

POPULAR Computing WEEKLY

WORD UP!

WordPerfect Amiga reviewed see page 18

NEWS DESK

Amstrad portable

Atari CD-Rom
price revealed

HARDWARE

Panasonic
KXP-1083
printer

Don't miss
our competition



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!

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!

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!**



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!

GAMES! GAMES!

Sports action, exciting thrillers and great arcade hits - there's a feast of fun covering



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

Choplifter™



World Grand Prix™



Super Tennis™



Space Harrier™



F16 Falcon™



Out Run™



Distributed in the UK by Mastertronic Ltd, 8-10 Paul Street, London EC2A 4JH. Tel: 01-377 6880

October 9-15

CONTENTS

News

4 News Desk Amstrad announces £135 million profit, and a portable machine is tipped soon . . . Atari acts on ST shortage . . . plus the Z88 story that never was (printed last week, that is).

8 News Analysis Gordon North offers a personal view of last month's PCW Show.

25 Soundcheck Mark Jenkins reports on music products at PCW.



Features

19 Software Ian Rook goes once round the block with the new Amiga version of top word-processor *WordPerfect*

21 Infocom Cliff Joseph spoke to Infocom chiefs Joel Berez and Mike Dornbrook and found out how the UK market compares with things in the US.

22 Hardware Chris Jenkins puts another printer through its paces - Panasonic's KXP-1083.



Programming

15 Machine Code Graphics Kenn Garroch continues his machine code graphics articles with advice on different screen layouts.

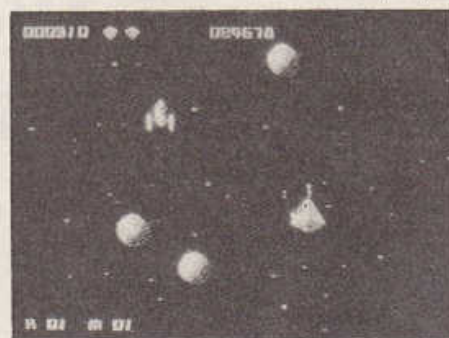
26 Listings Only enough space this week for one program - part two of the incredible *Phoenix* for the Spectrum.

12 Peek and Poke Kenn Garroch answers your programming queries.

Top: Bob Gleadow of Atari. Second: WordPerfect Amiga. Above: Panasonic KXP-1083 Below: Mega-Apocalypse.

Games

33 New Releases Your complete guide to all the programs released this week, including *Mega-Apocalypse*, *Indiana Jones*, *Terrorpods* and much more besides . . .



Executive editor Francis Jago **Deputy editor** John Brissenden **Features editor** Cliff Joseph **Technical editor** Duncan Evans **Marketing manager** Jeremy Kite
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.

£135m for Amstrad – portable on its way?

AMSTRAD last week announced pre-tax profits of nearly £136 million, showing an increase of over 80 per cent over 1986 figures of more than £75 million.

Amstrad chairman Alan Sugar made a lengthy statement to accompany the results, in which he warned that the phenomenal growth experienced by the company in recent years would not be sustained in the future.

"To go forward we must realistically accept that we cannot achieve the doubling effect we have experienced in the past," he said.

"The current financial year is going to be one of consolidation and seed planting in formulating our firm plan of growth for the future."

Sugar took the opportunity to round on his critics – in the computer industry and financial community alike – who had been less than impressed by Amstrad's moves into the PC market.

"We are not a company that lives or dies by the success of any one product," he said, perhaps admitting the company's hopes for the PCs had not been met.

"(The PC1512) attracted tremendous interest and, in my opinion, has revolutionised the so-called computer industry in the UK.

"The 'Amstrad effect' of low price high volume production and marketing has taken the wind out of an industry cocooned in a sedate and uncompetitive environment, encapsulated in a hyped-up aura of mystical high technological sophistication," Sugar stormed.

He added that Amstrad has plans for over 20 new products over the next 12 months, as well as moves into satellite TV and "two completely new, exciting product areas", as yet undisclosed.

● DESPITE denials, it seems likely that Amstrad will launch a new computer in America during November. This rumour

comes almost immediately after Alan Sugar denied that he would be entering the AT or 80386 market this year.

The machine, rumoured to be named the LT-1, is likely to be an MS-DOS compatible portable. Others suggested that the machine would follow the PS/2 range and have 3.5" disks, and indeed would come bundled with an adapted version of *Wordstar 1512* (*Wordstar LT-1?*).

Perhaps the most important feature of the portable, is the screen. To compete with the current crop of portables, Amstrad must use both supertwist technology, and some form of backlighting. In order to keep to the price range Amstrad has budgetted (supposedly £400) this is going to be very difficult, unless they use badged technology, something that seems very unlikely after Alan Sugar's comments on laser printers (see *Popular Computing Weekly*, 2 Oct).

The most likely date for the launch is next month's Comdex Show in the USA.



Sugar: upset 'so-called' computer industry

1987 PCW 'great success!' claim show organisers

THE 1987 PCW Show was, as anyone who tried to wander around on any of the public days will tell you, the busiest ever.

Although the official figures have yet to be announced, it seems almost certain that this **PCW Show, Olympia 1987**

year was far busier than last year. A figure nearer 80,000 was being rumoured last week, considerably higher than last year's 63,000.

The exhibitors too seemed happy, although most business companies felt the show had

lost its lead in the business market and should perhaps split, with one show for business and another for games.

Mike Blackman, the organiser of the show, was extremely enthusiastic when asked about the show; "The show was a great success for all concerned. The figure at the moment is around 75,000, and that is far better than last year. Trade reaction has been very good, and the level of international trade in particular was very good."

Next year, however, there will be a little more competition for the PCW show as EMAP (East Midlands Allied Press) are promising to launch a games-only show.



Mail-order Z88s recalled — most not affected

Z88 owners worried that their machines will have to be recalled due to faulty operating ROMs should not be getting too upset.

Peter King, marketing manager of Cambridge Computer, has assured *Popular* that the problems are only with the first few hundred machines, and that to describe them as problems is an exaggeration.

Simply the changes involve one ROM change (the operating system) in order that the machine will be able to run the

third party software that is currently being developed.

Z88 owners wishing to know whether or not their machines need to be returned for this modification should follow these simple instructions;

Press the 'INDEX' key, then press the 'HELP' key, and finally press the left 'ARROW' key. Your Z88 will then print a screen with the version number of your operating system. If the number is less than 2.0 (ie 1.0, 1.4, etc) then it needs changing; if it is 2.0 or above then all is well.



DKTronics sells out

PERIPHERALS manufacturer RAM Electronics has acquired the rights to manufacture and sell the DKTronics range of products.

RAM is probably best known for its range of Spectrum peripherals, including joystick and printer interfaces, and the Music Machine MIDI interface. RAM's Richard Sekula said:

"The DKTronics range of products complements our current range by adding a strong

Amstrad content which was previously missing from RAM's product line-up."

The DKTronics name will continue to be used, and the various products will be marketed under that name.

"Why not?" said a spokesman for the company. "It's a good name."

A revised price list for the DKTronics range of products will be issued shortly, according to the company spokesman.

SOFTWARE HOTLINES

NOW that PCW has been and gone at last, *Hotlines* is going to spend the rest of the year tracking down all those games that were announced but not yet available at the show (the vast majority, in other words).

Where better to start, in that case, than with *Star Trek*, which we've all been waiting for since last year's show. It seems that the ST version is now finished and that **Firebird** is just waiting to get all the packaging finished before they can get it into the shops. Firebird says that versions for the main 8-bit machines will follow 'at warp factor 10', which probably means next year's show. However, we should be able to review the ST version within the next fortnight (that gives me time to prepare lots of 'beam me up' jokes).

In the next office along the people at **Rainbird** are working on something called *Dick Special* for the ST and Amiga. The plot is fairly ordinary, about the search for a lost dog called Spook (hence the subtitle, *The Search for Spook*). But it's the graphics that make it look interesting — large cartoon-style animated graphics of the sort that you normally only see in short demo programs. The game is being programmed by Sandy White and Angela Sutherland, who were behind the innovative graphics of *3D Ant Attack* a few years ago.

I've just been peering over someone's shoulder at an almost finished version of *Backlash* by **Novagen**. It's a shoot

'em up for the ST, similar in style to the old *Battle Zone* game but what's impressive about it is the speed and smoothness of the action — 'awesome' was the word one ST boffin used. I wouldn't go quite that far, but it is pretty good.

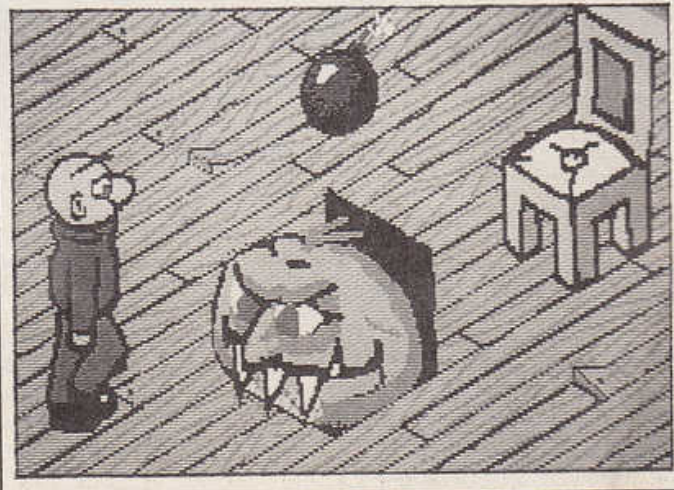
CRL looks like it's almost finished with the *3D Game Maker* at last. This is a utility which allows you to design 3D arcade games along the lines of *Knight Lore* and *Alien 8*. This has been in the pipeline for a while now, but got hit by delays.

Palace, on the other hand, is going for straight shoot 'em ups with *The Shoot 'Em Up Construction Kit*.

Other games designers that have been released generally haven't been all that successful, mainly because they've tried to cover too wide a range of possible games, but these two concentrate on specific types of games and they look like they're more likely to allow users to come up with something worthwhile.

There's yet another software house moving into the budget field this week. The not very sensibly named **Pirate Software** is launching £1.99 and £2.99 labels, and two titles look like they might be worth a closer look: *Holiday in Sumaria*, which looks like a sort of budget *Sweetvo's World*, and *Smash Out* which is a version of *Break Out* — not terribly interesting, but it does include a screen editor so that you can design screens of your own.

CRL is also about to release the Spectrum version of *Ball Breaker*, which could be described as *Break Out* in 3D. So here we are in late 1987 and I'm still reviewing versions of *Break Out* for the Spectrum. That, as they say, is progress.



DIARY
DATES

OCTOBER

15-17 October

Desktop Publishing ShowBusiness 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

14 November

National Einstein ExhibitionNational Motorcycle Museum,
Birmingham**Details:** Einstein software etc.**Price:** 50p**Organiser:** UKEUG (0473)
49507

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.

Action on ST shortage

ATARI last week confirmed that it has taken steps to resolve the ongoing ST shortage, which has left many potential customers in a state of desperation.

An Atari spokesman offered the usual "sales have exceeded all our forecasts" boast, while admitting that the company may have made insufficient forecasts for ST sales earlier in the year.

"It is slowly being resolved. We forecast increased sales for the ST, but sales have exceeded all our forecasts. All through August and September dealers were out of stock.

"We have made extraordinary moves to get a quantity of STs airlifted from Taiwan," he added, and said that he expected any problems to be fully solved by the end of the month.

In the meantime, Atari recommends anybody on the lookout for an ST to go to a large branch of WH Smith, or a specialist Atari dealer. Ring Atari on Slough (0753) 33344 for information on your nearest stockist.

Atari has confirmed further details on the CD-Rom machine announced at the PCW Show. It will reach the UK market "in very small quantities" in November, and will sell for £399 inclusive.

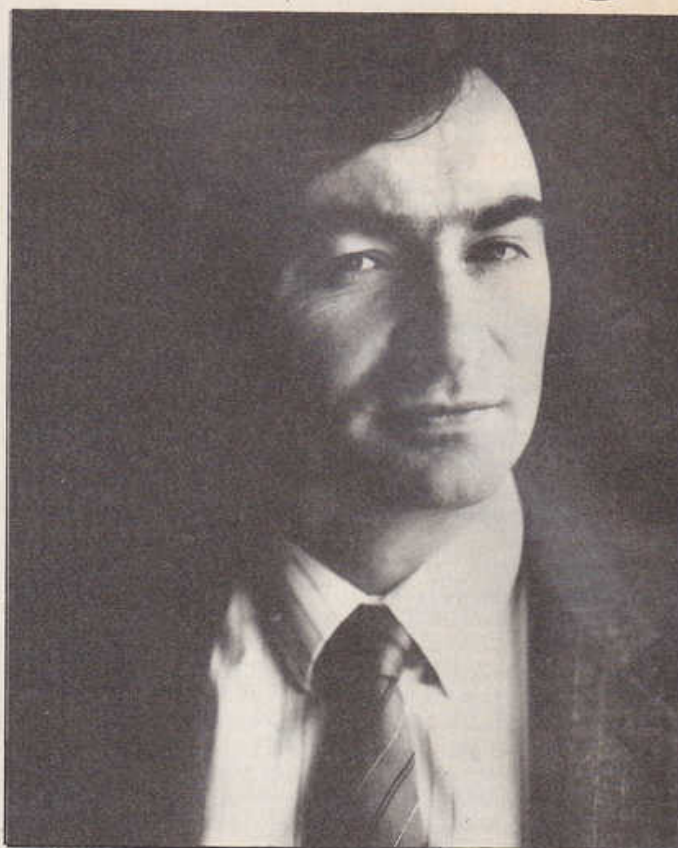
The Atari spokesman said last week that it will be aimed at the educational, engineering and business market - including users of large databases, such as national newspapers.

A500 cut?

THE END OF Commodore's voucher offer on the A500 Amiga last month has served only to fuel intense speculation on the future pricing of the model, and the trade press was suggesting a possible £499 (including VAT) price point from next week.

The £100 discount offered under the voucher scheme made a permanent cut more than likely.

Commodore was unwilling to comment either way last week but the putative £499 price point would fit in with the margins necessitated by the current huge advertising spend on the A500.



Atari UK chief Bob Gleadow

CHARTS

Popular to carry
16-bit Top Twenty

1	(5)	Terrorpods (ST)	Psygnosis
2	(2)	Defender of The Crown (Am)	Mirrorsoft
3	(1)	Barbarian (ST)	Psygnosis
4	(NE)	F15 Strike Eagle (ST)	Microprose
5	(4)	Road Runner (ST)	US Gold
6	(3)	Guild of Thieves (ST)	Rainbird
7	(9)	Terrorpods (Am)	Psygnosis
8	(8)	Indiana Jones (ST)	US Gold
9	(7)	Barbarian (Am)	Psygnosis
10	(10)	Flight Simulator 2 (ST)	Sub-Logic
11	(6)	Guild of Thieves (Am)	Rainbird
12	(16)	Arkanoid (ST)	Ocean
13	(14)	Flight Simulator 2 (Am)	Sub-Logic
14	(17)	Goldrunner (Am)	Microdeal
15	(16)	Faery Tale Adventure (Am)	Micro Illusions
16	(NE)	Tai-Pan (ST)	Ocean
17	(19)	Defender of The Crown (IBM)	Mirrorsoft
18	(20)	Space Battle (Am)	Anco
19	(13)	Sinbad (Am)	Mirrorsoft
20	(23)	TNT (ST)	Infogrames

All figures compiled by Microdealer/Computer Trade Weekly

From this week onwards Popular will be publishing both 8- and 16-bit software charts. The 16-bit market, whilst still smaller than 8-bit is now sufficiently developed to make worthwhile reading. It's (mildly) interesting to note that while companies like US Gold and Ocean are strong in both fields, the leading company on this chart at the moment is Psygnosis, which has probably never been heard of by the average Spectrum or Commodore owner.

THE BARBARIAN HAS ARRIVED! THE TERRORPODS ARE COMING!

TWO GREAT NEW TITLES FROM PSYGNOSIS



BARBARIAN

Can you become Hegor the famous dragon-slaying, monster-mangling Barbarian?

Are you the warrior who can enter the fearful realms of the underground world of Durgan, a world terrorized by the evil Necron?

Can you handle the adventure, the frenzied attacks, the hidden traps, the gruesome death dealing monsters?...

Your quest; to destroy the lair of the accursed Necron. Your prize; the kingdom's crown.

Your task is awesome! You must live on your wits, conquer your innermost fears, use every skill and weapon available to you.

Hideous perils await. Can you survive?...

Are you Hegor the famous dragon-slaying, monster-mangling Barbarian?

512k colour versions available for Atari ST and Commodore Amiga - colour monitors only.



TERRORPODS

It's been a long watch...As the sun disappears over the horizon, the uninviting, grey bleakness of Colian becomes apparent. Following the intense heat of the day, the onset of night adds the bitterness of sub-zero temperatures to an already hostile environment, and the stark interior of the D.S.V. appears almost homelike.

Deep melancholy is suddenly smashed by the shrill scream of a siren. The status panel has gone crazy, an extraordinary array of lights flash uncontrollably. Good grief... what's happening?

Frantically, you turn to look at the command scanner, hunting through the mass of information before you, in a desperate attempt to decipher what has happened.

Your whole being freezes...It can't be! The Terrorpods...

512k colour versions available for Atari ST and Commodore Amiga - colour monitors only.



ARENA

The classic sports simulation.

BRATACCAS

Become Kyne the earth scientist accused of genetic fraud.

DEEP SPACE

The ultimate interstellar war game.

512k colour versions available for Atari ST and Commodore Amiga - colour monitors only.

▶ BARBARIAN	£24.95
▶ TERRORPODS	£24.95
▶ DEEP SPACE	£34.95
▶ BRATACCAS	£34.95
▶ ARENA	£29.95
▶ ARENA BRATACCAS	£34.95

**Psygnosis
FREEPOST
Liverpool L3 3AB
United Kingdom**
Tel. Nos.
**051 647 8118 (Daytime)
051 227 4800 (After hours)**



S E E I N G I S B E L I E V I N G

The PCW show is a curious event. For five days each September, several dozen of Europe's noisiest computer game manufacturers and many thousands of their boisterous young customers set up camp in Olympia's National Hall, less than twenty yards from the restrained, squeaky-clean environment of the business and serious computing area. The visitors to each of these areas - kept apart by little red ropes and the prayers of the show organisers - are as incompatible as it is possible to be but the potent mix does give the whole event a cosmopolitan, almost dangerous quality.

Visitors to the 1987 show, which closed on Sunday, were starved of the big launch that had added a certain spice to previous events. There was to be no new major manufacturer entering the market, no new cult personality and no new software package for everyone to talk about in the bars and lounges. Even Amstrad, who used last year's show as the first public outing for its PC1512, could only follow up with the 9512 wordprocessor - an interesting machine but certainly no mould-breaker.

Admiring

Alan Sugar put in a personal appearance on the first trade-only day and glad-handed his way through a throng of admiring computer folk. The nice young representative from Amstrad didn't know whether 'Alan' would show up later in the week to meet members of the public but thought that 'as he's very busy he probably wouldn't'. I thought he probably wouldn't as well.

If the lack of big launches was disappointing, then the size and quality of the stands put up by the industry's big spenders certainly wasn't. I think US Gold and Ocean may have confused the PCW show with another of Olympia's famous events - the Ideal Home Exhibition. The stands they built would have housed several families and I would have put in an offer for one of them if the carpets were included in the price and the previous owners would agree to take out the 10 televisions they had put in every room.

Ocean's stand, in common with many others, housed a real arcade machine or two. The one I tried was a rally driving simula-

Showing out

Gordon North takes a slightly cynical look of last month's PCW show, and reports that it was not quite the main event that it was made out to be.



tion complete with black leatherette seating that delivered a hydraulic spinal punch to simulate reality. It left me feeling quite uncomfortable but at least it's an improvement on last year's show when I couldn't find a place to sit down at all. I'm not sure I approve of the use of expensive arcade games to promote cheap home ones because it smacks of subtle misrepresentation but perhaps I'm just a fuddy-duddy.

Sir Clive Sinclair was there too, and his company's matt-black stand took me right back to the days of the ZX81. It's quite ironic that his little black portable Z88 was one of the few things at the show that I found myself returning to over and over again. His stand was small compared to those of his neighbours and there were times of day when the light didn't get to it but Sir Clive has still got pulling power. I visited that stand over and over again until I really began to believe that I could formulate a spreadsheet on the train without being sniggered at.

Growth

The big themes in the business section were, not too surprisingly, desktop publishing and

networking but even exhibitors in these high-growth areas gave largely lack-lustre performances. The promised desktop publishing village was not so

point-of-sale material portrayed the bare chest of a hunky male model displaying the one thing that will make 1988 bearable... A black leather shoul-



Two views of the "non-vintage" 1987 PCW Show.

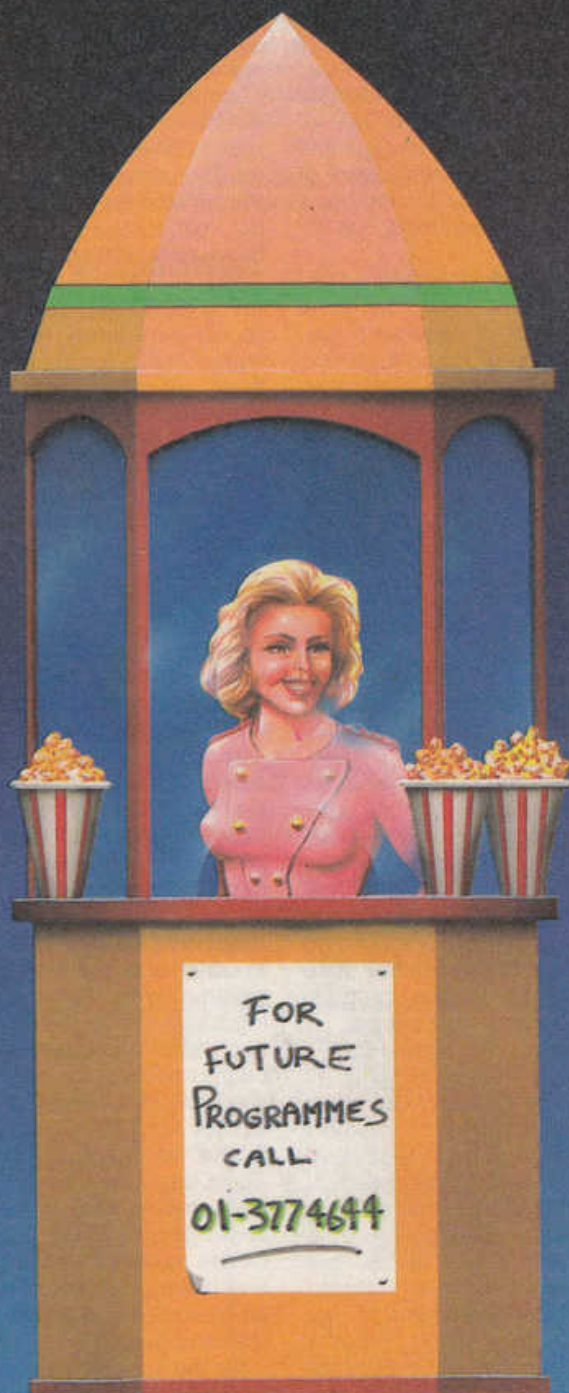
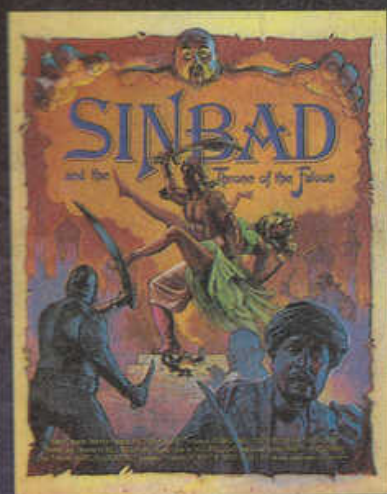
much a village as a circle of wagons waiting for the Red Indians to arrive. Every DTP representative I talked to was remarkably vague about the potential of the systems they were selling. 'Just around the corner' seemed to find its way into every conversation. Still, perhaps next year will be better and I'm sure that a good reason for buying a £10,000 DTP system is just around the corner.

It was in the business section that I found the product that I would nominate as my favourite of the show. A tacky piece of

der holster for a Psion organiser. It was only the thought of explaining the strange bulge under my jacket to the security man at the exit that stopped me from snapping one up on the spot. I finally left the PCW show with the feeling that I had just seen the whole of a very fast moving industry stop and draw breath. We will all attend the 1988 PCW show and I have a hunch that we will all enjoy it much more than this year. 1987 was not a vintage year.

MIRROR
Soft

CINEMAWARE



FOR
FUTURE
PROGRAMMES
CALL
01-3774644



Key facts in advertising

I am writing in connection with the 'CRUEL WORLD' letter that you published in 25/9-1/10 edition of *Popular*.

I must say that I agree with the sentiments of the reader, and that Commodore's advertising is indeed in very bad taste, perhaps even worse than suggested.

In fact, I would think that Atari could sue because the 'toy' computer depicted with the clockwork key drawn onto the side of its monitor has a quite uncanny resemblance to the distinctive keyboard of the Atari ST.

This point aside I would like to add my comments to the continuing Atari ST vs Amiga debate. Having looked in detail at both, and decided to keep my options open, I feel competent to comment.

My advice is that, if money is no object, then buy the Amiga for playing games and some occasional word processing, but be sure to fit a RAM expansion because the A500's memory tends to run out easily.

However, if you have any aspirations to use the machine for professional purposes, or like me, you have to count your pennies, then buy the ST. Not only is there more software, but it is cheaper too.

P. Michael Kingston
Bristol

As always, your views are very personal, and we are quite sure that there will be a barrage of mail disputing what you say, but we would be interested to hear what someone at Atari thinks about your comments on Commodore's advertising campaign.

Polite rejoinder

I am writing with regard to Duncan Evans's comparison of ST Basics in Vol 6 No 38 of

PCW. Apart from being an example of sloppy journalism, with two of the Basics being dismissed with statements like "I'm afraid we can write that off already" when a language isn't even available for evaluation, and "I don't particularly like the way it works", Mr Evans just doesn't seem to have spent enough time with HiSoft's Basic to understand how it works.

The original bundled ST Basic is indeed terrible and deserves criticism, and the forthcoming version will not be helped by retaining the dreadful editing environment, but the actual language update isn't yet available for use or review. We don't know how much, if anything, existing users will be charged for upgrades, but it will be bundled free with new STs and deserves to be evaluated at least as a Basic for the many first-time programmers that will use it.

From reading the article I feel that Mr Evans had far more experience of GFA and Fast Basic than of HiSoft's version. He didn't seem to have taken time to get the hang of the editor, which though it doesn't have all the features of Fast Basic's superb editor, is as capable as GFA's. More importantly it looks as though he hasn't grasped the most important feature apart from speed: HiSoft's Basic can handle more GEM features easily than the other Basics through special libraries which can be extended by the user to make it even more comprehensive with regard to GEM and other user-defined functions. This was neatly glossed over by the comment that "in practise it results in quite a messy situation". That can only mean that Mr Evans is "quite a messy" programmer, as the inclusion of two or three extra lines in the program doesn't upset most people.

He also described HiSoft's GET and PUT statements as being very clumsy to use, when to me they appear to be almost identical to those in Fast Basic and GFA Basic. His example of GFA's capability of splatting 8 by 8 squares of pixels on the screen at a rate of 230 per second would have withered somewhat had he got far enough into using HiSoft's Basic to achieve the figure of 869 per second in a set grid, or 429 randomly that I managed in

five minutes programming!

The nature of his attitude to exploring a new product for review is summed up in his conclusion where he says he wouldn't recommend it because "I don't particularly like the way it works". Apart from being an extraordinarily insipid statement and an inadequate summary it might explain how he didn't grasp the abilities of this Basic.

For a useful comparison between products, the reviewer should have sufficient experience of all the products, and while he seemed to know the first three well, it appears that he had not bothered to get sufficiently far with HiSoft Basic to produce a valid evaluation. It is unfair to ST users, Atari and HiSoft that this article was printed. The damning comments on the bundled Basic may serve to put newcomers to personal computing off buying the ST, they and ATARI will suffer. (I like the ST! I think every home should have one!) The inadequate evaluation of HiSoft's Basic will cause them to lose sales and might have prevented me from buying it and getting the greater control of the ST that I wanted without having to start all over again with C.

Tim Osmond
London

Perhaps Mr Osmond is unaware that a comparative review is a mixture of fact and personal opinion. There was not one mention of an incorrect fact and all his letter said was, 'I've bought HiSoft Basic and I don't like what you said about it'. Unlike Mr Osmond I have used all four languages, and offered my personal opinion as to which was the best one to program with. Anyone reading all of the conclusion can see that I offer guarded recommendations for all of the products (including HiSoft's) except Atari Basic. As for my 'blithe' comment on the Atari Basic upgrade, I have to say that anyone who is serious about programming in Basic will be appalled by the editor and if they can afford it, buy an alternative. As in fact Mr Osmond has.

On the specific point of the GET and PUT commands: in BFA Basic you simply spe-

cify a string that the area of screen is read into. Fast Basic is almost as simple. In HiSoft Basic you have to dimension an array, according to a convoluted formula, to the correct size, or larger, before you can GET or PUT. Regarding being withered, GFA Basic capabilities are remarkable because it is an INTERPRETED language, rather than HiSoft Basic which is COMPILED. Any GFA Basic owner can pay the extra money for the GFA Compiler; the resulting code will perform a random PUT at xxx per second.

Next, after spending the last five years programming in various Basics, I would say that my style is not straight-jacket structured programming, but it is usually far from "messy" and I do dislike the spaghetti programming approach. In my review, I actually gave HiSoft Basic top marks for structured programming, as it is just that bit better in this department.

I'm glad that Mr Osmond likes the product that he has bought. Good for him. We live in a democracy and this magazine is all about giving people the power to choose what is best for them.

By any other name . . .

Perhaps it would enlighten your correspondents (particularly Stephen Batey [Vol 6 No 37] and the Federation Against Software Theft) to hear that software "piracy" is NOT theft, and no-one should pretend it is. Pretty obviously, it isn't piracy, either. (If anything, it is a copyright matter, which is a civil issue, not a criminal one.) These labels are slapped onto controversial arguments to give them a pseudo-legal credibility.

I quite agree that unauthorised copying is a complicated issue. But let's not confuse it further by using incorrect and highly emotional terms.

Adam Smith
London

OPPORTUNITIES WITH AUDIOGENIC

Audiogenic is one of the oldest names in home computer software, dating back to 1979. Now part of the same group as Supersoft we are centralising our operations in Harrow.

SOFTWARE DEVELOPMENT MANAGER

At the end of October Darryl Still will be leaving to set up his own consultancy business. We are looking for someone who can take over his job which involves liaising with programmers, new product planning and development, and technical support. We are looking for a planner and administrator rather than a programmer, but a working knowledge of programming, and of the major home computers is essential.

ASSISTANT TO MANAGING DIRECTOR

This is a new position. Peter Culver, the MD, needs a right-hand man/woman to help with all aspects of running this busy company. You should be hard-working, ambitious, and prepared to do just about anything. Knowledge of computers and of programming is essential.

ADMINISTRATIVE STAFF

We need two energetic young people to assist with telephone enquiries, sales, and order processing (including packing and despatch). At least one should have an interest in, and (preferably) some experience of, accounting. Knowledge of computers is not essential, but an interest and the desire to learn would be helpful.

PROGRAMMER - 68000/ST/AMIGA

We have just released IMPACT, our first game for the Amiga and ST. We need a programmer with 68000 knowledge and (preferably) experience of ST and/or Amiga.

As in most smaller companies there is no hard and fast division between jobs. Everyone helps out everybody else when necessary. The job descriptions above are not hard and fast - if you think you can do part of one job and part of another we're prepared to consider you. Applicants should be non-smokers, hard-working and ambitious, with a friendly disposition. We believe in rewarding our staff with the benefits that they deserve - if you do well you can expect frequent pay rises.

If you are interested in working for a small company that aims to grow fast call us today on 01-861 1166 (office hours are 9.15 to 5.30, but there's often someone here in the evening).

Audiogenic Software Ltd., Winchester House, Canning Road, Wealdstone, Harrow, Middlesex HA3 7SI



499

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	Direct Disk Supplies	Micro Media Computer Supplies
ABC Systems	Electric Studio	Micronet
Alfa Electronics	Electro Music Research	Mighty Micro
Amstrad User Club	Evesham Micro Centre	Minerva Systems
Arnor	Future Publishing	Nabitchi Computers
Autodesk	Ganwood	Pace Micro Technology
Bascrowd	GEM Distribution	Pearlree Computers
Business Graphics	Grafsales	R & AJ Preston
Cambrian Software	Home & Business	Rombo Productions
Compact Software	HSV Computer Services	RT Computer Training
Computer Manuals	IO	Saxon Computing
Computer Training	ITEC Marketing	Shareware Marketing
Connect Systems	Kador	Siren Software
CPM	KDS Electronics	The Official Amstrad
Database Publications	KKS Electronics	Magazines
Diamond Business Software	Lightspeed Software	Tinith
Dictaphone	Logotron	Twilstar Computers
	Margin Maker	1512 Independents
	Metrotext	

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).



**AMSTRAD
COMPUTER
SHOW**

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.

A172

GMX12.87



with Kenn Garroch

No-access address

G Thibaudeau, of London, writes:

Q I have a big problem. A few days ago I finished an address filing program for my own use and saved it onto my Opus Discovery disc drive.

At first I was glad not to have written it in assembly language because of the time it would have taken. Now I'm sorry not to have done so. You see, my problem is that the program is roughly 41K long and, after saving it, I switched off for the night.

Since then it has been impossible to load it back into the Spectrum. The only thing I get is an 'out of memory' report. I know the program is long but why did it save it and load without a problem the first time?

Do you know where I could obtain a copy of the Discovery's ROM disassembly, if it exists?

Also, I was wondering if you could provide me with the address of an Opus Discovery club, maybe in the London area?

A I'm afraid this one is beyond me - hopefully some of our readers can help (pretty please?).

If you need help, write to Kenn Garroch, Peek & Poke, Popular Computing Weekly, Green-coat House, Francis Street, London SW1.

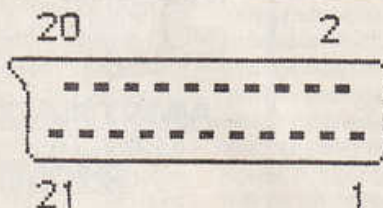
SCART sockets

Peter Erskine, of Colchester, Essex, writes:

Q Ref. *Popular Computing Weekly* 6-36 11/9/87 about SCART sockets. The pin out is as follows:

Pin	Signal
1	Audio output RH
2	Audio input RH
3	Audio output LH
4	Audio chassis return
5	Video chassis return (RGB Blue)
6	Audio input LH
7	RGB blue input
8	-
9	Video chassis return (RGB green)
10	Clock for video recorder remote control
11	RGB green input
12	Data line
13	Video chassis return (RGB red)
14	10 bit clock
15	RGB red input
16	RGB switching voltage
17	Video chassis return
18	RGB switching voltage return
19	Video output
20	Video input
21	Screening chassis return

where the pins are numbered like this:



Scart Socket

So the system is highly versatile but a simple signal lead would not be reversible; when you make one up, label one plug TV and the other Computer etc.

In the case of a lead for a non-stereo TV, it is sufficient to feed audio input to say LH only.

Video input means video recorder type signal, presumably composite 10 bit clock seems to be the signal for teletext which gives the time at the top right of the TV picture (if you don't make this connection you don't get the clock although teletext is still there).

A Thanks Peter.

Commodore controller

Adrian Soord, of Yeovil, Somerset, writes:

Q I own a Commodore 64 and I wish to use it to control electrical appliances such as coffee makers, lights, and radios. I understand that there are a few hardware packages on the market such as Epyx's Red Boxes which do the job but are extremely expensive.

Would it be possible to use the computer as a home control unit and be able to program what time an appliance comes on at any plug (terminal) in the house, or to control a motor to open and close curtains, etc?

I have a basic knowledge of electronics and plenty of spare time.

A Doing it yourself may not be much cheaper than buying a ready made unit. However, it should be a lot more fun, and you should end up with a more flexible system.

What you need is a method of transmitting information along the mains wiring of your house. Anything with a receiver built into its plug can then pick up the signal and decide whether to turn on or off.

Fortunately there is a chip (LM1893 stocked by Maplin at approx £16 each) which will do a lot of the hard work for you. This chip connects to the mains via an isolation transformer and is able to receive or transmit serial data at speeds up to 4800 baud - certainly fast enough for most applications. At the computer end, the connection should be quite straightforward, simply attach to the user port on the 64.

However, problems begin when building units to receive and decode the signals. The ideal system would have a microprocessor at each node (terminal, device, whatever) since this could easily be made to read the serial signal and turn various outputs on and off. Microprocessors also have the advantage that they could be used to transmit data back to the main computer (in this case the C64).

The drawback is that such a system would be quite expensive and take quite a while to set up.

The next best choice would be to use a UART (Universal Asynchronous Receiver Transmitter) chip at each node. As far as I can remember, the 6402 would be suitable since it does not have any control registers and can thus be used as a stand alone device.

Most other UARTs are built for interfacing to microprocessors and thus have all sorts of control registers that can be accessed via the address and data buses, which is rather impractical when there is no processor around.

By connecting the simple UART to the serial receive line of the mains tranceiver, every time data is transmitted, all of the receivers will get the same data/number. This will be an

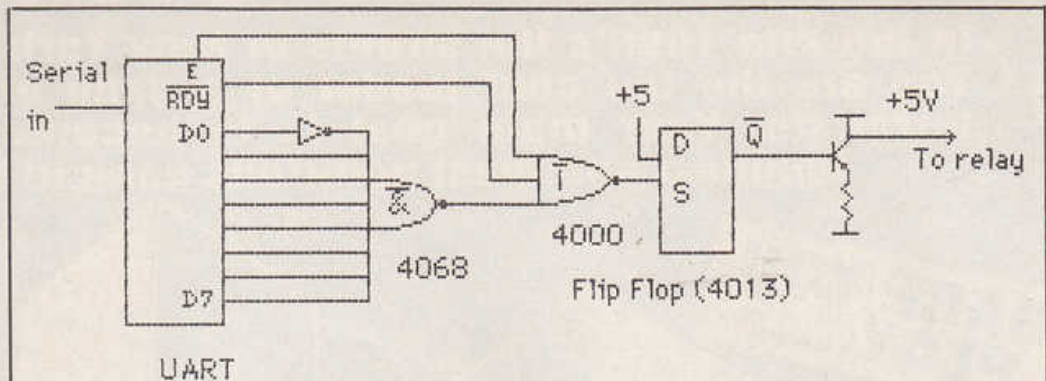
eight bit value, and can be decoded using an 8 input and gate (or nor) with some of the inputs selectively inverted.

This would give 266 possible locations, although since things may need more than one command, this can be split into 128 or 64. In any case, there should be far more than you would need. The main problem with this type of system is that each node would cost around £30 to build.

Another alternative is to scrap the idea of using the mains wiring, even though it is very attractive, and install your own cabling. This need only be two core bell wire as long as transmission speeds are kept relatively low.

The same UART system described above could be used, cutting the cost of a node by at least 50%. You will, unfortunately, have rather a large number of wires floating around the house.

One thing to make sure of when attaching things to the mains supply is 1, make sure the 250V is isolated from any



Switches on when 254 sent to UART
E is error detect =1 for error
RDY is data ready =0 when ready

Move the inverter to another data line for other addresses
you will need one to turn it off (connect to reset on ff).

electronic circuitry you may be using and 2, make sure that the relays used to turn the supply to the various devices are big enough.

I know these two points may sound trivial but having cooked

a circuit board once, and burnt out a pair of contacts, it definitely pays to install such things as fuses and isolation transformers.

I've sketched out a rough diagram of the UART receiver

idea so that, hopefully, it makes more sense. Without actually trying it, I can't be certain that it will work - I don't have the necessary data sheets either. I'll leave the fiddly details up to you.

"OF COURSE PRIME MINISTER You do grasp fully the issues behind the present COMPETITION?"

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

Popular Computing Weekly is joining forces with Mosaic Publishing in a competition to celebrate the release 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.

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?

"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'.

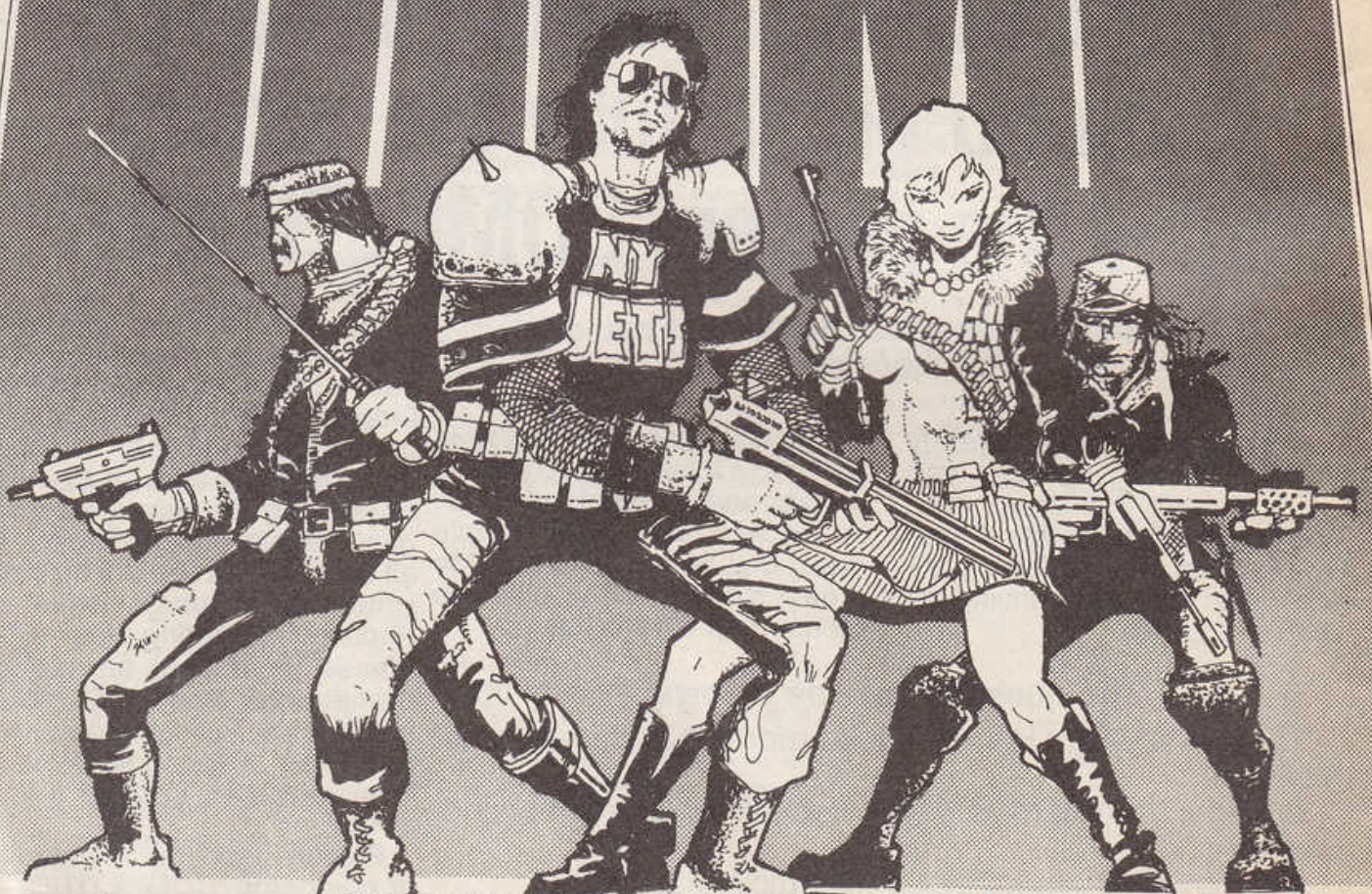
"Don't forget to include a slogan for the game. You could win one of fifty copies of *Yes, Prime Minister*."

GET INTO CRIME!

In the late 1990's the streets of New York are a jungle. You are the ice cool leader of a gang of drug crazed terrorists. Your main goal is to become the richest, toughest and most notorious gang in the city.

**DARE YOU
PLAY.....**

**FREE
OFFER**



FREE!

SEND YOUR NAME AND ADDRESS TODAY FOR YOUR FREE TRIAL OF
IT'S A CRIME THE WORLDS MOST POPULAR PLAY-BY-MAIL GAME

Write to:-

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

The first thing when dealing with machine code graphics is to gain direct access to the screen. On most computers this is pretty straightforward since the screen memory and the micro-processor's memory are in the same address space, unlike MSX and other machines which have their screen memory controlled by a separate chip through which you have to go to place anything directly onto the screen.

Knowing exactly how the screen is set out is vital, and as usual with computers, nothing is standard, they are all different. Presuming that the computer has some kind of bitmapped screen, the general idea of a display is to take the contents of the screen RAM and convert it into a form that can be displayed as pixels. In its simplest form, a byte can be said to represent 8 pixels with the left most being the most significant bit (MSB). This does, however, only give a monochrome display and since most machines work in colour, there must be some way in which the screen RAM is coded to represent different colours. The usual method is to use more than one bit to represent a pixel eg. two bits would give 4 pixels per byte with each pixel being capable of 4 colours. The Commodore 64 works after this fashion but gets additional colours partly by having an extra area of RAM that defines colours for an area the size of a character, and splitting the byte into two nibbles, the two low bits in each nibble giving the colour for one pixel, the two high bits for another.

The main thing to note is that the more colours there are, the more memory is needed or the lower the resolution. The best example of this is the BBC micro where the highest resolution is 640 x 256 with two colours the lowest (using the same amount of RAM is 160 x 256 with 16 colours ie. hi-res uses 1 bit per pixel, and lo-res uses 4 - either of which fits into 20K of RAM). An alternative is to use the method employed on the ST where each word (16 bits) represents 16 pixels in hi-res but in lo-res four words are taken in parallel to provide 4 bits per pixel (16 colours), the first pixel being the MSBs of each word the next being the second MSBs of each word and so on for all 16.

Putting the colours on the screen is usually done with a technique called masking. For example, with a mono display where each bit represents a pixel, to set the left most pixel in the byte (pixel 0 on the left hand side of the screen) simply OR with 128 e.g. in bytes this is:

```
01001000  on screen value of first
            byte of screen RAM
10000000  ORing with 128 gives
11001000  and the pixel is set. To
            clear it, AND with 127
01111111  like this, to get
01001000  which is what we started
            with
```

Finding out which bit to access can be done with a lookup table. Find the x offset in the byte, the remainder after dividing by 8 or, in machine code, just AND the x position

with 7. This is then an offset in the lookup table which has the following values:

10000000	x=0
01000000	1
00100000	2
00010000	3
00001000	4
00000100	5
00000010	6
00000001	7

The eighth bit is the first of the next byte i.e. 8 AND 7=0 which brings us neatly to finding the correct byte from the x position. This is simply x divided by 8 which, in machine code, is simply 3 right shifts, each one being divided by 2.

while displaying another reduces flicker), scrolling etc. If the start address does not change then it can be included in the t40t lookup table i.e. added to the multiplication - this will increase the efficiency of the routine and any small amount helps.

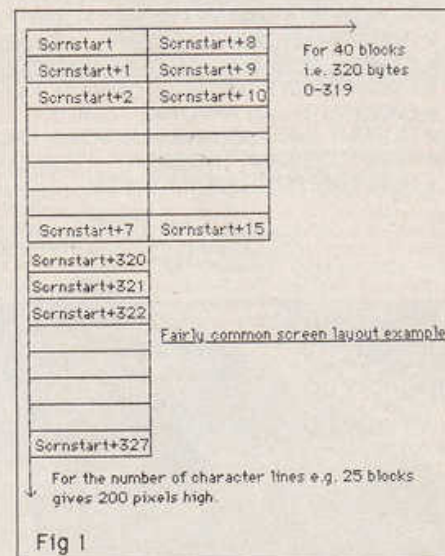
The above example is how things would work in an ideal world. However, apart from a few machines, the screen layout is usually more complex especially for colour. Fortunately, the basic idea is the same, all that needs to be done is to figure out exactly how the screen is laid out, and find a formula that will fit it. For instance, many machines use screen lines set up as in fig 1. To access these, the y value will need to be divided by the number of rows and then the

SECRETS OF THE SILVER SCREEN

Ken Garroch gives advice on how different screens are set out.

If the screen is laid out simply (and they rarely are) then there will be a specific number of bytes per line e.g. for 320 pixels monochrome there will be 40 bytes across. The next line continues where the last ended i.e. the screen is continuous in memory. So, using the y value of the position multiplied by the number of bytes from the beginning of the screen memory.

Taking the above example and say the screen is 200 lines deep, the multiplication of y by 40 will yield 200 results. Since screen access has to be as fast as possible a lookup table is used to get the results. A minor problem is the fact that 199x40 is 7960 which is a value that will not fit into a byte (0-255 only unfortunately). The answer is to use a table of words i.e. two bytes per result and multiply the y value by 2 before looking up the result (easy since it has one left shift). The table looks like this:



t40t	dc.w	0,40,80,120,160, 200,240, etc for 200 entries	1sr	Rx	x div 4	
			1sr	Rx	x div 8	
			add	Rx,R1	Add Rx to R1 to give byte pos	
		and the outline machine code is enter x and y in two regs (if possible) Rx and Ry	AND	#7,R2	R2 and 7 get x for mask lookup	
	LSL	Ry	Shift y value one left for x2	load	mask=R2, R3	Mask is in R3
	load	t40t+Ry,R1	Get times 40 value into R1	add	scrbsc,R1	Add start of screen RAM
	load	Rx,R2	Duplicate Rx - need it later	OR	R3,(R1)	OR mask into screen RAM
	1sr	Rx	x div 2			

Note that this is an outline form only it should be quite easy to convert to machine code for any processor. The reason that the screen start address i.e. the memory address of the first byte on screen, is added in later is because it may change i.e. for buffered screen (drawing on one screen

remainder used in conjunction with the x value to find the byte offset in question. For colour, the masking lookup has to be altered to cope with colours i.e. multiple bits. All this entails is finding a formula that fits, and using the shortest, simplest piece of machine code to perform the calculation.

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
- TRANPOSE 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



SPECDRUM / 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 Harrods LARYS**

WHSMITH • High St. Stores and all good computer shops or direct from Cheetah.

NOW AVAILABLE
Latin Kit & Editor
£3.99
Electro Kit & Editor
£4.99
Afro Kit & Editor
£4.99

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

NEW LOW PRICE ST!



ONLY FROM SILICA

Finally, there's a personal computer that not only solves problems like other computers, but also solves the one problem that other computers have created. Affordability. Silica Shop are pleased to present the ST range of personal/business computers from Atari. The ST was designed utilizing the most recent breakthroughs in semiconductor technology, producing a personal computer that performs tasks with fewer parts. Which means it costs less to make. And less to buy. The latest ST computers now include built-in power supplies and built-in disk drives. The TOS operating system and GEM window environment are now on ROM chips which are already installed in the ST keyboard. This enables automatic instant booting when you switch on. Silica Shop are pleased to offer the complete Atari ST range. Our mail order department is situated in Sidcup and we have 3 retail outlets at Sidcup, Lion House (Tottenham Court Rd) and Selfridges (Oxford Street). We have eight years experience of Atari products, longer than any other UK company, and are well established as the UK's No.1 Atari specialist. With a group turnover of over \$9 million and in excess of 60 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 purchase 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 £86.96 (+VAT = £100).

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 untidy 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 7M 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 be 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.

£260

+VAT=£299

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 Specialist. 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 SM125 Mono Monitor £509 (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 £899 (inc VAT)
 MEGA ST 2Mb Keyboard + CPU + SM125 Mono Monitor £909 (inc VAT)
 MEGA ST 4Mb Keyboard + CPU £1299 (inc VAT)
 MEGA ST 4Mb Keyboard + CPU + SM125 Mono Monitor £1309 (inc VAT)

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



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

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?



"WE ARE OFFICIAL COMMODORE DEALERS"



COMMERCIAL AND COMPUTER SERVICES LIMITED 01-549 3028

Amiga Titles	29.00	Leaderboard	20.00	Colourspace	16.00
Bureaucracy	29.00	Leaderboard Town	20.00	Cards	16.00
Golf	29.00	Mean 18	24.00	Electronic Pool	16.00
Hacker	20.00	Super Huey	20.00	Flipside	16.00
Portal	24.00	Apache Trilogy	15.00	Goldrunner	20.00
Shanghai	20.00	World Games	20.00	Karate Kid II	20.00
Tass Times	20.00	Anco Games	10.00	Land Of Havoc	16.00
Witness	20.00			Major Motion	16.00
7 Cities Of Gold	25.00	Atari ST		Mud Pies	20.00
Archon 2	25.00	Hardware		Pinball Factory	20.00
Adventure Cons. Set	25.00	520 STFM	275.00	Super Conductor	35.00
Arctic Fox	25.00	520 STFM + Colour	565.00	Time Bandits	15.00
Marble Madness	25.00	1040 STF	475.00	Trux Challenge	20.00
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	16.00
Guid Of Thieves	20.00			Ultima III	20.00
Fairy Tale Adventure	38.00	Commodore		Balance Of Power	30.00
Borrowed Time	20.00	Amiga Hardware		Black Cauldron	30.00
Ballyhoo	24.00	Amiga 500	473.00	Kings 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
Enchanter	24.00	Amiga 2000	1150.00	Hades Nebula	16.00
THHGTG	24.00			Mercenary	12.00
Infidel	24.00	3.5" Discs		Arkanoid	12.00
Leather Goddesses	24.00	Single Sided (White)	99p each	Chess	20.00
Mindshadow	27.00	Double Sided (Blue)	145p each	Football Fortunes	30.00
AMFV	24.00			Golden Path	30.00
Moon Mist	24.00	Atari ST Titles		Arena/Battacus	30.00
Music Studio	29.00	Gauntlet	20.00	Deep Space	20.00
Planetfall	24.00	GLF Football	23.00	Jewels Of Darkness	20.00
Seastalker	24.00	Machdem Bumper	17.00	Guid Of Thieves	20.00
Sorcerer	24.00	Art Director	42.00	The Pawn	20.00
Spellbreaker	24.00	Film Director	50.00	Gamers Compendium	20.00
Starcross	24.00	Planet St. Publisher	100.00	Check Mate	12.00
Suspect	24.00	Borrowed Time	20.00	Terrestrial Encounter	12.00
Suspended	24.00	Basketball	20.00	Liberator	10.00
Trinity	27.00	Bureaucracy	20.00	Mousetrap	12.00
Witness	24.00	Hacker 2	20.00	Phutots	8.00
Wishbringer	24.00	Little Comp. People	20.00	Timblast	12.00
Zork I	24.00	Shanghai	20.00	Apache Trilogy	20.00
Zork II	24.00	Tass Times	15.00	Alternate Reality	20.00
Zork III	24.00	Tess Times	15.00	Dungeon Reality	20.00
Silent Service	20.00	Toe-up	15.00	Pharmasia II	20.00
Ultima III	20.00	Skyfox	20.00	Championship West	20.00
Balance Of Power	25.00	ST Karate	15.00	Barbarian	20.00
Defender/Crown	24.00	Protector/Station	32.00	Winter Games	20.00
Deja Vu	24.00	Jewels Of Darkness	12.00	Roadwar 2000	24.00
Sinbad	25.00	Pro Sound	45.00	Rogue	15.00
SDI	24.00	War Zone/Fireblaster	20.00	Super Huey	20.00
Uninvited	24.00	Star Glider	20.00	Super Cycle	20.00
Arena/Battacus	25.00	Traiblower	20.00	Super Tennis	20.00
Deep Space	15.00	Typichon	15.00	World Games	20.00
Silicon Dreams	20.00	Passengers	17.00	Xevious	20.00
Starglider	15.00	Phoenix	17.00		
Hollywood Poker	15.00				
Swapper	15.00				

Please make cheques payable to: Systems Architects Ltd. We also accept Access and Visa. Prices subject to availability. See Amiga Listing for Prices of ST Infocom Adventures. Products not listed please phone for prices. All prices include VAT and delivery in the UK. Callers are welcome to order through 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

£473 inc. VAT

Modulator & Deluxe Paint

ATARI ST
£275

SOFTWARE SPECIALS

Impact	11.50
Terrapods	18.50
Flight Simulator II	35.00
Defender of The Crown	22.00
Pintos	11.50
Gold Runner	18.50
AMIGA ONLY	
Fairy Tale Adventure	37.50
ST ONLY	
Barbarian (Palace)	11.50
Tai-Tan	15.00
F15 Strike Eagle	18.50
Indiana Jones	15.00

Above prices apply to mail order only with the exception of software specials and hardware prices. Subject to availability.

☆ **MEMOTECH**
MTX 512 ☆



£39.95

Plus £3.05 postage (total £43)

- ☆ 64K User Ram ☆
- ☆ Z80 Processor ☆
- ☆ 3 Channel Sound ☆
- ☆ 16 Colours ☆
- ☆ Extensive Software ☆
- ☆ CP/M 2.2 Adaptable ☆
- ☆ Fully Guaranteed ☆



Further details/orders to:

UK HOME COMPUTERS

82 Churchward Avenue, Swindon, Wilts SN2 1NH
Tel: 0793 695034

The **AMIGA** Centre
Scotland

SPECIAL OFFERS

Alien Fires	£35.00	DIGI-PAINT II	£40.00
Deluxe VIDEO 1-2	£???.00	Deluxe-Paint	£52.00
DIGI-VIEW (including A500/A2000 adaptor)			£185.00

AMAZING COMPUTING £3.50

AIRT

- State of the art icon-driven programming language
- Over sixty commands
- Over 5600 instructions possible per program
- Includes Editor, Compiler, Print Utility, Form Utility. £55.00

DOG'S MATH AQUARIUM

- Explore and display functions in 2D/3D
- Uses recursion to create fractals, Mandelbrots
- Wire Frame, Contour Map or Supergrass modes
- ZOOM in/out and change position
- Cycle colours and change Sample Rate
- Teaching/Learning/Research tool. £58.00

ANIMATOR: APPRENTICE

- Create solid Disney-style 3D Animations
- Includes shading in 4096 colours
- Background muting
- Real-time audition (Requires 1Mb by ram)

ANIMATOR: JUNIOR £52.00
Demonstration Discs £7.00
Library Discs £14.00-£25.00
2-hour demo film on VHS £25.00

NEW MAGAZINES IN STOCK!

- AMI Project £3.00
- Info £3.50
- Robo City News £2.50
- Amiga Century £3.00

EXPRESS PAINT!

- Supports PAL and OverScan
- Uses half-bright mode (64 colours in low-res)
- Typesets: newsletters, images, posters, reports
- Flow text into area of any shape
- Overlay mode
- Fast scrollable canvases
- Also all core customised programs
- Link text files from any wordprocessor including note pad
- Use any Amiga screen, resolution up to 752 pixels wide
- Supports a canvas size of 8,000 pixels wide by a height only limited by memory. £58.00

OUTLINE!

- Keeps lists of data in a way that used to be the province of the databases
- Compatible with any wordprocessor. £36.00

DISK-PRO PLUS

- Free disc space by compressing your files
- Can increase your disc space by over 100%
- Includes FREE dinner! £22.00

SCULPT-3D

- Eric Graham's new masterpiece
- 3D Modelling Program
- THIS IS THE UK PAL PERSON
- Mouse or keyboard-driven
- Combine primitive solids to form complex shapes
- Build shapes by extruding or spinning curves
- Construct surfaces from contour lines
- IFF output: previews in less than one minute. £89.00
- Demonstration disc. £4.00

FORMS IN FLIGHT

- 2D/3D Drawing and Animation
- View from any perspective
- Rotate, Pan, Roll, Magnify, Move
- Spines, Freehand, Soap
- Complex Object-Needing
- Surface extrusions - any angle
- Efficient hidden line removal
- Red/Blue stereo images
- Plotter support
- Comprehensive manual (Requires 1Mb to run) £60.00

EARTHBOUND FONTS

- Over 90 fonts on three discs
- Over 80 different point sizes on each disc
- Utilities to view any Font
- Upgrade Fonts-using discs each £13.00
- at three £36.00

RAY TRACER

- 3D Graphics in 4096 colours
- Disc contains Source Code in C and BASIC
- Enter our Competition and win a 3D Utility £11.00

BUTCHER V2.0

- 25 IFF Graphics Utilities
- See full review in YOUR COMMODORE September 1987 £27.00
- Upgrade from BUTCHER V.1 £8.00

*** 24 hours VISACard Service ***

*** All prices include VAT and Postage (UK and BFPO) ***

*** Callers: Tuesday-Saturday 10.00am to 6.00pm ***
Dealer enquiries welcome

AMIGA Centre Scotland

4 Hart Street Lane, Edinburgh EH1 3RN Tel: 031-557 4242 anytime

WordPerfect is the most popular wordprocessor for IBM PCs and their compatibles. It is now available for the Commodore Amiga series, and despite its high price, Ian Rook finds it makes his words almost perfect.



Well, mucho, very, good

Chickens and eggs. Hardware and software. Same problem. No one will spend thousands of pounds developing a program for a machine which no-one has bought, but no-one will buy a machine which has no software. This Catch-22 situation usually results in the sheep sticking to PC-compatibles and having to suffer slow processors and duff machines. Brave software houses sometimes change all this and good software ensures a rosy future for any machine. Why *WordPerfect* is the best selling wordprocessor on the IBM's and compatibles. With a recommended retail price of £425 on the PC version, that is no mean feat. Until recently it was number one in price alone but then Amstrad put its incredibly naff wordprocessor - *WordStar 1512* - into a bundle (they should have put it into a bin) so it can't really be counted.

So what has made *WordPerfect* so popular? Well for a start it is fast. Moving from the top of a document to the bottom only involves a short pause. *WordPerfect* has the best help options I've seen on any program. Just press the Amiga help key followed by the initial letter of the topic you want help with and the necessary keystrokes are details. Type "help" followed by those keystrokes and you will get a full page of text on the function. This co-operation from the software is in stark contrast to the initial display. Until you press the help key there are no on-screen prompts, rulers or menus,

just a line at the bottom of the screen detailing the document name and cursor position. The keystrokes are far from mnemonic eg control F5 for mark text in preference to *WordStar's* control KB, but you get a keyboard overlay for the function keys. In fact you get two overlays. One for the A500 or A1000 and one for the A2000. You soon learn the major keystrokes.

Many expensive wordprocessors offer spelling checkers, but only a few include a Thesaurus. The ability to look up a synonym is a godsend for anyone who wants to add variety to texts. I particularly like it for writing vitriolic letters to restaurants where the service is lousy. You can add and delete words within the spelling checkers vocabulary, but the Thesaurus is fixed. One bugbear of the PC version is that the Thesaurus covers most of the page when in use. The Amiga version is window driven so you can move the text and allocate the space in a way you find more comfortable. This is not a gimmick, it makes software easier to use.

The window approach is extended to the full control of the software, you don't have to use a mouse with *WordPerfect*, but on an Amiga it seems the natural thing to do. For marking blocks it is much quicker than a load of cursoring around. There are full mail merge facilities, headers, footers and even mathematical calculation. The ability to define Macros saves a good deal of typing particularly when the work is repetitive. I would much rather press two keys than

have to enter my address at the start of every letter. In this way *WordPerfect* is a bit like *LocoScript*, storing the standard phrases on disk.

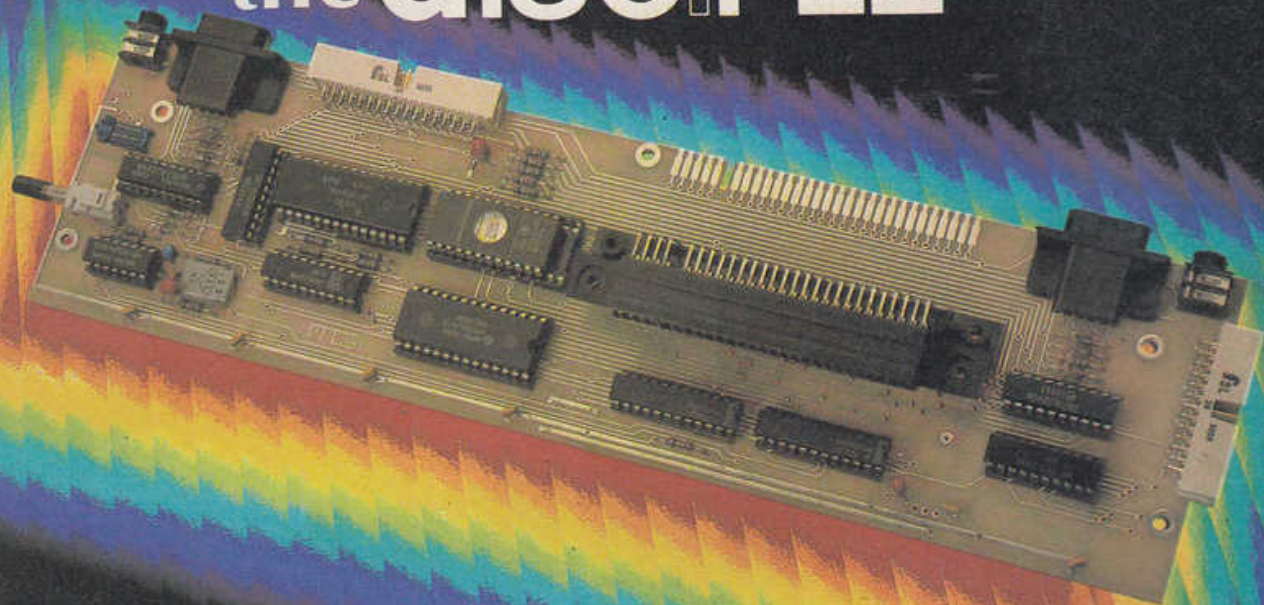
Amiga disks are slow. Not even the mighty *WordPerfect Corp.* can do much about that. This means that some of the features which have spoilt me on my hard disk PC, have become a pain. Spell checking and timed backups in particular.

Amiga developers are given guidelines on how to write a user-interface based on -RJ- Mical's (sic) intuition. Software uses requestors and gadgets. *WordPerfect* has compromised between the official way of doing things and the IBM way. Wild cards on an IBM use an asterisk, on the Amiga they do not. Yet the Amiga file manager prompts with a df1.*.

Officially you need two drives to use *WordPerfect*. I found the second drive handy - essential if you want to use the speller or Thesaurus, however, for simple text editing you could get by with one. But no-one is going to shell out £225 plus VAT for a simple text editor. The Amiga comes with ED after all. The price is steep but then the software is very, very good. In the United States the software is offered to registered students at \$99, so it might be worth looking up any distant relations.

I'm please to see this software on the Amiga, it adds credibility to the 2000's business machine mantle. It also removes the main reason for using an IBM.

The answer to the Spectrum-users prayer the **DISCIPLE**



AVAILABLE NOW!
the all purpose interface to take
your Spectrum to the limit

DISK INTERFACE

- ★ Allows up to 1.6 Mb of storage on 2 drives
- ★ Loads a full 48K program in 3.5 seconds
- ★ Simple Basic Syntax
- ★ Compatible with any standard drive – single or double density, single/double sided, 40/80 track, 3", 3½", 5¼".

SNAPSHOT BUTTON

- ★ Saves any program instantly – at any point you wish and as often as you like.

PRINTER INTERFACE

- ★ Compatible with the whole range of Centronics Parallel printers.
- ★ Uses normal Sinclair commands – LLIST, LPRINT, COPY
- ★ Permits user defined and screen graphics.

DUAL JOYSTICK PORTS

- ★ Sinclair and Kempston compatible.

NETWORKING

- ★ Operating system allows Disciple to act as file server; shared access to printer and disc drive for up to 64 Spectrums
- ★ Interface 1 Compatible



Use the disciple with any Spectrum – even the new Plus Two model.

the **DISCIPLE**

the ultimate disk, printer, joystick and network controller for the Spectrum **£89.95** (inc VAT)

Designed by Miles Gordon Technology for Rockfort Products (a trading division of Vignesh Ltd)

WRITE OR CALL US ON
01-203-0191

FOR FURTHER DETAILS OF:

- ★ Disciple + 780K drive at £199.95
- ★ Disciple + dual drive/printer packages

★ Special Disciple software titles
★ User Club + Magazine – format
The Disciple means that upgrading Spectrum owners do have a choice other than selling their machines and buying a Plus Three.

(Popular Computer Weekly)

To: Rockfort Products, 81 Church Road, London NW4 4DP

Please send me POST FREE..... (Quantity) DISCIPLE Interface
@ £89.95 each, including VAT & P&P.

I enclose CHEQUE/POSTAL ORDER for £.....

OR debit by ACCESS or VISA (tick as appropriate)

CARD NO

EXPIRY DATE

SIGNATURE

NAME (Block Capitals).....

ADDRESS.....

Postcode.....

Overseas order and trade enquiries welcome. Telex 933740 GANESH G.

Saturday afternoon may not be the best time to get your first glimpse of the PCW Show, but that's when Joel Berez, and Mike Dornbrook of Infocom arrived for a flying visit to the London headquarters of Activision UK. The American equivalent of PCW, the Consumer Electronics Show, isn't open to the public so they weren't expecting the hordes of young games players that swarmed over anything with a joystick attached.

"It was quite amazing," Joel said, and Mike seemed to agree.

"A madhouse. I don't think you could have anything quite like that in the States."

The computer games industry in Britain seems to be much more volatile than it is in America, with a younger audience and more emphasis on what we would call arcade games. In fact Joel remarked that PCW reminded him more of an old video games show than a computer show. The fact that 'computer' and 'video' games mean exactly the same thing to many people in Britain gives an indication of how differently the industry has developed.

According to Joel and Mike there is a much greater divide in Europe between the games and 'serious' sides of the industry.

"It's so different here, there are more entertainment labels. In America there's much less division between business and recreation - it's more of a smooth transition."

It all comes down to economics in the end. Americans tend to have a higher disposable income than we do - more money in other words, which means that they are much more likely to have powerful disc-based systems at home that also get used for business purposes.

"The top machines are PCs, the Apple 2, C64 and then the Mac - 40% of our sales are on PCs. Apple are doing really well at the moment, and the new 2GS is outselling STs and Amigas."

The average home user is also a bit older and the games they play tend to be more sophisticated than simple shoot 'em ups.

"The top titles take a lot of time and money to develop these days. People expect a lot, and whole teams of people work on the titles - artists, musicians, designers. It's not one man working in a room the way it often is here."

All this causes problems for a company like Infocom in a country where the most commonly used machine, the Spectrum, doesn't even have a disc drive and not a single Infocom game is available for it (though there is now the possibility of conversion onto the Plus 3, according to Activision).

"Our problem with this market is that we started off on disc, and we can't compress the programs any further. The original mainframe version of Zork took up a full megabyte, and it took a lot of work just to get it down onto disc. But the Amiga and ST are starting to sell here, and that's a good sign for us."

As a result, Infocom games don't sell in their tens of thousands over here, but, as in America, they do have a long life and sell

steadily over long periods rather than going in and out of the shops in a few weeks the way most arcade games do.

"Zork is eight years old now and it's still selling quite well. It's sold about half a million all together."

Zork is the game that first established Infocom's reputation in the adventure field. Ten years ago, Joel and a group of friends were working at the Massachusetts Institute of Technology, and in the evenings they would get together to play Adventure on their mainframe.

"We decided we could do better, and we came up with a larger game, with better puzzles - Zork."

"After a while we decided to leave MIT and make a bit of money, and the best thing to do it with was Zork. The strange thing when we started to sell it was when we found how unusual it was. People hadn't seen anything like it, something that was interactive."

All of Infocom's games are written on a mainframe using ZIL - the Zork Implementation Language, and then translated onto various micros using a system called ZIP.

Like Gilsoft's *Quill* (though on a much grander scale) the ZIL/ZIP system allows non-programmers to write adventures, so that Infocom can use writers who are strong on ideas without having to worry about their technical abilities. This led to collaborations with people like Douglas Adams, whose *Hitch Hiker's Guide To The Galaxy* was one of their biggest successes.

However, despite the success of the Zork Games and the adventures which followed, Infocom ran into trouble about a year ago. A venture into the business software market, with a database called *Cornerstone*, caused financial difficulties and the company became a subsidiary of Activision.

Joel and Mike's visit to Activision UK is to plan the release of their latest titles, *Plundered Hearts* and *Nord and Bert Couldn't Make Head Or Tail Of It*. These are both departures from the actual fantasy/sf formats of previous games. *Plundered Hearts* is a romantic adventure written by novelist Amy Briggs and aimed mainly at women, though they hope that men will enjoy it too.

"Twenty five per cent of our audience is female, which is unusual. For most companies it's 90-95% male, but they say that some of the best adventure players are housewives."

Nord and Bert is a collection of 'interactive short stories', each of which involves some sort of wordplay in order to solve the puzzles they present.

Both of these games are already available in America, but before returning, Joel and Mike dropped a hint about their next planned release, *Beyond Zork*.

This is a return to the world where the first Zork games were set, and it will incorporate some features of role-playing games as well as the usual text adventure. But they weren't saying any more than that, so Infocom fans will have to wait until nearer Christmas before returning to the Underground Empire.



The Underground Empire flies in

Infocom is better known in the UK to the disk-using elite than to the cassetted hordes, but the makers of Zork have been visiting London to plan their next few releases.

Cliff Joseph registers their surprise as they encounter the PCW Show, and checks out the future.

Not quite human

Locked up for a week in the company of the new Panasonic KX-P1083 multi-mode printer, Chris Jenkins finds that it can knock out a font with the best of them, and if the machine is not exactly conversational, the manual does speak English.

Choosing a printer to work with is rather like interviewing job applicants; it's not just a matter of finding someone with the right qualifications, you have to be able to get on with them. The Panasonic KX-P1083 multi-mode printer is like a highly-qualified job applicant with a few annoying habits; it does the job, but would you want to share an office with it?

It's fast, it's small, and it's compatible with a wide range of computers; it's just a

pity that the 1083 isn't a teeny bit more human-engineered.

The 1083 is a successor to the popular 1081, but inherits many bad points as well as the good ones. In appearance, the printer is pleasingly compact, with dimensions of 427 x 350 x 137 mm, and the weight of 9.9 Kg makes it luggable, if not portable.

The 1083 is a standard centronics (RS-232 optional) dot matrix device, which

will emulate the Epson FX-80 or the IBM Proprinter. This makes it suitable for the entire range of home and business computers.

As you'd expect, the 1083 has a built-in tractor feed. This is push-type, and so does not waste a sheet each time you load the printer. It handles up to three simultaneous sheets of perforated paper from 4-10" in width. There's also a selectable friction feed, for paper from 4-9" width and 5-14.3" depth. An optional cut sheet feeder is also available.

One very annoying feature is the semi-automatic paper loading, which, in common with other printers, tends to snatch the paper out of your fingers and crumple it up for you. Similarly galling is the feature which switches the printer off-line when you open the cover. This may avoid battered fingertips for the uncautious, but is frustrating if you just want to lift the cover to check the printing. Much more useful is the feature which switches the printer off-line when the paper runs out, preventing you from having half a document printed and the rest splattered in interesting patterns all over the platen.

Also annoying is the housing of the DIP switches, under the print head rather than recessed into a front panel. Fortunately, many of the printer's functions can be selected from the front panel alone.

<<< REV.1 >>>		
DIP-SW	SETTING	MODE
1-1	ON	PRINTER MODE (<u>STD.</u> / IBM)
1-2	OFF	PAPER OUT DETECTOR (DISABLE / <u>ENABLE</u>)
1-3	OFF	(LF / <u>NO_LF</u>) BY CR
1-4	OFF	SKIP PERFORATION (ON / <u>OFF</u>)
1-5	OFF	INTERNATIONAL CHARACTER SET
1-6	OFF	(USA / FRA / ENG / <u>ENG</u> / DEN / SWE / ITA / SPA)
1-7	ON	
1-8	OFF	(7 / <u>8</u>) BIT DATA RECEIVE
2-1	ON	BUFFER CONTROL
2-2	OFF	(MODE1 / MODE2 / <u>MODE3</u> / MODE4)
2-3	OFF	CUT SHEET FEEDER (ON / <u>OFF</u>)
2-4	OFF	ZERO FONT (0 / <u>2</u>)



The KX-P1083: dark sides and bright sides

The standard matrix is 9 x 9 pins, and the normal ASCII 96-character set is supported. However, using the DIP switches and front panel controls you can select a combination of eleven international character sets and five printing modes. There are two basic print sizes: Pica, at 10 characters per inch, and Elite at twelve. There's also a compressed mode, at 17 cpi, and semi-compressed at 15cpi. You can also select proportional spacing, and of course bold, italic, expanded, superscript, subscript, and underlining, all of them under software control.

Default mode printing speed is a very respectable 240 characters per second. This is achieved with the help of bidirectional printing (left-right-left) and logic seeking, by which the printer automatically skips the blank spaces at the end of lines and between paragraphs. The quality at this speed, though, is suitable only for listings and draft documents. However, from this mode (and no other) you can switch to other modes through software commands. In Courier near-letter quality mode, print speed is 48 cps, the dot matrix is 18 x 18 and noise levels increase dramatically, since the improved quality is achieved by a double pass of the print head. Trying to think while the 1083's print head is flinging itself around in NLQ mode is an uphill struggle. Also available is Bold PS, a pro-

portionally spaced NLQ mode, which again uses a double-strike method and is not bidirectional.

The 1083 has a 6K buffer, with an additional 32K as an option for the truly impatient. Part of this buffer space can be assigned using the DIP switches to storing a set of user-designed characters. The form length can be adjusted using a rotating switch on the front panel. There are ten lengths available, from 3" to 12". This makes it easy to switch from, say, listings to label printing to letters without getting the

screwdriver out to fiddle with the DIP switches.

There are twelve DIP switches, which are used to set the default modes of the printer. Switch one selects normal or Proprietary mode, in which you can use IBM graphics characters. DIP two switches on or off the paper out detector; obviously you'll want this switched off if you're using single sheets otherwise you'll have to put up with an annoying alarm beep at the end of each sheet.

Switch three selects whether the printer supplies its own line feed at each carriage return. Leave this in the wrong position and see your whole document printed on one line. Four switches the one-inch perforation skip on or off, while Five, Six and Seven select the international character sets. Other switches are used to configure the buffer, to select the optional cut sheet feeder, and to select whether zeros are plain or slashed.

Power up while holding down the Form Feed button, and the printer will produce a list of all the current DIP switch settings; clever idea. You can also activate a self test which prints out the entire character set, or a hex dump in which all data is printed in hex code rather than ASCII. Another useful feature is a warning buzzer which sounds if the printer is switched offline while there is still data in the buffer.

The 1083's perfect-bound manual is very comprehensive, and written in English, rather than incomprehensible Japlish which makes many manuals such heavy going. It covers basic operation, software control, font types, user-designed fonts, bit-image graphics and troubleshooting and includes many helpful tables and illustrations.

Overall, then, the 1083 is capable of producing good results despite its many annoying foibles. If compactness combined with the flexibility of the printouts are your highest priorities, you should be willing to learn to love the 1083.

Product Panasonic KX-P1083 printer
Micro any Centronics-compatible
Price £305
Supplier Panasonic, 300 Bath Road, Slough, Berks, SL1 6JB, 0753-73181.

than using it for limited spot effects.

The manufacturers aren't correct in claiming that this is a first; of course, the Hybrid Arts ADAP Soundrack, which connects to the ST to provide compact-disk quality sound sampling, has been around for some time. There is the slight drawback that it costs 2000, as opposed to the IS Sound Digitiser's 100.

The first thing to realise about the new IS package is that the software does not allow you to make samples. To do this you will need the original software package supplied with the IS analogue-to-digital-to-analogue conversion hardware cartridge.

Having created and filed your samples with the original software package (see the August ST Update for details), you can then link your MIDI synth to the ST, load the MIDI Sample Player software and get down to some serious music.

Like all samplers, the IS system works by changing the speed at which the sample is played back to create the effect of pitch changes. The MIDI communications standard for electronic musical instruments allows this to be done over a nine-octave range, with

Prices

ALL PRICES INCLUDE
VAT & DELIVERY

NEXT DAY DELIVERY
£5.00 EXTRA

Crushed

520 STFM NEW LOW PRICE

Only £279.00
ATARI Back in stock ATARI

520STFM with 1MEG memory upgrade installed £338.00
1040 STF £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
EVESHAM UPGRADED MODELS							
MONO 1512	381.74 439.00	477.39 549.00	N/A N/A	598.26 688.00	593.91 798.00	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 (COLOUR) 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
Excelsator+ CBM compat. disk drive (inc. GEOS) £159.95
Excelsator+ as above c/w Freeze Machine cart. £179.95

SCOOP purchase Complete brand new '64 circuit 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 NLQ £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

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

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

TELETEXT

A world of information
at your fingertips

A Microtext Adaptor turns your computer into a sophisticated Teletext receiver. Giving you a full colour display of any of the free pages from Ceefax or Oracle, you can save pages and print them out and even access Teletext from your own programs. On Teletext you'll find the latest news and sports results, there's road, rail and air travel information, what's on TV and weather reports. You can get an update on share prices or bargain holidays. And not only does Teletext cater for special interests, like computing, motoring, or gardening, but you'll also find things to do and places to go in your area, prize competitions and even your daily horoscope, plus much, much more. It's all free, easy to use and it's all at your fingertips.

When purchased separately, a Microtext Adaptor is supplied with a lead which connects to the 'VIDEO OUT' socket of your video recorder so using your video as the tuner for the system.

Or, there's our own Tuner (UK only) which has been specially designed to provide the signal that the Adaptor needs. Just plug in an aerial, it tunes itself in (!) and channels are selected from the computer keyboard.

Tune into Teletext, a world of information at your fingertips.

	Commodore 64	Amstrad CPC	Spectrum
Microtext Adaptor:	£69.95	£74.95	£79.95
Adaptor and Tuner:	£114.80	£114.80	£124.80

Prices include VAT and P.&P.! (Overseas add £2)

Only from:

MICROTEXT

Dept. PW, 7 Birdlip Close, Horndean, Hants PO8 9PW
Telephone: (0705) 595694

PROGRAMMERS WANTED

We require programmers to work on a number of projects.

Applicants should have proven ability in 6502, Z80 or 68000 - experience with CP/M an advantage.

GAMES WANTED

We are also sourcing finished products for release on all major formats.

Write in the first instance to:—

**The Software Development
Manager
Ace Products
Waters Green
Macclesfield
Cheshire SK11 6LH**

(501)

This year's PCW Show was a reasonably good one for musicians, with lots of interest being shown in the heavily music-oriented stands and quite a bit of response to games and other packages with some music content. As ever, Rob Hubbard astounded and delighted C64 users with his music for various new games, while Atari's big announcement on the first day was their launch of a CD ROM player which also (apparently) plays audio CD's as well, so once you've loaded up your software, you can work along to the latest dreadful Pink Floyd CD.

With over 300 exhibitors at the show it's hard to cover everything in a small space, but we'll be following up with detailed reviews of some of the music releases in coming weeks. Meanwhile, a tour around some of the musical highlights.

Cheetah

The *SpecDrum* and *AmDrum* drum sampling packages, plus an interface which will allow drum sounds to be played from Cheetah's new kit of budget pads. As we all know by now, Cheetah now have a wide range of MIDI control keyboards at absurdly low prices, and remain the best company to give an introduction to music followed rapidly by an opportunity to enter the more professional world of MIDI via their C64 and Spectrum interfaces, budget drum machine and synth module.

Datel

Lots of micro accessories including sound samplers and the £19.95 MIDI interface for the C64. No software specifically aimed at it, but it should run *C-Lab*, *SIEL*, *Jellinghaus*, *Steinberg* and other packages...

Eidersoft

Eidersoft was showing the latest version of its Atari ST sampler, *Pro Sound Designer*, with drum machine facilities and lighting synchronisation. The package is now fully responsive to incoming MIDI data and the demos were put on in conjunction with a Juno 106 and a Yamaha DX21 synth, which controlled voices, snatches of music and other samples taken on the ST.

Frontier Software

With vast amounts of musical data to be handled in professional applications (particularly if you're storing large numbers of sound samples), a hard disk drive is becoming a necessity rather than a luxury. Frontier showed its *SupraDrive* model in 20, 30 and 60mb versions (from £600 to £1700), and there's a 198mb model to come.

Inter Orient

A new sequencer package for the PC and compatibles, using a standard Roland/Passport type interface. No firm details or prices yet as Inter-Orient had only got its copy a day before the show, but it looks pretty powerful and should rival the *Octave Plateau* and other PC MIDI composition packages.

Quite a lot to hear at the PCW Show



Kuma

Kuma's *KMinstrel* is a useful beginner's music package which works on the ST (with MIDI output and now on the PC (with the addition of a suitable MIDI interface). It can be both educational and entertaining, and although it's far from being a professional composition package, it can be used to print out simple scores.

Of possible use to the songwriter, Kuma was also showing *KRhymes*, based on Longman's *Top Pocket Dictionary of Rhymes*, and *KRoget*, based on Roget's *Thesaurus*.

Llamasoft

Jeff Minter's *Colourspace* is a light synthesizer running on most popular micros and intended to provide a visual background to your own choice of music. However, the next generation of the program, probably to be called *Lightmage* and to be launched next year, will also have an active musical role to play.

Running on the ST, *Lightmage* features two cursors rather than one, and these are controlled either by programmable waveform generators or by hand. Many new colour mixing and sequencing functions are available, and patterns can be mapped onto three-dimensional surfaces. There are more preset patterns available and in later versions of the software, the MIDI output will be brought into use to control music directly from the micro as images are formed.

Merit Computers

Vital for the muso in a hurry, the *Plonker Box* sticks to the side of your monitor or micro and holds four or more of your most frequently-used 3", 3.5", 5.25" or 8" disks.

Silica Shop

Silica Shop seems the best deal around for Atari ST's, which continue to represent the best value if you're choosing a micro for musical purposes. Their range includes the 520ST-M with half megabyte drive at only £229.99.

MIDI packages, light and sound sequencing, composition, editing, percussion, hardware and something to dump discs in, all fall light upon the ear of Mark Jenkins who spent many hours at the recent PCW Show.

Softpaquet International

A new range of music programs derived from the Mopro sequencer launched about a year ago. Jan Den Hertog of Softpaquet admits that the original sequencer has been superseded by other products, and the new range doesn't include a sequencer as such. There are editors for the Yamaha TX81Z, Yamaha FB01, Roland D50 and Akai X7000/S700 though, plus a drum composer package called OME, an "Interpreter" called MIDAS which allows MIDI data to be transmitted in various ways, and a generic sample.

Softpaquet is currently organising UK distribution and we'll publish full reviews as soon as possible.

Syndromic

A wide variety of music software from Hybrid Arts, Soundbits, Drumware and others, including visual editors for synths and samplers, 16-bit stereo sampling with the ADAP system, 60-track sequencing with SMPTE Read/Write facilities, and the MIDI-Maze multi-combat synthesizer which links up to 16 ST's for a fast-action multiplayer game of "Kill the Happy Face".

Also on the Atari stand, a hybrid xxx demo or xxxx xxx xxxxxx Electric Network for Information Exchange, accessing a handy music database. Syndromic itself was emphasising the reasonable price of EZ Track, a basic MIDI sequencer package for the ST at less than £50.

Rainbird

Lotsa games, but also the *Advanced Music System*, which continues to be the best introduction to non-MIDI based music composition and editing.

2 Bit Systems

The *ST Replay* sound sampling system, now with a MIDI control option, plus the *Digidrum* drum sequencer, and on the 8-bit Ataris, the *Replay*, *Percussion Master*, *Micro-Voice*, *MIDIMaster* and *DigiDrum II* packages.

43FFCD282DAFCD", 1050
 5AFCD282D3A42", 903
 92DCD6E34CD", 1117
 13FFCD282D", 889
 CD3BFF21", 1094
 7FDCD28", 1238
 000ED", 907
 CD28", 819
 C3", 1042
 ", 454

PROGRAMMING: SPECTRUM

Phoenix

Ian Wooff

The last instalment of this program showed how it was possible to add new commands to Basic by extending the Spectrum's interpreter.

Adding commands is useful, but how many programs have you written that only use commands, and do not use functions? So this week's program shows how it is possible to extend our extended interpreter to include the ability to add functions to Basic.

With all these new commands and functions you may find that they can produce errors of their own. Producing Sinclair error reports is easy but you may find that they do not say what the nature of the error is. So this week's program also shows how user error messages can be added to our extended interpreter.

Listing one enters the final part of our extended interpreter into memory and saves all to code as one piece. You will need to have saved the code from part one from last week otherwise this part will be of no use.

Those of you who have been experimenting with the box command from last week may have found that it, or any other command added using this method, can be placed on the end of a PRINT statement. To try this, enter the following.

```
PRINT "PRINT statement";  
*BOX 10,10,10,10
```

When it is run you should find 'PRINT statement' and a small box on the screen at the same time.

To see how to add functions we need to consider what the ROM does when it finds a Sinclair function. Functions are evaluated by the scanning subroutine which is held in ROM at 24FBH. Any unknown function will eventually lead to the error "Nonsense in BASIC" being produced. This is the same error as that produced by an unknown command and so the extended interpreter will test the Command Table to see if it is a new command. Before this though, the chain of events mentioned last week will have been put into action.

The important ones here are the clearing of the machine and calculator stacks. These are needed before we can finish evaluating the function. The machine stack holds the return address of the routine which called scannings, and the calculator stack may hold important values needed in the evaluation of the function.

Since rebuilding the machine and calculator stacks is impossible another solution needs to be found.

Ideally we need to assign the result of our function to a Basic variable so that it can be used by a Basic program.

The solution is to call the ROM routine which deals with the LET command. The routine is at 11007, (2AFFH), and uses information held in the system variable to

create a new variable or assign a current variable a new value, the value being the top value on the calculator stack.

So all we need to do is set the system variables correctly, place the result on the calculator stack and call 11007. You will be glad to know that the ROM will have already set all the required system variables to the correct value, before control is given to the extended interpreter.

So all that needs doing is to stack the result and call the LET routine at 11007. An 8-bit number in the A register is stacked by the routine at 11560, (2D28H), a 16-bit number in BC is stacked by the routine at 11563, (2D2BH).

The only difference between commands and functions is that at the end of a function the result is stacked and the LET command called before a jump to the extended interpreter routine RET. The entries into the Command and Address Tables are identical to those for a command. There is no reason why a function may not have parameters, these being placed on the calculator in the usual way.

If you wish to produce a Sinclair error report you can use the RST \odot command, but take care, if you have used the machine stack, or moved it to a new address, the extended interpreter address will have been lost and so the extended interpreter will have been turned off. This problem can be avoided by placing the error code in ERR NR, (1Y+0), and then jump to the extended interpreter routine SYNTAX.

This method of adding function is used to add a RND function which does not use SEED. This function uses the 7-bit register R to produce the value. The routine produces values from 0 to 1 inclusive. As the text above explains, the result is given to the last variable used, as it is the last variable which will have the system variables set for it. So

```
LET A=+RND
```

will give the last variable which is 'A' the result of the function. The same will be done by the following:

```
LET A=0: PLOT 10,10: DRAW 100,100:  
*RND
```

as 'A' is still the last variable. The following will not though

```
LET A=0: PLOT 10,10: DRAW S,100:  
*RND
```

as the last variable used was 'S' not 'A' and so the result will be given to the last variable 'S'.

The extended interpreter is able to handle any number of user error messages, the only restriction being that of memory. The new error messages take the form:

```
8,1 <Error message up to 21  
characters> 3:1020
```

All new error messages begin with 'S', followed by the error number. The error message itself can be up to 21 characters in length, any more characters causing the error message to wrap-round onto the next line. This is followed by the line and statement number which caused the error. If memory is short, then the error messages

could be missed out and only the error number and line and statement number which caused the error being printed.

When an error occurs, control is given to an error routine which stores the error code and does any unfinished jobs such as removing entries of the machine or calculator stacks. Control is then given to the routine which produces the error messages. This is similar to the error routine in ROM, but produces the new form of error message shown above.

The error message data is held in the Error Data Table. This table must begin with a byte with bit 7 set, and the end of each message must have bit 7 set. This can be achieved by placing 255 at the start of the table and adding 128, (80H), to the last letter of each error message.

The error messages are demonstrated on the box command from last week. This command now produces three error messages.

```
S,1 "Y position off screen" - Y co-  
ordinate greater than 175  
S,2 "Box too long" - X co-ordinate + box  
length greater than 255  
S,3 "Box too high" - Y co-ordinate + box  
height greater than 175
```

These errors are produced when the conditions are met. To see the error messages try the following:

```
S,1 - *BOX 10,180,10,10  
S,2 - *BOX 200,10,10,60  
S,3 - *BOX 10,150,30,10
```

```
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 64755  
20 FOR a=65045 TO 65367 STEP 8  
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-65045)*1.25): STOP  
100 NEXT a  
110 SAVE "EX. BASIC"CODE 65045,322  
1000 DATA "D4FE44FF03424F5B",1025  
1010 DATA "0003524E4408B000",367  
1020 DATA "CDF7FDAF18093E01",976  
1030 DATA "1805CDF7FD3E0232",848  
1040 DATA "24FE76FDCB01AEFD",1292  
1050 DATA "CB304EC4CD0E2100",777  
1060 DATA "00FD7437FD742622",865  
1070 DATA "085C2322165CCDB0",667  
1080 DATA "16FDCB37AECD6E00",1035  
1090 DATA "FDCB02EE3E53D73E",1118  
1100 DATA "2CD73A24FE3C4F06",752
```

PROGRAMMING: SPECTRUM

1110 DATA "00CD1B1A3E20D7CD",772	1210 DATA "7820746F6F206C6F",741	1310 DATA "3A43FFCD282DAFCD",1050
1120 DATA "9BFEEED4B455CCD1B",1114	1220 DATA "6EE7426F7820746F",897	1320 DATA "3BFFAFCD282D3A42",903
1130 DATA "1A3E3AD7FD4E0D06",711	1230 DATA "6F2068656967E8CD",993	1330 DATA "FFCD282DCD6E34CD",1117
1140 DATA "00CD1B1ACD9710FD",883	1240 DATA "F7FD3243FFCDF7FD",1577	1340 DATA "B7243A43FFCD282D",889
1150 DATA "360AFFFD0B019E21",967	1250 DATA "3242FFCDF7FD327E",1252	1350 DATA "CD6E34AFCD3BFF21",1094
1160 DATA "FEFCE5C3AC1211A5",1302	1260 DATA "SCFEAFD225FE473A",1151	1360 DATA "5827D9C3C9FDCD28",1238
1170 DATA "FE3A24FECD140CC9",1040	1270 DATA "42FFB0FEB0D22FFE",1390	1370 DATA "2DCDB724C90000ED",907
1180 DATA "FF5920706F736974",935	1280 DATA "CDF7FD327D5C473A",1101	1380 DATA "5FCD282D3E7FCD28",819
1190 DATA "696F6E206F666620",705	1290 DATA "43FF00DA2BFEAFCD",1345	1390 DATA "2DEF0538CDF2AC3",1042
1200 DATA "7363726565EE426F",945	1300 DATA "282D3A42FFCD3BFF",983	1400 DATA "C9FD000000000000",454

```

FE17=          10          ORG  65047
FE17 44FF          20          DEFW RND ;          Continuation of Address Tabel
FE19 03424F58
      00          COMTABLE:
                        DB  3,"BOX",0 ;          Command Table. Includes function
FE1E 03524E44
      0880
FE24 00          ERRCODE:
                        DEFB 0
FE25 CDF7FD          30 ERROR1:
                        CALL GETA ;          Error 1
FE28 AF
FE29 1809
FE2B 3E01          ERROR2:
                        LD  A,1 ;          Error 2
FE2D 1805
FE2F CDF7FD          ERROR3:
                        CALL GETA
FE32 3E02
FE34 3224FE          ERR.NO:
                        LD  (ERRCODE),A
FE37 76          40          HALT
FE38 FDCB01AE          RES  5,(IY+1) ;          Signal 'ready for a new key'
FE3C FDCB304E          BIT  1,(IY+48) ;          Empty printer buffer if
FE40 C4CD0E          CALL  NZ,#ECD ;          has been used
FE43 210000          LD  HL,0 ;          Reset the system variables
FE46 FD7437          LD  (IY+55),H ;          FLAGX
FE49 FD7426          LD  (IY+38),H ;          X PTR hi
FE4C 220B5C          LD  (23563),HL ;          DEFADD
FE4F 23          INC  HL
FE50 22165C          50          LD  (23574),HL ;          Stream 00 points to
FE53 CDB016          CALL #16B0 ;          channel 'K'
FE56 FDCB37AE          RES  5,(IY+55) ;          Signal 'editing mode'
FE5A CD6E0D          CALL #D6E ;          Clear the lower screen
FE5D FDCB02EE          SET  5,(IY+2) ;          Signal lower screen will require
FE61 3E53          LD  A,"S" ;          Print 'S'          clearing
FE63 D7          RST  #10
FE64 3E2C          LD  A,", " ;          Print a comma
FE66 D7          RST  #10
FE67 3A24FE          LD  A,(ERRCODE)
FE6A 3C          60          INC  A
FE6B 4F          LD  C,A
FE6C 0600          LD  B,0
FE6E CD1B1A          CALL #1A1B ;          Print error code
FE71 3E20          LD  A,32 ;          Print a space
FE73 D7          RST  #10
FE74 CD9BFE          CALL MESS1 ;          Print error message
FE77 ED4B455C          LD  BC,(23621)
    
```

PROGRAMMERS

Over the last year the ZEN ROOM has produced some of Europe's top games, like TAU CETI, DRACULA, CYBORG, ACADEMY, DEATH OR GLORY, BALLBREAKER and THE ROCKY HORROR SHOW. Now Britain's most innovative software development team are looking for experienced freelance programmers to join them. If you have just written a game or are about to and would like the financial and programming back-up the ZEN ROOM can offer contact Michael Hodges on 01-985 2391 or write to the ZEN ROOM, Unit 7D, Kings Yard, Carpenters Road, London E15.

THE ZEN ROOM

A DIVISION OF CRL GROUP PLC



PROGRAMMERS REQUIRED

We are looking for enthusiastic programmers aged 18-25. Experience in Assembler and C is essential, and it would also be an advantage to have an interest in data communications.

Send CV to:

PMS Communications

Norfolk House, Smallbrook
Queensway, Birmingham B5 4LJ.

LIKE TO EARN £100's? DO YOU WRITE GAMES? ARE YOU BETWEEN 8-80?

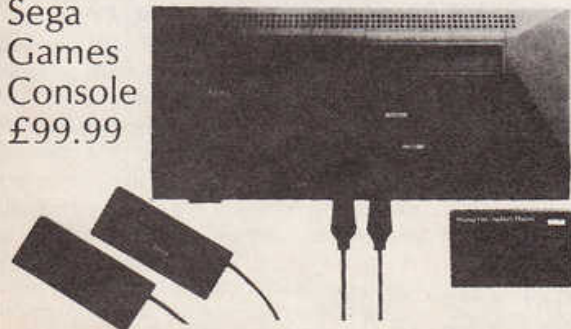
If the answer is yes why not let us turn your ideas into **HARD CASH**. You may have an "ELITE" which could make you a fortune. Ring us on 091 565 8473 or write to **SKYSLIP COMPUTERS 5 Stockton Road, Sunderland SR1 3NR. RING TODAY.**

SKYSLIP

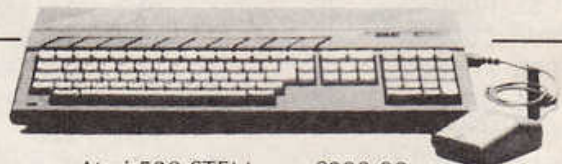
495

The Best Software Shop in Town

Sega
Games
Console
£99.99



Available
NOW!



Atari 520 STF £299.00

Atari 520 STF	£299.00
	+
5 Disks Crammed with Software	FREE
	+
Mouse Mat	FREE
	+
Barbarian	FREE

ULTIMA

WHITE LION WALK, GUILDFORD SURREY
TELEPHONE 0483-506939

31 HANOVER BUILDINGS, SOUTHAMPTON
TELEPHONE 0703-39419
OPPOSITE MACDONALDS

PROGRAMMING: SPECTRUM

FE7B CD1B1A	CALL #1A1B ;	Print line number in which error occurred
FE7E 3E3A	LD A,#3A ;	Print a colon
FE80 D7	RST #10	
FE81 FD4E0D	LD C,(IY+13)	
FE84 0600	LD B,0	
FE86 CD1B1A	CALL #1A1B ;	Print statement number in which error occurred
FE87 CD9710	CALL #1097 ;	Clear the editing area
FE8C FD360AFF	LD (IY+10),255 ;	Set NSPPC to indicate 'no jump'
FE90 FDCB019E	RES 3,(IY+1) ;	Select 'K' cursor mode
FE94 21FEFC	LD HL,START	
FE97 E5	PUSH HL ;	Place START on bottom of stack
FE98 C3AC12	JP #12AC ;	Jump back to ROM
FE9B 11A5FE	80 MESS1:LD DE,ERRORDATA ;	Address of error messages
FE9E 3A24FE	LD A,(ERRCODE) ;	Error code to A
FEA1 CD140C	CALL #C14 ;	Use ROM routine to print error message
FEA4 C9	RET	
FEA5 FF592070		
6F736974		
696F6E20		
6F666620		
73637265		
65EE426F		
7820746F		
6F206C6F		
6EE7426F		
7820746F		
6F206865		
6967E8		
	ERRORDATA:	
	DEFM 255,"Y position off scree","n"+#80,"Box too lon","g"+#80,	
	"Box too	
heig","h"+#80		
	;	See text for layout of Error Data Table
FED4 CDF7FD	90 BOX :CALL GETA	
FED7 3243FF	LD (BLEN),A ;	Length of box
FEDA CDF7FD	CALL GETA	
FEDD 3242FF	LD (BHEI),A ;	Height of box
FEE0 CDF7FD	CALL GETA	
FEE3 327E5C	LD (23678),A ;	Y position of box
FEE6 FEAF	CP 175 ;	Is Y position off top of screen ?
FEE8 D225FE	JP NC,ERROR1 ;	Error 1 if it is
FEEB 47	LD B,A	
FEED 3A42FF	LD A,(BHEI)	
FEF0 FEB0	ADD B	
FEF2 D22FFE	CP 176 ;	Is box too heigh ?
FEF5 CDF7FD	JP NC,ERROR3 ;	Error 3 if it is
FEF8 327D5C	100 CALL GETA ;	X position of box
FEFB 47	LD (23677),A	
FEFC 3A43FF	LD B,A	
FEFF 80	LD A,(BLEN)	
FF00 DA2BFE	ADD B ;	Is box too long ?
FF03 AF	JP C,ERROR2 ;	Error 2 if it is
FF04 CD282D	110 XOR A	Stack 0
FF07 3A42FF	CALL #2D28 ;	
FF0A CD3BFF	LD A,(BHEI)	
FF0D 3A43FF	CALL LINE ;	A=Height Draw first line
FF10 CD282D	LD A,(BLEN)	
FF13 AF	120 CALL #2D28 ;	Stack Length
FF14 CD3BFF	XOR A	
FF17 AF	CALL LINE ;	A=0 Draw second line
	XOR A	

PROGRAMMING: SPECTRUM

FF18 CD282D		CALL #2D28 ;	Stack 0
FF1B 3A42FF		LD A, (BHEI)	
FF1E CD282D		CALL #2D28 ;	Stack Height
FF21 CD6E34		CALL #346E ;	Negate top value on stack
FF24 CDB724		CALL #24B7 ;	Draw third line
FF27 3A43FF	130	LD A, (BLEN)	
FF2A CD282D		CALL #2D28 ;	Stack Length
FF2D CD6E34		CALL #346E ;	Negate top value on stack
FF30 AF		XOR A	
FF31 CD3BFF		CALL LINE ;	A=0 Draw last line
FF34 215827		LD HL, #2758 ;	Reset HL' is destroyed by line drawing
FF37 D9		EXX	
FF38 C3C9FD		JP RET ;	End command
FF3B CD282D	140	LINE :CALL #2D28 ;	Stack value in A
FF3E CDB724		CALL #24B7 ;	Draw line
FF41 C9		RET	
FF42 00	150	BHEI :DEFB 0	
FF43 00		BLEN :DEFB 0	
FF44 ED5F	160	RND :LD A,R	
FF46 CD282D		CALL #2D28 ;	Stack R register
FF49 3E7F		LD A, 127 ;	Register is 7 bits long
FF4B CD282D		CALL #2D28 ;	so stack 127
FF4E EF		RST #28 ;	Use calculator
FF4F 0538		DEFB 5, #38 ;	Division. End calculation
FF51 CDFF2A		CALL #2AFF ;	Call LET
FF54 C3C9FD		JP RET ;	End function

You've probably heard about us!

Universities: Schools: Colleges: Government Departments: Businesses
and

Hundreds of customers supplied and supported throughout the UK & Europe

ST User Groups

we will be delighted to offer you special deals.

ST Deals

Please call for our latest prices.
Special Value packs always on offer.

3.5" Disks

bulk pack box of ten single sided disks
Only
£15.00 + £1 P&P
All including VAT.

Part Exchange

Mail Order

Finance

or

Visit our showroom 600 square feet devoted to the Atari ST

BATH COMPUTER SHACK

8E CHELSEA ROAD, LOWER WESTON, BATH, AVON
TELEPHONE: 0225 310300

TROWBRIDGE COMPUTER SHACK

CASTLE STREET, TROWBRIDGE, WILTS
TELEPHONE: 02214 67299

(464)

UNLOCK THE SECRETS OF PENNY SHARE PROFITS



Did you know that there are thousands of men and women in this country quietly making money out of low priced Penny Shares?

Most of these people are private investors. Many of them started with just a few hundred pounds. Few had any previous stockmarket experience. Some never buy any other sort of share. What is the secret of their success?

FANTASTIC GROWTH RECORD

Seventeen out of the top twenty performing shares this year (at 2.7.87) were Penny Shares. Here is a selection of the recent winners:

	from	to	gain
Accis Jewellery	18p	310p	+1,633%
New Eng. Props.	12½p	76p	+508%
Excalibur Jewellery	18p	97p	+438%
Regentcrest	39½p	243p	+515%
Amber Day	15p	90p	+500%
Sharna Ware	46p	265p	+476%
Humberside Eltn.	12p	65p	+442%
Energy Capital	18p	101p	+461%
Talbox	8½p	47½p	+459%
Hughes Foods	32p	155p	+384%

(Prices as at 2nd July 1987)

Imagine how much your capital would have increased if you had invested in any of these Penny Share winners. But where do you find them? ... after all, shares do not rise in value just because they are low priced.

Of course, if you had the time, and the know-how you could isolate the potential winners and then complete a thorough investigation of the company.

But here is an easier route to Penny Share success. Each month the Penny Share Focus team of analysts condense days of research into a four page no nonsense action guide. Its sole aim ... to provide investors like you with opportunities for big capital gains. By carefully monitoring every Penny Share on the market ... by collating masses of financial and company data ... by making painstaking enquiries into the company's management, sometimes even visiting their offices, PENNY SHARE FOCUS helps you to spot the next Penny Share winner, and keeps you clear of the losers.

WHAT ARE PENNY SHARES? ... and WHY IS THEIR RECORD SO GOOD?

A Penny Share is quite simply a share that you can buy for mere pennies. The shares are cheap because the City has lost confidence in the

company's ability to make profits. It could be because of poor management, adverse trading conditions, or just plain bad luck. But the slump in the price of the shares means something has to be done ... something has to change.

In some cases the company may be restructured, new management installed, new products launched, new ideas and techniques introduced. Alternatively, the company's shares may be so cheap that a rival company moves in to take them over. Or a successful private company might buy them out as a cheap way in to the stockmarket. Whatever happens, it's nearly always good news for the investor who was brave enough to buy when the company was down.

Remember, these companies are still trading and they often have quite sizeable assets. Apart from the very few that do 'go to the wall' - and they're really surprisingly few - the only way a share price that has fallen to mere pennies can go is up.

Join the Penny Share investors today and subscribe now to claim a discount of £20 off your first year's membership subscription and be fully protected with our unique MONEY BACK GUARANTEE.

The editor of PENNY SHARE FOCUS has for more than ten years been the country's leading authority on Penny Shares ... the man who spotted Wire and Plastic when it was just 27p, and then watched it rise to £7.05 ...

put another way, if you had invested just £500 in Wire and Plastic when he told you, that investment would now be worth more than £13,000.

You can now have access to this valuable information each month through the pages of PENNY SHARE FOCUS. In just 4 tightly written pages he reviews the latest news, recommends the hottest Penny Shares of the moment, and keeps investors in touch with his past recommendations. You only make money when you sell, and it's the aim of PENNY SHARE FOCUS to get you out at the top of the market so you can move on to the next Penny Share winner.

APPLY NOW FOR YOUR MEMBERSHIP ... AND SAVE £20

An annual subscription to PENNY SHARE FOCUS is normally £59.50 - a sum easily recouped by investing in just one Penny Share winner.

As a first time subscriber you qualify for a £20 discount, if you complete and return the order form below within the next seven days.

That's right, you pay just £39.50 for twelve month's issues of PENNY SHARE FOCUS that will put you well on the road to stockmarket riches - simply follow our advice.

We are currently researching several companies from the 'bargain basement' of the stock market that look set for phenomenal growth. Ensure you don't miss them - complete and return your membership application today.

MONEY BACK GUARANTEE

Everyone knows that share prices can go down as well as up. That's why we advise subscribers to spread their investment over several of the many low priced shares we report on in Penny Share Focus.

What's more, we guarantee you at least three opportunities to double your money, or you pay us nothing. Yes, that's right, you must receive at least three recommendations from Penny Share Focus that double in value within the next twelve months. If you don't, let us know and we will gladly refund your first year's subscription in full, in cash by return of post.

© Penny Share Focus Ltd. 1987
Registered in England 1846796
11 Blomfield Street, London EC2M 7AY

STOP PRESS · STOP PRESS · STOP PRESS · STOP PRESS FREE BONUS ISSUE

We recently launched an additional service for Penny Share Focus subscribers - a special share of the month.

Each month you will receive an additional Penny Share recommendation in the form of a no nonsense one page letter with JUST ONE SHARE selected for its potential to provide subscribers with quick capital gains and fast in-and-out profits.

This additional service, launched earlier this year has already proved a winner. In the first issue we recommended our subscribers buy PEEK HOLDINGS at 16p. Those who did were more than delighted when they shot up to 100p in just a few months.

CIFER was another recommendation and this share quickly rose from 10p to 24p giving subscribers a short-term gain of more than 100%, even after allowing for dealing costs.

DON'T MISS OUT ON OUR NEXT PENNY SHARE WINNER - SUBSCRIBE TODAY ... now, before the next issue.

SPECIAL INTRODUCTORY MEMBERSHIP OFFER - £20 OFF FIRST YEAR'S SUBSCRIPTION

Please return to Penny Share Focus, 11 Blomfield Street, London EC2M 7AY

YES Please show me how I can make money with Penny Shares and enter my subscription to Penny Share Focus on the understanding that I am fully covered by your Money Back Guarantee above.

Name

Address

.....

..... Post Code.....

FOR OFFICIAL USE ONLY
MEMBERSHIP NO.

To: Bank plc

Branch Code Full Address.....

Current A/C Name.....

Current A/C Number.....

Please pay to National Westminster Bank PLC (60-05-11T), 31 Cheapside, London EC2V 6AN for the account of Penny Share Focus, A/C No: 25661205, the sum of £39.50 on receipt of this order and thereafter £59.50 on the same date each year until countermanded by me.

Date Signed



ZONEFOUR LTD

All disks now sent 1st class or courier



MIMIC IN FREE LIBRARY CASES

DS 96 TPI	10s	£7.60
FLIPSIDED	10s	£7.15
DS 48 TPI	10s	£6.80
UNIVERSAL	10s	£7.95

MIMIC 3.5"

SS	10s in Library Case	£13.55
DS	10s in Library Case	£15.95

5.25" BULK UNBRANDED DISKS (LIFETIME GUARANTEE)

FULLY CERTIFIED	SS 48 TPI	SS 96 TPI	DS 48 TPI	DS 96 TPI
Try 10 and see	£4.75	£5.55	£5.55	£6.35
25	£9.60	£10.40	£10.40	£11.20
50	£18.40	£19.20	£19.20	£20.80
100	£33.60	£35.20	£35.20	£36.80
250	£76.00	£77.60	£77.60	£80.00
500	£144.00	£148.00	£148.00	£152.00

AMSOFT CF2 3"	10s	£20.00
MAXELL CF2 3"	10s	£20.00
3" MIMIC CF2DD	10s	£26.40

ACCESSORIES INC VAT

IBM/Amstrad PC1512 Printer Cable GPR10125 x cent.	£7.15
Disk Notcher/doublers	£3.60
Disk cleaners 3.5"	£3.95
5.25" cleaner	£3.60
Mini Vac for printers and keyboards	£5.55

5.25" BULK COLOUR UNBRANDED

FULLY CERTIFIED	SS 48 TPI	SS 96 TPI	DS 48 TPI	DS 96 TPI
10*	£7.15	£7.95	£7.95	£8.75
25	£17.60	£19.20	£19.20	£20.80
50	£32.00	£36.00	£36.00	£38.40
100	£60.00	£64.00	£64.00	£72.00
250	£140.00	£152.00	£152.00	£160.00
500	£272.00	£208.00	£208.00	£300.00

RED, GREEN, BLUE, YELLOW, WHITE

10 in single colour OR 2 of each please state in large quantities your choice. (If stocks are available) * in library cases

NEW CATALOGUE AVAILABLE NOW

3.5" BULK UNBRANDED DISKS 135 TRILIFETIME GUARANTEE

	SS	DS
10	£11.95	£13.55
25	£28.00	£32.00
50	£52.00	£64.00
100	£96.00	£120.00
250	£220.00	£280.00
500	£400.00	£520.00

AMIGA HARDWARE

A500 Amiga	£475.00
Cumana compatible 1 meg disk drive	£140.00
Modulator	£24.95

ALL 5.25" DISKS HAVE REINFORCED HUB RINGS, SLEEVES, LABELS AND WRITE PROTECTS.

ALL DISKS CARRY A LIFETIME GUARANTEE.

ALL DISK PRICES INCLUDE VAT AND P/P.

TO ORDER PLEASE CALL DIRECT DISK LINE: 10AM 6PM

MIMIC HIGH DENSITY COBALT COATED 1.6 MEG SUITABLE FOR A.T.S.

10	50	100
£14.40	£64.00	£120.00

Verbatim preformatted for use with Kodak 6.6 meg drive or equivalent (5 Pack) £90.00

DISK BOXES INCLUDING VAT

5.25"	50 capacity £6.95	100 capacity £9.35
3.5"	40 capacity £6.80	80 capacity £9.55
3"/3.5"	80/90 capacity £9.55	
10 x 3.5" or 5.25" (library case)	£1.20	

SOFTWARE

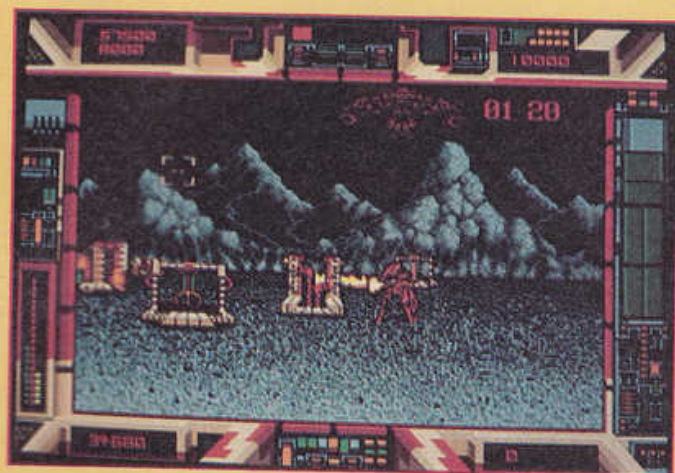
We sell the full range of SAGE POPULAR SOFTWARE
ABC All in One Business Package £150.00

Please Note: We can now offer you a duplicating service and in-house printing, packaging and most services you require. If you require any of these services, please telephone for a quotation on 0707 331076.

ZONEFOUR, Unit 11, Mundells Court, Welwyn Garden City, Herts. Tel: 0707 334460

Please call for bulk and seasonal prices and a full list of Paper, Labels, etc. etc. and new catalogue

Licensed to ill



The Terrorpods are coming! Unlike the dreadful BBC series of a similar name, these metallic aliens are invading a mining asteroid called Colian, with the intention of setting up shop and building more Terrorpods. Colian supports ten separate mining colonies, each with its own mines, dumps, stores and resource centres interlinked by regular shuttle services.

Everything was going fine until the Empire and its Terrorpods arrived to take over the planet and start manufacturing components for assembly off-world. As the only representative of the Federation stupid enough to take on the task of obtaining the components you find yourself down on Colian's surface, trading with the installations in an attempt to build up your mineral resource level. Until the Empire noticed what you were doing.

Suddenly, there are Terrorpods and Spoilers everywhere, destroying and draining installations left, right and centre. You're next on the list so it's a race against time to collect all the components, while fending off Empire attacks, before they nail you to the floor.

As usual with Psygnosis games, the packaging is first class, even if the Roger Dean poster has been folded up (grrrr!). The graphics, as well, seen in an out of the window, 3-D perspective, are up to the excellent standard that Psygnosis are renowned for. What is surprising is that the animation is, for the most part, very good.

The display consists of a bordered window through which the asteroid's surface can be seen, along with all the installations. In the border are displays and counters representing fuel and Detonite levels, damage sustained, number of missiles

primed, points scored, position co-ordinates, and an intelligence panel which the instructions refuse to elaborate upon.

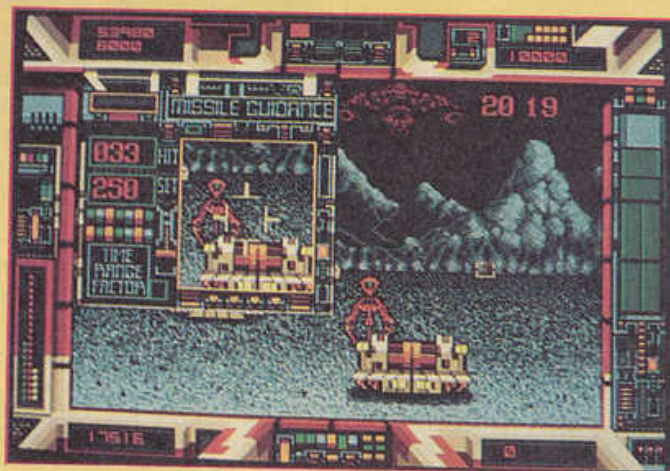
As long as you have fuel you can move around, left and right, and into or out of the scenery. The scrolling of the crushed rock surface is nicely done and, on the Amiga version but not the ST, the mountains in the background scroll along.

Your Defence Strategy Vehicle (DSV), has defence systems in the form of phasers (which make a harsh zapping noise followed by a noisy explosion when something is hit), shields to block enemy missiles, and missiles which must be primed, aimed and then directed to their targets.

The two other functions available are an energising beam which reconstructs installations that have been destroyed by the Terrorpods, and a remote drone. The drone must be sent out to dock with the various installations when you want to trade. The installations don't like having you around though, since the Empire is on your tail. Your appearance can spell destruction, so trading is strictly timed.

This aspect of the game must be mastered though, otherwise you aren't going to get anywhere. The delights of simply blasting away at Terrorpods and Spoilers soon pales when there is no point to it.

Running out of fuel and Detonite are the most serious problems initially. Having an empty tank means that the Empire mothership can pound you with missiles until your shields run out. Running out of Detonite prevents you from firing the phasers or priming a warhead for a missile, so this is not something you want to have happen.



The real trick to Terrorpods involves using the mapping systems to see where the Empire activity is, finding out trading prices at the various installations, warping from sector to sector to keep up with events, and monitoring and defending those installations that are building the components that you need. Life can get rather hectic when you're waiting at an installation for the next shuttle that will mean completion of a component, and the full force of the Empire starts to bear down on you. Run for it, or expend vast quantities of energy beat-

ing them off? The choice is yours.

It can take quite a while to really get the hang of Terrorpods; and the fast thinking, complex strategy and zapping may not be to everyone's taste, but it is certainly an original, slickly produced, and challenging game.

Product Terrorpods **Price** £24.95 **Machines** Amiga, Atari ST **Supplier** Psygnosis Ltd, 1st Floor, Port of Liverpool Building, Pier Head, Liverpool L3 1BY.

NEW RELEASES

Your complete guide to all the software released this week

AMSTRAD CPCs

Program Ninja Hamster Type Arcade **Price** £8.95 (£14.95) **Supplier** CRL, CRL House, 9 King's Yard, Carpenter's Rd, London E15 2HD.

Program Sorcerer Type Strategy **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program Uridium Type Arcade **Price** £2.99 **Supplier** Hewson, Hewson House, 56b Milton Trading Estate, Milton, Abingdon, Oxon OX14 4RX.

Hewson's excellent space shoot 'em up, finally released for Amstrad machines. Surprisingly, Hewson has released it as a budget game, making it very good value.

ATARI XL/XE

Program BMX Simulator Type Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

Program Ted Bear's Rainy Day Games Type Educational **Price** £1.95 (disc only) **Supplier** ABC Holdings, 53 Cambridge St, Aylesbury, Bucks HP20 1RP.

C64



Program Creations Type Arcade **Price** £1.99 **Suppliers** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

An interesting budget release - three games written with the Games Creator utility, plus the Games Crea-

tor itself, all on one tape for just £1.99.

As with most games written with utilities, the three here are competent but not particularly great. However, three of them, plus the possibility of writing your own make this exceptional value.

If excitement has a name, it certainly isn't *Indiana Jones and the Temple of Doom*. Like many games-of-the-coin-op-of-the-licence-of-the-film, the version which finally filters through to your home computer does little to capture the spirit of the original movie, though the music does stir the blood a little. The title screen is also great, and Harrison Ford fans may think it worth buying just for that!

The ST version is in three parts, and is basically two platforms-and-ladders scenarios and a chase game. The backgrounds, which of course don't capture all the detail of the coin-op original, are fairly bland, depicting a maze of caverns through which the small figure of Indy moves in a quest to free enslaved children. There are three difficulty levels, selected according to which entrance to the caves you choose, and this determines the number of guards, bats, serpents and evil sorcerers who will try to bump you off. There are also chasms which you can swing over, cliff edges to topple off and firebolts to cope with, all using your trusty whip.

Climbing ladders all the time, you finally complete the first section, and get on to the underground railway chase, which would be more exciting if it weren't for the fact that the diagonal scrolling becomes noticeably jerky at this point. The third level is back to the caverns for a diamond search, which is really just a sophisticated version of Pitfall. *Indiana Jones and the Temple of Doom* might have done well if it came out at the same time as the film, but doesn't measure up to the more impressive ST games currently being produced by more original software houses.

Chris Jenkins

Program Indiana Jones and the Temple of Doom Type Arcade **Machine** Atari ST **Price** £19.95 **Supplier** US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AY.

Program Okinawa Type Strategy **Price** £4.95 (£9.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.



Program Tobruk Type Strategy **Price** £9.95 (£14.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program Hysteria Type Arcade **Price** £8.95 (£12.95 on disc) **Supplier** Software Projects, Bearbrand Complex, Allerton Rd, Woolton, Liverpool, Merseyside.

Program Armourdillo Type Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

Another budget shoot 'em up. This time it's a ground based tank rather than a spaceship, but the principle's roughly the same. It's not the fastest game around, but the graphics are above average for a budget game.

Program Ted Bear's Rainy Day Games Type Educational **Price** £21.95 9 (disc only) **Supplier** ABC Holdings, 53 Cambridge St, Aylesbury, Bucks HP20 1RP.

Program Mr. Angry Type Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

A variation on the *Elevator Action* theme, set in a hotel where you have to find a missing body behind one of the hotel bedroom doors. The basic idea is a bit limited, but it's not bad for a budget game.



Program Thunderbolt Type Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.

This isn't quite the 'best ever shoot 'em up' that the cassette inlay brags about, but it is fast and furious (though some of the graphics are a bit gaudily coloured).

Program Ninja Hamster Type Arcade **Price** £9.95 (£14.95) **Supplier** CRL, CRL House, 9 King's Yard, Carpenter's Rd, London E15 2HD.

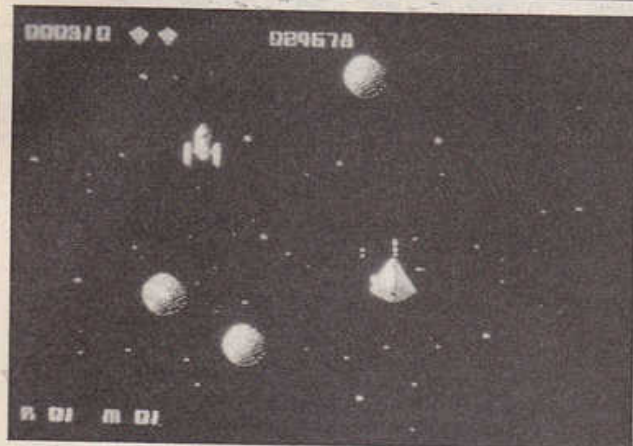
Program Pegasus Bridge Type Strategy **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.

Program Halls of The Things Type Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford St, London WC1A 1PS.

Program Codehunter Type Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford St, London WC1A 1PS.

MSX

Program BMX Simulator Type Arcade **Price** £1.99 **Supplier** Codemasters, 1 Beaumont Business Centre, Beaumont Close, Banbury, Oxon.



Some people like subtlety. Some like an intellectual challenge. Some like games which offer a positive attitude to life. Others just like to DESTROY! Kill! Blast! Har-Har!

Mega-Apocalypse should appeal to these demented joystick-bashers. The software equivalent of a Spinal Tap LP played at full volume on stereo headphones, this is without doubt the loudest, most brain-numbing, eyeball-searing game yet seen on the Commodore 64, and has no positive, life-enhancing aspects whatsoever, apart from being great fun.

Mega-Apocalypse is basically an improved version of Martech's earlier hit *Crazy Comets*, itself a version of the coin-op *Mad Planets*. Your only task is to blast progressively larger and faster planetoids out of the sky. Before each round you have the chance to pick up some subsidiary weapons to help you do this in an even noisier, more vicious way. These include extra shields, 360 degree rotation, extra speed and some kind of spinning weapon, the function of which isn't made clear.

The dual-player mode is great fun, and the dual enemy mode is even better, giving you another ship to blast at as well as the planetoids. The non-stop Rob Hubbard music, excellent sampled speech and violently swirling sprites are guaranteed to give you a headache within two minutes, so there's a soporific 'starfield' pause mode to give you a rest.

A stunning programming achievement, absolutely devoid of plot and maybe only of short-term interest, but a "must see" for headbangers and shoot 'em up fans.

Chris Jenkins

Program *Mega-Apocalypse* **Micro** CBM64 **Price** £8.95 (£12.95 on disc) **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE.

Spectrum

Program *Hysteria* **Type** Arcade **Price** £7.95 **Supplier** Software Projects, Bearbrand Complex, Allerton Rd, Woolton, Liverpool, Merseyside.

Software Projects has changed its set up recently. They're no longer producing games themselves, and are simply publishing other people's work. The first new game, by Special FX, reminds me a bit of the old Sinbad films, with elements of Greek mythology. You have been sent back in time to fight a power-crazed entity of some sort, but before you can locate it you have to fight your way past animated skeletons, harpies, and the like.

Program *Dark Star* **Type** Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford St, London WC1A 1PS.

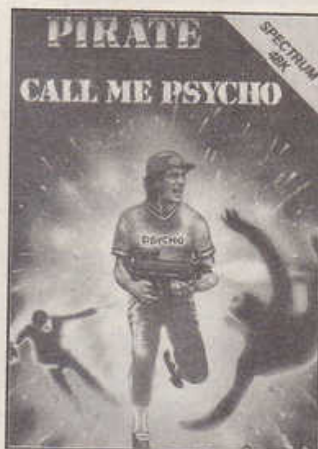
Program *Halls of The Things* **Type** Arcade **Price** £2.99 **Supplier** Firebird, 64-76 New Oxford St, London WC1A 1PS.

Halls was one of the first fantasy/D&D style games produced for the Spectrum (a sort of early *Gauntlet*), and was considered pretty wonderful in its day. Trouble is, that day was about three years ago, and while this isn't bad value as a budget game it does look its age.



Program *Trivial Fruit* **Type** Quiz **Price** £2.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

A budget variant on the *Trivial Pursuit* theme. Not bad of its kind, but I've never understood why you should want to do this sort of thing on a computer anyway.



Program *Call Me Psycho* **Type** Quiz **Price** £1.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

Program *Holiday In Sumaria* **Type** Quiz **Price** £2.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

Program *Smash Out* **Type** Quiz **Price** £1.99 **Supplier** Pirate Software, 197-199 City Rd, London EC1V 1JN.

Program *Sorcerer* **Type** Strategy **Price** £12.95 (£17.95 on disc) **Supplier** PSS, 452 Stoney Stanton Rd, Coventry.



Program *Red LED* **Type** Arcade **Price** £7.95 **Supplier** Ariolasoft, 68 Long Acre, London WC2E 9JH.

Program *Spaceblip/Bananablip* **Type** Arcade **Price** £2.50 **Supplier** Lelu/Lu's, 27a Draycott Avenue, Layton, Blackpool, Lancs FY3 7NP.

CHARTS

Top Twenty

1	(1)	Renegade	Imagine
2	(2)	Joe Blade	Players
3	(3)	Arcade Classics	Firebird
4	(12)	Soccer Boss	Alternative
5	(10)	International Karate	Endurance
6	(18)	Back To The Future	Firebird
7	(5)	BMX Simulator	Codemasters
8	(-)	Tai-Pan	Ocean
9	(11)	Uchi-Mata	Alternative
10	(8)	Dizzy	Codemasters
11	(4)	ATV Simulator	Codemasters
12	(29)	Indiana Jones	US Gold
13	(7)	Run For Gold	Alternative
14	(9)	Paperboy	Elite
15	(16)	Super Robin Hood	Codemasters
16	(13)	World Class Leaderboard	US Gold
17	(15)	Destructo	Bulldog
18	(19)	Barbarian	Palace
19	(21)	Football Manager	Addictive
20	(17)	Kik Start 2	Mastertronic

All figures compiled by Gallup/Computer Trade Weekly

MICRO-FILE

SOFTWARE

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		Special Offer		Basketball	22.49	World Games	22.49
Joystick IBM	21.99	☆☆ SPECIAL OFFER ☆☆☆		Mr. Karate	17.95	Print Master	26.49
Light Pen Amstrad PC1512	17.95	Company 81 and Datamacs	20.99	Little Comp. People	30.95	Hobswriter	52.95
Mouse IBM	65.95	100 Capacity Disk Box and 25 blank disks	28.49	Skyfox	22.49	Lattice C Compiler	87.95
Mouse Mat	2.25	☆☆ Offer ends		Trailblazer	22.49	Animator	26.49
5x15 Standard Tape	1.80	30th September 1987 ☆		Leather Goddess Of Phobos	26.49		
10x15 Standard Tape	3.40	Business and Utilities-IBM		Deadline	26.49	AMICA Games	
Joystick 125+ Cheatah	6.95	Designers Pencil	26.49	Passengers On The Wind	22.49	Golf	30.95
Joystick Match 1	12.99	Music Studio	30.95	Turbo G.T	13.95	Hollywood in jinx	26.49
Joystick Quickshot II	6.95	WordStar 1512	65.95	Ninja	9.49	7 Cities of Gold	26.49
Joystick Quickshot II Plus	9.95	Art Studio	43.99	Karate Kid 2	22.49	Skyfox	26.49
		Filen SL Editor	131.95	Arbalt	22.49	Arctic Fox	26.49
IBM PC Games		Dock Keeper	99.85	F15 Strike Eagle	19.49	Ballyhoo	26.49
Borrowed Time	20.95	Accountant	150.94	Ultima 3	22.49	Moon Mist	26.49
Championship Golf	30.95	Accountant + Financial Control	199.99	Balance Of Power	26.49	Silent Service	22.49
		Password PC	22.49	Chess	22.49	Balance Of Power	34.95
		Atari ST Games		Hardball	22.49	Siebad	34.94
		Baseball	22.49	Leadball Golf	22.49	S.D.I.	26.49
				Roadwar 2000	22.49	Deep Space	26.49
				Winter Games	22.49	Winter Games	22.49

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

HARDSOFT · INTERNATIONAL

1A The Square, Sawbridgeworth, Herts. 0279 726488/726406

Office automation at a price that is affordable. Lease an Amstrad PC1640 DD-MD + Epson printer + wordprocessor + spreadsheet, for under £7.00 per week.

As an approved dealer for Amstrad, Epson, Seikosha, Star, Olivetti etc., we offer free unbiased advice on various machines and software. Our sales team can demonstrate any machine anywhere in Britain and will advise you on which of our eight different leases will suit your needs best. CONTACT US TODAY FOR A FREE QUOTATION
NATIONWIDE NEXT DAY DELIVERY ★ CONSUMABLES ★ FREE TAX & FINANCIAL GUIDANCE ★ CONTINUOUS STATIONERY ★ 24 hr MAINTENANCE CONTRACTS ★

WOW! WE! Look what else is on offer!

AMSTRAD PCW 8256 £289 + VAT **ATARI STFM with mouse mat + FREE Gauntlet £274.95 inc. VAT and P.&P.**

PCW 8512 £389 + VAT
PCW9512 £489 + VAT

ALL WITH FREE MAINTENANCE!!!

Super Calc 2 £44.95
Sage Accounts £54.95
Combase £43.99
Desk Top Publishers £24.95
AMSTRAD Registered Business Dealer

Terrapods £18.75
Tai Pau £14.50
Phantasia 3 £14.95
Sidewalk £14.95
Roadrunner £18.75
PC Ditto £45.95

Runs IBM & PC packages on Atari ST

AMIGA DEALS NOW

AMIGA A500 + Modulator + Deluxe Paint

£529 inc. VAT and P.&P.

Terrapods £18.75
Goldrunner £18.75
Barbarian £17.95
Fairy Tale £35.95

Much more stock. Phone for quote!

HARDSOFT · INTERNATIONAL

1A The Square, Sawbridgeworth, Herts. 0279 726488/726406

(482)

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

STORT SOFT

ATARI MAIL ORDER SPECIALISTS

LOOK AT THIS NOW! If you have anything to do with Atari ST! Mad crazy madness at the No. 1 super saver mail order company.

SPECIAL OFFER!!

5 1/4 Discs

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

3.5 Discs

25 SS/DD 135 TP(MF1DD) & 80 or 60/90 LOCKING DISC BOX £35.00
50 SS/DD 135 TP(MF1DD) & 80 or 60/90 LOCKING DISC BOX £59.95

Access/Mastercard/Eurocard/Visa accepted. Credit Card Order Line - 0279 89509
24 Hours a Day, 7 Days a Week - No Hidden Extras - What You See is What You Pay

18 Crown Close, Sheering, Bishop's Stortford, Herts CM22 7NX

(434)

ADVERTISING RATES FOR MICRO-FILE

Semi Display Lineage £8 per single column centimetre (+VAT)
35p per word (+VAT)

CALL SUSANNAH KING or ROBERT COLE on 01-834 1717 FOR SEMI DISPLAY ADVERTISING

35 LONDON ROAD, TOOTING,
LONDON SW17 9JR

TIMESOFT TEL. 01-685 9849



PLEASE PHONE IF YOU DO NOT SEE WHAT YOU WANT !!!



ATARI ST
NEW RELEASES

1. Tai Pan £15.95
2. Terrapods £18.95
3. Indiana Jones £15.95
4. Degas Elite £23.95
5. TNT £15.95
6. OCPD Studio £18.95
7. Sentinel £14.95
8. Film Director £40.00
9. F15 Strike Eagle £17.95
10. Air Ball Con. Set £12.95
11. Leader Board £15.95
12. Leader Board Tournament £24.95
13. Winter Games £14.50
14. Strike Force Harrier £14.95
15. Star Raiders £12.00

AMIGA
NEW RELEASES

1. Marble Madness £15.95
2. GFL Football £17.95
3. FDI £23.95
4. Defender Of The Crown £24.95
5. Deluxe Paint 2 £64.95
6. Kings Quest 3 £13.95
7. Basket Ball £12.95
8. Little Comp. People £14.95
9. Sky Fox £13.95
10. Winter Games £18.95
11. Fairy Tale Adventure £37.95
12. Chess Master 2000 £19.95
13. Gold Runner £18.95
14. Arctic Fox £14.95
15. Pak-Box £7.95

PLEASE MAKE ALL CHEQUES
PAYABLE TO TIMESOFT!

(496)

AMAZING OFFERS!

Brand New

SPECTRUM PLUS's 48k

A scoop purchase for Christmas at

only **£89.95!**

ELECTRON COMPUTERS

Superb value — only **£59.95**

Each with power supply, User Guide,
introductory cass, TV ariel & 90 day warranty

ELECTRON PLUS 1's

only **£43.95**

with View & Viewsheets — only **£65.95**

Please add 95p for P. & P.
Cheques, P.O or quote Access or Visa



0532 687735

SAE for latest product offers
Please state which machine

SOFTWARE BARGAINS
DEPT. PCW
8/8A REGENT STREET
LEEDS
LS7 4PE

TRADE OR EXPORT ENQUIRIES WELCOME

SUPER FANTASTIC VALUE SUMMER MADNESS

Due to huge demand we have more stock available. Please contact us for
best prices on all software/wardware

CROWN CROWN CROWN CROWN CROWN

BUSINESS SOFTWARE

	TAPE	DISC
AMSTRAD CPC		
Mini Office 2	13.50	17.99
Quill/Illustrator	21.95	—
Card Box	—	52.99
D-base 2	—	109.00
Art Studio	—	17.99
Popular Accounts	—	89.95
Super Calc 2	—	44.95
Tasprint	8.99	11.75
Tasword	17.95	21.99

	TAPE	DISC
AMSTRAD PC		
Wordstar	—	62.99
Card Box	—	52.99
Dbase 2	—	109.00
Art Studio	—	17.99
New Word	—	62.00
Super Calc 2	—	44.95

AMIGA

	TAPE	DISC
Instant Music	22.50	—
Music Studio	29.99	—
Deluxe Paint 2	62.95	—
Deluxe Print	22.50	—
Superbase Personal	89.95	—
Textcraft	£60.00	—
+ Games at low prices New Release Spec. Mercenary	8.95	—

COMMODORE 64

	TAPE	DISC
Geos	47.50	—
Mini Office	13.50	—
Quill/Illustrator	23.99	—
Advanced Art Studio	22.50	22.50
Music System	13.50	15.95
Art Studio	13.50	15.50
Tasword	12.99	17.99
Home Account	15.50	17.95

COMMODORE 128

	TAPE	DISC
Swift Spread Sheet 128	—	21.99
Dbase 2	—	109.50
C128 Compiler	—	36.50
Super Script 128	—	65.95

ATARI ST 128

	TAPE	DISC
Mini Office 2	—	17.95
Music Creator	—	17.95
Print Shop	—	35.99
Stock Control	—	45.00
Haba Writer	—	53.95
+ Games at low prices — Phone		

SPECTRUM

	TAPE	DISC
Art Studio	12.99	—
Lastword	12.99	—
Mini Office	5.50	—
Quill/Illustrator	19.95	—
Tasprint	8.50	—
Tasword 2	12.50	—
Tasword 3	13.99	—

POPULAR GAMES

	TAPE	DISC
Elite	9.95	12.50
Fist II	8.95	13.50
Rana Rama	7.95	13.95
Metrocross	7.95	13.99
Army Moves	7.95	13.95
Krak Out	8.95	13.99
Tomahawk	8.95	13.95
Short Circuit	7.95	11.50
Future Knight	8.95	13.50
Escape From Finges Castle	8.95	12.95
Hyper Ball	8.99	13.50
Light Force	7.95	13.50
The Double	8.99	—
Ace Of Aces	7.99	12.50
Cobra	7.95	11.95
Jail Break	7.95	13.50
Gunship	12.99	16.99
Breakthrough	8.99	13.50
Aliens	7.99	11.50
Silent Service	8.99	13.50
Auf Wiedersehen Monty	7.95	13.99
Samurai Trilogy	8.95	13.50
Indoor Sports	7.95	13.50

TOP TEN GAMES

	TAPE	DISC
1. Paperboy	8.95	13.50
2. Exolon	7.95	11.50
3. Avenger	8.95	13.50
4. Barbarian	8.99	11.50
5. Roadrunner	8.99	13.50
6. Whizzball	7.95	11.50
7. Last Ninja	8.99	13.50
8. Living Daylights	8.95	11.50
9. Enduro Racer	8.99	13.50
10. Pirates	13.50	17.95

CROWN COMPUTERS!!!

ANY PRICE AND WE WILL MATCH IT!!!

In Stock now

Atari 520 STFM	269.95
Amiga 500 Sports Bundle	519.00

NEW

PC 1640 Mono Single Drive	539.95
PC 1640 Colour Single Drive	699.95
PWW 9512 Mono/M Daisy Printer + Software	539.95
PC 1512 Mono Single Drive	445.45
PC 1512 Colour Single Drive	599.00
Commodore, Amstrad, Spec 10% off RRP	

And remember our prices inc. P.P. & VAT

**47 Crown Drive,
Spalding, Lincolnshire**

Hotline: 0775 69058

No hidden extras what you see is what you pay!

Cheques and POs to:

CROWN SOFTWARE
47 Crown Drive,
Spalding, Lincolnshire.
Tel: 0775 69058

Send S.A.E. envelope to us now! for Autumn specials list

(466)

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!! Dyan 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" or 90 3 1/2")	£9.95

3.5" SPECIAL OFFERS

25 SS/DD 135 TPI(MF1DD) & 80 or 60/90 locking disc box	£35.00
50 SS/DD 135 TPI(MF1DD) & 80 or 60/90 locking disc box	£59.95
25 DS/DD 135 TPI(MF2DD) & 80 or 60/90 locking disc box	£38.95
50 DS/DD 135 TPI(MF2DD) & 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

135tpi unbranded	10	25	50	100	500	10 in a case
SS/DD (MF1DD)	11.95	29.00	57.00	98.00	?	12.95
DS/DD (MF2DD)	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!

Atari Basic	Publisher	R.R.P.	Our price
Atari Graphics & Sound	Wiley	£9.75	£5.50
Atari 130XE Mach. Lang. For Beginners	Wiley	£9.00	£4.95
Atari 130XE Games Book	Melborne	£6.95	£4.00
Advanced Spectrum Mach. Lang.	Melborne	£6.95	£4.00
Mach. Code Applications For ZX Spectrum	Melborne	£6.95	£6.50
Creating Arcade Games on your ZX Spectrum	Sunshine	£6.95	£4.50
Advanced Mach. Code Programming For CBMB4	Interface	£3.95	£2.75
The Complete Commodore 1488 pages	Granada	£7.95	£5.95
Machine Code Master (A Library of M/C Routines)	Granada	£9.95	£6.95
Commodore 64 Assembly Language	Sunshine	£6.95	£5.25
Advanced Commodore 64 Basic Revealed	Shiva	£7.95	£5.75
Micro Wars On The CBM 64	Collins	£9.95	£6.95
Business Applications For The CBM 64	Century	£5.95	£3.50
	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 MODERN LEAD (2 metres)	£8.95
BATTERY POWERED MINI-VAC - for keyboards, printers etc.	£9.95

(461)

★ EXCEPTIONAL VALUE ★

25 5.25" DS-DD DISKS plus 100 CAPACITY LOCKABLE DISK BOX FOR ONLY £17.60 VAT & Delivery inclusive

All above inc. envelopes, label sets and hub rings or 50 5.25" DS-DD DISKS plus 100 CAPACITY LOCKABLE BOX FOR ONLY £27.10 VAT & Delivery inclusive

No quibble guarantee



Cheques or PO's to:



Manor Court Supplies Ltd

Glen Celyn House, Penybont, Llandrindod Wells, Powys LD1 5SY. Telephone: 0597 87 784

● Educational and HMG orders accepted ● Trade enquiries



(325)

IF ANYONE DOES ANYTHING CHEAPER WE WILL BEAT THEM!

Phone for the best price.

5 1/4" DS D/D	3 1/2" DS/D/D
10.....£5.90	10.....£10.90
25.....£12.50	25.....£28.95
50.....£19.95	50.....£56.75
3" MAXELL CF2 (10).....£20.00	
80 capacity 5 1/4" LSB.....£8.00	Spectrum 128+.....£99.00
100 capacity 5 1/4" LSB.....£11.00	Citizen 2 col. dot matrix printer £28.95
3 1/2"/5 1/4" library cases.....95p	Datix Microstick joystick.....£8.99
40 capacity 3 1/2" LSB.....£7.95	C2N data recorder.....£25.99

All prices include VAT and postage. ALL TRADE ENQUIRIES WELCOME.

M.D.S. Computer Supplies

11 Church Street, Banbridge BT32 4AA

Credit Card Hotline 10am-7pm (08206) 23477

A Division of Brockliss Enterprises Ltd.

(468)

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)

BRADWAY SOFTWARE (PW)

The specialists in Really Useful Utilities for the Spectrum 48 and 128 and +2

LETTA-HEAD PLUS. Design your letterhead, poster or label on screen, add text from the library of 25 different fonts, select the required output format and print all the copies you need. Price only £9.

DUMPY 3. Produces over 100 different size, shape, density and shaded screendumps. Price less than 1p per dump!! £8.50.

LIN-O-TYPE. Print out any ASCII wordprocessor file in high density NLQ in a choice of 25 fonts, or turn your Spectrum into a full WYSIWYG electronic typewriter. Price £8.50.

ASTRUM+. The very best Z80 assembler and monitor package. Full wordprocessor style editor, unlimited source code on microdrives or Opus Discovery. Command driven monitor with multiple breakpoints, single stepping, slow run etc. Price £13.50 (state microdrive or Opus version).

DISC MANAGER. Discovery disc sector editor and file management program. Erase, rename, copy groups of files, examine, modify and understand disc directory, recover damaged data. Price £10.50 on 3 1/2 in. disc only.

All programs drive all printer interfaces and are compatible with Microdrive, Wafadrive and Disc. Letta-Head, Dumpy and Lin-O-Type require an Epson compatible printer. Prices are for cassettes, include full instructions. P.&P. within Europe. Please add £2 per program worldwide airmail postage, £1.50 for microdrive cartridge or disc. Send for further details!

(264)

33 Conalan Avenue, Sheffield S17 4PG

DIGIPIX Disk Price Special

3.5" DS/DD DISKS



	10	25	50	100
Unbranded DS/DD 135tpi (MF200) inc labels & p&p	9.95	24.00	45.00	90.00
MFMC DS/DD 135tpi (MF200) cases labels p&p	14.95	36.50	70.00	130.00

All Disks Fully Guaranteed

Disk customers may also purchase any amount of the following with their order. (Available only with Disk orders.)

Mouse Mat £3.50 ★ 40 capacity, locking 3.5" Disk Box £5.75
80 capacity, locking 3.5" Disk Box £7.00 ★ 100 3.5" Disk Labels £1.50

Send Cheque or P.O. to:

DIGIPIX

1 Brasher Close, Bishopstoke, HANTS. SO5 6PY

494

RAMSOFT COMPUTER SUPER DEALS

ALL PRICES INCLUDE VAT.

AMIGA 500 £464.95

With voucher. With mouse mat and Deluxe Paint, Karate Kid II, Amiga Basic, 10 public domain software discs, TV modulator and delivery.

AMIGA 500 £494.95

Without voucher. With all the above items and delivery.

SAVE £10.00 on one of the above Amiga superdeals by paying with cheque.

NOTE - Amiga voucher must be received by Tuesday 13 October.

ATARI 520 STFM £274.95

With mouse, five public domain discs, Basic language interpreter and delivery.

ATARI 1040 STF £474.95

With mouse, integral disc drive, power supply and delivery.

SAVE £5.00 on one of the above Atari superdeals by paying with cheque.

Access order/enquiries
Telephone 0706 43519
(please telephone after 1pm)



Send cheques, Transcash or Access number and address to:

**Ramsoft (Dept. PCW), 24 Bankfield Lane
Norden, Rochdale, Lancashire OL11 5RJ**

(498)

IT DOESN'T HAVE TO COST A FORTUNE!!

NOT ALL
DISCS
ARE EQUAL



WHY NOT USE
THE SAME
AS THE PRO'S

To make your computer SMILE!!

Professional discs at unprofessional prices!!

5 1/4" d/s d/d discs with free plastic case	£6.00
3 1/2" d/s d/d discs with free plastic cases	£14.50
5 1/4" Lockable disc boxes (holds 100)	£8.75
3 1/2" Lockable disc boxes (holds 80)	£8.75

We offer you a wonderful service all because you come first.

All prices inc. VAT & P.P.

These discs are exceptional high quality and are used throughout the industry.

Phone
Me NOW

M. Wood Discs

Telephone:
0952 590156

27 Burford, Brookside, Telford TF3 1LQ

(480)

RECRUITMENT

STARGLIDER

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)

Have you warned the neighbours you're getting a MASTER SYSTEM



For just £99.95 you get

- ★ The games machine
- ★ 2 Sega control pads
- ★ A power pack including a 3 pin plug
- ★ A T.V. aerial switcher box
- ★ A free built-in mystery game for you to find



P. & P. Free in U.K.

Make cheque or postal order payable to ISM and send to:

ISM, 1 RUSSELL GREEN, WOKINGHAM, BERKSHIRE RG11 1BR

Sega Cards	£14.95
My Hero	£14.95
Ghost House	£14.95
Transbot	£14.95
Super Tennis	£14.95
F-16 Fighting Falcon	£14.95
Teddy Boy	£14.95
Mega Cartridges	£19.95
Action Fighters	£19.95
Choplifter	£19.95
Black Belt	£19.95
Pro Wrestling	£19.95
Shooting Gallery	£19.95
Wonder Boy	£19.95
Quartet	£19.95
Fantasezone	£19.95
Great Golf	£19.95
World Soccer	£19.95
Gangster Town	£19.95
Zillon	£19.95
Enduro Racer	£19.95
World Grand Prix	£19.95
Secret Command	£19.95
Alex Kidd in	£19.95
Mirrical World	£19.95
Two-Mega Cartridges	£24.95
Space Harrier	£24.95
Enduro Racer	£24.95
Rocky	£24.95
Outrun	£24.95
Missial Defence	£24.95

The new Sega Master System games console puts an arcade into your home.

Working from either card or cartridge the amazing games give screen after screen of almost arcade quality graphics. These machines will be in short supply and much sought after so ISM are giving you the chance to beat the rush and be the first in your neighbourhood to own one of these remarkable systems.

There is a terrific range of games available and some almost unbelievable peripherals like the Light Phaser and 3D glasses!!



Don't miss out, but warn your neighbours.

With your system you will receive a 10% discount voucher against your next software purchase, and automatically be enrolled in the ISM—Sega club, which will keep you updated with future developments.

<h3>Atari ST Software</h3> <table border="1"> <tr><td>Tracker</td><td>£18.95</td><td>TNT</td><td>£15.95</td></tr> <tr><td>Knight Orc</td><td>£18.95</td><td>Digre</td><td>£18.95</td></tr> <tr><td>Advanced</td><td>£18.95</td><td>Phantasia III</td><td>£18.95</td></tr> <tr><td>Art Studio</td><td>£18.95</td><td>Barbarian</td><td>£18.95</td></tr> <tr><td>Indiana Jones</td><td>£15.95</td><td>Road Runner</td><td>£18.95</td></tr> <tr><td>Terrorpods</td><td>£18.95</td><td>Guild Of Thieves</td><td>£18.95</td></tr> <tr><td>Tai Pan</td><td>£15.95</td><td>Sidewalk</td><td>£15.95</td></tr> <tr><td>F15 Strike Eagle</td><td>£18.95</td><td>Intro Eagles Nest</td><td>£15.95</td></tr> <tr><td>Starglider</td><td>£13.95</td><td>Extensor</td><td>£15.95</td></tr> <tr><td>Balance Of Power</td><td>£22.95</td><td>Gauntlet</td><td>£15.95</td></tr> <tr><td>First Word Plus</td><td>£57.00</td><td>Fast Basic</td><td>£69.95</td></tr> </table>		Tracker	£18.95	TNT	£15.95	Knight Orc	£18.95	Digre	£18.95	Advanced	£18.95	Phantasia III	£18.95	Art Studio	£18.95	Barbarian	£18.95	Indiana Jones	£15.95	Road Runner	£18.95	Terrorpods	£18.95	Guild Of Thieves	£18.95	Tai Pan	£15.95	Sidewalk	£15.95	F15 Strike Eagle	£18.95	Intro Eagles Nest	£15.95	Starglider	£13.95	Extensor	£15.95	Balance Of Power	£22.95	Gauntlet	£15.95	First Word Plus	£57.00	Fast Basic	£69.95	<h3>ATARI 520 STFM</h3> <h2>£269.95</h2> <p>Includes: mouse, UK language disc and five discs full of public domain software</p>		<h3>Software Latest Releases</h3> <table border="1"> <thead> <tr> <th></th> <th>CD</th> <th>SP</th> <th>AM</th> </tr> </thead> <tbody> <tr><td>World Class Leaderboard</td><td>£6.95</td><td>—</td><td>£6.95</td></tr> <tr><td>Death Wish 3</td><td>£6.95</td><td>£5.50</td><td>£6.25</td></tr> <tr><td>Exolon</td><td>£6.95</td><td>£5.50</td><td>£6.25</td></tr> <tr><td>Egypt Epic</td><td>£6.95</td><td>—</td><td>—</td></tr> <tr><td>Summer Gold</td><td>£6.95</td><td>£6.95</td><td>£6.95</td></tr> <tr><td>Tai Pan</td><td>£6.25</td><td>£5.50</td><td>—</td></tr> <tr><td>Indiana Jones</td><td>—</td><td>£6.25</td><td>—</td></tr> <tr><td>Renegade</td><td>£6.25</td><td>£5.50</td><td>£6.25</td></tr> <tr><td>Solomon's Key</td><td>£6.95</td><td>£6.25</td><td>£6.25</td></tr> <tr><td>Star Games 2</td><td>£6.95</td><td>£6.95</td><td>£6.95</td></tr> <tr><td>Bubble Bubble</td><td>—</td><td>£5.50</td><td>—</td></tr> </tbody> </table>			CD	SP	AM	World Class Leaderboard	£6.95	—	£6.95	Death Wish 3	£6.95	£5.50	£6.25	Exolon	£6.95	£5.50	£6.25	Egypt Epic	£6.95	—	—	Summer Gold	£6.95	£6.95	£6.95	Tai Pan	£6.25	£5.50	—	Indiana Jones	—	£6.25	—	Renegade	£6.25	£5.50	£6.25	Solomon's Key	£6.95	£6.25	£6.25	Star Games 2	£6.95	£6.95	£6.95	Bubble Bubble	—	£5.50	—
Tracker	£18.95	TNT	£15.95																																																																																														
Knight Orc	£18.95	Digre	£18.95																																																																																														
Advanced	£18.95	Phantasia III	£18.95																																																																																														
Art Studio	£18.95	Barbarian	£18.95																																																																																														
Indiana Jones	£15.95	Road Runner	£18.95																																																																																														
Terrorpods	£18.95	Guild Of Thieves	£18.95																																																																																														
Tai Pan	£15.95	Sidewalk	£15.95																																																																																														
F15 Strike Eagle	£18.95	Intro Eagles Nest	£15.95																																																																																														
Starglider	£13.95	Extensor	£15.95																																																																																														
Balance Of Power	£22.95	Gauntlet	£15.95																																																																																														
First Word Plus	£57.00	Fast Basic	£69.95																																																																																														
	CD	SP	AM																																																																																														
World Class Leaderboard	£6.95	—	£6.95																																																																																														
Death Wish 3	£6.95	£5.50	£6.25																																																																																														
Exolon	£6.95	£5.50	£6.25																																																																																														
Egypt Epic	£6.95	—	—																																																																																														
Summer Gold	£6.95	£6.95	£6.95																																																																																														
Tai Pan	£6.25	£5.50	—																																																																																														
Indiana Jones	—	£6.25	—																																																																																														
Renegade	£6.25	£5.50	£6.25																																																																																														
Solomon's Key	£6.95	£6.25	£6.25																																																																																														
Star Games 2	£6.95	£6.95	£6.95																																																																																														
Bubble Bubble	—	£5.50	—																																																																																														
<h3>Software Specials</h3> <table border="1"> <thead> <tr> <th>SPECTRUM 48K</th> <th>AMSTRAD CPC</th> </tr> </thead> <tbody> <tr><td>Mikie</td><td>£2.99</td><td>Yearling Fu II</td><td>£2.99</td></tr> <tr><td>Mailstrom</td><td>£2.99</td><td>Sabra Wolf</td><td>£1.99</td></tr> <tr><td>Double Take</td><td>£2.99</td><td>Tha Boomb</td><td>£1.99</td></tr> <tr><td>Return To Oz</td><td>£1.99</td><td>Raid</td><td>£1.99</td></tr> <tr><td>Fat Worm Blows A Sparky</td><td>£2.99</td><td>Return To Oz</td><td>£1.99</td></tr> <tr><td>Highlander</td><td>£2.99</td><td>Bobby Beaming</td><td>£3.95</td></tr> </tbody> </table>		SPECTRUM 48K	AMSTRAD CPC	Mikie	£2.99	Yearling Fu II	£2.99	Mailstrom	£2.99	Sabra Wolf	£1.99	Double Take	£2.99	Tha Boomb	£1.99	Return To Oz	£1.99	Raid	£1.99	Fat Worm Blows A Sparky	£2.99	Return To Oz	£1.99	Highlander	£2.99	Bobby Beaming	£3.95	<h3>COMMODORE 64C SPORTS PACK</h3> <h2>£169.95</h2> <p>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</p> <p>FREE Intro to Basic Part One and one game cartridge worth £29.95</p>		<h3>Software Specials</h3> <table border="1"> <thead> <tr> <th>COMMODORE 64</th> <th>COMMODORE 64 DISCS</th> </tr> </thead> <tbody> <tr><td>Comic Bakery</td><td>£1.99</td><td>Little Camp People</td><td>£3.95</td></tr> <tr><td>Amnesia Day</td><td>£1.99</td><td>Koronas Rift</td><td>£3.95</td></tr> <tr><td>On Court Tennis</td><td>£1.99</td><td>Alto Ego</td><td>£3.95</td></tr> <tr><td>Double Take</td><td>£2.99</td><td>Eddies</td><td>£3.95</td></tr> <tr><td>Transformer</td><td>£1.99</td><td>Spirity</td><td>£2.95</td></tr> <tr><td>Dragon World</td><td>£1.99</td><td>Star Rank Boxing</td><td>£3.95</td></tr> <tr><td>Outlaw</td><td>£1.99</td><td>Murder/Mississippi</td><td>£3.95</td></tr> </tbody> </table>		COMMODORE 64	COMMODORE 64 DISCS	Comic Bakery	£1.99	Little Camp People	£3.95	Amnesia Day	£1.99	Koronas Rift	£3.95	On Court Tennis	£1.99	Alto Ego	£3.95	Double Take	£2.99	Eddies	£3.95	Transformer	£1.99	Spirity	£2.95	Dragon World	£1.99	Star Rank Boxing	£3.95	Outlaw	£1.99	Murder/Mississippi	£3.95																																				
SPECTRUM 48K	AMSTRAD CPC																																																																																																
Mikie	£2.99	Yearling Fu II	£2.99																																																																																														
Mailstrom	£2.99	Sabra Wolf	£1.99																																																																																														
Double Take	£2.99	Tha Boomb	£1.99																																																																																														
Return To Oz	£1.99	Raid	£1.99																																																																																														
Fat Worm Blows A Sparky	£2.99	Return To Oz	£1.99																																																																																														
Highlander	£2.99	Bobby Beaming	£3.95																																																																																														
COMMODORE 64	COMMODORE 64 DISCS																																																																																																
Comic Bakery	£1.99	Little Camp People	£3.95																																																																																														
Amnesia Day	£1.99	Koronas Rift	£3.95																																																																																														
On Court Tennis	£1.99	Alto Ego	£3.95																																																																																														
Double Take	£2.99	Eddies	£3.95																																																																																														
Transformer	£1.99	Spirity	£2.95																																																																																														
Dragon World	£1.99	Star Rank Boxing	£3.95																																																																																														
Outlaw	£1.99	Murder/Mississippi	£3.95																																																																																														
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 COMM, C64	IT'S A KNOCKOUT £2.99 C64, SP, AMS	VIETNAM £2.99 COMM, 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	BUTCH HARD GUY £2.99 SPECTRUM	KORONIS RIFT £2.99 COMMODORE 64 SPECTRUM	HACKER £2.99 SPECTRUM 48K SPECTRUM 128K																																																																																								
SHOOT EM UPS comprising: Super Zaxxon Drop Zone Blue Max 2 Fort Apocalypse £2.99 Commodore 64	STAR GAMES 1 comprising: Way of the Tiger Rescue on Fractalus Barry McGuigan Boxing Search-head 2 £3.99 Amstrad	UNBELIEVABLE ULTIMATE comprising: Atta Attack Sabre Wolf Underworld Alien 8 £2.99 Spectrum only	UNBELIEVABLE ULTIMATE VOL. 2 comprising: Lunar Jetman Jetpac Tranz-AM Psst £2.99 Spectrum only	CLASSIC COLLECTION Auto Mania Witches Cauldron Pyjama Rama Battle of the Planets Zoro £2.99 Commodore 64	SPECTRUM STINGERS comprising: Bruce Lee Pole Position Cyber Run Zoro £2.99 Spectrum only	AMSTRAD ACADEMY Zoro Bruce Lee Bounty Bob Dambusters £2.99 Amstrad only	UNBELIEVABLE ULTIMATE comprising: Estombed Staff of Karmah Bike Witch Imbotep £2.99 Commodore 64	SCOTT ADAMS SCOOPS Pirate Adventure Strange Odyssey Voodoo Castle Buckaro Banx £2.99 C64	PLATFORM PERFECTION comprising: Zorro Bounty PCB Brush LCE Ghostchaser £2.99 Commodore 64																																																																																								
CHEETAH 125+ JOYSTICK £6.95	COMMODORE C2N CASSETTE RECORDER £29.95	PROGRAMMERS REFERENCE GUIDE C64 £4.95	AMSTRAD PCW 9512 £449 + VAT IN STOCK NOW!! Save over £50		INTERNATIONAL SOCCER CARTRIDGE C64 £3.95	SIMONS BASIC CARTRIDGE C64 £9.95	KONIX SPEEDING JOYSTICK £10.95																																																																																										



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 £5.00 please add 50p; strictly mail orders only.

(484)

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 (182)

FAULTY SPECTRUM?

As you are probably aware from press reports Sinclair Computers no longer have a repair department. Our computer repair workshop has been an OFFICIAL Sinclair Repair Depot for the past six years and we are pleased to announce that we will continue to do your out of guarantee repairs as in the past.

Send your faulty computer DIRECT

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

CALL OR SEND WITH CHEQUE OR P.O.

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

287V

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

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

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 Amicus numbers #1 to #22 disks in stock. For full details of programme content PLUS Tutorial "PD Without Tears" PLUS the JUMPDISK Magazine PLUS a collection of programmes and articles from previous issues of JUMPDISK. Please send a \$3.50 cheque/P.O. 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:
PLAYFAIR PROJECTS (491)
133 Hookfield, Harlow, Essex. Tel: 0279 417636

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)

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 now even non-standard format tapes present no problem to Transdisk. Plus, enjoy the convenience of loading and running your newly transferred software from an autorun disc menu. No other tape to disc utility for the Atari is as powerful or successful as that! £19.95 inc. Supplied on disc with instructions.

The Freezer!

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

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

Special offer order both programmes for £35.00

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

DIGICOMM

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

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)

WORD PROCESSING SYSTEM

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

DUPLICATION

We now OFFER THE FOLLOWING: data/audio cassette duplication for most computers; Disc duplication (£5.25); blanks; PHOTOCOPIED LABELS & INLAYS PRINTED, with your LOGO, or dot-matrix.

Price list from: SSP,

20 WestEnd, Loughton, Near Bicester,

Oxon OX6 0DF.

Tel: 0869 252621 (283)

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

CBM 64, 1541 disc drive, C2N, numerous discs, tapes, magazines, £200 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
1/2 mb. DISK DRIVE & INTERFACE	£160
1/2 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

DISKS

48TPI	96 TPI
10-£5.50	10-£6.50
25-£12.80	25-£13.00

100+ Silly Prices; please call.

Despatch by Return—no quibble guarantee!!

Cheques/P.O. to:

V. MARSHALL
35 Rochford Way, Croydon
Surrey CR0 3HE Tel: 01-689 3487

500

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

2 THE MIDLANDS

SOUTHEND

NORTHAMPTON

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)

A-Z COUNTY SUPPLIES

Large range of games and business
software available at discounted
prices.

MSX
ATARI ST
COMMODORE
SPECTRUM
AMSTRAD

Mail order enquiries welcome

174 Kettering Road
Northampton NN1 4BE

Tel: 0604 24380

(452)

DEALERS!

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

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)

BOSTON

9th October - Opening

CROWN COMPUTERS

Is both proud and honoured to announce the opening of its first shop to all Popular Computing readers.

1. First you got service with Crown Mail Order.
2. Now you can get it from our shop.

6 High Street, Boston, Lincs.
Tel: (0205) 53611.

See our half-page advert and phone us now to place any order large or small.

PHONE US NOW !!!

(497)

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**

We are now also at
1000 Uxbridge Road, Hayes
Tel: 01-573 2726

45 Boston Road, London W7
Tel: 01-579 6133 (416)

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)

NOTTINGHAM/DERBY

SOFTWARE CITY BARGAINS SOFTWARE CITY BARGAINS

SOFTWARE CITY USED COMPUTER PRODUCTS

SINCLAIR COMPUTERS	COMMODORE COMPUTERS
Spectrum 48K £40.00	Commodore Vic-20 £30.00
Spectrum Plus £59.00	Commodore Plus/4 £35.00
Spectrum 128K £85.00	Commodore 16 £30.00
Spectrum Plus 2 £110.00	Commodore 64 £90.00
QL £130.00	Commodore SX-84 £199.00
AMSTRAD COMPUTERS	ACORN COMPUTERS
CPC 464 Green £135.00	Electron £40.00
CPC 464 Colour £190.00	BBC B (DFS.Iss 7) £299.00
6128 Green £230.00	Disc Drives from £50.00
6128 Colour £270.00	PRINTERS
DISC DRIVES	Commodore MPS801 £85.00
Commodore 1541 £115.00	Commodore 1525 £55.00
Opus Discovery 1 £100.00	Commodore 1520 £25.00
Opus Discovery Twin £150.00	Alphacom 32 £25.00
JOYSTICKS/INTERFACES	USED SOFTWARE (Tested)
Quickshot 1 £5.00	20 Different £17.00
Kempston Interface £5.00	50 Different £40.00
Ram Turbo £10.00	(Spectrum 64 and BBC only. Send a list of your collection so we know what not to send. State preferences, Arcade, Adventure or Mixed.)
Interface 1 £25.00	SPARES (New)
Interface 2 £10.00	Spectrum PSU £11.00
Microdrive £25.00	Commodore 64 PSU £27.50
MISCELLANEOUS	48K Membrane £4.50
Data Recorder £10.00	Plus Membrane £7.50
Commodore 64 Datasette £20.00	Spectrum ULA £14.00
Commodore 16 Datasette £20.00	STARTER KITS
Colour Monitors from £125.00	Spectrum 48K, Data Rec., Joystick, Interface, 20 Games £75.00
Blank 5 1/2 Discs (new) for 10 £7.00	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)

LEICESTER

VISIT THE
**EAST MIDLAND'S
LEADING
ATARI DEALER**
FOR A FULL RANGE OF ATARI
AND ASSOCIATED PRODUCTS

3.5" DS/DD DISC'S
Guaranteed for Life



START
The ST
Quarterly Magazine with
FREE DISC **£12.95**

All prices include VAT and postage in the UK
Cheques & postal Orders made payable to: abc

abc 135 St. Leonards Road,
Leicester, LE2 3BZ

CYBER STUDIO
£89.95

TIME WORKS
TRIPPLE PACK
£149.95

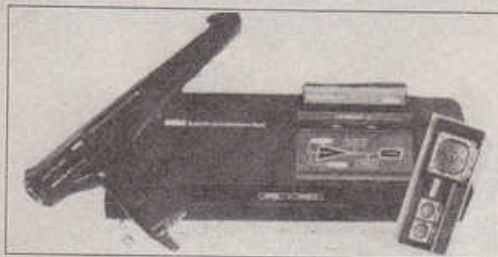
Just two great titles taken from a vast range of software

520 ST FM
£279

(0533) 700190
(24hr Answerphone)
Norfolk (0328) 710316

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).....	£449
ATARI 520 STFM (keyboard, mouse, 1/2 meg drive).....	£258
ATARI 1040 STF (with mono monitor).....	£510
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.....	£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!!!

THE BEST IN SCOTLAND FOR DISCOUNT

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

4 SOUTH WEST

BRISTOL

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)

ABERDEEN

Computer Centre **STar U.K.** Computer Centre

You can come and see us at

COTTONHOUSE, 493 UNION ST. ABERDEEN, SCOTLAND AB1 2DB.
TEL: (0224) 581 858. ALL ENQUIRIES PLEASE PHONE GARY EXT 28

ATARI 520 STFM WITH PSU, MOUSE, MODULATOR,
FREE P.D. SOFTWARE AND 1 YEARS SUBSCRIPTION
TO STar U.K. - ONLY **£279.95**

MEGA ST's PHONE FOR BEST PRICES IN U.K.
GUARANTEED!!!

ATARI LAZER PRINTER **£999.99**

WE STOCK MOST ST PRODUCTS - AT BEST PRICES!
WITH ALL ST MACHINES PRO COPY ONLY £15.00

* HARD DISK DRIVES *
* ATARI MONITORS *

* MEGA ST2, MEGA ST4, 1040STF. *

PUBLISHING PARTNER - ONLY **£124.95!!**
PRO COPY ST Ver 1.41 NOW ONLY **£27!!**

FLUJI MF1DD Disks - Boxed in 10's with labels - Now only £22.95
Sony MF1DD Disks - Boxed in 10's with labels - Now only £19.95

All disks are branded with lifetime guarantees

For ALL your ST needs - Look no further!

ALL Public Domain software only **£1.**

We have over 100 disks of excellent quality
And all at only £1 each - Why pay more?

Send S.A.E. for P.D. list & Info sheet!

REMEMBER OUR GREAT NEWSLETTER

"Hello . . ." (click)

"Hello, is that Ocean's PR department?"

"What's it to you?"

"Oh hello, I bought 'Head over Heels' the other day, and I was given the wrong instructions. Can you tell me what the pause key is please?"

"No."

"Pardon?"

"I said no!"

"Can't you get one out?"

"No I can't."

"Well can you send me the right instructions please?"

"Yes, send us yours and we have a twenty four hour turnaround." (CLICK)

Typically of the big boys it arrived two weeks later.

"Hello, is that US Gold?"

"Yes."

"Oh hallo, I bought 'Gauntlet' . . ."

"I'm sorry, we're closed, ring us when we're open."

"When's tha . . ." (CLICK).

That was 5:32 on a Friday afternoon.

This is a typical attitude displayed by the "modern" software conglomerates. They have a money grabbing fetish akin to the Inland Revenue service, and are as helpful as the DHSS. This would be bearable if the mistakes outlined above were not so common, but from the efficiency of these companies, you'd think they were being run by a bunch of lemmings who got their start-

ing capital by suing their brain surgeons for negligence.

The prize for minimum helpfulness must go to the temporary secretaries, who have a collective IQ a flatworm would be ashamed of. "Never heard of it" is not uncommon, and this is when the technical term you have used is 'Spectrum' or 'tape player'. When you finally get an 'expert' on the phone, he is preoccupied by the Manpower reject . . . whoever heard of turning down the volume on the inlay?

As for the programmers, when asking about their latest "All Machine Code" blockbuster, wouldn't you be a little surprised to hear "Try changing the variable in line 6527"?

The big software companies have the integrity of 'Pravda', advertising a game which will "blow your mind with its superlative gameplay" that needs two fingers to play and the reflexes of a brain-damaged slug. That is, if you have the patience of Princess Diana's gynaecologist to wait three months for the overnight delivery. My congratulations to Ocean for supplying an inlay subscription service for suckers who now just buy the artwork and leave the capitalists to sell the cassette off to the local discotheque as Sigueigue Sputnik's latest single.

Trying to get an unloadable game swapped is like getting a photo of

Melissa Ravenflame. You'd get a piccy of the Ed, several months later. The magazines are no better, the rating of a game roughly corresponds to the number of courses at the press launch multiplied by the expenses allowance excess, doubled for each full page colour advert (quadrupled for cover positions). The only reason SU (Simply Unbearable) didn't give 'Game Over' a perfect ten is because the editorial assistant's chauffeur's daughter didn't get a free season ticket to Stringfellow's like the rest of the Editor's harem.

The software industry, now run by a small bunch of elite ex convicts who, if they saw a Spectrum, would probably stub out their Gauloises on it, is about as uncorrupt as Ronald Reagan's arms division. They release programs which are as much fun as six weeks in a Vietnamese death camp, but not half as interesting. Once they have your money, it's 'wham bam, thank you man' and 'afterservice not in my data'.

To sum up this total apathy on the part of the big boys, I offer you this biscuit-snatching finale from Elite: "Hello, I purchased 'Space Harrier' this afternoon, and having discussed it with a friend who's also got it, we think it's a forgery. Can you put me through to someone who can help?"

"Try again on Monday." (CLICK)

T. J. Wright

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 (pew this is getting confusing, Ed!) will receive a prize, which for this special case will be £20.

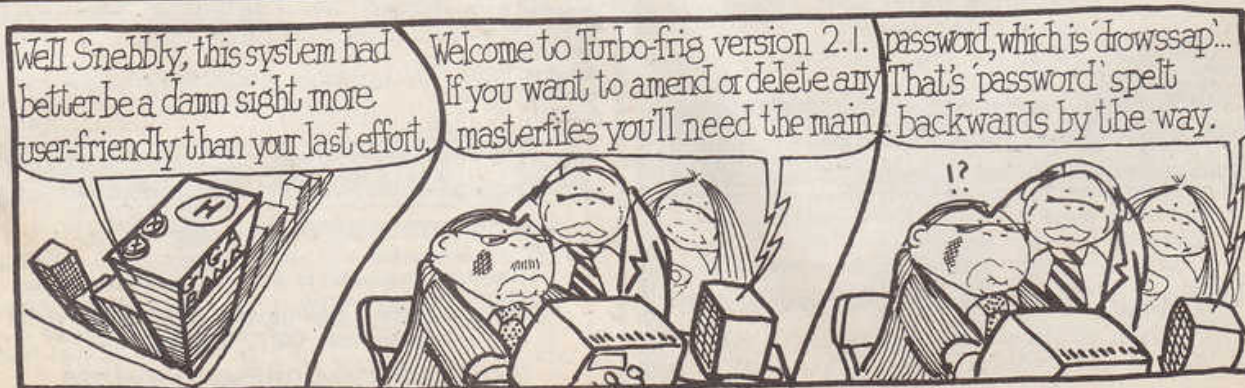
Because this is such an important decision, we have decided to run

this 'design a puzzle' competition for two weeks, so the closing date is October 16.

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



GLENTOP

GFA BASIC



The GFA Family

From image processing to
compiling BASIC... from
crunching numbers to
desktop publishing...
from 2-D draughting to
film creation...

GFA is the link



GLENTOP

Glentop Press Ltd
Freepost
Barnet
Herts EN5 5XE
Tel: 01-441 4130

GFA DRAFT

GFA DRAFT is a power GEM based two dimensional CAD package for the ATARI ST, suitable for numerous applications, such as circuits, scaled technical drawings, designs and plans. GFA DRAFT is fully linked to GEM, with all functions chosen from drop-down menus by use of the mouse. This enables even complete beginners easily to learn how to use the program and to produce quality drawings quickly. The extensive use of ready-made symbols and shapes, together with the numerals drawing function allows drawings to be produced rapidly and efficiently. Existing drawings are easily altered or included in new designs by the use of sophisticated window facilities. Output can be sent to an extensive range of printers and plotters.

£99.95 inc. VAT

Available from computer
shops or direct from
Glentop.

Now the Summer will surely last forever!

The smell of the surf, the sun on your back, the sand between your toes... This isn't California Dreamin' - this is for real! Six of the best West Coast sports designed to set your pulse racing! Wow your friends with your incredible flying skateboard feats, or show your cool hacking at the sack.

Skate down the boardwalk, flip the Frisbee® and wheelie the BMX. And then the ultimate test - that King of Californian sports - shooting the curl as you battle with those giant Pacific rollers to decide which surfer truly rules the waves!

You'll be playing for big name sponsors like Pacer Skateboards, Ocean Pacific, RAD Mag, Frisbee®, Hacky Sack®, Morey Boogie®, Burton®, Snowboards and Bluebird®, and certainly in each pack you'll find a fun to enter competition to win quality products made by these companies too!

California Games™ features superb graphics, all the atmosphere of the West Coast, and one to eight

players can take part. All the quality you expect from a Epyx product is here and so much more. We could tell you more but instead let's hear what the critics have to say:

"California Games is quite simply the apex of computer sports gaming. Even in purely technical terms Epyx have somehow managed to surpass their own high standards - the pictures and sounds generated by this program are atmospheric beyond belief."

If you gather up all the superlatives from previous Epyx reviews

and add them together, you just might go halfway towards describing California Games!

-ZZAP 64

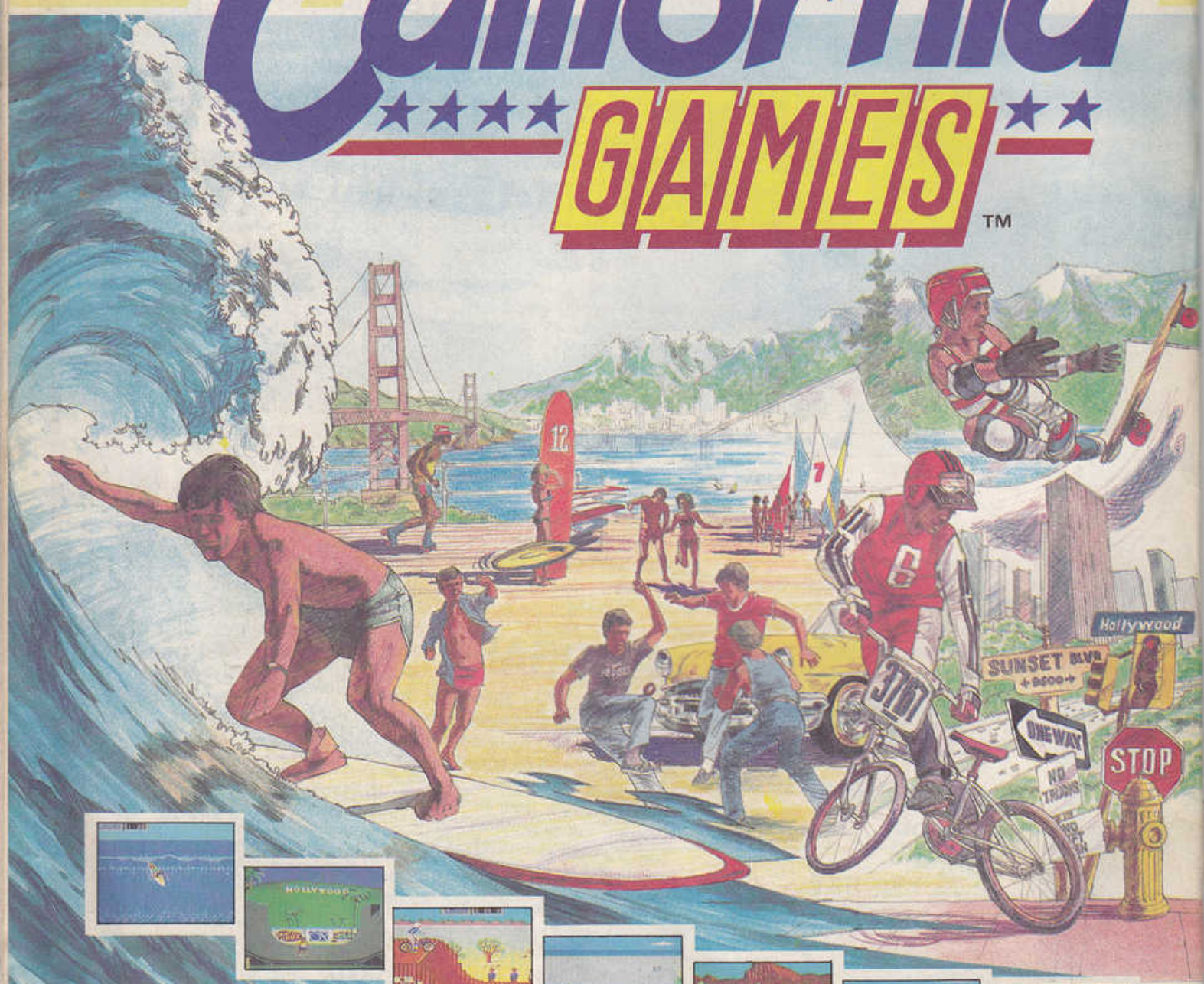
"California Games has to be the best release this year so far.

Some of the individual games are almost worth the asking price on their own".

-COMMODORE COMPUTING INTERNATIONAL

Need we say more?

California GAMES™



CBM 64/128	£9.99 CASSETTE	£11.99 DISK
SPECTRUM	£8.99 CASSETTE	
SPECTRUM+3	£12.99 DISK	
AMSTRAD	£9.99 CASSETTE	£14.99 DISK
MSX	£9.99 CASSETTE	
IBM	£24.99 DISK	
AMIGA	£24.99 DISK	

PLUS
PRIZES TO BE WON IN EVERY PACK!

Manufactured and distributed under license from Epyx Inc. U.S. Gold Ltd, 2/3 Holland Way, Hobart, Birmingham B6 7AX. Epyx is a Registered Trademark No 1196870. *All supplied by MarkTrade.

Screens as seen on Commodore 64

EPYX®