POPULAR COMPUTING WEEKLY

A FOCUS MAGAZINES PUBLICATION

Feb 16–22 1989 70p

GREAT NEWS!

Next week, Computer Gamesweek will be merged with *Popular Computing Weekly*, giving us a brilliant full colour centre section that will be brimming with leisure software coverage. We're pleased to say that this will have no effect on the cover price – next week's super soaraway 72-page issue will simply include a 24-page games section in addition to the normal fare, plus an A2 poster of Dragonscape. Order your copy now.

KONIX CONSOLE

What are the chances for this beast? Gamesweek's arcade ace John Cook, ex-development manger at Mirrorsoft, gives his view.

SEGA SPECIAL

A page on what's new for Sega owners: Golvellius, Captain Silver, Rambo III and Lord of the Sword.

MIDI REPORT

Tony Sacks reports from the Frankfurt Music Fair.

ATARI ST

Want to dissect the boot sector of your ST discs? Catch Bytes and Pieces, page 43, for a listing. Kenn Garroch explains joystick control from the C language.

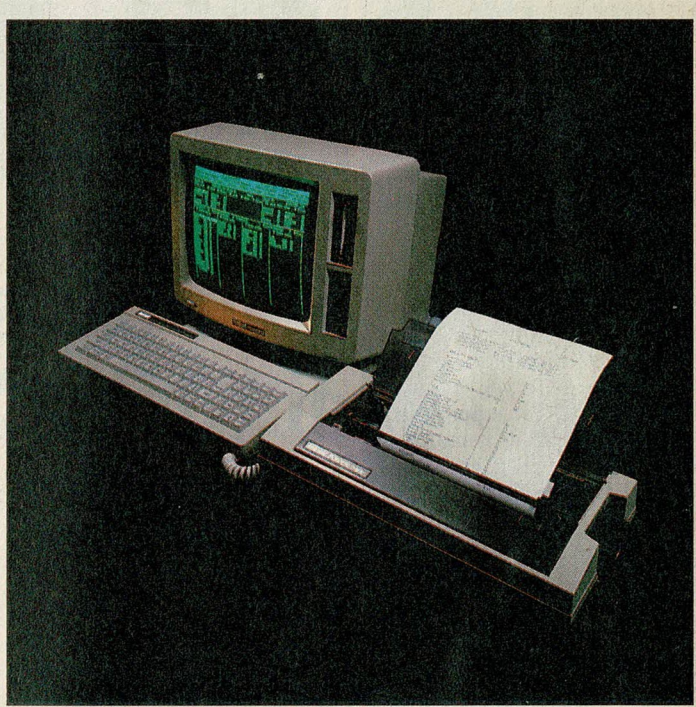
MONITORS CONDEMNED FOR RADIATION OUTPUT BY FoE

EXCLUSIVE

A SURVEY of computer radiation emissions commissioned by environmentalist group Friends of the Earth concludes that a number of monitors in popular usage emit "totally unacceptable" levels of non-ionising, low-frequency radiation. The report comes at a time when interest in VDU hazards is increasing.

The Amstrad PCW, which has sold more than one million, comes in for particularly scathing criticism. Other monitors investigated are Hyundai, Fair, Philips, Compaq and Olivetti. Only Olivetti and Compaq come out with anything near satisfactory emission levels, according to FoE.

There are currently no legal limits to electromagnetic emissions from computers. Electric field strengths outside the monitor of five volts per metre are being pressed for by trade unions. In practice, levels of up to 25V/m are considered acceptable. The FoE study looked particularly at the extra low 50Hz and very low 15-20KHz frequencies.



Amstrad PCW: one of the machines slated as "unacceptable"in the report commissioned by FoE.

Almost all monitors looked at in the FoE investigation had electric – as opposed to magnetic – field strengths in excess of 250V/m. At various points in space around the

continued on page 5 ▶

Whistle blown on inside job

ALLEGATIONS of insider trading have surfaced about a series of deals which preceded the £11 million takeover bid for Personal Computers, the IBM systems house, from P & P plc, the computer systems company, on Wednesday February 8.

Two market-makers in Personal Computers shares, Kleinwort Grieveson and Phillips & Drew, were swamped by orders for more than 15,000 shares from a number of provincial stockbrokers at the price of 143 pence, the day before the announcement. The sudden enthusiasm for the shares was unexpected, particularly in view of the fact that one of the firms had not transacted a deal in Personal Computers shares since November 1988. The bid from P & P on February 8, valued Personal Computers shares at 228 pence each, which left purchasers with an overnight profit of 85 pence a share.

Another cause for concern was the fact that Phillips & Drew brokers lost money on an acquisition deal being negotiated by the same company's corporate finance department. Phillips & Drew had no statement to make. "It is not company policy to make a comment when an investigation is taking place."

The Stock Exchange authorities

continued on page 3 ▶

IN BRIEF

Activision boosted

After a slump in sales last year, Activision is on the road to recovery with strong business reported in the Christmas quarter. Sales are up 62 percent on the same quarter last year – this was attributed by Activision boss Bruce Davis to sales of *Last Ninja II, SDI* and *Afterburner*.

Gloves off

Toymaker Mattel has adapted the remote glove used to manipulate hazardous chemicals and nuclear fuels so that a cheap version can now oeprate Nintendo computer games. The Power Glove will replace the Nintendo joystick in appropriate games and will sell in the U.S. for $100. Games control enters a new ball park conceptually – to stop a car, the user pushes out an open hand; to steer you just move your hand in the appropriate direction. A boxing game, *Bad Street Brawler*, is being written for the device by Mattel.

Stocking trade

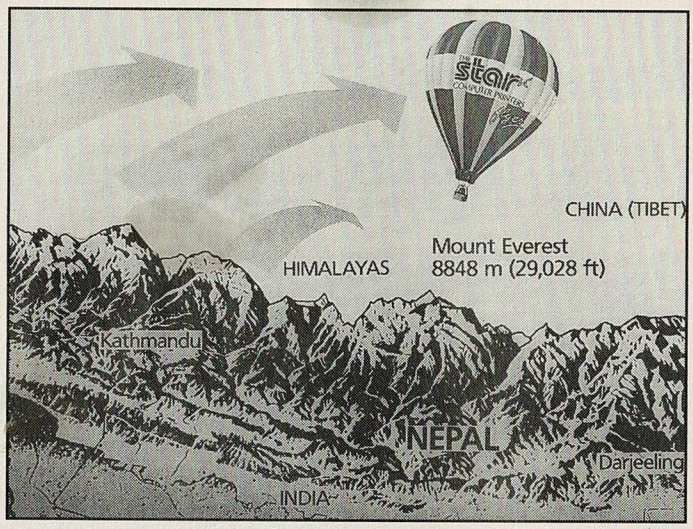
NASA reports that 70 percent of computer faults in its various facilities are attributable to overheating caused by static electricity from nylon stockings. As a result, the oh-so-sound *London Evening Standard* had a cartoon in which a flummoxed computer repair man says to a passing woman: "Well, let's see if it works if you take your knickers off."

Life in the sun with Ada

Programmers, do you fancy a little sunshine? Australia is short of 100 programmers in the Ada language. So short, in fact, that a $3.6 billion over-the-horizon radar project has been delayed until said programmers can be found and no doubt showered in dollars.

Everest balloon sponsored by Star

ON April 3, 1933, the Marquess of Clydesdale and Flight-lieut. D. McIntyre became the first men to fly over the summit of Mount Everest in Westland PV3 and Wallace biplanes. Now that feat is to be attempted for the first time by a hot air balloon sponsored by printer maker Star Micronics and piloted by Per Lindstrand and mountaineer Chris Bonnington.



Artist's plan of the proposed route.

Readers will recall Lindstrand as the pilot of Richard Branson's Virgin Atlantic Flyer balloon in July, 1987, in which the pair flew from the U.S. to Ireland.

Bonnington is taking part as a mountain survival specialist, in case the balloon has to ditch in the mountains. Accompanying the pair will be cameraman Mark Jarrold.

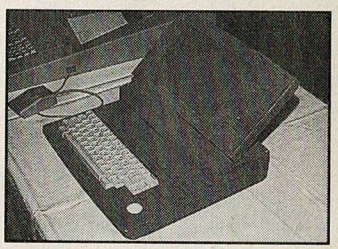
The flight, due to last five hours – eight hours' fuel will be carried in case of emergency – is planned to take place between September and October.

The balloon, the Star Flyer, has been made by Lindstrand's company, Thunder and Colt. When fully-inflated it will stand more than 90ft. high. Designed to carry less weight, the Star Flyer is capable of climbing to very high altitudes. In addition to sponsoring the event, Star has supplied the on-board weather data printer, a standard NL-10.

Atari picks pockets at Which Computer?

BOTH the Atari ST portable and Pocket PC will be exhibited at the Which Computer Show from February 21-24, according to Atari technical manager Les Player. Whether the ST portable will be the mock-up shown at Comdex or an early prototype is not known. Says Player: "All activity with the portable was taken out of our hands after we finished the design of the chips. Its up to the U.S. operation now."

The Pocket PC will be available in sample quantities in "three to four weeks", according to Atari and will eventually sell in two versions, at £199 and £299.



Atari Pocket PC (above) – sample quantities soon and the ST portable (right) – will they show a prototype or a mock-up?

In May the ST Plus and the ST portable should become available, according to Player. The ST Plus will be based on a 68000 – not a 68020 as has been rumoured – and will include a bit block transfer device, or blitter, as standard.

Database release ST Mini modules

DATABASE Software is to launch the highly-successful *Mini Office Professional* software package on Atari ST format later this month.

The new software makes use of the complex ST features and offers more facilities than previous formats and, according to the company, some which cannot be found on more expensive packages.

To be sold as a series of modules as opposed to a complete package, each will cost £24.95 and are supplied with a range of desk-top accessories. Initially, there will be just two modules – available from February 21 – the spreadsheet and communications modules. Three more will become available within a few months; they will be a document processor, presentation graphics and a database.

Sometime during the summer Database plans to release all five modules as a complete package. Further information can be obtained from Database Software on 0625 878888.

Colour fax

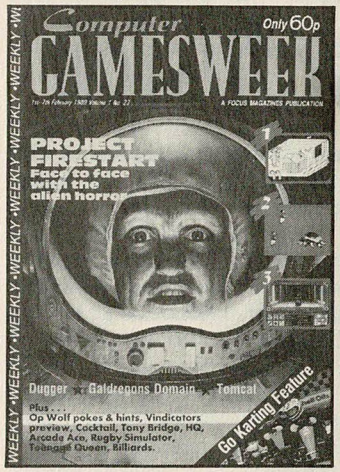
StarSignal, a start-up company in California, has invented the world's first colour fax machine. Costing $20,000, the colourfax has 256,000 colours but is the size of a household washing machine, according to Newsbytes West Coast correspondent Wendy Woods.

Why so big? It includes a colour scanner, colour printer and a colour copier. A StarSignal spokesman said the machine is a bargain, considering its nearest competitor, from Canon, costs three times as much.

DYNAMIC DUO TO MERGE

THE great news for games fans is that Focus Magazines is merging *Computer Gamesweek*, its weekly computer games magazine, with *Popular Computing Weekly*. The move is designed to offer readers better value for money, while providing advertisers in each magazine with a wider audience.

From February 23, Computer Gamesweek will appear as a brilliant full colour stand-alone centre section within *Popular Computing Weekly*. Initially, Gamesweek will form a 24-page colour section in a new 72-page issue of Popular. The cover price of 70p will remain unchanged. The launch issue will also contain a free colour poster of the Software Horizons game *Dragonscape*.



Andrew Jackson, Marketing Manager at Focus, explained the move: "After looking at these markets, we decided we need to offer both readers and advertisers more. Computer Gamesweek is an exciting, colourful publication with its own advertiser and reader following. However, the markets of these magazines undoubtedly overlap. In keeping Computer Gamesweek as a separate publication within Popular Computing Weekly, we can still provide specialist games editorial for enthusiasts, whilst providing a news and feature magazine for everyone."

Mark Evans, who has moved across from Focus Magazines title, Amstrad Computer User, will be Gamesweek editor on Popular Computing Weekly. In an unrelated move, Billy MacInnes joins Popular as News Editor.

NEC off the hook

INTEL last week won the war but lost the battle in its long-running chip cloning dispute with the Nippon Electric Company. A federal judge in San Fransisco ruled that the microcode in a microprocessor is copyrightable but that NEC has not copied the data in the microcode ROM of the Intel 8088 and 8086 in its V-series microprocessors. The judge reasoned that Intel had forfeited the copyright on its 8088 and 8086 chips because it did not mark the devices adequately with copyright notices; a disappointed Intel told *Popular Computing Weekly* that its second sources had released many of the 808X chips without ID and copyright labelling – amounting to about 10 percent of those shipped to date.

Ton a minute for IBM U.K.

DURING 1988, money poured into the swollen coffers of IBM U.K. at the rate of £123 per second – or £7,370 every minute. This represents year – end sales of a phenomenal £3,874 million, up 11 percent on the previous year. IBM U.K. employed 660 new staff in 1988 – a rate of 1.8 per day.

Tony Cleaver, IBM's U.K. chief, said record exports were recorded for the PS/2 range of personal computers.

Code Masters – solid as a rock?

CODE Masters announced its next full-price title today. *Rock Star* for the Spectrum, Amstrad CPC and Commodore 64 puts a player in the position of forming a rock band and pushing them all the way to stardom, through the use of various publicity stunts, one of which involves the consumption of a hamster. Is this a case for the RSPCA?

Also announced were four budget titles at the new standard price of £2.99. *Rally Cross Simulator* for the Commodore 64, *Grand Prix 2*, Spectrum and Amstrad CPC, *Fast Food* – eat as much as you can – Spectrum and CPC and *Twin Turbo* for the Amstrad. Also on the cards is *BMX Simulator 2* for the three 8-bit computers.

Rock Star will retail for £9.99 C64 and CPC versions and £8.99 Spectrum version. No fixed release date as yet although an Easter release is certain.

Chase, the ST game by Australian programmer Tony Barker, has finally turned up on the Mastertronic label after an original 1987 *Code Masters* agreement fell through.

Barker originally agreed with the company at the 1987 PCW Show at Earls Court, after hunting for a publisher. Chase, a vector graphics game which could easily be mistaken for a Star Wars clone, was planned for a Christmas release, although it never appeared because of a communications breakdown between the two parties, possibly because Code Masters had changed its address.

Whistle blown on inside deal

◀ continued from front cover

have launched an investigation into the dealings. David Morton, the Stock Exchange press officer, told *Popular Computing Weekly* that the Stock Exchange did not comment on individual investigations: "No one is allowed to trade on price-sensitive information without telling the market. Our computers trawl through the transactions every day, pulling out any unusual trading. In cases such as this, there would be an investigation as a matter of course. If things are discovered, the information is passed on to the Department of Trade and Industry, which then decides whether or not to prosecute."

Steve Brooker, P & P marketing director, says of the investigation: "Although we have not been contacted by the Stock Exchange, we know that the inquiry is going ahead. We are totally confident that P & P as a group is totally clean in this matter. We are as interested as anyone else in finding out the result."

David Southworth, chief executive of P & P, finds it difficult to believe that anyone could have been stupid enough to try an inside deal in the current climate, a view shared by Stewart Lakey of Personal Computers, who was quoted as saying: "It must be a very naive person."

THIS WEEK

☐ **Which Computer? Show preview** ..... p. 11
Tony Hetherington looks ahead one week to *The Business Computer Show*

☐ **Game of the Week** p. 15
Zak McKraken and the Alien Mindbenders on the ST – a tabloid journo rumbles an alien plot to invade the earth via the telephone lines

☐ **Sega games special** ..... p. 17
Our games freak looks at four new games for the Sega Master System

☐ **Konix Console** ..... p. 21
John Cook gives a completely alternative view of the games console everybody is talking about

☐ **Frankfurt Music Fair** ..... p. 24
A report from the music industry's most prestigious annual event – loads of new software and hardware for MIDI fans

☐ **Printer review** ..... p. 29
We review the new £149 MT-81 printer from Mannesman Tally, which was launched with great fanfare last week

Regular Features

Letters ..... p. 6
Hotlines ..... p. 9
Games reviews ..... p. 16
Comms ..... p. 19
DTP Update ..... p. 22
Puzzle ..... p. 27
Bytes & Pieces ..... p. 42–43
Kenn Garroch ..... p. 44–45

Microprose secures UMS II after contract confusion

MICROPROSE is in the news again. The company has signed the world-wide rights to *Universal Military Simulator II*. Complications have arisen because U.S. Gold claimed to have acquired the world-wide distribution rights to the game in January.

A prepared statement from MicroProse reads; "After recent pre-emptive publicity in the computer press concerning the signing of UMS II to another software house, MicroProse is pleased to set the record straight and announce formally the signing of world-wide rights to Universal Military Simulator II."

Martin Moth of MicroProse says all contracts between MicroProse and Intergalactic Development Incorporated, developer of the game, were signed and completed on February 2.

The original press release from U.S. Gold stated: "U.S. Gold is pleased to announce that it has reached agreement with Intergalactic Development Incorporated of Davenport, Iowa for the world-wide distribution of its follow-up to the massively successful Universal Military Simulator."

If the contracts had not been exchanged, why did the company make such an announcement? Was it a misunderstanding? If so, why was no announcement made correcting the mistake?

Bob Malin, manager of SSI at U.S. Gold, maintains: "The terms had been agreed between the two companies. We received a letter from Ezra Sidon, the head of Intergalactic Development Inc, agreeing this but there was no contract. U.S. Gold sent Sidon our standard contract to enable us to act as a licensee.

"There seemed to be some confusion, on Sidon's side, over the terms of the contract. After we had sorted out as much of the confusion as possible we sent him a final contract with a formal offer but heard nothing. The next thing we knew Intergalactic Development Incorporated had signed the contract for UMS II with MicroProse."

There is some speculation, however, that the U.S. Gold announcement was made to pressure Intergalactic and Sidon, the author of the original UMS, into signing a deal with the company.

Commenting on the deal, Sidon said: "I am very excited over the fact that we are working with MicroProse, without doubt the best simulation company in the home entertainment market."

Ironically, Telecomsoft, the company from which publisher Paul Hibbard and development managers Steven Perry and Peter Moreland were poached by MicroProse, owns the European rights to the first UMS program but decided not to take up its option on the sequel.

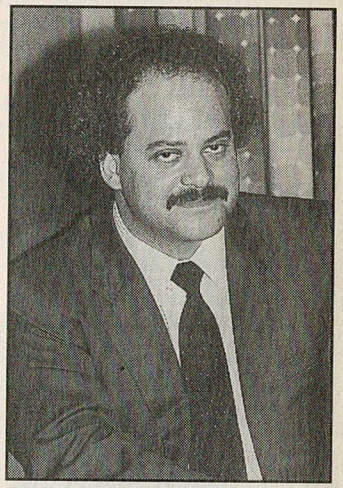
U.S. GOLD GAINS WORLD DISTRIBUTION RIGHTS FOR
U.M.S. II : NATIONS AT WAR

How U.S. Gold announced the contract it thought it had won.

Now Atari sues Nintendo over monopoly

NINTENDO has another adversary in the U.S. courts, Atari Corporation, which has joined its unrelated namesake Atari Games to sue Nintendo for anti-competitive behaviour.

Unlike Atari Games, however, Atari Corp is seeking damages of $250 million, more than twice that sought by the former. The new complaint alleges that Nintendo has effectively cornered 80 percent of the world's $2.3 billion market for computer games.



Sam Tramiel, Atari president: seeking more than twice as much as Atari games.

In its lawsuit, Atari says that U.S. games developers are faced with a stark choice - either sell their games to Nintendo or not sell at all. Nintendo counters that the Atari Corp allegations are without foundation. Atari president Sam Tramiel offered no comment.

Most non-Nintendo games sold in the U.S. run on the PC or Mac, with a lesser number on the ST and Amiga. The real money is to be made by selling Nintendo-compatible games; the catch is that Nintendo was until recently the only source of the cartridges in which the software is packaged.

In December, 1988, however, Atari Games announced it had reverse-engineered the Nintendo games cartridge, at the same time as it sued Nintendo for $100 million for operating a monopoly.

Popular Computing Weekly predicted at the time that it would result in a patent infringement suit from Nintendo. On January 31 Nintendo issued a writ charging Atari Games with patent violation.

Flat-bed printer eradicates paper jamming

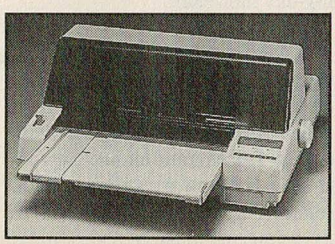
SMALL business tired of documents and invoices being damaged while feeding through a printer can obtain trouble-free printing from the C.Itoh new flat-bed multi-colour printer.

The 24-pin machine, the C-610, will print on thick paper of up to three sheets for triplicate copies, which is very useful for invoices and other legal documents. Being a flat-bed unit, documents are less likely to become jammed and bending is almost impossible.

The C-610 is supplied with a tractor feed so that fanfold paper can be loaded, as well as postcards and envelopes. A cut-sheet feeder is also available as an optional extra.

The printer is equipped with Centronics parallel and serial RS232 interfaces. The two standards allow the C-610 to work well with the majority of computers.

Designed to emulate an Epson LQ-2500 and IBM Proprinter XL, the C-610 runs at 200cps draft and 66cps in near letter quality. It retails for £680 C.Itoh can be contacted on 0895 811902.



C.Itoh 24-pin C-610 flat-bed printer.

High res. dot matrix claims laser quality

PRINTER pioneer Epson has announced the world's first dot matrix printer with a higher resolution than a standard laser unit. The TLQ4800 is a heavy-duty 48-pin - another global first. For £2,199 you could own a printer which provides a resolution of 360×360dpi, whereas many lasers will print only at 300×300dpi.

The printer will handle single and multiple sheet paper simultaneously, using a paper parking method. Users have a choice of 10 typefaces which are printed at 300cps in draft mode and 100cps in letter quality, both at 12cpi.

The TLQ4800 will be available in the U.K. from March 1. Further information can be obtained from Epson, 0442 61144.

Dismissive

It appears we were misled by both sides in our story last week about Telecomsoft publisher Paul Hibbard leaving for Microprose.

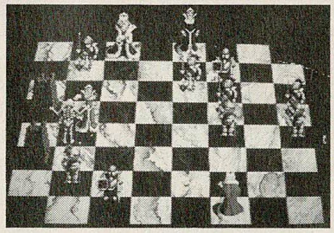
"Hibbard did not leave Telecomsoft, he was dismissed - and you can quote me on that," said Telecomsoft managing director Paula Byrne the morning our story appeared. Why was that not mentioned when we spoke to Byrne the previous week: "Well, we had settled things with Paul and did not want to stir things up." What was that about being hoist with your own petard? In any case, we are happy to set the record straight.

Chess computers checked, mate

THE companies which make chess computers may well be in for a massive sales slump as millions of prospective customers are realising that their game is not good enough to beat the electronic opponent.

One company, Fidelity International Inc, was compelled to withdraw a electronic *Reversi* game in 1986 when the product flopped due to its unbeatable playing techniques.

The chess computer scene as well as other electronic board games, is approaching a very tight and extremely vicious circle as various manufacturers strive to produce machines which have a greater game-playing ability to improve its position in the competitive technological field. The fight to the top is a difficult one, made more difficult by companies proving that they can produce better machines than their competitors.



● **Chess software is selling, dedicated hardware is too clever.**

This practice is standard for all companies, whether electronic, engineering or otherwise, although in this case the price for being top-of-the-form is high, as nobody wants to compete in a losing battle.

So the easier and in many cases older machines are more successful as people find they are more able to play the games.

In November an unmarketed chess computer, *Deep Thought* beat the renowned Dane grandmaster, Bent Larsen, in a tournament in California.

MONITORS CONDEMNED FOR RADIATION EMISSION

◀ continued from front cover

monitors, the Amstrad PCW had low frequency emissions of between 500 and 750V/m, the Hyundai 500V/m, the Fair 250V/m and the Philips 250 to 500V/m. The report recommends that all these machines "should not be considered for future purchasing".

While not displaying with a PCW in its London office, an FoE spokesman said that the organisation had now screened all its machines and had placed a "biohazard" sign on its office PCW. While this may seem melodramatic, there is a growing body of "suggestive evidence" that low-frequency electromagnetic radiation is harmful. Emissions from the flyback transformer and deflection coils in the monitor may be linked to clusters of, for example, miscarriages in office workers.

In a conference of the Industrial Society in London last week, David Rice of the white collar union Apex reported that clusters of miscarriages has occurred at British Telecom, BP, DVLC in Swansea, the Department of Employment computer centre at Runcorn, and Manchester's fire control room. These could, said Rice, be related to posture, workstation design or stress; he added that VDU radiation cannot be ruled out as a possible cause: "Our main concern is the welfare of our members, and on the basis of this information there are too many unexplained incidents," said Rice.

"unexplained incidents"

Speaking for the Health and Safety Executive, Dr Colin MacKay told the conference there did appear to be a correlation between spontaneous abortion and increasing numbers of hours worked on VDUs. In a sample of 3,799 pregnancies, 5.7 percent doing no VDU work suffered miscarriages, against 8.2 percent for 15 hours VDU work and 9.3 percent for more than 15 hours.

In the U.S., health care company Kaiser Permanente performed a study which found that in a sample of 1,583 pregnant women, the rate of miscarriage was 80 percent higher in those working with VDUs. The rate was 100 percent higher than in women who did not work at all - indicating that contributions to stress and the workplace in general are also significant.

Even in the face of such suggestive evidence, many hardware manufacturers are reluctant to admit that there is any problem. Yet the remedies, according to experts, will "cost pennies" to implement. The VDU Workers Rights Campaign, based in London, is pressing for compulsory shielding of all VDUs to eliminate electromagnetic radiation. One way of doing this would be to create a conductive "Faraday cage" round offending circuitry - like coils and transformers - by building a metal box or conductive mesh screen round them. Since electromagnetic waves have both electric and magnetic components, the screening will only stop the electric part escaping the monitor. The effects of the pulsed magnetic field are under as much scrutiny as the electric.

Friends of the Earth is shielding its equipment with speaker grille wire on the outside, by spraying offending circuitry with conductive nickel aerosols - not CFC free yet - and by installing conductive screen filters.

There are currently 100 MPs pressing for legislation about the use of VDUs. Unfortunately, not one is from the Conservative benches. For more information, contact the VDU Workers Rights Campaign on 01-608 1338.

● **BBC journalists at the World Service headquarters are threatening to strike unless a demand that pregnant women should not have to use a VDU is met.**

POPULAR COMPUTING WEEKLY
A FOCUS MAGAZINES PUBLICATION
Vol. 8: No. 7

Popular Computing Weekly, Greencoat House, Francis Street, London SW1P 1DG
Tel: 01-834 1717. Fax 01-630 6165
© **Focus Magazines 1989.**
ISSN 0265-0509

Editor Paul Marks **Production Editor** Michael Johnson **Chief Sub-editor** Harold Mayes MBE **Staff Writer** Adrian Pumphrey
Art Assistant Paul Ellis **Assistant Advertising Manager** Tim Owen **Display Executive** William Saville
Classified Executives Elizabeth Solanke, Nicholas Carr **Managing Editor** Brendon Gore
Publishing and Commercial Director Paul Coster BSc **Chief Executive** Richard Hease **Financial Director** Brendan McGrath

Typeset by Magazine Typesetters, 6 Parnell Court, East Portway, Andover, Hampshire

Printed by McCorquodale Magazines, Andover, Hampshire

Distributed by SM Distribution, Streatham, London SW16. Telephone: 01-677 8111, Telex 261643

Subscription rates: U.K. £35 per year, overseas £49.95 per year.

LETTERS

Sheer poetry

I realise that your publication is not slanted towards poetry, as such but I should be obliged if you would consider the enclosed article, Compuworld, as a novel addition to the letters page.

COMPUWORLD

Computers now are all the rage,
New technology of our age,
They help us learn, work and play,
They even calculate our pay.

An accepted part of our society,
Computers placid in sobriety,
Do we rule them, or do they rule us?
The human race, aside they brush.

Artificial intelligence once given,
Be it disc or menu-driven,
Computers have the power to 'think',
A power from which mere mortals shrink.

The world they have in their control,
Defence and economy as a whole,
The global issues with which they deal,
No bitterness nor compassion feel.

Efficient rulers they could be,
No time-off or breaks for tea,
But human interest would be lost,
Is it really worth that cost?

Stuart Low

★ STAR LETTER ★

Gizmo located

Further to the letter from G. Ballantyne of Clydebank, the gadget he is looking for may be the Currah Micro-Speech, a gizmo which plugs into the expansion slot in the back of the Spectrum.

As well as allowing the computer to output sound through the TV it can add speech to programs in Basic but I have no idea which chip is used, although it has an American accent, as you would expect.

From the instruction book it seems the main chip was made by General Instrument Microelectronics and the device has a copyright date of 1983. It is complete with a sample game of the adventure variety.

Having upgraded recently to a bigger machine I have no further need of this add-on and if you would pass my address to Ballantyne I will send it for the cost of the postage.

Alan Mackie,
4 Skerrington Mains,
Hurlford,
Kilmarnock,
Ayrshire KA1 5JB.

Well spotted . . .

I would like to draw attention to a small anomaly in your four-page pull-out guide Welcome to your machine" - December 15-21 1988.

The Archimedes processor is called RISC - Reduced Instruction Set Computer. The RAM can vary for different models - A305, 512K; A310, 1,024K; A410, 2MB; A440, 4MB.

In addition all the 400 series have a podule backplane and fan fitted as standard. The Archimedes can display 256 colours on-screen at one time from 4,096.

You also state that the price starts at £800. It starts at £699 and can be more than £2,000. Please note, however, that the lowest price is for the basic computer without a monitor.

In all other respects, however your magazine is one of the best I have seen.

Martin Webster,
Littleborough,
Lancs.

Half a dozen on Twelve

I have just seen a copy of Tony Sacks' review of the Steinberg's Twelve and I must say I was rather disappointed. Although perhaps this is a case of shutting the door after the horse has bolted, I think we must draw attention to the following points:

We do not sell software directly. This comment will offend our dealer network. We are distributors, as you state correctly and have a wide-based dealer network which does an excellent job for us.

The review gives the impression that the Twelve Midi channels are pre-set in relation to the track numbers. You can address all Midi channels and can assign any channel number to any track. Most amateur/semi-pro users will be limited by their systems to no more than nine or 10 channels and anyone finding this a problem would generally have a professional set-up and consequently use a higher level software solution.

The statement that repeated patterns will save memory space is not correct. Only pattern-copy with data copy or arrange-song will do this. It is incorrect to say that the Arrange Song has to be referenced to a separate empty track. It can be any one of the tracks. The track and pattern system is not a complication. The layout is a linear tape-like device but, with the editing and copying advantage of pattern segments, works in the way the majority of people involved in contemporary music production operate.

As you state, the Twelve is being bundled by Atari with 1040 STs from participating dealers. It is true that its product is to be packaged differently from the Steinberg/Evenlode distributed program but in no way should you consider the Atari manual to be inferior. In fact, at the time of writing the review you could not have seen the Atari originated manual/packaging.

I feel that the main and most damning part of the review - and the most unfair - are the comments on the manual. Foremost in peoples' mind is the thought "Will I be able to understand the manual?" The review castigates the idea of a step-by-step approach to the workings of Twelve without finite explanations of what you are doing. No piece of software can be all things to all men but we feel that the Twelve really is a superb entry-level piece of software for anyone interested in Midi recording.

David Crombie,
Evenlode Soundworks.

Tony Sacks replies: I stand by my original conclusion the Twelve is not an ideal sequencer for the beginner. It is too complex and the manual fails to explain it adequately.

So far as they go the worked examples are satisfactory but, by themselves, are insufficient. For a program as complex as Twelve the manual should not be a mere tutorial but should be a reference work, allowing users to refer to it when problems arise, as no doubt they will. For this you need an index or, at the very least, a contents page – and should not have to plough through worked examples which may not deal with your particular problem in an attempt to find an answer. Curiously, the advanced users' chapter provides the kind of succinct explanation which is missing elsewhere in the manual but concentrates on some of the more obscure functions.

One of the strangest aspects of the manual is that it deals almost exclusively with step-time programming. I can find only two pages – of more than 130 – which cover real-time entry even though, for most musicians, this will be the usual form of input. The difference between the two forms of input is not made clear, nor is the "auto-rec" function explained. I am sure this will baffle many newcomers and leave them with a distorted view of what sequencing is about – and of Twelve capabilities.

Turning to some of your specific points:

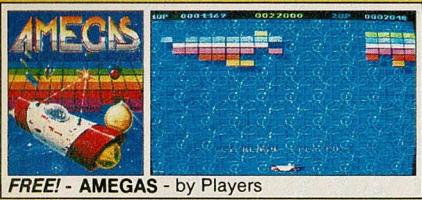
I did not intend to give the impression of pre-set channels. The 12-channel limit could be felt even by the owner of low-budget system based on, say, a Kawai K1 with a Cheetah multi-timbral expander. More important, perhaps, the 12-track restriction means that you cannot record as many alternative lead or rhythm tracks as most of the cheaper sequencers allow you to do.

I am sorry if I implied that Twelve makes better use of the ST memory than it does. I did not say that the arrange song has to be referenced to a separate empty track. The track and pattern system as implemented in Twelve is complicated. It is interesting to note that in its new top-of-the-range sequencer, Cubit, Steinberg has adopted a far simpler visual arrangement system.

If, as it seems, the Atari manual is essentially the same as that of Evenlode, the same criticisms apply. In conclusion, let me repeat that my criticisms are aimed not so much at the program but at its suitability for beginners, especially with its present manual.

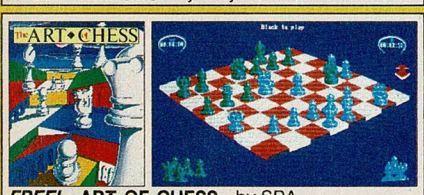
Finally, a note of warning for potential purchasers. The copy-protection system used on Twelve means that it will not run on some ST disc drives. Try before you buy.

FREE! TENSTAR PACK WORTH OVER £229!

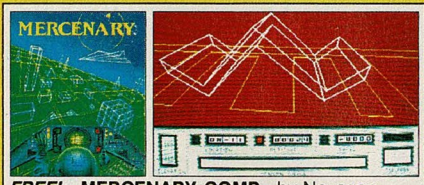


FREE! - AMEGAS - by Players

FREE! - INSANITY FIGHT - by Microdeal



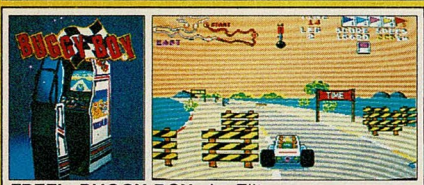
FREE! - ART OF CHESS - by SPA



FREE! - MERCENARY COMP - by Novagen

FREE! - BARBARIAN, ULT WARRIOR - by Palace

FREE! - TERRORPODS - by Psygnosis



FREE! - BUGGY BOY - by Elite

FREE! - THUNDERCATS - by Elite

FREE! - IKARI WARRIORS - by Elite

FREE! - WIZBALL - by Ocean

Commodore AMIGA

£346.95 +VAT= £399

INCLUDES FREE UK DELIVERY

The Amiga 500 is one of a new breed of technologically advanced computers, which are now emerging as the new standard for home computing, based around the new Motorola 68000 chip. The A500 has 512K RAM and a 1Mbyte double sided disk drive built-in. It can be connected directly to a wide range of monitors, or to a domestic TV set through a TV modulator. Designed with the user in mind, the A500 features a user friendly WIMP environment and comes supplied with a free mouse. And, when you buy your Amiga from Silica Shop, the UK's No1 Amiga specialists, you will experience an after sales service that is second to none, including a technical support helpline and free newsletters and price lists. Return the coupon below for our current information pack, which will give details of the Silica service and the very latest Silica Amiga offers. E&OE.

WHY SILICA SHOP?

Before you decide when to buy your new Commodore Amiga computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer as well as expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Amiga related products in the UK, a full time Amiga specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. Here are just some of the things we can offer you:

THE FULL STOCK RANGE: The largest range of Amiga related peripherals, accessories, books and software in the UK.

AFTER SALES SUPPORT: The staff at Silica Shop are dedicated to help you to get the best from your Amiga.

FREE NEWSLETTERS: Mailed direct to your home as soon as we print them, featuring offers and latest releases.

FREE OVERNIGHT DELIVERY: On all hardware orders shipped to Silica Shop customers within the UK mainland.

PRICE MATCH PROMISE: We will normally match our competitors offers on a 'same product same price' basis.

FREE TECHNICAL HELPLINE: Full time team of Amiga technical experts to help you with your technical queries.

But don't just take our word for it. Complete and return the coupon below for our latest Amiga literature and begin to experience the Silica Shop specialist Amiga service.

PHOTON PAINT PACK

A500 Computer	£399.99
TV Modulator	£24.99
Photon Paint	£69.95
TenStar Pack	£229.50
TOTAL RRP:	£724.43
LESS DISCOUNT:	£325.43
PACK PRICE INC VAT:	**£399**

1084S MONITOR PACK

A500 Computer	£399.99
1084S Colour Monitor	£299.99
Photon Paint	£69.95
TenStar Pack	£229.50
TOTAL RRP:	£999.43
LESS DISCOUNT:	£350.43
PACK PRICE INC VAT:	**£649**

FREE FROM SILICA

When you buy the Amiga 500 from Silica Shop, you will not only get a high power, value for money computer, we will also give you some spectacular free gifts. First of all, we are now including a TV modulator with every A500 stand alone keyboard, so you can plug your Amiga straight into your TV at home (the modulator is not included with the A500+A1084S pack as it is not required for use with monitors). Secondly, we have added a free copy of Photon Paint, an advanced graphics package with an RRP of £69.95. Last (and by no means least!), so that you can be up and running straight away, we are giving away the sensational TENSTAR GAMES PACK with every A500 purchased at Silica Shop. This pack features ten top Amiga titles which have a combined RRP of nearly £230! Return the coupon for details.

FREE TENSTAR PACK

When you buy your Amiga 500 from Silica Shop, we want to make sure you get the best deal possible. That is why we are giving away the TENSTAR GAMES PACK worth nearly £230, absolutely FREE with every A500 purchased from us. The TenStar Games Pack includes ten titles for the A500, each individually packaged in its own casing with instructions.

Amegas	£14.95
Art Of Chess	£24.95
Barbarian, Ult Warrior	£19.95
Buggy Boy	£24.95
Ikari Warriors	£24.95
Insanity Fight	£24.95
Mercenary Comp	£19.95
Terrorpods	£24.95
Thundercats	£24.95
Wizball	£24.95
	£229.50

TOTAL RRP: £229.50 INC VAT

DO YOU OWN AN AMIGA?

If you already own an Amiga computer and would like to be registered on our mailing list as an Amiga user, let us know. We will be pleased to send you copies of our price lists and newsletters FREE OF CHARGE as they become available. Complete the coupon and return it to our Sidcup branch and begin experiencing a specialist Amiga service that is second to none.

SILICA SHOP:

SIDCUP (& Mail Order) 01-309 1111
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
OPEN: MON-SAT 9am - 5.30pm **LATE NIGHT:** FRIDAY 9am - 7pm

LONDON 01-580 4000
52 Tottenham Court Road, London, W1P 0BA
OPEN: MON-SAT 9.30am - 6.00pm **LATE NIGHT:** NONE

LONDON 01-629 1234 ext 3914
Selfridges (1st floor), Oxford Street, London, W1A 1AB
OPEN: MON-SAT 9am - 6.00pm **LATE NIGHT:** THURSDAY 9am - 8pm

To: Silica Shop Ltd, Dept PCWK 12/88, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX

PLEASE SEND ME FREE LITERATURE ON THE AMIGA

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

Address: .....

.....

.....

Postcode: .....

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

R.R.P £90.00

INTRODUCTORY OFFER ONLY £75 INC. VAT and P&P

..GRAPHICS.. DTP.. CAD..

..TECHNICAL DIAGRAMS..STATIONERY.. LABELLING..

..MAPS.. GREETINGS CARDS..CAMERA-READY ARTWORK..PUBLICITY..

FREE LIBRARY DISC with 24 Icon Sets & 22 Complete Fonts

MicroDesign II

THE INTEGRATED PAGE PROCESSOR for the PC*

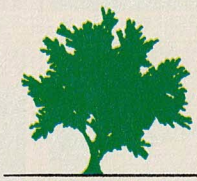
*REQUIRES....
DOS 3.2 or above
CGA
512K Memory
Microsoft Mouse compatible
Suitable for Amstrad PCs

Fully integrated program includes:
Text Editing .. Typesetting .. Graphic Design .. Icon Design .. Font Design .. Printing

- Unbeatable output quality from Epson- and IBM- compatible 9-pin dot-matrix printers
- Import Word-Processor files... Integral Text Editor supports ASCII control characters for *Italic*, **Bold** and Underline
- Page Layout facilities include Portrait and Landscape page formats, and cut & paste on full A4 page
- 'Undo last operation' feature means no fatal mistakes
- Fast and friendly to use with mouse or keyboard
- Comprehensive file maintenance section

MicroDesign was used to design, typeset and print its own 100-page Manual

This advertisement was entirely designed, typeset, and printed AT THIS SCALE using an Amstrad PC1640, a £170 dot-matrix printer, and MicroDesign.



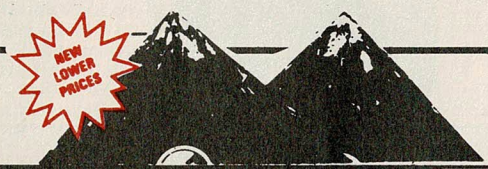
10 Park Street
Uttoxeter
Staffs
ST14 7AG

CREATIVE TECHNOLOGY

Telephone 0889 567160

Micro Mountain!!

NEW LOWER PRICES



TEL 0525 853333
24 HOUR ORDERLINE

UNBRANDED DISCS

100% Certified & Lifetime Guarantee including sleeves, labels and WP Tabs

5 1/4"	D SIDE 48 TPI	PLUS DP100 DISC BOX	D SIDE 96 TPI	PLUS DP100 DISK BOX	D SIDE HD 1.6	PLUS DP100 DISC BOX
25	£9.50	£16.25	£10.50	£17.25	£23.75	£29.95
50	£17.50	£24.00	£18.50	£25.00	£46.49	£51.49
100	£33.00	£38.00	£34.00	£39.00	£89.95	£93.95
3 1/2"	**S SIDE 135 TPI**	**PLUS DP080 DISC BOX**	**D SIDE 135 TPI**	**PLUS DP080 DISC BOX**	**D SIDE HD 2.0**	**PLUS DP080 DISC BOX**
25	£22.00	£28.45	£24.00	£30.45	£61.25	£66.75
50	£40.00	£46.50	£46.00	£52.50	£120.50	£123.95
100	£75.00	£80.00	£85.00	£90.00	£238.95	£239.95

BRANDED DISKS, TOP BRANDS, BEST PRICES, SHIPPED TODAY.

5 1/4"	3M			DYSAN			VERBATIM			3" AMSOFT
	10	50	100	10	50	100	10	50	100	
DS48	£7.49	£34.45	£66.90	£8.35	£38.75	£75.49	£7.99	£36.95	£71.90	D/SIDED £1.99 each Packed in 10's
DS96	£13.15	£62.75	£123.50	£10.15	£47.75	£93.49	£12.35	£58.75	£115.50	
DS HD	£14.25	£66.25	£130.50	£11.99	£54.95	£107.90	£14.49	£67.45	£132.90	
INCL DP100 DISC BOX	ADD £5.95	ADD £4.95	ADD £3.95	ADD £5.95	ADD £4.95	ADD £3.95	ADD £5.95	ADD £4.95	ADD £3.95	

3 1/2"	3M			DYSAN			VERBATIM			SONY		
	10	50	100	10	50	100	10	50	100	10	50	100
DS135	£15.35	£73.75	£145.49	£14.49	£69.45	£136.90	£13.85	£66.25	£130.49	£14.35	£68.75	£135.50
DSHD	£44.20	£215.95	£429.90	£38.15	£185.75	£369.45	£36.69	£178.45	£354.90	£39.99	£194.95	£387.90
INC DP080 DISC BOX	ADD £5.95	ADD £4.95	ADD £3.95	ADD £5.95	ADD £4.95	ADD £3.95	ADD £5.95	ADD £4.95	ADD £3.95	ADD £5.95	ADD £4.95	ADD £3.95

HEAD CLEANING KITS 5 1/4 + FLUID 2.50 - 3 1/2 + FLUID 3.50

NO HIDDEN EXTRAS

VAT INCLUDED
FREE CARRIAGE ON ALL ORDERS OVER £10.00
ALL PRODUCTS CARRY OUR NO-QUIBBLE REPLACEMENT FOR LIFE GUARANTEE.

DISK BOXES

DP020	20 X 3"	£8.95
DP040	40 x 3.5"	£4.95
DP080	80 x 3.5"	£6.95
DP050	50 x 5.25"	£4.95
DP100	100 x 5.25"	£6.95
DP140	140 x 5.25"	£7.95

LABELS

3 1/2 X 1 7/16 TRACTOR/FRICTION £4.99/1000

TO ORDER TEL: 0525 853333

WE ALSO SUPPLY RIBBONS, LISTING PAPER, IBM PRINTER CABLES FROM £7.95 AND MUCH MORE.

MICRO MOUNTAIN 0525 853333 (10 lines). FAX: 0525 850485.
DATAPRO HOUSE, NORTH STREET, LEIGHTON BUZZARD, BEDS LU7 7EQ.

PLEASE SUPPLY .....

.....

MY COMPUTER IS .....

I ENCLOSE CHEQUE/ PO for £.....

OR CHARGE MY ACCESS/ VISA NO. EXPIRY DATE.....

CARRIAGE £2 BUT FREE ON ALL ORDERS OVER £10.

NAME .....

ADDRESS.....

.....

.....

POSTCODE..... DAYTIME TEL NO. ..... MCM 12/1.

HOTLINES

It is almost 3am and I am sitting on my bedroom floor watching a program about a murderous computer and am giving serious thought to a steaming cup of coffee. Microprose is famed for its simulations and just to show that it is still on the ball – pun intended – is releasing two new simulations, one about tanks and another about 16th century Japan.

The MI tank simulation puts you in the driving seat of a 60-ton MI Abrams tank, the latest toy of the U.S. Army. Set for summer release on the PC, this as yet unnamed tank simulator promises loads of action riding on the back of a truly accurate simulation.

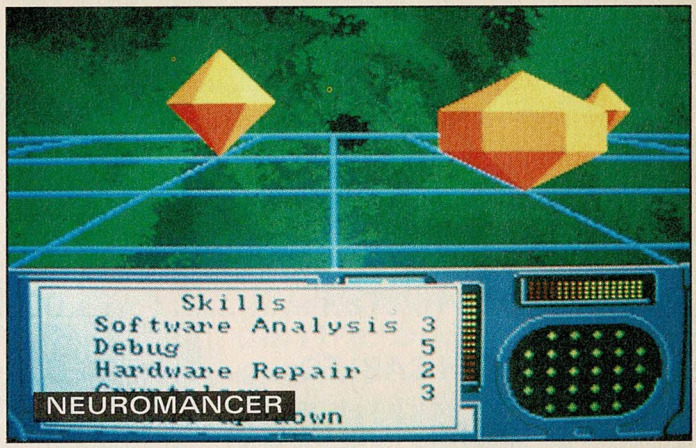
> '...a truly accurate simulation...'

In feudal Japan, career opportunities for the dedicated young warrior are enormous. Where else after a few years of dedicated service would you be given the opportunity to lead your own real-time armies and indulge in a little one-on-one combat? The role-playing side of this game is important as you have to fit with the Japanese ethic while attempting to advance both as a warrior and a politician.

There is a snag when you realise that the other characters in the game have the same idea as you, so do not be surprised if the knock on your door one night yields an opponent bearing gifts and concealing daggers.

What is this, another tank simulation? It certainly looks like it. *Abrams Battle Tank* is set in the near future, with the possible exception of the WW-II mission, where you must fight your way through nine missions to return home with all the glory. A full mixture of weaponry is available in this action-based simulation – but beware, the enemy also has an impressive array of advanced weaponry.

Other features include day/night encounters with 3D graphic terrain perspective. Abrams Battle Tank will be available from Electronic Arts in March on the PC for £24.95.



I am not all that sure as to which is the better piece of news – that *Neuromancer* will soon be available on the Amiga or the fact the book is being made into a film. So start sharpening those fingernails.

Neuromancer is available now from Electronic Arts and will retail for £24.95.

Adrian Pumphrey

SHOWTIME

FEBRUARY

Which Computer? Show Feb. 21–24
National Exhibition Centre
Birmingham
Organiser: Cahners Exhibitions
Tel: 01-891 5051
Gargantuan business computing showcase. Has the now obligatory CAD village, plus DTP and Networking sections and computer aids for the disabled.

APRIL

The European Computer Trade Show April 16–18
Business Design Centre
Islington
London N1
Nearest tube: Angel (Northern Line)
Organiser: Database
Tel: 0625 878888
Miffed at the number of non trade visitors at the September PC Show, a number of exhibitors have lent support to this trade-only show. It is strictly business to business and entry is by invitation only.

MAY

PC User & PC CAD Show May 9–11
Olympia
London
Tube: Earls Court and Special to Olympia
Organiser: EMAP Exhibitions
Tel: 01-404 4844
The attempts to pull in CAD vendors into the general shows continues here, with a CAD village turned into a show-within-a-show by EMAP.

JUNE

Commodore Computer Show June 2–4
Novotel Hotel
Nearest Tube: Hammersmith
(Metropolitan, Piccadilly and District Lines)
Prices: £5 (adults), £3 for (Under 16); £1 off for advance booking
Organiser: Database
Tel: 0625 878888

Atari User Show June 23–24
Alexandra Palace
London
Tube: Wood Green (Piccadilly Line)
Organiser: Database
Tel: (0625) 878888
Prices: £5 (adults), £3 for (Under 16); £1 off for advance booking
Organiser: Database

BEST PRICES ON ATARI, AMIGA & C64 PACKS

RAM DELTA JOYSTICK (R.R.P £9.99).....£8.95
STANDARD JOYSTICK.....£4.99
3½" DS DD BULK DISKS ..... £8.99 for 10
5¼" DS DD BULK DISKS ..... £3.99 for 10
3½" & 5¼" DISK HEAD CLEANING KITS £2.99

SCHNIEDER EURO PC £453.00

STAR LC10 PRINTER £228.00

IBM PRINTER CABLES £6.95

LARGE SELECTION OF SOFTWARE AT COMPETITIVE PRICES

ORDERS UNDER £10 ADD £1 P&P

NOTHING EXTRA TO PAY
ALL PRICES INCLUDE V.A.T. AND DELIVERY
TRADE ENQUIRIES WELCOME

Callers 091 516 0065

OR send cheque or P.O. with your order

VAT REG: 496 0821 33
BRANDED AND UNBRANDED DISKS AT COMPETITIVE PRICES

H.C.L.

TEL: (091) 516 0065
FAX: (091) 516 0065

HOBURNE CONSULTANTS LTD
9R RIVERSIDE ROAD, SOUTHWICK, SUNDERLAND SR5 3JG
SPECIALISTS IN THE SUPPLY AND INSTALLATION OF COMPUTER HARDWARE, SOFTWARE AND DATA SUPPLIES

PSION ORGANISER II

NOW YOU CAN GET ORGANISED FOR NEW, UNBEATABLE PRICES!!

FOR EXAMPLE:

	RRP	OUR PRICE
PSION ORGANISER II XP	£140	£125
PRINTER	£200	£175
65K DATAPAK	£60	£45
COMMS LINK (RS 232) with IBM PC/XT PLUG	£59	£50

★ FREE CARRYING POUCH!! ★

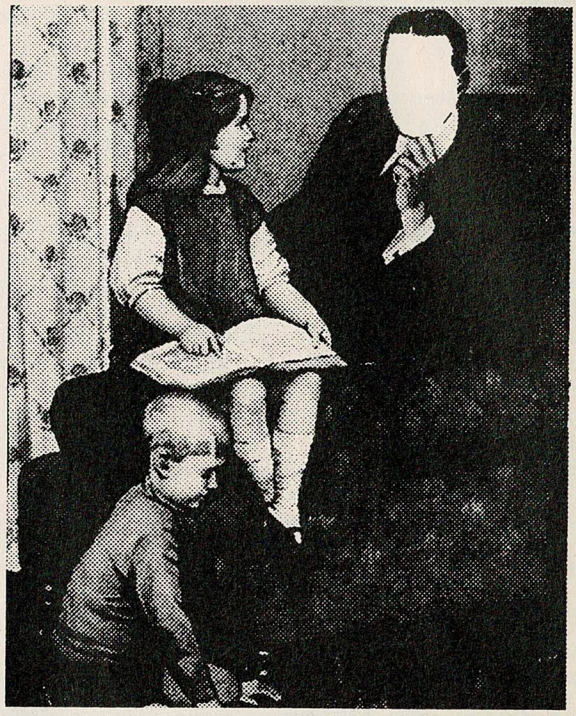
We offer prompt delivery on all orders, or you may collect, by arrangement, from our West End Office.

Phone NOW for details and full price list!

0836 790159
01-539 9353
01-734 2603

PREMIER HOUSE
SUITE 116, 77 OXFORD ST
LONDON W1

So why didn't we order it from Wight Computing.



But still he sits there with that blank look on his face.

0983 68978

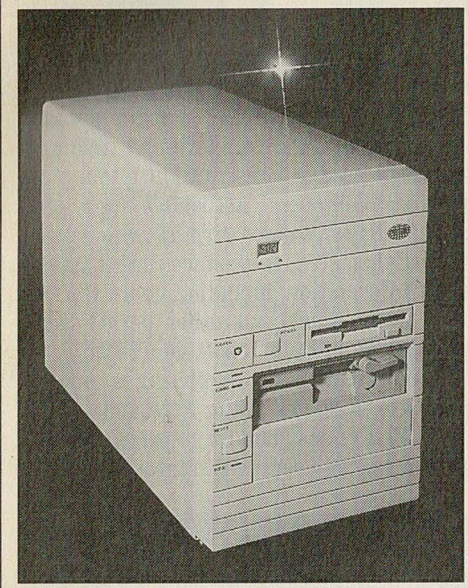
From Disks to Networks
Memory Upgrades and Hard Disks
FAX CARDS AND MODEMS
Phone for the most up to date prices or write to:

WIGHT COMPUTING

122 High Street, Ryde,
Isle of Wight
PO33 2SU

VISA

Good advice Given Freely



The 80386 DeskTower from Digital Matrix.

Business in Brum

THE COMPLETE BUSINESS SOLUTIONS SHOW

THE WHICH COMPUTER? SHOW

NATIONAL EXHIBITION CENTRE BIRMINGHAM 21-24 FEBRUARY 1989

Which new or upgraded products can the businessman expect to find at this year's show? Alastair McCann sets the scene for next week.

The growth of the Which Computer Show has been extraordinary as it has developed from "the winter show in Birmingham" to become the business show and is set to overtake the PC Show in this capacity. So next week the doors open at the National Exhibition Centre - February 21-24 - to reveal the whole range of professional computing, including new hardware and software and an expanded CAD village reflecting the enormous growth in CAD/CAM applications and, of course, a DTP centre.

The 1989 show will be opened by keen Z-88 user, Social and Liberal Democratic Party leader Paddy Ashdown, the latest in a line of computer-literate politicians to appear at such events. Lord Young opened last year's show and Labour's Bryan Gould did the honours at the PC User Show. Apart from the obvious public relations implications, this also shows the importance now attached to new technology. The technology on show will be exhibited by more than 500 businesess to an estimated 60,000 visitors.

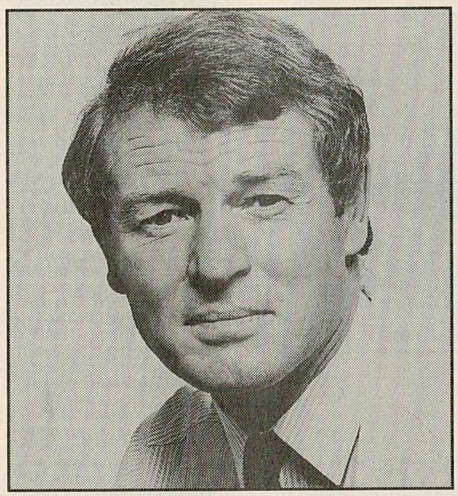
Hardware

Commodore and Atari, leaders in the home computer market, are planning their biggest-ever stands, which will mean the return of the Commodore mausoleum housing the lecture theatre which towered over everything at the PC Show.

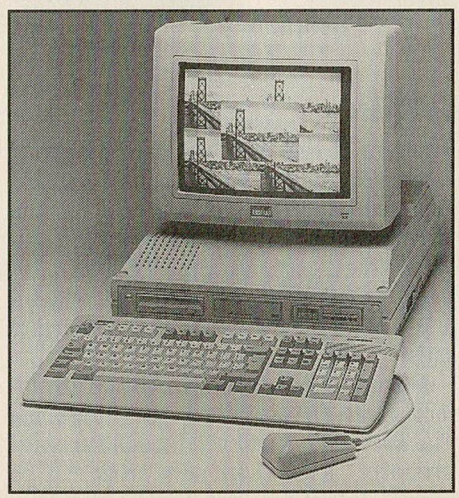
It will be far from a repeat performance, as both companies mean business. Commodore will present a dual attack based on its PC and Amiga ranges and will show the Amiga 2500 launched at CES in Las Vegas which operates through Workbench 1.4, uses a 68020 processor and is designed to house the Unix card and the AT bridgeboard, which will also be on view.

The PC40 Series III machines are the latest addition to the Commodore PC range which also features the PC1, the cheapest entry-level PC at only £315. This new range aims to offer PC power which will leave a smaller footprint.

Atari will be concentrating on its high-end Mega STs which will be seen demonstrating DTP software and 8088, 80286 and 80386 PCs. There will also be the first commercially-available version of the Atari transputer-based workstation which was formerly known as the Abaq.



Z88-user Paddy Ashdown will open the show.



Amstrad PC 2386: features 20 MHz Intel 80386 MPU and 65 Mb hard disc.

Amstrad, now recognised as one of the main players in the PC market, will show its 2086, 2286 and 2386 range of PCs, as well as the recently-launched SM2400 modem, Amstrad Local Area Network and range of business software.

New machines are also promised by Tulip - new AT-386sx; NCR - PC316sx; Elonex - 386 computer; Gandlake Software - Factotum PC III portables and desk-top PCs; Husky - unnamed new portable; Digital Matrix - the £999 80386 DeskTower micro; and from Sharp, a range of lap-tops - PC-5541 AT-286, PC-4641 XT and PC-4602.

There will also be something of a rush of high-performance workstations, including the Apricot Qi series of PS/2-compatible, 32-bit-based workstations and the first showing of two new Hewlett-Packard HP RS Vectra PC technical workstations, the Acorn Archimedes R140 Unix-based workstation and, of course, the Atari ATW.

The increase in the top end of the business market is also reflected in the growth in CAD/CAM software and the subsequent increase in the size of this year's CAD village which apparently attracted 26 percent of last year's visitors. The CAD village will house more than 14 of the leading CAD manufacturers, including Autodesk, Autocim, Taxan, Pink Software, Instagraphic, Desktop Engineering and 3-Com, each armed with new computer-aided design solutions such as market leader Autodesk with its range of AutoCAD, AutoSolid, AutoShade, AutoSketch and AutoFlix systems.

Perhaps the Mitsubishi stand, above all others, typifies the style of the show, as it

continued on page 12 ▶

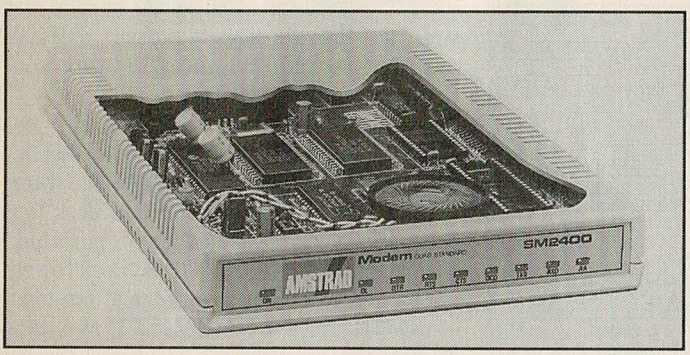
◀ continued from page 11

is set to launch five new products and display its existing range of software and peripherals, including hand-held scanners, colour scanners, monitors, colour printers and a new generation of fast-access optical drives. The new products include a 386 SX desk-top computer, a 286 lap-top, a 68000 Unix workstation, a modular EPOS terminal for high street applications and a fast-access WORM drive.

Peripherals

Printers demand far more than peripheral interest for visitors as they often form the backbone of a business system. To add to confusion, four major manufacturers have new ranges to add to the already bewildering array which will face any potential printer purchaser.

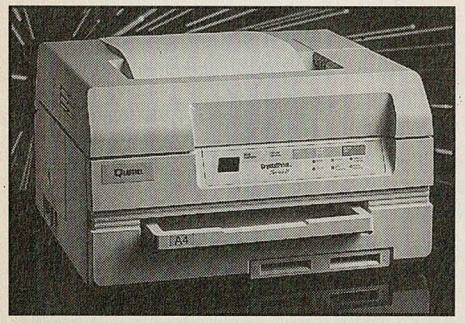
Leading the charge is Star Micronics with its Welsh-built Multifont LC-10 and LC24-10 printers. The LC-10 costs only £259 - £299 for the colour version - and offers eight resident fonts and is now also available in a special Commodore version to interface with C64 and C128 computers.



Amstrad SM2400 modem: functions with RS232 socket-equipped computers.

The recently-launched LC24-10 is a high-quality, 24-pin printer with a graphics resolution of 360dpi, supports print variations such as shadow, outline and shadowed outline, and costs £399.

Citizen will supplement its full range of laser, dot matrix and daisywheel printers with its new Overture 112 12-pages per minute laser printer; the Swift 24, sub-£400 24-pin dot matrix printer; and the 180E 9-pin printer, as well as publicise its sponsorship of the World Wide Fund for Nature nation-wide schools competition. Will this also start a trend for green computing?



Qume CrystalPrint WP Series II: claimed to match laser printer quality.

Qume will be offering its latest addition to the Crystalprint range of printers which it claims is a low-cost alternative to laser printing; in laser terms low-cost means slightly more than £1,000. The new Publisher is a PostScript-compatible LCS printer running at six pages a minute and will join the range which produces output at 300 × 300dpi which Qume claims is equivalent to laser printer quality.

Japanese newcomer Kypcera will be making its U.K. debut and will demonstrate its range of laser printers. The low-end F-1000 has a print speed of 10 pages per minute, 512K of RAM, seven standard emulations, 79 resident fonts, the Prescribe printer control language providing graphics capability and an IC ROM card for storing graphics, typestyles and business forms and will cost £2,180.

That is only the tip of the iceberg, as the following are also set to launch new printers. Epson will be launching the 48-pin TLQ-4800, an ink-jet printer and a laser page printer; Brother, Gestetner, NEC, Seikosha and Honeywell-Bull all promise new editions, with Honeywell giving a debut its 4/68 colour dot matrix printer which will use its new "moving ruby" technology.

Alongside the printers will be a range of other peripherals which together meet any need a computer user may have and range from Microvitec, NEC and Wyse Technology monitors to PC graphics cards, disc drives, data analysers and even non-interruptible power supplies.

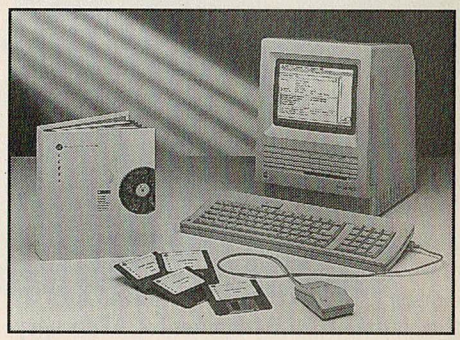
Software

Software at the show will fall into many categories, ranging from business applications inlcuding the LAN version of the Micropro *Wordstar 5* to support for vertical markets such as the FCS *Fleetplan* fleet management software and will almost guarantee there will be something to satisfy every business palate.

Mirrorsoft will again exhibit the ubiquitous *Fleet Street Editor,* the life-saving *File Rescue Plus* and will launch *Personal Assistant,* a new friendly front-end to e-mail, Telex, fax and remote database services.

Computer Associates will unveil *Super-Calc 5,* the latest release in the SuperCalc series, which it claims is full of advanced features such as linked multiple spreadsheets, *Lotus 1-2-3* compatibility, two and 3D graphics and presentation quality reporting. Computer Associates will also release *Superproject Expert* which uses SuperCalc macros to produce time management information, including hours worked on a daily, weekly or other period basis utilising an in-built report generator.

Compsoft will be exhibiting a duo of database packages, *Delta Five* and *Debut.* Delta Five is designed for experienced and inexperienced users with features such as on-line help screens, simple form fill techniques, relational structure which allows any number of databases to be linked, a powerful applications builder, 16 indexed fields and sophisticated processing and report facilities.



Access Accounting from Oyster Business Systems: a powerful Mac-package.

Debut is an exceptional data-gathering, analysis and presentation program which uses a 3D Rubik's cube-style matrix to collate many pages of information in a single file. Debut can extract data from unlimited sources according to pre-defined selection criteria and collate it in such a way that users can achieve an "at-a-glance" overview of, say, a company's investment performance, sales records and projected turnover in a fraction of the time it would take by conventional means.

As with Delta Five, Debut offers three levels of on-line help screens and is driven by menus and definable command sequences to automate commonly-used commands.

Finally, two interesting stands to look for are the trade commissions from Australia and California which will contain goods and details representing a variety of companies on a single stand.

The Which Computer Show is more than a launching pad for new products; it provides a giant shopwindow for businesses looking to invest in or upgrade computer systems. It also provides a platform for the various branches of computing, including the CAD village and DTP centre. □

ST SPECIALISTS

Unit 2A, Willowsea Farm, Spout Lane North,
Stanwell Moor, Staines, Middx TW19 6BW
Telephone: 0753 683965

VISA Access

NEW RELEASES

TITLE	S.S.P.	OUR PRICE
Hellfire Attack	24.99	17.50
Lords of Conquest	24.99	17.50
Starfleet	24.99	17.50
Hostages	24.99	16.50
Operation Wolf	24.99	16.50
After burner	24.99	16.50
Falcon	29.99	19.50
Fahrenheit 451	24.99	16.50
Firezone	24.99	16.50
Kennedy Approach	24.99	16.50
Munsters	19.99	13.50
Mini Golf	19.99	18.50
Night Hunter	24.99	17.50
Joan of Arc	19.99	13.50
Espionage	19.99	13.50
Batman	19.99	123.50
Manhunter	29.99	19.50
Advance Ruby Sim	19.99	13.50
Crazy Cars II	19.99	13.50

SOFTWARE LIST

TITLE	S.S.P. £	OUR PRICE £
Alien Syndrome	19.95	13.50
Arcade Force Four	24.99	19.50
Arkanoid II	19.99	13.50
Armageddon Man	19.99	14.50
Barbarian	24.99	16.50
Barbarian	19.99	10.50
Bards Tale 1	24.99	17.50
Better Dead Than Alien	19.95	13.50
Beyond The Ice Palace	19.99	13.50
Bionic Commando	19.95	16.00
BMX Simulator	14.99	10.50
Bubble Bobble	19.99	13.50
Buggy Boy	19.99	13.50
Bomb Jack	19.95	13.50
Borrowed Time	24.99	16.50
Bureaucracy	34.99	26.50
Captain Blood	24.99	16.50
Casino Roulette	19.99	13.50
Chessmaster 2000	24.99	17.50
Chubby Gristle	19.99	13.50
Corruption	24.99	16.50
Carrier Command	24.99	16.50
Champion Wrestling	19.99	16.00
Champion Water Ski	19.99	16.00
Chess	24.99	16.50
Crash Garrett	19.99	13.50
Dark Castle	24.99	16.50
Defender Of The Crown	29.99	19.50
Dungeon Master	24.99	16.50
Deflector	19.99	16.00
Daley Thompson	19.99	13.50
Deluxe Scrabble	19.99	13.50
Deja Vu	29.99	19.50
Diablo	14.99	10.50
Dizzy Wizard	19.99	13.50
Elf	19.99	13.50
Eco	19.99	13.50
Eddie Edwards Ski	19.99	13.50
Elite	24.99	16.50
Empire Strikes Back	19.99	13.50
Extensor	9.99	7.50
Fire & Forget	24.99	16.50
Flight Sim II	39.99	26.50
Football Manager II	19.99	13.50
Flintstones	19.99	13.50
Foundation Waste	24.99	16.50
Fernandez Must Die	24.99	16.50
Formula One	19.99	13.50
Guild Of Thieves	24.99	16.50
Gunship	24.99	16.50
Get Dexter II	19.99	13.50
Gauntlet II	24.99	19.50
Gary Linekers S/Skills	19.99	13.50
Gold Runner II	19.99	13.50
Garfield	19.99	13.50
Hollywood Poker Plus	14.99	10.50
Hardball	24.99	16.50
Hollywood Hijinx	29.99	19.50
Hollywood Poker	14.99	10.50
Helter Skelter	14.99	10.50
Hot Shot	19.99	13.50
Ikari Warriors	14.99	10.50
Impact	14.95	10.50
Impossible Mission II	19.99	16.50
Insanity Fight	24.99	16.50
Int'l Soccer	24.99	16.50
1KI	24.99	16.50
I Ball	9.99	7.50
Jet	39.99	26.50
Jewels of Darkness	19.99	13.50
Joe Blade II	19.99	13.50
Juggler	24.99	16.50
Killdozer	19.99	13.50
Knight Orc	19.95	13.50
Kings Quest Pk	24.99	16.50
Knightmare	19.99	13.50
Las Vegas	9.99	7.50
Leather Goddess	29.99	19.50
Leatherneck	19.99	13.50
Leisure Suit Larry	19.99	13.50
Living Daylights	19.99	13.50
Lurking Horror	29.99	19.50
Legend of the Sword	24.99	16.50
Mach III	19.99	13.50
Mercenary Compendium	24.99	16.50
Mickey Mouse	19.99	13.50
Mind Fighter	24.99	16.50
Metrocross	19.99	13.50
Mission Genocide	9.99	7.50
Mean 18	24.99	17.50
Maria's Xmas Box	14.99	10.50
Moebius	24.99	16.50
Marble Madness	19.99	14.50
Mind Forever Voyaging	29.99	19.50
Maniac's Diary	24.99	16.50
Netherworld	19.99	16.00
Night Raider	19.99	13.50
Northstar	19.99	13.50
Nord and Bert	24.99	16.50
Nigel Mansell's G P	24.99	17.50
Obliterator	24.99	16.50
Out Run	19.95	16.00
Overlander	19.99	13.50
Off Shore Warrior	24.99	16.50
Ogre	24.99	16.50
Puffys Saga	24.99	17.50
Powerdrome	24.99	17 50
Pacmania	19.99	13.50
Pandora	19.99	13.50
Pawn	19.99	13.50
Peter Beardsley	19.99	13.50
Phoenix	19.99	13.50
Pink Panther	19.99	13.50
Platoon	19.99	13.50
Power Play	19.99	13.50
Predator	19.99	13.50
Power Struggle	14.99	10.50
Purple Saturn Day	24.99	16.50
Perfect Match	24.99	16.50
Questron II	24.99	19.50
Question of Sport	24.99	16.50
Return to Genesis	19.99	13.50
Rampage	14.99	10.50
Rolling Thunder	19.99	16.50
Roadwar 2000	24.99	19.50
Roadrunner	24.99	16.50
Revenge II	9.99	7.50
Rings of Ziffin	24.99	16.50
Rockford	19.99	13.50
Rambo III	24.99	16.50
Ranarama	19.99	16.00
Roadwars	24.99	16.50
Roadwar Europa	24.99	19.50
Shackled	19.99	13.50
Side Arms	19.99	16.00
Silent Service	24.99	16.50
Sapiers	19.99	13.50
Sky Fox	14.99	12.50
Sky Fighter	14.99	10.50
Slap Fight	19.99	13.50
Space Quest I	19.99	13.50
Star Trek	19.99	13.50
Scenery Disc 7	19.99	13.50
Scenery Disc II	19.99	13.50
Scenery Disc European	19.99	13.50
Scenery Disk Japan	19.99	13.50
Sentinal	19.99	13.50
Sidewinder	9.99	7.50
Space Harrier	19.99	13.50
Spitfire 40	24.99	16.50
Starwars	19.99	13.50
Starglider	24.99	16.50
Stellar Crusade	34.99	26.50
Stir Crazy	19.99	13.50
STOS	29.99	19.50
Street Fighter	19.99	16.00
Street Gang	14.99	10.50
Strip Poker	19.50	13.50
Strip Poker II	14.99	10.50
Summer Olympiad	19.99	13.50
Super Hang-On	19.99	13.50
Super Sprint	14.99	10.25
Space Ace	19.99	13.50
Soccer Supremo	14.99	10.50
Staff	19.99	13.50
Sundog	19.99	13.50
Star Fleet	24.99	17.50
Sinbad & Throne of Falcons	24.99	16.50
Speedball	24.90	16.50
Superman	24.99	16.50
ST Karate	19.99	13.50
Skrull	24.99	16.50
Tanglewood	19.99	13.50
Tetris	19.99	13.50
Thrust	9.99	7.50
Tracker	24.99	10.50
Turbo Cup	19.99	13.50
Typhoon	19.99	13.50
Thundercats	19.99	13.50
Time and Magik	19.99	13.50
Terramex	19.99	13.50
Terrorpods	24.99	16.50
Transputor	24.99	16.50
Thunder Blade	24.99	19.50
Techno Cop	24.99	19.50
Times of Lore	24.99	16.50
Ultima III	24.99	16.50
Ultima IV	24.99	16.50
Uninvited	24.99	16.50
U.M.S.	24.99	16.50
Victory Road	24.99	16.50
Virus	19.99	13.50
Vampire Empire	19.99	13.50
Vegas Gambler	24.99	16.50
War Games Con Set	24.99	16.50
Warlocks Quest	19.99	13.50
Where Time Stood Still	19.99	13.50
Whirligig	19.95	13.50
Winter Olympiad	19.99	13.50
Warhawk	9.99	7.50
Wizards Crown	24.99	16.50
Wizards Warz	19.99	13.50
Wanted	19.99	13.50
Xenon	19.99	13.50
Xevious	24.99	16.50
Zynops	19.99	16.00
20000 Leagues Under the Sea	19.99	13.50

UTILITIES

TITLE	S.S.P. £	OUR PRICE £
Adventure Art Studio	69.99	50.50
Animator	79.95	60.50
Art Director	49.95	32.50
Cad 3D Fonts and Printives	29.95	21.50
CAD 3D Architectural Design	29.95	21.50
Degas Elite	24.95	17.50
Dev-Pac 2 Ver 2.0	59.95	45.50
Digi Drum	24.95	17.50
Deluxe Music Construction Set	69.95	50.50
Easy Draw II	59.95	45.50
Easy Draw II Supercharged V	99.99	72.50
Easy Draw 2 General Library	29.95	21.50
Easy Draw 2 Technical Library	29.95	21.50
Fast Assembler	19.95	16.50
First Word Plus	79.95	60.50
Film Director	59.95	45.50
Fleet Street Publisher	115.00	95.50
G.F.A. Artist	49.95	32.50
G.F.A. Compiler	45.99	32.50
G.F.A. Basic Interpreter V.3	45.95	32.50
G.F.A. Draft	99.99	72.50
G.F.A. Draft Plus	139.95	115.00
G.F.A. Sheet	45.99	32.50
G.F.A. Vector	34.95	26.50
Graphic Sheet	59.99	45.50
G.S.T. C Compiler	24.95	17.50
K. Spread II	79.95	60.50
K. Data	49.99	32.50
K. Graph II	49.99	32.50
K. Minstral	29.95	21.50
K. Roget	49.99	32.50
K. Word II	59.95	45.50
K. Sega	49.95	32.50
K. Occam	59.99	45.50
Lattice V.4	Please ring	for details
Lisp	89.95	69.50
Macro Assembler	24.99	17.50
Maps & Legends	29.99	21.50
Modula II Developer	149.95	110.50
Modula II Standard	99.95	72.50
Music Studio	24.99	21.50
M.C.C. Pascal	89.99	69.50
Paintworks	34.95	26.50
Power Basics	39.99	26.50
Publishing Partner	159.99	115.50
Sage Accountant	171.95	150.50
Sage Accountant Plus	228.85	175.50
Sage Book Keeper	113.99	85.50
Saved	29.99	21.50
ST Data Manager	79.99	60.50
ST Swift Calc	79.99	60.50
ST Word Writer	79.99	60.50
ST Doctor	19.95	16.50
ST Replay	79.99	60.50
Super Conductor	49.99	32.50
Superbase Personal	99.95	72.50
Timeworks DTP	99.95	72.50
Timeworks Partner	49.95	32.50
Trimbase	89.95	70.50
V.I.P. Professional	149.99	110.50
Word Perfect	228.99	175.50

Castle Computers

NOW TAKEN VISA

Dept PCW

6 Hope Street, Hanley, Stoke-on-Trent

Tel: 0782 575043 (10 lines)

SPECTRUM SALE		SPECTRUM SPECIAL OFFERS		SPECTRUM SPECIALS		C64 SPECIALS		C64 SPECIALS		C64 SPECIALS	
Thunderblade	5.50	Nebulus	3.50	Crazy Cars	6.50	Double Dragon	6.50	Big Sleeze	1.99	Biggles	1.00
Double Dragon	6.50	Leaderboard	2.99	Fire and Forget	6.50	Afterburner	6.75	Delta	3.50	Killed Until Dead	2.99
R Type	6.99	Basil Mouse Detective	1.50	Spy v Spy Trilogy	3.95	Robo Cop	6.50	Nightmare	2.99	Sentinel	2.99
Afterburner	6.99	Ninja Hampster	1.99	Sentinel	2.99	R Type	6.50	Leaderboard	2.99	Sidewise	2.99
Robo Cop	6.75	Lords of Midnight	1.99	Hysteria	2.99	Operation wolf	6.50	Legions of Death	2.99	Tigers in the Snow	2.99
Batman II	6.75	Action Force 1	2.99	Rygar	2.99	Emlyn Hughes Soccer	6.50	Flying Shark	2.99	IK+ (Special Offer)	1.99
Operation Wolf	6.75	Wolf Man	2.99	Rebel	1.99	Echelon	6.99	19 Boot Camp	4.95	Captain America	1.99
Skate or Die	6.99	Yeti	2.99	The Big Sleeze	2.99	720°	2.99	Karnov	2.99	Trantor	2.99
Skateball	6.99	Enduro Racer	2.99	Super Cycle	1.99	Starglider (Special Offer)	2.99	Mask II	2.99	Starglider	2.99
S.D.I (Save 50%)	4.95	Knightmare	2.99	Oink	1.99	Wonder Boy	2.99	Bedlam	2.99	Super Sprint	2.99
Dragon Ninja	6.50	Anilist	1.99	Mag Max	2.99	Tetris	2.99	Rampage	2.99	Winter Olympiad 88	3.95
Tracksuit Manager	6.50	Guadal Canal	1.99	Frightmare	2.99	Techno Cop	6.99	Octopolis	2.99	Super Hang On	3.95
Gunship	6.50	Ancient Battles	9.95	Fire Fly	2.99	Tiger Road	6.99	Quedex	3.50	Quartet	2.99
Game Set and Match II	8.95	Super Sprint	1.99	Last Mission	1.99	Black Tiger	6.99	Hunters Moon	3.50	Rygar	2.99
The In Crowd	9.95	IK+ (Special Offer)	1.99	Flunky	1.99	Black Lamp	2.99	Little Computer People	1.99	Road Runner	2.99
Savage	6.00	Leviathan	1.50	Waterloo	3.95	Led Storm	6.99	Night Games II	2.99	720°	2.99
We Are The Champions	6.95	Quartet	1.99	Champ Sprint	2.99	Wec Le Mans	6.50	Indiana Jones	2.99	Ramparts	1.00
Cybernoid II	6.00	Giants	9.50	Clever and Smart	1.99	G I Hero	6.75	A View To A Kill	1.75	North Star	2.99
Road Blasters	6.25	Ikari Warriors	5.50	Mask III	2.99	Dynamic Duo	6.75	Mean City	1.99	Andy Capp	2.99
Tiger Road	6.50	Laser Squad	6.75	West Bank	1.99	Motor Massacre	6.99	Flunky	1.99	Bobsleigh	2.99
Black Tiger	6.50	Black Lamp	2.99	Yogi Bear	1.99	Operation Hormuz	6.99	Action Force	2.99	Dan Dare	1.50
Fire and Forget	6.50	Tetris	2.99	Blood Valley	2.99	Skateball	6.99	Frankenstein	2.99	Dandy	0.99
Exploding Fist +	5.50	Dark Sceptre	2.99	Spitfire 40	3.95	Cave Man Uglympics	6.99	Jack Nipper II	2.99	Psycho Soldier	2.99
Crazy Cars	6.50	Cholo	1.99	Ace of Aces	2.99	Butcher Hill	6.99	On The Tiles	1.99	Indoor Sports	1.99
Barbarian II	6.50	Magnetron	1.99	Supreme Challenge	8.95	Star Trek	6.99	Traz	1.75	Leaderboard Executive	2.99
Guerilla Wars	5.25	Gothik	2.99	1943	6.50	Batman II	6.50	Legions of Death	2.99	Football Manager II	4.95
F 16 Stealth	7.50	Echelon	6.00	Barbarian (Psygnosis)	6.50	Western Games	1.99	Terramex	2.99	Fire Fly	2.99
Carrier Command	10.00	Savage	6.00	Eye	2.99			Mystery of the Nile	1.99	Last NInja II	7.99
The Train	6.75	Red Led	2.99	Zengi	0.99			Comet Game	.50	Microprose Soccer	9.95
Airbourne Ranger	6.99	Led Storm	6.50					Enduro Racer	2.99	Wec Le Mans	6.50

PAY THAT LITTLE EXTRA FOR A FAR BETTER SERVICE

P&P ON ALL ORDERS UNDER £5.00 – 50P, OVER £5.00 P&P FREE *(NO OVERSEAS ORDERS PLEASE)*

WE NOW OFFER A FASTER SERVICE THAN EVER BEFORE
ALL ORDERS SENT 1ST CLASS POST.

ATARI ST		ST SPECIAL OFFERS		ATARI ST		AMIGA SPECIAL OFFERS		AMIGA SPECIAL OFFERS		AMIGA SPECIAL OFFERS	
American Pool	5.00	Night Hunter	13.95	The Krystal	19.95	The Krystal	19.95	Obliterator	9.95	Falcon	19.95
Speedball	14.95	Helter Skelter	9.50	Fed of Free Traders	21.95	Cosmic Pirate	15.95	Barbarian	9.95	TV Sports Football	19.95
GFL Basketball	6.00	Kennedy Approach	14.50	20,000 Leagues Under Sea	12.95	Chuckie Egg	12.95	Terrapods	9.95	Sword of Sodan	19.95
Falcon	15.95	Inter Karate +	12.95	Skate or Die	15.95	Robo Cop	14.95	Sex Vixens From Outer Space	18.95	Hybris	19.95
GFL Football	7.00	Nebulus	13.95	Custodian	12.95	Skate or Die	15.95	Sherlock	7.00	Manhatten dealers	12.95
Enduro Racer	5.00	North Star	5.00	Mission Elevator	9.50	Prospector	12.95	Plundered Hearts	7.00	Arkanoid II	7.00
Deja Vu	10.00	Pinball Factory	6.00	Jug	12.95	Operation Wolf	14.95	Leather Goddess	7.00	Driller	10.00
Stella Crusade	15.00	Puffys Saga	13.00	Chuckie Egg	12.95	Sword of Sodan	19.95	Summer Olympiad	7.00	Black Shadow	3.00
Killdozers	4.00	Purple Saturn Day	14.95	Dungeon Master	14.95	Fed of Free Traders	20.95	Star Ways	3.00	Powerdrome	15.95
Elemental	5.00	Paint Works	8.00	Joan of Arc	13.95	GB Air Rally	9.00	Hacker	4.00	Arcade Classics	5.00
Tanglewood	8.00	Super Huey	5.00	Man Hunted	19.95	Helter Skelter	9.50	Hacker II	4.00	Bionic Commando	12.00
Lombard Rally RAC	14.95	Tetris	6.00	1943	12.95	Inter Soccer	12.95	Space Station	3.00	Elf	5.00
Crazy Cars II	14.95	Shanghai	5.00	Night Raider	12.95	Falcon	19.95	Quadralien	7.00	Empire Strikes Back	12.95
Afterburner	13.95	Sky Chase	8.00	Hostages	14.95	Marble Madness	10.00	Power Play	8.00	Sherlock	7.00
Robo Cop	12.95	Shuffle Board	3.00	Gato (Special Price)	10.95	Jigsaw Maniac	3.00	Nord & Bert	6.00	Sky Chase	9.00
Operation Wolf	12.95	Perry Mason	6.00			Major Motion	6.00	Tracers	8.00	Strike Force Harrier	6.00
R Type	12.95	Trantor	5.00			Music Studio	6.00	Blackjack Academy	8.00	Shooting Star	3.00
Batman II	12.95	Trauma	3.00			Out Run	10.00	Phalanx II	6.00	Super Hang On	15.95
Sinbad Throne of Falcon	9.95	Strike Force Harrier	7.00	Zynap	12.95	Pinball Wizard	6.00	City Defence	6.00	IK+	15.95
Stock Market	7.95	Spitfire 40	8.00	Jet	24.95	Rocket Ranger	18.95	Ebon Star	7.00	Mortville Manor	15.00
Summer Olympiad	7.95	Sky Rider	3.00	Powerdrome	15.95	Slaygon	6.00	Galactic Invasion	7.00	Super Man	12.95
Sun Dog	6.00	Double Dragon	12.95	Heroes of the Lance	16.95	Silicon Dreams	6.00	Cogans Run	5.00	Growth	7.00
Marble Madness	10.00	Flying Shark	12.99	Pac Mania	12.95	Gauntlet II	13.95	Flight Path 737	6.00	Speedball	14.95
Rogue	6.00	GFL Baseball	6.00	Super Sprint	5.95	Romantic Encounters	10.00	Diablo	3.00	Pac Mania	12.95
Tracksuit Manager	12.75	Fish	12.95	Inter Karate	5.95	Faery Tale Adventure	10.00	Power Drome	15.95	Pac Land	14.95
Victory Road	11.95	F15 Strike Eagle	9.95	Karate Kid II	6.95	Arkanoid II	7.00	Intersepter	15.95	Elite	14.95
UMS Vietnam Scenario	8.00	Champ Wrestling	5.00	Solomons Key	5.95	Emerald Mine	6.00	Bureaucracy	7.00	U.M.S.	14.95
Gauntlet II	12.95	Clever and Smart	5.00	Super Cycle	5.95	Dungeon Master (1 Meg)	13.00	Ball Riader	3.00	Garfield	13.95
Garfield	12.95	Bermuda Project	6.00	Leather Goddess	6.95	Fusion	15.00	Battle Chess	15.95	Micky Mouse	14.50
		Bards Tale	15.45	Planetfall	6.95			Bermuda Project	7.00		

GAME OF THE WEEK: ZAK McKRAKEN AND THE ALIEN MINDBENDERS

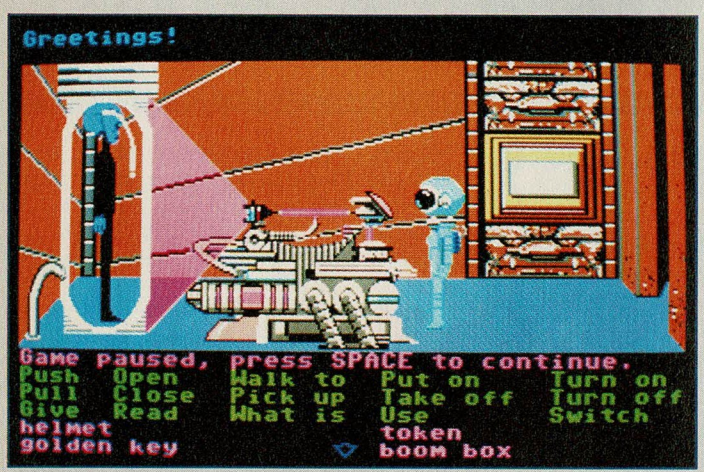
Zak the hack

Zak McKraken and the Alien Mindbenders is an interesting title for a game which certainly conjures some unusual thoughts, but whatever thoughts may cross your mind I can guarantee they will be nowhere near so weird as the game.

For a start the world is under threat of alien invasion by a group of beings who are using the national telephone network to produce intelligence-sapping sonics and an alien fun park has been found on Mars. You may be wondering how Zak fits into this rather bizarre picture but when I tell you he belongs to that high-minded group known as tabloid journalists, all will, I hope, become clear.

As Zak chases a story about a vicious two-headed squirrel he becomes involved, like it or not. There was a slight clue to this pre-ordained greatness as, just after the animated sequence showing the editor dishing out the assignment, Zak had a rather unusual dream about a strange alien device and a rather attractive woman named Annie who is into ancient artefacts.

Two things really make this game stand out from the crowd, apart from the outrageous humour, and they are the large animated characters and the control system which allows you to play the entire game without once touching the keyboard. This control system is extremely easy to use, as you point and click. By using a selection of commands at the bottom of the screen you find that you can manipulate any object or person you encounter easily. Things are speeded considerably by the fact that there is no need to be near an object to manipulate it; clicking on the object and telling the computer what you wish to do with that object is sufficient to set Zak and his companions in motion.



The companions, like Zak, are controlled directly by you. Apart from Annie there are Melissa and Leslie, currently on Mars exploring the so-called alien leisure complex. The need for multiple characters arises because many of the problems require co-operation between the characters and each of the characters has a different personality, so one may do what the other can or will not.

Several other characters inhabit this game but by far the most important two are the aliens. Every now and again you will see these two rather unusual specimens as they act out a little scene, often producing clues, always entertaining.

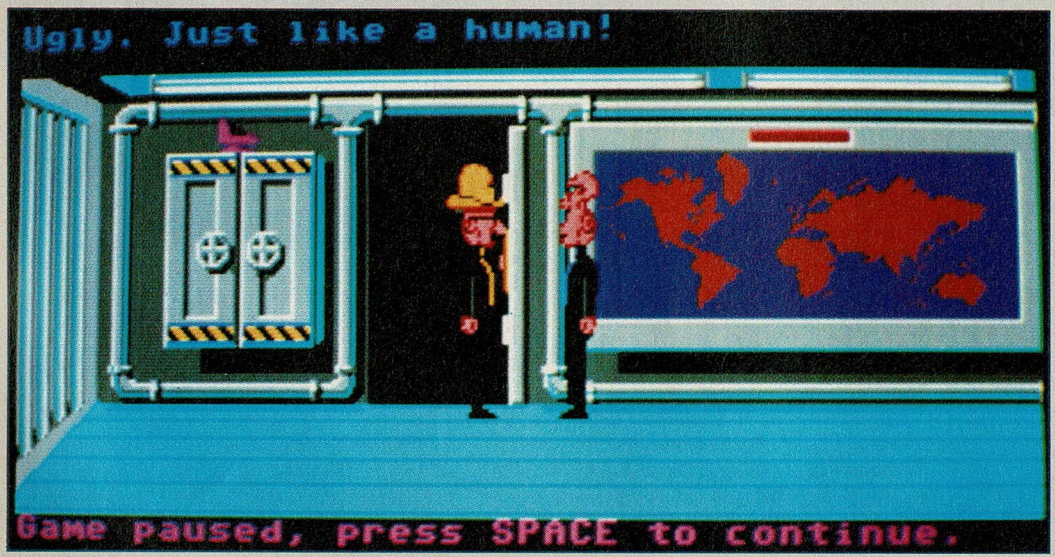
Rather than limiting the game to a small number of locations, Zak and Co are required to wander all over the world to collect the parts needed to build the alien device. Travel round the world is via the local air service. You may have noticed that I did not say friendly, as the stewardess is far from helpful – your every attempt to explore your surroundings is foiled by her keen eye and short temper.

Revenge is sweet for it is not long before she is incapacitated and you have the freedom you need to do those things all good adventurers enjoy.

Before you start your epic adventures it is wise to read the copy of the National Inquisitor, as it holds many clues to help you progress through this most unlikely of situations. If the newspaper was not sufficient there is always that telephone call from mum, where she imparts her worldly wisdom to point you in the proper direction.

The humour is very strong. Within minutes of booting this game I managed to kill the goldfish sushi twice, once by electrifying it in the lamp, thus making fish chowder and once by sending the fish down the waste disposal unit, a nerve-grinding experience for the poor fish.

You cannot help but like this game as it delights constantly with its off-beat humour and although the puzzles are well hinted, they still remain a challenge, although I hope you like making maps, since it is no fun getting lost in the jungles of Peru or the pyramids of Egypt.



Reviewer: Zak McPumphrey
Machine: ST
Price: £24.99
Supplier: Lucasfilm Games
POPULAR RATING
Graphics: 84
Sonics: 78
Gameplay: 96
Overall: 94

Time Bandit – PC

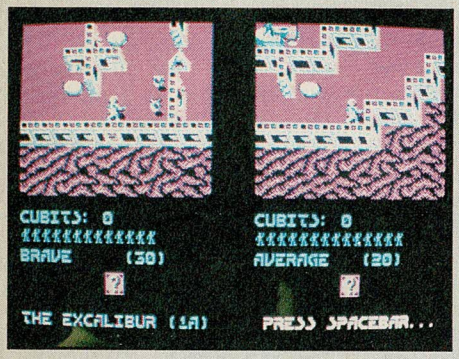
Some adventures last only a few months – others mere minutes — but this one stretches before you as a lifetime's endeavour, a challenge of the guardians.

Being dabblers in time, the guardians have quite a set-up and when they find that some unscrupulous time bandit has been using their gateways to loot the loot they were going to loot, they became a little miffed. The challenge they lay before you is to use their time gates, either alone or with a friend, to enter 16 lands and there, in combat, the inhabitants solve the puzzles encountered and return with the six ancient treasures.

"No sweat," you exclaim, but beware – the puzzles are fiendish and the inhabitants are extremely hostile and, to cap it all, most of the lands have 16 levels.

One-player mode is fun but with two players the ability to back-stab enhances gameplay, as missiles from your weapon are capable of inflicting grievous damage on friend and foe. In two-player mode if a player dies accidentally he returns as a shadow. The shadow is capable only of combat and, if hit, is only stunned instead of destroyed. It is beyond doubt a massive game and thankfully a save option gives you a reasonable chance of completing it.

Some of the timescapes involve considerable thought, as you must contend not only with the nasties but you must also solve the



adventure-like puzzles encountered. Not all the timescapes contain puzzles; some rely solely on a fast trigger finger.

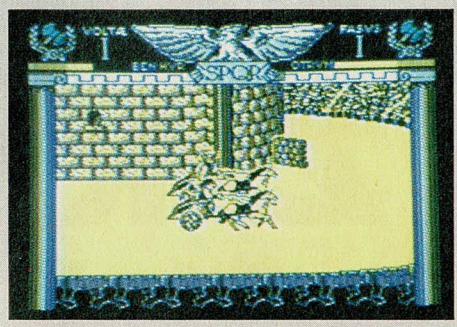
Each time you escape from a timebase its level increases. This means that the next time you visit it it may just be a little larger and certainly much more difficult.

The size and addictability of this program make it good value, as you will undoubtedly still be blasting away at the monsters and testing your brain with the puzzles months after purchase.

Reviewer: Adrian Pumphrey
Price: £19.95
Supplier: Microdeal
POPULAR RATING
Graphics: 82
Sonics: 15
Gameplay: 79
Overall: 81

Colosseum – Spectrum

It is so tough being rich, bright and handsome so I can sympathise with this guy and his troubles. Life can be a little unjust, especially when the chief of the Praetorian Guard is envious of the attentions a beauty named Calia is heaping on you. Things degenerated so far that Nerio branded you a coward and a traitor. Your only means of



redemption is the *Colosseum,* where you can enter a chariot race, risking life and limb for fame and glory.

The game appeared on the screen and I was stunned. The first thing I did was to check it was a Spectrum connected to the monitor and then I launched into the fray, wheels-a-spinning and arms-a-chopping. To validate his honour and prove his courage Benurio must survive four laps on each of the four deadly courses.

The race starts and the fun begins. As you tear along the circuit, avoiding the casually-placed boulders and walls, you encounter your fellow competitors. Talk about Sunday drivers – these guys are lethal. If they are not trying to bury the hatchet in your head they are going fender-to-fender trying to force you into the nearest immovable object.

Of course, this cuts both ways and you are capable of putting on the pressure to bring about an early demise. If ramming is not your style you can slug it out with your currently-held weapon. They change with each competitor you kill, increasing gradually in strength until you possess the coveted throwing weaponry.

The deadlier weaponry really is needed, for as you slug it out your opponent is returning the shots and if his weapon is the more powerful there is a fair chance that your energy level will be depleted before his.

The graphics are truly remarkable, with the sequences when the chariots go round the corners a true feat of programming; as the objects in the distance rotate and grow as you hurtle to victory accompanied by frenzied hoof beats.

Reviewer: Adrian Pumphrey
Price: £2.99
Supplier: KIXX
POPULAR RATING
Graphics: 87
Sonics: 75
Gameplay: 81
Overall: 80

SAS Combat Simulator – Amstrad CPC

Less of the breakfast, on with the slaughter, as 4mm. high SAS Commando goes on the rampage, blasting his way past multi-coloured troops, trains and a host of other organic and mechanical machines of death. Blowing away the humans is relatively easy when they stand still but for some reason they refuse to co-operate and continue to weave round the screen spraying bullets and lobbing grenades.

If that was not bad enough some of them have the temerity to snipe from concrete bunkers; a grenade soon wipes the smile off their faces.

Initially it all seems a little too much as the hail of bullets and constantly-mobile troops provide an effective barrier against further progress. The shoe is on the other foot when your little killing machine runs over a Code Masters symbol. That grants you a bonus – be it rapid fire, an extra life or a jeep. The vehicle really turns the tables on your hostile friends as it renders you vulnerable only to their grenade attacks, which are easily avoided.

About halfway through the first level the scrolling changes from horizontal to vertical. Once past the first level, courtesy of the jeep, the gameplay changes completely. Not only is your man much larger but he is walking along a horizontally-scrolling landscape. As he wanders along, enemy troops meander up to him and stick him with their knives. Your only defence is to do it to them before they do it to you – a tricky business as timing is crucial as you have only one chance per victim.

Not the best shoot-'em-up around as the gameplay fluctuates from ridiculously difficult to boringly easy with frightening regularity.

Reviewer: Adrian Pumphrey
Price: £2.99
Supplier: Code Masters
POPULAR RATING
Graphics: 68
Sonics: 45
Gameplay: 50
Overall: 53

Captain Silver

It is a yo-ho-ho and a bottle of rum as our intrepid hero sets off to find buried treasure against incredible odds. There are four levels and they take our hero through the city to a pirate-infested ship and on to a jungle where he will find the treasure mountain of *Captain Silver*.

In the city, Silver must use his sword to deadly effect against giant teddy bears and grinning cats. By collecting the letters left behind by those demised characters he can earn cash bonuses; he can also choose the direct approach and find the gold on the streets.

With the gold and a key, Silver can enter the shop where he can buy enhanced weaponry and other bonus items. Once he

reaches the ship he must explore its decks for treasure chests while engaging the pirates. If he manages to defeat the pirate captain it is off to the jungle for more adventures.

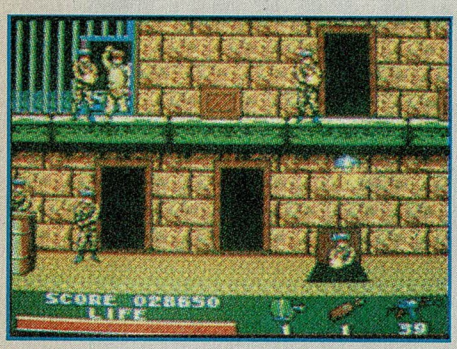
The graphics are a little too childlike for my liking but this only makes it an ideal game for children, as the gameplay is simple and the characters comic. □

SEGA SPECIAL

Rambo III

John Rambo, the one with the over-developed deltoids and the under-developed brain, is on the rampage in Afghanistan. Grabbing his light phaser, Rambo causes havoc among the enemy forces as he battles his way through level after level of Soviet troops to rescue his POW friend Colonel Trautman.

Naturally, the enemy troops are a little



hostile and not above shooting back. It is therefore advisable to fire a few rounds in their general direction before your energy level becomes too critical.

Rambo is armed with a machine gun; rapid fire is achieved by holding down the trigger; when empty it reverts to single shots. Rambo also carries a grenade – which is activated by shooting the symbol at the bottom of the screen – and a healing drink which replenishes his diminishing energy levels.

Apart from the troops, various items can be shot. If you are lucky, shooting an item may reward you with extra ammunition or free a prisoner.

The game is very simple to play; all you are required to do is pay close attention to the slowly-scrolling landscape, loosing bursts of automatic fire at the defending troops. The graphics are good and the resounding bark of the Kalashnikov is very atmospheric. □

Golvellius, Valley of Doom

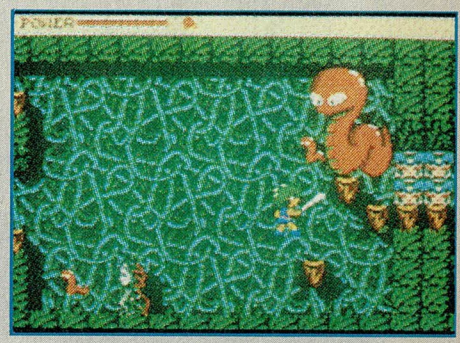
Cute graphics abound as our hero sets forth to rescue a fair princess from the clutches of the evil king *Golvellius*.

The green-haired hero Kelesis must battle through valley and cave to defeat the seven great demons standing between him and a final confrontation and unrequited love. Kelesis starts the adventure unarmed but before he can get into any serious trouble a wise old woman gives him a sword and a pair of boots.

To reach Govellius and free his love Kelesis must pass through seven valleys, each guarded by a demon. Each valley comprises several screens and plenty of monsters. In each of the screens a small cave entrance can be found; the entrances are often hidden and you invariably have to fight off a monster for a random period before the entrance appears.

On entering the caves Kelesis will encounter various friendly characters. The wise woman will sell equipment to aid in the quest; the fairy will offer advice and a host of other beneficial characters will help Kelesis – for a price.

In one of the caves Kelesis will encounter a horizontal or vertical scrolling cave



section which he must battle through to encounter the guardian demons or exit to a new valley.

This is a huge game which is ideal for those wishing to spend a little time and effort idling away the hours. Thankfully there is a code word which can be entered to restart at the same level. □

Lord of the Sword

Adventure unlimited as a lone hero sets forth with sword and bow to battle the evil inhabitants of the land and complete the three tasks which would prove him worthy of being king.

As the hero traverses this horizontally-scrolling land he will encounter many strange foes, some of which require a skilful bow shot since getting any closer is inadvisable. Occasionally he will encounter a town where he may call up a map of the land and/or seek guidance from the inhabitants. This takes the form of shelter or advice, or even the odd item or two to aid our traveller.

There is no shortage of combat as the lands are fraught with difficulty but a little thought is also needed to use the villagers' gifts wisely. The graphics are reasonably good and colourful and the monsters fade away rather than explode in a shower of blood. □

SEE US AT
THE WHICH COMPUTER? SHOW
21-24 FEBRUARY 1989 NEC BIRMINGHAM

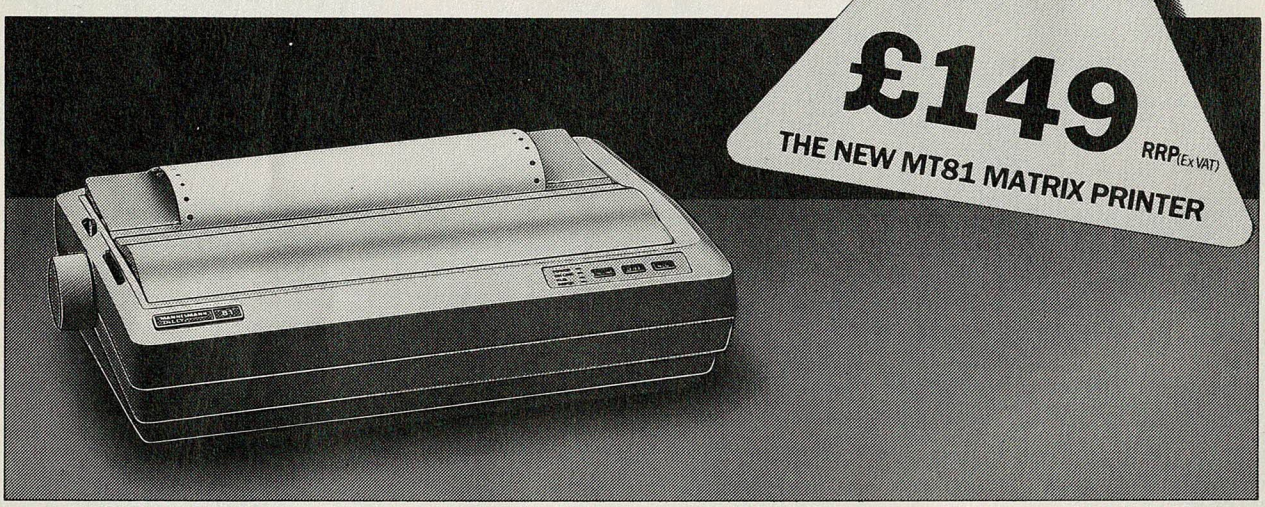
MANNESMANN

TALLY

LEADS ON QUALITY.

NOW IT LEADS ON

PRICE.



Be a FRIEND of Guide Dogs

FOR FURTHER INFORMATION ON THE EXCITING NEW MT81
AND THE FULL RANGE OF MANNESMANN TALLY PRINTERS
PHONE (0734) 772528/788711 OR FAX (0734) 791491

MANNESMANN TALLY

THE STRONGEST PRINTER RANGE IN THE WORLD

SAND AND GEMS

Thanks to Sid Hancock for sending me a mbx to tell me about Sandie's Beach - 0905 774477 - V21 /22/22bis/23 - 24 hours a day, system closed for mail 0230-0330 daily. After a refreshingly uncomplicated registration procedure I was allowed into this scrolling board and was presented with a menu for some 27 echoes.

Echoed conferencing is what Sandie's Beach is primarily about, although there are some file areas attached to some of them. Among the list of echoes available from this extensive list are Penpals around the world; Special interest groups for Amstrad, Apricot and Archimedes computers; hardware; music; science fiction and fantasy; and even cookery.

ABLED echo

The Beach also has a section called ABLED which is an echo designed for disabled users. It is one of my convictions about comms that it has a great deal of potential for usefully interfacing the disabled and ablebodied. In the case of housebound people comms could radically expand their sphere of communication and social life.

At the front end of the board I was informed that Sandie will be getting a hard drive in the next two weeks. This will mean that downloading should be much faster, as she will not need to use the TUG 2 download database. Sandie is, of course, Sandie Franchi, who is co-sysop of TUG 2 with her husband Pete. TUG 2 is on 0905 775191 - V21/22/22bis/23-24 hours. The sysop is John Laffey and his wife Dawn is co-sysop. The BB has been on-line for only about four weeks but is already showing signs of becoming a lively and interesting log-on.

It lists its specialisms as MG cars and nursing - an odd mix, you may think, but explained easily when you discover Laffey's passion for MGs and his wife's career as a nurse. This BB has obviously set out to be a partnership.

Originally Dawn had only her own section in the bulletins, the Medical Den, but now, apart from almost dominating the message area, she has established a file area entitled Health. There you will find a growing number of textfiles covering health subjects, including detailed but readable and helpful information on AIDS. Dawn is keen to hear from other female comms enthusiasts.

An inventively-displayed section, especially for a scrolling board, is The Wall of Fame. It is essentially a textfile comprising what used to be called typewriter art - pictures composed of ASCII characters - depicting a wall on which quotes and graffiti are short story textfiles which can be <T>yped to the screen and read, or downloaded by other users.

Trivia Quiz

Midget Gem is also to be the base for a Trivia Quiz which will have its elements scattered on as many BBs as John can become involved. If each sysop displaying a part of the quiz were to donate £1 a fairly substantial prize could be offered to the user who managed to answer the questions and follow the bulletin board treasure trail across Britain. John reckons that participation would mean at least one new caller per month for each BB on the trail's list. Sysops wishing to take part, contact John.

Finally I want to tell you about a new BB set for a meteoric rise to stardom in the BB firmament. I would say that, as I am the sysop. If you want to make direct contact to contribute news, views, board recommendations or brickbats for inclusion in this column you can now log-on to The Owl Service - 0532 605876 - V21/23 - 2100-1400 hours at present but 24 hours from March 1. Or use Prestel MBX 011112661. See you on-line. □

Malcolm Arnold

YOUR OBJECTIVE IS VERY SIMPLE BUT FAR FROM EASY: TO BECOME A SUCCESSFUL, AND PREFERABLY NOT DEAD, COSMIC PIRATE.

"Every detail of this package is well considered and beautifully executed ... the challenge is lasting and compulsive"
Computer and Video Games

"A thinking man's shoot em up ... an engrossing and addictive challenge that will have you coming back for more"
The One

"This one'll have you coming back so often your joystick will beg for a break"
ST Amiga Format

Available for Amiga and Atari ST Computers.
Coming Soon for Commodore 64, Spectrum and Amstrad.

OUTLAW

Outlaw Productions, The Old Forge, 7 Caledonian Road, London N1 9DX

Please check for availability of individual formats

PALACE SOFTWARE

Will young guns go for it?

An alternative view of the new Konix Multi-System from ex-Mirrorsoft man John Cook.

"The Toy Industry", commented a friend as we wandered round a rather subdued Toy Fair at Earls Court, "is run exclusively by 60-year-olds and they all live in Leeds." If it is not true it certainly feels like it.

I did not get the feeling many people were having fun; toys are obviously serious business, yet an oasis of joviality and optimism was to be found on the Konix stand on which the idea of the new Multi-System was launched to an expectant trade.

The press has, predictably, gone crazy about it. New hardware is thin on the ground and there is always the possibility that new enthusiasm and new readers might be just round the corner.

So the Multi-System has, before a production version has come off the line or even the development system is completely finished, been hailed as "The Ultimate Games Machine".

Far be it for anyone to suggest that acclaim might be a little premature but the hardware of the machine has failed to excite many of the programmers I have quizzed.

They point to the inadequate 128K on-board memory, particularly for a machine with a 50K screen. Double buffer that for vectors and there is no memory for the code. Go for Sprites and memory is eaten just as fast. Not much there for sampled sound, either.

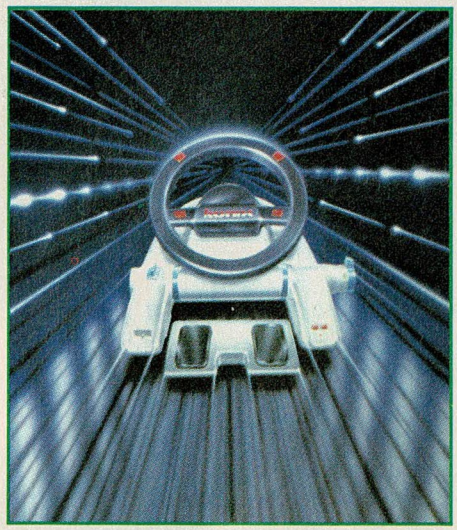
One other downer and a source of concern is the launch of a powered chair to be sold alongside the system for an extra £150. Considering powered arcade units sell for something in the region of £9,000 new, can the Konix chair be anything other than a flimsy gimmick?

These are all negatives and no doubt, with time and effort, if programmers get down to it – that assumes the software houses can be persuaded to play ball – good, perhaps great games can be produced for the system. After all it does outspecify all the 8-bit console opposition – and perhaps the chair is only an example of misplaced zeal.

This is all irrelevant to the men who sign the cheques. They know that the only two things which will make the Konix sell is the fact that it will cost slightly less than £200 retail and it looks nothing like a computer. In fact, Wyn Holloway has designed a piece of equipment which is something out of a teenies' dream.

Do you want to be a racing driver? Ride a motor bike, fly an F-16? Konix will be dangling those temptations in front of children and you would have to be strong-willed not to go for it.

In fact, the Multi-System is the correct machine at the proper time. The mini-recession of last autumn has meant that the mass junking of Spectrums in favour of 16-bit computers did not occur at Christmas – again. To pay £300 or £400 with the prospect of £20–30 software afterwards you need to be a very enthusiastic enthusiast, it seems. Yet Spectrum owners still shuffle discontentedly in front of their TV sets. They want more.



The control unit can be adapted to car steering wheel, aircraft controls or bike handlebars.

Sega and Nintendo could have supplied the goodies with their 8-bits but have not chosen to divert resources to the European market. A cheap Atari ST console might fulfil the needs of the nation's youth and there are always rumours of the Commodore cut-down Amiga: both would have the significant advantage of a huge software base.

Konix has a machine here and now – well, almost – and looks like playing most its cards right. Styling and lack of competition will make it one in a field of one this year and congratulations to everyone involved, in advance.

Yet something still niggles about the future of the System beyond 1989. With serious competition, would Sega and Nintendo, with far more muscle than Konix, just turn belly up? Or would they finally take Europe seriously, perhaps even with the new 16-bit consoles? What about high-specified future developments which would compete head-on with the Konix, like the hand-held games machine rumoured from Epyx?

My guess is at that time we will all be looking back at the system and those gushing headlines and reaching the only possible conclusion – it's good but not *that* good. □

A 3½ inch disc drive unit is included with a 'game safe' facility and also a Konix joystick.

PaperClip Publisher

Tony Hetherington reviews the latest C64 DTP package from across the pond.

The C64 has always had its fair share of DTP packages but they have been aimed at specific users. The AMS *Stop Press* is linked to its mouse and *GeoPublish* runs only in the GEOS operating system. Now software importer FSSL is set to import copies of *PaperClip Publisher* and broaden the scope of C64 desk-top publishing.

It is certainly a package with a pedigree; its box lists three of the biggest names in C64 software - Batteries Included, which produced the original PaperClip word processor; Gold Disk Inc, author of the Amiga package *Professional Page;* and Electronic Arts, listed as the publisher. According to EA it has no plans of importing PaperClip Publisher to the U.K., so FSSL stepped in.

PaperClip Publisher is a powerful page layout program which features a built-in text and graphics editor and an icon and pull-down, menu-controlled page layout utility which is easy to use and effective.

Sample newsletter created in about thirty minutes.

The program is box-orientated; it allows its use to fill the page layout with any number of box shapes and then fill them with text and graphics to create the finished page. This means that the box menu is by far the most important aspect of the program as, either through default settings or user-defined settings, you can determine the style of the contents of box.

You can decide to level in blank or shade it with a selection of 26 patterns, have a single, double or thick line border, add a drop shadow for added effect, magnify its text or graphics contents by adjusting X and Y factors and even select text fonts and point sizes and determine whether the text will be centred or left- or right-justified.

Once you have adjusted the default box for most of your needs other minor settings such as changes in point sizes can be done quickly by adjusting the settings for the current box.

Icons down the right-hand side of the screen are used to activate many of the program functions, such as a magnifier to check minor detail like the positioning of headings, a quick text editor to add headings and captions and others to pour in text and graphics into selected boxes.

One particularly useful application is that boxes can be linked so that if there is no room for a whole document file in one box it can run on to another on the same page or even on to another page.

Editing a page layout with which you are dissatisfied could not be easier, as boxes can be moved, re-shaped and re-sized to create the desired effect. Overlaying boxes on top of each other can produce some interesting effects to improve the appearance of your letter, CV, newsletter or flysheet by adding shaded borders to headings. This is surprisingly simple and involves defining a box shaded in one of the patterns and then creating on top of it a clear box in which you type your heading.

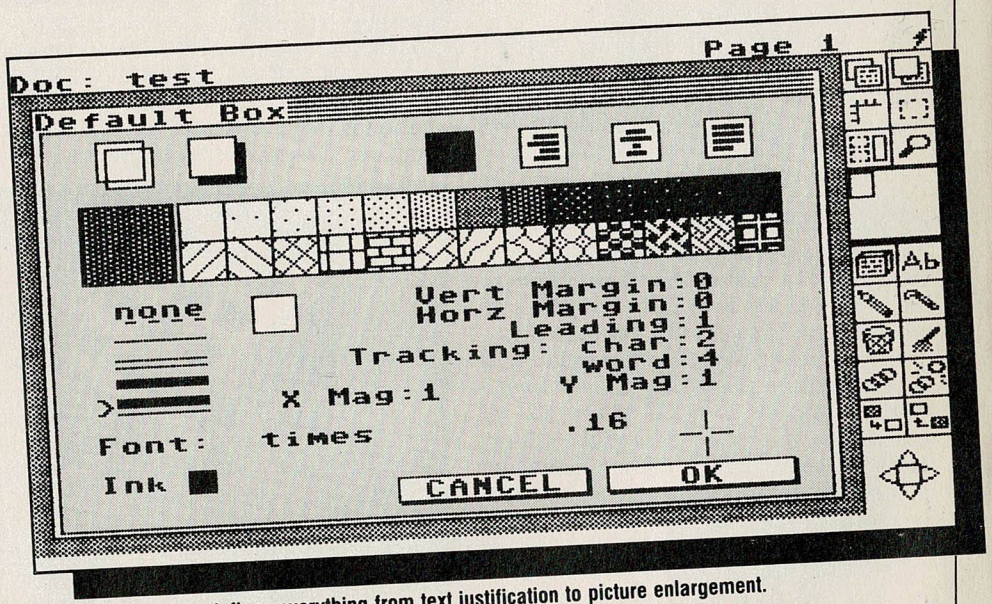
This box approach to page layout has its good and bad points as, although it is fast and simple to use, it means that text cannot flow round the contours of an irregularly-shaped drawing, something used to great effect in other packages such as Stop Press. On the plus side, boxes can be linked and given different settings to allow even a novice access to fonts, point sizes, text justifying and drop shading after only a 30-minute run through the helpful tutorials included in the manuals.

As with GeoPublish, a PaperClip Publisher user is not restricted to the fonts and clip-art supplied on the disc as utilities are supplied to use clip-art from programs such as Stop Press, *Newsroom, PrintShop* and *Printmaster.* A utility can read in data from GEOS fontpacks.

Text can also be borrowed from other word processors but the list is more limited than that of GeoPublish, which can read any C64 word processor file and centres on other Batteries Included products such as PaperClip. Others will have to use a spellchecker and thesaurus.

Graphics can be drawn in the program and then sized to fit almost any space to add to the visual appeal of the result.

Finally, your masterpiece can be saved on disc as a template for future newsletters or printed-out. The program supports most C64 printers, including the 1525, 1526, MPS 801, 802, 1000, Epson FX, LX and MX, Okimate 20 and Star NP-10 and NX-10. It must be defined when the program is loaded for the first time as it affects the shape of the page on which you can work.



Default box screen: defines everything from text justification to picture enlargement.

At times PaperClip Publisher runs at little more than snail's pace - for example, when it is pouring in text - but this should prove a useful tool and costs £34.95 - disc only - and is available from FSSL on 0386 553153. □

WHAT VIDEOVAULT HAVE GOT FOR YOUR COMPUTER

FOR ONLY £99.95 INCLUDING VAT + P&P

Access VISA

AT LONG LAST due to customer demand the VideoVault have a fantastic printer at an amazing low price, of only ***£99.95***

LOOK AT ALL THESE AMAZING FEATURES:

HUSHPRINTER by the VideoVault

- ☆ **FAST** – Bidirectional text printing at a quick 80 characters per second.
- ☆ **QUIET** – less than 56DB noise (In case you need to hear a pin drop).
- ☆ **VERSATILE** – Under control from you computer print line can be set for double size characters at 40 per line or half size characters at 160 per line, linespacing can be programmed to 4.5, 6 or 9 line to the inch.
- ☆ Standard unit less than three pounds in weight including 100ft of paper roll.
- ☆ **ECONOMICAL** – Uses low cost thermal paper, sharp tear bar permits economy tear off paper lengths – use only what you need no ribbons to run out or replace.
- ☆ **RELIABLE** – A full 12 months warranty.
- ☆ Manual controls – power on/off, linefeed.
- ☆ Print modes text – bidirectional, graphics – unidirectional.
- ☆ Print characteristics – alphanumeric.
  80 characters per line.
  40 characters per line in Expanded Mode.
  160 characters per line in Condensed Mode.
  Graphic – dot addressable.
  4800 dots per square inch (60 vertical by 80 horizontal)
- ☆ Self test build in standard, activated by holding down linefeed switch with power off and then turning power on.

TRADE & OVERSEAS ENQUIRIES MOST WELCOME

Amstrad 464 · IBM or Compatible · Atari ST · BBC Model B · Spectrum · Amiga · Psion · Commodore 64 · Z88

VideoVault

LIMITED

Old Kingsmoor School, Railway Street, Hadfield, Cheshire SK14 8AA.
Tel: 04574 66555/67761/69499 Fax No.: 04574 68946.
Head Office and Access & Visa orders, queries.

© COPYRIGHT VIDEOVAULT LTD. 981042

How to order your Hush Printer

Please supply me with _____ Hush Printers for my (tick box)
Commodore 64 ☐ Spectrum Model 16k/48k/+2 Including Interface ☐
Atari St ☐ Amiga ☐ Psion ☐ IBM or Compatible ☐
RS232 Output ☐ BBC Model B ☐ Amstrad 464 ☐ Z88 ☐
at a total cost of **£99.95** each including VAT and P+P.

We also have available a Battery Portable Model for those on the move for the IBM or Compatible ☐ Psion ☐ Z88 ☐ at only £149.95 including VAT and P+P.

All overseas orders add £10.00 for P+P charges.
Payment can be made by cheque/postal order, Access/Barclaycard. Made out to Videovault Ltd.

NAME _____

ADDRESS _____

_____ POST CODE _____

I authorise you to charge my Access/Visa card no.

Signature: _____

Send your order today to:
VideoVault Ltd,
Old Kingsmoor School, Railway Street, Hadfield, Cheshire SK14 8AA.

Noting dev

Tony Sacks returns fr Fair with the latest ne software industry h

Midi is becoming a victim of its own success. When it surfaced six years ago, Midi was designed to allow different electronic instruments to chat to one another. Although the possibility of linking the instruments to computers was envisaged, nobody could have foreseen the way the Midi software industry has mushroomed.

Now there are hundreds of Midi programs, ranging from basic sequencing, voice-editing and score-writing packages to specialist applications such as stage lighting and sound mixing control. With the increase in functions there has been the growing problem of musicians wanting to run several Midi applications on their computers without having to quit a program and boot a new one each time a new function is needed.

A variety of solutions to the problem from software vendors was a dominant theme at the annual jamboree, the Frankfurt Music Fair. As we reported previously, two companies - Steinberg of Germany and The Digital Muse of Britain - have turned to multi-tasking operating systems as the answer. The Steinberg M.ROS - Midi Real-time Operating System - was demonstrated on an ST with a pre-release version of the new Cubit "desk-top Midi recording system" running at the same time as a mixer controller called Mimix and a voice editor for the Korg M1 synthesiser. Elsewhere on the stand a sophisticated sound sample processing and a resynthesis program called Avalon, also running under M.ROS, was being put through its paces.

Cubit should be available in the U.K. next month for about $500. The PC and Mac versions, which were not on show at Frankfurt, should follow about two months later. For the moment, at least, Steinberg will continue to market and support Pro-24 and has just produced an Amiga version of this industry-standard program.

Karl Steinberg, the company founder, says he has not yet decided whether to release M.ROS as a separate program. If the company wants M.ROS to become the standard musical multi-tasking operating system it will have to make details available to other producers.

The TDM rival to Cubit, Virtuoso, has the possible advantage of basing its multi-tasking abilities on a standard system, 08/9. Virtuoso uses a regular screen layout into which functions such as the sequencer, score-writer and voice-editors will fit as page-sized modules. The program being shown was unfinished but looks full of innovative ideas.

TSM admits it faces an uphill struggle against established names such as Steinberg and C-Lab but believes its product is strong enough to succeed.

A great deal will depend on the pricing, which has yet to be decided. If successful, an Archimedes version may follow. Two of the big American producers, Dr T's and Hybrid Arts, think that multi-tasking is unnecessary and that switcher programs will do. Dr T's MPE - Multi-Program Environment - switcher and data exchange system, for example, can support up to eight programs.

Dr T's has finally succumbed to GEM and was showing a pre-release version of a $150 graphics interface, Tiger, for its Keyboard Controlled Sequencer.

Hybrid Arts was demonstrating several programs running under its Hybriswitch system which handles up to 16 programs simultaneously, if you have the memory. The complete package of interacting HA programs is now being marketed under the Total Control banner.

One major software producer which has not yet turned either to multi-tasking or to switcher programs is Passport Designs. The company's Greg Lee argues that it is for the computer makers to provide standard multi-tasking systems for their machines.

Passport was showing version 3 of its Master Tracks Pro sequencer at Frankfurt. The program now supports two separate Midi outputs, giving access to 32 channels, and has enhanced synchronising features for film and video work. Initially, MTP 3.0 will be available for the Macintosh but ST, Amiga, Apple II and PC versions will follow later this year.

One particular aspect of the multiple-program problem is that most electronic musicians now have several synthesisers, each of which needs a separate but often similar voice-editing package. At Frankfurt there were at least three "generic voice editors" which use the same program to edit and store voice data for different synthesisers. Each of the three used its own solution to the problem.

Steinberg has a generic editor for the ST called X-Syn which consists of a main program, costing around £56 in Germany, to which the user adds appropriate modules, costing £17 for each synth. Modules are available for the Yamaha DX synths and FBO1 module, the Casio CZ series, and the Roland JXBP synth and MT32 module. The Steinberg U.K. distributor, Evenlode Soundworks, does not intend to market X-Syn in Britain.

Dr T's is adopting a different approach for its generic editor, probably to be called Orchestrator. It will allow patches for at least a dozen of the most popular synthesisers, including the Kawai Ki and the Roland D110 module, to be edited and stored from the one program but will restrict the number of parameters which can be altered on each instrument to about eight. The program is due in April at a cost

Scenes from the fair: (clockwise from top left) Cheetah's hardware-based Sequencer-Plu Steinberg's multi-tasking Cubit Sequencer; a trio of Yamaha C!s; EMR's Studio 24 Plus for

elopments

om the Frankfurt Music
ws on what the music
as in store for 1989.

of $149. A third approach to generic editing is from Hybrid Arts, whose £250 GenEdit program will allow users to custom-design editing pages for their own synthesisers using graphics tools supplied with the package. This ST program, which uses an operating system said to be much faster than GEM, is due by mid-year.

Other trends were also evident. Score-writing packages seem to be in vogue this year with at least half-a-dozen new or improved contenders. Probably the most costly is the Erato Music Manuscriptor, which uses a $700 dedicated graphics tablet and was being demonstrated on a $4,200 gas plasma display. The software for a PC costs another $1,200.

More affordable are the Comus Proscore package - around £150; the Sonus £200 Superscore; the Steinberg unpriced Masterscore version 2; and the Art of the Few $229 Beethoven - all for the ST. For the IBM, Passport was showing a $200 program called Escort which allows the company's Score package to transcribe sequences recorded using Master Tracks Pro and other sequencers.

There were few all-new sequencers, other than Cubit and Virtuoso, but Intelligent Music was showing its first program of this type, Real-Time. As you would expect from IM, it is not a conventional sequencer; it lets you change or edit almost anything as the music is playing or being recorded on any of its 256 tracks. The £199 package is a companion piece to the IM composing package, called M.

Two budget sequencers made their debut. One is a £75 package for the ST and the Amiga from French company Comus. The sequencer, Track 24, is a cut-down version of the company's £155 Studio 24 package, dispensing with Studio 24 scoring facilities and interface for the £170 Big Band composing program. Both these original programs are available for the Amiga as well as the ST.

The second low-cost sequencer is a £55 ST-only package called First Track from the German producer O C Geerdes. The U.K. is the only country in Europe without a Geerdes distributor, which is unfortunate, because the company is probably the only serious musical software producer still supporting the Commodore 64. It has a portfolio of more than 20 C64 programs, most of them synthesiser voice editors. The latest and perhaps the last of these, for the Korg M1, made its debut.

If the C64 was making a last-ditch stand at Frankfurt, there were signs that other machines - particularly PC-compatibles, the Amiga and even the Archimedes - are starting to challenge the stranglehold on the music software industry held by the Atari ST and the Apple Macintosh. The PC challenge has been given impetus by the arrival of the Yamaha portable AT-compatible, the C1. A U.K. price of £2,999 has been set for the C1, which will have a 20MB hard disc and a 400-track sequencer.

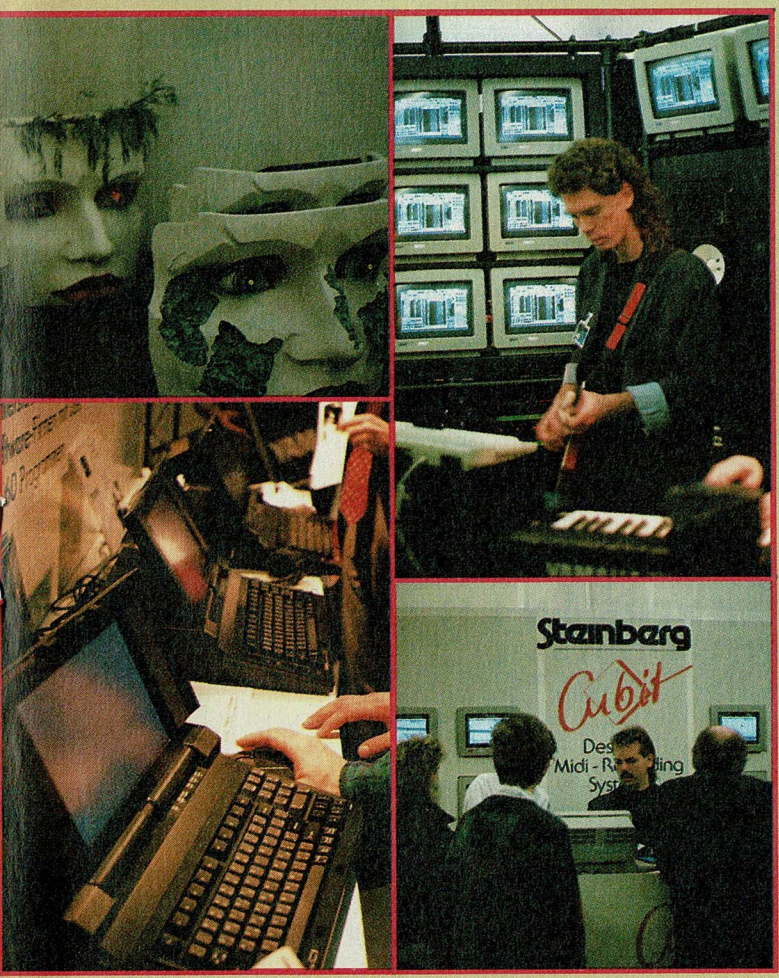
More than 40 software companies are now said to be supporting the C1 with more than 60 programs already available. Perhaps the biggest eye-opener for German computer enthusiasts at Frankfurt was the Acorn Archimedes which is not available officially in Germany. Mike Beecher of Electromusic Research was showing elements from his company's Arpeggio music system for the Archimedes. It now includes the £50 Soundsynth to create sounds for the eight internal voices: the £99 Studio 24 Plus sequencer; the £574 Scorewriter with a laser driver; and the £30 Handimusic which allows disabled musicians to create music using only one control.

Other EMR programs in the pipeline include a £30 Rhythm Box drum package; the £20 Vu-Music which interprets music graphically; and a device which will scan printed scores and turn them into sequences. EMR is still supporting other computers including the Amstrad PCW for which it recently released a £60 16-track sequencer.

Near EMR, Armadillo Systems was demonstrating its high-quality 16-bit sampling package for the Archimedes. The Archimedes still represents a small sector of the musical micro market which the Mac and the ST will continue to dominate for some time. One particularly impressive example of the power of these computers is the Turbosynth package from the American supplier Digidesign.

The package, originally for the Mac and shown at Frankfurt in a new £235 ST version, simulates a synthesiser in software on the computer. The user "constructs" a sound by connecting various modules such as oscillators and filters depicted on the computer screen. The computer then generates the data to produce that sound when it is played back through a sampler.

The show was dominated by hardware, without which Midi software would not exist. Equipment on the way includes a new version of the Kawai best-selling K1 budget synthesiser with a new drum section and a built-in reverb; a £250 hardware sequencer, including powerful echo simulations and other affects, from joystick maker Cheetah; a new £200 version of the Casio digital horn, of which 10,000 have been sold in the U.K., with a built-in accompaniment section; and a box called Proteus contain 4MB of stunning 16-bit sampled sounds, 32 of which can play simultaneously. The price is around £600. □



ıs; keyboards putting a brave face on it; C-Lab's Notator keeping pace with a guitarist; the Archimedes; Dr T's stand included the Orchestrator generic editor.

THE AMIGA CENTRE
77–79 ROCHESTER ROW
LONDON SW1P 1LQ

AMAZING SALE!!

40% OFF RRP ON *ALL* AMIGA SOFTWARE

BUSINESS PACKS ★ LEADING GAMES
★ GRAPHICS PACKS ★ MUSIC

01-931 7161

BOOKS ON DESKTOP PUBLISHING FROM PRENTICE HALL

THE ELECTRONIC PUBLISHER
DIANE BURNS AND SHARYN VENIT

The complete resource guide for publishers, designers, typesetters and production staff. This comprehensive reference emphasises style, design, and format and brings the practical application of proper publishing traditions and guidelines to computerised production methods.
1988 352 pages 13-251877-5 £19.10 Paperback

INSTANT PAGEMAKER
22 READY-TO-RUN STYLE SHEETS
TONY POMPILI, KATE HATSY THOMPSON, STEVEN J. BENNETT AND PETER G. RANDALL

Used in conjunction with the PageMaker (3.0/IBM) program, this book/disk allows you to choose from predesigned traditional business style sheets rather than spend time formatting your own for every one of your document types.
● 1988 250 pages 13-468034-0 £39.96 inc. VAT Book & Disk

INSTANT BYLINE (IBM VERSION 1.1)
22 READY-TO-RUN TEMPLATES
TONY POMPILI, KATE HATSY THOMPSON, STEVEN J. BENNETT AND PETER G. RANDALL

This book will teach you how to use and create templates. The disk has 22 templates with page layouts and typographical specifications.
● 1988 250 pages 13-468026-X £39.96 inc. VAT
● Non-returnable items

For more information on these and other titles please write to Jean Walmsley at the address below.
Prices are correct at the time of going to press but may be subject to change.

PRENTICE HALL
66 Wood Lane End, Hemel Hempstead, Hertfordshire, HP2 4RG, England.
SIMON & SCHUSTER INTERNATIONAL GROUP

Cryptic cards for Valentine

Romeo Ron is into alphamatics, which is why he sent out his Valentine cards this year bearing the following cryptic message:

$$\sqrt{VALENTINE} = ?$$

Each of the objects of his affection, to whom the cards were addressed, was fortunately mathematically minded and was able to set to and solve the puzzle. Just in case of difficulty he included the answer with the card. For instance one young woman received the following:

$$\sqrt{541679076} = 23274$$

As can be seen by comparing each of the digits of the nine-digit value with the word 'VALENTINE', each similar letter is represented by the same digit, different letters by different digits. Of course, the square root works out exactly to a whole number.

Now it so happened that each young woman received a different solution. There were just sufficient solutions to go round. Obviously, each solution involved a different substitution. For example, in the number given above the 'V' represented the digit '5', in other solutions it would not necessarily do so.

Can you say how many Valentine cards Romeo Ron sent to the young women? □

PUZZLE SOLUTION

Solution to puzzle of February 9–15

Answer: The multiplication was 13,029 times 7 equals 91,203.

Solution: The initial number before multiplication must be in the range of 10,000 to 14,285. The higher of the two limits is found by dividing 99,999 by 7 and taking the integral part of this answer. This is therefore the highest five-digit number which can be multiplied by 7 and still have only five digits.

Taking each starting position in turn, this value is transferred to a string variable (N$). The five individual digits are each extracted in turn and are placed in variables A$ to E$ - lines 120 to 160. It can be seen that the result of switching the positions of the digits as described is the same as re-arranging the digits in the order E$+A$+D$+C$+B$ - line 170. The string produced is converted to its numeric equivalent and a test is carried-out to check if this value is 7 times the start value - line 190. □

```
100 FOR N=10000 TO 14285
110 N$=STR$(N)
120 A$=MID$(N$,1,1)
130 B$=MID$(N$,2,1)
140 C$=MID$(N$,3,1)
150 D$=MID$(N$,4,1)
160 E$=MID$(N$,5,1)
170 Z$=E$+A$+D$+C$+B$
180 Z=VAL(Z$)
190 IF Z=N*7 THEN PRINT N$;"
    ";Z$
200 NEXT
```

COMPUTING WITH MARTIN WHITBREAD

Did you receive or treat yourself to a new computer for Christmas? This will either have been an exciting or a totally frustrating time, depending on whether you could understand the manual or not and if any of the software would load.

Appalling documentation is common at all levels of computing and it is a symptom of the pace of the industry. By the time a full manual, with examples and self-teaching sections, is released, the product could well be antique.

Many suppliers leave it to independent authors to support their product properly, assuming that if the product sells there will be a wide market for the book. If the computer is a flop it is tough luck on the early buyers.

Before the arrival of the Digital Research CP/M operating system, microcomputers were bought as a system - there was no standard operating system. The great popularity of CP/M and the way that software could be transferred from machine to machine over serial links using the PIP function created a different market. Users bought a CP/M-compatible system - or they went to Apple or Commodore.

The computer was just a vehicle for the operating system and application software and there were many such systems available; some companies came and went overnight, others survive, such as North Star and Rair.

Some years later, IBM produced the PC but it remained in the IBM office computing market for several years before the great PC clone explosion and MS-DOS took over where CP/M left off. Although IBM now wants to control this market by producing an IBM-only situation, with Micro Channel Architecture and OS/2, it seems doubtful that users will take any real notice until more applications software is there to be used but some people are convinced that empty matchboxes, sprayed blue and lettered with a combination of IMB, would sell well in the U.S.

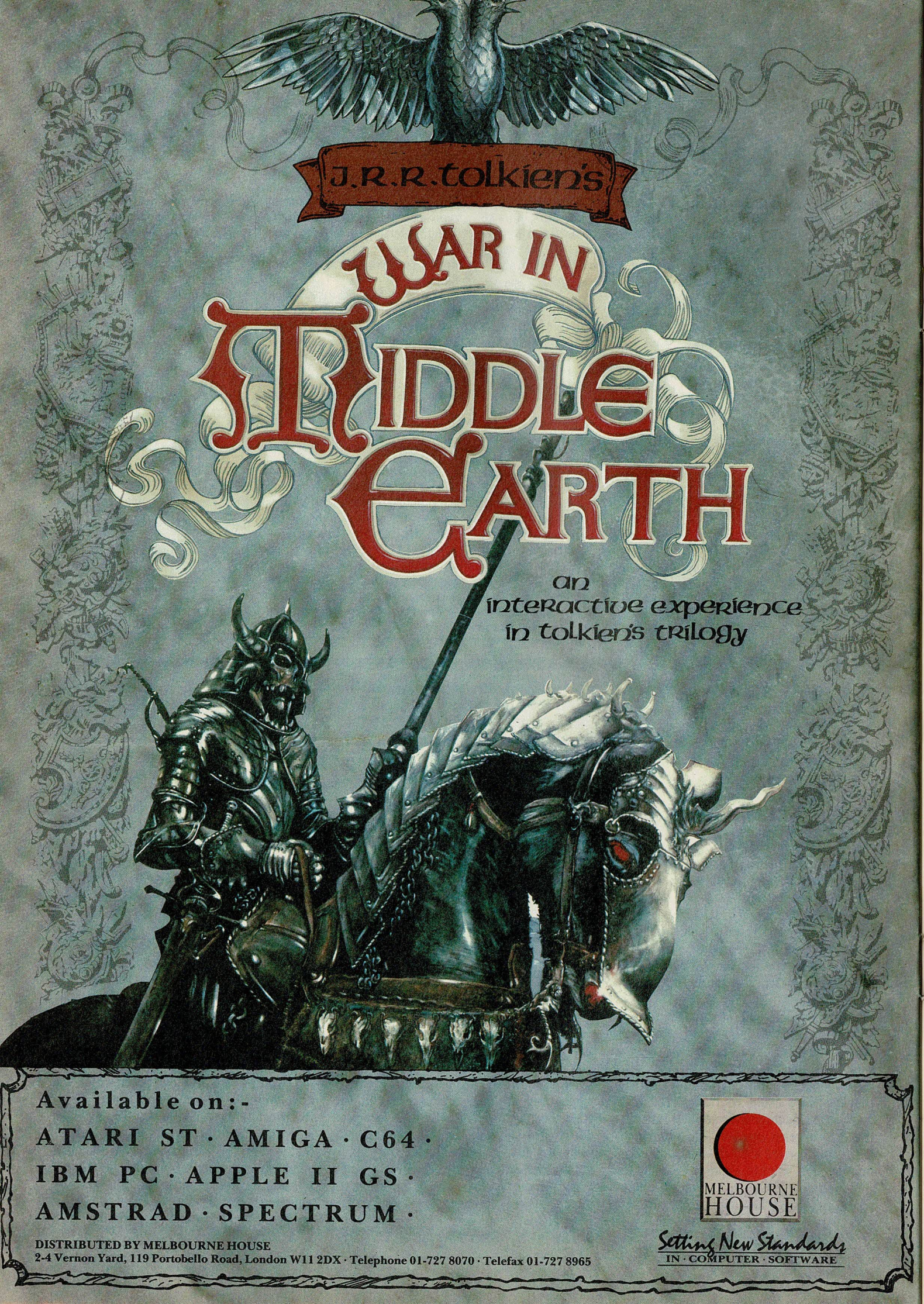
So computers can be exciting things when they are new products but at the start there is little software and very poor documentation. The useless manual is a problem yet to be solved easily but suppliers of applications software can now turn round products very quickly, once a compiler for their source language - often C - is available.

The Acorn Archimedes got its C compiler off the ground very quickly and Helios, the operating system for the Atari transputer system also has a C compiler. Fortran, too, is needed, for computers which are to be used in science and engineering. Much engineering applications software is still written in Fortran or rather programs written, perhaps some time ago, in Fortran are still in use today.

The first model of a new product range is often too tempting. The bells and whistles are the envy of your friends. The trouble is that the first model often reveals design flaws and later versions may be fundamentally different. Cars are the same; there is often an unpopular Mk1 model on the second-hand market for which there is little demand as the engine/gearbox/suspension were completely redesigned in the Mk2. The Austin mini and many other models have been through this cycle. Mk1 creates the market and Mk2 is the product.

If you have a Mk1 computer, enjoy the novelty; if it is a good system it may create its own following. Those who have played safe and opted for an established market, Mk2 or beyond, will have a wide choice of support, including a reasonable manual but will have done much for innovation in microcomputer design.

If you have a Mk1 car, give it to a museum or put a match to it. □



Available on:-

ATARI ST · AMIGA · C64 ·

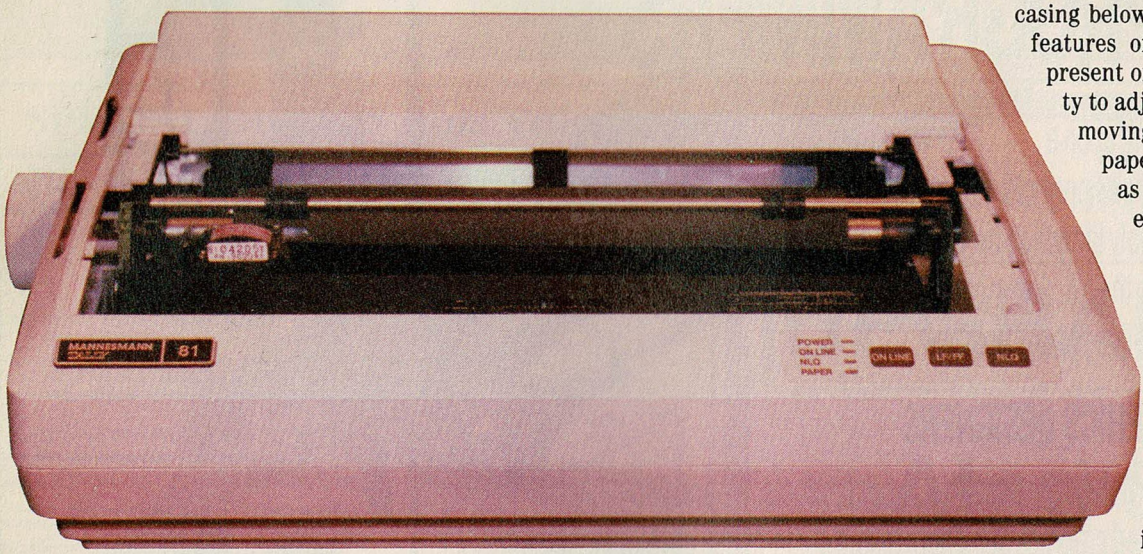
IBM PC · APPLE II GS ·

AMSTRAD · SPECTRUM ·

MELBOURNE HOUSE

Setting New Standards IN · COMPUTER · SOFTWARE

DISTRIBUTED BY MELBOURNE HOUSE
2-4 Vernon Yard, 119 Portobello Road, London W11 2DX · Telephone 01-727 8070 · Telefax 01-727 8965



Top of the form

Andrew Banner tests the new Mannesman Tally low-priced MT-81 printer.

The printer pricing war has raged on and off for years, with manufacturers releasing a new model every so often. Each model, according to the makers, offers special facilities which can be found on no other in that particular price range.

The new Mannesman Tally product has the same boast made for it, but is this machine truly worth the praise the company is giving it?

Launched in the U.K. only one week ago, the MT-81 offers good value at £149 plus VAT. The printer is full-featured, offering 130cps in draft quality and 24cps in near letter quality mode, using a 9-pin printhead on 80-column paper.

Until now that is fairly much run of the mill, as is paper handling; it can use single-sheet, friction-fed paper as well as fanfold paper via the integral tractor feed. That is also a standard of today's printers, although paper parking is also included in this machine, allowing you to have single and fanfold paper loaded at once.

Paper positioner

The main body of the printer is protected by a two-piece plastic cover. The front part covers the printhead, ribbon and half of the platen, while the rear half covers the remainder of the roller and the rear-mounted tractor feed unit. This part also acts as a paper positioner and has three fitting positions to give optimum paper feed depending on which type you are utilising at the time.

One of my first thoughts when I used the machine was how awkward it would be to keep removing the cover to feed the new sheets of paper, which is required because of the roller and bail bar being located underneath.

Looking inside, the paper detection switch is certainly one of the crudest I have seen on any recent machines and it is there we get the first inkling how the printer has been made so cheaply. The switch takes the form of a 1.5in. long plastic arm situated in front of the tractor unit.

On the end of the arm is a mechanical switch with two metal prongs protruding from it downwards. When there is no paper present they connect to the metal casing below. One of the most-used features of most printers is not present on the MT-81. The facility to adjust the print density by moving the head closer to the paper is a notable absentee, as is the lack of a calibrated bail bar. This is most annoying, as it assists users in aligning paper to give a constant margin on both left and right sides of the paper.

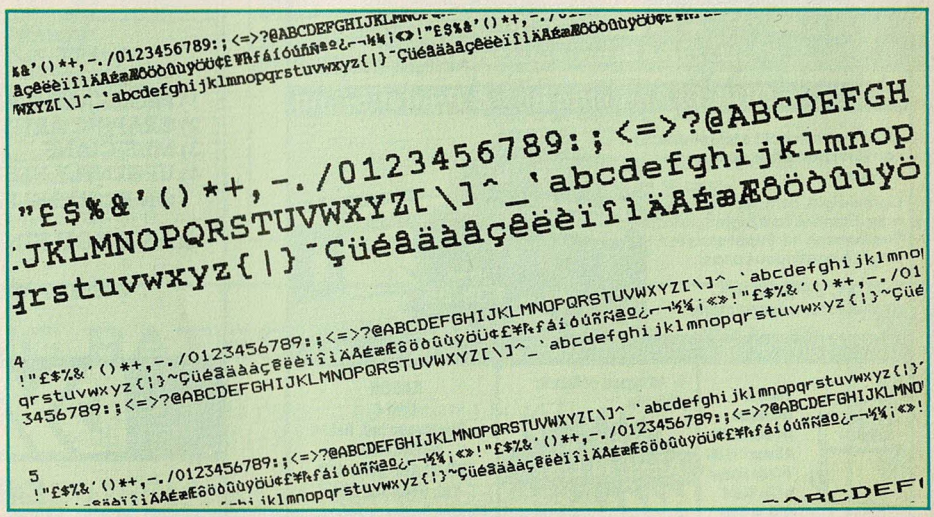
The MT-81 is loud but not when printing. Hidden somewhere in the machine is an ear-piercing piezo transducer which sounds at the merest thing, including pressing the line feed button while the printer is online. If the paper has run out you certainly know about it.

Equipped with a parallel Centronics interface, the Epson FX-85 compatible unit also offers IBM Proprinter compatibility, with all the regular features, including nine print and printer options available from the front panel of the machine.

The printer is full-featured, offering 130cps in draft quality and 24cps in near letter quality mode, using a 9-pin printhead on 80-column paper.

On a final note, I found the manual to be a small and flimsy effort, providing all the necessary information in a somewhat incomprehensible way, which baffled me. I would hate to think what a newcomer would make of it.

The printer is good value, although some of the bare essentials have either been missed or simplified to save cost. □



Self-test sample displaying some of the various print options.

PROGRAMMERS

F-16 COMBAT PILOT

We are now embarking upon a range of challenging new projects. If you have experience in assembly language programming and would like to join the No. 1 company in simulation, then we'd like to hear from you.

COMPUTER GRAPHICS DESIGNERS

Creative on-screen graphics are essential to our products. We are also looking for experienced graphics designers to join our in-house development team.

Digital Integration

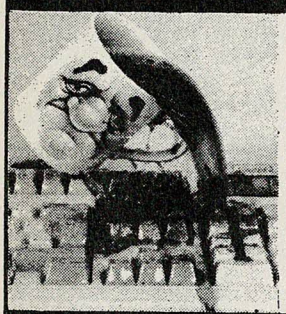
The Real World of Simulation

Please phone for an application form or send a copy of your c.v. to:

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

Seal 'n Type

Unique and Ingenious Spill Cover



The protective keyboard cover through which you can type freely and easily.

Accidents can happen! Protect against spills, dust, ash & grime. Available for popular computer keyboards. Can be custom-made for any push button machine. Manufactured in U.K. by Kador Pat. Pend. & Reg. Des.

From £6.50

PEACE 'n QUIET: Acoustic Box & Printer Stand

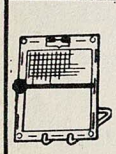
NOW you can hold a telephone conversation while your printer stays on!

Lightweight, compact in silver grey. Stand is 7cm high. See through lid. Paper slots for single & continuous paper.

Easy DIY. Simple to use. Available for most printers.

From £38.95

DEXETTE COPYHOLDER



The 3 in 1 copyboard
A4 size £8.50
A3 size £10.00
★Copy Holder
★Clip Board
★Write Wipe Board

All attachments removable

RE-INKING SERVICE

★ All types of fabric ribbons

eg £1.90 Amstrad/Epson

Same day service. Ring for Free transporter SAE

CONTACT US AT

KADOR
Unit 4
Pontcynon Ind. Est.
ABERCYNON
MID GLAM. CF45 4EP
Tel: 0443 740 281

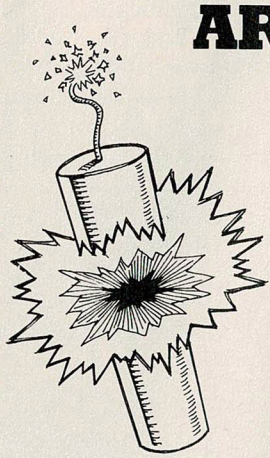
Cheques Payable to Kador

Prices fully inc

kador

Ring or Write for our FREE comprehensive catalogue

ARE YOU



LOST AND FRUSTRATED?

AS A DEVELOPMENT HOUSE WE ARE LOOKING FOR:

COMMERCIAL AND SUB COMMERCIAL STANDARD:

1) PROGRAMMERS
2) GRAPHIC ARTISTS
3) MUSICIANS
4) URGENTLY NEEDED AMIGA PROGRAMMERS TO WORK ON EXCITING PROJECT, NOW

HAVE YOU FINISHED OR NEAR FINISHED GAMES?
NEED FINANCE?
Write or telephone in strictest confidence:
Stuart Robb

DYNAMIC

DEVELOPMENTS

15 Bicton Street, Exmouth
Devon EX8 2RU
Tel: (0395) 276550

(H124)

MICRO-FILE

FOR SALE

SPECIAL OFFERS from Trilogic

C64 PERIPHERAL OFFERS

OCEANIC OC118N 51/4" DISK DRIVES FOR THE C64 AND 128.

SPEC: 160K FORMATTED, VERY HIGHLY COMPATIBLE, (EXPERT COMPATIBLE) STEEL CASE, SEPARATE POWER UNIT, DEVICE NUMBER SWITCH.

BUY DIRECT FROM THE IMPORTERS - only £118.99 inc VAT & post

OC118N DRIVE PLUS EXPERT TAPE/DISK CARTRIDGE V3.2R £148.99 inc VAT & post

CITIZEN 120D PRINTER
FOR C64/128 ONLY £149.99 inc VAT & post *See below for spec.*

STAR LC10 PRINTER
FOR C64 OR AMIGA £239.99

COMMODORE 64 HOLYWOOD PACK £149.99 inc VAT & post

AMIGA PERIPHERAL OFFERS

MASTER 3A 3.5" EXTERNAL DISK DRIVE

SPEC: 720K FORMATTED CAPACITY THROUGH PORT, LOW POWER CONSUMPTION, STRONG STEEL SLIMLINE CASE, FAST ACCESS, VERY QUIET OPERATION.

NO ON/OFF switch £86.99 inc VAT & post

With ON/OFF switch £89.99 inc VAT & post

COMMODORE 1901 MONITOR
FOR AMIGA ONLY £219.99 inc VAT & post.

SPEC: RGB ANALOGUE INPUT FOR AMIGA & ATARI, INFINITE RANGE OF COLOURS, RGBI FOR C128 plus COMPOSITE VIDEO FOR C64 OR VIDEO RECORDER/TV TUNER, MONO AUDIO, COMPLETE WITH ALL LEADS. These are BRAND NEW monitors, converted in our workshops to give all 4096 colours with clarity better than the 1084 MONITOR.

BUY A 1901 PLUS OUR AMIGA MINIAMP2 STEREO SPEAKERS FOR ONLY £234.99 inc VAT & post.

CITIZEN 120D PRINTER.

SPEC: 130CPS DRAFT & 25CPS NLQ, GRAPHICS CAPABILITY, FRICTION AND TRACTOR FEED, IBM & EPSON COMPATIBLE, PLUG IN INTERFACE - PARALLEL OR COMMODORE SERIAL, COMPLETE WITH CABLE.

ONLY £149.99 inc VAT & post

STAR LC10 COLOUR PRINTER
FOR C64 OR AMIGA £269.99 inc VAT & post

3.5" SONY/FUJI DS/DD Disks,
guaranteed £28.49 per 25 inc VAT & post

HOW TO ORDER:

SEND PAYMENT BY CHEQUE, CASH OR P.O. OR BY PHONE USING ACCESS OR VISA.

PRICES INCLUDE VAT & CARRIAGE.

FREE CATALOGUE

CREDIT CARD HOTLINE 0274 691115.

NEXT DAY DELIVERY £6.00 (CREDIT CARD ORDERS ONLY)

CALLERS WELCOME - OPEN WEEKDAYS 'TIL 6.00, SATURDAYS 'TIL 4.00

TRILOGIC, Unit 1, 253b New Works Road, Bradford, BD12 0PQ
Tel 0274 691115 Large range of computer accessories in stock please phone

---

Chips for memory

UPGRADES

Atari ST
CBM Amiga
All PCs

Perrymere Limited
(051) 227 2482.

400/800 XL/LE **LOOK** NOW ST

ATARI OWNERS

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

CHARNWOOD PRODUCTS AND GAMES
30A Warwick Avenue, Quorn, Loughborough
Leicestershire LE12 8HD
Tel: 0509 412604 (465)

SERIOUS SPECTRUM OWNERS wanting UTILITIES PROGRAMMING HELP, PRACTICAL software and USEFUL articles, GRAPHICS, INFO, IDEAS and MORE from LIKE-MINDED THINKERS, TRY . . .

OUTLET monthly on MDRIVE, OPUS, DISCIPLE, PLUS D, TAPE

£2 gets YOUR FIRST issue! A blank disc or cartridge (not cassette) gets a FREE demo!

CHEZRON SOFTWARE, 605 LOUGHBOROUGH ROAD, BIRSTALL, LEICESTER LE4 4NJ (H57)

★ ★ ★ CERTIFIED DISKS ★ ★ ★

INCLUDING SLEVES, LABELS AND A 100% NO-QUIBBLE GUARANTEE!

PSION ORG. XP £110

QTY.	5·25″ DS/DD	5·25″ DS/HD	3·50″ DS/DD
25	£9.40	£23.00	£22.00
50	£17.00	£45.00	£40.00
100	£30.00	£85.00	£75.00
200	£58.00	£160.00	£140.00

IBM PC PRINTER LEAD £5.95

PRICES INCLUDE CARRIAGE AND V.A.T.

SAME DAY DESPATCH
Call our order desk
(0836) 775060
quoting your Access number, or send cheques to:
WESTONING LTD
DEPT. PCW, 12 SANDERSON ROAD, WESTONING, BEDFORD MK45 5JY (H128)

ALL COMPUTERS WANTED FOR CASH OR EXCHANGE
Tel: 01-727 0424
(867)

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 £1.50

MCSOFT
21 Purbrook Road, Tadley, Hampshire RG26 6PR (178)

ADVERTISING RATES FOR MICRO-FILE

Semi Display — £10 per single column centimetre (+VAT)
Lineage — 40p per word (+VAT)

CALL ELIZABETH SOLANKE or NICHOLAS CARR on 01-834 1717 FOR SEMI DISPLAY ADVERTISING

ACE COMPUTERS LTD

Epson LX 800

£169 + VAT = £194

Panasonic KXP 1124

- ☆ 24 Pin Printer
- ☆ 192 CPS Draft
- ☆ 63 CPS NOQ
- ☆ 6 Resident Font
- ☆ Epson LQ & IBM Pro-Printer Emulation Modes
- ☆ Excellent Letter Quality

£289 + VAT = £332

Juki 6,000 Daisy Wheel Printer

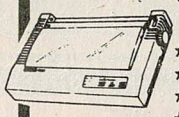
only

£120 + VAT = £138

Oki Mate Colour Printer available for Amiga, IBM & ST

£120 + VAT = £138

CITIZEN 120D CENTRONIC



- ★ 120 CPS Draft
- ★ 24 CPS NLQ
- ★ Tractor &Friction
- ★ 4K Buffer

£120 + VAT = £139.00

HQP 45

- ★ 24-Pin Printer
- ★ Wide Carriage 136
- ★ 200 CPC 66 NLQ
- ★ 24K Buffer

£347 + VAT = £399.00

star LC-10 CENTRONIC

- ★ Built in Fonts
- ★ 120 CPS Draft
- ★ 30 CPS NLQ
- ★ 4K Buffer
- ★ Optional C.S.F.

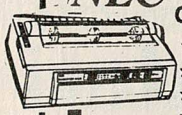
£173 + VAT = £199.00

LC-10 Colour ..... £225 + VAT = £259
LC-24-10 ..... £279 + VAT = £310
NX-15 ..... £289 + VAT = £332

IN STOCK NOW

Commodore LC-10 and Colour at the same price

NEC P2200 CENTRONIC



- ★ 140 CPS Draft
- ★ 47 CPS NLQ
- ★ 24-Pin
- ★ Tractor & Friction Feed
- ★ Optional C.S.F.

£260 + VAT = £299.00

Panasonic KXP 1081

- ★ 120 CPS Draft
- ★ 24 CPS NLQ
- ★ IBM/Epson C
- ★ Tractor & Friction Feed
- ★ Centronics

£138 + VAT = £159.00

Archimedes

305 Series	* Base	£699 inc
	* Mono	£769 inc
	* Colour	£939 inc
310 Series	* Base	£799 inc
	* Mono	£859 inc
	* Colour	£1049 inc
440 Series	* Base	£2470 inc
	* Mono	£2528 inc
	* Colour	£2700 inc

PC Emulator £79 inc. Prices inc VAT

LASER PRINTERS

PANASONIC KXP 4450

★ 1 Year on site Warranty
★ 300 DPI
★ 512K
★ Serial/Parallel

£1564 + VAT = £1799.00

CANNON LBP-8

★ 300 DPI ★ 512K
★ Serial/Parallel

£1474 + VAT = £1699.00

PHILIPS MONITORS

Mono 7502 .....£68 + VAT = £79
Colour 8833.....£225 + VAT = £259
Colour 8852.....£259 + VAT = £297

HARD DISKS & CARDS

21 MEG + VAT = £219
32 MEG + VAT = £249
44 MEG + VAT = £299

All hard cards come formatted & ready to plug in with free XTrec Software Worth £40

EPOS SYSTEMS

ELECTRONIC POINT OF SALES

- * Electronic Stocktaking
- * Accurate Stock Valuation
- * Auto Stock Replenishment
- * Detailed Sales Analysis
- * Flexible Reporting Routines
- * Unit Stock Control by W/h & BR
- * Purchase order control
- * Auto Stock Ordering
- * Label Printing
- * Price Mark up
- * Profit Analysis
- * VAT Analysis
- * Total Cash Taken
- * Up to 8 shops & W/H
- * Software runs on any IBM compatible

TiTink

SOFTWARE £499 + VAT = £573.85
TILL £800 + VAT = £920.00

COMMODORE AMIGA

A500 +

- * Modulator
- * Carrier Command
- * Aegus Sonix
- * Photon Paint
- * Karate Kid II
- * Gold Runner
- * Quickshot Joystick

23 Public Domain inc Arcade, Guard Games & Adventure

£389.00 inc

+ FREE HOLIDAY DRAW

ACE High Quality 1 Meg Disc Drive

£82.00

ATARI

520 STFM Super Pack

Inc £400 FREE SOFTWARE

£348.00 inc

High Quality Ace 1 Meg Disk Drive

£82.00 inc

COMPATIBLES

ATARI PC 3

20 Meg, Floppy disk MS DOS 3.2, GEM Software, GEM Word, GEM Paint, Mouse

£899 inc

SAMSUNG

S330 XT
20 Meg £899 inc
30 Meg £929 inc
40 Meg £979 inc

S500 AT
20 Meg £1099 inc
30 Meg £1129 inc
40 Meg £ 1179 inc

All Samsungs come with mono monitor, DOS 3.2 and manuals for EGA on the above P.C.'s add £300

Opening End of February: 16 West Street, Weston-Super-Mare and also 54 Commercial Road, Newpool.

MAIL ORDER

FROM BRISTOL ADDRESS ONLY

PRICES SHOWN INC. VAT AND FREE DELIVERY

BRISTOL: 42 Cannon Street, Bedminster.....Tel: 0272 637981
BRISTOL: 3 North Street, Bedminster .....Tel: 0272 66634
CARDIFF: 87 City Road.....Tel: 0222 483069
SWINDON: 31 Faringdon Road .....Tel: 0793 512074/3

If you would like to run your own Franchise Business Write to: 42 Cannon Street, Bedminster, Bristol BS3 1BN

ACCESS VISA

DUGGER

STARRING HERBIE STONE

Yes folks, he is back again, the famous HERBIE STONE. In another Hilarious and utterly addictive Arcadegame. Catch the Stonecrunchers.

With music all through the Gameplay, brilliant graphics and animation plus a remarkable 32 colours on both the AMIGA and ATARI ST, DUGGER has to be in your Games collection.

Don't miss the COMPETITION.

The Prizes to be won:

2 MAXI Watches
2 SWATCH Watches
2 3kg Swiss Chocolate

LINEL

THE EXCLUSIVE SALES REPRESENTATIVE:

THE SALES CURVE Ltd.
The Lombard Business Centre
50 Lombard Road
LONDON SW11 3SU

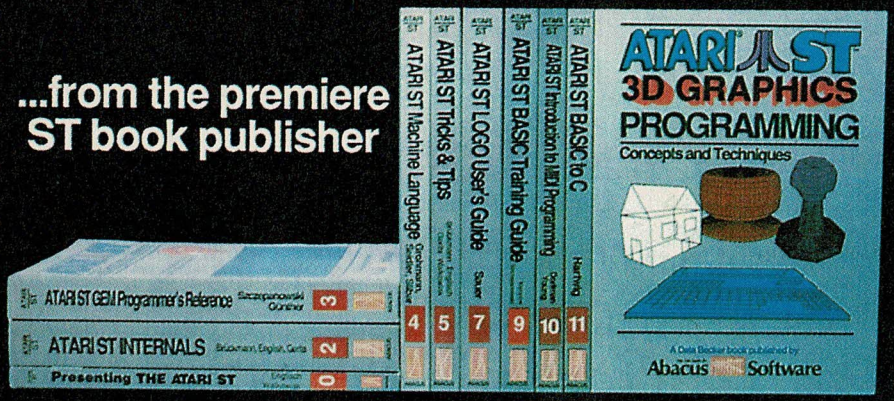
Tel: 01-585 3308
Fax: 01-924 3419

MERIMPEX Ltd, LINEL Products, Am Schrägen Weg 2 FL-9490 Vaduz
Tel: (01041) 75 283 68 Fax: (01041) 75 206 56

AMIGA/ATARI ST

BESTSELLERS

...from the premiere ST book publisher



What reviewers say about Abacus Books:

On ST Internals:
*...will not be going any farther than arms reach from my computer...*ST Applications
...the best and most useful volume out so far...can't afford not to have it.—STart, Dewitt Robbeloth

On GEM programmer's Reference:
Anyone interested in learning how to manipulate the VDI or the AES will want to have this book at their fingertips...—ST Applications, Richard Kaller
The next most important Abacus book...
—STart, Dewitt Robbeloth

Presenting the Atari ST
Gives you an in-depth look at this sensational new computer. Learn about the architecture of the ST, working with GEM, the mouse, operating system, all the various interfaces, the 68000 chip and its instructions, LOGO. 180pp **£14.95**

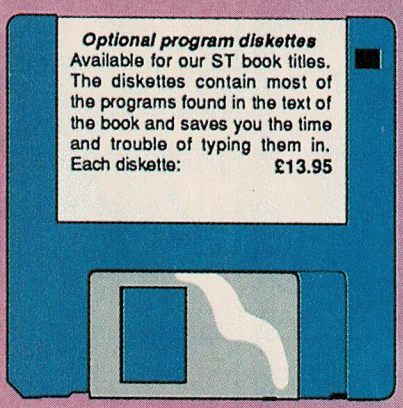
Atari ST for Beginners
Written for the firsthand ST user. Get a basic understanding of your ST. Explore LOGO and BASIC from the ground up. Simple explanations of the hardware and internal workings of the ST. Illustrations, diagrams. Glossary. Index. 200 pp **£14.95**

ST INTERNALS
Essential guide to the inside information of the ST. Detailed descriptions of sound and graphics chips, internal hardware, I/O ports, using GEM. Commented BIOS listing. An indispensible reference for your ST library. 450pp **£16.95**

GEM Programmer's Ref.
For serious programmers needing detailed information on GEM. Presented in an easy-to-understand format. All examples in C or assembly language. Covers VDI and AES functions. No serious programmer should be without. 410pp **£16.95**

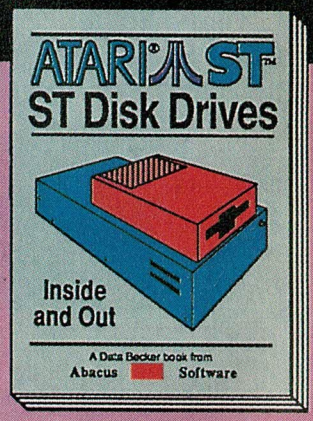
ST Machine Language
Program in the fastest language for your ATARI ST. Learn 68000 assembly language, its numbering system, use of registers, structure & important details of instruction set, and use of internal system routines. Geared for the ST. 280pp **£16.95**

ST TRICKS & TIPS
Fantastic collection of programs and info for the ST. Complete programs include: super-fast RAM disk; time-saving printer spooler; color print hardcopy; plotter output hardcopy; creating accessories. Money saving tricks and tips. 260pp **£16.95**



Optional program diskettes
Available for our ST book titles. The diskettes contain most of the programs found in the text of the book and saves you the time and trouble of typing them in. Each diskette: **£13.95**

ST Disk Drives - Inside and Out
As the foremost publisher of ST books, we announce the newest volume in our continuing ST Reference Library series– ***ST Disk Drives - Inside and Out.*** This book includes chapters on files, file structures and data management. Thoroughly discusses the floppy disk, the hard disk and the RAM disk both from a programming and a technical perspective. Includes several full-length utilities and programming tools that enable you to further explore to ST disk drives. 450pp **£18.95**



ST LOGO User's Guide
Take control by learning ST LOGO—the easy to use, powerful language. Includes: file handling, recursion, Hilbert & Sierpinski curves, 2 & 3D function plots, data structure, error handling. Helpful guide for LOGO users. 375pp **£16.95**

ST BASIC Training Guide
Thorough guide for learning ST BASIC. Detailed programming fundamentals, commands descriptions, ST graphics & sound, using GEM in BASIC, file management, disk operation. Tutorial problems give hands on experience. 316pp **£14.95**

Intro to MIDI Programming
Discover the magic of MIDI! Learn MIDI programming, how to program your synthesizer, how to buy MIDI software, how to buy a synthesizer, use extended BIOS. Includes source code for ST music box auto-player from Xlent Software. 250pp **£16.95**

ST BASIC to C
Move up from BASIC to C. If you're already a BASIC programmer, you can learn C all that much faster. Parallel examples demonstrate the programming techniques and constructs in both languages. Variables, pointers, arrays. 230pp **£14.95**

ST 3D GRAPHICS
FANTASTIC! Learn how to create fantastic and impressive 3D graphics on your Atari ST. Rotate, zoom and shade 3D objects. All programs written in machine language for high speed. Learn the mathematics behind 3D graphics. Hidden line removal, shading. With 3D pattern maker and animator. 350pp **£18.95**

Look for these Abacus titles in your local bookstores and computer stores.

For More Information:

Distributor
Computer Bookshops Limited
021-706-1188

you can count on
Abacus

5370 52nd Street SE, Grand Rapids, MI 49508
In U.S. Call (616) 698 0330

Athene Consultants (Media Centre)
16 Stoke Road, Gosport, Hants. PO12 1JB

Tel: 0705 511439
0705 511648 **Amiga Hardware**
Fax: 0705 511646

*** Same Day Despatch*** Stock items
*** CREDIT CARDS WELCOME***
*** Access & Visa***

THE STAR
PRINTERS FOR BUSINESS

THE LOWEST PRICES IN THE UK, AMIGA 500 SYSTEMS FROM £379

Amiga PD Library massive range, £2 per disk. Call for details.

3.5" DS/DD 135TPI
Standard Bulk

At 86p
Lifetime Warranty
High Clip (KAO/Maxell)
97p
Minimum Qty 10
Order in units of 10

5.25" DS/DD 48tpi
High Quality Bulk

High Clip
Lifetime Warranty
For IBM PC 360k
37p
Minimum Qty 25
Order in Units of 25

5.25" DS/QD 96tpi
High Quality Bulk

High Clip
Lifetime Warranty
45p
Minimum Qty 25
Order in Units of 25

5.25" HD AT 96tpi
High Quality Bulk

High Clip
Lifetime Warranty
For IBM AT 1.2 Mb
£1.13
Minimum Qty 25
Order in Units of 25

DISKS
Prices per Pack of 10

DYSAN

5.25" AT Only £15.00
5.25" DS/QD 96tpi £11.50
5.25" DS/DD 48tpi £9.10
3.5" DS/DD 135tpi £16.50
3.5" DS/HD £47.50

Branded Disks at Low Prices

3M

5.25" AT Only £19.00
5.25" DS/QD 96tpi £16.50
5.25" DS/DD 48tpi £8.00
3.5" DS/DD 135tpi £18.50
3.5" DS/HD £45.50

DISKS

SONY

3.5" DS/HD £45.00
3.5" DS/DD £15.00

SPECIAL OFFER * * * *

5.25" DS/HD Branded Verbatim only £16.00 while stocks last
3.5" ``DS/DD Branded Verbatim only £12.00 while stocks last
3″ Branded Unbranded CF2 Disks ONLY £20.00

We also Supply Verbatim, Fuji, Xidex, Maxell, Nashua

The Full STAR Printer Range at Low Prices

Disk Storage Systems
DATA CARTRIDGES - RIBBONS - PAPER - TONER CARTRIDGES - CABLES

3.5"

10	3.5" Disk Box	£1.30
40	3.5" Disk Box	£6.00*
100	3.5" Disk Box	£10.00*
28	3" Disk Box	£6.00*

5.25"

10	5.25" Disk Box	£1.30
50	5.25" Disk Box	£7.00*
100	5.25" Disk Box	£9.00*
140	5.25" Disk Box	£11.00*

* Lockable

Full Range of Printer Ribbons for EPSON, STAR, AMSTRAD etc.

All Orders £1 Delivery Charge
All Prices Include VAT
Courier Next Day Delivery £7.00 - 3 Day £6.00 (up to 10 kg)

COMPUTER TRADING COMPANY

The First Floor, 62 Westow Hill
Crystal Palace, London SE19
Tel: 01-761 4687/0860 225058

Amiga A500

inc. MODULATOR
also inc. SOFTWARE £339.00 + VAT

Amiga A500

inc. 1084 COLOUR MONITOR
also inc. SOFTWARE £529.00 + VAT

NEXT DAY DELIVERY AVAILABLE ON ALL COMPUTERS

AMIGA

	OUR PRICE
Rocket Ranger	£21.95
Starglider II	£18.95
Daley Thompson Challenge	£16.95

ATARI ST

	OUR PRICE
Elite	£17.50
Five Star	£17.50
Starglider II	£18.75

Access VISA

(H28)

BATH COMPUTER SHACK

YOU CAN'T AFFORD TO GO ELSEWHERE

ATARI SUPER PACK

Atari 520stfm, 1 meg drive, 22 games and a joystick **ONLY £349.00**
Atari 520 stfm 1meg Drive (ex-pack) **£279.00**
Atari 1040stfm now with modulator **ONLY £419.00**
Atari 1040stfm with SM124 high resolution mono monitor **ONLY £529.00**
Atari SH205 Hard Disc **£529.00**
Atari SM124 High Res Monitor **£119.00**
Atari SC1224 Colour Monitor **£249.00**
Atari SL.M804 Lazer Printer **£1049.00**

ATARI MEGA'S AND PC'S

Please call for our very best prices, you won't be disappointed.

MONITORS

Philips CM8833 **£259.00**
Philips CM8852 **£299.00**
*NB: All above prices include lead.

PRINTERS

Citizen 120D **£159.00**
Panasonic KXP1081 **£175.00**
Epson LX800 **£199.00**
Star LC10 (with spare ribbon) **£215.00**
Star LC10 colour **£265.00**
Star LC24/10 **£339.00**
Star NB24-15 (free sheetfeeder) **£599.00**
*NB: All above prices include lead.

ACCESSORIES

Handykap Keyboard Cover **£7.95**
Monitor Stand **£24.95**
Mouse Mats **£4.50**
Monitor Master (ST Only) **£35.00**
Mouse Master (ST & Amiga) **£24.95**

COMMODORE

Amiga 500 **£369.00**
Amiga 500, Deluxe paint, 5 games **£389.00**
Amiga 500, Deluxe paint, 2 games, 1084 Colour stereo monitor **£619.00**
Amiga 500, Deluxe paint, 2 games, modulator **£399.00**
Amiga 500, Photon paint, modulator **£389.00**
Commodore 1084 colour stereo monitor **£259.00**

Full range of PC's in stock please call for our best prices.

AMSTRAD

Amstrad PC1640 DD Mono **£669.00**
Amstrad PC1640 SD Mono **£559.00**
Amstrad PC1640 HD ECD **£1099.00**
Amstrad PC1512 DD Colour **£725.00**

****

Amstrad PC1640 DD Mono, DMP4000 Printer, Wordstar, Supercalc 3.1, Accounts Master
ONLY £899.00 — SOLD OUT
TRY US FOR AN ATARI PC

****

All other models available, please call for our very best prices.
Amstrad PPC512S **£429.00**
Amstrad PPC512D **£549.00**
Amstrad PPC640S **£549.00**
Amstrad PPC640D **£629.00**

DISCS & BOXES

At UNBEATABLE Prices

10 × 3.5″ DS DD Discs in Box **£9.95**
25 × 3.5″ DS DD Discs in Box **£25.00**
25 × 5.25″ Discs **£8.50**
100 × 5.25″ Discs **£29.95**
Above Discs Certified & Guaranteed
40 Cap 3.5″ Lockable Box **£4.99**
80 Cap 3.5″ Lockable Box **£7.99**
120 Cap 3.5″ Lockable Box **£9.99**

Orders under £50 add £2.50 P&P.
All prices include VAT.
All Hardware is sent by next day courier F.O.C.

Access & Visa orders welcome
Mail order address below E & OE

SHOW ROOM
8c Chelsea Road
Lower Weston
Bath
Avon
BA1 3DU
TEL: (0225) 310300 FAX: (0225) 446827

MAIL ORDER
Units 11/12 White Hays South
West Wilts Trading Estate
Westbury
Wilts
BA13 4JT
TEL: (0373) 858031 FAX: (0373) 858032

(1131)

EX DEMO MACHINES WITH WARRANTY

COMMODORE 128D
only £225.00
inc. VAT, Postage and Packing

OMNIDALE LTD (MAINFRAME)

23 CURZON STREET
DERBY
DE1 2ES

Tel: 0332 291219

(H136)

KOSMOS SOFTWARE

French, First Aid, Football, Spelling, Science, Spanish, Sport, Scotland, England, English Words, German, General Knowledge, Geography, Italian, Arithmetic, and Natural History.

Let your computer help you learn

Write or phone for a FREE 20 page illustrated catalogue of our Leisure and Educational Software. Available for IBM PC Compatibles and most home computers

KOSMOS SOFTWARE LIMITED

FREEPOST (no stamp needed)
DUNSTABLE, BEDS. LU5 6BR
Tel. 05255 3942 or 5406

H45

AT LAST !!!

From the author of 'Rebelstar'

LASER SQUAD

A fast action strategy game with superb graphics and sound.

"Laser Squad is one of the best games I have played on any computer ... The graphics are full of character, the attention to detail is amazing ... Sound is fab." C & VG HIT: 97%

"The 3D graphics are great ... a terrific game with more yet to come." ACE Rating: 873

"I think Laser Squad is Mega fab ... on a par with Elite for thinking warmongers," Your Sinclair Megagame, 9/10.

"Lots of brain busting action without all the boring complexities of other products. Target's really hit the bullseye!" Sinclair User: 89% overall.

"The original concept of 'Rebelstar' was elegant and addictive and 'Laser Squad' takes it much further without losing any of its playability ... An excellent expansion of a Classic." Crash: 89% overall.

Laser Squad includes:
★ 3D Graphics ★ fast 8 way scrolling ★ 1 or 2 player options ★ up to7 skill levels ★ Strategic map display ★ 4 fire options ★ drop, pickup, throw or use diferent objects ★ sophisticated artificial intelligence ★ THREE separate scenarios with the main program.....

Expansion Kit One is now available, including two challenging scenarios;
'The Cyber Hordes' and
'Paradise Valley'

Laser Squad Laser Squad Laser Squad Laser Squad Laser Squad

Mail Order: tick boxes on coupon and send with a cheque or postal order to:-TARGET GAMES LTD. 19 The Rows, Harlow, Essex, CM20 1BZ

	Laser Squad Cass.	Laser Squad Disk	Expansion Kit 1 Cass.	Expansion Kit 1 Disk
Commodore 64	☐	☐	☐	☐
Amstrad CPC	☐	☐	☐	☐
Spectrum	☐		☐	
	£9.95	£14.95	£3.95	£5.95

Name _____
Address _____
_____
Postcode _____
I have enclosed £ in a Cheque/Postal Order.

BRANDED DISKETTES

UNBEATABLE PRICES FROM HONG KONG!

VERBATIM 5¼" 25/2D.....£5.85

NASHUA 5¼" 25/2D £4.00

NASHUA 3½" 25/2D £12.20

PROMAY 5¼" 25/2D.....£3.00

PROMAY 3½" 25/2D.....£8.25

ALL PRICES PER BOX OF 10 DISKS INCLUDING CARRIAGE

Write now for a free catalogue
Send Postal Order or International Bankers Draft to:

Q.E.D. AGENCY
P.O. Box 98054
TSIM SHA TSUI POST OFFICE
HONG KONG

(H70)

The Instant Catalog

ALL TITLES IN STOCK

SPECTRUM	CASS
4 Soccer Simulators	6.45
After Burner	6.45
Barbarian II	6.45
Bard's Tale	6.50
Batman - Caped Crusader	5.95
Command Performance	9.99
Cybernoid II	5.50
Exploding Fist Plus	5.25
Fists "N" Throttles	8.75
Football Manager II	5.75
Frank Bruno's Big Box	8.75
Game Over II	6.50
Game Set and Match 2	8.75
Giants	9.99
Gold Silver Bronze	9.99
Heroes of the Lance	7.99
In Crowd - Compilation	8.75
Laser Squad	6.25
Last Ninja II	8.95
Leader Board Par 3	9.99
Mega Games Vol 1	9.95
Mickey Mouse	5.25
Operation Wolf	5.50
Pacmania	5.95
R-Type	6.45
Rambo III	5.95
Return of the Jedi	6.45
Road Blasters	5.99
Robocop	6.25
Savage	5.95
Spitting Image	6.45
Supreme Challenge	8.75
Taito Coin-op Hits	8.95
Techno Cop	5.50
Thunder Blade	6.50
Tiger Road	6.25
Total Eclipse	6.45
Ultimate - The Works	8.95

COMMODORE 64	CASS	DISK
4 Soccer Simulators	6.50	9.25
10 Great Games Vol 3	9.99	11.99
Afterburner	6.95	9.99
Armalyte	6.45	8.75
Barbarian II	6.45	8.75
Batman - Caped Crusader	6.45	9.45
Bombuzal	6.45	8.75
Caveman Ugh-Lympics	7.25	10.50
Command Performance	9.99	10.75
Crazy Cars	6.50	9.50
Cybernoid II	6.45	9.99
Double Dragon	6.50	9.99
Emlyn Hughes Int Soccer	6.45	8.75
Exploding Fist Plus	6.45	8.75
Fists 'N' Throttles	8.75	9.99
Football Manager II	6.45	9.99
Frank Bruno's Big Box	8.75	9.99
Game, Set and Match 2	8.75	11.99
Games: Summer Edition	9.99	11.99
Giants	9.99	11.99
Last Ninja 2	8.75	9.99
Leader Board Par 4	10.99	12.99
Mega Games Vol 1	9.99	10.99
Menace	6.75	12.95
Dragon Ninja	6.75	9.99
Microprose Micro Soccer	9.95	12.99
Operation Wolf	6.45	9.99
Pacmania	6.45	9.99
Rambo III	6.45	9.99
Robocop	6.45	9.99
R-Type	6.45	9.99
Sports World 88	9.99	10.99
Supreme Challenge	8.75	11.50
Taito Coin-op Hits	9.99	12.99
Thunder Blade	6.95	10.99
Tiger Road	6.95	10.99
Times of Lore	6.45	8.99
In Crowd - Compilation	9.99	11.99
Techno Cop	7.45	10.75

ATARI ST	DISK
5 Star Compilation	14.75
Action ST Compilation	11.99
After Burner	13.99
Batman	12.50
Bombuzal	14.75
Captain Fizz	9.99
Crazy Cars II	12.50
Double Dragon	11.99
Dungeon Master	14.75
Eliminator	13.99
Elite	14.75
Falcon	15.50
Flying Shark	14.75
Garfield	11.99
Heroes of Lance AD&D	17.25
Hostages	14.75
International Karate (IK+)	11.99
Joan of Arc	13.99
Leaderboard Birdie	13.99
Leisure Suit Larry II	21.50
Lombard RAC Rally	14.75
Manhattan Dealers	12.50
Mickey Mouse	13.99
Nebulus	13.99
Operation Wolf	11.99
Pacmania	11.99
Powerdrome	17.25
Purple Saturn Day	14.75
R-Type	17.25
Rambo III	11.99
SDI	13.99
STOS - Games Creator	19.49
Speedball	14.75
Spitting Image	11.99
Teenage Queen	11.50
Thunder Blade	13.99
Times of Lore	15.25
Triad Vol 1	17.49
Wanted	11.50

PLANET'S Best Buy EST. 1988

INSTANT, Boston House, Abbey Park Road, Leicester LE4 5AN
Mail Order Only. State Computer's make and model.
P&P: 50p on orders under £5. EEC 75p per title.
Whole World £1.50 per title for Air Mail.
New titles sent on the day of release.

0533 510102

FOR DISK PRICES & NEW RELEASES PLEASE RING US.

SPECTRUM TAPE TAPE - TAPE UTILITY B

Yes TUb will back up most of your TAPE based software, including most of the recent jerky loaders and those programs with a counter – converts for reliable loading. Can measure speed of faster loaders, manages 100% accurately many blocks over 51k, etc, etc. **Unrivalled. On tape at £7.50.**

SPECTRUM TAPE TO DRIVE – TP5

A complete software package (includes TUb) to transfer hundreds of programs to your drive – manages some that hardware devices can not reach! Jerky and counter loaders managed easily, but program not for the novice. **Only £12** (+£1 on m/drive cart). **INFORMATION BOOK** covering over 400 transfers, including many top 20 hits **£2.50 extra with TP5.**

M/DRIVE OWNERS – MICROMATE

The only complete package for m/drive owners, and it pays for itself! These are just some of its features: Format (up to approx 104k), Clone, sector editor, reconditions cartridges, repairs and gives condition of files, 'boot' program, multiple ERASE, rename, true CAT. Copies tape to drive (unsecured), drive to drive, drive to tape. It has so many features and is unique. **YOU MUST HAVE THIS PROGRAM IF YOU HAVE A M/DRIVE! £13.99 on m/drive cartridge.**

CODE COMPRESSOR, Z80 TOOLKIT

Code compressor – compresses machine code – many uses, but ideal with hardware devices that don't compress code. **Only £4.50. Z80 Toolkit** – An superb assembler (full screen editor), fast disassembler, single step to see how m/c works, loader, hex/dec toggle, tutorial – ideal for ALL particularly beginners – **only £7.99.** State TYPE of SPECTRUM + drive system when ordering. E.g PLUS 3 or 128k with Opus disc drive. **M/drive cartridges £1.75 each (min 4).**

ALL PROGRAMS CARRY OUR MONEY BACK GUARANTEE (not updates – phone for prices of these). All prices inclusive except add £1 Europe, £2 others. SAE for full details. **LERM DEPT PCW, 11 BEACONSFIELD CLOSE, WHITLEY BAY, NE25 9UW. (Tel: 091-2533615)**

NSG

NORTHERN PC SOFTWARE GROUP

Collieston, Aberdeen. AB4 9RT.
Telephone and Help-Line:- 035887-336

NSG offer to ALL Amstrad and IBM Compatible Users a Personal Service.
We are especially interested in NEWCOMERS to COMPUTING. *OUR NON-PROFIT MAKING SERVICES INCLUDE THE FOLLOWING:-*

PUBLIC DOMAIN: Fine programmes available on 5.25" and 3.5" disks. IBM Compatible Material is offered for ALL USERS, on 5.25" Disks at a maximum of **£3.50 per Disk.** *Inc VAT & Post.* We hold the largest PD Library in the North of Britain, which is being increased monthly.

24 HOUR HELPLINE: Use this Service at any time of Day or Night for instant assistance to any Member. Especially valuable to newcomers to these excellent PD programmes. *Help available on any aspect of Computing, at all times.*

OTHER SERVICES:- INFORMATION. BBS, COMMS, NETWORKING, DISK EXCHANGE, NEWSOFTWARE, CONSULTANCY

SPECIAL INTERESTS: Special Interest Groups encouraged. Share your expertise with other enthusiasts, through our News Letter.

Send for information today without delay.
This is a service for all beginners, and the enthusiast.
Modest registration fee £20.00.
Includes credit for £10.00 PD software.
Special terms for OAP/students/unemployed.

AMIGA HARDWARE

EXCHANGE OR CASH

Why not make something out of nothing?

Get rid of Junk

Other computers are worth a try.

Send stuff to:

Computerware

In-Shops, Unit 15, Market Hall, Epsom

(1060)

BCL Best Computers Ltd Repair Centre

STOP PRESS!

Has your computer broken down?

Don't despair, we'll repair!

Our experienced technicians undertake ultra fast repairs on all makes of 18,16 and 32 bit machines.

WE REPAIR:

Atari ST 520/1040

Commodore Amiga 500/1000/2000

Commodore 64

Sinclair 48K Spectrum & the full Spectrum range

Amstrad 464/664/6128

All IBM and compatible machines

Hard disk and drive installation
(spares and Commodore also available)

and many many more . . .

Come and visit us at:

GALAXY AUDIO VISUAL
(1st FLOOR)

230 TOTTENHAM COURT ROAD, LONDON

Tel: 01-631 0139

MURDER!

AMIGA

512k EXPANSION BOARDS

£99 inc. VAT

UNREPEATABLE SPECIAL OFFER.

01 760 0274

Full Range of Hardware and software for all popular machines at discount prices
CHEQUES AND POSTAL ORDERS MADE PAYABLE TO:

VISA **SABRE SIXTEEN** VISA

7 Park Street, Croydon, Surrey, CRO 1YD

Prices include VAT and Postage. Please allow 7 days delivery

Please send me ..... Amiga 512k expansion boards
I enclose Cheque/PO £.....
Name: _____
Address: _____
_____
_____
Tel: _____

4×4 Plot – C64

J Consadine

In the good old days when there was only the Pet and high resolution was only a dream in the eye of the computer designer, it could be a pain trying to design pictures with low-res characters on a 40 × 25 grid. It was possible to improve the resolution to 80 × 50 by using a simple program enabling more precise graphs and pictures to be drawn. I have adapted this technique to run on a C-64 which uses the quarter-block characters, each one being 4 × 4 pixels.

The program works by arranging the codes for the 16 double-density graphics in such a way that if the position of the code already on the screen is ORED in binary with the position in the array of the code you want to put on the screen, the resulting position will give the code containing both the characters you want to plot.

Array S contains the list of all the 16 codes and array T is used for decoding the PEEK code from the screen into a position for use with array S.

Lines 10 and 11 should be included at the beginning of the program which is to use the double-density feature; they initialise the two arrays required.

The plotting section – the last three lines – can be called by GOSUB 10000 during the program run, after an X and Y value has been specified. The X value should be between 0 and 79 and the Y value between 0 and 49.

Assigning 0 to both X and Y will produce a dot in the bottom left-hand corner of the screen; 40 for X and 25 for Y will produce a dot in the middle of the screen; 79 for X and 49 for Y gives a dot at the top right.

This is not the fastest plotting routine as it is in Basic but it is simple to use, can easily be added to any program and can produce a multitude of designs, just like Ceefax. Colour could be added with a little experiment but just changing the background colour can produce dramatic effects as in the demonstration. □

```
1 REM******************
2 REM
3 REM  4X4 PIXEL PLOT
4 REM
5 REM  J.CONSADINE
6 REM
7 REM
8 REM******************
9 :
10 DIMS(15),T(255):FORT=0TO15:READS(T):T(S(T))=T:NEXT
11 DATA32,123,126,97,108,98,127,252,124,255,226,236,225,254,251,160
12 :
13 PRINT"■":POKE53281,0:POKE53280,0:REM DRAW SINE WAVE
14 FORZ=1TO80:Y=25+INT(20*SIN(Z/π)):GOSUB10000:X=X+1:NEXT
15 PRINT"■■HIT ANY KEY TO CONTINUE"
16 GETA$:IFA$=""THEN16
17 PRINT"■":POKE53281,3:REM DRAW COCKTAIL GLASS
20 Y=1:FORX=31TO47:GOSUB10000:NEXT
30 Y=2:FORX=32TO46:GOSUB10000:NEXT
40 Y=3:FORX=33TO45:GOSUB10000:NEXT
50 X=39:FORY=4TO15:GOSUB10000:NEXT
60 X=39:FORY=15TO28:GOSUB10000:X=X+1:NEXT
70 X=39:FORY=15TO28:GOSUB10000:X=X-1:NEXT
80 Y=26:FORX=28TO50:GOSUB10000:NEXT
90 X=38:FORY=20TO42:GOSUB10000:X=X-1:NEXT
95 DATA39,21,38,20,38,19,39,19,39,20,38,21,37,20,37,19,38,24,41,22,44,24
96 FORZ=1TO11:READX,Y:GOSUB10000:NEXT
100 FORZ=1TO15
110 X=INT(RND(0)*51):IFX<28THEN110
120 Y=INT(RND(0)*49):IFY<28THEN120
130 GOSUB10000:NEXT
135 FORDEL=1TO3000:NEXT:POKE53281,0
140 GOTO140
150 REM
9999 REM PLOT ROUTINE
10000 A=X-40:B=Y-24
10001 S=1524+(A/2)-INT(B/2)*40:IFS>2024THENPRINT"OUT OF RANGE!":END
10010 POKES,S(T(PEEK(S))OR(2↑((A/2-INT(A/2))*4+((B/2-INT(B/2))*2)↑2))):RETURN
```

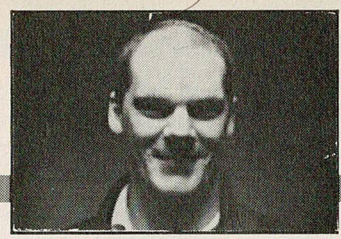
Bootinfo - Atari ST

Dave Rowlands

This program for the ST reads the boot sector of any disc you care to test. It then provides you with all the information about the sector. The program is written in GFA Basic. □

```
' ============================================================================
'                                                                            '
'                 ********************************************               '
'                 *                                          *               '
'                 *              BOOTINFO V1.20              *               '
'                 *                                          *               '
'                 ********************************************               '
'                                                                            '
'                       PROGRAME WRITTEN BY DAVE ROWLANDS                    '
'                                JULY  1988                                  '
'                             ATARI ST VERSION                               '
'                                                                            '
' ============================================================================

Closew 1
Clear
B_drive%=1 ! Set to drive 'A', button #1
Seen!=False
'
'
Do
  '
  '
  Cop$=""
  If Xbios(4)>0 Then
    Cop$="
  Endif
  Cop$=Cop$+"          "+"     ATARI ST VERSION"
  Titlew 1," BOOTINFO V1.20 "
  Infow 1,Cop$
  '
  Fullw 1
  Cls
  '
  If Not Seen! Then    ! Show title screen only once
    Seen!=True
    Deftext 4,16,0,32
    '
    Print
    If Xbios(4)>0 Then
      Deftext 2,0,0,32
      Print "          ";
    Endif
    '
    Print "   BOOTINFO V1.20"
    If Xbios(4)>0 Then
      Print "          ";
    Endif
    '
    Print "  ";Chr$(189);" Dave Rowlands"
    '
    If Xbios(4)>0 Then
      Print "          ";
    Endif
    '
    Print "     July 1988"
    Deftext 4,0,0,6


    Print At(1,20);" Press spacebar to continue......"
    Void Inp(2)
    '
  Endif
  '
  Msg$="|====================|Please select Drive.   |====================="
  '
  Rem Set active button on alert box to
  Rem represent disk drive
  Alert 2,Msg$,B_drive%," A | B | QUIT ",Drive%
  Exit If Drive%=3
  '
  Rem Store selected drive number
  B_drive%=Drive%
  Cls
  @Display_boot_sector(Drive%)
  '
Loop
'
Closew 1
Openw 0
Cls
'
' ============================================================================
'
Procedure Display_boot_sector(Drive%)
  '
  Rem Display information contained in boot sector of active drive, on screen
  '
  Local Buff%,Total_tracks%,Free_bytes%,Bytes_per_sector%,F$
  '
  Free_bytes%=Dfree(Drive%)
  Dec Drive%
  '
  Msg$=" Drive "+Chr$(Drive%+65)+": "
  Titlew 1,Msg$
  '
  Rem read sector 0
  @Read_write_sector(True,Drive%,0)
  '
  Rem Console default output
  F$="CON:"
  Msg$="==================        |Select text output.|====================="
  Alert 2,Msg$,2," Printer | Screen | Cancel ",Butt%
  '
  If Butt%<>3
    '
    If Butt%=1 Then
      F$="PRN:" ! Printer output
    Endif
    '
    Close #0
    Open "O",#0,F$
    '
    If F$="PRN:" Then
      Print #0," BOOTINFO V1.2 By Dave Rowlands"
      Print #0
      Print At(1,10)
    Endif

  Rem Sect_buffer$ located in Read_write_sector procedure
  Buff%=Varptr(Sect_buffer$)
  '
  Rem Byte offsets into Buffer%
  '
  Bps=11
  Spc=13
  Res=14
  Fat=16
  Drr=17
  Sec=19
  Media=21
  Spf=22
  Spt=24
  Side=26
  Hid=28
  '
  Print #0
  Print #0," Bytes per sector          = ";
  @C8086(Buff%+Bps)
  Bytes_per_sector%=W_8086%
  Print #0,W_8086%
  Print #0," Sectors per cluster       = ";Peek(Buff%+Spc)
  Print #0," Reserved sectors          = ";
  @C8086(Buff%+Res)
  Print #0,W_8086%
  Print #0," Number of FAT             = ";Peek(Buff%+Fat)
  Print #0," Maximum directory entries = ";
  @C8086(Buff%+Drr)
  Print #0,W_8086%
  Print #0," Total sectors on disc     = ";
  @C8086(Buff%+Sec)
  Print #0,W_8086%
  Print #0," Media descriptor          = $";Hex$(Peek(Buff%+Media))
  Print #0," Sectors per FAT           = ";
  @C8086(Buff%+Spf)
  Print #0,W_8086%
  Print #0," Sectors per track         = ";
  @C8086(Buff%+Spt)
  Print #0,W_8086%
  Print #0," Number of disc sides      = ";Peek(Buff%+Side)
  Print #0," Number of hidden sectors  = ";
  @C8086(Buff%+Hid)
  Print #0,W_8086%
  Count%=Peek(Buff%+(Sec+1))*256
  Add Count%,Peek(Buff%+Sec)
  Total_tracks%=Count%
  Count%=Peek(Buff%+(Spt))
  Total_tracks%=Total_tracks% Div Count%
  '
  Print #0," Total number of tracks    = ";Total_tracks%
  Hx$=Hex$(Lpeek(Buff%+8))
  Print #0," Number of unused sectors  = ";Free_bytes% Div Bytes_per_sector%
  '
  Rem Serial number = 24 bits long (3 bytes)
  '
  Print #0
  Print #0," Serial number in hex      = ";Left$(Hx$,6) ! First 3 bytes
  Print #0," Disc checksum in hex      = ";Hex$(Dpeek(Buff%+510))

    Cop$=" Free disc space = "+Str$(Free_bytes%)
    Cop$=Cop$+" bytes."
    Infow 1,Cop$
    Print #0
    '
    Print " Press spacebar to continue"
    Close #0
    Void Inp(2)
    '
  Endif
  '
Return
'
' ============================================================================
'
Procedure C8086(W_addr%)
  '
  Rem Change the 8086 word format at W_addr% to 68000 format
  '
  Local B1%,B2%
  '
  B1%=Peek(W_addr%)      ! Low byte
  B2%=Peek(W_addr%+1)    ! High byte
  '
  Rem Print 68000 value from address W_addr% at current cursor pos.
  '
  W_8086%=B1%+(B2%*256)
  '
Return
'
' ============================================================================
'
Procedure Read_write_sector(R!,Drive%,Sector_numb%)
  '
  Rem If R! = TRUE then read sector
  Rem Drive%  0 = A : 1 = B : 2 = HARD DISC
  '
  Local Rw%   ! Read/Write flag
  Sect_buffer$=Space$(512)   ! 512 byte Sector buffer
  '
  Rw%=2       ! 2 = Read sector, ignore disc change
  '
  If Not R!
    Rw%=3     ! 3 = Write sector, ignore disc change
  Endif
  '
  A=Bios(4,Rw%,L:Varptr(Sect_buffer$),1,Sector_numb%,Drive%)
  '
  If A<>0 Then
    Error A
  Endif
  '
Return
'
' ============================================================================
'
```

KENN GARROCH



Your technical queries answered

ST 'C' access

Howard Jones, of Bracknell, Berkshire, writes:

Q Writing a *Boulderdash*-type game for the ST, while getting the main rock-falling and mud-digging procedures working satisfactorily, I have encountered the following problems:

1, Although your recent explanation of the joysticks was all very well for machine code freaks, I use C and could not see how it worked. Is the same possible in Lattice C? I need a routine like that on the C64 so I can read the joystick when I need to do so.

2, Getting the sound chip to work correctly. I have read 'ST Internals' and your article and in a separate program I have got Dosound to work but, in the game program, it is called for spot effects like rocks crashing. The program produces a big stacked-up racket of crashes which continues after the program has stopped and gone back to the desk-top.

In the command list for the sound chip I have used a wait command (S84) to make the sounds the proper length. Is this the problem?

I would be interested to see what you have to say and hope the problems can be solved in C rather than resorting to the GST.

A The first part was not easy to find but I think the following might do what you want; it is not ideal and there may be a better way. You should be able to access both RAWCONIO, raw console input/output and IKBDWS, intelligent keyboard send from C. With the second send the following bytes:

$19,2,2,10,10,1,1

The first is the code to make the system use the joystick instead of the cursor keys. It works only with joystick input 0, so far as I can see, and returns the usual codes $4B - left, $4D - right, $48 - up, $50 - down, and $74 for fire - equivalent to control right cursor. Of the six bytes following the $19, I am not sure what the first two do; the second set the delay before the stick input repeats and the last two set the repeat speed, for x and y directions respectively in tenths of a second. Diagonals can also be sensed, since the key numbers are returned alternately, i.e., $4B, $48, $4B, $48 and so on for left and up.

The system seems to be reading the joystick inputs all of the time but not returning them in a readable format, apart from the foregoing. As you say, from machine code it is possible to re-direct the appropriate vector and use a fast routine to decode the data packages sent from the keyboard microprocessor. This is not very easy from C and would probably require some inline sequences.

The problem you have with the Dosound command seems to involve the delay, as you say. I cannot get this to work properly and I suspect that the best way to circumvent the problem is to design your own sound chip access routines. It should be possible to get at the various registers directly from C. One thing of which to make sure is that you turn off the keyboard click, since this changes some sound chip settings when a key is pressed. Memory location $484 bit 0 should be cleared for the keyclick and bit 2 cleared for the bell.

More Spectrum fractals corrections

Fred Fee, of Raynes Park, London, writes:

Q Thank you for the Mandelbrot and Julia programs in the January 5–11 issue. To get them to run, they need a slight alteration.

In lines 130, 150, 260 and 280 of the Julia, the variable nx should be changed to n and in lines 140, 160, 260, and 270, ny should be changed to z.

The Mandelbrot requires the same changes but for np and nq in lines 110, 130, 260, 280, and 120, 140, 260, 270 respectively.

To improve the resolution on a black and white TV you can try changing line 250 in each program to the following:

250 IF c>0 THEN IF C/2=INT(c/2) THEN PLOT n,z and delete line 260.

A Thank you for the tips - I am sorry about the errors, including the % in line 220 of the Julia plot, which should be removed.

Spectrum to Ferguson

H. Loveday, of Batley, West Yorks, writes:

Q I have a Spectrum +3 and a Ferguson MC05 TV. When using the normal aerial connection, everything is satisfactory. Using the Ferguson lead MA17 – for QL and Spectrum 128 to MC01 – I get no picture and, in fact, no signal on the TV. This signal can be measured on the computer RGB/Peritel socket.

The TV worked through the RGB socket with the Spectrum + using the Ferguson interface MA20. Can you help?

A It looks as if you are using the wrong lead. The Spectrum needs to be connected to the SCART (Peritel) connector on the Ferguson. Try the connection shown in the figure; I cannot guarantee it will work since I do not have a Ferguson TV.

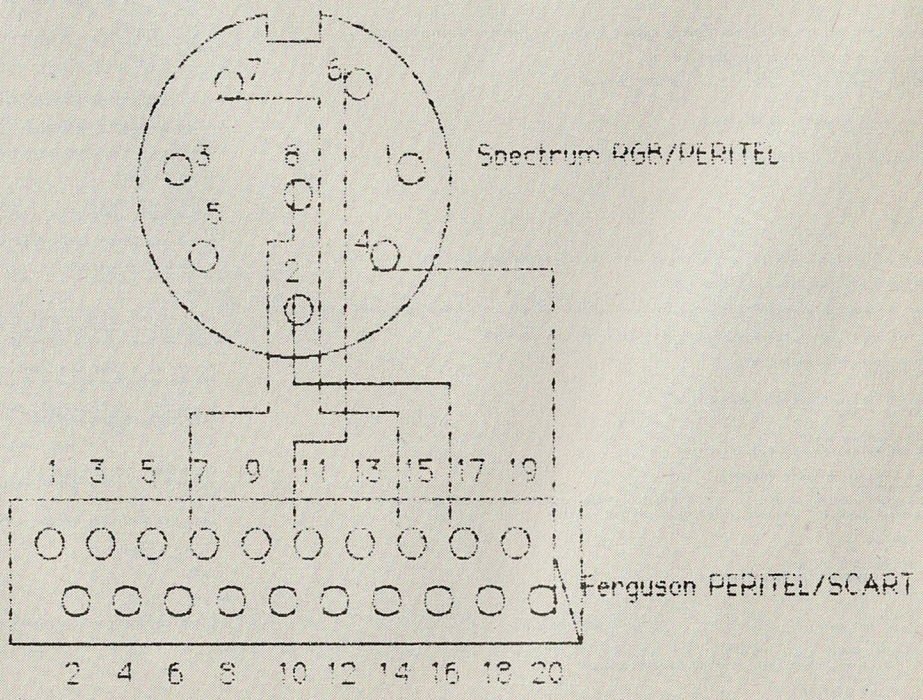


Figure 1 - Spectrum +3 to Ferguson

C64 lightpen

David Hughes writes:

Q I have a Commodore 64 and have built the Maplin lightpen in the hope that I can write programs for it. The trouble is that I am confused as to the port with which the pen can be used. According to the schematic drawing in the Programmers' Reference Guide it is control port 1 but according to the guide's memory map the address 56320 is for the lightpen and by testing a joystick at those ports I find that the address 56321 is control port 1.

When I peek these addresses, 56320=127 and 56321=255, which suggests that the lightpen is on port 1. It appears that the information on the memory addresses is crossed.

Could you enlighten me and point me in the proper direction to tie the lightpen input at address 56321 with the raster 53266, the lightpen x at 53267, the lightpen y at 53268, the interrupt reg 53273, and any other requirements in machine code or Basic?

```
10 X=PEEK(53267)
20 Y=PEEK(53268)
30 X=(X-30)/160*40
40 Y=(Y-50)/200*25
50 PRINT "[HOME]":FOR T=1 TO X:PRINT "[RIGHT]";:NEXT
60 FOR T=1 TO Y:PRINT "[DOWN]";:NEXT:PRINT"X";:GOTO 10
```

Figure 1 - C64 Light Pen demo

A The lightpen connects to control port 1 but only the position, which the Vic II chip stores in registers 53267 for horizontal and 53268 for vertical, is of interest. A simple demonstration program is shown which should allow you to follow an object (X) round the screen. The Vic II chip has an input connected to the lightpen which gives a pulse when the pen is over a light portion of the screen. When this coincides with the raster scan position the Vic chip can find the position of the pen. From your circuit diagram, the push button on the pen comes in at joystick North position – read memory location 56321 least significant bit (0).

For more advanced usage it should be possible to use the pen to generate an interrupt (IRQ) but this scarcely seems necessary, since the position can be read at almost any time. It would be better to do the whole thing in machine code, since this will give much greater speed and allow more sophisticated programs to be written.

More information on the subject can be found in *Programming the Commodore 64* by Rae West, published by Level Computer Publications, PO Box 438, Hampstead, London NW3 1BH.

Which ST monitor?

D. Ainslie, of Sheffield, writes:

Q These questions concern the Atari STFM 512K model. First, which monitor would you suggest I buy? Obviously I want one which will give me the best of both – all three? – worlds, i.e., low, medium and high resolution – to maximise the software base. Does such a monitor exist?

Second, I have a friend who is willing to lend me a Commodore colour monitor, model 1701, which he uses with a C64 machine. It has front phono inputs – audio and video – and rear inputs – luma, chroma and audio. Could this be connected to the ST and, if so, how?

I bought a lead which did not work and fell apart in my hands. Perhaps the connectors were faulty. It appears to have some kind of resistor soldered into the 13-pin plug. Is this resistor necessary and could I use the lead, resoldered of course, to connect my ST to the 1701?

A The type of monitor for which you are looking is a multi-sync. There are two on the market, the most famous probably being the NEC. By checking the frequency of the incoming signal it sets up its display appropriately, i.e., it will operate well with low, medium, and high resolution (70Hz). The lead you bought will probably work with the 1701, though you will need to modify it. Fortunately, the STFM sends a composite colour picture signal which should be acceptable to the 1701. If you follow the diagram you should be able to get things working. I am not too sure what the resistor is for but it seems likely that it is being used to reduce the intensity of either the sound or picture signal. If you wire the lead initially without it, you will see whether the picture is too bright, or the sound too loud, and be able to insert the resistor in the appropriate wire – S or P in the diagram.

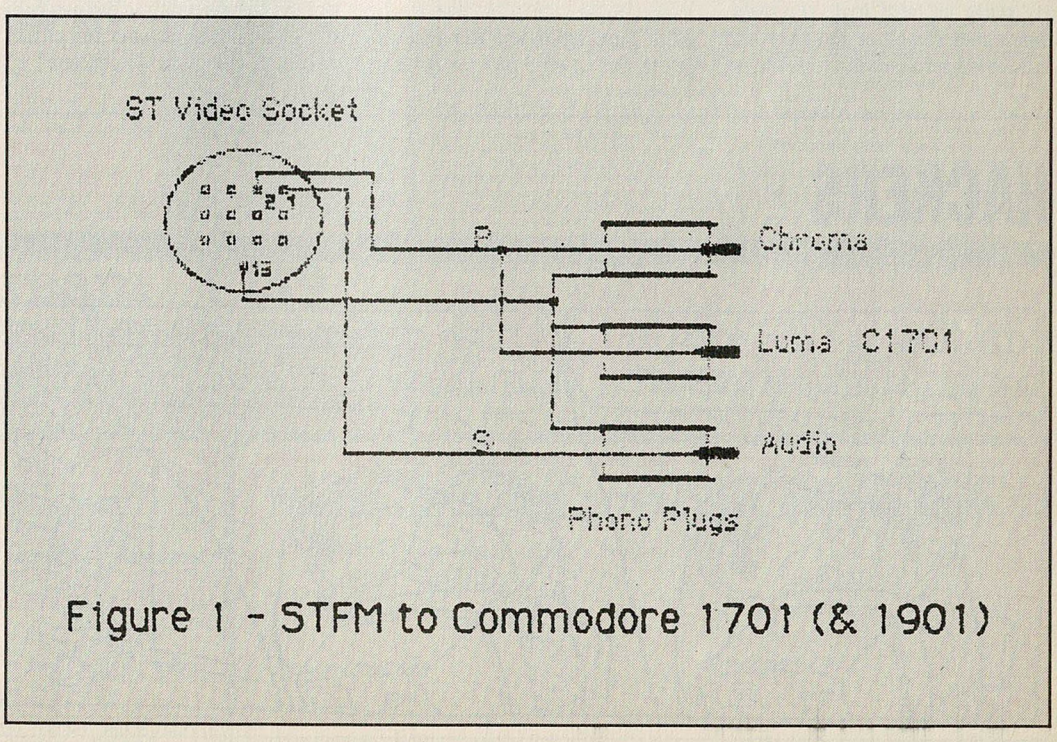


Figure 1 - STFM to Commodore 1701 (& 1901)

A woman's cry from Man's-land

By Liz Holliday

Two months ago, I visited another country. Not overseas. All I did was visit the Atari Users' Exhibition in London. The difference is I am female.

An assistant said, "Sorry, Madam, I thought you were with him." I gritted my teeth, snarled and moved to another stand. The lads behind the counter were too engrossed to realise I was there. I realised that the object of their attentions was a strip poker game and that the subject of their conversation was the fact that it was a bit of a rip-off.

The graphics were not very good and, "she doesn't take off enough, anyway." At which point I stopped saying "Excuse me" and left. I do not think they even noticed they had lost a sale.

It was then that I realised how deeply lost in that other country women in hobby computing are – and the things which have occurred to me are not, perhaps, the most obvious.

I find the Maria Whittaker *Barbarian* advertising deeply offensive; I would find it offensive if it was used to sell baked beans – but it would not be. The reason? Baked beans are perceived as selling to everybody. Computers are not. The male-dominated advertising industry takes its brief from the male-dominated computer industry and aims soft-porn advertisements at men. Then both claim that they are merely reflecting market forces.

Another thing I have noticed is the way computer magazines are marketed. I was in a branch of W H Smith. A sign said Computers and there were the shelves of computer magazines – but not the top shelf. That was full of *Playboy, Penthouse* and *Mayfair*. So women are not targeted as computer purchasers and cannot buy a magazine about them without a faint sense of embarrassment.

Of course, some software houses try to appeal to women. The problem with that idea is that mostly they assume that we want knitting patterns and recipe databases. Either that or show-jumping simulations and romantic adventure games. God forbid that a woman should harbour an ambition to make Right On Commander in *Elite*. Sure, there was Kim Kimberley in the Level 9 *Silicon Dreams* trilogy but I can think of no other heroines in computer games. Ingrid in *Gnome Ranger*? Same company, funny – but I can think of none in an arcade game.

Then there is the vexed question of being taken seriously in shops. Women, of course, do not like computers. So a woman in a computer shop must be with one of the male customers. When one is served, it usually involves being condescended to by some 16-year-old boy who does not know where the on/off switch is, let alone the difference between a parallel port and parallel processing. Regardless of whether they do or not, the assumption is that you do not. Women are not into computing right?

The trouble is, of course, that it is a male-dominated industry. So the marketing men cannot see the problem with the scantily-clad females on the advertising and the design boys cannot see the problem with strip poker games and the chap in retail cannot see you at all if you are a woman.

All that is why computing is another country. So I have one question for all businessmen. Why are you prepared to get up the noses of 52 percent of your potential market so that you can pander to the vanity, machismo and chauvinism of the other 48 percent?

NEXT WEEK

On sale Thursday, February 23

Computer Gamesweek

Next week, our crazy colleagues on Gamesweek become part and parcel of *Popular:* 24 pages dedicated to the best in entertainment software.

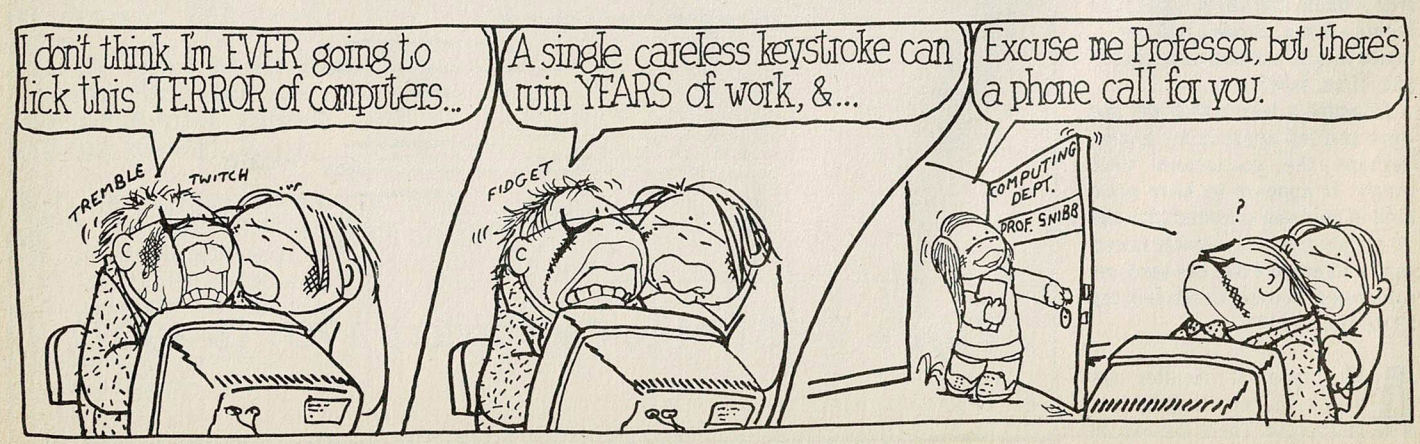
Schools out

But micros are in, as Adrian Pumphrey learns algebra, French, all sorts of general knowledge . . . and how to count teddy bears? Tune in next week . . . and take that bubblegum out of your mouth.

C64 – peripheral vision

We begin a new week-by-week series looking at the hardware add-ons for your micro. We start with the C-64.

HACKERS



520ST-FM SUPER PACK

1Mb DISK DRIVE
£450 OF SOFTWARE

ARCADE GAMES

Arkanoid II	Imagine	£19.95
Beyond The Ice Palace	Elite	£19.95
Black Lamp	Firebird	£19.95
Buggy Boy	Elite	£19.95
Chopper X	Mastertronic	£9.99
Ikari Warriors	Elite	£14.95
Marble Madness	Electronic Arts	£24.95
Quadralien	Logotron	£19.95
Ranarama	Hewson Consultants	£19.95
Return To Genesis	Firebird	£19.95
Roadwars	Melbourne House	£19.95
Starquake	Mandarin	£19.95
Test Drive	Electronic Arts	£24.95
Thrust	Firebird	£9.95
Thundercats	Elite	£19.95
Wizball	Ocean	£19.95
Xenon	Melbourne House	£19.95
Zynaps	Hewson Consultants	£19.99

SPORTS SIMULATIONS

Eddie Edwards Super Ski	Elite	£19.95
Seconds Out	Tynesoft	£19.95
Summer Olympiad '88	Tynesoft	£19.95

PRODUCTIVITY SOFTWARE

Organiser	Triangle Publishing	£49.95

JOYSTICK

Atari CX40 Joystick	Atari Corp	£4.99

FREE ATARI BUNDLE VALUE: £458.97

The Atari Super Pack is ideal for you if you want to get off to a flying start with the best in entertainment software. The Pack includes a 520ST-FM with ½Mb RAM, a built-in 1Mb disk drive, over £450 of top games and a joystick. If you buy the Super Pack at Silica Shop, we will add our own ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for details.

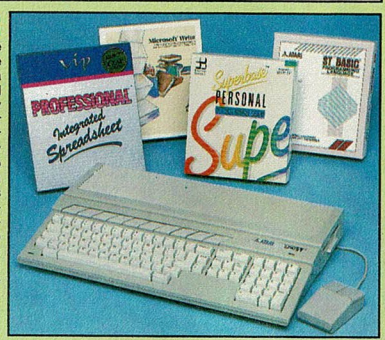
£399 INCLUDING VAT

With SM124 mono monitor: £498 INC VAT With SC1224 colour monitor: £698 INC VAT

1040ST-FM PROFESSIONAL PACK

NOW WITH TV MODULATOR

For the serious home user and the small business, we are pleased to announce a new package based around the 1040ST-FM. The 1040ST-FM has 1Mbyte RAM and a 1Mbyte built-in disk drive. In addition, the 1040ST-FM now comes with a TV modulator built-in. (The previously available 1040ST-F was designed for use with a monitor only and did not come with a modulator.) This modulator allows the 1040ST-F to be plugged directly into any domestic TV set, and comes complete with a lead to allow you to do so. The new 'Professional Pack' from Silica includes the new 1040ST-FM with modulator plus four high quality software packages including a spreadsheet, database, word processor and programming language. This 'Professional Pack' software will enable you to get straight down to business with your new computer. In addition to this software (worth £384.84), if you buy the Professional Pack from Silica Shop, you will also receive the Silica ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for further information.



£499 INCLUDING VAT

With SM124 mono monitor: ..... £598 INC VAT

With SC1224 colour monitor: ... £798 INC VAT

ATARI 1040ST-FM	(Computer)	£499.99
VIP PROFESSIONAL	(Spreadsheet)	£149.95
MICROSOFT WRITE	(Word Processor)	£149.95
SUPERBASE PERSONAL	(Database)	£59.95
BASIC DISK & MANUAL	(Language)	£24.98

NORMAL RRP: £884.82

LESS DISCOUNT: -£385.82

PROFESSIONAL PACK PRICE: £499.00

2Mb & 4Mb MEGA ST

The MEGA ST computers are styled as as lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

2Mb MEGA ST	4Mb MEGA ST
£899 INC VAT	£1199 INC VAT
+mono monitor=£998	+mono monitor=£1298
+colour monitor=£1198	+colour monitor=£1498

DTP PageStream £149 +VAT =£171.35

Desktop Publishing (DTP) is one of the fastest growing applications for personal computers. We are pleased to announce a powerful low cost package for the Atari ST called PageStream. PageStream costs only £149 (+VAT=£171.35) and, because it works with an Atari 1040ST and a Seikosha SP-180AI printer, you can be up and running with a complete system for less than £1000. Some of the features of PageStream are listed to the right. If you would like further information on this program, complete and return the coupon below, ticking the 'DTP' box in the corner.

* TEXT-FLOW AROUND GRAPHICS
* ROTATION OF TEXT & GRAPHICS
* SLANT OR TWIST ANY OBJECT
* POSTSCRIPT COMPATIBLE
* TAG FUNCTION
* AUTO/MANUAL KERNING & HYPHENATION
* GROUPING OF OBJECTS

DO YOU OWN AN ATARI ST?

If you already own an Atari ST computer and would like to be registered on our mailing list as an ST user, let us know. We will be pleased to send you copies of our price lists and newsletters FREE OF CHARGE as they become available. Complete the coupon and return it to our Sidcup branch and begin experiencing a specialist ST service that is second to none.

SILICA SHOP:

SIDCUP (& Mail Order) **01-309 1111**
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
OPEN: MON-SAT 9am - 5.30pm **LATE NIGHT:** FRIDAY 9am - 7pm

LONDON **01-580 4000**
52 Tottenham Court Road, London, W1P 0BA
OPEN: MON-SAT 9.30am - 6.00pm **LATE NIGHT:** NONE

LONDON ..... **01-629 1234 ext 3914**
Selfridges (1st floor), Oxford Street, London, W1A 1AB
OPEN: MON-SAT 9am - 6.00pm **LATE NIGHT:** THURSDAY 9am - 8pm

ATARI ST

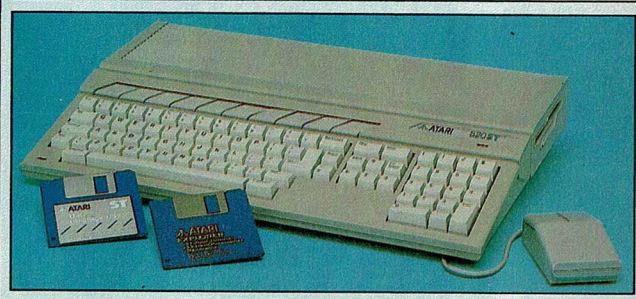
ST COMPUTERS

The range of Atari ST computers offers something for everyone. From the games enthusiast who wants the challenge of the very best in arcade action, to the businessman who wants to make financial forecasts or faultless presentations. The ST offers high quality graphics, sound and speed for the gamer, whilst providing a fast, user friendly and affordable solution to business. The ST is now firmly established in the home environment and boasts a wealth of users in education, local government, television, and a variety of different businesses. Software for the range stretches to cover applications as diverse as ENTERTAINMENT, ACCOUNTS, ART, COMMUNICATIONS, COMPUTER AIDED DESIGN, DATABASES, DESKTOP PUBLISHING, EDUCATION, MUSIC, PROGRAMMING, SPREADSHEETS, WORD PROCESSING and more. For a full list of the software available, as well as details of the ST range, complete and return the coupon below.

All prices correct at the time of going to press. E&OE.

520ST-FM EXPLORER PACK

WITH BUILT-IN 1Mb DISK DRIVE



The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

£260

ONLY £2.51 PER WEEK RETURN COUPON FOR DETAILS

+VAT= £299

+ SM124 mono monitor: £398 INC VAT + SC1224 colour monitor: £598 INC VAT

WHY SILICA SHOP?

Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

SILICA STARTER KIT: Worth over £200, FREE with every Atari ST computer bought from Silica.

PROFESSIONAL PACK: Free business software with 1040ST-FM and MEGA ST's bought from Silica.

DEDICATED SERVICING: 7 full-time Atari trained staff with years of experience on Atari servicing.

THE FULL STOCK RANGE: All of your Atari requirements from one place.

AFTER SALES SUPPORT: The staff at Silica are dedicated to help you get the best from your ST.

FREE CATALOGUES: Mailed direct to your home as soon as we print them, featuring offers as well as all of the new releases.

FREE OVERNIGHT DELIVERY: On all hardware orders shipped within the UK mainland.

PRICE MATCH PROMISE: We will match competitors on a 'same product same price' basis.

FREE TECHNICAL HELPLINE: Full time team of Atari technical experts always at your service.

FREE SILICA STARTER KIT WORTH OVER £200

WITH EVERY ST - RETURN COUPON FOR DETAILS

ALL PRICES QUOTED INCLUDE FREE UK DELIVERY

To: Silica Shop Ltd, Dept PCWK 1288, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND 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? ..... DTP ☐

FOOTIGRUS

Actual Screenshots

£19.95

AMIGA-ATARI ST

SEND CHEQUE OR POSTAL ORDER TO: **CRL GROUP PLC,** 7 KING'S YARD, CARPENTERS ROAD, LONDON E15 2HD