L=550:GOSUB
 BOX:FILL 1,1
   4250  GOTOXY 4,5 :PRINT "ENTER ITEM TO STA
RT CHANGE (1-"COUNTERX(SL)-1") ";
   4260  INPUT ".,";A$:A=INT(VAL(A$)):IF A<1
OR A> COUNTERX(SL)-1 THEN GOTO 4250
   4270  GOTOXY 4,3:PRINT "ITEM NUMBER ";A:
   4275  IF A=COUNTERX(SL) THEN ER$="ITEM VAL
UE IN EDIT OUT OF RANGE":GOTO REPORT
   4280  GOTOXY 4,5:PRINT "OLD VALUE: ";ITEM(
SL,A),:INPUT "NEW VALUE (#=EXIT)";B$
   4290  IF B$="#"THEN GOTO 4110
   4300  B=VAL(B$):ITEM(SL,A)=B:A=A+1:GOTOXY
4,5:PRINT SPACE$(64):GOTO 4270
   4400  CNAME:CLEARW 2:X=30:Y=50:H=180:L=550
:GOSUB BOX:FILL 1,1
   4410  GOTOXY 4,5:PRINT"OLD NAME :          "
;NAME$(SL)
   4420  GOTOXY 4,8:INPUT"NEW NAME :          "
,NAME$(SL)
   4430  GOTO 4110
   4900  HITM: GOTOXY 8,18:? ">>>>   HIT MOU
SE BUTTON   <<<<"
   4910  GOSUB 12000 :IF BU<>1 AND BU<>2 AND
BU<>3 THEN 4910
   4920  RETURN
   5000  REM***************ALTER RANGE*******
   2100  RATIO=(315/(MAX-MIN)):INK=INT(500/(M
AXCOUNT )):XCOR=10
   2110  FOR Y=RANGEX(X,1) TO RANGEX(X,2)-1
   2120  YCOR=315-ITEM(X,Y)*RATIO+14+MIN*RATI
O
   2130  YCOR2=315-ITEM(X,Y+1)*RATIO+14+MIN*R
ATIO
   2140  LINEF XCOR,YCOR,XCOR+INK,YCOR2
   2150  XCOR=XCOR+INK
   2160  NEXT Y:YCOR2=INT(YCOR2/16)-1:XCOR=IN
T(XCOR/16)-1:
   2162  IF YCOR2<0 THEN YCOR2=0
   2163  IF xcor <0 THEN xcor =0
   2165  GOTOXY XCor  ,YCOR2: PRINT CHR$(16+X
);
   2170  FINISH: NEXT X:
   2175  LINEF 2 ,315+14+MIN*RATIO,613,315+14
+MIN*RATIO
   2180  FOR X=10 TO MAXCOUNT*INK STEP INK
   2190  LINEF X,315+14+MIN*RATIO+2,X,315+14+
MIN*RATIO-2
   2195  NEXT X
   2200  FOR Y=INT(MIN) TO INT(MAX) STEP INT(
(MAX-MIN)/20)
   2210  LINEF 8,315-Y*RATIO+14+MIN*RATIO,12,
315-Y*RATIO+14+MIN*RATIO
   2220  NEXT Y
   2300  GOSUB 12000:IF BU=2 THEN GOTO MENU
   2310  IF BU=1 THEN GOTO LINEGRAPH
   2320  GOTO 2300
   3000  REM***************BAR CHART*******
************
   3010  BARCHART: GOSUB WHICH :GOSUB MAXMIN:
MAXCOUNT=MAXCOUNT+1
   3015  B=0:FOR G=1 TO BL:IF STATEX(G)=1 THE
N B=B+1
   3016  NEXT G
   3020  ER$="N":ZBL=0:FOR X=1 TO BL:IF STATE
X(X)=0 THEN ZBL=ZBL+1: GOTO 3050
   3030  IF COUNTERX(X)<3 THEN ER$="MORE THAN
 ONE VALUE NEEDED IN BLOCK TO PLOT"
```

```
   3040  IF (RANGEX(X,2)-RANGEX(X,1)) <1  THE
N ER$="INCORRECT BLOCK RANGE"
   3050  NEXT X:IF ZBL=BL THEN ER$="ALL BLOCK
S ARE OFF "
   3053  IF ER$<>"N" THEN GOTO REPORT
   3054  IF MAX=MIN THEN MAX=MIN+1
   3055  RATIO=260/(MAX-MIN)
   3060  CLEARW 2:X=10:Y=10:L=595:H=280:GOSUB
 BOX:COLOR 1,1,1,3.3:FILL 2,2
   3070  G=0:FOR X=1 TO BL:IF STATEX(X)=0 THE
N GOTO 8FINISH ELSE G=G+1
   3080  SIZE=INT(580/(MAXCOUNT)):DIF=INT(((2
2-B*2)*SIZE)/100)
   3090  XCOR=10+(9-B)*K:FOR   Y=RANGEX(X,1)
TO RANGEX(X,2)
   3095  IF ITEM(X,Y)=0 THEN GOTO 3160
   3100  HIGHT=260-ITEM(X,Y)*RATIO+18+RATIO*M
IN :RZERO=260+18
   3106  XCOR2=XCOR+SIZE/2:IF MIN<0 THEN RZER
O=RZERO+MIN*RATIO
   3107  IF G=1 THEN GOTO 3151
   3110  COLOR 1,0,0:FOR CO=XCOR2-DIF TO XCOR
2+DIF
   3118  LINEF CO-0 ,RZERO,CO-0,HIGHT
   3150  NEXT CO
   3151  COLOR 1,1,1,X
   3152  LINEF XCOR2-DIF,RZERO,XCOR2-DIF,HIGH
T
   3153  LINEF XCOR2-DIF,HIGHT,XCOR2+DIF,HIGH
T
   3154  LINEF XCOR2+DIF,HIGHT,XCOR2+DIF,RZER
O
   3155  LINEF XCOR2+DIF,RZERO,XCOR2-DIF,RZER
O:IF ABS(HIGHT-RZERO)<3 THEN 3160
   3156  IF ITEM(X,Y)<0 THEN FILL XCOR2,HIGHT
-2 ELSE FILL XCOR2,HIGHT+2
   3160  XCOR=XCOR+SIZE:NEXT Y
   3170  8FINISH: NEXT X
   3180  LINEF 10,RZERO,610,RZERO
   3190  FOR G=0 TO BL-1:X=G*120+10+G*08:FOR
Y=300 TO 323:COLOR 1,0,00
   3200  LINEF X,Y,X+70,Y:NEXT Y:COLOR 1,1,1,
G+1:Y=300:L=70:H=23:GOSUB BOX
   3210  FILL X+2,Y+2:
   3220  GOTOXY(G*15)/2+1,19:PRINT NAME$(G+1)
::NEXT G
   3300  GOSUB 12000:IF BU=2 THEN GOTO MENU
   3310  IF BU=1 THEN GOTO BARCHART
   3320  GOTO 3300
   3500  REM***************ARITHMATIC DATA O
PTION*****************
   3510  ARITHMATIC: GOSUB SELECT:CLEARW 2:X=
20:Y=20:H=290:L=580:GOSUB BOX:FILL 1,1
   3520  IF COUNTERX(SL)-1=0 THEN ER$="NO DAT
A IN BLOCK SELECTED ":GOSUB REPORT
   3525  GOTOXY 2,3:PRINT "NAME OF BLOCK "NAM
E$(SL)
```


Hi-res window on the C64

by Neil Kendall

The following subroutine will set up a high resolution window in the top third of the screen. This is useful for applications such as adventure games where text and graphics have to be displayed simultaneously. The hi-res memory is in the normal position of 8192 onwards and colour information is stored in screen memory 1024 onwards.

The machine code is initialised by using *Gosub 60000* and called by *Sys 49152*.

The size of the window can be altered by poking different numbers into location 49240.

```
60000 L=60020:FORI=49152TO49333:L=L+10
60005 T=0:FORJ=0TO5:READA:POKEI,A:T=T+A
60010 I=I+1:NEXTJ:READB
60015 IFT<>BTHENPRINT"ERROR IN ";L:STOP
60020 I=I-1:NEXTI:RETURN
60030 DATA76,115,192,173,25,208,789
60040 DATA24,106,144,46,169,255,744
60050 DATA141,25,208,169,223,45,811
60060 DATA17,208,141,17,208,169,760
60070 DATA247,45,24,208,141,24,689
60080 DATA208,169,0,141,18,208,744
60090 DATA169,127,45,17,208,141,707
60100 DATA17,208,120,169,59,141,714
60110 DATA20,3,169,192,141,21,546
60120 DATA3,88,76,49,234,173,623
60130 DATA25,208,24,106,144,246,753
60140 DATA169,255,141,25,208,169,967
60150 DATA32,13,17,208,141,17,428
60160 DATA208,169,8,13,24,208,630
60170 DATA141,24,208,169,120,141,803
60180 DATA18,208,169,127,45,17,584
60190 DATA208,141,17,208,120,169,863
60200 DATA3,141,20,3,169,192,528
60210 DATA141,21,3,88,76,49,378
60220 DATA234,173,14,220,41,254,936
60230 DATA141,14,220,120,169,3,667
60240 DATA141,20,3,169,192,141,666
60250 DATA21,3,88,169,255,141,677
60260 DATA25,208,169,1,141,26,570
60270 DATA208,169,147,32,210,255,1021
60280 DATA162,0,32,210,255,232,891
60290 DATA189,164,192,201,255,208,1209
60300 DATA245,96,17,17,17,17,409
60310 DATA17,17,17,17,17,17,102
60320 DATA17,17,17,17,17,255,340
60330 DATA120,169,49,141,20,3,502
```

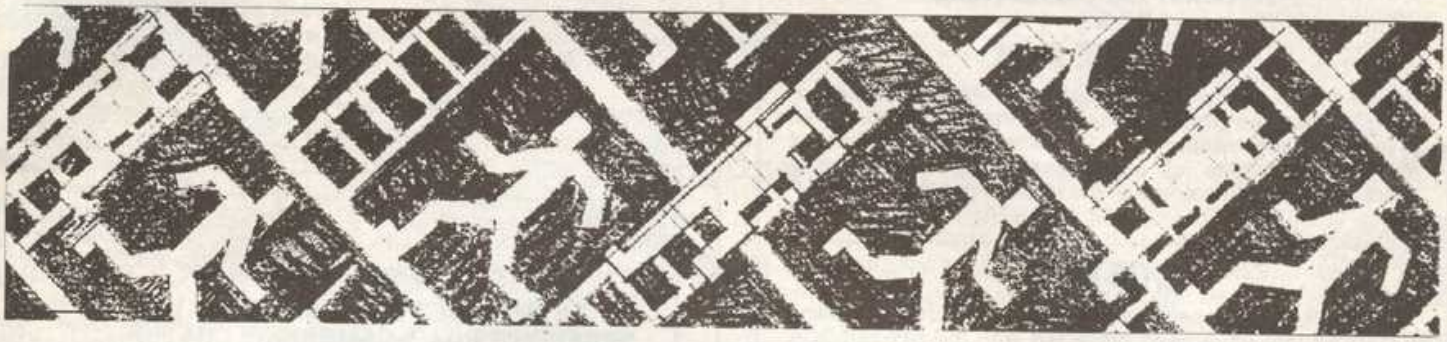
UXB game on Spectrum

by Ian Grainger

In this entertaining arcade style game you play the part of Dynamite Dave who has been hired by the local council to defuse the bombs in the YTS Training Centre. To do this you must collect the bombs, of which there are five on each floor of the building.

Over the ten floors are distributed a number of hazards, from the remains of previous defusees to a worm that appears after four levels. The worm can help as well as hinder because it leaves a block behind as it chases you around the screen. Also, gravestones pop up from time to time, just to confuse matters. Full instructions are given in the program which will be presented over three weeks.

Should you not feel up to the task of typing it all in then send £2 to Ian Grainger, 33 Wellfield Road, Wingate, County Durham TS28 5LA and he'll send you a copy.



```
  1 REM UXB
  2 REM Written by Ian Grainger
  3 REM (c) 1986
  4:
  9 REM Data for Graphics
 10 DATA 3,7,15,31,11,12,7,3,0,128,192,
224,64,192,128,0,31,63,71,135,31,56,48,9
6,224,240,136,132,224,112,48,24
 20 DATA 63,64,152,160,160,160,160,128,
248,4,242,10,10,2,2,2,128,128,160,160,15
8,64,63,0,10,10,10,10,50,4,248,0
 30 DATA 0,1,7,31,63,31,7,1,120,248,248
,24,120,56,120,248,0,0,0,0,0,0,0,0,120,8
,8,8,8,8,8,0
 40 DATA 7,31,49,49,59,30,15,4,224,248,
140,140,220,120,240,32,198,227,252,63,31
,252,240,192,99,199,63,252,240,63,15,3
 50 DATA 3,12,49,65,163,79,159,44,0,128
,128,128,192,240,248,92,165,45,45,37,31,
15,3,0,76,92,92,76,248,240,192,0
 60 DATA 1,7,31,63,63,99,109,237,128,22
4,248,252,252,70,90,91,227,237,237,237,2
55,255,255,255,71,95,95,95,255,255,255,2
55
 70 DATA 63,127,110,123,63,15,31,31,128
,192,192,192,128,0,0,0,31,31,15,15,7,3,0
,0,0,134,195,225,255,254,252,56
 79 REM Data for machine code
 80 DATA 58,72,92,33,0,88,119,17,1,88,1
,255,2,237,176,50,143,92,50,141,92,22,12
7,6,8,197,33,0,64,1,0,24,126,162,119,35,
11,120,177,32,247,122,15,87,193,16,234,2
01
 90 DATA 33,0,232,17,0,64,1,0,16,237,17
6,33,0,248,17,0,88,1,0,2,237,176,201,33,
0,64,17,0,232,1,0,16,237,176,33,0,88,17,
0,248,1,0,2,237,176,201
 99 REM Set up graphics
100 CLEAR 59391
105 PAPER 0: BORDER 0: CLS : LET p=5: L
ET p1=0: LET i=1: LET ti=7: LET x=0: LET
 y=10: LET a$="SETTING UP GRAPHICS- PLEA
SE WAIT": GO SUB 9000
110 RESTORE : FOR f=USR "a" TO USR "t"+
7: READ a: POKE f,a: BEEP .001,40: NEXT
f
120 FOR f=15608 TO 16383: POKE f+48896,
PEEK f: BEEP .001,40: NEXT f
130 RESTORE 60: FOR f=64256+(37*8) TO 6
4256+(44*8)+7: READ a: POKE f,a: BEEP .0
01,40: NEXT f
140 RESTORE 80: FOR f=64200 TO 64247: R
EAD a: POKE f,a: NEXT f
150 RESTORE 90: FOR f=64100 TO 64145: R
EAD a: POKE f,a: NEXT f
160 POKE 23607,251
170 POKE 23658,0
180 DATA "ROW","RAM","CPU": RESTORE 180
: DIM h(3): DIM h$(3,3): FOR f=1 TO 3: R
EAD h$(f): LET h(f)=(4-f)*5000: NEXT f
200 REM Main loop
210 GO SUB 1000
220 GO SUB 2000
225 GO SUB 2030
226 IF le>10 THEN  GO TO 6110
230 PAPER 1: BORDER 1: INK 6: CLS : PRI
NT AT 10,12;"LEVEL "; INK 5;le
240 GO SUB 4000: RANDOMIZE USR 64200
250 PAPER 0: BORDER 0: INK 7: CLS
260 IF PEEK 59392=0 THEN  GO SUB 3000:
GO TO 280
270 RANDOMIZE USR 64100
280 GO SUB 5000
290 GO SUB 6000
291 IF le>3 THEN  GO SUB 8900
300 LET x=INT (RND*16)+1: LET y=INT (RN
D*8)+1: IF b(x,y)<>1 THEN  GO TO 300
310 LET b(x,y)=0: PRINT AT (y-1)*2,(x-1
)*2; INK 5;"  ";AT (y-1)*2+1,(x-1)*2;"
  "
315 IF bo=0 THEN  LET le=le+1: LET sc=s
c+500: LET di=di-1: GO TO 225
320 REM movement
330 BEEP .01,10: BEEP .01,12
335 LET ti=ti+1: IF ti/di=INT (ti/di) T
HEN  GO SUB 5900: IF le>3 THEN  GO SUB 7
500: GO SUB 8910
337 IF lost=2 THEN  GO TO 405
338 IF lost=1 THEN  GO TO 400
340 IF INKEY$="" THEN  GO TO 335
345 LET ti=ti+1: IF ti/di=INT (ti/di) T
HEN  GO SUB 5900: IF le>3 THEN  GO SUB 7
500: GO SUB 8910
350 IF INKEY$="q" THEN  LET x1=x: LET y
1=y-1: GO SUB 7000: GO TO 400
360 IF INKEY$="a" THEN  LET x1=x: LET y
1=y+1: GO SUB 7000: GO TO 400
370 IF INKEY$="o" THEN  LET x1=x-1: LET
 y1=y: GO SUB 7000: GO TO 400
380 IF INKEY$="p" THEN  LET x1=x+1: LET
 y1=y: GO SUB 7000: GO TO 400
390 IF INKEY$="m" THEN  LET x1=x: LET y
1=y: GO SUB 7050: GO TO 300
400 IF lost=1 THEN  LET lost=0: GO SUB
9000: GO SUB 5005
405 IF lost=2 THEN  LET lost=0: GO SUB
8000: GO SUB 5005: IF li>0 THEN  GO TO 2
91
410 IF li=0 THEN  GO SUB 4060: GO TO 50
0
420 GO TO 310
499 REM Flag row and high score
500 LET pos=0: FOR f=1 TO 3: IF sc>h(f)
 THEN  LET pos=f: RANDOMIZE USR 64200: G
O TO 520
510 NEXT f: GO TO 640
520 FOR f=2 TO pos STEP -1: LET h(f+1)=
h(f): LET h$(f+1)=h$(f): NEXT f
530 LET p=6: LET p1=0: LET i=1: LET ti=
7: LET x=0: LET y=0: LET a$="Please ente
r  your initials intotodays flag ceremon
y. Use keys:-O- Left    P- Right    M- S
elect": GO SUB 9000
540 LET p=1: LET p1=0: LET i=6: LET ti=
7: LET x=0: LET y=9: LET a$=" ABCDEFGHIJ
KLMNOPQRSTUVWXYZ .!: ": GO SUB 9000
```

CLASSIFIED

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

CALL RODNEY WOODLEY on *01-437 4343* FOR SEMI/DISPLAY ADVERTISING

SOFTWARE

GOLDMARK SYSTEMS
SOFTWARE FOR THE AMSTRAD

LORD OF THE RINGS

Side 1 of our conversion cassette will AUTOMATICALLY transfer the three games to disc including the screen. Side 2 is for NON-DISC owners and will reduce the loading time of around 15 mins, to just under 3 mins. This program is extremely useful if you are in the habit of getting killed!

cassette **£4.00**

SPEED-TRANS

SPEED-TRANS is specifically designed to transfer many programs that have been protected with the SPEEDLOCK protection system. Contains full instructions to convert to disc.

cassette **£5.50**

VIEWTEXT

This utility will allow you to see the text in a BINARY file. It is particularly useful for games that require passwords (EG Hacker and other adventure games). This utility is TRANSMATTABLE to disc.

cassette **£3.00**

WHY WAIT AGES FOR YOUR PROGRAMS TO LOAD – let us help you to convert them to disc. Please telephone or write for further information and other services we offer (large SAE appreciated).

UK prices shown. EUROPE add £1.00 per title. REST OF WORLD add £1.50 per title. We accept EUROCHEQUES. Please make your cheque payable in sterling.

GOLDMARK SYSTEMS, 51 Comet Road, Hatfield, Herts. AL10 0SY, England. Tel: 07072 71529. up to 9pm.

30PL5

FOR SALE

BLANK CASSETTES

WITH LIBRARY CASES	C10	C15	C20	C30
10	3.80	4.00	4.15	4.60
20	7.00	7.20	7.40	8.20
50	15.00	15.20	15.90	17.50
100	27.00	28.00	29.00	33.00

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

DISKS

10 5¼ DS/DD £8
inc plastic case
10 3½ SS/DD £25

MEMOTECH COMPUTERS

MTX 512 COMPUTER	£75.00
DMX 80 PRINTER	£150.00
RS232	£35.00
PASCAL ROM	£35.00
SPECULATOR ROM	£35.00
½ mb. DISK DRIVE & INTERFACE	£150.00
1 mb. DISK DRIVE & INTERFACE	£210.00

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

UK HOME COMPUTERS
82 CHURCHWARD AVE SWINDON WILTS. SN2 1NH
24-hr Phone Service 0793 695034 31PL27

CHERZON SOFTWARE
Dept. 407, 605 Loughborough Road Birstall LEICESTER LE4 4NJ
CATLOADER one key, self-maintaining loader menu to dramatically simplify Microdrive use. Plus SAVE-IT!, AUTODRAW and TIMECOUNT all on one tape.
SUPERPRINT smart, new double-width, double-height character set (16 × 16 boxes). Plus INPUT anywhere routine, RENUMBER, plus SCOPY m/c screen dump for I/Face 1. Four routines on one tape. 'No Quibble' refund if dissatisfied. SAE brings details.
£3.50 each 30PL6

DISCS

AMSOFT 3" CF2	£32.00 PER 10
AMSOFT 3" CF2DD	£59.50 PER 10
AMSOFT 3" CF2	£17.35 PER 5
SONY 3½" SSDD	£26.25 PER 10
SONY 3½" DSDD	£35.12 PER 10
MAXEL 5¼" MD2D	£17.90 PER 10
ATHANA 5¼" DSDD	£10.90 PER 10
DMP 2000 PRINTER	£139
PACK & POST INC. ADD 15% VAT	25PL2

RUGBY MICRO SPARES
30 OXFORD ST RUGBY
CV21 3NF. (0788) 71643
Callers welcome by App.

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 BROKEN

Have it repaired and working again at a fixed price. The price is inclusive of parts, labour, P+P, VAT and return postage.

SPECTRUM/PLUS	£16.95
QL	£34.95
AMSTRAD 464/664	£34.95
BBC (A OR B)	£29.95
ELECTRON	£24.95
COMMODORE 64 (NOT PSU)	£29.95
C64, VIC 20, PSU (EXCHANGE)	£29.95

Please send computer with cheque or postal order to:

MICRO:MEND
The Old School, Main Street, FARCET, Peterborough PE7 3DB.
Telephone: (0733) 241718

28PD10

AB COMPUTERS & ELECTRONICS

★CHEAP COMPUTER REPAIRS (FROM £12)★
BBC, AMSTRADS, COMMODORES etc
3 MONTHS WARRANTY GIVEN ON REPLACED PARTS

WE ALSO SUPPLY HARDWARE & SOFTWARE

IBM/NEC PC's & COMPATIBLES

CALL US ON 01-568 7149
(we are next to Osterley Park on the A4) 31PL29

173 THORNBURY ROAD. OSTERLEY.
ISLEWORTH. MIDDLESEX TW7 4QG.
Telex 946240 EASY TO 19200 8215

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 COMUTERS FOR HIRE
COMPUTER HIRE SERVICES, 294A CALEDONIAN RD, LONDON N1 1BA. 23PL17

66% OFF
PRINTER RIBBONS

Why pay £££s for a *new* fabric ribbon cassette when we can re-ink your old one at a THIRD OF THE PRICE?
Post cassette, stating printer make and model and enclosing one third of the price of a new one (minimum £1), to:

ALADDINK, (Dept. PC),
4 Hurkur Crescent, Eyemouth,
Berwickshire TD14 5AP 27PL01

YOUR PERSONAL CENTRONICS PRINTER

- *DRAFT DOT MATRIX*
- *NEAR LETTER QUALITY*
- *SUBSCRIPT SUPERSCRIPT*
- *CONDENSE EMPHASIZE*
- *96 CHAR+48 EURO+16 MATHS*
- *EPSON/IBM GRAPHICS*
- *OPTIONAL TRACTOR*

ROCK HALL LIMITED
128 STATION RD. GLENFIELD
LEICESTER LE3 8BR.
TEL: 0533 313531.
TELEX: 341100.

24 HOUR COMPUTER REPAIRS and COMPUTER SPARES

HOW TO GET YOUR SPECTRUM REPAIRED FOR ONLY £19.95

SPECIAL OFFER!

Why not upgrade your ordinary Spectrum into the fantastic DK Tronics typewriter keyboard for only £31.50 including fitting, VAT and return post and packing. Normal recommended retail price £49.95. Replacement printed DK Tronics key sets £7.50 including post & packing.

SPECIAL OFFER!

Why not upgrade your 16K Spectrum to a 48K for as little as £17.95 including VAT, post and packing. If you would like us to fit the kit for you, just send us £19.95 which is a fully inclusive price to cover all costs including return postage. Full fitting instructions supplied with every kit. Issue 2 and 3 only.

16K to 48K UPGRADE KIT

SPARES FROM OUR D.I.Y. SECTION

WHY NOT PURCHASE THE SPARES FOR YOUR COMPUTERS FROM US. THE ONLY MAIL ORDER COMPANY SELLING SPECTRUM SPARES. Same day despatch service on receipt of orders. You can order by Access card or call at our Reception to collect.

TRADE REPAIRS most welcome

TEN ★ REPAIR SERVICE

- ★ While you wait service including computer spare parts over the counter.
- ★ All computers fully overhauled and fully tested before return.
- ★ Fully insured for the return journey.
- ★ Fixed low price of £19.95 including post, packing and VAT. (Not a between price of really up to £30.00 which some of our competitors are quoting).
- ★ Discounts for schools and colleges.
- ★ Five top games worth £33.00 for you to enjoy and play with every Spectrum repair.
- ★ We repair Commodore 64's, Vic 20's, Commodore 16's and Plus 4's.
- ★ The most up to date test equipment developed by us to fully test and find all faults within your computer.
- ★ Keyboard repairs. Spectrum rubber key boards only £8.95.
- ★ 3 month written guarantee on all repairs.

BEST SERVICE – BEST PRICES!

EXTENSION RIBBON

56 Way ribbon cable to extend your ports for your peripherals **£10.95** plus £1.50 p & p

TRADE ORDERS WELCOME

KEYBOARD TEMPLATES **£5.50** plus £1.50 p & p

RUBBER MAT **£6.50** plus £1.50 p & p

ARE YOU ANOTHER CUSTOMER - fed up waiting weeks for your estimate?

Need your computer repaired fast? Then send it now to the **Number One Repair Company in the U.K.**, or call in and see us at our new fully equipped 2,500 square foot workshop, with all the **latest test equipment available**. You are more than welcome.

We will repair your computer while you wait and help you with any of your technical problems. Commodore computers repaired for only **£35.00**. Please note we give you a 100% **low fixed price** of **£19.95** which includes return post and packing, VAT, not a between price like some other Repair Companies offer. We don't **shock you** with repair bills **£30.00** upwards. We don't just repair the fault and send your computer back, we give your computer a:-

FREE OVERHAUL WITH EVERY REPAIR WE DO:-

We correct **Colour, Sound, Keyboard, Check the loading and saving chip**. Put new feet on the base if required, Check for full memory, Check all sockets including ear/mike and **replace where needed**. All for **an inclusive price of £19.95 including VAT, all parts, insurance and post and packing. No hidden extras whatsoever.** We don't have to boast too much about our service as we have thousands of customers from all over the world highly delighted with our service. A **first class reputation for speed and accuracy**. Don't forget, we are only **twenty minutes** from Manchester City Centre so why not call in, have a coffee with us and see your computer being repaired.

NEW

SPECIAL OFFER! Gun Shot II Rapid Fire Joystick and Interface complete outfit. Normal recommended retail price £19.95. If purchased together special offer of only **£16.50** including p & p. Joystick available as separate item **£10.95** plus interface available as separate item **£9.00** plus £1.50 p & p.

REPLACEMENT POWER SUPPLY

ZX81 SPARES NOW IN STOCK

Spectrum replacement power transformer suitable for all makes of computer £9.95 plus £1.50 p & p

KEYBOARD MEMBRANES

Spectrum keyboard membranes **£5.50** plus £1.50 p & p

Spectrum Plus spare keyboard membranes **£12.90** plus £1.50 p & p

ZX 81 membranes **£5.00** plus £1.50 p & p

COMMODORE POWER SUPPLY

Commodore replacement power transformer **£29.00** plus £1.50 p & p

VideoVault D.I.Y. CORNER

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

SPECTRUM SPARES

Z80B CPU	3.00
4116 Rams	1.00
ZTX 650	0.60
ZTX 213	0.60
Power Supply Transformers	9.95
ULA 6C001	16.50
All prices plus £1.50 Post and Packing	
Rom	16.50
Keyboard membrane Spectrum	5.50
Keyboard membrane Spectrum Plus membrane	12.90
Metal Templates	5.50
Keyboard Mats	5.50
ZX81 membrane	5.00
Service Manual	£30.00

COMMODORE SPARES

6526 – C.I.A.	23.00
6510 – Processor	23.00
6581 – Sid Chip	23.00
906114 – House Keeper	23.00
901225 – Graphic Rom	23.00
901226 – Basic Rom	23.00
901227 – Kernal Rom	23.00
6569 – VIC	23.00
4164 Rams – Memory	3.00
Power Supply Transformers	29.00

All our prices include VAT, but please add £1.50 on each order to cover post, packing and handling charges.

VIDEOVAULT HEALTH WARNING!!! Sending your computer to any other Repair Centre can seriously Damage its Health

FULLY REPAIRED AND TESTED ON MOST ADVANCED TEST EQUIPMENT IN EUROPE!

VideoVault Ltd.

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

MANCHESTER CITY CENTRE BRANCH NOW OPEN. CALL FOR DETAILS

ORDER NOW!

SPECIAL OFFER 5 GREAT FREE GAMES NORMAL RECOMMENDED RETAIL PRICE £33.00 YOURS FREE WITH EVERY SPECTRUM REPAIR

© Copyright Videovault Ltd. No. 150786

LONDON COMPUTER REPAIR CENTRE

★ Spectrum, Commodore, BBC, Atari, Amstrad etc.
★ Low cost repairs from £12.00
★ Collection & delivery optional
★ Used Micro's bought, sold, exchanged.

Call NIGEL: 01-863 7166

MICRO SUPPORT
Unit 3, 15 Springfield Road, Harrow, Middx, HA4 1QF.
13PL3

CHILTERN COMPUTER SERVICE

FOR FAST RELIABLE REPAIR SERVICE
SPECTRUM £16.00
WE ALSO REPAIR CBM 64 & 8BC, VIC 20, ORIC, AMSTRAD, PRINTERS & DISC DRIVES
Ask for details.
We give 3 months warranty on replaced parts
Send computer with details of fault and cheque made out to:
CHILTERN COMPUTER CENTRE
98/100 HIGH TOWN ROAD, LUTON, BEDS
TEL: 0582 455684
Overseas enquiries welcome

COMMODORE REPAIRS

by Commodore approved engineers

★ CBM Power Supplies	£15.00
★ VIC 20 Modulators	£8.05
★ VIC 20 from	£14.50
★ CBM64 etc.	

For more details write or tele:
G. C. BUNCE & SONS, 36 Burlington Road, Burnham, Bucks SL1 7BQ.
Tele: 06286-61696
27PL02

SINCLAIR REPAIRS

SPECTRUM/PLUS	£12.00
KEYBOARD	£8.50
INTERFACE I/MICRODRIVE	£17.00 each

All prices are fully inclusive of p&p and VAT
Send Cheque with computer only unless power supply suspected. Callers Welcome.

I. T. WESTERN ELECTRONICS
Unit F2A & F3
Avonside Enterprise Park
Heywroughton Road,
Melksham, Wilts
Tele: (0225) 705017
27PL5

DUPLICATION

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

22PL396

CASSETTE COPIES

50 C10's FOR ONLY £40 INC. P + P
FROM YOUR CASSETTE MASTER IN REAL TIME. PLEASE PACK IN FOIL AND SEND CHEQUE TO:—
SOUNDS GOOD
CLEAR CROFT, BOTTOM LANE, SEER GREEN, BUCKS HP9 2UH.
TEL: (04946) 5900
28PD3

The 1st choice

EXPRESS SPECTRUM, BBC and COMMODORE REPAIRS!

SOFTWARE RRP £24.00 FREE WITH EVERY REPAIR*

WHY PAY HIGH 'FIXED' PRICES

Spectrum repairs between £9 and £20.
BBC repairs between £14 and £45.
Commodore repairs between £14 and £35.

*Spectrums only

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

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

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

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

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

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

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

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

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

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

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

Because we repair hundreds of computers every week, we are able to pass on our 'component-buying discount' to YOU in lower prices . . . Z80A cpu £1.50, 4116 50p. Upgrade fitted £18.95 – we bring down the prices for repairs and components!

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

Every parcel sent by Royal Mail Receipted Post and insured for return journey!
(For next day delivery include £1.50 extra).
(Securicor by prior arrangement).
On-site maintenance for Apples, I.B.M.'s and most makes of printers also available.
Guaranteed 4hr response!

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

MANCOMP LTD
(Dept PCW26)
Printworks Lane, Levenshulme, Manchester M19 3JP
Phone 061-224 1888.
OR 061-224 9888.
OPEN MON - SAT 9am to 7pm

What we do today . . . others do tomorrow!

NOTE OUR PRICES AND WATCH OTHERS FOLLOW THE LEADER

There's a Dealer near you

WARWICKSHIRE

FAST FORWARD COMPUTER STORE
29 SMITH STREET
WARWICK
Tel: (0926) 492004
PL545

YORKSHIRE

YORK COMPUTER CENTRE
7 STONEGATE ARCADE
YORK
Tel: (0904) 641862
PL918

SUFFOLK

FOR MSX, SPECTRUM, COMMODORE, AMSTRAD
PL901B

Sudbury Micro Systems
Computer Retail & Consultancy

64 NORTH STREET
SUDBURY
TEL: SUDBURY 311839

SURREY

ULTIMA
UNIT 28
WHITE LION WALK
GUILDFORD
(0483) 506939
26PL802a

STAFFORDSHIRE

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

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

POSITRON COMPUTING
15 CENTRAL PRECINCT
LLANELLI
SAE15 1YE
0554 759624

AMSTRAD 8256 UPGRADE
24PL20

jbs records
COMPUTER PROGRAMS
REAL-TIME or (Slow) HIGH SPEED professional Cassette Duplication and Blanks 1 to 1,000+ Computer printed cassette labels. BBC Disk copying 1 to 500+ Fast Security Delivery Service.
jbs records—a division of FILTERBOND LTD.
19 Sadlers Way, Hertford SG14 2DZ.
0992 551188
PL397

DATA DUPLICATION: Telephone 021-643 7113 for further details and prices, or write to M.G. Copies, Warwick Chambers, 14 Corporation Street, Birmingham B2 4RN.

There's a Dealer near you . . .

BIRMINGHAM

D.G. MICROTEK ELECTRONICS
1908 DUDLEY ROAD
WINSON GREEN
BIRMINGHAM
Tel: (021) 454 4697
PL844

ESSEX

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

CAREY ELECTRONICS
FOR
THE BBC MICROCOMPUTER
SYSTEMS
COMPUTERS AND SOFTWARE,
PERIPHERALS.
7 CHURCH ROAD
WALTON-ON-NAZE, ESSEX
FRINTON-ON-SEA (02556) 6993
9am-9pm
PL844A

H REYNOLDS
79 ORSETT ROAD
GRAYS, ESSEX
Tel: (0375) 375948
PL801

MIKES COMPUTER STORE
292 LONDON ROAD
WESTCLIFF-ON-SEA
ESSEX
Tel: (0702) 332554
PL800

ATARI
520 STM
£399

Communication Plus+ INCORPORATING MICRO-MEND
5 HONEYWOOD ROAD
(Off Cranes Farm Rd)
BASILDON
Tel: (0268) 21818
PL883A

Communication Plus+ INCORPORATING MICRO-MEND
c/o KEDDIES
(second floor)
HIGH STREET
SOUTHEND
Tel: (0702) 62426
PL862

NOBLES
14-17 EASTERN
ESPLANADE
SOUTHEND-ON-SEA,
ESSEX
Tel: (0702) 63377/8
PL900

GLASGOW

THE COMPUTER DEPOT
205 BUCHANAN STREET
GLASGOW G1 2JZ
Tel: (041) 332 3944
PL795

HEREFORDSHIRE

HONEYSETT COMPUTERS
17 UNION STREET
HEREFORD HR1 2BT
Tel: (0432) 279404
ASK ABOUT
CLUNKER SALE
PL824

MEGABYTE
12 ETTRICK SQUARE
CUMBERNAULD
067 1ND
0236 738398
29PL1

KENT

ANIROG COMPUTERS
29 West Hill
Dartford
Kent
Tel: (0322) 91649
PL484

dgh software centre
10 NORTH STREET,
ASHFORD, KENT
Tel: (0233) 32597
PL856

MICROWAY COMPUTERS
39 HIGH STREET
RAINHAM, KENT
Tel: (0634) 376702
PL812

MIDDLESEX

INNOVATIONS
COMPUTER & VIDEO
9 HARMONDSWORTH ROAD
WEST DRAYTON
MIDDLESEX UB7 9JS
Tel: (0895) 420457
PL910

LEEDS

MICROPOWER
NORTHWOOD HOUSE
NORTH STREET
LEEDS LS7 2AA
Tel: (0532) 458800
PL883

LONDON

LOGIC SALES
19 THE BROADWAY
THE BOURNE, SOUTHGATE
LONDON N14
Tel: 01-882 4942
PL895

GALLERY SOFTWARE
1st FLOOR
THE ARNDALE CENT,
WANDSWORTH,
LONDON SW18
Tel: 01-870 4941
27PL29

VIC ODDENS
6 LONDON BRIDGE WALK
LONDON SE1
Tel: 01-403 1988
PL488

GAMES WORLD
129 KING STREET
HAMMERSMITH
LONDON W6
Tel: 01-741 4467
PL918

LIVERPOOL

NABITCH COMPUTING
SPECIALISTS IN AMSTRAD
PCW8256 – PCW8512
SOFTWARE & HARDWARE
MERSEYSIDE INNOVATION CENTRE
131 MOUNT PLEASANT
LIVERPOOL L3 5TF
051-709 0123/708 8775
Software Design Service Available
28PL1

NORFOLK

THETFORD MICROS
SPECIALISTS –
COMPUTER REPAIRS
21 GUILDHALL STREET
THETFORD
NORFOLK
(0842) 61645
PL912A

SUSSEX

GATWICK COMPUTERS
62 THE BOULEVARD
CRAWLEY, SUSSEX
Tel: (0293) 26240/37842
PL912

The software house: skill or chance?

David C Ridge finishes a two-part series of advice to potential entrepreneurs

The single most important factor in the sales of your product is the quality and quantity of your advertising. Sure, it's nice to have a great product, but if nobody knows about it, how will they buy it?

However, advertising will not make people buy your product if they have no need or want for that product. But good advertising informs people who already want such a product, where they can get it and why yours is better. And don't worry about how saturated the market might be with similar products; there is always room for the best, so make sure that yours is.

It is vital to accurately assess the latest trends and prejudices in the market. If the buying public has recently had a bad experience with a similar product then your product, no matter how good, will feel the brunt of the prejudice.

In most cases this will be decided by which machine the people involved have experience with. However, in the unlikely event that you have a choice to make, then make the decision based on the active installed user base. This is not to be confused with how many machines have been sold. The real question is: how many machines have been sold *in the market you wish to address* and how many are still being used?

No one would deny that the Spectrum is incredibly popular and the number of publications which cater to its users would seem to verify that. The same goes for Amstrad and Commodore. Some people claim that certain obscure computers are much more popular than they really are. How many Enterprise publications are there?

This underscores a point I made earlier about knowing the market you wish to address. It's entirely possible that a particular computer is phenomenally popular *in another country* but has not caught on where you are. This will be reflected by the publications available locally.

Predicting the way a market will go and then charting your business course accordingly is the fastest way I can think of to go broke. After considerable experience and observation, I have no choice but to turn a wonderful and historical phrase coined by Sir Winston Churchill – The computer industry is a riddle, wrapped in mystery, inside an enigma! You have no more chance of predicting the outcome of the introduction of a new machine than you have of predicting when the post will arrive (or if it will arrive).

Think about some recent events. Was it logical to introduce the Spectrum+ with no joystick port, no sound and a tacky keyboard? Was it logical that Sinclair, at the time a major force in world computing, would introduce a business computer with a squidgy keyboard, finicky mass-storage and 128K Ram?

Is it logical that Commodore, with arguably the largest installed user base in the world, should be having financial difficulties? Is it logical that the Apple II, which was designed in 1976, is still selling today? I'm just trying to emphasise a point. Sure, looking at it logically, the Atari ST seems to have all the right ingredients to become an overwhelming success. But that doesn't mean a thing.

So in conclusion, I will say that if it sounds appealing to you to risk it all, work yourself unconscious and then be left scratching your head at the end of the day, then starting a software house could be for you. But there's no doubt about it – you'll be working in a house of cards.

DIGITAL INTEGRATION · DIGITAL INTEGRATION · DIGITAL

DIGITAL INTEGRATION

PROGRAMMERS

Digital Integration specialises in producing high quality real-time simulations for the home computer market.

We are now looking for good machine code programmers to join our in-house development team currently working on a range of interesting and challenging projects. Applicants must be able to demonstrate a thorough understanding of machine-code development on Z80, 6502 or 68000. Creative talent, self-motivation and a strong interest in home computers are essential. Salaries according to experience.
Interested? If so, please send us your c.v. or call Dave Marshall on 0276 684959.

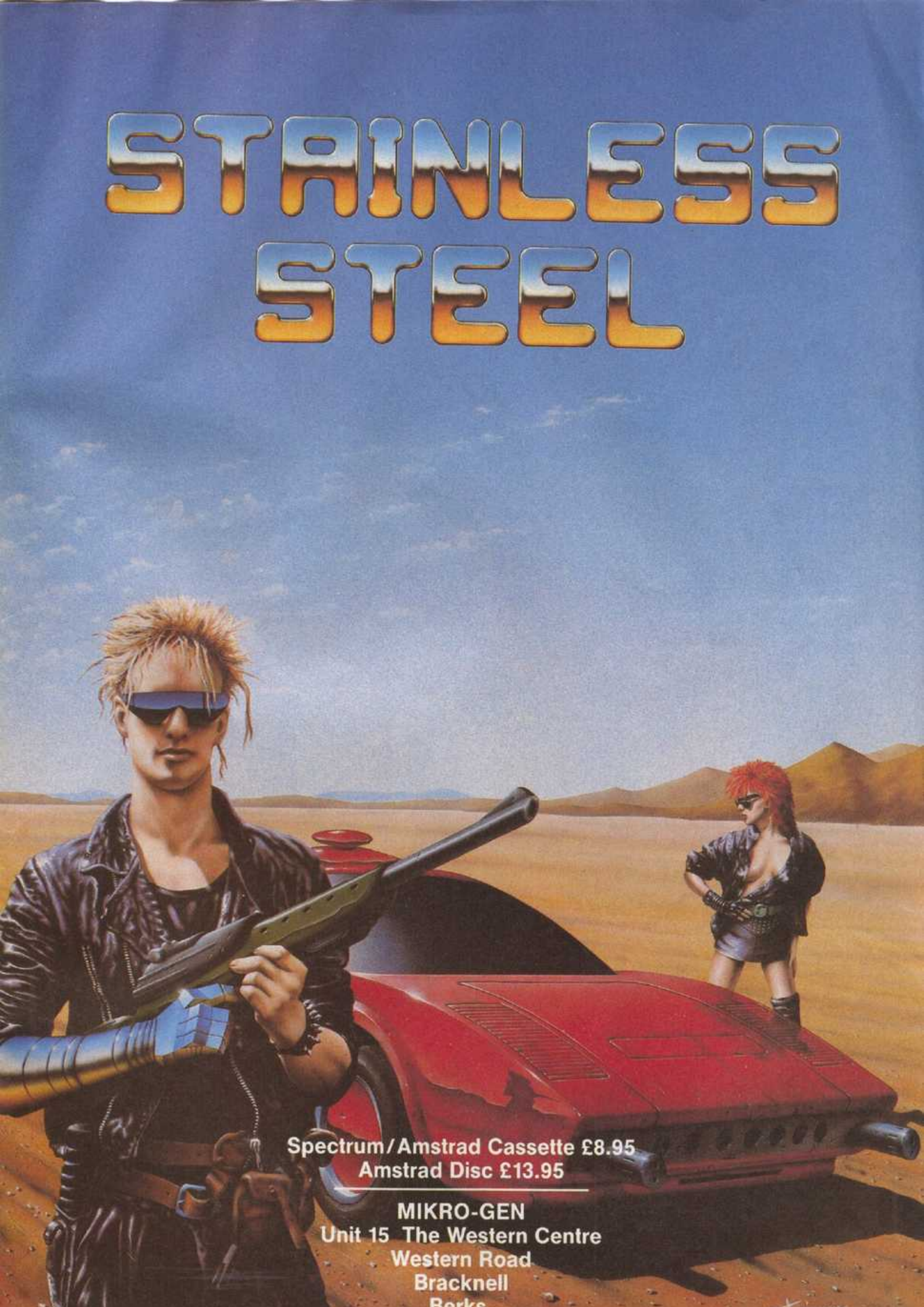
DIGITAL INTEGRATION LTD.,
Watchmoor Trade Centre,
Watchmoor Road,
Camberley, Surrey, GU15 3AJ
Tel. 0276 684959

Advancing the Art of Simulation
DIGITAL INTEGRATION

INTEGRATION · DIGITAL INTEGRATION ·

DIGITAL INTEGRATION · DIGITAL INTEGRATION · DIGITAL

STAINLESS STEEL



Spectrum / Amstrad Cassette £8.95
Amstrad Disc £13.95

MIKRO-GEN
Unit 15 The Western Centre
Western Road
Bracknell
Berks

HELLFIRE

COMMODORE 64

8.95

ocean

COMMODORE 64

12.95

Ocean House
6 Central Street · Manchester · M2 5NS