

# POPULAR Computing WEEKLY

## Picture this!

Choosing a monitor, p.16

### NEWS DESK

Amiga A500  
price cut

Atari profits up

---

### PROGRAMMING

More machine  
code graphics

Eight pages  
of listings





# 10 HIT GAMES OVER 20 EXCITING EVENTS



# ocean

AVAILABLE FOR  
**AMSTRAD**  
**COMMODORE**  
**SPECTRUM**  
**SPECTRUM + 3**  
CASSETTE  
**£12.95**

DISK  
**£17.95**

BASKETBALL • SOCCER • VAULT • SWIMMING • SHOOTING • ARCHERY • TRIPLE JUMP •  
WEIGHT LIFTING • PING-PONG • PISTOL SHOOTING • CYCLING • SPRING BOARD DIVING • GIANT SLALOM •  
ROWING • PENALTIES • SKI JUMP • TUG OF WAR • TENNIS • BASEBALL • BOXING • SQUASH • SNOOKER/POOL •



# October 16-22

# CONTENTS

POPULAR  
**Computing**  
WEEKLY

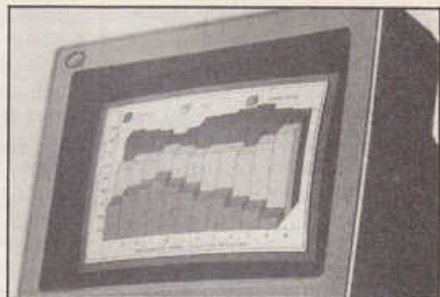
## News

**4 News Desk** Atari profits up 132 per cent . . . A500 price cut . . . Barry McGuigan raises £1,000 for NSPCC.



## Features

**16 Choosing a monitor** - has never been more difficult. Keith Hoyle offers some general advice on what's best for you.



## Programming

**14 Peek and Poke** Kenn Garroch answers your programming queries.

**22 Machine Code Graphics** Kenn Garroch continues his machine code graphics articles with advice on graphics sprites.

**24 Listings** More listings continued from recent weeks - in particular the amazing Spectrum program, Phoenix.



Top: Barry at the PCW Show.  
Second: IBM Colour Display.  
Above: Implosion. Below:  
Ultimate Games.

## Games

**33 New Releases** Your complete guide to all the programs released this week, including *How To Be A Complete Bastard* and much more besides.



Executive editor Francis Jago Deputy editor John Brissenden Technical editor Duncan Evans Production editor Yvonne Hartland Staff writer Nikki Carvey  
Advertisement manager David Osen Advertisement executive Athena Peerman Classified manager Susannah King Classified executive Robert Cole Editorial  
secretary Annmarie Allan Managing editor Brendan Gore Publisher Trish Phillips Group Publisher Paul Coster Chief executive Richard Hease Financial director  
Brendan McGrath. Published by Focus Magazines, Greencoat House, Francis Street, London SW1P 1DG. Typeset by Magazine Typesetters, 6 Parnell Court,  
East Portway, Andover, Hampshire. Printed by McCorquodale Magazines, Andover, Hampshire. Distributed by S M Distribution, London SW9. Tel 01-274  
8611. Telex 261643.

© Focus Magazine 1987. ISSN 0265-0509

**ABC**

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

**Popular Computing Weekly. Tel: 01-834 1717.**



## New price for A500

In a move predicted by *Popular* over the last few weeks, Commodore has announced a new price for the Amiga A500. As of October 15th, the A500 will retail at £499.99 inclusive of VAT, and with Deluxe Paint from Electronic Arts bundled free.

Tom Hart, Commodore's national Sales Manager for Consumer Products, said: "We believe that £499.99 inclusive of VAT offers a significant incentive to the consumer during the Christmas period and the months ahead."

This is the only price change both for the remainder of 1987 and for the foreseeable future."

Even at £499.99, there still seems to be some scope for price reductions, especially considering Deluxe Paint is worth at least £50.

## ST boosts Atari profits

ATARI'S half-year profits are up 132 per cent on last year's corresponding figures, at \$28,795,000 (£17,531,202).

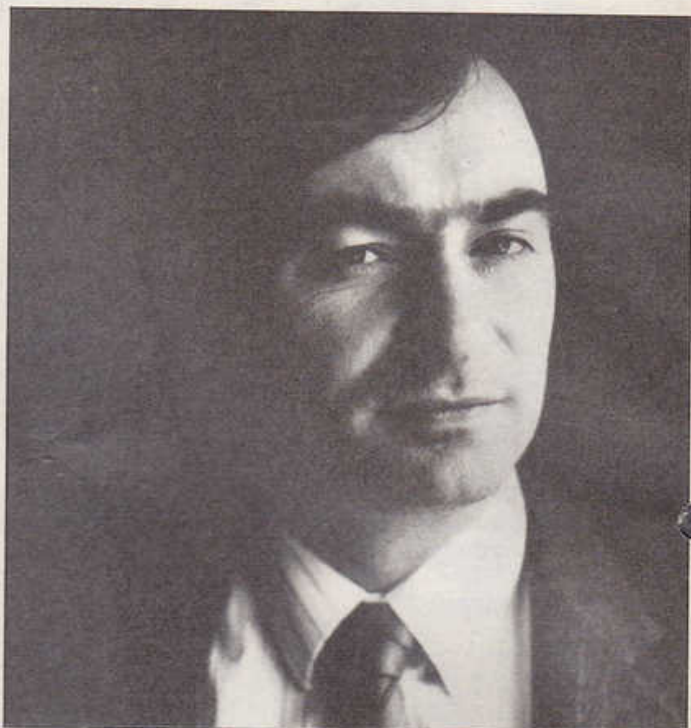
This figure is for net income over the first half of 1987 – up to July 4, and compares with net income over the same period last year of \$12,400,000 (£7,549,467 at today's rates).

"Last year we were trading at a loss – this year we're trading on the back of a very healthy 'cash in the bank situation'," commented an Atari spokesman last week.

The turnaround is largely thanks to the phenomenal success of the ST range, and the spokesman added that Atari will be adding upgrades and more power to these machines in future, rather than further reducing their price.

"We will be looking to acquire a semi-conductor manufacturing facility, to move the company into the 1990s, exploiting the power of parallel processing, and so on," he continued.

Meanwhile the company's problems in meeting demand for the STs has reached global proportions. This week's trade press carried reports that Atari



Atari UK chief Bob Gleadow

chief financial officer Greg Pratt was admitting shortages in every Atari subsidiary.

"I've got no real idea of exactly how many we could've supplied. There's been a substan-

tial global shortfall. On today's profit figures, I can only say, 'Boy, I wish someone told me demand was going to be this high back in May', Pratt was reported as saying.

## New joysticks from Konix soon

ONE criticism that has been levelled at the new Sega and Nintendo games consoles is that the tiny joystick 'cards' supplied with them aren't really suitable for high-speed games playing.

However, Joystick manufacturer Konix is about to launch new versions of its successful *Speed King* for both games machines, and also for Apple and IBM PCs.

The new joysticks are based on the original *Speed King* design, with variations for the different machines also available.

The IBM and Apple versions have been enhanced so that the sticks can be used for graphics design as well as playing games.



Konix have already received orders for 150,000 Nintendo sticks from America and also expect the Sega version to do well.

The original *Speed King* has been dropped in price to £11.95 and now comes bundled with a copy of *Gremlin Graphics' Thing Bounces Back* game.

## Word up

TASMAN Software are releasing *Tasword Plus Three* this week.

The program is an upgraded version of the original *Tasword* wordprocessor for the Spectrum, and includes a number of new features, such as mail-merge, erase and rename file, and background printing, to take advantage of the Plus Three's new disc facilities.

And, at the same time, Seven Stars Publishing are releasing *Qualitas Plus*. This is an enhanced version of the *Qualitas* program designed to be used in conjunction with *Tasword*, *The Writer* or *The Last Word*. It allows you to print in condensed and enlarged modes, and also includes five new fonts for NLQ printing. A tape with a further ten decorative fonts is also available.

*Tasword Plus Three* is priced at £19.95, and *Qualitas Plus* at £10.95 (£5.95 for the decorative fonts tape).



# The prize guy



THE PCW Show is increasingly becoming the chosen place for software houses to run long and complicated competitions. Two years ago, Acorn ran a full-blown *Elite* championship, and this year, CDS ran a *Brian Clough's Football Fortunes* competition.

The game marked the culmination of a national search for the best player (run in a variety of regional local papers) in Britain.

Philip O'Neill, of Airdrie near Glasgow, scraped through after

a close and often hard fought final.

For all his work, Philip won a trophy and a selection of CDS software, both of which were presented by sometime ex-boxer, sometime pop singer (which explains the uncanny resemblance to ex Undertones lead singer, Feargal Sharkey), and sometime motor racer, Barry McGuigan.

Quite why Barry McGuigan handed over the prizes is unclear, but he seems quite happy anyway.

## Colour revolution

EIDERSOFT Ltd will shortly be releasing a product that could revolutionise the way entertainment software will look on the Atari ST *Quantum Paintbox*, written by David Jones, is described as a graphics utility, and is capable of displaying 4096 colours simultaneously.

The technique used is one of palette switching whereby the screen is divided into eight sections, each of which has its own 512 colour palette.

Because of the processing power required, this technique only lends itself to the production of still pictures, such as title pages.

There are two other modes of operation in *Quantum Paint*, one of which displays 512 colours and can be used for still or minimally animated pictures. The other is of more importance to software producers in that it uses 128 colours and allows full animation as well.

For home users there will be special routines included on the program disc to enable the pictures produced with *Quantum Paint* to be incorporated in their own programs.

*Quantum Paint* is expected to retail for £19.95 (inc VAT), and Eidersoft can be contacted on (0708) 856468.

## SOFTWARE HOTLINES

The prettiest screenshot of the week award goes to **Melbourne House** for *Road Wars*. Not surprisingly, this is an Amiga screenshot so don't expect to see anything like it on the Spectrum.

This is a coin-op conversion in which you control a 'Battle-sphere' hurtling along a never-ending roadway in outer space. Trundling alongside is your opponent in a second sphere, and the point of the game is for the two of you to try and bump each other off the roadway and into oblivion, using a variety of hi-tech weapons that you can pick up along the way.

*Road Wars* is one of the first releases from the new, improved Melbourne House and it certainly looks like an improvement over some of their lacklustre pre-PCW efforts.

The annual burst of sports games is about to make its regular Christmas appearance.

**Tynesoft** has got *Winter Olympics '88* lined up for release in about a month. The six events are ski-jumping, bob-sled, slalom, downhill racing, biathlon and speed skating.

Tynesoft was going to call it *Winter Olympics*, but it seems that **Epyx** had a similar idea and managed to copyright the word 'Olympics' before anybody else could use it.

**Ariolasoft** is just about to unleash *The Werewolves of London*, the first game from new software company Viz Designs. It's a gentle little game in which, labouring under a curse, you turn into a werewolf every night.

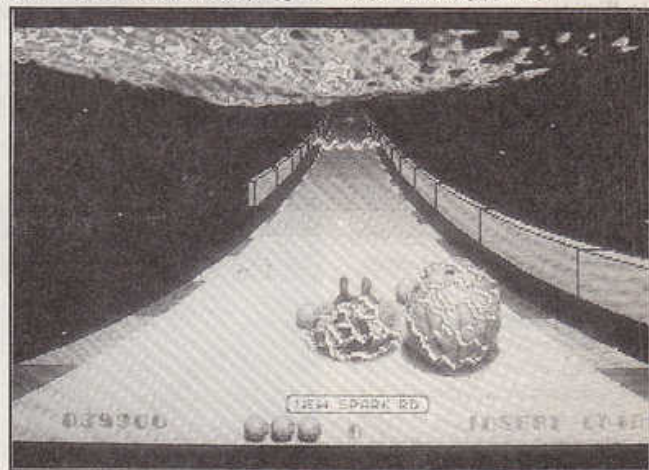
The only way to get rid of the curse is to find the antidote ingredients that are hidden throughout the game's 185 screens, and to eat all your relatives as well. As you may have guessed, it's the demolishing of the family that is the real fun in the game. Viz' next release is going to be *Valley of The Ants* (or something like that), with giant ants, mutant rats and the like.

**Virgin Games** is going in for something a bit more intellectual after *How To Be A Complete Naughty Person*. They're producing a game based on everybody's favourite war-game, *Diplomacy*.

If you've never played *Diplomacy* then you ought to give it a try. Although the aim of the game is to conquer Europe it's not one of those dull strategic jobs. The best part of the game is that it gets half a dozen people together and gives them all the chance to stab each other in the back. It has been known to ruin life-long friendships.

The game is being programmed by American war-gaming company Avalon Hill, and although the PC version is almost finished the C64 one won't be ready until early next year, which is all the excuse you need to go and buy the board-game for Christmas.

Spectrum adventure fans aren't all that well catered for these days, since all the best stuff is being produced for 16-bit machines, but **8th Day Software** is currently working on a series of *Detective Tales* adventures for 128K Spectrums. **8th Day** is one of the few companies still turning out decent adventures for less than £15 so *Detective Tales* could be well worth looking out for.





## DIARY DATES

### OCTOBER

15-17 October

#### Desktop Publishing Show

Business Design Centre, London

**Details:** Demonstrations of latest hardware and peripherals, plus seminars and user clinics

**Organiser:** Database Exhibitions, 061-456 8383

23-25 October

#### Amstrad Computer Show

G-Mex, Manchester

**Details:** Latest hardware and software right across the Amstrad range

**Organiser:** Database Exhibitions, 061-456 8383

### NOVEMBER

13-15 November

#### Electron and BBC Micro User Show

New Horticultural Hall, London

**Details:** Latest hardware and software across the Acorn range

**Organiser:** Database Exhibitions, 061-456 8383

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

## On the shelf

A PLANNED package containing *pro midi*, *pro sound* and a dumb MIDI keyboard package from Eidersoft has been shelved. A spokesman for the company explained that the move was a result of Casio and Yamaha's intelligent MIDI keyboards dropping into the £100-200 price bracket, making the proposed package uneconomical at around £100.

*pro midi*, along with the other impending titles in the series *pro drum* and *pro light*, will still be sold separately for £19.95. All three programs have been delayed but are due for release in three weeks' time.

# Barry backs Back Pack

A SPECIAL appearance by Barry McGuigan at the Back Pack stand at the PCW show helped to raise over £1,000 for the NSPCC children's charity.

The Back Pack games compilation is now available for the Spectrum and C64 and the Amstrad version should be released soon. The final contents of the different versions are as follows:

Spectrum - *Xeno*, *Night Gunner*, *Marsport*, *Metabolis*, *Monty On The Run*, *Starion*, *Mailstrom*, *Starstrike*, *Lunar Jetman*, *Bounty Bob Strikes Back*.

C64 - *Xeno*, Barry McGuigan's *Boxing*, *Nomad*, *Prodigy*, *Bounces*, *Skyfox*, *Electraglide*, *Starion*, *Bounty Bob Strikes Back*, *Monty On The Run*.



Amstrad - *Xeno*, *Grumpy Gumphrey Super Sleuth*, Barry McGuigan's *Boxing*, *Marsport*,

*Monty On The Run*, *Starion*, *Starstrike*, *Knightshade*, *Night Gunner*, *Thing On A String*.

## Games for a laugh Swifte-LISP

THE GUILD OF THIEVES, the adventure game by Magnetic Scrolls, has just been awarded Game of the Year at the 1987 British Micro Computing Awards.

*The Guild of Thieves* is the second Magnetic Scrolls adventure and follows in the footsteps of its successful predecessor *The Pawn*, which was voted Adventure of the Year by five British magazines and also received awards from abroad.

Anita Sinclair, Managing Director of Magnetic Scrolls said she was delighted to win the award and hoped that the success story would continue with the release of their third game *Jinxter*.

*Jinxter* follows in the mould of *The Guild* as it is also an enthralling adventure game.

Noted for its descriptions and detailed graphics, *Jinxter* is set for November release.

SAHARA has announced *Swifte-LISP*, another programming language which can run under the MIRAGE operating system.

*Swifte-LISP* is supplied as an interpreter and debugger, and is written in MC68000 assembly language. It takes up 41k, and can be used with LISP dialects such as Scheme, Standard LISP and UCI/Stanford LISP. It costs £59.

## Dark Castle for Mirrorsoft

MIRRORSOFT this week announced the signing of a new licence - *Dark Castle*, a 'huge' adventure signed from the American company Three-Sixty Pacific, Inc.

The graphic adventure features 14 danger zones, which are guarded by flying monkeys, dragons, and plenty else besides.

*Dark Castle* will be available at the end of the month on the PC, Atari ST and Macintosh, with Spectrum and C64 versions to follow in January 1988 'at the earliest', according to a Mirrorsoft spokesperson. Prices have yet to be confirmed.



Award for Magnetic Scrolls





The leading North West  
Specialist ATARI Dealer



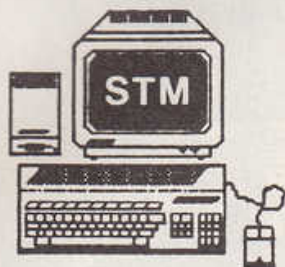
**ADBROKE  
COMPUTING**  
INTERNATIONAL

33, Ormskirk Road  
Preston, Lancs.  
Tel: (0772) 21474  
Mail Order: 27236 or  
Bul/Board 6pm to 9am



This Company has given years of full support to ATARI users Countrywide from their retail shop premises at Ormskirk Road, Preston. Now from their NEW Mail Order Depot they can offer the same Excellent service to all Mail Order Customers.

All Software and Hardware is fully tested prior to selling. This ensures Customers receive working items so that returned goods, and all the attendant frustration are a thing of the past. All Hardware is supported by our own 'ON SITE' engineers, therefore quick turn round on all repairs is Guaranteed. All prices quoted are fully VAT inc. and there are no 'hidden extras', what you see is what you get. Prices include delivery. Items despatched same day. Ring for latest price changes.



520STM Packages.....PHONE



1040STF+Mouse  
+Softwr.....£480.00  
1040STF+Mouse  
+Hi-Res Mon  
+Softwr.....£580.00  
1040STF+Mouse  
+Colour Mon  
+Softwr.....£780.00

1Meg Upgrades are available for the 520STM. These are our own design and are very simple to fit. Using the same board, all ST's can be Upgraded to 2mg or 4mg. So no need to sell your 520 just Upgrade to a Mega ST using our board.

1Meg Upgrade (STFM).....£70.00  
1Meg Upgrade (All ST's).....£135.00  
2.5Meg Upgrade +Board.....PHONE  
4Meg Upgrade +Board.....PHONE  
If any of the above Upgrades are purchased with Hardware then deduct £5 from total.

#### PRINTERS

Dot Matrix  
Star NL10.....£240.00  
NL10 Sheetfeeder.....£55.00  
National Panasonic.....PHONE  
MP165.....PHONE  
MP135.....PHONE  
LX86 Tractor Feed.....£19.00  
LX86 Sheetfeeder.....£55.00  
LQ800 24pin D/M.....£525.00  
All Others.....PHONE



3 1/2 D/S	5 1/4 D/S
D/D	D/D 46TPI
Per Disk.....£1.99	.....£0.80
10 Disks.....£16.00	.....£6.50
10 Disks+Plastic	
lib case...£17.50	.....£7.50
100 Disks+Cases...£150.00	.....£60.00
500 Disks+Cases...£650.00	.....£280.00

All Disks are covered by an unconditional lifetime guarantee.



We also stock a full range of quality P/D ST Software at £3.99 per Disk. Send SAE for catalogue.



Our ATARI trained engineers will repair all Hardware in minimum time at competitive rates. Please ring for a quotation. All repairs carry a 90 day warranty.

#### NEWLY IMPORTED

Imager. Easily fixed to your printer it will digitise anything placed in the printer and save to Disk to be used with Degas, Elite etc. RRP £99.99.

All Printers, Disk Drives etc supplied with cables etc. NO HIDDEN EXTRAS

Mega ST's.....PHONE  
Laser Printers.....PHONE  
PC Clones.....PHONE

#### DUST COVERS

Computers.....£3.99  
Monitors.....£4.99  
Disk Drives.....£2.99  
Printers.....£7.99

IF IT'S AVAILABLE we have it!  
Send SAE for full catalogue.

All Dedicated books and mags in stock



520STFM+Mouse  
+Softwr.....£285.00  
520STFM+Mouse  
+Softwr  
+1Meg Upgrade.....£350.00  
520STFM Mega Pack  
520STFM+Mouse  
+Softwr  
+1Meg Upgrade  
+1Meg 2nd Drive.....£485.00  
Equal to 1040STF+1/2Meg Drive  
+Modulator

For Med Res Col Mon add.....£299.00  
For High Res Mono Mon add....£129.00

All Hardware is covered for 12 months by our service dept. and is tested prior to delivery to assure satisfaction.



We have a complete range of Software in stock and fully tested.

We also stock a full range of ATARI 8Bit Hardware and Software including the new XE range. Please ring for prices

#### PERIPHERALS

Triangle 1mg D/Drive.....£139.00  
Triangle 2x1mg D/Drive.....£229.00  
Pro Draw Graphics Tab'.....£310.00  
Cumana 1Meg D/Drive.....£139.00  
All Drives come complete with Software

#### HARD DRIVES

Atari 20mg.....£550.00  
Triangle 20mg Hard Disk.....£669.00  
Supra 20mg.....£550.00  
30mg.....PHONE  
60mg.....PHONE

Any Software problems? Queries? give us a ring we usually have the answer

TO ORDER Simply send, or phone your order, stating Full Name, Address, Visa or Access Nos, Cheque or Money order. Make payable to Ladbrooke Computing International, 33, Ormskirk Road, Preston, Lancs. PR1 2QP.

FOR MORE INFO CALL ON THE ABOVE NUMBERS OR SEND SAE AND STATE FULL REQUIREMENTS



# NEW AM NOW OTHER HOME COM

Amiga 500 is here.

With a mind-blowing array of features and capabilities.

And a £499.99\* price ticket (inc. VAT), hundreds of pounds less than anyone could have predicted.

"...a miracle of compression..." writes *Popular Computing Weekly*\* "...it all adds up to a formidable system which is clearly better than anything else at the price."

This elegant little machine takes family computing into new dimensions of creativity, excitement and productivity.

It outruns and outguns office PCs as a business multi-tasker, performing a deskful of different jobs simultaneously, at over 7 million steps per second in realtime.

So other home computers may not be the only machines it consigns to the toy cupboard.

## AMAZING SCIENCE FACT.

Amiga is used by Disney, Universal and other Hollywood studios for its dazzling 3D graphics manipulation and animation powers.

A sophisticated high-speed graphics processor called a blitter chip transforms images in realtime.

You can paint the screen with more than 4,000 colours. Create and modify designs and effects as you like, with pin-sharp resolution.

You command an almost limitless workshopful of stunning professional graphics capabilities.

With an optional Genlock interface, you can capture images off videotape. Manipulate and mix

them with graphics. Then re-transfer them to videotape!

This means you can produce spectacular special effects like those created by Amiga computers for Channel 4's *Chart Show* and the American TV science fiction series *Amazing Stories*.

## YOU AIN'T HEARD NOTHING YET

Concealed within the sleek Amiga shape, there is also a pro-quality sound synthesiser and a four-track stereo sound system.

Driven by another powerful and unique custom chip, it can synthesise musical instruments and



\* Includes DeluxePaint from Electronic Arts worth £79 + VAT! (Excludes monitor or TV modulator.)

COMMODORE BUSINESS MACHINES (UK) LTD, COMMODORE HOUSE, THE SWITCHBACK, GARDNER ROAD, MAIDENHEAD, BERKSHIRE SL6 7XA. TELEPHONE: (0628) 770088. TELEX: 846057 CBMU KL



# AMIGA 500. COMPUTERS ARE JUST TOYS.

Your Amiga can also synthesise the human voice.

It can speak back anything you care to write on the keyboard.

So this is one computer that can not only word process with faultless professionalism, and incorporate superlative graphics into the text, it can also read the text back to you aloud.

## GAMESMANSHIP AND WORKMANSHIP!

The new Amiga 500, in fact, dumbfounds its competitors in every way.

Graphics, stereo sound, multi windowing, multi screens, 512K to 1Mb RAM (expandable by an incredible 8 further megabytes externally\*\*), 3½" internal disk drive with 880K of mass memory, 4 unique dedicated chips plus the 16/32-bit power and 7.14MHz speed of its central processor, communications and vast expansion potential all add up to a computer of immense professional capability.

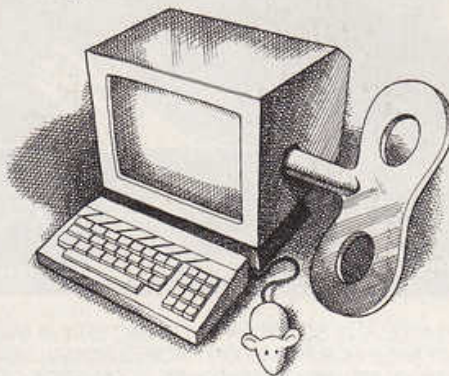
Yet the same technology allows the Amiga 500 to play games so mind bending that only full-scale arcade machines have been able to play them until now.

## AND AMIGA MEANS 'FRIEND'!

However many of the Amiga's extraordinary talents you find yourself using, they will all be beautifully simple and natural.

You will be totally at home in the friendly and effortless Amiga

environment, where everything happens by windows, icons, mouse and pulldown menus.



And the Amiga 500 simplifies life in another way too.

There is now no comparable home computer. At any price.

**INCREDIBLY  
ONLY £499.99\*  
INCLUDING VAT**

Try the astonishing new Amiga 500 at your nearest Commodore Amiga dealer.

And discover why *Personal Computer World*†, having tested the graphics performance of Amiga's latest and most powerful rival, concluded "...Amiga still reigns supreme..."



**Commodore**

sound effects.

An optional digitiser allows you to take onboard real sounds. Mix and modify the two. Translate your compositions from keyboard to sheet music. Play them back through the monitor's speaker or your hi-fi.

\*Popular Computing Weekly, 22-28 May 1987. †Personal Computer World, February 1987. \*\*Subject to availability.

AMIGA IS A TRADEMARK OF COMMODORE-AMIGA INC. © 1987 COMMODORE BUSINESS MACHINES (UK) LTD. ALL RIGHTS RESERVED.



# Computer Music at it's best...



## MIDI INTERFACE

For ZX SPECTRUM - Compatible with 48/128k/+2

- MIDI DELAY FACILITY • STORES THOUSANDS OF NOTES
- MIDI IN/OUT/THROUGH • FULL MIDI COMPATIBLE ASSIGNMENTS
- CONTROL ANY MIDI COMPATIBLE INSTRUMENT
- FORWARD AND REVERSE SEQUENCE PLAYBACK
- REAL OR STEP TIME INPUT FROM INSTRUMENT OR COMPUTER
- SUITABLE FOR HOME OR PROFESSIONAL USE
- FULL SYNC FACILITY • 8 TRACK MIDI SEQUENCER
- COMPLETE WITH HARDWARE / FULL SOFTWARE
- TRANSPOSE FACILITY • MICRODRIVE COMPATIBLE
- COMPREHENSIVE INSTRUCTION MANUAL
- MIDI LEAD INCLUDED
- EXCEPTIONAL VALUE

128k/+2 to Midi Lead  
(BT style plug to 5 pin DIN)  
**ONLY £9.75**  
It is not necessary to purchase the lead with the Cheetah Midi Interface

Extra 5 pin DIN  
to 5 pin DIN Midi Leads  
**ONLY £4.99**

## SOUND SAMPLER

For ZX SPECTRUM - Compatible with 48/128k/+2

- SAMPLE ANY SOUND • SYNC FACILITY • MIXING OF SAMPLES
- SUITABLE FOR HOME OR PROFESSIONAL USE • SIMPLE TO USE
- REPLAY AT VARIOUS PITCHES FORWARDS OR BACKWARDS
- POWERFUL EDITING FACILITY • ECHO, REVERB ETC.
- SAMPLE SOUND EFFECTS INCLUDED • COMPLETE SYSTEM
- EACH SAMPLE SOUND STORED AS FILES IN MEMORY
- BANDWIDTH-AN AMAZING 17.5KHz
- OUTPUT THROUGH MOST HI FI'S • MICRODRIVE COMPATIBLE
- GRAPHICS SAMPLE DISPLAY • PLAYBACK FROM KEYBOARD
- REALTIME PITCH HARMONISER

Dog barking, Glass breaking, Drum beating, Car revving even make your voice sound like Mickey Mouse — it's all possible with this amazing add-on from Cheetah



## SPEC DRUM / AMDRUM

Digital Drum System for the Spectrum 48K 128K +2 and Amstrad 464.664.6128.

As featured on  
"Micro Live"  
and  
"Saturday Superstore"

- 8 DIGITALLY RECORDED REAL DRUM SOUNDS
- SIMPLE TO USE — UP AND RUNNING IN ONLY MINUTES
- A TRUE DIGITAL DRUM MACHINE
- 'REAL TIME' OR ON SCREEN PROGRAMMING
- COMPLETE WITH SOFTWARE
- EXTRA SOUNDS CAN BE LOADED FROM TAPE
- CREATIVE, EDUCATIONAL AND FUN
- THE MOST EXCITING PERIPHERAL EVER DEVELOPED
- DYNAMIC FILING SYSTEM — STORE OVER 1000 PROGRAMMED RHYTHMS
- SONGS CAN BE SAVED ON TAPE
- TAPE SYNC FACILITY
- POLYPHONIC • COMPREHENSIVE MANUAL
- JUST PLUGS IN TO MOST HI FI'S

Prices include VAT, postage & packing. Delivery normally 14 days. Export orders at no extra cost. Dealer enquiries welcome.

Cheetah, products available from branches of

Dixons Harveys WHSMITH High St. Stores and all good computer shops

or direct from Cheetah

128 to Midi Lead  
available  
now at.... **£9.75**

**Cheetah**  
Marketing



CHEETAH MARKETING LTD  
Norbury House, Norbury Road,  
Fairwater, Cardiff CF5 3AS.  
Telephone: Cardiff (0222) 555525  
Telex: 497455 Fax: (0222) 555527



## Sinclair admits

I am grateful to Dave Clare for correcting my error concerning the Acorn ARM Chip which was caused by too hasty reading of the specifications. Actually for once, I am quite delighted to be proved wrong as I was initially most impressed with the ARM and was then disappointed when I thought it would be slow in a multiply routine. Now that I know the true figures I am confident that Acorn have produced a truly remarkable design.

Clive Sinclair  
London W1

## Software defence

Having enjoyed the lively contents of your letters page for some months, I thought it was about time to make my contribution. Not wishing to start up a major argument I decided to confine myself to giving my opinion of the points raised by D Wright of Fareham (*Letters* Vol 6 No 39).

Starting with his (her) first point on the cost of software and its comparison with the record industry, Mr (Mrs, Ms?) Wright seems to have overlooked the fact that there is one major difference. The money spent on software is only 30 per cent of the total that is spent on singles alone. As the software market is much smaller, the units sold will be much smaller, so companies will sell them for a higher price. The same will apply to royalties, as the software writer has to live on returns from smaller sales and thus needs a higher percentage. Who is the richer of the two, Andrew Draybrook or Andrew Ridgley?

Secondly I can't accept that the time taken to produce a song is the same as that taken to produce a game (singular in both cases). Most artists release an album of around ten tracks every twelve to twenty months. Most software writers will take twelve to eighteen months to produce one game. Budget releases are a different case as they sell in greater quantities because of their lower price. However, that same low price means that a lot less time can be spent on development of the game, which in turn leads to lower quality.

Moving onto Mr Wright's suggestion of an independent software reviewing body, we al-

ready have one. It is called the computer press and the purchasing public. If you go into any computer shop today you will find a copy of *The Great Space Race*. Not because it is good, but because they can't get rid of it. As soon as it hit the streets the press and public denounced it to the rubbish it was. The only people who bought it were those who did not try before they bought.

That brings me to the next point. If Mr Wright is no longer trying before he buys he has only himself to blame. I never ever buy a program until I have tried it at my local computer shop. If they won't let you try, say goodbye and go elsewhere. If there are no other shops then buy by mail order and if the game is not fit for the purpose it was sold for then send it back.

Arriving at last at his final point about software piracy, I think that the main reason for any form of protection is to stop the casual copier. There will always be those who don't have access to a multiface and who can't hack a game and it is to stop those people that the companies use protection.

Having said all that I would like to finish by saying that I think the mooted drop in the cost of full price software is long overdue. The difference between 8-bit software and 16-bit is also (despite your numerous defences) far too wide. Archimedes owners can now buy an amazing piece of 32-bit software named *Zarch* for only £20.00. With a user base of three people it is selling for £4.00 less than most 16-bit software, while the industry pleads that the newer computers cost a lot more to develop software for. To finally drive the stake home I would like to recommend the company I buy all my ST software from (No, I don't work for them). They are Plan Away, advertised in *PCW* quite often, and have never failed to provide polite and efficient service while managing to sell games such as *The Fawn*, *Silent Service* and *Space Quest* (RRP £24.95) for £17.50.

D. Marchant  
London N20

PS. I realise the scissors will have to come out for this one and would prefer that the last paragraph be kept as is, with all editing done on earlier parts. Ta Muchly Dan "Dark Star" Marchant.

Scissors? What scissors?



## Blow your own trumpet

Your correspondent, Keith Kimber, says in his piece "French Lessons" (Vol 6, No 37) that we in Britain must pay a "small fortune" to access the sort of socially useful data available on the French Minitel system. This is certainly not true for computer owners.

A subscription to Micronet, Prestel and Telecom Gold together costs a little over 18 pence a day - hardly a small fortune!

Socially useful data? The Prestel database is full of valuable information. In fact there are over 300,000 pages of data, some useful, some just fun. And for the computer user there's Micronet: 35,000 pages devoted to micros. Micronet contains not only information but also interactive services (such as electronic mail and multi-user games) and downloadable software.

As for Mr Kimber's excellent idea about giving away modems, he obviously isn't aware that that's precisely what Micronet has been doing for over a year. Just pay for a year's subscription (£66) in one go and we'll supply a free modem.

If Mr Kimber would like to take advantage of our free modem offer then perhaps he could contact me at Micronet (Durrant House, 8 Herbal Hill, London EC1R) and I will be happy to send him a free brochure.

David Rosenbaum  
Public Relations Manager  
Micronet

## Einstein discovery

I enjoy reading *PCW*, mainly for the news items, and some of the reviews can be interesting. However, I have to take exception to comments by Ian Rook in his *PCW* 9512 review.

Firstly I quote: "The disks are Amstrad standard 3-inch, no-one else uses these (OK, so the Tatung Einstein uses them, but no-one uses a Tatung Einstein.)" However, look at page 11, *DIARY DATES*, the same issue, and what do we see? On November 14th there is the "National Einstein Exhibition" - how strange - Mr. Rook presumably does not read *PCW*!

About 50,000 Einsteins have been sold in the UK, so I've heard. Some of these owners must surely use them. I do. My Einstein has a 256K silicon disk, the two normal 3in drives and the machine and operating system support a 5.25in DSDD plug-in drive. A hard disk is also available. At present I'm running on 80 column monochrome, but this will soon be updated to 80 column colour as a new card has become available. It has, as standard, an RS232, parallel centronics, parallel user, and ADC ports and a sound chip.

I run *Wordstar Professional*, *Datatar* and *Reportstar*. I also have *Cracker III* and a pile of PD software. I doubt if I will be able to outgrow it, if I update, it will be to an AT clone in order to run CAD software, and that will sit in the office.

One further comment from Mr. Rook: "As anyone who bought a Jupiter Ace will tell you, no machine is complete without a Basic interpreter". The Einstein has a Basic interpreter, but I've never used it. I taught myself about micros and programming on the Einstein using *Forth*! *Forth* is also supported by an excellent interest group, the FIG UK.

I think as a general comment there are many users of CP/M machines of various types and vintages, and many of these are true users. Satisfied users who have not the money nor the inclination to rush out and buy the latest "whiz box", with all its software. There are also many computer languages, and they all have their supporters. It would behave Ian Rook well not to be so sweeping and derogatory. His opinion is just that - an opinion.

Michael O'Brien  
Luton



## CAN YOU WRITE COMPUTER GAMES

One of Britain's leading software development houses require programmers to code for Commodore, Spectrum, Amstrad and Atari computers. Using superb development equipment you will be working on the latest major games titles. Source are currently coding for Ocean, US Gold, Activision, Ariolasoft and Vis Design.

First class salaries are paid along with interview and relocation expenses.

Can you make the grade?



LENCETT HOUSE, 45 BOROUGHGATE,  
OTLEY, WEST YORKSHIRE LS21 1AG

Tel: 0943 467511

## MAILTRONIX

*Specialist Computer Hardware  
and Software Supplies*

### AUTHORISED AMSTRAD DEALER

- Amstrad, Spectrum 128 + 2 inc. six games and joystick .....£139.99
- Amstrad, Spectrum 128 + 3 (built in disc drive) inc. six games and joystick.....£215.99
- Amstrad CPC 6128 and green screen, 17 games and joystick .....£289.00
- Amstrad CPC 6128 and colour screen, 17 games and joystick .....£379.00

## ATARI 520 STFM £270

An excellent range of software is also available for all home computers. We have over 2,000 titles, inc. over 500 Commodore programmes.

Please make cheques payable to: Mailtronix. All prices inc. VAT. Please add 50p postage and packing.

Phone or write for a free catalogue to:

### MAILTRONIX

Unit 2, Western Road Industrial Estate, Western Road,  
Hockley, Birmingham B18 7QD

Tel: 021-523 4956

# DON'T MISS..

BOARD  
GAME

## FOOTBALLER OF THE YEAR

Enjoy the world of a Football League Player suffering the pain and winning the glory, starting at the bottom and becoming a legend....  
A Footballer of the Year.



Gremlin Graphics Software Ltd /  
Gremlin Board Games Ltd.,  
Units 2/3 Holford Way,  
Holford, Birmingham  
B6 7AX

Available  
Now  
£14.99

Available  
from  
October

CBM64/128 · AMSTRAD £9.99C · £14.99D  
SPECTRUM · MSX £7.99

COMPUTER  
GAME

## GARY LINEKER'S

GAMES YOU CAN BUY

## SUPERSTAR SOCCER

The most original computer football game of all time.... Available on  
CBM64/128 disc and cassette,  
Amstrad disc and  
cassette, Spectrum  
48/128K cassette,  
MSX Cassette.



### ORDER YOUR GAMES NOW!!

If you would like us to rush one of these great games direct to your home at no extra charge fill in this coupon NOW and post to:-

GREMLIN BOARD GAMES/GREMLIN GRAPHICS SOFTWARE LTD.  
Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

I would like _____ copies of Gary Lineker's Footballer of the Year. (Cheques made payable to Gremlin Board Games)	I would like _____ copies of Gary Lineker's Superstar Soccer System (Cheques made payable to Gremlin Graphics Software Ltd)
Name _____	Address _____
Postcode _____	
Total Amount Enclosed £ _____	
Please debit my Access/Visa account. _____	
Signature _____	Date _____



# "OF COURSE PRIME MINISTER

You do grasp fully the  
enormous complexity of the  
issues behind the present  
**COMPETITION?"**

"Don't be ridiculous, Bernard, it could  
hardly be more simple . . ."

**P**opular Computing Weekly is joining forces with Mosaic Publishing in a competition to celebrate the re-lease of *Yes Prime Minister*, the licence of the long-running hit television series.



No less than fifty *Yes Prime Minister* games are on offer as prizes, and all you have to do is answer the three simple questions below, AND provide a new slogan for the game to be used as a tie-breaker.

All entries must arrive by last post on October 23rd 1987. The competition will be judged by Francis Jago, Executive Editor, and John Brissenden, Deputy Editor of *Popular Computing Weekly*. The judges' decision will be final, and all winners' names will be published in a future issue of *Popular Computing Weekly*.

Please send your entries to: Competition, *Popular Computing Weekly*, Focus Magazines, 3rd Floor, Greencoat House, Francis Street, London SW1P 1DG.

Please mark your envelopes or postcards 'COMPETITION'.



The questions are as follows:

- 1) What was Jim Hacker's job before he became Prime Minister?
- 2) Name the actors who play Hacker, Sir Humphrey and Bernard.
- 3) What is Sir Humphrey's full official title?

Don't forget to include a slogan for the game. You could win one of fifty copies of *Yes, Prime Minister*.





with Kenn Garroch

## Cheese

Graham Curtis, of Breadsall, Derby, writes:

**Q** I have followed with interest your Peek and Poke feature in *Popular Computing Weekly* and your recent articles in *ST Update*. I have just forsaken my CPC664 for a shiny new 1040 STF and my first project is to convert a camera shutter timing program from 664 to Atari.

The basic concept for both machines is identical: a phototransistor is connected across the centronics busy pin and ground. When light is shone through the camera shutter onto the sensor, the busy pin is pulled low giving a software timable event.

To measure shutter times down to 1/2000 of a second successfully, a very fast routine is required to monitor the port and time the shutter opening time. The Amstrad (Z80) version runs at around 65000 cycles per sec giving reasonable accuracy.

I wrote a program using fast basic and it does the right thing but rather slowly (approx 3000 cycles per sec) since it accesses the busy signal through a rather slow GEMDOS routine. More speed was needed so, armed with your *ST Update* articles, I tried my hand at a machine code direct access version. This program will not run since it produces a bus error. I misguidedly thought that entering supervisor mode avoided this problem. I am completely stumped and would appreciate your comments on getting the program to work, or suggesting an alternative method.

**A** Your program is correct apart from a couple of minor details. You tried to load the MFP address as MOVE.L \$FFFA01,A2 which should have been LEAL \$FFFA01,A2 or MOVE.L #\$FFFA01,A2 ie, the address not the contents. Also, the best way to check for a bit being changed is to use the BTST instruction eg, if D0 holds 1 then BTST #0,D0 sets the zero flag to zero ie, the bit is non-zero, if D0 held 0 the BTSTing it sets the zero flag to 1ie, the bit is zero. The timing speed should be in the region of 1.300000th of a sec and the program should therefore be:

## One track mind

Robert Timothy of Rumney, Cardiff, writes:

**Q** After much consideration, I have decided that you are the person to write to for some technical advice. I own an Atari 520STFM with built-in 360K disk drive. This internal drive however, can only access tracks 0-79 on a disk, whilst some software manufacturers have been using an extra two tracks, 80-81, for software protection. The result is that these programs will not work on my computer.

To solve this problem, I recently bought an external 1 Meg drive capable of accessing the tracks that internal ones can't, but have hit upon another problem. The programs themselves need to be autobooted from drive A, the internal drive. What I need to do is remove the built-in drive and fit the larger one in its place, leaving the smaller drive for use as drive B. I would be very grateful if you could tell me if it is possible to do this, and if so, how?

**A** Your reasoning may not be totally right about double-sided drive being able to access the extra two tracks since the stepper motor is doing the same thing for both drives ie, the 360 is single-sided, the 720 is double-sided, but both have 80 tracks. However, it may be the case that the double-sided drives have a slightly better specification. The fact that your computer cannot load the software is not a fault

go	bsr	super	
	lea.l	\$FFFA01,a2	
closed	move.b	(A2),d0	Read port
	btst	#0,d0	Test bit zero
	beq	closed	Still zero then wait for one
	move.l	#0,d2	Reset counter
open	move.b	(a2),d0	Read port again
	addq.l	#1,d2	Count / time
	btst	#0,d0	Test bit zero
	bne	open	Still one so wait for zero
	bsr	usuper	
	rts		
super	clr.l	-(sp)	Zero for to super
	move	#\$20,-(sp)	Super command
	trap	#1	Doit
	addq.l	#6,sp	
	move.l	d0,stkve	
	rts		
stkve	ds.l	1	1 long storage
usuper	move.l	stkve,-(sp)	Contents of stkve to stack
	move	#\$20,-(sp)	
	trap	#1	User mode
	addq.l	#6,sp	
	rts		

of the machine, it is the software houses's problem and one which should be corrected by them - especially since the software is sold to run on this particular machine.

Exchanging the drive should be possible although I can't say for sure. The internal drive is attached via a ribbon cable, a power plug, and three bolts. Disconnecting it is quite easy, and the larger drive should just drop into its place. You will be invalidating your warranty by opening the case of the ST so grit your teeth and cross your fingers before you do it. As I said, without actually trying it myself, I can't be sure that swapping the drives will work although I can't see why it shouldn't. Take a good look at the connections on both drives to see if they are the same before you remove anything, and take care when attaching the cables if you decide to go ahead.

What I would like to emphasise is the position of the software house, as I see it. They should ensure that their software works with the machines they say it will. If it doesn't then they should either replace it with a version that does work, or refund the money - check this with your Citizens Advice Bureau. In any event, they really should take more care that their product works before distributing it.

## Sounds good

Graeme Dolderson of Drontfield, Sheffield, writes:

**Q** I am using an Amstrad monitor with my ST, with no loudspeaker in the monitor, obviously I am getting no sound. A friend of mine has taken the audio out and not only allowed me to connect this up to my hi-fi but also built a small pre-amp (with a gain of 12) into the system.

Unfortunately, this still gives only low volume sound and I would like to increase the volume further, any suggestions?

P.S. Why don't you give PCW a new photo?

**A** I would have thought that the hi-fi output was loud enough for anyone, however, since you want more then why not try the 15W power amp made by Maplin (VQ37S ready made at £7.95 with PSU shown on page 242 of the Maplin catalogue). Strangely enough, I have seen no adverts for a device that would do what you want, built especially for the ST. I should think that the market is big enough for some entrepreneur to sell one.



# BE PART

An exciting year is already set for *Popular Computing Weekly* with new writers, new ideas and a new look. Why not be part of it by taking advantage of our subscription rates?

Be sure of getting all the news first, plus reviews, features, interviews, programs, comment and competitions – all in *Popular Computing Weekly*, delivered to your door every week.

Our new subscription service has now been established, so you can now be assured of receiving your subscription copy earlier – wherever in the UK you live.

Rates are as follows – UK £25, Europe/overseas £50, Back issues cost 80p in the UK, £1 in Europe and overseas.

Write to Popular Computing Weekly Subscriptions, Focus Magazines, 3rd Floor, Greencoat House, Francis Street, London SW1P 1DG.

October 2-9 1987

Vol 6 No 39 60p

## POPULAR Computing WEEKLY

### SUGAR TALKS

Page 28

NEWS DESK  
BT grabs  
HewsonTeam  
Cascade sues  
Microprose  
PLUS  
Full PCW  
Show reports

HARDWARE  
Amiga – ST –  
Archimedes  
3-way clash



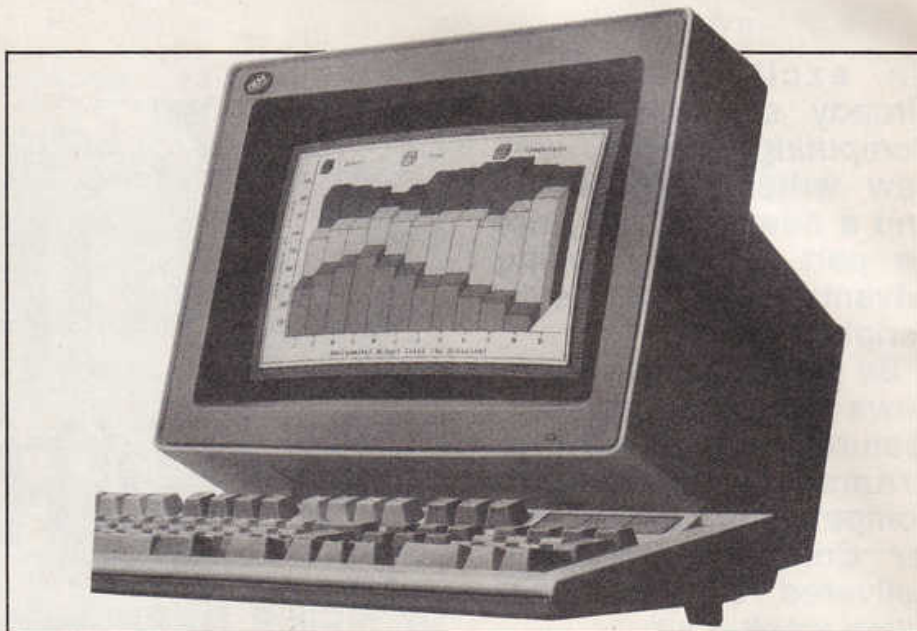
SPECIAL  
PCW Show Issue

# OF IT



# CHOOSE ME!

Choosing a monitor is not just a case of nipping out to the shops to buy the first one you see. The choice is plentiful and the range varied depending on how much you want to spend. Keith Hoyle demystifies the art of choosing a monitor.



**C**hoosing a computer is probably the most expensive peripheral you will purchase next to your computer. Although monitors are not cheap they can make a big difference to the quality of your display. So if an item costs so much, surely it is deserving of a more practical approach. When you are deciding on the most appropriate monitor for your system there are several questions you must ask yourself.

- Do I want, or need a colour monitor or will a monochrome model suit my needs?
- Does this monitor have the correct interface to allow me to connect it to my computer?
- Does it have a high enough resolution, so as to give me the sharpest clearest text and graphics?
- Probably the most important question, will it suit my needs, should I decide to upgrade to a better machine sometime in the future?

Before we try to answer these questions let's have a look at what is available at the moment and explain some of the more commonly used jargon associated with monitors.

Firstly, there are two distinct types of monitor. There's colour and monochrome. By monochrome we mean either green, amber or white screen.

## Monochrome Monitors

Monochrome monitors usually have a higher definition (sharper picture) than colour monitors, but are best suited for text applications. Unless of course you are using your computer for (DTP) desk top publishing applications, then you will probably require an ultra high resolution colour monitor!

Monochrome monitors are normally supplied with a composite interface usually in the form of a B.N.C. connector, or the standard Phono connector. These monitors have a standard input of 1 volt peak to peak  $\pm .5V$ .

The bandwidth of a monochrome monitor is also useful in telling you how clear the display will be, the higher the bandwidth the better the picture will be. There may also be an input for sound, but check with your dealer first.

You may also require a stand for your monitor, even if it is going to sit on top of your computer. There are several types of monitor stand available from third party manufacturers, but if the makers of the monitor supply one it would probably fit better and look nicer, albeit a little more expensive. Some of the more expensive stands will probably include a tilt and swivel mechanism, this will allow you to position the monitor most suited for your own personal comfort.

Most monitors will be supplied with a lead to connect it direct to your computer, all you will have to supply is the computer itself and a plug.

**“Choosing a monitor is probably the next most expensive peripheral you will purchase next to your computer . . . So if an item costs so much, surely it is deserving of a more practical approach.”**

## Colour Monitors

Most colour monitors will be described as either high, medium, or low, they are all referring to the resolution of the monitor ie, the amount of dots available on screen to display the various images. A high resolution monitor will be capable of 640x400 pixels, medium resolution up to 400x200 pixels, and low resolution will be 200x150 pixels.

**continued on page 18**







# MONITORS: FEATURE

A point to note here is these figures are all only approximate. A particular monitor may have some obscure resolution like: 640x285 or 500x300 pixels resolution. Do not forget that your present computer may not drive your newly purchased monitor to its full extent, what I mean is your present computer may only output a maximum of 320x200 pixels resolution. Your monitor may be capable of displaying 640x400 pixels resolution. This will not make any difference to you but you may be paying for something you don't really need.

There is another point governing the clarity of the picture your monitor will display, that is the Dot Pitch. The dot pitch is the actual size of the dots (Pixels) that go to make up the image on your monitor, they can range in size from .31mm up to a maximum of .61mm, the smaller the dot pitch, the sharper the image will be.

## Types of Input

The range of inputs associated with colour monitors are quite confusing and require a little explanation. There are basically four different kinds of RGB input: TTL RGB, HIGH IMPEDANCE RGB, LOW IMPEDANCE RGB and RGBI.

The RGB stands for red, green, blue, your three primary colours. TTL (Transistor Transistor Logic) is means of representing digital on's and off's using +5V and 0V respectively, this type of interface will only display up to eight colour's.

High Impedance RGB is linear interface and can display all colour's, using 0 to 4V.

Low Impedance RGB is also a linear interface, this type of interface is sometimes known as 1V-75ohm.

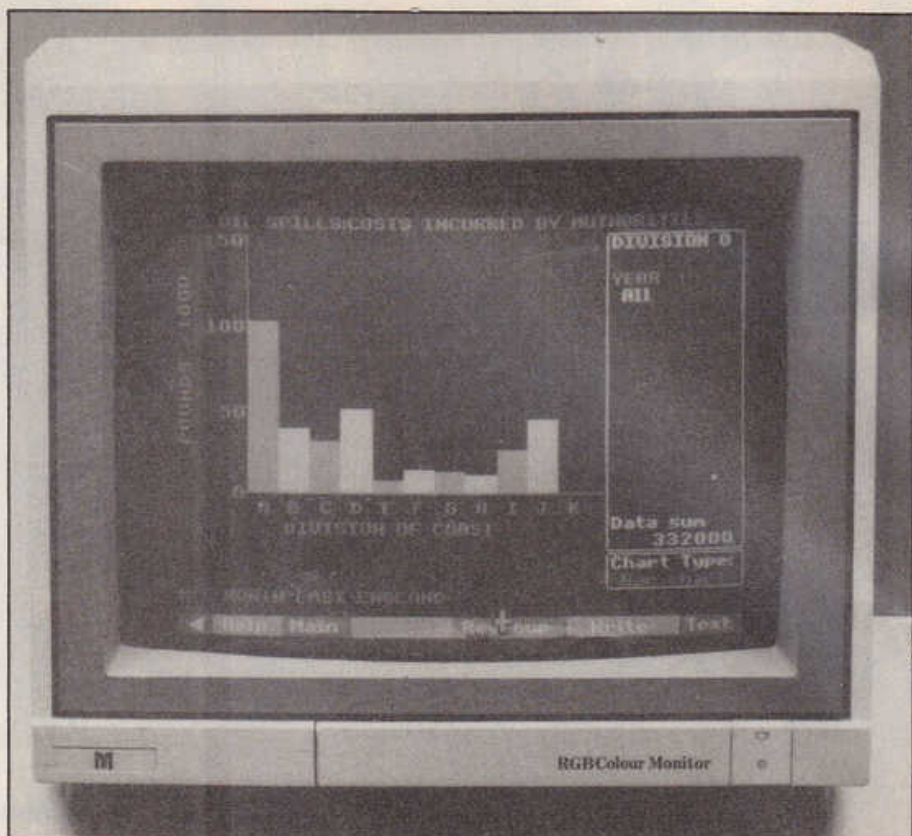
The RGBI input is also used at TTL levels so this to can only display up to eight colours.

Several of the new colour monitors also come with a composite video input as well as RGB-RGBI.

The reason for the high quality of the RGB/I interface is each of the signals from the computer to the monitor are sent down individual lines, this in turn causes very little signal loss and results in a high quality picture.

Some of the monitors now come complete with RGB linear, TTL RGBI, COMPOSITE VIDEO and STEREO SOUND. The particular monitor in question is the Philips 8833 Colour monitor. This monitor has all the possible inputs the average user would need so to upgrade in the future will not be such a headache. The reason for the high quality of the RGB/I interface is each of the signals from the computer to the monitor are sent down individual lines, this in turn causes very little signal loss and results in a high quality picture.

Most connectors for the RGB type inputs are through a DIN type plug, however some of the newer monitors are being equipped with a new interface, called the Euro connector, Scart connector, or Peri socket.



## Possible Answers to the Questions

● You may think that a monochrome monitor will satisfy your needs now and in the future, but think hard before you buy, you may end up buying a colour monitor in time as you upgrade your present computer.

● If you buy a colour monitor as the one mentioned, it will almost certainly have the correct interface for your future needs. If on the other hand you buy a monochrome monitor it will probably only have a composite video input, which is fine as long as you only intend using it with text.

● Picture quality is also a sticking point, you may have bought what you thought was the perfect monitor, but when you upgraded last month found that the resolution was somewhat poor in comparison with the computer output. If it were only low resolution you may find you get headaches and eye strain, due to the poor quality images.

● The possibility of you ever upgrading may seem remote now, but in twelve months time who knows you may buy the Atari ST or the Commodore Amiga? Then you will have all that potential and not be able to utilise it. So think hard, the colour monitor may be one of your better choices when you ponder it in years to come.

## Terms Associated with Monitors

### Inputs

These specifications will vary from monitor to monitor.

RGBI TTL ... 0V/5V respectively

HIGH IMPEDANCE RGB ... 0 to 4V

LOW IMPEDANCE RGB ... 1V 75ohm

COMPOSITE VIDEO (MONO-CHROME) ... 1V +- .5V pp/75ohm. Can be green, amber or white and refers to the colour of the characters.

AUDIO ... Sound input either Mono or Stereo (M or S).

### Display

DOT PITCH ... Normally in mm, the size of the pixels on screen that make up the picture.

PIXELS (Picture Element) ... the smallest unit of the computer that can be addressed, and goes to make up a graphic display.

RESOLUTION ... The number of pixels that can be displayed on the screen. The more the better.

BANDWIDTH (MHz) ... The display frequency (Monochrome monitors) the higher this figure the better.

LONG PERSISTANCE ... The length of time the pixels stay illuminated, used in computers that can display very high resolution screens.



NEW!

# PC-DITTO

SOFTWARE BASED IBM  
EMULATOR FOR THE  
ATARI ST.

THIS PROGRAM RUNS ALL  
POPULAR IBM PROGRAMS

INCLUDING:

LOTUS 123 – FRAMEWORK –  
SYMPHONY – FLIGHT SIMULATOR  
– SIDEKICK – WORDSTAR – WORD  
PERFECT – AND MUCH MORE

**PRICE £49.95**

Available from:



Box 68, St Austell, Cornwall PL25 4YB  
Tel: 0726 68020



# GOLDRUNNER

# 2

## IS COMING...

AND WE NEED A **PROGRAMMING MUSICIAN** TO PROVIDE MUSIC FOR THIS MEGA WORLDWIDE SELLING GAME. IF YOU WANT TO FOLLOW IN THE FOOTSTEPS OF ROB HUBBARD, AND HAVE MUSIC WHICH IS EXCITING FOR THE ATARI ST THEN PLEASE SEND A DEMO DISC TO — JOHN SYMES, MANAGING DIRECTOR, MICRODEAL, BOX 68, ST AUSTELL, PL25 4YB



## The big, big computer show moves North to Manchester!

The fastest growing computer show of them all is now moving North – to the most innovative, prestigious exhibition centre in Britain.

This magnificent building, in Manchester city centre, will play host to all the major companies in the Amstrad market – including Amstrad themselves, showing the complete range of machines.

Whether you own an Amstrad CPC, PCW or PC – or just thinking of buying one – there will be lots for you to see and enjoy.

★ **Hear from the experts in the Amstrad Theatre!**

### The list of exhibitors includes:

Amstrad  
ABC Systems  
Alfa Electronics  
Amstrad User Club  
Amnor  
Autodesk  
Bascrown  
Business Graphics  
Cambrian Software  
Compact Software  
Computer Manuals  
Computer Training  
Connect Systems  
CPM  
Database Publications  
Diamond Business  
Software  
Dictaphone

Direct Disk Supplies  
Electric Studio  
Electro Music Research  
Evesham Micro Centre  
Future Publishing  
Garwood  
GEM Distribution  
Grafsales  
Home & Business  
HSV Computer Services  
IO  
ITEC Marketing  
Kador  
KDS Electronics  
KKS Electronics  
Lightspeed Software  
Logotron  
Margin Maker  
Metrotex

Micro Media Computer  
Supplies  
Micronet  
Mighty Micro  
Minerva Systems  
Nabitchi Computers  
Pace Micro Technology  
Peartree Computers  
R & AJ Preston  
Rombo Productions  
RT Computer Training  
Saxon Computing  
Shareware Marketing  
Siren Software  
The Official Amstrad  
Magazines  
Tirith  
Twistlar Computers  
1512 Independents

The 8th official

# AMSTRAD COMPUTER SHOW

**G-Mex Centre,  
Manchester**

10am-6pm Friday, October 23  
10am-6pm Saturday, October 24  
10am-4pm Sunday, October 25

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



Friday, October 23, 10am-6pm  
Saturday, October 24, 10am-6pm  
Sunday, October 25, 10am-4pm

**G-Mex Centre, Manchester**

**How to get there:** G-Mex is only one mile from the M602, and there's ample parking space beneath the hall. Within easy reach of Victoria and Piccadilly railway stations.

A182

GMX12.87





**CHUCK YEAGER'S ADVANCED FLIGHT TRAINER**





The instinct to survive. Out of control, screaming towards Earth at Mach 3, just 8 seconds and 20,000 ft left! Fly aileron rolls, Cuban 8's, even hammerhead stalls. Simulation so realistic you may just blackout. Remember - test pilots are only wrong once.

CLIMB INTO THE COCKPIT WITH THE GREATEST TEST PILOT EVER - CHUCK YEAGER. FLY 14 DIFFERENT AIRCRAFT INCLUDING EXPERIMENTAL JETS. COMPETE AGAINST 6 ADVERSARIES.



DYNAMIC INSTRUMENTATION, BLACK BOX RECORDERS AND 10 VIEWPOINTS WITH ZOOM UP TO 256X.



UNLEASH THE POWER OF  
YOUR IMAGINATION

Electronic Arts software is available on a wide range of home computers including Commodore C64, Commodore Amiga, Atari ST, IBM PC and compatibles, Spectrum and Amstrad. Electronic Arts products are available from good software stockists and especially where you see this sign.

**ELECTRONIC ARTS®**  
AUTHORISED DEALER

For a full broadsheet describing the complete range or information on your nearest stockist write to: Electronic Arts, 11-49 Station Road, Langley, Berkshire SL3 8YN, England. Or call our Customer Services Dept. on 0753 46465.

ELECTRONIC ARTS



## Graphic Detail

In the third part of his series on machine code graphics, Kenn Garroch unravels some of the mysteries surrounding hardware sprites.



Fig 1

The most common graphics tools used in computer games today are sprites. These are predefined blocks of graphics that can be placed anywhere on the screen, usually without destroying the background when they were first introduced to home micros. They were hardware driven beasts, that's to say, they were controlled by a specialised graphics chip which left the microprocessor free to do other things. The old Atari and Commodore machines contained these special graphics chips that allowed the user to define a graphics shape in memory which could then be placed anywhere on screen simply by specifying the x/y coordinate.

There are a number of important features about hardware sprites.

- They do not disturb the background graphics.
- One of the colours is defined as transparent ie, it is possible to see the background graphics through them.
- They are placed on screen in order so that the front sprites always cover those that are behind.
- They are usually of fixed size (though not always).
- Their position is specified as an x/y coordinate - usually top left.

All of these features serve to make sprites very useful when it comes to writing games.

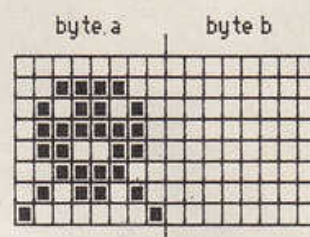
Many of the later machines such as the Amstrad, BBC, and Spectrum do not have hardware sprites, so the same effect must be created in software. This can be done in a number of ways, depending on the screen layout and the processor. The problem of how to place sprites on screen via a software method can be looked at in a number of ways, the simplest view is to look at the object as a number of dots, and simply plot them row by row onto the screen. This is very slow however, and a better way is to look at a sprite as a number of lines, each of which can be placed on

screen as a byte. Take the simple definition of a monochrome sprite in Fig. 1. Each row is 8-bits wide, and there are eight rows ie, it is the same size as the average character. Characters are placed on the screen at preset positions, sprites need to be placed at any pixel position.

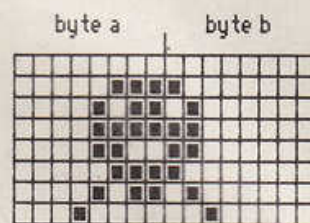
Last week I discussed plotting points, and how to find the screen memory location of a byte that contains a point. The same method can be used to find the byte where the top line of the sprite starts - most screens have their lowest memory position at the top left of the screen, and also lower towards the left hand edge so, 0/0 is the top left corner.

To put the sprite onto the screen, the particular byte position is found and then the offset in that byte. The sprite can then be shifted right the number of positions specified by the x remainder ie, the offset within the byte to get the correct position. Bits of the sprite that come out of the right side of the byte are shifted into the left side of the next byte giving two consecutive bytes that can be placed on the screen in two moves - see Fig. 2. Of course, this is for an ideal screen and other layouts may need slightly different methods but usually only at the 'laying on the screen' stage.

Allowing the background to show through is achieved by masking or ORing the image onto the screen. After the row has been shifted, using register of memory depending on the processor, each resultant byte is ORed onto the screen which leaves the background showing through. This is fine for mono displays but for colour, a little more sophistication is needed. A mask is required that will zero only the appropriate bits and again, how this is done depends largely on how the colour mapping is set out on screen for the computer in question. A 16 colour system may take one nibble of each byte to specify the colour of a pixel which means that for a sprite 8 pixels wide, four bytes are taken up per row.



Sprite at pos 0 in byte



Sprite at pos 3 in byte

Fig 2

Fig. 3 shows this layout for two bytes, the best way to treat this would be to have two definitions, one shifted four places from the other as this would save a lot of processor time that would otherwise be devoted to A shifting. To place the sprite on the screen, the odd or even definition is used, depending on the offset in the screen byte, and then a mask is used that outlines the definition ie, where colours are to be changed on the screen are zeros, transparent sections are 1s. ANDing the screen with the mask leaves the background colours intact, but blanks out the places where the sprite will go. The sprite can be ORed into the blank places, again, leaving the transparent sections intact.

All that remains is to save the whole of the background that the sprite will cover, including transparent bits, in a block of memory so that it can be returned later when the sprite has moved on.

As I mentioned in the first of these articles, the number of pixels that the sprite is moved should be optimised so that the frequency at which the screen is refreshed and persistence of vision are taken into account. If the resolution of the screen is such that moving the sprite a nibble or byte at a time will be virtually unnoticeable then the amount of shifting of bits is reduced considerably and the routine can be made to run that much faster.

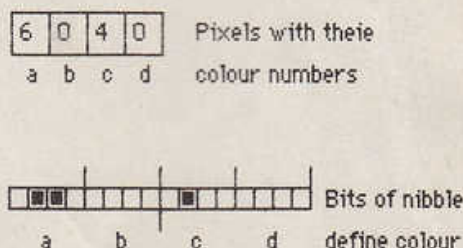


Fig 3



A MUCH BETTER DEAL - WEEK AFTER WEEK

NOT ONLY DO THE LEAVES  
DROP IN SEPTEMBER  
SO DO OUR PRICES

AMSTRAD COMPUTERS  
P.C.W./PC1512/PC1640

ALL AT TRADE PRICES

HOW TO SAVE UP TO £280.00  
ON AMSTRAD P.C.

WELL OF COURSE PHONE

WAVE NOW!!!

All current chart games software retail less 25% + £1 P&P

★ ★ ★ ★ ★ WAVE PRICES EXCLUDE VAT.

ANC 3 day £9.00. Next day £12.00. Admin. Offices. Callers by appointment only.  
UK Post & Ins. (A) £5.00 (B) £4.00 (C) £3.00 (D) £2.00 (E) £1.00 (F) 50p.  
Despatched by return of post. Prices in this advert are valid for 14 days.

**W.A.V.E.** (Dept. POP 1809)

Walney Audio Video & Electrical  
53 Shearwater Crescent, Barrow-in-Furness,  
Cumbria LA14 3JP. Telephone: 0229 44753/29109

**Once Bytten**

59 SWANLEY ROAD  
WELLING, KENT DA16 1LL  
Tel: 01-304 2631

(Callers by appointment only)

Cheques and P.O.s to AMTEN LIMITED please



**Safe DATA 5 1/4" Universal Discs**

(Good for all drives, single or double sided, single or double density, 40 or 80 tracks).

10 packed in library case ..... only £7.95 each  
5 Boxes or more ..... only £6.95 each  
10 Boxes or more ..... only £5.95 each

Guaranteed for life. 100% Error Free.

**DYSAN**

5 1/4" SSDD 96tpi branded 1 Box £6.96. 10 Boxes for £60.

**BULK DISCS**

	10 in library case	25 Loose	50 Loose	100 Loose	200 Loose
5 1/4" SSDD 96tpi	£5.95	£10.95	£18.95	£33.50	£65.00
5 1/4" DSDD 96tpi	£6.95	£12.50	£19.95	£35.50	£69.95
3 1/2" SSDD 135tpi	£13.50	£29.50	£57.50	£110.20	£209.50
3 1/2" DSDD 135tpi	£14.95	£33.95	£62.50	£120.00	£225.00

With labels and hub ringed (5 1/4" with sleeves).

All with lifetime warranty.

NB. All disc prices include VAT and carriage in UK.

**COMMODORE**

Amiga 500 kit ..... £525.00  
Amiga 1081 Monitor ..... £279.00  
Amiga 2nd Drive ..... Call  
Cumana Amiga D/D ..... £139.00

**ATARI**

520ST-FM kit ..... £279.95  
520ST-FM + SM125 ..... £379.95  
1040 ST-F ..... £469.00  
1040 ST-F + SM125 ..... £569.00

Please phone for details of latest deals, we're getting better all the time!  
PART-EXCHANGE DEFINITELY WELCOME—All prices include VAT. Carriage extra.

**TELEPHONE: 01-304 2631**

9am-10pm for all orders, prices and technical info



ALL PRICES INCLUDE  
VAT & DELIVERY

NEXT DAY DELIVERY  
£5.00 EXTRA

**Prices**

**Crushed**

520 STFM NEW LOW PRICE

**Only £279.00**  
ATARI Back in stock ATARI

520STFM with 1MEG memory upgrade installed £338.00  
1040 STFM £469.00 SM125 M.monitor £119.00  
MEGA ST 2 £899.00 MEGA ST 4 £1199.00

All ST prices include: mouse etc. PLUS 5 disks full of s'ware including demos, utility, wordpro & game

Philips CM8833 Hi-res colour monitor c/w ST cable £279.00  
(ONLY £269.00 if bought with an ST)

Atari SC1224 Hi-res colour monitor £299.00

Atari SMM804 Printer (Special, few only) £149.00

1MEG MEMORY UPGRADE (STFM ONLY) £59.00  
(Requires soldering, free fitting if you buy a new ST from us)

**3.5" disks**  
10 ..... £11.95 in 10 cap plastic case £13.95  
25 ..... £27.95 in 40 cap plastic case £34.95  
Fully guaranteed double sided media.

**AMSTRAD 1512/1640**

ALL PRICES VAT & DELIVERY INCLUSIVE

Select an Amstrad PC from our wide range

We have a full range of models including the highly popular Evesham upgraded models. Our single floppy 21/32 MEG models are professional internal installations leaving maximum expansion room. The twin floppy versions use a hardcard. 1512 models can be supplied with 640K RAM upgrade installed for £20.00 extra. Prices in light type are ex VAT

**STOP PRESS** FREE with 1512... Migent Ability & 4 games  
(former retail value over £200.00)

	SD	DD	AMS 20MEG	SD 21MEG	DD 21MEG	SD 32MEG	DD 32MEG
<b>EVESHAM UPGRADED MODELS</b>							
MONO 1512	381.74 439.00	477.39 549.00	N/A N/A	598.26 688.00	693.91 798.00	641.74 738.00	737.39 848.00
COLOUR 1512	520.87 599.00	616.52 709.00	N/A N/A	737.39 848.00	833.04 958.00	780.87 898.00	876.52 1008.00
MONO 1640	494.78 569.00	581.74 669.00	868.70 999.00	711.30 818.00	798.26 918.00	754.78 868.00	841.74 968.00
CGA (cable only) 1640	625.22 719.00	712.17 819.00	912.17 1049.00	841.74 968.00	928.69 1068.00	885.22 1018.00	972.17 1118.00
ECD (EGA) 1640	755.65 869.00	842.61 969.00	1129.57 1299.00	972.17 1118.00	1059.13 1218.00	1015.65 1168.00	1102.61 1268.00

**32MEG HARDCARD**...Western Digital Filecard, supplied with  
XTREE file management software **FREE** (Normally £50.00)  
Supplied ready configured.....ONLY.....£319.00

**21MEG HARDCARD**...Tandon Business card, top quality at a  
low price. Supplied fully configured.....ONLY.....£269.00

**Commodore**

64C computer only £149.95 Connoisseurs pack £199.95  
C128 computer only £199.95 C128 starter pack £239.95  
1541C D-drive £189.95 Music exp. pack £75.00  
Excelsior+ CBM compat. disk drive (inc. GEOS) £159.95  
Excelsior+ as above c/w Freeze Machine cart. £179.95

**SCOOP** Complete brand new '64 circuit  
purchase boards. Use for repair, spare or  
upgrade a VIC-20. Limited qty. **only**  
**£45.00**

**AMIGA** A great offer on the fabulous new 500 model.  
Includes TV modulator, Deluxe Paint, Silent  
Service & 5 disks of public domain s'ware.  
PLUS one of either Skyfox, One on One or  
similar. Price includes voucher allowance. **only**  
**£469.00**

Philips CM8833 hi-res colour monitor, STEREO sound, inc cable £279.00  
(ONLY £269.00 if bought with an AMIGA)

**PRINTERS** **PRICES INCLUDE**  
VAT, DELIVERY & CABLE

We use and recommend Star printers, they offer the best combination of  
features, print quality, reliability and value for money. Sheet feeders in stock.

Star **NL-10** New low price (state cartridge type) £219.00

..SPECIAL: 2 spare ribbons value £13.90 **FREE** with **NL-10**..

Star **NX-15** Wide carriage version of **NL-10** £319.00

Star **NB24-10** Brilliant 24 pin printer 216cps 72cps NLO £479.00

Star **NB24-15** Wide carriage 24 pin £599.00

PANASONIC KXP-1081 Best sub £200.00 model £179.00

Many other models in stock at competitive prices

All prices include VAT/delivery. Next day delivery £5.00 extra.

**How to order**

Send cheque, P.O. or ACCESS/VISA details  
By phone with ACCESS/VISA details  
Govt., Educational or PLC orders accepted  
Same day despatch whenever possible  
Callers welcome, open 6 days 9.30-5.30  
All goods subject to availability E.&O.E.  
TELEX: 333294 FAX: 0386 765354  
Also at: 1755 Pershore Rd., Cotteridge, Birmingham B30 3BH Tel: 021 458 4564

**Evesham Micros**  
63 BRIDGE STREET  
EVESHAM  
WORCS WR11 4SF  
Tel: 0386 765500



## Phoenix

Ian Wooff

**T**his is the first part of Multi-Print which adds 22 new commands and 7 new functions to Basic.

These new commands are aimed at making better quality screen displays a lot easier to produce.

They are based around a routine which supports 42 characters to a line and 5 user definable windows, with a few other goodies thrown in for good measure.

If you have successfully assembled all the code making up Multi-Print, I will explain what the new commands/functions do and how you can use them.

Any program which contains any of the new commands/functions must have the Multi-Print code in memory.

This means the machine stack must be lowered to 61740. The program must also begin with the command RANDOMISE USR 61741. This can be achieved by adding the following lines to your program:

```
10 RANDOMISE USR 61741
   your program
```

```
9999 *CLEAR 61740: LOAD "MULTI-PRINT"CODE: RUN
```

Save the program with SAVE "filename". LINE 9999 to auto-run from line 9999, followed by the code making up Multi-Print.

The commands NEW and CLEAR turn Multi-Print off and so RANDOMISE USR 61741 must be used to turn it back on after using these commands.

The new commands can be used as ordinary commands such as the ones already present in Sinclair Basic. Functions though are treated slightly differently. The value returned by a function is given to the last numeric variable used.

LET a = \*DPEEK 40000 (there must be a space after a-).

This will give the variable a the result of PEEK 40000 + 256 \* PEEK 40001, while the following will do the same, as -

```
LET a = 0: PLOT 10,10: DRAW 100,100:
*DPEEK 40000
```

The last variable is still a. The following will not though as -

```
LET a = 0: PLOT 10,10: LET S=100:
DRAW S,S: *DPEEK 40000
```

The last variable is not a, but s and so the result will be given to the last variable s.

The commands and functions may have any form of parameters (ie, numeric, variable, expressions etc).

Attribute values used can be calculated using the method described in chapter 16 of the programming manual.

The commands are listed below followed by the functions.

\*RAM - Selects 42 characters per line printing mode. 32 characters per line reselected by CLS, CLEAR and NEW commands.

\*ROM - Selects 32 characters per line printing mode.

\*CLS - Clears the screen, does not select 32 characters per line.

\*CURENT x - Selects current window (x=1 > 5).

\*WINDOW w,x,y,z - Defines the area of the screen covered by current window. Windows may overlap each other. W = left margin (0-42), x = right margin (0-42), y = top line (0-24), z = bottom line (0-24). Windows are initially defined to cover the whole screen.

\*SCROLL - Scrolls current window up one line. The window will scroll automatically when the print position reaches the bottom line of the current window. Both text and attributes are scrolled.

\*COLOUR x - Gives attribute value used to fill bottom line of current window when it scrolls up. (x=0 > 255).

\*SOUND x,y,z - Used to produce sound automatically on printing. X = 0 no sound y and z must be there but not used. X = 1 sound given by data y = pitch z = duration. X = 2 sound according to print positions y and z must be there but not used. (X=1 > 3, y and z if used =0 > 65535).

\*HOME - Moves 42 characters per line to top left of current window.

\*SWAP x,y - Replaces attribute x for y in current window (x and y=1=0 > 255).

\*WASH x - Replaces all attributes in current window with given attribute value (x=0 > 255).

\*TFADE x - Totally fades the current window so no text remains in it (x=0 > 255).

\*WCLS - Clears the current window.

\*PAUSE x - Waits x/50 seconds. Is not stopped by a keypress (x=0 > 65535, 1/50 second > 22 minutes).

\*BOX w,x,y,z - Draws a box w and x giving bottom left corner of box, y giving the length, z giving the height of the box (w,x,y,z are all hi-res coordinates).

\*DPOSE x,y - Does a double poke (x and y=0 > 65535).

\*SCREEN x - Selects address of current screen. A second screen requires 6912 bytes.

The new commands, except box, cause output onto current screen. This allows a screen to be produced, without the user seeing it being produced. If x is 0, the default value of 16384 is used.

\*MOVE - Moves current screen to 16384, so it can be seen.

\*CSCT x - Provides address of start of character data used by 42 characters per line printing routine. If x=0 then the original data is reselected.

\*BREAK x - Disables break (x=0 > 1). X=1 break off x=0 break on.

\*ONERROR x - Line jumped to when an error occurs (x=1 > 9999).

\*NOTE x,y,z - Plays a note x = note 1 pitch, y = note 2 pitch, z = duration (x,y and z=0 > 255).

The functions produced by the program are as follows.

\*DPDEK x - Does a double peek of address given (x=0 > 65535).

\*RND - Returns a random number (0 to 1 inclusive).

\*AND x,y - Returns a logical AND of x and y.

\*XOR x,y - Returns a logical XOR of x and y.

\*OR x,y - Returns a logical OR of x and y (x and y including above =0 > 65535).

\*ERROR - Returns code of last error.

\*FADE x - Fades the current window with the value given. Try 20. Returns number of cells still holding data (x=0 > 255).

\*When 42 column mode is selected the program will try to locate the text being printed into the current window. The text is automatically formatted so that words are not split in half over two lines.

This means all text printed in 42 mode is held in a 50 byte print buffer. This buffer is cleared when a space is received and so all text must be terminated by a space, for it to be printed in the correct position.

In 42 mode the number of user definable graphics is also increased to 37 the shapes on the number keys becoming user definable graphics. These graphics are only six bits wide.



# PROGRAMMING: SPECTRUM

One user definable  
Graphic character

```

X X X X X - -
X X X X X - -
X X X X X - -
X X X X X - -
X X X X X - -
X X X X X - -
X X X X X - -

```

X's get printed, -'s do not and will be obliterated by next character.

The new user definable graphics on the number keys only appear in 42 mode. To use all 37 graphic characters load the data in from address 62030 onwards.

If you are just using the ordinary 21 graphics then load the data in from address 64216.

If you require graphics Axx to appear correctly in basic programs then you must lower the system variable UDG to 65357 by \*DPOKE 23675,65367.

The 90 tokens in Sinclair Basic, codes 165-255, can also be redefined to any text you wish.

The program to produce the code needed by Multi-Print to redefine the tokens is given next week.

This is of use if you are writing programs which frequently use the same words and memory is at a premium.

Multi-Print contains five new error messages, their meaning being given below.

1) Window off screen. An attempt has been made to define a window which is not contained on the screen.

2) Invalid window number. An attempt has been made to set a current window of less than 1 or more than 5.

Print buffer full. More than 50 characters have been received without a space been sent.

Print out of screen. The coordinates given for printing were out of range.

Window parameter error. An attempt has been made to define a window with the bottom line above the top of the right margin to the left of the left margin.

```

1 DEF FN h(a$)=FN b(a$(1))*16+FN b(a$
(2))
2 DEF FN b(a$)=CODE a$-48-7*(a$)"9"
10 CLEAR 61740
20 FOR a=61741 TO 65239 STEP 8
21 POKE 23692,100
30 READ r$,r
40 PRINT a;"-";r$;"=";r
50 LET c=0
60 FOR g=0 TO 7: LET z=FN h(r$): LET r
$=r$(3 TO )
70 POKE a+g,z
80 LET c=c+z: NEXT g
90 IF c<r THEN PRINT "ERROR IN LINE
";1000+((a-61741)*1.25): STOP
100 NEXT a
110 POKE 64548,16: SAVE "MULTIPRINT"COD
E 61741,3498
1000 DATA "2A3D5C0137F17123",640
1010 DATA "70C93A3A5CFE0B28",826
1020 DATA "5AFE0C2B04FE1420",706
1030 DATA "143AD0FAA7282C21",820
1040 DATA "37F1E5CD49FAFDCB",1509
1050 DATA "01AEC37D1B32D5FA",1035
1060 DATA "ED4BCAFA78B12813",1120
1070 DATA "21425C712370AF23",661
1080 DATA "77CD49FA2137F1E5",1205
1090 DATA "C3761BFD0B017E20",955
1100 DATA "072137F1E5C3B712",961
1110 DATA "CD0313CD49FA2A59",886
1120 DATA "5CCDA7112137F1E5",1039
1130 DATA "C3B412AF32D8FA21",1117
1140 DATA "5D5C35E5DFE1FE2A",1211
1150 DATA "20D134DD21E5FADD",1247
1160 DATA "CB007E20C62A5D5C",786
1170 DATA "E5DD4600DFE6DFFD",1417
1180 DATA "23DD8E002019E710",750
1190 DATA "F4CD49FAFD362600",1117
1200 DATA "E1DD6E0111DBFA26",1081
1210 DATA "00195E2356EBE948",780
1220 DATA "0C0600DD09E1225D",600
1230 DATA "5C21DBFA341BC0CD",1064
1240 DATA "7A1CCD3AF2CD7A1C",1010
1250 DATA "180CDF1809CD7A1C",647
1260 DATA "CD3AF2CD821CFDCB",1324
1270 DATA "007E2821FE0D2804",510
1280 DATA "FE3A2019CD49FAFD",1150
1290 DATA "CB017E20342137F1",743
1300 DATA "E521B712E5C3761B",1032
1310 DATA "D1FD36000AC37BF1",1082
1320 DATA "CDD52D3BF320F1C9",1236
1330 DATA "CDA22D1BF6FDCB00",1138
1340 DATA "7E28EADFFD36000B",941
1350 DATA "FE2C20E1CD49FAE7",1314
1360 DATA "C93ADBFA876F119D",1145
1370 DATA "FBC3D4F1CD35F2ED",1636
1380 DATA "43D1FACD35F2ED43",1330
1390 DATA "D3FACD2DF2FE03D2",1420
1400 DATA "26F23256FAFE01C2",1115

```

```

1410 DATA "53F4ED48D3FAED43",1404
1420 DATA "CCFAED4BD1FAED43",1529
1430 DATA "CEFA1863CD35F2ED",1316
1440 DATA "43CAFA185A3EA0C3",1050
1450 DATA "A1F23EB0C3A1F23E",1301
1460 DATA "ABC3A1F232B6F23C",1300
1470 DATA "32B9F2CD35F2ED43",1281
1480 DATA "D1FACD35F22AD1FA",1460
1490 DATA "7CAB477DA94FCD2B",984
1500 DATA "2DCDF2A1829CD35",870
1510 DATA "F27BB1200301D7FB",1041
1520 DATA "05ED43D9FA1818ED",1061
1530 DATA "5FCD282D3E7FCD2B",819
1540 DATA "2DEF0538CDDFA18",871
1550 DATA "06CD2DF23257FA18",909
1560 DATA "56CD2DF232D1FACD",1292
1570 DATA "2DF232D2FACD2DF2",1289
1580 DATA "32D3FACD2DF232D4",1265
1590 DATA "FA327D5C3AD3FA32",1086
1600 DATA "7E3CAFCDD282D3AD",951
1610 DATA "FACD46F33AD1FACD",1490
1620 DATA "282DAFCD46F3AFCD",1158
1630 DATA "282D3AD2FACD282D",893
1640 DATA "CD6E34CDB7243AD1",1058
1650 DATA "FACD282D0C6E34AF",1082
1660 DATA "CD46F3215827D918",919
1670 DATA "3DCD282D0CDB724C9",976
1680 DATA "CD35F2ED43D1FACD",1468
1690 DATA "35F26069ED4BD1FA",1267
1700 DATA "7123701821CD35F2",817
1710 DATA "60694E2346CD2B2D",677
1720 DATA "CDDF2A18113A8D5C",834
1730 DATA "083A58FA328D5CCD",892
1740 DATA "05F90B328D5C186A",675
1750 DATA "CD35F2FB767BB128",1206
1760 DATA "610B1BF83AD5FACD",1106
1770 DATA "282DCDDFA1853CD",899
1780 DATA "35F27BB1C2A7F301",1197
1790 DATA "0040ED43D6FAC353",1110
1800 DATA "F411004001001B2A",395
1810 DATA "D6FAEDB01834CD2D",1203
1820 DATA "F232D3FACD2DF232",1295
1830 DATA "D2FACD2DF247F33A",1324
1840 DATA "485C1F1F1F21D2FA",750
1850 DATA "0EFE56235E626B25",725
1860 DATA "2005EE10D30C622D",657
1870 DATA "20F5EE10D30C6B10",877
1880 DATA "EEFB1862CD2DF2FE",1357
1890 DATA "02D226F232D0FA18",1024
1900 DATA "55CD2DF2F5FE06D2",1292
1910 DATA "77F6A7CA77F63AC2",1351
1920 DATA "FA21F5FF110B0047",882
1930 DATA "1910FD1159FA19EB",910
1940 DATA "214EFA010B00EDB0",786
1950 DATA "F121F5FF110B0047",873
1960 DATA "32C2FA1910FD1159",894
1970 DATA "FA19114EFA010B00",632
1980 DATA "EDB018122A4F5C01",669

```

continued on page 26 ►



# PROGRAMMING: SPECTRUM

◀ continued from page 25

1990 DATA "0500090186F57123",542	2550 DATA "32C9FAC9F1C0CFF9",1604	3110 DATA "C921C6FA35D6A587",1249
2000 DATA "701803CD65F62137",779	2560 DATA "324EFAAF32C9FAC9",1255	3120 DATA "6F2600ED5BC3FA19",947
2010 DATA "F1E5C3761BCD1DF9",1293	2570 DATA "CDE6F818EFD13A8F",1356	3130 DATA "4E2346235E2356EB",668
2020 DATA "18F4CD2DF232D1FA",1269	2580 DATA "5CE6F8B2328F5C18",1057	3140 DATA "ED42552AC6FA0AFE",1142
2030 DATA "CD2DF232D2FACD2D",1252	2590 DATA "EAD13ABF5CE6C7CB",1368	3150 DATA "A5300A7723031520",433
2040 DATA "F232D3FACD2DF232",1295	2600 DATA "22CB22CB22B2328F",879	3160 DATA "F522C6FAC9C5D523",1373
2050 DATA "D4FACDCFF9DA90F6",1731	2610 DATA "5C18DBF1DDCB00B6",1179	3170 DATA "22C6FACDC6F7D1C1",1534
2060 DATA "32D4FA3AD3FACDCF",1443	2620 DATA "FE0120CFDDCB00F6",1164	3180 DATA "2AC6FA18E821C6FA",1227
2070 DATA "F9DA90F632D3FA57",1455	2630 DATA "18C9F1DDCB00BEFE",1334	3190 DATA "35FDCB0186D6A5CD",1228
2080 DATA "3AD4FABACA90F6D2",1508	2640 DATA "0120C0DDCB00FE18",927	3200 DATA "100CC92AD9FAEB6F",1084
2090 DATA "90F63250FACDB9F9",1409	2650 DATA "BAF1DDCB0296FE01",1258	3210 DATA "266029292919EB3A",479
2100 DATA "3254FA7A3251FACD",1092	2660 DATA "20B1DDCB02D618AB",1044	3220 DATA "4EFAF5CDB9F94FF1",1532
2110 DATA "69F93255FA3AD1FA",1336	2670 DATA "2A4F5C0105000936",282	3230 DATA "E607473AFAFFACB27",937
2120 DATA "FE18D272F6573AD2",1203	2680 DATA "F4233609C9CD10F6",1010	3240 DATA "CB27CB27F5E63887",1150
2130 DATA "FAFE18D272F6BAD2",1494	2690 DATA "181ECD10F6F13E01",825	3250 DATA "876FF1E6C0CDB9F9",1548
2140 DATA "90F6CA90F63252FA",1364	2700 DATA "18162190FA22C6FA",955	3260 DATA "67D5ED5BD6FA19D1",1342
2150 DATA "7A3253FA18883A52",805	2710 DATA "3E02180CCD10F63E",629	3270 DATA "79856F7CCE00670E",812
2160 DATA "FA324FFA3A50FA32",1067	2720 DATA "031805CD10F63E04",565	3280 DATA "08C51AD51103FF4F",798
2170 DATA "4EFA18F0CD2DF232",1134	2730 DATA "32CBFAED4BCAFA78",1384	3290 DATA "780600A7280DCB39",606
2180 DATA "58FA32BF5C08CDE9",1069	2740 DATA "B1C265F176FDCB01",1288	3300 DATA "CB18CB3BCB1ACBFB",1172
2190 DATA "F9CDF5F9CD00FA08",1411	2750 DATA "AEFDCB304EC4CD0E",1171	3310 DATA "3D18F07EA3B1DDCB",1215
2200 DATA "E5772310FCE1CD1A",1107	2760 DATA "210000FD7437FD74",826	3320 DATA "025628022FAB7723",502
2210 DATA "FA1D4120F318CDDC",1053	2770 DATA "26220B5C2322165C",358	3330 DATA "7EA2B0DDCB025628",1016
2220 DATA "2DF232D1FACD2DF2",1288	2780 DATA "CDB016FDCB37AECD",1293	3340 DATA "022FAA772B24D113",645
2230 DATA "0B3AD1FA57CDF5F9",1311	2790 DATA "6E0DFDCB02EE3E33",964	3350 DATA "C10D20C53A4FFA47",893
2240 DATA "CDE9F9CD00FA08E5",1379	2800 DATA "D73E2CD73ACBFA3C",1104	3360 DATA "3A4EFAACDB9F94FCD",1309
2250 DATA "BE2001722310F9E1",862	2810 DATA "4F0E00CD1B1A3E20",437	3370 DATA "A6F9D5C5010040ED",1127
2260 DATA "CD1AFAA11D20F018",871	2820 DATA "D7CD08F7ED46455C",1148	3380 DATA "5BD6FAED4219C1D1",1285
2270 DATA "A3CD21FAAFE57723",1209	2830 DATA "CD1B1A3E3AD7FD4E",924	3390 DATA "3ABF5C4F717BE607",842
2280 DATA "10FCE1CDDAF91D41",1259	2840 DATA "0D0600CD1B1ACD97",633	3400 DATA "A72B0223713A4EFA",743
2290 DATA "20F31890CD2DF257",1022	2850 DATA "10FD360AFFFD0CB01",1045	3410 DATA "C6062151FABE2829",839
2300 DATA "DD210000CD21FAE5",971	2860 DATA "9ECD65F62137F1E5",1268	3420 DATA "324EFA3A56FAFE01",1027
2310 DATA "ED5FA62801AA77A7",995	2870 DATA "C3AC121112F73AC8",925	3430 DATA "2B10FE02C03A4EFA",890
2320 DATA "2802DD232310F1E1",815	2880 DATA "FACD140CC9FF5769",1135	3440 DATA "6F3A4FFA5FAF6757",958
2330 DATA "CDDAF91D4120EBDD",1251	2890 DATA "6E646F77206F6666",787	3450 DATA "1B072ACCFAED5BCE",1061
2340 DATA "E5C1C9CD39F5CD2B",1378	2900 DATA "207363726565EE49",873	3460 DATA "FACDB503DD218F5C",1128
2350 DATA "2DCDF2A18B9AF32",981	2910 DATA "6E76616C69642077",789	3470 DATA "C93A4FFA2153FABE",1144
2360 DATA "D4FACD2DF257CD3D",1307	2920 DATA "696E646F77206F75",804	3480 DATA "3C302D324FFA3A50",670
2370 DATA "F53AD4FA3CCA26F5",1310	2930 DATA "6D6265F25072696E",959	3490 DATA "FA18C53A4EFAFE80",1239
2380 DATA "32D4FA7BB120EF18",1104	2940 DATA "7420627566666572",782	3500 DATA "30E73EB0324EFAC9",1048
2390 DATA "9EDD218F5CF53AC9",1151	2950 DATA "2066756CEC507269",894	3510 DATA "2100400100187554",323
2400 DATA "FAA7CABBF5FE1FCA",1538	2960 DATA "6E74206F7574206F",745	3520 DATA "1E01EDB03A8D5C77",854
2410 DATA "FAF5FE1ECA09F6FE",1490	2970 DATA "66207363726565EE",902	3530 DATA "01FF02EDB0C3CBF4",1313
2420 DATA "10CA1AF6FE11CA26",1001	2980 DATA "57696E646F772070",776	3540 DATA "3A54FA473A52FA4F",932
2430 DATA "F6FE13CA38F6FE17",1300	2990 DATA "6172616D65746572",849	3550 DATA "3A55FA673A53FA6F",998
2440 DATA "CA15F6FE12CA47F6",1260	3000 DATA "206572726FF2ED5B",1042	3560 DATA "7D91577C905F1CD5",961
2450 DATA "FE14CA56F6C9F1FE",1504	3010 DATA "C6FA21C2FAED52DA",1462	3570 DATA "79E618C640677987",996
2460 DATA "20D273F721C9FAFE",1342	3020 DATA "7FF6EB772322C6FA",1244	3580 DATA "87878787806FC1C5",1169
2470 DATA "162003361FC9FE10",613	3030 DATA "21C5FABE3077FEA5",1256	3590 DATA "E5AF545DB82816C5",1024
2480 DATA "200277C9FE112002",659	3040 DATA "3037FE20C01190FA",992	3600 DATA "21200044197DFE20",569
2490 DATA "77C9FE13200277C9",947	3050 DATA "2AC6FAED52E57DCB",1366	3610 DATA "30047CC60767E5ED",950
2500 DATA "FE17200277C9FE12",903	3060 DATA "276FCB2785673A4E",764	3620 DATA "B0D1C110EA41AF12",1086
2510 DATA "200277C9FE142002",662	3070 DATA "FA6F3A51FA95BCDC",1307	3630 DATA "1310FCE1C1247CE6",1095
2520 DATA "77C9FE06CAF8F8FE",1532	3080 DATA "E6F8E1452190FA7E",1325	3640 DATA "0720D43A52FAAF3A",778
2530 DATA "0DCAE6F8C9F1FE18",1413	3090 DATA "E5C5CD10F8C1E123",1348	3650 DATA "53FA9108CDE9F906",1179
2540 DATA "D2B9F6324FFA3E1E",1064	3100 DATA "10F52190FA22C6FA",1170	3660 DATA "00CD00FAEB212000",755



# PROGRAMMING: SPECTRUM

3670 DATA "1908C5E5E5EDB0E1",1326	4240 DATA "454B060544504F48",457	4810 DATA "38000044447C4444",452
3680 DATA "11200019D1C13D20",569	4250 DATA "4504055446414445",434	4820 DATA "4400003810101010",188
3690 DATA "F1EB3A57FA417723",1090	4260 DATA "060457434C530805",336	4830 DATA "3800000404044444",204
3700 DATA "10FC3A50FA324EFA",1034	4270 DATA "5041555345060545",462	4840 DATA "3800004850605048",456
3710 DATA "C97BCB2FCB2FCB2F",1071	4280 DATA "52524F520B065343",489	4850 DATA "4400004040404040",388
3720 DATA "C6586778E6070F0F",776	4290 DATA "5245454E06035345",459	4860 DATA "7C0000446C544444",520
3730 DATA "0F816FC9CB3FCB3F",988	4300 DATA "450B044353455406",390	4870 DATA "440000446454544C",480
3740 DATA "CB3FC978E6F8C640",1327	4310 DATA "03524E440B03424F",387	4880 DATA "4400003844444444",396
3750 DATA "6778E6070F0F0F81",634	4320 DATA "580003414E440402",308	4890 DATA "3800007B44447840",496
3760 DATA "6FC9D5CB2757CB27",1096	4330 DATA "4F520403584F5204",421	4900 DATA "4000003844444444",408
3770 DATA "C602B2D1C9247CE6",1130	4340 DATA "F1F3E6F260F5BBF3",1727	4910 DATA "3800007B44447848",512
3780 DATA "07C07DC6206FD87C",1005	4350 DATA "89F241F4CBF450F4",1459	4920 DATA "4400003840380444",316
3790 DATA "D60867C93A54FA4F",997	4360 DATA "5AF459F2FCF4FEF3",1658	4930 DATA "3800007C10101010",244
3800 DATA "3A55FA913C4F47C9",949	4370 DATA "D9F45FF472F362F3",1498	4940 DATA "1000004444444444",356
3810 DATA "3A52FA5F3A53FA93",1023	4380 DATA "4DF36BF526F585F3",1331	4950 DATA "380000444444442B",368
3820 DATA "3C5FC9C53A54FA4F",1024	4390 DATA "91F39CF3AEF3C3F2",1641	4960 DATA "1000004444444444",372
3830 DATA "3A52FA47CDA6F9D5",1294	4400 DATA "D4F2EEF292F297F2",1715	4970 DATA "280000442810102B",220
3840 DATA "ED5BD6FA010040ED",1094	4410 DATA "9CF2000000000000",398	4980 DATA "4400004444281010",276
3850 DATA "4219D1C1C9D51120",956	4420 DATA "0000001010101000",64	4990 DATA "1000007C08102040",260
3860 DATA "0019D1C9CDE9F9CD",1327	4430 DATA "1000002424000000",88	5000 DATA "7C00003820202020",308
3870 DATA "F5F97BCB27CB27CB",1304	4440 DATA "000000287C28287C",368	5010 DATA "38000004020100B",176
3880 DATA "275FC53A54FA4F3A",860	4450 DATA "280000107C507C14",404	5020 DATA "0400003808080808",92
3890 DATA "52FA47CDB0F9D501",1263	4460 DATA "7C1000686810205B",484	5030 DATA "3800001038541010",244
3900 DATA "0040ED5BD6FAED42",1159	4470 DATA "5800001028102A44",270	5040 DATA "1000000000000000",16
3910 DATA "19D1C1C9D53600FF",1190	4480 DATA "3A00000810000000",82	5050 DATA "00FC001824702020",488
3920 DATA "C9020002FE001700",482	4490 DATA "0000001020202020",144	5060 DATA "7C00000038043C44",312
3930 DATA "1F023838020002FE",403	4500 DATA "1000002010101030",144	5070 DATA "3C000040407B4444",444
3940 DATA "0017001F02383802",170	4510 DATA "2000000028107C10",228	5080 DATA "7800000038404040",368
3950 DATA "0002FE0017001F02",312	4520 DATA "2800000010107C10",212	5090 DATA "38000004043C4444",260
3960 DATA "3838020002FE0017",393	4530 DATA "1000000000000010",32	5100 DATA "3C00000038447840",368
3970 DATA "001F023838020002",149	4540 DATA "1020000000007C00",172	5110 DATA "3C000000C10181010",144
3980 DATA "FE0017001F023838",422	4550 DATA "0000000000000018",24	5120 DATA "100000003C44443C",272
3990 DATA "020002FE0017001F",312	4560 DATA "1800000004081020",84	5130 DATA "04380040407B4444",444
4000 DATA "0238380000000000",114	4570 DATA "400000384C545464",464	5140 DATA "4400001000301010",164
4010 DATA "0000000000000000",0	4580 DATA "3800003010101010",168	5150 DATA "3800000400040404",72
4020 DATA "0000000000000000",0	4590 DATA "3800003844043840",304	5160 DATA "2418002028303028",268
4030 DATA "0000000000000000",0	4600 DATA "7C00003844180444",344	5170 DATA "2400002020202020",196
4040 DATA "0000000000000000",0	4610 DATA "380000081828487C",324	5180 DATA "1800000068545454",380
4050 DATA "0000000000000000",0	4620 DATA "0800007C407B0444",388	5190 DATA "5400000078444444",408
4060 DATA "0000000000100000",1	4630 DATA "3800003840784444",432	5200 DATA "4400000038444444",328
4070 DATA "A590FA0300000064",662	4640 DATA "3800007C04081020",240	5210 DATA "3800000078444478",432
4080 DATA "000A000000000000",10	4650 DATA "2000003844384444",348	5220 DATA "404000003C44443C",384
4090 DATA "FF004000D7FAECF1",1261	4660 DATA "3800003844443C04",312	5230 DATA "040600001C202020",134
4100 DATA "FAF1F2F100F2F7F1",1704	4670 DATA "3800000000100000",72	5240 DATA "2000000038403804",212
4110 DATA "05425245414B0606",374	4680 DATA "1000000010000010",48	5250 DATA "7800001038101010",240
4120 DATA "434F4C4F55520604",478	4690 DATA "1020000004081008",84	5260 DATA "0C00000044444444",284
4130 DATA "4641444506044E4F",439	4700 DATA "04000000003C003C",124	5270 DATA "3800000044442828",272
4140 DATA "544502074F4E4552",470	4710 DATA "0000000010080408",36	5280 DATA "1000000044545454",336
4150 DATA "524F52060352414B",476	4720 DATA "1000003844081000",164	5290 DATA "2800000044281028",204
4160 DATA "0804484F4D450803",320	4730 DATA "10000038544C5C40",388	5300 DATA "440000004444443C",332
4170 DATA "524F4D0806534352",484	4740 DATA "3800003844447C44",440	5310 DATA "043800007C081020",240
4180 DATA "4F4C4C0805534F55",491	4750 DATA "4400007B44784444",512	5320 DATA "7C00003844545444",484
4190 DATA "4E44020453574150",467	4760 DATA "7800003844404044",440	5330 DATA "3800000004784828",388
4200 DATA "0406435552454E54",475	4770 DATA "3800007048444448",448	5340 DATA "2800000010284428",204
4210 DATA "0A045741534B0606",329	4780 DATA "7000007C407B4040",548	5350 DATA "10000000106C007C",264
4220 DATA "57494E444F570003",475	4790 DATA "7C00007C407B4040",560	5360 DATA "0000007884B4A4B4",776
4230 DATA "434C530805445045",456	4800 DATA "4000003844404C44",396	5370 DATA "B478000000000000",252



## Pawn Grabber

Simon Cooke

**F**irst assemble the program, PAWN-GRAB.TOS, with DevpacST or a similar assembler to create an executable TOS file.

Double click PAWNGRAB.TOS from the desktop, and press a key when loaded. Load *The Pawn* as normal, without resetting the computer and select the picture you wish to save by pulling it down as far as it will go. Next, remove Pawn disc, insert save disc, and press the Alternate/Help keys together (the picture will go weird, this is normal).

The screen will now save under PAWNx.NEO (x starting at 1 and going through the character set). When the drive stops, insert the Pawn disk and continue as normal.

Please note that the saved picture may have two or more corrupt inks, which can easily be corrected using normal *Neochrome* ink settings.

This is because *The Pawn* uses interrupts to display more than 16 colours on the screen at once, so that the text and menu bar stay the same colour. The text on the picture will also be corrupt, due to them being displayed in medium resolution as opposed to low rez.

This may work with *Guild Of Thieves*, and other programs, if they leave the VBL queue alone, and boot from the desktop.

```
start    dc.w $a00a
         pea scode(pc)
         move.w #38,-(sp)
         trap #14
         addq.l #6,sp
         pea string1(pc)
         move.w #9,-(sp)
         trap #1
         addq.l #6,sp
         move.w #7,-(sp)
         trap #1
         addq.l #2,sp
         clr.w -(sp)
         move.l #$1200,-(sp)
         move.w #$31,-(sp)
         trap #1
```

```
scode    lea savepic(pc),a1
         move.l $456,a0
         adda.l #28,a0
         move.l a1,(a0)
         rts
```

```
savepic  movem.l d0-d7/a0-a6,
         -(sp)
         tst.w $4ee
         bmi exit
         move.w #-1,$4ee
         clr.l d0
```

```
         move.b $ff8201,d0
         swap d0
         move.b $ff8203,d0
         lsl.w #8,d0
         move.l d0,a6
         lea filename+4(pc),a1
         move.b (a1),d0
         addi.b #1,d0
         move.b d0,(a1)
         clr.w -(sp)
         pea filename(pc)
         move.w #$3c,-(sp)
         trap #1
         addq.l #8,sp
         tst.l d0
         bmi.s exit
         move.w d0,handle
         lea dummy(pc),a0
         moveq.l #4,d0
         bsr write
         lea palbuf(pc),a0
         lea $ff8240,a1
         moveq.l #15,d0
         move.w (a1)+,d1
         andi.w #$777,d1
         dbra d0,palop
         lea palbuf(pc),a0
         moveq.l #32,d0
         bsr write
         lea dummy(pc),a0
         moveq.l #92,d0
         bsr write
         move.l a6,a0
         move.l #32000,d0
         bsr write
         move.w handle,-(sp)
         move.w #$3e,-(sp)
         trap #1
         addq.l #4,sp
         movem.l (sp)+,d0-d7/a0-a6
         rts
```

```
exit     write  move.l a0,-(sp)
         move.l d0,-(sp)
         move.w handle,-(sp)
         move.w #$40,-(sp)
         trap #1
         lea 12(sp),sp
         tst.l d0
         bmi.s exit2
         rts
         exit2  addq.l #2,sp
         bra.s exit
```

```
palbuf   ds.w 16
handle   dc.w 0
dummy    ds.b 92
filename dc.b 'PAWN0.NEO',0
string1  dc.b 'Pawn Screen Grabber v1.0',13,10
         dc.b 'Written by Simon Cooke',13,10
         dc.b '*** Installed ***',13,10,0
```



# NEW LOW PRICE ST!



# £260

+VAT=£299

## ONLY FROM SILICA

Finally, there's a personal computer that not only solves problems like other computers, but also solves the one problem that other computers have created. Affordability. Silica Shop are pleased to present the ST range of personal/business computers from Atari. The ST was designed utilising the most recent breakthroughs in semiconductor technology, producing a personal computer that performs tasks with fewer parts. Which means it costs less to make. And less to buy. The latest ST computers now include built-in power supplies and built-in disk drives. The TOS operating system and GEM window environment are now on ROM chips which are already installed in the ST keyboard. This enables automatic instant booting when you switch on. Silica Shop are pleased to offer the complete Atari ST range. Our mail order department is situated in Sidcup and we have 3 retail outlets at Sidcup, Lion House (Tottenham Court Rd) and Selfridges (Oxford Street). We have 8 years experience of Atari products, longer than any other UK company, and are well established as the UK's No. 1 Atari specialists. With a group turnover of over £9 million and in excess of 80 staff, we offer you unbeatable service and support. We provide several facilities which you will find invaluable during your Atari computing life and most of these facilities are available ONLY FROM SILICA. We suggest that you read through what we have to offer, before you decide where to purchase your Atari ST.

### FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package:

- \* BASIC Language Disk
- \* BASIC Manual
- \* ST Owners Manual
- \* TOS/GEM on ROM

If you buy your ST from Silica Shop, you will also receive:

- \* NEochrome Sampler - colour graphics program
- \* 1st Word - Word Processor

In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special ST STARTER KIT worth over £100, which we are giving away FREE OF CHARGE with every ST computer purchased at our normal retail prices. This kit is available ONLY FROM SILICA and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

### DEDICATED SERVICING - Only From Silica

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

**1Mb RAM UPGRADE:** Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £96.96 (+VAT = £109.96).

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

### THE FULL STOCK RANGE - Only From Silica

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

### AFTER SALES SUPPORT - Only From Silica

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

### FREE CATALOGUES - Only From Silica

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

### FREE OVERNIGHT DELIVERY - From Silica

Most orders are processed through our computer within 24 hours of receiving them. Most hardware orders are sent by the overnight GROUP 4 courier service FREE OF CHARGE to customers within the UK. This method helps to ensure minimum delay and maximum protection.

### PRICE MATCH - Only From Silica

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

## SO MUCH FOR SO LITTLE!

There is nothing that can compare with the incredible value for money offered by Atari's 520ST-FM. For only £260 (+VAT=£299), you can purchase a powerful 512K RAM computer, with a 95 key keyboard (including numeric keypad), MIDI interface, GEM, a palette of 512 colours, mouse controller, and a 512K built-in disk drive. The 520ST-FM has a TV modulator built-in, and comes with a lead to allow you to plug it straight into any domestic colour television set. The mains transformer is also built-in to the keyboard, so there are no messy external boxes. You couldn't wish for a more compact, powerful and stylish unit. Atari ST computers are now firmly established in the UK, there are nearly 500 software titles already available for a wide variety of applications and the list is growing all the time. And that's not all. When you buy your new 520ST-FM (or any Atari ST computer) from Silica Shop, you will get a lot more, including a FREE Silica ST Starter Kit worth over £100. Read the ONLY FROM SILICA section on the left, to see why you should buy your new high power, low price 520ST-FM from Silica Shop, the UK's No. 1 Atari Specialists. For further details of the range of Atari ST computers and the FREE Silica ST Starter Kit, complete and return the reply coupon below.

**ATARI 520ST-FM NOW ONLY £260 (+VAT=£299)**  
520ST-FM with 512K RAM & mono monitor £399 (inc VAT) Upgrade from 512K RAM to 1024K RAM £100 (inc VAT)

### ATARI 1040ST-F - NEW PRICE

We are pleased to announce a new reduced price point on the 1040ST-F which is now available for only £499 (inc VAT). The 1040 is a powerful computer with 1Mb of RAM and also includes a built-in 1Mb double sided 3 1/2" disk drive. The 1040 has been designed for use on business and professional applications most of which require a high resolution monochrome or colour monitor. It does not therefore have an RF modulator for use with a domestic TV set. Modulators can be fitted for £49 (inc VAT).

1040ST-F Keyboard - Without Monitor £499 (inc VAT)  
1040ST-F Keyboard + High Res SAM125 Mono Monitor £599 (inc VAT)

If you would like further details of the 1040ST-F, return the coupon below.

### MEGA ST's NOW IN STOCK

For the user who requires even more RAM than the 520 or 1040 ST's offer, the new MEGA ST computers are now available. There are two MEGA ST's, one with 2Mb of RAM and the other with a massive 4Mb. Both new computers are fully compatible with existing ST's and run currently available ST software. The MEGA ST's are styled as an expandable Central Processing Unit with open architecture and a detachable keyboard. They are supplied with GEM, a free mouse controller and all extras as with the 520 or 1040. Prices are as follows:

MEGA ST 2Mb Keyboard + CPU £699 (inc VAT)  
MEGA ST 2Mb Keyboard + CPU + SAM125 Mono Monitor £799 (inc VAT)  
MEGA ST 4Mb Keyboard + CPU £1199 (inc VAT)  
MEGA ST 4Mb Keyboard + CPU + SAM125 Mono Monitor £1299 (inc VAT)

If you would like further details of the MEGA ST's, return the coupon below.

# ATARI ST

To: Silica Shop Ltd, Dept PCWK 1087, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

**PLEASE SEND ME FREE LITERATURE ON THE ATARI ST**

Mr/Mrs/Ms: \_\_\_\_\_ Initials: \_\_\_\_\_ Surname: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Postcode: \_\_\_\_\_

Do you already own a computer \_\_\_\_\_

If so, which one do you own? \_\_\_\_\_

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

**LONDON** 01-580 4839  
Lion House (1st floor), 227 Tottenham Court Rd, London, W1P 0HX

**LONDON** 01-629 1234 ext 3914  
Selfridges (1st floor), Oxford Street, London, W1A 1AB





## News-maker

Simon T Goodwin

**P**art two of the desktop publishing program is detailed and listed this week. Also, if you'd like a copy of *News-maker* on disc with example files then send £7.00 to 41 Fountains Drive, Acklam, Middlesbrough, Cleveland TS5 7LW.

### Banner

This option allows you to print Banners or Headlines in one of three styles: Emphasized, Underlined or Double-Height. In each case you must enter the required text and then position it using the cursors and copy.

### Files

This option allows you to load and save whole pages, screens or blocks (to Cut and Paste) to disc.

You can save a block that you have just Cut. If you load a block you can then Paste it anywhere on screen.

Loading and saving pages is easy (make sure you have 51K of space on disc before saving). You can load Mode 2 screen designs in with the Load Screen option. In each case you must specify a filename of not more than 8 characters.

### Print

This is the most important option of all. The results of printing a page or a screen will depend on the quality of your printer.

I think the program is **Epson** compatible but I have only tested it on an Amstrad DMP 2000 printer. The page is A5 size when printed.

Whilst the quality of output is not up to professional standards it is quite readable. Experienced readers may want to insert their own printer routines. A quicker, low quality dump can be achieved by typing:

```
3770 PRINT #8,CHR$(27);"A";CHR$(7);
3780 FOR 1in=pixel TO 0 STEP -14
3910 PRINT #8,CHR$(27);"A";
CHR$(7);PRINT #8
```

### Miscellaneous

The first option of this sub-menu is vital, Move. Using this you can move between the 3 parts that make up the full page, numbered 1, 2 and 3. This is quick and easy.

It will take time to master *News-maker*, in order to make the most of it. Remember that as a last resort pressing Esc will return to the main menu.

There are a few tips I can give to save time and effort:

1... When drawing vertical lines that cover more than one of the 3 screens do not move the cursor horizontally before moving screens. This will make it easy to match up the two lines.

2... Do not cut areas larger than two-thirds the size of the screen or the computer may crash.

3... It is best to put text on screen before graphics to avoid accidentally wiping text of the screen when drawing.

4... If you add .Cut to block filenames this will enable you to identify them easier.

5... Do not position text on the top line of a screen as it may be cut off during printing.

```
1730 MOVE storex,storey:FILL 1
1740 RETURN
1750 :
1760 :
1770 GOSUB 2340
1780 PRINT "DENSITY?"
1790 PRINT "(default=5)"
1800 INPUT "",dense
1810 WINDOW 1,80,1,25
1820 GOSUB 2400
1830 IF dense<0 THEN 1770
1840 spray=1:GOTO 1490
1850 :
1860 :
1870 GOSUB 2340
1880 WINDOW 1,80,1,25
1890 LOCATE 15,5:PRINT "MOVE CURSOR AND PRESS COPY TO"
1900 LOCATE 15,6:PRINT "DEFINE POSITION,WIDTH"
1910 LOCATE 15,7:PRINT "AND LENGTH OF WINDOW."
1920 TAG:MOVE 15*8,280:PRINT "EG;  +  +";
1930 MOVE 15*8,250:PRINT "  +";
1940 TAGOFF:LOCATE 15,13:PRINT "PRESS A KEY"
1950 WHILE INKEY#="" :WEND
1960 GOSUB 2400
1970 x=storex:y=storey
1980 FOR n=1 TO 255:CALL &BB1B:NEXT
1990 GOSUB 4390:posx=x+4:posy=y-6
2000 FOR n=1 TO 255:CALL &BB1B:NEXT
2010 GOSUB 4390:wx=x+4:wy=y-6
2020 IF wx<posx THEN SOUND 1,100:GOTO 2010
2030 FOR n=1 TO 255:CALL &BB1B:NEXT
2040 GOSUB 4390:lx=x+4:ly=y-6
2050 IF ly>posy THEN SOUND 1,100:GOTO 2040
2060 b%=0:IGCOORD,posx,posy,@b%
2070 !CUT,b%,pas,INT((wx-posx)/8),INT((posy-ly)/2)
2080 sd=INT((wx-posx)/8):se=INT((posy-ly)/2)
2090 storex=x:storey=y
2100 RETURN
2110 :
2120 :
2130 IF sd=0 AND se=0 THEN RETURN:ELSE GOSUB 2340
2140 x=storex:y=storey
2150 WINDOW 1,80,1,25
2160 TAGOFF
2170 LOCATE 15,5:PRINT "Move the cursor to the"
2180 LOCATE 15,6:PRINT "position you want to paste"
2190 LOCATE 15,7:PRINT "to and press COPY."
2200 LOCATE 15,13:PRINT "PRESS A KEY"
2210 WHILE INKEY#="" :WEND
2220 GOSUB 2400
2230 FOR n=1 TO 255:CALL &BB1B:NEXT
2240 GOSUB 4390:posx=x+4:posy=y-6
```



# PROGRAMMING: AMSTRAD CPC

```
2250 c%=0:IGCOORD,posx,posy,@c%
2260 IPASTE,c%,pas,sd,se
2270 storex=x:storey=y
2280 RETURN
2290 :
2300 :
2310 RETURN
2320 :
2330 :
2340 ICUT,49152+160+13,z,40,100
2350 IFWINDOW,55469,30,90,0
2360 FOR n=1 TO 255:CALL &BB1B:NEXT
2370 PLOT 104,360:GOSUB 4620
2380 WINDOW 16,42,4,13
2390 RETURN
2400 IPASTE,49152+160+13,z,40,100:RETURN
2410 :
2420 :
2430 ICUT,49152+160+26,z,20,100
2440 IFWINDOW,55482,13,50,0
2450 PLOT 210,360:GOSUB 4580
2460 RESTORE 4680:IPRINT,220,354,"Banner"
2470 TAG:FOR n=1 TO 4:READ a$:MOVE 220,344-(n*16):PRINT a$;:NEXT:TAGOFF
2480 a%=0:IMENU,4,0,0,1,1,220,328,@a%
2490 IPASTE,49152+160+26,z,20,70
2500 IF a%=4 THEN RETURN
2510 WINDOW 28,63,4,8
2520 ICUT,55482,z,48,60
2530 IFWINDOW,55482,38,50,0
2540 PLOT 210,360:GOSUB 4610
2550 PRINT "Enter text then use cursors to place
2560 FOR n=1 TO 255:CALL &BB1B:NEXT:f$="":INPUT "",f$
2570 IPASTE,55482,z,48,60
2580 WINDOW 1,80,1,25
2590 x=storex:y=storey:GOSUB 4390:x=x-4:y=y-6:storex=x:storey=y
2600 IF a%=1 THEN EMPHASIZE,x%,y%,f$
2610 IF a%=2 THEN IPRINT,x%,y%,@f$
2620 IF a%=3 THEN GOSUB 2660
2630 RETURN
2640 :
2650 :
2660 x2=x:y2=y:x1=INT(x/8):y1=400-y:x=x1:y=y1/16
2670 IF x<1 THEN x=1
2680 IF y>24 THEN y=24
2690 IF rt=1 THEN RETURN
2700 LOCATE x,y:IDPRINT,f$
2710 RETURN
2720 :
2730 :
2740 ICUT,49152+160+38,z,20,120:WINDOW 40,49,5,13
2750 IFWINDOW,55494,13,90,0:PLOT 305,360:GOSUB 4590
2760 FOR n=1 TO 255:CALL &BB1B:NEXT
2770 RESTORE 4690:IPRINT,320,354,"Files"
2780 TAG:FOR n=1 TO 6:READ a$:MOVE 320,330-(n*16):PRINT a$;:NEXT:TAGOFF
2790 a%=0:IMENU,6,0,0,1,1,320,314,@a%:IPASTE,49152+160+38,z,20,110
2800 ON a% GOSUB 2840,2920,3220,3010,3380,3350
2810 IF error=1 THEN FOR n=1 TO 255:CALL &BB1B:NEXT:WHILE INKEY$:WEND:IPASTE,49152+160+38,z,20,100
```



"OFFICIAL COMMODORE DEALERS"



COMMERCIAL AND COMPUTER SERVICES LIMITED 01-549 3028

Amiga Titles	28.00	Leaderboard	20.00	Colourspace	16.00
Bureaucracy	28.00	Leaderboard Tourn.	20.00	Cards	16.00
Golf	28.00	Mean 18	24.00	Electronic Pool	16.00
Hacker	28.00	Super Hero	15.00	Fipside	16.00
Portal	24.00	Apshai Trilogy	20.00	Goldrunner	20.00
Shanghai	20.00	World Games	20.00	Karate Kid II	20.00
Tess Times	20.00	Anco Games	8.00	Land of Havoc	16.00
Witness	25.00			Major Motion	16.00
7 Cities Of Gold	25.00	Atari ST		Mud Pies	16.00
Archon 2	25.00	Hardware		Pinball Factory	20.00
Adventure Cons. Set	25.00	\$20 STFM	275.00	Super Conductor	20.00
Arctic Fox	25.00	\$20 STFM + Colour	565.00	Time Bandits	25.00
Marble Madness	25.00	1040 STF	475.00	Trivia Challenge	15.00
One To One	25.00	1040 STF + Mouse	600.00	Silent Service	20.00
Skyfox	25.00	Hard Disk (SH204)	685.00	Crusade In Europe	20.00
The Pawn	20.00	Mono Monitor	135.00	F15 Strike Eagle	18.50
Build Of Thieves	20.00			Ultimate II	20.00
Fairy Tale Adventure	39.00	Commodore		Balance Of Power	25.00
Borrowed Time	20.00	Amiga Hardware		Black Cauldron	30.00
Bellyhoo	24.00	Amiga 500	473.00	King Quest 2	30.00
Cut Throats	24.00	Colour Monitor	399.00	SDI	35.00
Deadline	24.00	External Drive	249.00	Strike Force	20.00
Enhancer	24.00	Amiga 2000	1150.00	Hades Netball	20.00
THHGTG	24.00			Mercenary	20.00
Infidel	24.00	3.5" Discs		Arkanoid	12.00
Leather Goddesses	24.00	Single Sided (White)	99p each	Chess	12.00
Mindshadow	24.00	Double Sided (Blue)	145p each	Football Fortunes	20.00
AMFV	27.00			Golden Path	30.00
Moon Mist	27.00	Atari ST Titles		Arena/Brattacus	30.00
Music Studio	29.00	Gauntlet	20.00	Deep Space	30.00
Planetfall	24.00	GLF Football	20.00	Jewels Of Darkness	20.00
Seastalker	24.00	Medals Bumper	17.00	Guards Of The Law	20.00
Scorcher	24.00	Art Director	42.00	The Pawn	20.00
Spellbreaker	24.00	Film Director	50.00	Games Compendium	20.00
Starcross	24.00	Strip Poker	10.00	Crack On	12.00
Suspect	24.00	Borrowed Time	20.00	Terrestrial Encounter	12.00
Superclued	24.00	Basketball	20.00	Liberator	10.00
Trinity	27.00	Hacker	20.00	Mosetrap	12.00
Witness	24.00	Hacker 2	20.00	Plutos	12.00
Wishbringer	24.00	Little Comp. People	20.00	Timeblast	8.00
Zork I	24.00	Shanghai	20.00	Apshai Trilogy	20.00
Zork II	24.00	Tess Times	20.00	Alternate Reality	20.00
Zork III	24.00	Strip Poker	10.00	Dungeon Reality	20.00
Silent Service	20.00	Tee-up	15.00	Championship Wrest	20.00
Ultimate III	20.00	Skyfox	20.00	Phantasia II	20.00
Balance Of Power	20.00	Bridge Player 2000	18.00	Leaderboard	20.00
Defender/Crown	25.00	ST Karate	15.00	Metrocross	20.00
Deja Vu	24.00	Protector/Station	20.00	Barbarian	20.00
Sirbad	25.00	Pro Sprint	32.00	Questprobe	15.00
SDI	24.00	Star Glider	15.00	Roadrunner	24.00
Uninvited	24.00	War Zone/Fireblaster	20.00	Rogue	20.00
Arena/Brattacus	25.00	Jewels Of Darkness	12.00	Super Huey	15.00
Deep Space	24.00	Star Glider	15.00	Super Cycle	20.00
Silicon Dreams	15.00	Trailblazer	20.00	Super Tennis	20.00
Starfinder	20.00	Typhlooz	15.00	Winter Games	20.00
Hollywood Poker	15.00	Peasants	17.00	World Games	20.00
Swooper	15.00	Phoenix	17.00	Xenious	20.00

Please make cheques payable to: Systems Architects Ltd. All prices inc. VAT. Please add 50p postage and packing. We also accept telephone orders made through Access and Visa. Prices subject to availability. See Amiga Listing for Prices of ST/Amiga Adventures. Products not listed please phone for prices. Callers are welcome at the shop. Allow up to 28 days delivery, items usually despatched within 10 days.

## SYSTEMS ARCHITECTS

Systems Architects, Dept. PCW1, Syndicate Dept. Store, 6-9 Market Place, Kingston Upon Thames, Surrey KT1 4BR. Tel: 01-549 3028 (24-hr ansaphone)

# AMIGA A500

## £573 NOW £473 inc. VAT

Also inc. Modulator & Deluxe Paint, five public domain discs, and one game - Karate Kid II or Goldrunner

# ATARI 520 STFM

## £275

## SOFTWARE SPECIALS

Impact	11.50
Terrapods	18.50
Flight Simulator II	35.00
Defender of The Crown	22.00
Plutos	11.50
Gold Runner	18.50
AMIGA ONLY	
Fairy Tale Adventure	37.50
ST ONLY	
Tai-Pan	15.00
F15 Strike Eagle	18.50
Indiana Jones	15.00

Above prices for software specials are subject to availability.

### SPECTRUM SOFT ON CASS ALL 2.99 EACH

Martians, Infiltrator, Back To The Future, Krakout, It's A Knockout, Highlander, Headshot, Muscular Madness, Donkey Kong, Boulderdash, Boulderdash 2, Empire, Dragons Lair, Legend Of Kage, Arc Of Yezod, Southern Belle, Visions Snooker, Mario Brothers, Double Take, The Ice Temple, Galvin, Prodigy, HIVE, Koronis Rift, Undom, W.A.R., The Edolon, Druid, Night Gunner, Miami Vice, Dandy, Uchi Mata, The Comet Game, Tarzan, Tempest, Xarg, Hijack, Donright, Explorer, Tapper, Express Reader, 10th Frame, Xenius, Spec-graf Grid, City Slicker, Penta Gram, Pyracore, Hardball, Costa Capers, Rasputin, Monty On The Run, Return To Oz, Football Manager, Firelord, Psi-5 trading Co, Trailblazer, Mike, Kinetik, Japco, Skoolzade, Fighter Pilot, Masters Of The Universe, Rebel Planet, Way Of The Tiger, I.C.U.P.S., Butch Hard Guy, Kayeth, Mailstorm, Temple Of Terror, Spy Hunter, The Gooses, Bubbler.

### £2.99 COMPILATIONS ON CASSETTE

Now Games 2 inc: Air Wolf, Chuckie Egg 2, Tir Na Nog, Cauldron, World Cup, Indoor Sports inc: Air Hockey, Bowling, Darts, Ping Pong, Star Games One inc: Way of the Tiger, Beachhead 2, Rescue On Fractalus, Barry McGuigans Boxing, Best of Beyond inc: Shadowfire, Doodzarks Revenge, Enigma Force, Sorderons Shadow.

### SPECTRUM UTILITIES & PERIPHERALS

Spectrums £25.00, Retrotrons Wafadrives £17.49 inc. P&P, includes 1 free 84K write, 2000 Micro-Soft £2.99. Also include all Spinaker Educational Titles from previous ads.

### SPECTRUM SOFT ON CASS ALL £1.99 EACH

Bailbaker, Les Fics, Frankenstein, Sorderons Shadow, Petal 2, Rescue On Fractalus, Battle of The Planets, 3 Weeks in Paradise, Kool, Bazooka Small Trader, Revolution, Robin of Sherwood, Zoids, Muggys Revenge, Equinox, Gap Out, H.U.R.G., Gerry The Gern, The Evil Crown, Mantrona, William Wobblor, Fighting Warrior, Mermad Madness, Music Miner, Stainless Steel, Pole Position.

### COMMODORE 64 COMP ALL £2.99 EACH

ACTION PACK INC: Rocket Rodger, 3D Waterski, Guardian, Hypercroc, ZAPP SIZZLERS "Z" INC: Monty on the run, "Z", Starquake, Boulder, PLATFORM PERFECTION INC: Zoro, Bruce Lee, Bounty Bob, Ghostchaser, SCOTT ADAMS SCODS INC: Pirate Adventure, Voodoo Castle, Strange Odyssey, Buckaroo Banzai, BEST OF BEYOND INC: Psi Warrior, Quake Minus I, Enigma Force, Shadowfire, STAR GAMES ONE INC: Way of the Tiger, Beachhead 2, Barry McGuigans Boxing, Rescue in Fractalus, UNBELIEVABLE ULTIMATE INC: Entombed, blackwyche, Staff of Karnath, Inhotop, INDOOR SPORTS INC: Air Hockey, Bowling, Darts, BIG NAME BONGAZ INC: Stellar, Star in Spring, Decathlon, Murder by the Dozen, Park Patrol, Nexus, Master of the Lumps, Fighting Warrior, Red Hawk, Starion, Galactic Controller, Spirit of the Stones, William Wobblor.

### COMMODORE 64 CARTRIDGES £3.99 EACH

Oils Well by Sierra (Cartridge) £3.99, Mr Cool by Sierra (Cartridge) £3.99

### COMMODORE 64 DISCS £1.99 EACH

Superman, Zork I, Zork II, Zork III, Starcross, Deadline, Suspended, Ghostbusters, Pacifinder, Tracer Sanction, Pitfall, Reddawns, Beamrider, Web Dimensions, Thing in a Spring, Decathlon, Murder by the Dozen, Park Patrol, Nexus, Master of the Lumps, Fighting Warrior, Red Hawk, Starion, Galactic Controller, Spirit of the Stones, William Wobblor.

### COMMODORE 64 DISCS £4.99 EACH

After Ego Male, After Ego Female, The Hobbit.

### COMPILATION DISCS £4.99 EACH

Disc 1: Turbo 64, Derby Day, Handicap Golf, World Cup, Testmatch, Disc 2: View to Kill, Friday 13th, Codename Matt II, The Pyramid, Test Match, Basky and the Egg Slashes.

### SPINAKER EDUCATIONAL SOFTWARE

#### COMMODORE 64 £1.99 EACH

All: Aegian Voyage, Songmaker, Ranch, Sea Speller, Number Tumblers, Fraction Fever, Make a Face, Story Machine, Alpha Build, Dance Fantasy, Logic Levels, Alphabet Zoo.

#### COMMODORE 64 CASSETTES ALL £2.99 EACH

Temple of Apshai Trilogy, GT American Cross Country Road Race, Ghostbusters, Adventure Quest, Koronis Rift, The Edolon, Transformers (activation), The Music Studio, Dandy, Avenger, I.C.U.P.S., Boulderdash, Infodroid, Headcoach, Highlander, The Force, Max Headroom, Superbowl, Parallax, Hyperball, Boulderdash Construction Kit, Super Huey 2, Superbasic, Boulderdash 2, Uchi Mata, Prodigy, R.M.S. Titanic, Hacker, Barry McGuigans Boxing, Xenious, Chameleon, Dragons Lair, Explorer, Back to the Future, Classic Snooker, Way of the Tiger, Knight Games, The Comet Game, Jack the Nipper, Kinetik, Skoolzade 64, Americas Cup Challenge, The Boxing, Fighter Pilot, Beach Head 2, Hat Wheels, Monty on the Run, Robin of the Wood, System 15 000 2nd ed., Return to Oz, Magic Madness, Escape from Paradise, Masters of the Universe Arcade, Masters of the Universe Adventure, W.A.R., Football Manager, On Court Tennis, Moon Crisis 1999, Mission A.D., Druid, Lord of the Rings, Donkey Kong (Cart), Mario Brothers, Krakout, Heartland, Tarzan, Impossible Mission, Beyond the Forbidden Forest, Future Knight, Decathlon (activation), Jumpin' Jimmy, Battalion Commander, Double Take, It's a Knockout, Comic Bakery, Shao-lins Rd, International Karate, Starr League Baseball, Vietnam, Temple of Terror, Tag Team Wrestling, Super Star Ping Pong, Saracen, Kayeth.

#### COMMODORE 64 CASSETTES ALL £1.99 EACH

Signa 7, Spiderman/Hulk, Surfcham, Fessum M/C Lung Ass, Grandmaster Chess/Othello, Pitman Typing Tutor, Chuckie Egg 2, "O" Level Maths, Jet set Willy 2, Firelord, Alleykat, Jumpman, Chimera, Thing on a Spring, Who Dares Wins 2, Enigma Force, Frak 64, Indis Alpha, Starion, Muggys Revenge, Paradox, Combat Lynx, Beach Head, Ghostchaser, Highway Encounter, Ark Penders, William Wobblor, Flak, Dragonskull, Kettle, Bulldog, Adrian Mole, Sherlock, Krystals of Zong, Match Fishing, Neocypis, Willow Pattern, Out on a Limb, The Evil Crown, Hyper Biker, Empire, Bombo, Hampstead, Forest of Doom (book + tape), Little Computer People, Beamrider, Pylot, Touch Type (Commodore), Dunsy Run, Deus ex Machina, Spirit of the Stones.

#### COMMODORE 60 UTILITIES & PERIPHERALS

Scrabble, Cludo, Monopoly, all for £7.95, Future Finance £4.95, Easy File £4.95, C&A Music Maker Keyboards £5.00, Programmers Utility Disc £4.95, Assembler Tutor Disc £4.95, News Mouse Cassette £20.00, News Mouse Disc £23.00, Intro to Basic PT £2.99

#### BARGAIN BOOKS FROM 1ST PUBLISHING INC.

As per previous advert (£9.95 + £2.50 P&P)

### CHEQUES PAYABLE TO

## LOGIC SALES LTD

17 Leofric Square, Eastern Industry,  
Peterborough, Cambs PE1 5TN.  
Tel: 0733 313870

# YORK COMPUTER CENTRE

## THE SPECIALIST IN YORKSHIRE

Atari ST's from	£245
Atari 130XE	£129
Commodore Amigas (with voucher)	£476
Commodore 64 from	£125
Spectrum +2	£149
Sega Master Console	£99
Nintendo Games Console	£99

\*\*\*

Plus a very wide range of programs for all the above machines at discount prices.

\*\*\*

Also disc drives, monitors, printers, joysticks, books, blank tapes and discs *all* at competitive prices.

Please call for details on 0904 641862 or visit our shop in the centre of York

Dept. PCW, 9 Davygate Arcade, Davygate, York  
0904 641862

VISA



# Oo-er, sounds a bit rude



It must be dead handy for Virgin Games to be part of Richard Branson's little empire, since it must make it relatively easy to tie up licensing deals with other parts of the Virgin group. The Virgin publicity machine automatically works in your favour and you don't even have to worry too much about having good ideas since somebody's already done it for you.

In the wake of the transatlantic speedboat and ballooning games, Virgin Games has now produced *How To Be A Complete Bastard*, based on the book published - oh, good heavens - by Virgin Books.

The tie-in here is mainly with Ade Edmondson, co-author of the *Bastard* book, and most well-known as the psychotic Vivien in *The Young Ones*.

The idea behind the game isn't a bad one; playing part of Ade (they don't say which part, but you can bet it's one of the rude ones) you gatecrash a yuppie party and attempt to behave in the most disgusting possible manner in order to achieve the status of a complete bastard.

If I tell you that the screen display includes a Weeometer, Drunkometer, Smellometer and Fartometer you should begin to realise that the humour is pretty basic. Mind you, any game that has control keys for left/right, up/down and Fart can't be all bad.



Once you're inside the house, you explore the various rooms looking for opportunities to offend guests, eat too much, throw up, and throw doggy-do around.

The main screen display is split into two, a technique called

'Bastavision'. The two halves show your position in each room from different angles, and you can rotate each view so that you can see everything in the room. Although it looks like a simple two-dimensional display (moving left/right across the

screen) you can move into and out of the screen, creating a limited 3D effect. Because of this you need to keep an eye on the two halves of the screen so that you can line yourself up with the people and objects that are also in the room.

I found this a bit tricky, and spent quite a bit of time nudging my way around rooms trying to get into the right position.

Along the way you'll find various cupboards, bookshelves and so on, which you can search through. When you find something a menu will appear in the lower half of the screen telling you what options are open to you. Most things can be thrown around, but some items (such as a frozen pizza - no prizes for guessing what you can do with that) need to be kept until you find somewhere, or someone, to use it on.

You score points for doing obnoxious things, and eventually you aim to light up all the letters in the phrase 'Complete Bastard', at the bottom of the screen. But doing anything 'girly' will lose you points.

It's not just the humour that is basic though, as the graphics are a little bit on the stick-insect side, too.

The only real weakness in the game is that the action on the screen doesn't always match what should be happening. On one occasion I dropped some stinkbombs in a crowded room to try and get rid of everyone in it. The caption 'that's a real room clearer' appeared but absolutely nothing happened!

Because of this the screen display can get a bit monotonous at times, simply because few of your actions seem to have any visible effect. And the option to 'do nothing' can appear rather too frequently as well.

*HTBACB* is really the computer equivalent of a dirty seaside postcard, and as such is crude and mildly amusing. Like a lot of British humour it relies a bit too heavily on naughty words like 'wee' and 'fart', and while the game may well prove enjoyable for a while, it's quite possible that the novelty may wear off after a while.

Stephen Dean



**Program** *How To Be A Complete Bastard* **Type** Arcade **Machine** Spectrum/Amstrad CPC/C64 **Price** £7.95/£8.95/£9.95 **Supplier** Virgin Games, 2-4 Vernon Yard, Portobello Road, London W11 2DX.





# SIMTECH



## ST HARDWARE

520 STM	£206.99
520 STFM	£269.95

## 520 STM PACKS

1. 520 STM, 1 Mb disc drive	£289.66
2. 520 STM, 1 Mb disc drive	£359.00
3. 520 STM mono monitor 1 Mb disc drive	£389.00
4. 520 STM mono monitor 1 Mb disc drive	£459.00

Pack 1-4 all include FREE mouse and a FREE copy of 1stWord (v1.06). A FREE copy of ST Basic on disc and a manual, 5 FREE discs containing CPM and public domain software and 5 FREE blank discs.

1040 STF	£469.95
1040 STF plus mono monitor	£569.95
Mega ST2	£869.99
Mega ST4	£1169.99
1 Mb blank discs (10)	£14.95
1 Mb blank discs (10)	£18.95

All ST CPU's except the 520 STM come supplied with FREE ST Basic on disc and a manual, 5 FREE discs containing CPM and public domain software and 5 FREE blank discs.

## AMIGA HARDWARE

Amiga A500 + disc + mouse	£471.00
Pack 1: A500 + A1900M mono monitor	£559.00
Pack 2: A500 + A1010 second disc drive	£701.00
Pack 3: A500 + A1081 colour monitor	£816.00
Pack 4: A500 + A1010 second disc drive + A1081 colour monitor	£1,045.00

All above are supplied FREE with Deluxe Paint, Karate Kid II, Mouse mat and 10 public domain discs. Call for best prices on all Amiga S/W.

## ST SOFTWARE AND UTILITIES

### ART and DESIGN

Degas Elite	£55.95
GFA Draft	£79.95
The Music Studio	£22.95
Pro Sound Designer	£44.95
Pro Sprite Designer	£29.95

### BUSINESS and UTILITIES

1st Word Plus	£62.95
Fleet St. Publisher	£92.00
Publishing Partner	£127.50
Haba Writer III	£32.40
ST Easitalk	£29.95
ST Datacomm II	£64.95
Accountant Plus (Sage)	£193.49

### GAMES

Airball	£18.99
FSII	£37.95
Silent Service	£18.99
Barbarian	£18.99
Starglider	£18.99
Leader Board	£18.99
Leader Board Tournament	£7.95

Chess (Psion)	£18.99
Gauntlet	£18.99
Arkanoid	£11.49
Star Raiders	£11.49
Xevious	£18.99
Road Runner	£18.99
Pirates Barbary Coast	£9.99
10th Frame Bowling	£18.99
Pinball Factory	£18.99
Crystal Castle	£11.49
Gato	£22.99
SDI	£22.99
Shanghai	£18.99
Strike Force Harrier	£18.99
Arena/Bratallas	£26.95
Phantasia II	£18.99
TNT	£16.49

### ADVENTURES

Alternate Reality	£18.99
Guild of Thieves	£18.99
The Pawn	£18.99
Hitchhikers Guide	£22.99
Hollywood Hijinx	£22.99
Bally Hoo	£22.99

How to order:

By Post to: PCW,

118 Doggett Road, Catford,

London SE6 4QB

By Phone:

Call 01-690 3569

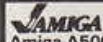
All prices include VAT and UK Mainland delivery.



**Fleet Micro Company**  
Micro Computer Hardware and Software



Atari STFM  
+ Free Starter Kit  
**£285.00**



Amiga A500 with 512K RAM,  
880K 3.5" disk, mouse, software  
**£499.00**

### ATARI ST

Airball	19.45
Alternate Reality	18.45
Arkanoid	11.65
Borrowed Time	19.49
Cad 3D	39.00
Chasmodon 2000	35.00
Colorscape	15.55
Crystal Castles	11.15
Degas Elite	54.55
Fast Basic (D)	35.85
Fleet Street Publisher	89.95
Flight Simulator II	38.95
Gauntlet	19.45
Gold Runner	19.45
Guild of Thieves	19.45
Hacker	19.45
Hacker II	19.45
Hardball	19.45
Hitch Hikers Guide	23.35
International Karate	15.55
Karate Kid II	19.45
LCP	27.25
Leaderboard	19.45
Mercenary Compendium	19.45
Metrocross	19.45
Music Studio	27.25
Photos	11.65
Prohibition	15.55
Road Runner	19.45
Rogue	19.45
Silent Service	19.45
Sky Fox	19.45
ST Karate	15.55
Starglider	19.45
Super Huey	15.55
Terrapods	£19.45
TNT	15.55
Trail Blazer	19.45
Typhoon	19.45

### AMIGA

7 Cities of Gold	23.35
Archon	23.35
Arkanoid	23.35
Balance of Power	31.15
Barbarian	19.45
Baron	19.45
Borrowed Time	19.45
Challenger	7.75
Cruncher Factory	7.75
Defender of the Crown	23.35
Deja Vu	23.35
Demolition	7.75
Faerytale	38.95
Flight Simulator II	38.95
Goldrunner	19.45
Guild of Thieves	19.45
Hitch Hikers Guide	23.35
Jewels of Darkness	15.55
Karate Kid II	7.75
Karate King	19.45
Leader Board	19.45
Little Computer People	27.25
Martle Madness	23.35
Portal	27.25
Pro Sprint	31.15
Roadwar 2000	19.45
Shanghai	19.45
Silent Service	19.45
Skyfox	23.35
Space Battle	7.75
Starglider	19.45
Super Huey	15.55
Tas Times	19.45
Temple of Aghai	19.45
Terrapods	19.45
The Pawn	19.45
Tournament Leaderboard	7.75
Winter Games	19.45
World Games	19.45

### CBM 64

Academy	7.75	11.65
Acad 2	7.75	11.65
Archon	7.75	—
Arkanoid	6.95	10.10
Bank St Writer	—	38.20
Barbarian	7.75	10.10
Basic 64 Compiler	—	30.40
Bitblasting	—	10.15
Boulder	7.75	10.10
Edolon	7.75	11.65
Elite	11.65	14.00
Encounter	7.75	10.10
Evolution	6.95	10.10
Gauntlet	7.75	11.65
Gobots	7.75	—
Gunsling	11.65	15.55
Heat Over Heels	6.95	10.10
Impos Mission	7.75	7.75
Int Karate	5.05	10.10
Last Ninja	7.75	11.65
Leaderboard	7.75	11.65
Mercenary	7.75	—
Oxford Pascal 64	—	26.90
Paperboy	6.95	—
Powersplay	6.95	11.65
PSI Warrior	7.75	—
Rana Rama	6.95	10.10
Scrabble	10.10	11.65
Sorcery	6.95	—
Spendory	7.75	11.65
Spy Hunter	7.75	11.65
Starglider	11.65	14.00
Superscript 64	—	38.20
Thanatos	6.20	7.75
The Sentinel	7.75	11.65
Trailblazer	7.75	11.65
Unikum	7.75	10.10
Wizball	6.95	11.65
World Class LB	—	11.65
Zoids	6.95	11.65

REMEMBER... we guarantee delivery within 5 days or your money back  
All prices include VAT and P&P  
Make cheques, P.O.s payable to:

**FLEET MICRO COMPANY**

Unit 25, "Shafers", 677 High Road, South Benfleet, Essex SS7 5SF  
Tel: South Benfleet (0268) 565138

From KJC Games, Britain's leading PBM CO  
**AN OFFER YOU CAN'T REFUSE!**

**ABSOLUTELY FREE**  
TRY A FREE TRIAL IN THE WORLD'S MOST  
POPULAR PLAY-BY-MAIL GAME.

## IT'S A CRIME!

All you need to do is send us your name and address and we'll send you a rulebook, start position in a new game, and credit for your first two moves. If you enjoy the game, and we think you will, you can continue playing It's a Crime! for the incredibly low price of only 75p a turn.

### THE SETTING

The game is set in New York City in the late 1990's. You role-play the part of a gangleader who controls a group of misguided youths. The city has severely deteriorated. The brave citizens who remain are now in a life and death struggle with the ever increasing number of drug-crazed street gangs. The New York Police Department is severely undermanned.

Your main goal is to become a very powerful gang. This is measured by building your gang's turf into one of the largest and by becoming one of the richest, toughest, and most notorious gangs in the city. This will allow you to enter the MOB, and maybe later, become the Godfather.

On a typical turn you could send your Pros, Punks and 'Cruits out to take over a couple of city blocks and ambush an enemy gang, rob or firebomb a building, buy and sell drugs, have yourselves a party, terrorize the residents, and much more.

SEND YOUR NAME AND ADDRESS TODAY FOR YOUR  
FREE TRIAL OF **IT'S A CRIME!** THE WORLD'S MOST  
POPULAR PLAY-BY-MAIL.

WRITE TO:

**KJC GAMES,**  
PO BOX 11, CLEVELEYS, BLACKPOOL, LANCs FY5 2UL



## Your complete guide to all the software released this week

### Amiga

**Program** *Grand Slam* **Type** Tennis simulation **Price** £24.95 **Supplier** Eidersoft, The Office, Hall Farm, N. Ockendon, Upminster, Essex RM14 3QH.

A tennis game that allows you to play all the main Grand Slam tournaments, and takes into account the different types of playing surface.

The game is quite playable, though the graphics aren't what you might expect from an Amiga game.

### Amstrad PCW

**Program** *ACE* **Type** Flight simulation **Price** £19.95 **Supplier** Cascade Games, 1-3 Haywra Crescent, Harrogate HG1 5BG.

Cascade's old air-combat game finally finds its way onto the PCW. Although the game calls itself a simulator, the emphasis is on action rather than twiddling dials which makes it more playable than many flight simulators.

### Atari ST

**Program** *Mortville Manor* **Type** Adventure **Price** £24.95 **Supplier** Eidersoft, The Office, Hall Farm, N. Ockendon, Upminster, Essex RM14 3QH.

An Agatha Christie style mystery, involving a dead/missing person and a house full of relatives. The game has some excellent sound effects, some not-quite-so-excellent voice synthesis (with a heavy French accent), and graphics that aren't as good as the ST is capable of.

**Program** *Ranarama* **Type** ST **Price** £19.95 **Supplier** Hewson, Hewson House, 56b Milton Trading Estate, Milton, Abingdon, Oxon OX14 4RX.

ST version of Hewson's hit Gauntlet-style game, and its first 16-bit release. A great improvement over the Spectrum version, and with some excellent music and sound effects.



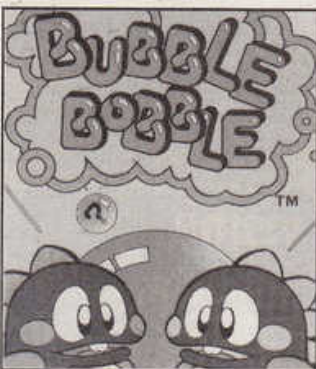
### Commodore 64

**Program** *Implosion* **Type** Arcade **Price** £9.95, (£14.95 on disc) **Supplier** Cascade Games, 1-3 Haywra Crescent, Harrogate HG1 5BG.

A fast action shoot 'em up written by 16-year-old Joe Booth. The animation is very smooth and the sound effects are impressive. It's not quite state-of-the-art but Joe Booth will probably be a millionaire before I am.

**Program** *Bubble Bobble* **Type** Arcade **Price** £7.95 **Supplier** Firebird, 64-76 New Oxford Street, London WC1A 1PS.

A conversion of the successful coin-op game. It's not exactly pushing back the frontiers of programming, but it's one of those cute, simple games that can be enormously addictive.



### Spectrum

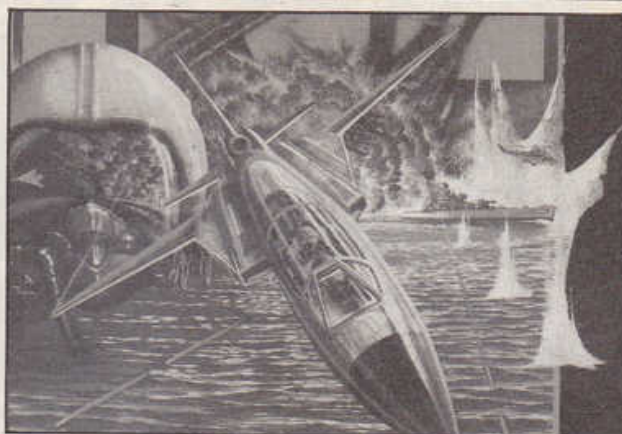
**Program** *Implosion* **Type** Arcade **Price** £8.95 **Supplier** Cascade Games, 1-3 Haywra Crescent, Harrogate HG1 5BG.

**Program** *Xecutor* **Type** Arcade **Price** £7.95 **Supplier** Edge, 36/38 Southampton Street, Covent Garden, London WC2E 7HE.

The latest in the recent spate of rather good shoot 'em ups. This is a vertically scrolling game rather than horizontal, and has a simultaneous two-player mode, just like a real arcade game.

**Program** *Ronnie Goes To Hollywood* **Type** Adventure **Price** £3.99 (available by mail order only) **Supplier** Eighth Day Software, 18 Flaxhill, Moreton, Wirral, Merseyside.

It's been a while since I've seen a decent adventure for the Spectrum, but 8th Day's budget games are always worth a look. This is a 'moderately difficult' adventure following Ronnie Reagan's activities for a week in Hollywood.



The best budget buy of the moment has to be the batch of six old Ultimate games that Mastertronic are putting out on the Ricochet label over the next fortnight.

Whilst some of the later games failed to match Ultimate's own high standards they were generally still as good as anything else on the shelves at the time, and the best of them have yet to be beaten for sheer addictiveness and playability.

*Sabrewulf* was the last of Ultimate's '2D' games, a maze game in a jungle setting. The format might look familiar by now, but it was Ultimate that invented it, and this was the game that introduced the Sabremen to the games playing public. Skipping over *Underwilde*, which was their next release but hasn't yet been 'budgetised', we come to *Knightlore* and *Alien 8*.

When *Knightlore* was released towards the end of '84 the entire games industry collectively gasped and stood back in astonishment, though only for a few seconds before running off and copying it!

The game continued the adventures of Sabremen as he searches the depths of an old castle to find a cure to the curse that turns him into a rather cuddly werewolf every night. The 3D animation and the complex problems that it made possible were a huge innovation in games programming, and while the look may have been copied the game has never been beaten for sheer addictiveness.

*Alien 8* was the follow up to *Knightlore* and basically took the same formula into an outer space setting. Sabremen was replaced by the *Alien 8* droid, and the castle became a spaceship. Ultimate took a bit of flack because of the similarities between the games, but the game was more complex than *Knightlore* and it would have been daft to drop a winning formula after just one game. I'm biased because *Knightlore* is my all-time favourite game, but both of these games at a budget price represent mega-enormous-value and if you haven't already got them then you've got no excuse for not buying them now (OK, we get the hint, Ed!).

These two games together gave Ultimate a reputation that no company, not even Ultimate themselves, were ever able to match, and after this period things started to go downhill. *Knightshade* attempted to alter the formula with more shoot 'em up action and less puzzle solving, but it didn't quite work (the same applies to *Blackwyche*, the most recent of this group of games).

Still, if the later games didn't reach the dizzy heights of their previous efforts, Ultimate never released a really bad game during this period and even the 'worst' of this batch is excellent value at the new price. They were all released over a range of formats, so check the individual machine listings for details.

Stephen Dean

**Supplier** Mastertronic, 8-10 Paul Street, London EC2.







# FOR SALE

## BOOKS

(A) All books £1.00 each plus 50p p.p. each book. (B) All books £1.25 each plus 50p p.p. each book.

**COMMODORE 64**  
Disc Companion  
DIY Robotics & Sensors  
Graphic Art  
Software 64  
64 Program Book  
Writing Strategy Games  
Putting Your 64 To Work

**GENERAL**  
Home Applications  
Confessions Of An Infomaniac

**SINCLAIR SPECTRUM**  
80 Games And Applications  
Artificial Intelligence  
Creating Arcade Games  
Discover Your ZX Spectrum  
Educational Programs  
Exploring Adventures  
Hardware Manual  
Inside Your Spectrum  
Practical Robotics  
The ZX Spectrum

**COMMODORE 64**  
40 Educational Games  
Adventure Games  
Adventurers:  
Easy Programming  
Exploring Adventures  
Commodore 64 Exposed  
Graphics And Sound  
Intro. 64 Machine Code  
Machine Code Master  
The Working C64

**SINCLAIR SPECTRUM**  
40 Educational Games  
Adventures  
Spectrum Gamesmaster  
Spectrum Book Of Games  
Spectrum In Education

**AMSTRAD**  
Adventure Games  
664 Computing  
Sensational Games  
Learning Programs

## ATARI 520 STFM £269.95

Includes: mouse, UK language disc and five discs full of public domain software

## COMMODORE 64C SPORTS PACK £169.95

Features Commodore 64C, Commodore C2N cassette unit, Quickshot 1 joystick, Commodore Sports Holdall, Barry McGuigan's Boxing, Great American Road Race, Decathlon, On Field Football, Star League Baseball Plus

FREE Intro to Basic Part One and one game cartridge worth £29.95

## SINCLAIR SPECTRUM 128+2

Complete with joystick, six Sinclair games

## £139.95

FREE!! Mario Bros and Donkey Kong

## SEGA

Console now in stock

## £94.95

Includes FREE Hang On game

## Software Latest Releases

	C64	SP	AM
World Class Leaderboard	£8.95	—	£8.95
Death Wish 3	£8.95	£5.50	£8.25
Exolon	£8.95	£5.50	£8.25
Egypt Epic	£8.95	—	—
Summer Gold	£8.95	£8.95	£8.95
Tai Pan	£8.25	£5.50	—
Indiana Jones	—	£8.25	—
Resogad	£8.25	£5.50	£8.25
Solomon's Key	£8.95	£8.25	£8.25
Star Games 2	£8.95	£8.95	£8.95
Bubble Bubble	£8.25	£5.50	—
Super Sprint	£8.95	£8.95	£8.95
Jack Nipper II	—	£5.50	—
Quaden	£8.95	—	—
Track 'n' Field	£8.25	—	—

## Software Specials

COMMODORE 64	AMSTRAD DISCS
Law of the West £2.99	Hive £3.95
Highlander £2.99	Heartland £3.95
Super Hero 2 £2.99	Eidolon £4.95
Future Knight £1.99	Ballblazer £3.95
Crystal Castles £1.99	Starstrike 2 £4.95
Tenth Frame £2.99	Spinology £3.95
On Court Tennis £1.99	Winter Sports £3.95
Avenger £2.99	Fifth Axis £3.95
Double Take £2.99	Barry McGuigan £4.95
Great Escape £2.99	Little Comp People £4.95

MARIO BROS £2.99 SPEC,C64,AMS	DONKEY KONG £2.99 SPECTRUM AMSTRAD	HARDBALL £2.99 SPECTRUM	TEMPLE OF TERROR £2.99 COMM, SPEC	BUBBLER £2.99 SPECTRUM	INDOOR SPORTS £1.99 C64, SPEC AMSTRAD	TAG-TEAM WRESTLING £2.99 C64	IT'S A KNOCKOUT £2.99 C64, SP, AMS	VIETNAM £2.99 C64	KAYLETH £2.99 COMMODORE C64
KNIGHT GAMES £1.99 C64	KRAKOUT £2.99 SPECTRUM, C64 AMSTRAD	MARTIANOIDS £2.99 SPECTRUM	EIDOLON £2.99 C64, SPECTRUM	LITTLE COMPUTER PEOPLE £2.99 SPECTRUM 128 COMMODORE 64	XEVIUS £1.99 SPECTRUM, C64 AMSTRAD	MONTY ON THE RUN £1.99 SPECTRUM C64	BUTCH HARD GUY £2.99 SPECTRUM	KORONIS RIFT £2.99 COMMODORE 64 SPECTRUM	HACKER £2.99 SPECTRUM 48K SPECTRUM 128K
UNBELIEVABLE ULTIMATE comprising: Attic Attack Sabre Wolf Underworld Alien 8 £2.99 Spectrum only	UNBELIEVABLE ULTIMATE comprising: Entombed Staff of Karmah Bike Witch Imhotep £2.99 Commodore 64	UNBELIEVABLE ULTIMATE VOL. 2 comprising: Lunar Jetman Jetpac Tranz-AM Pst £2.99 Spectrum only	SPECTRUM STINGERS comprising: Bruce Lee Pole Position Cyber Run Zoro £2.99 Spectrum only	CLASSIC COLLECTION Auto Mania Witches Cauldron Pyjama Rama Battle of the Planets £2.99 Commodore 64	SHOOT EM UPS comprising: Super Zaxxon Drop Zone Blue Max 2 Fort Apocalyps £2.99 Commodore 64	BEST OF BEYOND comprising Sorderons Shadow Doomdarks Revenge Shadow Fire Engima Force £2.99 Spectrum only	BEST OF BEYOND comprising PSI Warrior Enigma Force Shadow Fire Quake Minus One £2.99 C64 only	PLATFORM PERFECTION comprising: Zorro Bounty PCB Brush LCE Ghostchaser £2.99 Commodore 64	

## MAIL-CENTA

17 Campbell Street, Belper, Derbyshire DE5 1AP. Telephone: 077382 6830

Please make cheques/P.O.s to Mail-Centa: Telephone orders using Access/Visa welcomed. All orders despatched same day whenever possible. Postage: UK FREE over £5 (not books); under £5 please add 50p; strictly mail orders only

(503)

## 9" MONITOR £16

9" VDU OR MONITOR ideal to work with computer or video camera uses Philips black and white tube ref M24/306W. Which tube is implosion and X-Ray radiation protected. VDU is brand new and has a time base and EHT circuitry. Requires only a 16V dc supply to set it going. It's made up in a lacquered metal framework but has open sides so should be cased. The VDU comes complete with circuit diagram and has our six months guarantee. Offered at a lot less than some firms are asking for the tube alone, only £16 plus £5 post and insurance.

## COMPACT FLOPPY DISC DRIVE EME-101

The EME-101 drives a 3" disc of the new standard which despite its small size provides a capacity of 500k per disc, which is equivalent to the 3½" and 5¼" discs. We supply the Operators Manual and other information showing how to use this with popular computers: BBC, Spectrum, Amstrad etc. All at a special snip price of £27.50 including post and VAT. Data available separately £2, refundable if you purchase the drive.

## COMPUTERS

COMPUTERS the Acorn "Electron" as used in many schools for games and serious jobs. Works into colour or Black and White TV. Proper price was £199, our price, tested and working £45 + £3 post, tested but slightly faulty £36 + £3 post. All are complete with mains P.S.U., 300 page handbook, TV lead, and starter cassette. Full range of Software also in stock at very low prices. Sample pack of 5 £4.

## £1 BAKERS DOZEN PARCELS

There's over 400 packs in our Baker's Dozen range and you become entitled to a free gift with each dozen packs. A classified list of these packs and our latest "News Letter" will be enclosed with your goods, and you will automatically receive our next news letters.



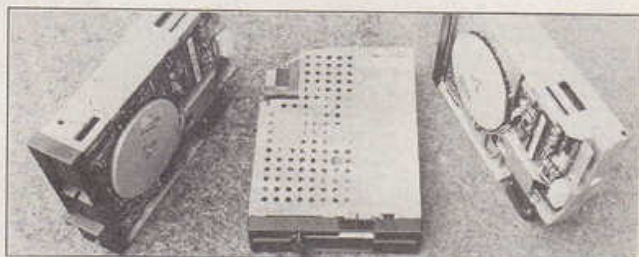
TRADE ENQUIRIES INVITED

## J & N BULL ELECTRICAL

DEPT. P.C., 250 PORTLAND ROAD, HOVE, SUSSEX BN3 5QT

MAIL ORDER TERMS: CASH, P.O. or cheque with order. Orders under £20 add £1 service charge. Monthly account orders accepted from schools and public companies (min. £20). Access & B/card orders accepted. Phone Brighton (0273) 734648 or 203500.

## 80 TRACK / DS DD 5¼" HALF HEIGHT DISC DRIVES



Uncased bare drive .....	£60
Drives in cream metal cases .....	£70
Cased drive with connecting leads to suit BBC micro .....	£74.95

## Special Offers on IBM compatible add-ons

Few only:	
Olivetti plug in 20 megabyte hard card .....	£199
Racal CP2123 plug in modem card .....	£99
Teac 40 track DS/DD bare drives, black fronted .....	£60
AT and T CDC Wren 1 36mb hard disc drives (45µs) (uncased) .....	£335

Money back if not satisfied and returned undamaged within 7 days. Callers welcome Mon-Fri 9-5.

## Pinboard Computers Ltd,

Unit 9, Bondor Business Centre,  
London Rd, Baldock,  
Herts SG7 6NG  
Tel: (0462) 894410

Prices include VAT, packing and parcel post.





# MICROWARE COMPUTER SERVICES

## AMIGA HARDWARE

Amiga 500 including Deluxe Paint, Starter Pack	£499
A1081 Colour Stereo Monitor	£369
A1010 3 1/2" 880K External Disc Drive	£249
NEC 3 1/2" 880K External Disc Drive	£149
A501 Ram Expansion, 512K/1024K	£99
A520 TV Modulator	£22
Digiview Version II, Video Digitiser	£175
Video Camera for use with Digiview	£239

Description	Pack 1	Pack 2	Pack 3	Pack 4	Pack 5
Amiga 500	£499	£499	£499	£499	£499
A1900M Mono Monitor	£104	—	—	—	—
A1081 Colour Monitor	—	—	£369	£369	£369
A1010 Disc	—	£249	—	£249	—
NEC 3 1/2" Disc	—	—	—	—	£149
Starter Pack	£82	£82	£82	£82	£82
Deluxe Paint	£90	£90	£90	£90	£90
RRP Total	£866	£1032	£1147	£1434	£1296
MCS Total	£639	£749	£849	£1100	£999

Any items may be purchased separately. With every Amiga 500 you will receive a free Starter Pack containing a mouse mat, Karate Kid II and 10 discs full of public domain software.

## ATARI HARDWARE

Description	Pack 1	Pack 2	Pack 3	Pack 4
520 ST-M CPU	£229.99	£229.99	£229.99	£229.99
Mono Monitor	—	—	£149.99	£149.99
1Mb Disc	£149.99	—	£149.99	—
1Mb Disc	—	£199.99	—	£199.99
Mouse Controller	£24.99	£24.99	£24.99	£24.99
Word Processor	£59.99	£59.99	£59.99	£59.99
Starter Pack	£34.70	£34.70	£34.70	£34.70
RRP Total	£499.66	£549.66	£649.65	£669.65
MCS Total	£299.00	£369.00	£399.00	£469.00

With every Atari ST-M you will receive a free Starter Pack containing five discs full of public domain software, and Spell-It to use with your word processor.

Atari 1040 ST-F Keyboard with 1024K Ram 1Mb drive, mouse, no modulator	£499
1040 ST-F as above + high res. mono monitor	£599
1040 ST-F as above + medium res. colour monitor	£899

## MEGA ST

Mega ST Keyboard, 2Mb Ram and CPU	£849
Mega ST Keyboard, 2Mb Ram CPU and high res. mono monitor	£949
Mega ST Keyboard, 4Mb Ram and CPU	£1099
Mega ST Keyboard, 4Mb Ram CPU and high res. mono monitor	£1199

## AMSTRAD PC

All PC1512s come with ability package and four US Gold Games free

PC1512 SDM mono monitor 1 x 5 1/4" 360K disc drive	£458
PC1512 DDM mono monitor 2 x 5 1/4" disc drive	£569
PC1512 SDC colour monitor 1 x 5 1/4" disc drive	£629
PC1512 DDC colour monitor 2 x 5 1/4" disc drive	£746
PC1640 SDM mono monitor 1 x 5 1/4" disc drive	£575
PC1640 DDM mono monitor 2 x 5 1/4" disc drive	£688
PC1640 SDC colour monitor 1 x 5 1/4" disc drive	£746
PC1640 DDC colour monitor 2 x 5 1/4" disc drive	£859
PC1640 SDECG extended colour graphics monitor 1 x 5 1/4" disc drive	£899
PC1640 DDECG extended colour graphics monitor 2 x 5 1/4" disc drive	£999
PC160 HDECG extended colour graphics monitor 1 x 5 1/4" disc drive, 20Mb hard disc	£1299

## AMIGA SOFTWARE

Maxi Plan 500 Spread Sheet	£99
Maxi Plan Plus	£149
Scrabble Version II	£86
Acquisition Pioneer	£139
Super Base Personal	£99
Alien Fires	£34
Borrowed Time	£22
Marble Madness	£19

MS-DOS IBM emulator	£60
PC MS-DOS emulator 5 1/4" disc	£49
Airball	£22
Barbarian	£22
Deep Space	£22
Gold Runner	£22
Road Runner	£22
Star Glider	£22

## AMSTRAD PC SOFTWARE

Word Star 1512	£60
Super Base Personal	£99
MS Word Junior	£50
MS Multi Plan Junior	£50

## ATARI SOFTWARE

VIP Professional	£189
Logistix	£99

## PO Box 2, Skegness, Lincolnshire PE25 2QL. Tel: 0754 610217

Order instructions: write name, address, postcode and phone number. Write order out clearly stating quantity, description and price, make cheques or POs payable to Microware Computer Services and send to above address.

All prices are fully inclusive. Prices subject to change without notice on availability. E. & O.E.

(509)

## PANTHER SOFTWARE!

"The No. 1 Mail Order Centre"  
More stock than you can imagine. Please send S.A.E. envelope for list, state which computer you want info on.

Title	Our Price	Title	Our Price	Title	Our Price	Title	Our Price
Peripherals		Basketball	22.49	World Games	22.49	Music Studio	30.95
Joystick IBM	21.99	Portal	22.49	Print Master	26.49	Mini-Amiga File	87.95
Light Pen Amstrad PC1512	17.95	Fourth Protocol	17.95	Holowriter	52.95	Lattice L	113.95
Mouse IBM	65.95	Bridge Master	17.95	Lattice C Compiler	87.95	Lisp	129.95
Mouse Mac	2.25	Alex Higgins Snooker	17.95	Animator	26.49	Pascal	70.95
5x15 Standard Tape	1.80	Cybert II Chess	17.95	AMIGA Games		☆☆☆ DISKS ☆☆☆	
10x15 Standard Tape	3.40	Winter Games	17.95	Golf	30.95	10x5.25 DS 48TPI disks & plastic	
Joystick 125+Chess	6.95	Pit Stop 2	17.95	Hollywood in jazz	28.49	Memory card	8.99
Joystick Match 1	12.99	Fahrenheit 451	17.95	7 Clues of Gold	28.49	10x5.25 DS 48TPI disks	7.49
Joystick Quickshot II	6.95	Trivial Pursuit	22.49	Skyfox	26.49	20x5.25 DS 48TPI disks	13.99
Joystick Quickshot II Plus	9.95	Saboteur 2	13.49	Arctic Fox	26.49	25x5.25 DS 48TPI disks	16.49
IBM PC Games		Jewel of Darkness	17.95	Ballyhoo	26.49	50x5.25 DS 48TPI disks	28.99
Borrowed Time	20.95	Space Man	39.99	Moon Mail	26.49	10x5.25 DS 96TPI disks	8.49
Championship Golf	30.95	Deadline	26.49	Slam! Service	22.49	25x5.25 DS 96TPI disks	17.49
		Passengers On The Wind	26.49	Balance Of Power	34.95	100 Capacity 5.25 lockable disk box	13.99
		Hobbit	26.49	Sinbad	34.94	(supplied with dividers and keys)	
		F15 Strike Eagle	19.49	S.D.I.	26.49		
		Solo Flight	17.95	Deep Space	22.49		
		Top Gun	17.95	Winter Games	22.49		
		G.A.T.O.	22.49				
		World Games	22.49				

Orders under £7.00 please add 50p for P&P.

Please make all cheques payable to PANTHER SOFTWARE, 2 Riverway Gardens, The Meadows, Nottingham NG2 3LL or Phone: The Hotline 0602 860 664

## SECTOR SOFTWARE

0772 454328

### QZ - QL - Z88 FILE TRANSFER

QZ will transfer files, documents, programs etc from the Z88 to the QL, or QL to the Z88. Print Z88 files on the QL printer, directory files with file sizes, rename files, transfer part of file or whole file, full compatibility with Task Master. Supplied on 3 1/2" flp disc or microdrive.

QZ software £15, QL-Z88 lead £8 or both for £22.50

Send now for our FREE Z88/QL product guide/price list (state which).

## SECTOR SOFTWARE

39 Wray Crescent,

Ulnes, Walton, Leyland, Lancs. PR5 3NA

Prestel Mailbox 772454328



(442)

## Athene Consultants

33 Holly Grove, Fareham, Hants PO16 7UP. Tel: 0329 282083

ALL DISCS SUPPLIED WITH LABELS AND LIFETIME GUARANTEE

Disc manufacturer Memorax

Description	Price
3-5 DS/DD 10 discs	£11.50 inc.
3-5 SS/DD 10 discs	£10.95 inc.
Storage Box (holds 10 discs)	£1.30 inc.

Popular Computing Weekly Special Offer only

1 free 3 1/2" disc box worth £1.30 with ten discs

Quantity Discount starts at 50 discs

3-5 DS/DD 50 discs ONLY £52.90 inc. (82p each + VAT)

3-5 SS/DD 50 discs ONLY £49.90 inc. (87p each + VAT)

3-5 SS/DD 100 discs £100. 3-5 SS/DD 100 £94.30

Despatch by 1st class post

Remember prices include VAT, postage and labels. All discs by top manufacturers

with a Lifetime Guarantee. PLUS a 14 Day Money Back Guarantee.

QL Turboquill described as "Absolutely Essential" by QL World now has even faster

version, QL Turboquill + for expanded memories QLs only. QL Turboquill + only

£13.50 please state mdy or 3-5 inch disc & quill version.

To take advantage of these very low prices, send cheque/P.O. to:



## Athene Consultants

Dept (POP), 33 Holly Grove, Fareham, Hants PO16

7UP. Tel: 0329 282083 Prestel MBX 329282083

CALL FOR THE LOWEST PRICES FOR QUANTITY IN U.K. (489)





Atari 520 STFM.....	£270.00
Commodore A500 inc. Deluxe Paint.....	£459.00
Commodore 128D Desk Top	
New Type Special Price.....	£350.00
Commodore 64 Compendium PK.....	£149.99
Commodore 64 Computer only.....	£114.99
Commodore Plus 4 Computer.....	£39.99
Commodore C-16 Compendium Pack.....	£39.99
Commodore 1541 Disc Drive.....	£139.99
Commodore 1570 Disc Drive.....	£149.99
Commodore 1571 Disc Drive.....	£189.99
Commodore C2N Cassette.....	£25.00
Commodore Green Monitor H/res.....	£69.00
Commodore Power Pack.....	£22.50
CBM Repairable Power Pack.....	£28.99

Lots of CBM spares - just call

With every computer sold a large selection of software is included in with the price.

Please note at these prices stock sells fast, please call to reserve your item.

We have tons of miscellaneous equipment unlisted, unfortunately we have not time to list and send to customers, so sorry to past and future customers who requested lists.

How to order: Payment by Access or Barclaycard, C.O.D., cheque with order.

Prices include V.A.T. @ 15%. Carriage by Securicor (next day) add £7. Carriage by G.P.O. add £3.

## 2-BIT COMPUTERS

26-30 Bowesfield Lane, Stockton-on-Tees, Cleveland TS18 3ER

Tel: 0642 604768

(508)

## CRIBBAGE

The popular pub game six card cribbage is now available for the Spectrum 48K/128K

Features include:

**IMPRESSIVE FULL COLOUR  
PLAYING CARD GRAPHICS  
100% MACHINE CODE  
TWO LEVELS OF PLAY  
AUTOMATIC SCORING  
HELP OPTION FOR BEGINNERS**

Six card cribbage is suitable for both beginners and experienced crib players and comes with full instructions and rules of the game.

★ ★ ★ ★ MONEY BACK GUARANTEE ★ ★ ★ ★

If you are not delighted with six card cribbage then simply return the tape within 5 days and your cash will be refunded.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Send cheque or postal order for £6.95 to

## ESEM SOFTWARE

95 Rodway Road, Patchway, Bristol BS12 5PH  
Tel: 0272 236064

(490)

## 2-BIT COMPUTERS COMPUTER BARGAINS

Apple II Computer Monitor Disc Drive.....	£249.99
Philips 2010 C CPM inc. Software.....	£299.99
Sinclair QL.....	£74.99
Sinclair + 128K.....	£69.99
Sinclair 48K Plus.....	£59.99
Acorn Electron.....	£39.99
Acorn Power Pack.....	£9.99
Acorn Interface 1.....	£39.99

Large quantities of sub-standard computer equipment for sale as spares - please contact the equipment buyer.

Vast stocks of computer software available, ancient and modern - why not call to find out if we have your requirement.

## RAMSOFT COMPUTER SUPER DEALS

ALL PRICES INCLUDE VAT.

**AMIGA 500**  
**£464.95**

Or less!  
Phone for details

With free mouse, mouse mat, 10 public domain discs, Amiga Basic, Amiga handbook, Karate Kid II game, and TV modulator

**ATARI 520 STFM**  
**£274.95**

Or less!  
Phone for details

With free mouse, Atari Basic, manual, and 5 public domain discs and software

**COMMODORE 64**  
**C PACK**

Phone for details

With 64C, C2N cassette, Neos mouse with software, Chess, Monopoly, Cluedo, Scrabble and Typing Tutor

Other computers not listed here/enquiries, please phone 0706 43519 (after 1pm please)



Access telephone orders accepted



**Ramsoft, 24 Bankfield Lane  
Norden, Rochdale, Lancashire OL11 5RJ**

(507)





**ARGONAUT**  
Software Ltd.

# STARGLIDER



**ARGONAUT**  
Software Ltd.

One of the most highly acclaimed games of 1987 was just the beginning . . .

Now Argonaut Software is developing a new generation of 16/32 bit entertainment software.

If you are a creative programmer or talented artist then consider joining us. We're not like the others! Our development team works in a fun atmosphere at our North London office.

In 1988 we will be specialising in Atari, ST, Amiga, Archimedes and IBM PC products. If you are an assembler/programmer and would like to work on these machines then contact:

**Jez San or Rich Clucas at Argonaut Software Ltd**

**Tel: 01-208 0072 or 01-208 0681**

**Fax: 01-208 2509**

(458)

## AVON COMPUTER EXCHANGE LTD

*Biggest independent computer distributor in the West and Wales. Specialist in home and business computers*

### \*USED COMPUTERS

Spectrum 48K.....	£44.95
Atari 800 XL.....	£49.95
Commodore 64.....	£89.95
Amstrad 464.....	£89.95

### DISC DRIVES

Commodore 1541.....	£99.00
Atari 1050.....	£79.00
CBC disc drives.....	£69.00

\*All prices include VAT and free delivery in UK. We also stock a vast range of printers and all the latest software. All Atari ST and Amiga software 20% off recommended price with this advert.

### NEW COMPUTERS

Amstrad 464 mono.....	£169.00
Amstrad 128 mono.....	£259.00
Amstrad 6128 colour.....	£249.00
Commodore Amiga.....	£474.00
Atari 520ST.....	£289.00
Amstrad 8256.....	£344.00
Amstrad 8512.....	£458.00
Amstrad PC 1512.....	£458.00
Amstrad PC 1512 mono.....	£655.00
Amstrad PC 1512 colour.....	£655.00
Amstrad PC 16040 EGA in stock	
Opus System PCL 1.....	£458.00

All other models in stock

FAST PC XT compatible - 13 meg hard disk .....£976.00  
Make cheques payable to Avon Computer Exchange

**42 Cannon Street, Bedminster, Bristol BS3 1BN**  
Telephone: 0272 637981

**126 Church Road, Redfield, Bristol BS5**  
Telephone: 0272 542116

**87 City Road, Cardiff**  
Telephone: 0222 483069

(444)

## AVON COMPUTER EXCHANGE LTD

*Biggest independent computer distributor in the West and Wales. Specialist in home and business computers*

### \*USED COMPUTERS

Spectrum 48K.....	£44.95
Atari 800 XL.....	£49.95
Commodore 64.....	£89.95
Amstrad 464.....	£89.95

### DISC DRIVES

Commodore 1541.....	£99.00
Atari 1050.....	£79.00
CBC disc drives.....	£69.00

\*All prices include VAT and free delivery in UK. We also stock a vast range of printers and all the latest software. All Atari ST and Amiga software 20% off recommended price with this advert.

### NEW COMPUTERS

Amstrad 464 mono.....	£169.00
Amstrad 128 mono.....	£259.00
Amstrad 6128 colour.....	£249.00
Commodore Amiga.....	£474.00
Atari 520ST.....	£289.00
Amstrad 8256.....	£344.00
Amstrad 8512.....	£458.00
Amstrad PC 1512.....	£458.00
Amstrad PC 1512 mono.....	£655.00
Amstrad PC 1512 colour.....	£655.00
Amstrad PC 16040 EGA in stock	
Opus System PCL 1.....	£458.00

All other models in stock

FAST PC XT compatible - 13 meg hard disk .....£976.00  
Make cheques payable to Avon Computer Exchange

**42 Cannon Street, Bedminster, Bristol BS3 1BN**  
Telephone: 0272 637981

**126 Church Road, Redfield, Bristol BS5**  
Telephone: 0272 542116

**87 City Road, Cardiff**  
Telephone: 0222 483069

(444)



## SERVICES

### COMPUTER REPAIRS

**Fixed Super Low Prices!**

Inclusive of parts, labour and VAT



**FIRST AID  
FOR  
TECHNOLOGY**

**1 week turnaround**

**Free collections/delivery available for local area**

### ★ AUTUMN OFFERS ★

SPECTRUMS	£14 inc. + Free Game
C64	£22 inc. + Free Game
C16	£18 inc.
VIC20, C+4	£22 inc.
BBC	£32 inc.
ELECTRON	£19 inc.
AMSTRAD 464	£32 inc. + Free Game
SPECTRUM 128	£16 inc.
C64 P.S.U. FOR SALE	£20 inc.

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

**W.T.S. ELECTRONICS**

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

### EAST LONDON MICRO SERVICE CENTRE

Spectrum, Commodore, Amstrad,  
Atari, MSX plus peripherals.  
Turnaround typical of 2-5 days.  
Three months warranty  
guaranteed.

Postal repairs undertaken.  
Computer IC's components sold.  
Budget games, software and  
accessories sold. Mail order  
welcome. Trade enquiries  
welcome.

Open 9am-8pm Mon.-Sat

### SAN ELECTRONICS

63 Plashet Grove, East Ham  
London E6 1AD  
Tel: 01-472 4871

Four minutes walk from Upton Park Tube Station.  
(358)

### 400/800 NOW XL/LE LOOK ST ATARI OWNERS

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

CHARWOOD PRODUCTS AND GAMES  
30A Warwick Avenue, Queens, Loughborough  
Leicestershire LE12 2HD  
Tel: 0509 412604 (485)

### ST PUBLIC DOMAIN

Software from only £1.50 per disc. Huge range  
that covers all types of programs plus special  
compilations and unbeatable offers. For a full list  
send stamp only to:

### SOFTVILLE

55 Highfield Avenue,  
Waterlooville, Hants PO7 7PY (492)

**COMMODORE 64C** compendium  
pack, mouse, cassette recorder, soft-  
ware, individually boxed, hardly used.  
£139. Tel: 01-348 3538.

**ICLOPD** keyboard, monitor, modem  
plus xchange software. £350. No time  
wasters. Tel: 01-952 9104.

**CBM 64** disc printer, 1500 sheets,  
paper discs, 85 tapes, three joysticks,  
drum synth + extras £550 o.n.o. Tel:  
Wearside 5841676.

**ATARI WIDGETS.** SM124 high-res  
monitor for ST, only £75. 1050 disc  
drives for 8-bit Atari, only £65. All  
boxed. Phone Andy on: 01-514 1995.  
**COMMODORE 128**, 1541 disc  
drive, tape deck, MPS 801 printer,  
modem, 2 joysticks, Expert and  
Freeze Frame 4 cartridges, approx  
200 quality games, Easy Script, £450.  
Please telephone: 0206 560618.

**640K QL**, CST disc, Centronics plus  
joystick interfaces, Q Ram, Super-  
charge, Metacompo, Pascal, Editor,  
Chess. Much more software - many  
magazines - £350 o.n.o. Tel: (Week-  
days) 05827 63708. (Weekends)  
0788 812988. Delivery not  
impossible.

### ATARI ST PUBLIC DOMAIN

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

Discs from £2.50

### MCISOFT

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

### AMIGA PUBLIC DOMAIN SOFTWARE

We have the very latest Fish # numbers #1 to #88  
and Amiga numbers #1 to #22 disks in stock. For  
full details of programme content PLUS Tutorial  
"PD Without Tears" PLUS the JUMPDISK Magson  
PLUS a collection of programmes and articles from  
previous issues of JUMPDISK. Please send a \$3.50  
cheque/PO for the "JUMPDISK SAMPLER". We  
will send a copy by return.

George Thompson Services Ltd.  
Old Reigate Road, Betchworth, Surrey RH3 7DR  
Tel: 073-784 4675 (291)

### FLOPPYSHOP ST USER GROUP and public domain library

We're an independent user group set up to support  
the ST community. For £5 annually you have access  
to one of the largest software libraries in Britain  
along with free subscription to a club magazine. The  
current issue is available as part of our introduction  
pack which you can get free by sending a S.A.E. to  
the address below. We charge only £3.50 per disc  
including P&P.

### Floppyshop ST

50 Stewart Crescent, Northfield, Aberdeen (415)

M5 Sord Computer c/w games and all  
Basic cartridges.  
£85.00

### IDEAL CHRISTMAS PRESENT

Software at sale prices. S.A.E. to:  
**PLAYFAR PROJECTS** (491)  
133 Hookfield, Harlow, Essex. Tel: 0279 417636

**AMSTRAD** colour monitor, second  
disc drive, DK Tronics TV tuner, plus  
lots of software and magazines plus  
blank discs. Tel: Luton (0582)  
504455 ask for Jerry (business  
hours). Offers. Will split.

**CBM 64**, 1541 disc drive, C2N, nu-  
merous discs, tapes, magazines,  
£200 o.n.o. Tel: Mark. 0742 314053.

**QL, SPECTRUM**, Oric software list.  
S.A.E. A. Chapman, 33 Albert Road,  
Leyton.

**TWO AMSTRAD PCW 8512**, with  
serial/Centronics interface, over  
£1,000 pounds of software and 20  
discs as new. £345 plus VAT each.  
Tel: 0462 675855/341315. Ask for  
Graham.

**AMSTRAD CPC 6128**, 3" disc  
drive, CTM 644 colour monitor, DMP  
2000 printer, joystick, software.  
£300. Tel: 01-278 2225.

**WORD PROCESSING SYSTEM**  
for Spectrums. Comprises Ibico letter  
quality printer, 12cps, Kempston Cen-  
tronics 'E' interface, Tasword 2 word  
processing s/ware, fully configured,  
boxed and manuals. £100 o.n.o., will  
split. Tel: 01-727 6184.

## FOR SALE

### Atari 800 XL / 130 XE Essential Utilities

#### Transdisk Version 3.0

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

#### The Freezer!

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

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

Special offer order both programmes for £35.00

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

**DIGICOMM**

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

## LABELS

### Self Adhesive Disk & Cassette Labels

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

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

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

*Industrial  
Process*

Unit A4  
Smeed-Dean  
Centre  
Sittingbourne  
Kent ME10 3RN

Self Adhesive Labels - **SUPERFAST**

## RIBBONS

### ALADDINK

**FABRIC RIBBON CASSETTE RE-INKING**

Trial offer: £1 per ribbon

Post used cassettes with payment to:

**ALADDINK (Dept PC),**  
4 Hurler Crescent, Eyemouth,  
Berwickshire TD14 5AP  
Tel: 08907 50965 (338)

**BBC MODEL B**, dual DFS board,  
128K sideways Ram, 80T ds drive,  
software, £275. Access/Visa possi-  
ble. Tel: Southampton 0703 849962.

**BBC B**, with A.P.T.L. board and re-  
play Rom, Opus Challenger disc drive  
with 256K sideways Ram, leads, man-  
uals, etc. £270.00. Tel: 0582  
591468. After 7pm.

## DUPLICATION

#### JBS records

### COMPUTER PROGRAMS

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

Fast Security Delivery Service

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

**AMSTRAD 6128**, recorder, Multi-  
face 2, Romboard, many discs, tapes,  
magazines, etc. £270 o.n.o. Tel:  
Mark. 0742 314053.

## BLANK CASSETTES

#### WITH LIBRARY CASES

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

Fully Inclusive (C.O.D. £1 extra)

## DISKS

**10 5 1/2 DS/DD**  
£6.00 inc. case

**10 3 1/2 SS/DD**  
£11 inc. case

**10 MAXELL 3" CF2**  
£20

### MEMOTECH COMPUTERS AND ACCESSORIES

MTX 512 COMPUTER	£43.00
DMX 80 PRINTER	£150.00
RS232	£30.00
PASCAL ROM	£30.00
SPECULATOR ROM	£30.00
1 mb. DISK DRIVE & INTERFACE	£160
1 mb. DISK DRIVE & INTERFACE	£160

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

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

**AMIGA SOFTWARE**, to swap,  
have latest stuff. Contact: John Tate,  
168 King Street, Hammersmith,  
London.

## LEARN CHESS

**Sinclair Spectrum 48K + 128K + 2**

**2 massive programs, using approximately 80K  
of memory, teach everything that the beginner  
needs to know to play the fascinating game of  
chess at club level.**

"... Very comprehensive ..." (Sinclair User).

"... An excellent implementation ..." (Ocean).

RRP: £9.95

Mail order: £6.95 from:

## COXSOFT

31 Fullwell Avenue, Barkingside, Ilford, Essex IG6 2HB  
Tel 01-505 3822

Please allow 28 days for delivery and trade enquiries  
welcome





FOR SALE

# STORT SOFT

## ATARI MAIL ORDER SPECIALISTS

### INCREDIBLE LOW PRICES!

ALL DISKS CARRY A NO QUIBBLE REPLACEMENT GUARANTEE ARE CERTIFIED 100% ERROR FREE AND COME WITH LABELS. 5 1/4" ALSO HAVE SLEEVES AND WRITE PROTECTS FLIP SIDED DISCS HAVE TWO INDEX HOLES AND TWO NOTCHES

#### SPECIAL OFFER !!

25 SS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£16.00
50 SS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£25.00
100 SS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£39.95
25 DS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£17.00
50 DS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£26.50
100 DS 48TPI 5.25" DISCS & 100 CAP LOCKING DISC BOX	£42.00

#### 5 1/4" DISCS FROM AS LITTLE AS 33 PENCE

#### BLANK 5 1/4" DISKS

DISK NOTCHER FREE WITH EACH 100 DISKS PURCHASED

UNBRANDED	TRIAL 10	25	50	100	10 in a plastic lib. case
SS48 TPI	£4.50	£9.00	£17.00	£33.00	£5.50
DS48 TPI	£5.50	£11.00	£19.00	£35.00	£6.50
DS96 TPI	£6.50	£13.00	£21.00	£37.00	£7.50
DS96 TPI FLIP SIDED	£7.00	£14.00	£22.00	£38.00	£8.00
MIMIC FLIP SIDED DS96 TPI	£8.95	£20.00	£38.00	£70.00	£9.95
MIMIC HIGH DENSITY 1.6meg	£23.00	£52.00	£100.00	£180.00	£24.00
COLOURED - mix & match or all one colour					
SS48 TPI	£6.50	£12.00	£22.00	£42.00	£7.50
DS48 TPI	£7.50	£14.00	£24.00	£44.00	£8.50
DS96 TPI	£8.00	£16.00	£28.00	£50.00	£9.00

SPECIAL PRICE!! Dysan DS48 TPI BOX OF 10 ONLY £10.95

#### LOCKING DISK BOXES

5 1/4" HOLDS 50	£7.95	5 1/4" HOLDS 100	£9.95
3 1/2" HOLDS 40	£7.95	60/90 (HOLDS 60 3 1/2" or 90 3 1/2")	£9.95

#### 3.5" SPECIAL OFFERS

25 SS/DD 135 TPI(MF100) & 80 or 60/90 locking disc box	£35.00
50 SS/DD 135 TPI(MF100) & 80 or 60/90 locking disc box	£59.95
25 DS/DD 135 TPI(MF200) & 80 or 60/90 locking disc box	£39.95
50 DS/DD 135 TPI(MF200) & 80 or 60/90 locking disc box	£65.00

FULL RANGE OF ATARI HARDWARE & SOFTWARE - BEST PRICES - RING FOR DETAILS! Just write for more information. Cheques etc. payable to STORT SOFT (International orders add 10% and remit in pounds Sterling by bank draft or intl. money order. Write for quote in any other currency.)

ACCESS/MASTERCARD/EUROCARD/VISA accepted. CREDIT CARD ORDER LINE - 0279 89509 24 HOURS A DAY, 7 DAYS A WEEK - VAT & P.P. INC. NO HIDDEN EXTRAS - WHAT YOU SEE IS WHAT YOU PAY

18 CROWN CLOSE, SHEERING, BISHOP'S STORTFORD, HERTS CM22 7NX

# DISKS

<b>5 1/4" 48TPI</b>	<b>96 TPI</b>
10-£5.50 inc.	10-£6.50 inc.
25-£12.50 inc.	25-£13.00 inc.

100+ Silly Prices; please call.

Despatch by Return—no quibble guarantee!!

Cheques/P.O. to:

**V. MARSHALL**

**35 Rochford Way, Croydon**  
**Surrey CR0 3AE Tel: 01-689 3487**

500

Central Media shop now open at address below

## CENTRAL MEDIA

WE SELL  
ATARI ST  
HARDWARE  
Ring for  
details

520 STFM  
£275  
1040 - £475

#### 3.5 INCH DISCS

10 UNBRANDED S/S D/D £9.50  
10 UNBRANDED D/S D/D £10.00

#### 5.25 INCH DISCS

10 DATATECH D/S D/D 96tpi £7.99  
10 DATATECH D/S D/D 48tpi £6.50  
10 TDK S/S D/D 48tpi £5.99  
10 AMSOFT CF2 3" £24.00

All prices inc. VAT & P.&P.

TRADE ENQUIRIES WELCOME

ALL CHEQUES & PO's PAYABLE TO  
**CENTRAL MEDIA**

101 SPRING BANK, HULL HU3 1BH TEL: (0482) 26581 (493)

We sell  
the AMIGA  
Genlock  
computerised  
video system,  
ring for  
details you  
will not be  
disappointed

135tpi unbranded	10	25	50	100	500	10 in a case
SS/DD (MF100)	11.95	28.00	57.00	98.00	?	12.95
DS/DD (MF200)	13.95	33.00	62.00	110.00	?	14.95

#### COMPUTER STATIONERY

PRINTER PAPER - Continuous fan fold, sprocket fed.						
SHEETS	11" x 9.5" 60gsm	A4 70gsm	11" x 9.5" 90gsm	A4 90gsm		
500	£4.95	£6.95	£9.00	£9.95		
1000	£8.95	£10.95	£14.00	£15.00		
2000	£13.95	£16.50	£24.00	N/A		
LABELS - Continuous fan fold, sprocket fed.						
	70mm x 36mm	89mm x 36mm	102mm x 36mm	89mm x 49mm		
1000	£4.15	£4.25	£4.50	£5.75		
2000	£7.50	£7.90	£8.40	£10.50		

Please specify number of labels across (1, 2 or 3)

#### BOOKS - END OF SUMMER BARGAINS!

	Publisher	R.R.P.	Our price
Atari Basic	Wiley	£9.75	£5.50
Atari Graphics & Sound	Wiley	£9.00	£4.95
Atari 130XE Mach. Lang. For Beginners	Melborne	£6.95	£4.00
Atari 130XE Games Book	Melborne	£6.95	£4.00
Advanced Spectrum Mach. Lang.	Melborne	£6.95	£6.50
Mach. Code Applications For ZX Spectrum	Sunshine	£6.95	£4.50
Creating Arcade Games on your ZX Spectrum	Interface	£3.95	£2.75
Advanced Mach. Code Programming For CBM64	Granada	£7.95	£5.95
The Complete Commodore (488 pages)	Granada	£9.95	£6.95
Machine Code Master (A Library of M/C Routines)	Sunshine	£6.95	£5.25
Commodore 64 Assembly Language	Shiva	£7.95	£5.75
Advanced Commodore 64 Basic Revealed	Collins	£9.95	£8.95
Micro Wars On The CBM 64	Century	£5.95	£3.50
Business Applications For The CBM 64	Sunshine	£5.95	£4.50

#### ATARI HARDWARE - BARGAIN PRICES

520 STFM	£279.95	1040STF	£425.00
1040 STF & SM125 mono monitor			£570.00
Mega ST (2 megabyte RAM & 1 meg drive)			£845.00
Mega ST (2 megabyte RAM & 1 meg drive) & SM125			£935.00
Mega ST (4 megabyte RAM & 1 meg drive)			£1095.00
Mega ST (4 megabyte RAM & 1 meg drive) & SM125			£1190.00

All Hardware comes with free dust covers!! All STs come with 5 public domain disks including CPM emulator and the arcade game Megaroids, 5 blank discs to get you going. Basic language disk and manuals.

#### COMPUTER ACCESSORIES

5 1/4" DISK NOTCHER (Double your disk capacity on a single sided drive)	£3.95
DISK CLEANING KITS Liquid non-abrasive type - protect your valuable software	
5 1/4" DCK	£3.95
3 1/2" DCK	£4.95
ST/IBM/AMSTRAD 1512 TO CENTRONICS PRINTER LEAD (2 metres)	£8.95
ST TO RS232 MODEM LEAD (2 metres)	£8.95
BATTERY POWERED MINI-VAC - for keyboards, printers etc	£9.95

(461)

#### SPECIAL OFFERS

##### ★ EXCEPTIONAL VALUE

25 x 5.25" DS-DD DISCS  
PLUS  
100 CAPACITY LOCKABLE DISC BOX  
FOR

**ONLY £17.60**

OR  
50 x 5.25" DS-DD DISCS  
PLUS  
100 CAPACITY LOCKABLE DISC BOX  
FOR

**ONLY £27.10**

20 x 3.5" DS-DD DISCS  
PLUS  
40 CAPACITY LOCKABLE BOX  
FOR

**ONLY £29.50**

OR  
50 x 3.5" DS-DD DISCS  
PLUS  
90 CAPACITY LOCKABLE BOX  
FOR

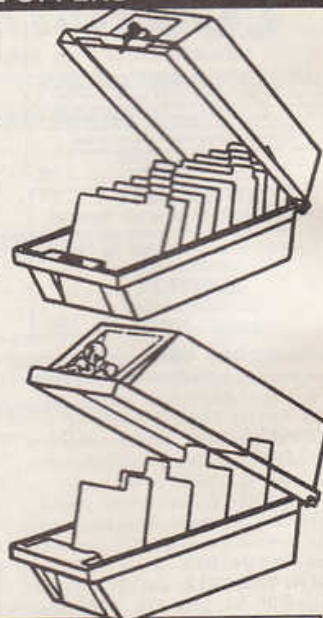
**ONLY £68.20**

**REMEMBER THE PRICE YOU SEE IS ALL  
YOU PAY. (U.K. ONLY)  
THEY INCLUDE VAT AND CARRIAGE**

Cheque or Postal Order to:

**Manor Court Supplies Ltd**  
Dept YC10, Glen Celyn House, Penybont,  
Llandrindod Wells, Powys LD1 5SY.  
Telephone: 0597 87784 or 0597 87792

Orders accepted from educational and government depts.  
Dealer enquiries invited. (510)





M

CRO  
SLE

## 1 THE SOUTH EAST

## LONDON

## DIGITAL SHADES LTD

✓ **Amiga 500**  
**Special offers**

★ A500 plus starter kit & modulator

☆ **£499** ☆

⌞ **Atari ST**  
**Special offers**

★ Atari 520 STFM plus starter kit

☆ **£260** ☆

*If you can't see the machine, peripheral, or software you want, then ring now for new low prices or send S.A.E. for mailing list.*

(378)

Mail order hotline 01-471 7969

All prices include VAT

9 Selsdon Road, Upton Park, London E13 9BY

## SOUTHEND-ON-SEA

# ESTUARY

## PERSONAL COMPUTERS

Commodore's Amiga A500 available NOW. Call for price.  
Buy the Atari STFM at the new price – only £299 inc. VAT.  
Software at discount prices.

**Victoria Circus Shopping Centre**  
(escalator from railway station)  
Southend on Sea

**Tel: (0702) 614131**

(289)

1 SOUTH  
EAST

## SOUTHEND

**A.S. and T. Ltd.**  
*Largest Atari St dealer in Essex*

Tel: 0702 510151  
Unit 32/33  
Rutherford Close  
Eastwood Industrial Estate  
Leigh-on-Sea  
Essex

(Progress Road/A127)

(388)

2 THE  
MIDLANDS

## BOSTON

## CROWN COMPUTERS

Opening on  
9th October at

**6 High Street,  
Boston, Lincs.**

**Tel: (0205) 53611**

Phone now for orders!

(512)

**DEALERS!**

**You can reach 40,000 readers for as little as £25 a week!**  
**For more details phone Susannah on 01-834 1717**



## HAYES

### GOEL COMPUTERS

- ★ We deal in the whole range of computers from PCs to Spectrums
- ★ Atari STFM now at the new price – **£275**

with Ferguson colour monitor – **£450**

**Amiga A500 – £499 inc. VAT**

Send S.A.E. for list of software

We are now also at  
1000 Uxbridge Road, Hayes  
Tel: 01-573 2726  
45 Boston Road, London W7  
Tel: 01-579 6133

(416)

## MANCHESTER/HINCKLEY

### COMPLEX SPECIAL PRICES WITH THIS AD! AMSTRAD SUMMER DEALS

Amstrad 1640 20Mb Tandon £999

Including twin floppy, Supercalc, Wordstar printer – £649; Colour version add £159; with Tandon 20 Meg hard card add £199. All prices + VAT – phone for others not listed.

#### AMSTRAD PC

1DD Mono	£379	20Mb Upgrade for Amstrad PC (fitted if required)	£245
2DD Mono	£479	Amstrad 1512 Mono (20Mb Tandon)	£649
1DD Colour	£519	640K Memory	£799
2DD Colour	£619	Amstrad Colour 1512 (20Mb Tandon)	£799
1640 20 meg ECD	£1099	640K Memory	£799
1640 DDECD	£839	Amstrad 128K memory upgrade	£29
1640 EDC	£749		

#### SUMMER SPECIALS

Tandon PCA20	£1349
Mini Scribe 30 Meg card	£275
Tandon 20 Meg upgrade	£199
Tandon 20 Meg business card	£199

#### PRINTERS

Epson LX800	£189
Star NL10	£195 inc. interface
Citizen 1200	£135

For further lists of printers and machines see PCW

#### ATARI

520STFM	£235	1040STF	£399
520STFM + mono monitor	£315	1040STF + mono monitor	£479
520STFM + Philips colour 8833	£459	1040STF + Philips colour 8833	£624

#### COMMODORE

Amiga 500	£439	Amiga Bridge + 5	POA
Amiga 500 modular	£25	PC One Disk Drive 20Mb	£799
Amiga 1	£349	AT 20Mb 1.2 Disk Drive 20Mb	£1775
Amiga 1	£1049		
Amiga 2000 1Mb	£1116		

GOVERNMENT AND EDUCATIONAL ORDERS WELCOME,  
EXPORT ENQUIRIES WELCOME  
STANDARD DELIVERY £5 AND NEXT DAY £9.50 – ADD 15% TO ORDER TOTAL  
Complex House, 28 Bradgate Road, Hinckley LE10 1LA  
(0455) 635583. Manchester 061-976 3763

(342)

ARE YOU THROWING YOUR MONEY OUT OF THE WINDOW



HAVE YOUR FABRIC RIBBONS RE-INKED FOR ONLY £1.50  
OR RE-INK YOUR OWN DMP 2000 / DMP 3000 BY USING OUR KIT COMPRISING OF 1 SPARE RIBBON  
1 BOTTLE OF SPECIAL INK AND FULL INSTRUCTIONS EACH RIBBON WILL RE-INK ON AVERAGE 40 TIMES  
ONLY £12.95 £10.00 OVER ONE THOUSAND UNITS SOLD ALL READY

CONTINUOUS PAPER & DISC LABELS	OUR PRICE	DISC STORAGE BOXES	OUR PRICE
2000 SHEETS 60ga Draft	£14.95	AMS 20L HOLDS 20 x 3" DISCS + BOXES	£9.95
1000 SHEETS 80ga	£12.95	MD 100L HOLDS 100 x 3 1/2" DISCS 20	£9.95
500 ADDRESS LABELS	£4.95	DO 100L HOLDS 100 x 5 1/4" DISCS	£10.95
100 3" 3 1/2" FLOPPY DISC LABELS 69 x 70	£3.00	10 3" SPARE DISC BOXES	3.50
100 STANDARD DISC LABELS 55 x 35	£1.66	AMS HOUSE + DESKTOP PROGRAMME	£24.95 £71.96
100 CASSETTE LABELS 89 x 41 WITH CUT OUTS	£3.00	AMS HOUSE + DESKTOP PUBLISHER	£24.95 £71.96

NEW LOW PRICE 10 5 1/4" 3" DISKS SUITABLE FOR 1st and 2nd DRIVE ONLY £24.95

PCW STARTER PACK 10 5 1/4" 3" DISKS - 1 AMS 20L STORAGE BOX - 2000 SHEETS PAPER 1 PCW RIBBON - 100 10 1/2" DISC LABELS - 100 ADDRESS LABELS £49.95

#### FREE SOFTWARE WITH EVERY COMPUTER

PC 1512 SINGLE DISC DRIVE WITH 12" MONO MONITOR	+ 4 U.S. GOLD GAMES & MIGHT ABILITY £546-35 £458.85
PC 1512 SINGLE DISC DRIVE WITH 14" COLOUR MONITOR	+ 4 U.S. GOLD GAMES & MIGHT ABILITY £744-85 £631.35
PC 1512 DOUBLE DISC DRIVE WITH 12" MONO MONITOR	+ 4 U.S. GOLD GAMES & MIGHT ABILITY £642-85 £573.85
PC 1512 BUSINESS PACK DOUBLE DISC DRIVE + DMP 3000 PRINTER + WORDSTAR + SUPERCALC	£934-30 £803.85
PC 1512 DOUBLE DISC DRIVE WITH 14" COLOUR MONITOR	+ 4 U.S. GOLD GAMES & MIGHT ABILITY £838-30 £746.35
PCW 1512 DISC BASED WORD PROCESSOR WITH DAISY-WHEEL PRINTER	+ £40.00 SOFTWARE VOUCHER £573.85
PCW 8256 DISC BASED WORD PROCESSOR WITH MONITOR & PRINTER	+ ACE JOYCESTICK PACK £458-85 £458.85
PCW 8512 TWIN DISC DRIVE WORD PROCESSOR WITH MONITOR & PRINTER	+ ACE JOYCESTICK PACK £574-30 £574.30
CPC 464 CASSETTE BASED COMPUTER WITH GREEN SCREEN & GAMES PACK	+ £20.00 SOFTWARE VOUCHER £199.95
CPC 464 CASSETTE BASED COMPUTER WITH COLOUR SCREEN & GAMES PACK	+ £30.00 SOFTWARE VOUCHER £299.95
CPC 6128 DISC BASED COMPUTER WITH GREEN SCREEN	+ £30.00 SOFTWARE VOUCHER £299.95
CPC 6128 DISC BASED COMPUTER WITH COLOUR SCREEN	+ £40.00 SOFTWARE VOUCHER £399.95
DMP 2000 OVER 100 TYPEFACE COMBINATIONS INCLUDING M L Q	+ OUR RIBBON RE-INK KIT FREE £159.00
DMP 3000 WILL OPERATE WITH AMSTRAD PC OR ANY IBM PC	+ OUR RIBBON RE-INK KIT FREE £194.35
DMP 4000 15" CARTRIDGE PRINT SPEED 200 CHRS - MLD SPEED 50 CHRS PER SECOND	+ 4 RIBBONS FREE £401.35
LQ 3500 24 PIN DOT MATRIX PRINTER	+ 4 RIBBONS FREE £401.35

SEND FOR OUR CATALOGUE OF OVER THREE THOUSAND TITLES FOR AMSTRAD CPC - PCW - PC COMMODORE SPECTRUM  
ATARI / ATARI ST BBC MSI ELECTRON APPLE SERIES 2 - APPLE MACINTOSH COMPUTERS ALL AT DISCOUNT PRICES

ALL PRICES INCLUDE V.A.T. POST & PACKAGING IN ONLY. EXPORT ORDERS WELCOME

COMSOFT APPOINTED AMSTRAD BUSINESS COMPUTER DEALER

COLDSTREAM COMPUTER CENTRE 48 DUKE STREET, COLDSTREAM, BERKSHIRE, TD12 4LF

SHOP OPEN MON / SAT 9.30-12.00, 1.00-5.30 TEL: 0690 2979, 24-HOUR ORDER SERVICE ON 0690 2854

## 2 THE MIDLANDS AND NORTHERN ENGLAND

### ASHBY DE LA ZOUCH

#### ASHCOM

##### Atari hardware

520 STFM, keyboard/mouse/0.5 meg drive	£259.95
1040 STF keyboard/mouse/1 meg drive	£439.95
1040 STF plus colour monitor	£799.95
SF 314 1 meg drive	£169.95

##### Commodore Amiga range

A500 4 + Offer Pack	£450.00
A1010 disc-drive	£249.95
3.5 inch discs DD/DS guaranteed (packed in 10s)	£12.50
50 bulk packed 3.5 inch discs DS/DD guaranteed	£50.00

Amazing prices on peripherals and all software. All prices include VAT at 15% and P&P on UK mainland. For more information call us on (0530) 411485 or send SAE for full price list. To order send cheques/PO or Visa/Access details to the address below or phone with credit card.

#### ASHCOM

10 The Green, Ashby de la Zouch, Leicestershire LE6 5JU

(437)

## NOTTINGHAM/DERBY

### SOFTWARE CITY BARGAINS SOFTWARE CITY BARGAINS

#### SOFTWARE CITY USED COMPUTER PRODUCTS

##### SINCLAIR COMPUTERS

Spectrum 48K	£37.00
Spectrum Plus	£53.00
Spectrum 128K	£85.00
Spectrum Plus 2	£110.00
QL	£130.00

##### AMSTRAD COMPUTERS

CPC 484 Green	£135.00
CPC 484 Colour	£190.00
6128 Green	£230.00
6128 Colour	£270.00

##### DISC DRIVES

Commodore 1541	£115.00
Opus Discovery 1	£100.00
Opus Discovery Twin	£150.00

##### JOYSTICKS/INTERFACES

Quickshot 1	£5.00
Kempston Interface	£5.00
Ram Turbo	£10.00
Interface 1	£25.00
Interface 2	£10.00
Microdrive	£25.00

##### MISCELLANEOUS

Data Recorder	£10.00
Commodore 64 Datasette	£20.00
Commodore 16 Datasette	£20.00
Colour Monitors from	£125.00
Blank 5 1/4" Discs (new) for 10	£7.00

##### COMMODORE COMPUTERS

Commodore Vic-20	£30.00
Commodore Plus/4	£35.00
Commodore 16	£30.00
Commodore 64	£90.00

##### ACORN COMPUTERS

Electron	£40.00
BBC B (DFS.iss 7)	£299.00
Disc Drives from	£50.00

##### PRINTERS

Commodore MPS801	£85.00
Commodore 1525	£55.00
Commodore 1520	£25.00
Alphacom 32	£25.00

##### USED SOFTWARE (Tested)

20 Different	£17.00
50 Different	£40.00
(Spectrum 64 and BBC only. Send a list of your collection so we know what not to send. State preferences, Arcade, Adventure or Mixed.)	

##### SPARES (New)

Spectrum PSU	£11.00
Commodore 64 PSU	£27.50
48K Membrane	£4.50
Plus Membrane	£7.50
Spectrum ULA	£14.00

##### STARTER KITS

Spectrum 48K, Data Rec., Joystick, Interface, 20 Games	£75.00
Spectrum Plus, as above	£90.00

How to order. Send a cheque or postal order to the address below. All our used products are in excellent condition and guaranteed for 3 months. Price includes VAT and delivery. Please allow 14 days for delivery.

**SOFTWARE CITY (PCW), 173 Mansfield Rd, Nottingham  
NG1 3FR. Tel: (0602) 410493**

WANTED: ALL TYPES OF SOFTWARE FOR CASH

(483)

## CLEVELEYS

### ELM COMPUTING

Amiga A500 – £469 + VAT  
(Vouchers accepted)

Atari 520 STM – £269

Software for all machines at discount including ST Amiga, MSX, BBC etc.

	RRP	Our Price
ie: MSX Milk Race	£1.99	£1.79
ST Roadrunner	£24.99	£19.95

Send S.A.E. stating interest to:

ELM COMPUTING, 3c York Avenue,  
Cleveleys, Lancashire FY5 2UG  
Tel: 0253 852882 (443)

## STIRLING

### TECH SUPPLIES

Ex-stock electronic components, computers, peripherals, word processors, test equipment and office equipment.

NO ORDER TOO SMALL  
NO ORDER TOO LARGE

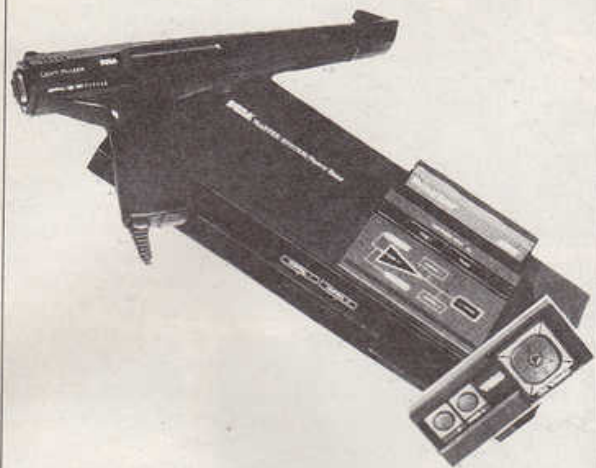
19i Winchester Avenue, Denny,  
Stirlingshire FK6 6QE

Tel: 0324 825627  
Open hours: 9am-4pm, 7.30pm-10.30pm (426)



## 3 SCOTLAND

### GLASGOW



New – Sega games console **ONLY £89.95**  
Phone for list of Sega games cartridges

#### AUTUMN OFFERS FROM CITY CENTRE

AMIGA A500 (with modulator) ..... £399  
SEGA GAMES CONSOLE ..... only £89.95  
(10% off all Sega games cartridges)  
COMMODORE 64/Vic 20 power packs ..... £11.50

#### DISCS! DISCS! DISCS! DISCS!

3.5" ds/dd discs 10 ..... £10  
3.5" ds/dd discs 25 ..... £24  
3.5" ds/dd discs 50 ..... £47  
3.5" ds/dd discs 100 (plus free lockable disc box).... £93

Lockable disc box – for 80+ 3.5" discs **£9.95**

Prices include VAT and carriage in the UK

**IF YOU DO NOT SEE WHAT YOU WANT PHONE US NOW!!!**

#### CITY CENTRE COMPUTERS

136 Ingram Street, Glasgow G1. Tel: 041-552 4222

## GLASGOW

### GLASGOW COMPUTER CENTRE

Atari appointed dealer  
and Service Centre  
Specialists in Atari ST Computers  
VIRGINIA GALLERIES  
(1st FLOOR)  
33 VIRGINIA STREET  
GLASGOW G1 1TU  
TEL: 041-552 1522 (136)

## EDINBURGH

### The AMIGA

#### CENTRE SCOTLAND Commodore Business Centre Amiga Specialists since 1985

Amiga A500 and A2000 now available.  
Technical and software support to our customers. Full range of AMIGA software and peripherals.

Send S.A.E. for our software catalogue

4 Hart Street Lane  
Edinburgh EH1 3RN  
Tel: 031-557 4242 (24 hrs.) (379)

## AIRDRIE

### J.C.S.

JOHN'S COMPUTER STORE

☆ Atari ST range  
+ Amiga A500

☆ In Airdrie now –  
Phone 0236 54260

Hardware and Software  
all tried and tested

4 Graham Street, Airdrie,  
Scotland ML6 9JP

## 2 THE MIDLANDS

### SHEFFIELD

#### ATARI DISCOUNT SOFTWARE CONCEPT SOFTWARE

SOFTWARE	
Top Gun.....	£15.95
Slap Fight.....	£15.95
TNT.....	£19.95
Into The Eagles Nest.....	£15.95
Barbarians.....	£17.95
Barbarian (Palace).....	£12.95
Airball.....	£17.95
Jupiter Probe.....	£15.95
Tai Pan.....	£14.95
Flight Sim II.....	£34.95
Scenery Discs.....	£17.95
Guild Of Thieves.....	£17.95
Metro Cross.....	£17.95
Bolderdash.....	£17.95
Hardball.....	£17.95
Golden Path.....	£15.95
3D Galax.....	£15.95
3D Backlash.....	£15.95
Indiana Jones.....	£15.95
Degas Elite.....	£17.95
Advanced Art Studio.....	£18.95
Art Director.....	£36.95
Film Director.....	£44.95
Aegis Animator.....	£59.95
Pro Sprite Designer.....	£31.95
First Word Plus.....	£59.95
Signum.....	£179.95
Fast Basic Disc.....	£35.95
Fast Basic Rom.....	£64.95
Cad 3D.....	£36.95
Midi Maze.....	£29.95
Sinc Track.....	£279.95
E2 Track.....	£49.95
Steinberg Pro 24.....	£285.95

**520 STFM** with free games. Phone for price.  
**520 STM** with 1/2 meg drive and software **£85.95.**

High quality discs DS/DD – £11.50 for 10.

All prices include VAT P.&P. for UK mainland. Concept Software, c/o Red  
Tape Studios, 50 Shoreham Street, Sheffield S14. Tel: (0742) 760970

Make cheques payable to Concept Software

S.A.E. for catalogue

(505)



# Blast off!

**W**e are living in an age where computers have become commonplace, whether at home, work, or in school. Hundreds of thousands of people, if not millions, are now using computers.

During the boom years of the computer every child in Britain wanted one. They couldn't get enough of it. Now many of them sit in cupboards unused. So what has this got to do with violent software? You may well ask, but if you look at most of the top selling computer games, they have one of two things in common; you are either destroying somebody or something; or escaping from somebody or something.

Imagine a game where you are escaping from a large maze-like building and are being chased by armed guards. Suddenly you see one of them running towards you, so what do you do? You get out your cosmic laser-blaster and vapourise him. Even though he hasn't done anything to you, and is wearing a similar uniform of somebody who shot at you.

As you are playing this game your young son or daughter, brother or sister is watching you doing this. It doesn't matter what age they are, all they see you doing is blasting somebody wearing a particular set

of clothes. So when they go to school they see somebody from another school wearing the same set of clothes as that school's bully, so what they do is beat them up, regardless of what they have done, just because they have seen you doing the same thing on the computer.

You might think "Children wouldn't do that." But children have been known to mimic adults and older children, and children and even adults have been known to mimic their favourite television or film character, so why not something off the computer?

I shall take an example of a young child playing the game Frogger, where part of the game involves crossing a large busy road. Everytime the frog is killed the child feels no pain and just starts the game again. That child might live near a motorway or a busy road and could just start playing Frogger on the road. "Oh it will never happen", you might say, I have already shown some examples of how children will copy people, so it could eventually happen.

At the cinema and on video tapes there is an age limit for certain films, the BBC and IBA have brought in a 9pm barrier, programmes are not suitable for young chil-

dren after that time. However, there is nothing stopping any child buying any game. So what should we do with this so-called dangerous software?

As with most things there is no fool-proof method to stop children buying certain pieces of software, so isn't it really up to the parents to accompany their children when buying software? Computer software doesn't have to meet any Government specifications as with cars and children's toys. Unless for some reason a computer magazine won't feature it, there is no holes barred. The only people who can really stop a piece of software being published are the software publishers.

Should the Government set up a body to review the software before it is published? This could work, or would it end up like the approval system for modems, with software being sold under the counter?

I have had my say and I don't mind whether you agree or disagree, or think I am just another person who is being an over-protective busybody, but just think next time you see a young child playing or watching somebody playing Bugblaster, what they are thinking?

**Richard Brooks**

This week, due to overwhelming demand, we have decided that it is about time to launch a new puzzle.

And it has also been decided that the best people to think of a new format for the puzzle would be you, the readers.

So, in essence, this week's puzzle is to think of a puzzle; which will

start the week after next.

As with all other puzzles, the person who invents the most interesting format for the new puzzle (pewh this is getting confusing, Ed!) will receive a prize, which for this special case will be £20.

Because this is such an important decision, we have decided to run

this 'design a puzzle' competition for two weeks, so the closing date is November 7.

Send all your ideas to Puzzle Ideas, Popular Computing Weekly, Greencoat House, Francis Street, London SW1P 1DG.

We expect to see wierder and more ingenious ideas than ever!

## HACKERS

Oh...It's got an lcd display.... They can only be viewed from a very narrow angle, can't they?

Well yes, normally, but this one is a bit different.

You'll have to stay over there if you want to see anything.





# SEGA

## THE ULTIMATE HOME VIDEO ARCADE MACHINE



This is SEGA – the powerful new video games system designed specially for the home and the whole family. It's compact and easy to assemble, and the high technology gives you sharp video images, vibrant colour and realistic sound!



**LOOK  
HOW MUCH  
SEGA GIVES YOU**

With Sega, you get a complete, ready-to-use system. All you need is a TV! The package includes

games console (to run a card or cartridge), a FREE copy of the hit arcade game "Hang On", 2 control pads, a TV aerial fixture to let you watch TV even when the console's still connected as well as a fitted 3-pin plug and a special mystery game built-in and ready for you to find!

**GAMES!  
GAMES! GAMES!**

Sports action, exciting thrillers and great arcade hits - there's a feast of fun covering

256k cards! And Sega has 1 megabyte and huge 2 megabyte cartridges to take the 40 new titles coming your way later this year including smash hits Out Run, Space Harrier and many more.

**SEGA GIVES YOU ALL  
THIS FOR JUST £99.95!**



**LIGHT PHASER**

Take aim and fire at your targets with ease – and stunning realism!

**3-D VISOR GLASSES**

Get more out of your game – More force, more action and more amazing 3-D realism!

**SEGA**  
*The Ultimate Games  
Machine For Your Home*





**BE FAST...BE ALERT...OR BE DEAD!**

# R.I.S.K.



## THE EDGE

I didn't expect to get a 'R.I.S.K.' order... none of us ever does. I mean, Galactic Command doesn't call for a Rapid Intercept, Seek and Kill operative unless all else has failed... but why do I get this feeling I'm gonna be on my own this time?

THE EDGE, 36/38 Southampton Street, London WC2E 7HE

**COMMODORE**

**8.95**

**DISC 12.95**