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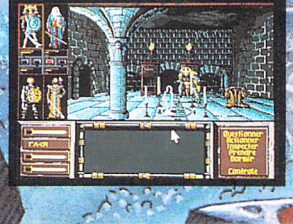

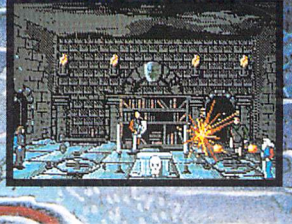

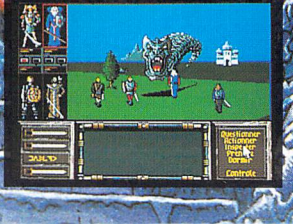

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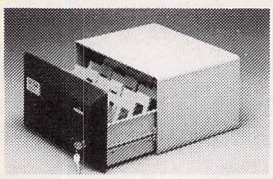

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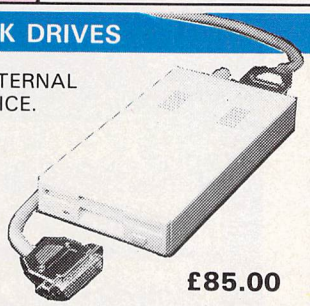

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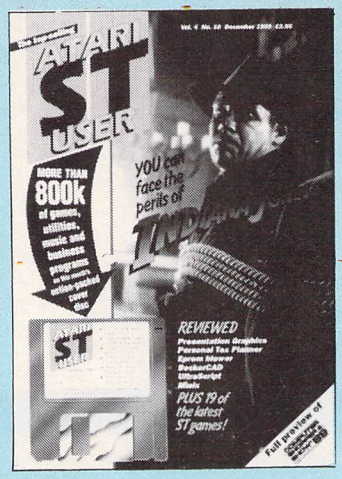

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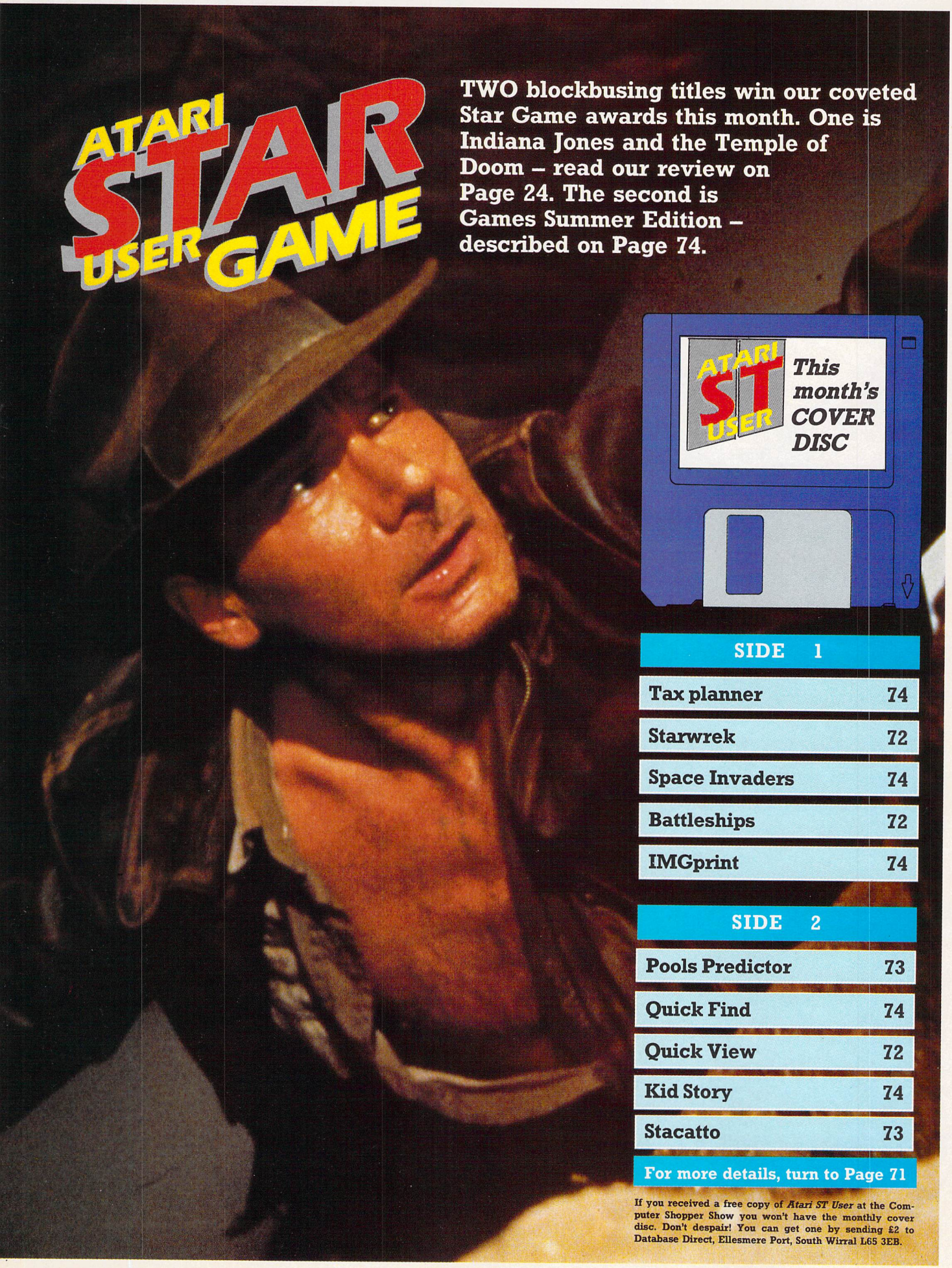

ATARI STAR USER GAME

TWO blockbusing titles win our coveted Star Game awards this month. One is Indiana Jones and the Temple of Doom – read our review on Page 24. The second is Games Summer Edition – described on Page 74.

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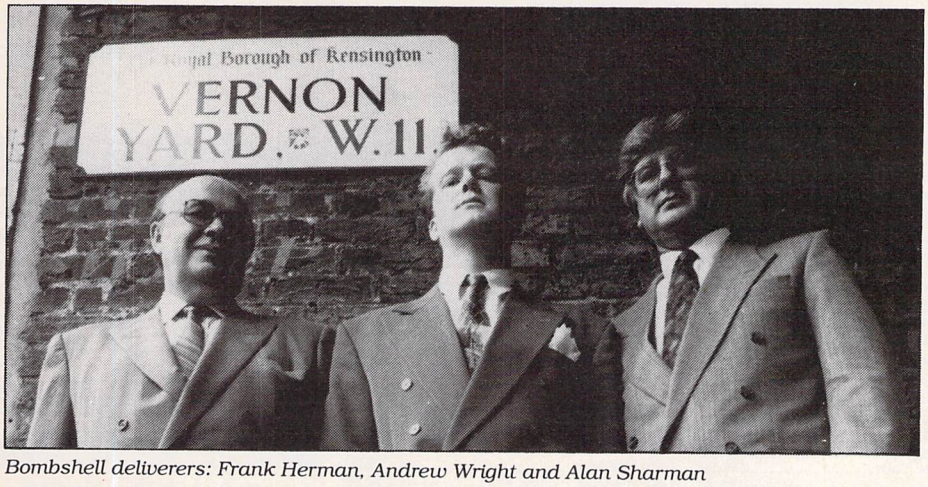


Bombshell deliverers: Frank Herman, Andrew Wright and Alan Sharman

VIRGIN BLITZES 16 BIT MARKET

VIRGIN Mastertronic has dropped a price bombshell which has created waves of anger and dismay throughout the 16 bit games market. Giving a new meaning to cut-price, it has launched new label 16-Blitz at a mould-breaking price of £4.99.

This has been seen as a pioneering move to force others to either follow suit or at least revise their price structuring and products. Its reception by the rest of the games software world is summed up well in Virgin's own words — "never have so few caused so much aggravation to so many in so short a time".

Virgin Mastertronic (01-727 8070) established the 8 bit budget market in 1984 by introducing software at under £2. It now hopes to repeat the performance in the 16 bit arena.

"We feel the time is right to attack the 16 bit market and once again set a precedent that the rest of the industry will follow", said Frank Herman of Virgin. "We looked at a variety of price points and decided that this was the one that would set the market alight. In the same way that £1.99 did not upset the full price market, we believe that by finding a price point so far below full price, the two price points will be able to co-exist much better than if we had gone to, say, £7.99".

Budget product manager Andrew Wright said: "Since joining the company last year it became increasingly obvious that £9.99 was not a realistic price point for budget 16 bit software. The market just would not support it. However, the market was ripe for 16 bit software at a realistic price.

"It was just a matter of putting all the pieces together and doing some sums before we came up with a price point of £4.99, the lowest ever charged for a16 bit game".

Sales director Alan Sharman added: "Pricing software at £4.99 will be on the one hand a means of reducing the risk of copying and on the other hand stimulating volume sales by being at a price affordable to all. It also gives software houses another bite at the cherry after compilations. It's going to be a very succesful range".

The first titles from 16-Blitz mix new releases with full price games now reduced to budget and titles previously sold at higher budget prices. They include Kelly 5, Little Computer People, Pub Pool, Road Wars, Speedboat Assassins, Sorcerer Plus and Motorbike Madness.

Developers get together

OFTEN unsung heroes of the software market are the developers, the men who keep it going by producing the goods.

Now a body has been set up to look after their interests.

The Society of Software Authors is an organisation for programmers, graphic artists, musicians and game designers which so far has 400 members, including such big names as Jez San and Dave Pringle.

Started by Jon Dean and Mev Dinc, it is designed for the sharing of knowledge and protection of interests of its member, but is not a trade union or militant body.

Its aim is to ensure that the relationship between publishers and authors is fair and professional and that authors' interests are protected. It offers practical advice on such matters as tax, copyright and contracts. The SSA produces fact sheets and runs a helpline (0867 35485).

Shock horror

OUTRAGEOUS comedienne of the macabre, television personality, film star and former showgirl Elvira is the inspiration for the latest ST offering on the Horrorsoft label.

As a follow-up to its first Horrorsoft title Personal Nightmare, Tynesoft (091-414 4611) has chosen the game of the film Elvira — Mistress of the Dark.

The game is an icon-driven role-playing horror story with the player acting as ghostbuster in the pay of Elvira. It costs £29.99.

NEW LAUNCHES LINING UP FOR CHRISTMAS

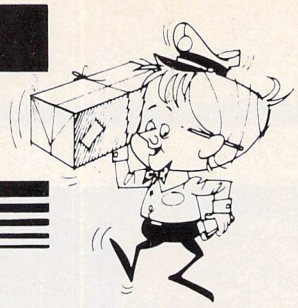
CHRISTMAS releases have been announced thick and fast on the various US Gold labels. Ghouls 'n' Ghosts is a Capcom sequel to Ghosts 'n' Goblins with Knight Arthur fighting numerous foes to rescue Princess Hus from the Evil Ones. It is due out in December.

From Loriciel comes Pinball Magic, a 12 level pinball simulation complete with dual flippers, tilt feature, dazzling lights and extra bonuses. Turbo OutRun is a turbo charged version of top tyre smoker OutRun. It features a four stage race across America.

Winners compilations costing £29.99 include Blasteroids, Thunderblade, Led Storm, Impossible Mission and Indiana Jones and

Turn to page 9

BYTEBACK



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MU.05 ST-Sheet (v.2); Powerful Spreadsheet 1280 x 280 (D/S)

BC.01 Clip Art; 100s of high quality pictures for use with DTP

BM.03 Mono; Pool, Chess and the original Colossal Cave adventure

BT.04; Shanghai, Fully playable first level of this board game

BT.35 Autoroute; The intelligent map, working routeplanner demo

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Computers ARE good for you

A RECENT study at Nottingham University has scotched the hypothesis that computer addicts suffer stunted psychological and social development. Research has shown that computer dependency can actually be theraputic for people who find it hard to relate to others.

The findings have been published in a book *Computer Addiction?* written by Dr Margaret Shotton of the university's Department of Production Engineering and Production Management (0602 484848).

It follows the study initiated to investigate the syndrome of computer dependency and to see if obsessive dependency is detrimental to psychological and social development.

Volunteers who admitted they were dependent on computers were compared with control groups of non-dependent computer owners and people who did not own one.

As expected, the computer dependent individuals, mainly well educated males, spent significantly more time computing than the other groups, but were found to use computers in a more exploratory and self-educational manner, rarely having a definite end product in mind.

Investigation showed that the computer-dependent people had experienced different types of parenting from the control groups, leading them to become object rather than people centered at an early age. This bias had been perpetuated throughout life, leaving them shy and unable to form satisfactory relationships.

Their lives had become dominated by task and object related activities with computing being the ultimate hobby which offered them a controllable form of interaction which they had not been able to find elsewhere.

Although some marriages had suffered because of the computer dependency of one partner, most volunteers were quite happy about their dependency. They felt the positive benefits gained by their use of computers far outweighed any disadvantages. Most had increased their social circles, had gained in confidence and self esteem and had improved their job prospects.

Findings suggested that computers provided an outlet for high level intelligence, curiosity and originality.

Joystick goes up market

SPECTRAVIDEO (01-900 0024) reckons its latest joystick is so advanced that it should be called a game controller.

The Quickshot QS 129 Flight Controller is a hand held peripheral with thumbs used to control cursor movements and the fire button. Specravideo boss Ashwin Patel has described it as the first game controller to be designed for the 1990s.

It will cost £12.50. Spectravideo has dropped the price of its best-selling QuickShot Turbo to £10.50.

LOTSA FONTS

MIRRORSOFT (01-928 1454) has launched a deluxe upgrade to its Fleet Street Publisher DTP package which includes Ultrascript for a price of £99.95.

It comes with 15 Lucida fonts; extra add-on fonts are available at £29.95 each.

Adventures get own hotline

SO many people now play adventure games that a thriving helpline business in Manchester is taking up to 600 calls a week.

The Guiding Light was started recently by Jackie Wright who previously ran a helpline service from her home. It now has its own offices with 10 lines and four members of staff.

A self confessed games fan, Jackie has completed many computer adventures herself, but when an obscure query comes up she turns to manufacturers for the answer. Other answers are provided by members of the public who enter The Guiding Light's monthly hints and tips competition.

The secret of a good games line is to give just enough advice to get the player out of a spot but not so much that the rest of the game is spoiled.

A nucleus of popular games give rise to most calls. At present Jack The Ripper, Dracula, Frankenstein, Personal Nightmare and the Police, Space and Kings Quest top the list.

"We find that certain places in each game always cause the problems", said Jackie. "If someone rings and mentions a game, we almost know before they tell us where it is they have got stuck. If we receive a call on Personal Nightmare they nearly always want to know where to get the free voucher to send off for the film".

For games adventurers who are being driven mad by a sticky spot, The Guiding Light can be contacted on 0898 338933.

Safer faster

MITCHTRON UK (0726 68020) has announced D.A.S.H., the duplicating and security handler.

It boasts a 10 sector format which gains 10 per cent more space on all discs giving the facility for four extra tracks if drives allow.

It runs in all screen modes, saves most crashed files, includes automatic virus check and has fast re-format speeds. Price, £19.95.

★ ★ ★

KUMA (07357 4335) has extended its promotional offer on K-Roget Thesaurus for the ST. Savings of £20 on the usual price of £49.95 will continue until December 31.

French software distributor raided

GST Software Products has struck a decisive blow against alleged piracy giving other software houses a lead which has been applauded by FAST, the Federation Against Software Theft.

Suspecting its former French distributor of copying its products, GST took out an injunction. This led to the biggest police raid of its kind in France and will end in a court case over alleged large-scale counterfeiting.

At the centre of the allegations is Wings Micro Electronics which had a substantial amount of material seized when its Paris base was raided.

Responsible for GST's strong action was managing director David Rose who told *Atari ST User*: "When our suspicions were raised we engaged an excellent English speaking French lawyer who had experience in this field. On his advice we obained a 'cease and desist' injunction which was issued by a magistrate and led to a raid involving police, bailiffs, a lawyer and a technical expert.

"f I had a message to hand on from this, it is that software developers should not be afraid of taking action if they suspect that their products are being copied. We found that the French legal system acted very well on our behalf. It was surprisingly quick and comparatively cheap.

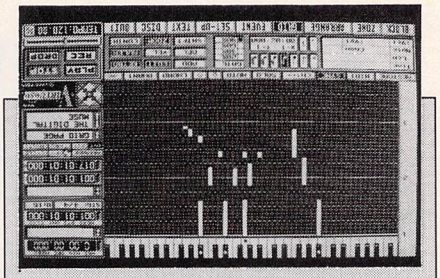
"I would like other people to be able to benefit from our experience if they consider taking similar action. That is why we are keen members of FAST".

Involved in the raid were suspect copies of Timeworks Publisher programs Huntingdon-based GST was supported in its actions by Digital Research and Timeworks Inc who both believe their trademarks have been infringed. It has now taken on Brittany-based Guillemot as its authorised French importer and has been in contact with its French customers to put matters right with them.

Commenting on GST's stand, Bob Hay of FAST told *Atari ST User*: "The company is one of our members and we give it our full support in the action it has taken. What is apparent from this is that the copyright law is working well in France".

Recently, La Commande Electronique, the French distributors for Ashton Tate, took action against pirates, resulting in a court case and stiff fines.

After FAST joined with Berkshire Trading Standards to raid the premises of Cybersoft earlier this year, a case at Reading Crown Court in September has resulted in fines of £12,000.



Right note

VIRTUOSO is a new Midi sequencer package for the Atari ST said to be designed from the musician's point of view, not for the programmer's convenience.

Written in machine code, it is claimed to be the first multi-tasking sequencer that squeezes every last drop of capacity from the chip at the Atari's heart.

Believing that Atari's Gem graphics are a cumbersome weight, The Digital Muse has designed a completely new set of graphics around a black and white keyboard. The musician can write on the keyboard display and watch the music rolling by on screen as it is heard. Virtuoso costs £299.

A cut-down version of Virtuoso is also available. Called Prodigy, it combines professional features with ease of use and is upgradeable to Virtuoso. Prodigy costs £129.95.

Lasers can get a refill

LAZERFILL (01-809 7576) is offering a service designed to cut the expense of replacing empty laser printer cartridges. It is a cartridge refill and drum extension treatment for a broad range of laser printers.

Cartridges can be refilled at around half the cost of a complete replacement cartridge and Lazerfill will put about 30 per cent more toner into the cartridge than the original manufacturer.

Bar service

PREVIOUSLY only available direct from Canada, the Critic Barcode Plus program reviewed in July's *Atari ST User* is now available in this country through Software Express (021-643 9100) which has secured the UK rights from Canadian Software House.

The point-of-sale and stock control system is designed for small retailers and warehouses who want to computerise their operations. It runs on any ST from 1040 upwards but a hard disc is recommended. Price £286.

Outlook improved

ATARI ST owners who want to convert their machines into home weather stations can do so with little known software from Timestep Weather Systems (0440 820485).

Timestep ST SAT runs on a standard 1040 ST, receiving GOES, Meteosat and NOAA signals. High quality pictures are displayed in 320 x 200 resolution in 16 grey levels. Images can be saved on disc and 13 images can be automatically animated with necessary hardware to track weather patterns. The system costs £688.

Christmas launches

From page 7

Battle of Britain is the latest air combat simulation from Lucasfilm Games.

From Access Software comes Heavy Metal. For December release at £19.99, it starts the player as a second lieutenant with the opportunity to work up the ranks based on performance as a field commander.

★ ★ ★

OCEAN (061-832 6633) has announced an impressive list of games releases for the run up to Christmas. Leading the line-up is Batman: The Movie which has just gone on sale. Also available now is Beach Volley based around volley ball.

Due next are shoot-'em-up coin-op Cabal, arcade style adventure Ivanhoe and a Vietnam war game, The Lost Patrol.

Then there is an arcade-style gangster offering, The Utouchables, and Operation Thunderbolt, the shoot-'em-up sequel to Operation Wolf.

For December, Ocean is offering 3D driving game Chase HQ and F29-Retaliator, billed as the ultimate flight simulation

All titles cost £19.99.

Level 9 ... going H.U.G.E.

Level 9 is dropping adventure games

AUTHOR of more than 15 top selling adventure games, Level 9 Computing has announced it is to pull out of that market.

Latest release Scapeghost will be the last adventure from Level 9 (0934 814450), which is moving on to produce arcade style games and conversions using its programming system H.U.G.E. (wHolly Universal Games Engine).

"People have been declaring the death of the adventure market for years", said designer Peter Austin. "We feel that Scapeghost is an appropriate final release".

In the game players control deceased cop In-spectre Alan Chance and use his ghostly powers to clear his name of crimes he didn't commit.

It costs £19.95.

"H.U.G.E. is a good name for the new Level 9 system", said managing director Mike Austin. "It includes 165,000 lines of code and has taken 10 man years to develop.

"It represents a number of major advances for games software and we are confident that the acclaim that Level 9 has received in the past for its high quality adventures will be continue in the more arcade-orientated environment".

Now tune in for teletext

MICROTEXT (0705 595694) has produced a teletext adaptor for the Atari ST. By plugging in a TV aerial, users can access any of the hundreds of pages available on Ceefax or Oracle.

Other facilities include saving pages to disc as a compact 1k file or in Degas format for later reloading into a paint package and printing out pages either in colour, grey scale or as pure text.

The system is also programmable to capture a sequence of pages and save them to disc or print them out automatically. Connection to the computer is via the parallel printer port. A socket is provided on the rear panel for the reconnection of the user's printer, so no ports are lost.

Price £149.

New drives from Cumana

CUMANA has produced two restyled disc drives for Atari users. In new retail packaging, they come in 3.5in and 5.25in formats in slimline casings. Atari 520 and 1040 owners can now choose between the restyled 3.5in CSA 345 and the 5.25in CSA 1000S.

Both have integral power supply and moulded mains plug. Formatted capacity of the 80 track CSA 354 is 720k. The CSA 1000S has 40/80 track switching and 360/720k formatted storage capacity. Cumana drives are available through a national dealer network. For prices ring Cumana on 0483 503121.

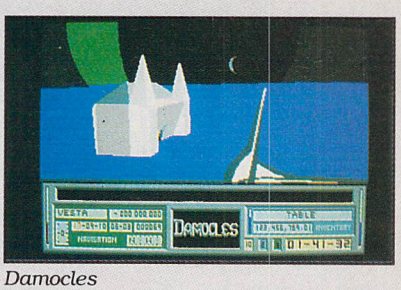
SOFTWARE HOTLINE

LOOKING to the New Year, Domark (01-780 2222) has announced three new games for the ST. Aimed at January release is coin-op conversion Cyberball, a fast and furious American football game where teams of giant Cyborg robots play with a 350lb steel ball packed with high explosive.

Also due in January is Wings of Fury, an airborne shoot-'em-up adventure. Both will cost £19.99.

With no release date yet fixed, Escape from the Planet of the Robot Monsters is the latest Tengen conversion from the new coin-op.

★ ★ ★



Damocles

PROMISED soon from Novagen (021-449 9516) is Damocles, the sequel to author Paul Woakes' hit Mercenery. Under development for the last two years, the 3D space adventure should be out before Christmas at a price of £24.95.

★ ★ ★

STOS, the games creation package from Mandarin Software (0625 878888) is celebrating two more additions to its growing family.

STOS Musician is a powerful, feature packed music editor which brings Midi input into STOS. Games Galore includes four of the most outstanding entries in the STOS

Skate Tribe

Gameswriter of the Year Awards, Skate Tribe, Sky Strike, Mouthtrap, and Yomo. It costs £19.95.

STOS Musician can be held in memory along with the game being programmed. It incorporates more than 100 tunes and jingles which can be modified and used in games. Price £14.95.

COMPUTER SHOPPER SHOW SPECIAL

The computing Aladdin's cave

THE Great Hall at Alexandra Palace will be transformed into a Mecca for computer enthusiasts in November when the UK's newest cross-format exhibition, the Computer Shopper Show, comes to town.

Timed to hit the start of the peak pre-Christmas buying season, it is the result of a brave but well researched decision by organisers Database Exhibitions and is sponsored by Computer Shopper magazine.

Computer Shopper Show incorporates and replaces three established Database events, the Atari Christmas Show, the Electron & BBC Micro User Show and the Commodore Christmas Show. It will retain all the machine specific attractions of these popular and successful exhibitions, and more besides, to serve up one huge festive offering.

Something for everyone is the aim of the show, which will open on November 24 and run until November 26. With more than 200 stands, it has been supported by exhibitors from all major sectors of the popular market and is expected to attract more than 30,000 visitors.

"We knew the concept of an all-format event in the run up to Christmas was what people had been waiting for, but even we have been surprised at just how great the actual demand has been", said head of Database Exhibitions Michael Meakin. "The response from exhibitors and potential visitors has been far greater than we expected, which underlines the fact that this type of event is what everyone has been waiting for.

"For those three days in November, the Computer Shopper Show will transform Alexandra Palace into the best stocked Christmas computer gift hypermarket this country has ever seen".

The importance of timing for the Computer Shopper Show was underlined by Mike Malone, sales director for Database Exhibitions.

"Positioned right at the start of the peak buying period, timing of this show has been a key factor", he said. "It appeals to both exhibitors and visitors alike. As our promotional campaign has got underway, space at the show has become hot property with the computer trade realising it is a must for their Christmas marketing plans.

"Similarly, the small business community and the computer buying public has realised that this will be ultimate venue for buying computer products. We are convinved that we have achieved what we set out to do – to turn the Computer Shopper Show into the world's largest pre-Christmas computer shopping opportunity".

When visitors enter the Great Hall they will be treated to a vast selection of goods from excellent hardware through the whole range of add-ons and peripherals to cut price games. Bargains galore will make it a must for the Christmas buyer and the sheer volume of stands will give visitors a unique opportunity to compare the prices and merits of exhibitors from throughout the UK – an impossible exercise in normal circumstances.

Not only will Computer Shopper be the ultimate marketplace, it is also designed to be fun – a real festive start to the Christmas season.

Typifying this concept, a circus theme will run throughout the three days and has been the basis of the high profile promotional campaign. A robotic Father Christmas, wire walkers, stilt walkers, a strong man, clowns and even a baby elephant will be there to add to the atmosphere and help make Computer Shopper the greatest show on earth.

Your chance to win a trolley full of goodies

YOU'VE been set loose in a computer superstore to grab what you want. The time limit is tight but the potential rewards are mouth watering.

It's a dream that many may have had but for 11 lucky people it will become a reality at the Computer Shopper Show.

They will be winners of the various trolley competitions which have been running in the last few months, and their reward will be that star in the competition prize firmament – the chance to complete a trolley dash.

Outside show hours the 11 lucky winners will be given a trolley, a time limit and some restrictions on what they can take then set loose in the Great Hall at Alexandra Palace. Before them will be the largest single collection of computer goodies to be seen in the run up to Christmas and free aisles to get round as many stands as possible within the time limit.

A large percentage of exhibitors have agreed to take part in the competition and allow their stands to be visited, giving winners a unique chance to fill their Christmas stockings.

Debut for latest products

MANY new product launches combined with firm favourites and a wide range of bargains will greet Atari ST owners who visit Computer Shopper Show.

Choosing the event to launch a number of new packages is Digita International (stand B1a). Top of its Atari list is System 3, an easy to use integrated suite of programs developed as the first step towards computerisation for the small business. System 3 includes cash-flow controller, invoicing, statements and stock control for £49.95.

New for the ST is Digita's Cashbook Controller. Billed as "the complete accounting solution for the small business", it costs £49.95. The Gem-based database DGbase is a powerful new relational database for the ST which fully integrates with other Digita products and costs £49.95, while the Devon-based firm has struck a blow for Britain with a new typing tutor to combat the American programs. Its called Perfect Touch and costs £29.95.

Also due for sale on the Digita stand will be Multigen, a new genlock for the ST which comes with its own processor, memory and power supply for approximately £250, plus Home Accounts designed as a complete home accounting package for a price of £24.95.

A range of games for the ST will be on offer from A & S Distribution (stand K18). "We'll be taking everything but the kitchen sink", said Alf Payne, who will also be offering joysticks on his stand.

Among the general supplies on offer from A1 Computer Supplies (stands E2 and L2) will be a wide range of computer furniture, mice, software and discs.

Admincure (stand A10) will have a range of computers, printers and accessories. Among its stock of shareware discs and public domain software, Advantage (stand E12) will be featuring a new range of Atari products fresh from America including games, education and business software programs. It will round off its stock with a selection of books and languages.

One of the top names in the Atari world, Arnor (stand D3) will be using Computer Shopper Show to unveil its new database for the ST, ProData. Features include multiple indexes for accessing data, multiple segment indexes, a powerful filtering feature, comprehensive printing options, easy to use layout design and password protection for a price of £80.

Star's range of printers will figure strongly on the Athene Computers stand (C3) where ST hardware will be on sale, along with more than 500 discs of public domain software.

Audio Visual Research and 2Bit Systems (stand H12) will be showing an impressive selection of sound samplers which will range in value from £30 to £600. Visitors will have a chance to hear for themselves the incredible sound of the A16 Samplerack, the 16 bit sampler for the ST which produces CD quality stereo sound with midi control and sampler sequencer for £595.

The entry level Atari ST Sound Master will be on sale at £30 and other Audio Visual products will be ST Replay, Replay-Pro and the ST14 Sound Module which sells for £245.

B Bytes Computer Systems (stand M14) has several new launches planned for the show including its card index file Supercard at £24.95, a money-based educational package for the ST at £14.95, and a simulation of the popular board game Yahtzee for Atari 8 bit machines at £9.95. Two new games will also be launched for the ST – Billy Bounce and Jump Jack, both costing £5.

Existing favourites from the B Bytes stable will not be forgotten, with B Base, B Spell, Kidsoft Maths and Play Spell also featuring on its stand. Each costs £14.95.

Claiming to have produced a new concept in disc labelling, BlackStuff will be letting show visitors into its secret on stand F3. Its Polly Erasable Label kits are totally wipe clean. As files are deleted and overwritten the Polly label can be updated accordingly, making scribbles and illegibile alterations a thing of the past.

For £13.74 the kits are packed in a desktop canister which contains 50 everlasting labels, the solvent and erasure pen, fast drying fine line marker pen, cotton wipes and circular colour-coding labels to help disc classification.

Bath Computer Shack (stand C2) will be selling the Tweety Board which allows the Atari ST to produce stereo sound, plus a cordless mouse for the ST, and Bowthorp EMP (stand J6) will be offering its comprehensive range of surge protection devices.

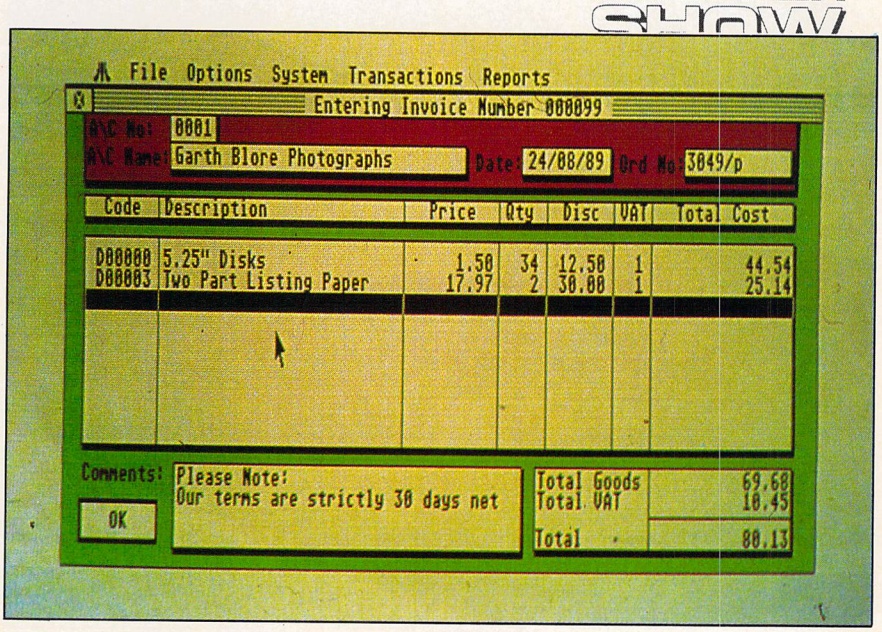
Adventure Soft (stand M8) will be selling a range of ST software at discount prices and a selection of printers will be offered by Caspell Computer Services (stand A3) along with its Ribbon Refresh package with which up to 30 printer ribbons can be re-sprayed.

Cavendish Distribution (stand H14) will be launching its new PC hardware emulator for the ST. Called PC Speed, it costs £379.

Club 68000 (stand L1a) is a mail order house specialising in discounted software for the Atari range plus some interesting hardware accessories and a selection of surplus computer equiment across many formats, that will be on sale at bargain prices from Commonside Hardware Services (stand J7).

A wide range of good games for the ST at attractive prices will be on offer by Computer Communications (stand L6) and Computer

COMPUTER SHOPPER SHOW SPECIAL



Digita's new System 3 business program

COMPUTER SHOPPER SHOW SPECIAL

Express (stand A1) will be selling a range of 16 bit computers together with software and peripherals.

A number of new titles will be on sale by Computer Manuals (stand S11) which will also be offering damaged books at knockdown prices. Computer Store (stand L13) will be catering for Atari users with a range of blank discs, disc boxes, joysticks and disc drives.

Discount prices will be offered by Conceita Micro Systems (stand J11) which will feature a range of Deskjet printers and well known discs. From Dabs Press (stand K12) there will be a selection of new books in the Dabhand Guide series.

Diamond Computers (stand S25) will have a full range of hardware, software and peripherals for the ST. The keen competition for business which is one of the watchwords of Computer Shopper Show was underlined by Mike Brown from Diamond who would offer no further information for fear of letting the opposition know what brands he will be selling!

A selection of discs, disc storage boxes and Panasonic printers will feature on the Mediaware stand (S5). Dowling Computers (stand S17) will be offering ST machines, peripherals and a range of games and business software.

Star and Panasonic printers, discs, disc boxes and STs will be sold by Ealing Computers (stand B1b).

Equinox Business Systems (stand K3) will be offering its recently-launched small business accounts package SBA Plus. Written and developed by Equinox, the package is the next up-grade from SBA Xtra, aimed at the maturing small business.

It features flexible invoicing with a product table or free format mode, an involving link with sales ledger and stock control, integrated puchasing links with bought ledger and stock control, complete sales ledger, multi-period VAT, library charts and accounts and the ability to act for more than one company. SBA Plus costs £199.95.

A new range of discs which have software protection built into the shell will feature strongly on the stand of Escroe (A8). Escroe specialists in volume sales of discs ranging from 2.8in to 8in.

Evesham Micros (H16) will be concentrating mainly on hardware including external disc drives for the ST. In addition to stocking ST machines, it will also be selling memory and internal disc drive upgrades.

A wide range of discs will be the speciality of First Stop Computer Supplies (stand F7).

Forget-Me-Clock II, a new internal clock card for the ST will be launched by Frontier Software (stand H10). It is supplied with special auto-run sofware which will set the ST system clock's time and date every time the machine is reset or turned on. A new disc duplication device for the ST will be on offer, allowing up to 32 floppy disc drives to be attached to the ST's floppy disc port.

The recently launched version of Frontier's upgradable version of its best selling Xtra-Ram upgrade for the ST will also be offered. Allowing two upgrade options, it will expand any 0.5Mb keyboard based ST to 1Mb and then can be upgraded again to boost the ST to 2.5Mb. It will also expand any 1Mb ST to 2.5Mb and the Mega 2ST to 4Mb.

"The new expandable Xtra-Ram is unique to the UK and we expect it to sell well in the marketplace during the autumn and winter months, particularly at the Computer Shopper Show", said Martin Walsh, Frontier's marketing manager.

Xtra-Ram unpopulated costs £69.95, with ram chips for upgrade to 1Mb £99.95 and with chips for upgrade of keyboard ST to 2.5Mb or Mega 2ST to 4Mb £299.95.

Graduate Computing (stand L9) will be choosing Computer Shopper Show to launch its first education package to cover the new national curriculum. The mathematics program has four key stages covering children from 5 to 16 and aims to coach them through all aspects of the new curriculum. It costs £20.

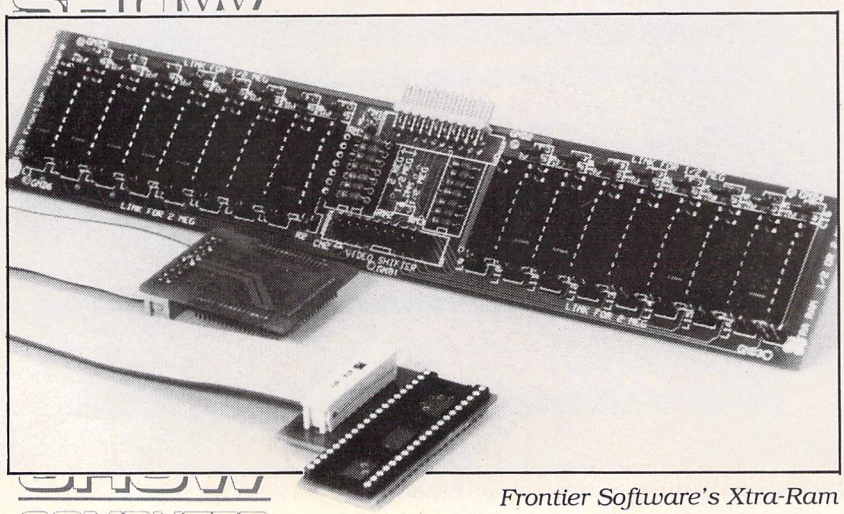
On the FM Computer Supplies (stand L18) visitors will be treated to what is billed as the largest collection of storage boxes in the country. Stands, copy holders and replacement mice for a wide range of computers will also be on sale at very competitive prices, said FM boss John Taylor.

HSV Computer Services (stand S9) will be offering a range of discs, ribbons and accessories and Hewson Consultants (stand M7) will be displaying its wide range of games software.

A selection of software including games from US Gold, Kyx and Gremlin will be on offer from In Store Marketing (stand M15) and Kador (stand M4) will have its range of seal'n'type protective keyboard covers, together with the Keytops series of stick-on labels for converting keyboards to other languages. The company will also be giving details of its courses on recharging laser cartridges.

Kempston Data (H2/H3) will be selling its Daatascan package for the ST. A hand-held scanner with easy-to-use software, with it

Mandarin Software's STOS game creator



Frontier Software's Xtra-Ram

images can be scanned from newspapers and photographs then imported into DTP and paint packages. Daatascan costs £229.95. Also available from Kempston Data will be Daatafax, the computer-based personal organiser for the ST costing £49.95 and the Kempston disc drive costing £89.95.

Several new products will be available from Kuma Software (stand M6). Polyfyler is an open format relational database for the ST and K-Spread 4 is Kuma's presentation spreadsheet package. Kuma is offering a special VIP deal to owners whereby they can upgrade to K-Spread 3 plus K-Graph 3 for £50 by returning their master disc. It is also extending its Better English at a Better Price promotion on K-Roget until December 31.

K-Roget is a computerised version of Longmans Pocket Roget's Thesaurus and lets users select the most appropriate word from a database of more than 150,000 words and phrases. The special offer reduces its price from £49.95 to £29.95.

Thingi Computer Supplies (stand M11) will debut Thingi 2 at the Computer Shopper Show. The new document holder is a much enhanced version of Thingi, injection moulded with a special gravity clip allowing documents to be positioned. It costs £8.61.

Among the software on sale at the Llamasoft stand (M17) will be a double pack for the ST featuring Andes Attack and Gridrunner for £19.95.

A range of software, peripherals, disc boxes and joysticks to cover all formats will be available from MCD (stand B12) and the peripheral market will also be served by MD Office Supplies (stands A2 and S15). Main Media (stand B2) will be selling discs, disc boxes and accessories.

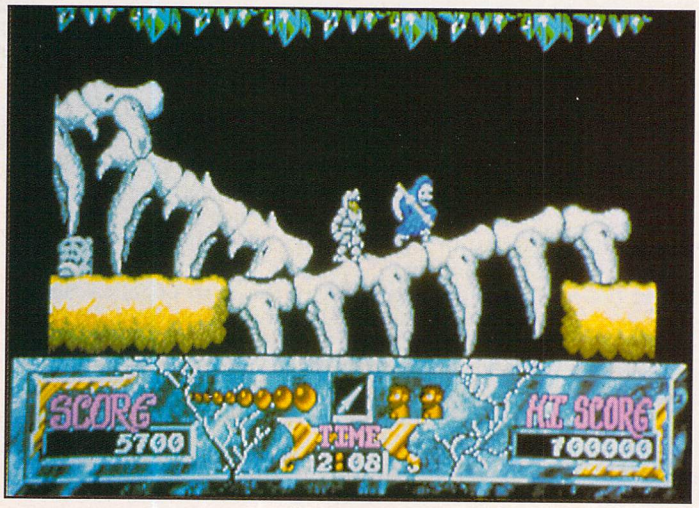
Database Publications (stand B6) will have current editions of its five computer titles on sale, including *Atari ST User*, plus back copies for readers to fill in their collectons with issues they may have missed.

Several additions to the STOS games creation family of products from Mandarin Software will be unveiled on stand J18. On offer will be STOS Gamespack, a selection of games written in STOS, Cartoon Capers the winning entry in the recent STOS Gameswriter of the Year Award and STOS Music 100, a music package with 100 tunes. All will cost £19.95.

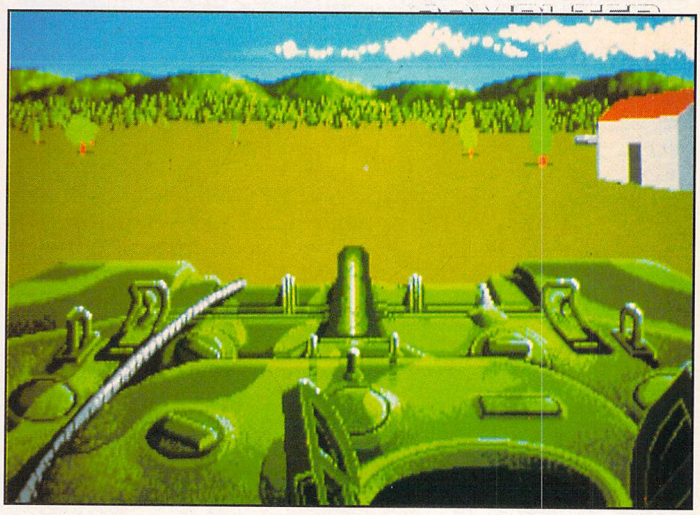
Magnetic media, data buffers, disc drives and uninterruptable power supply systems will be among the range of computer accessories from Manor Court Supplies (stand G18) and Megaland (stand S7) will be doing good deals on Atari computers.

Memory Expansion Systems will be showing its new high-capacity board for the ST on

Maniac Mansions



Ghouls and Ghosts



Tank Attack

COMPUTER SHOPPER SHOW SPECIAL

A special section for businessmen

A SPECIALIST feature of the Computer Shopper Show has been designed to attract a minimum of 5,000 buyers from small businesses, many of them looking for a micro for the first time.

The Small Business Advisory Centre is a new concept developed jointly by Database Exhibitions and Computer Shopper magazine.

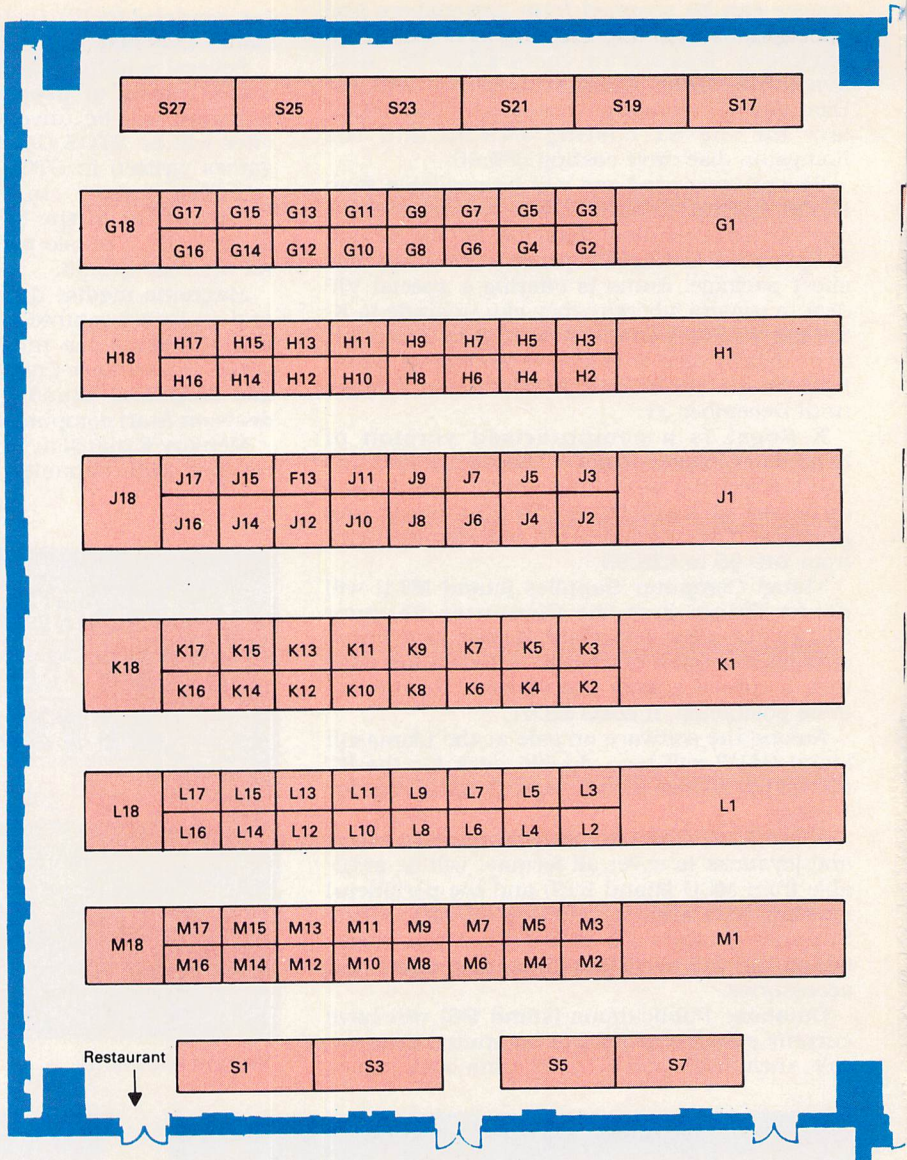
It will be supported by Apricot Computers which has agreed to link up with leading UK business software houses to present a non-stop display of the benefits of networking to small companies.

The Department of Trade and Industry will send along experts from its Enterprise Initiative scheme to offer advice and a leading firm of accountants will be there to give financial pointers.

"We are going to offer the small businessman the most comprehensive source of information ever provided at a computing event", said sales director of Database Exhibitions Mike Malone. "We are firmly convinced that no previous computer show has ever adequately addressed this area of advice for small businesses. Computer Shopper will fill that gap".

COMPUTER SHOPPER SHOW SPECIAL

COMPUTER SHOPPER SHOW



stand B7. Another offer of bargain prices will come from Micro Supplies with its wide range of both software and hardware products on stand A5.

On offer from Modem Marketing will be its new EC2400 modem which was launched earlier this year. The package covers all four speeds currently used worldwide including V22bis and is fully Hayes-compatible at a price of £279.

Discs for all machines will be among the OMD products on stand M18; a selection of discs, storage boxes and mouse mats for the ST will be available from Quantum Computers (stand L8) and Reflex Magnetics will be selling a wide range of discs on stand M5.

Vidi-ST, the Video Image Digital Interface which allows pictures to be grabbed from video, will be on sale from Rombo Productions on stand M12.

Leisure and cut-price business software for the ST will be offered by SDC on stand J14 and on stand H6, ST UK will have more than 600 discs of public domain software, many for the ST. It will also have a selection of discs, disc boxes and other accessories.

The new Atari Portfolio computer will be on sale from HAT Software (stand H7). This hand-held PC-compatible machine will cost £250; HAT will also be running a series of Midi demonstrations at their stand.

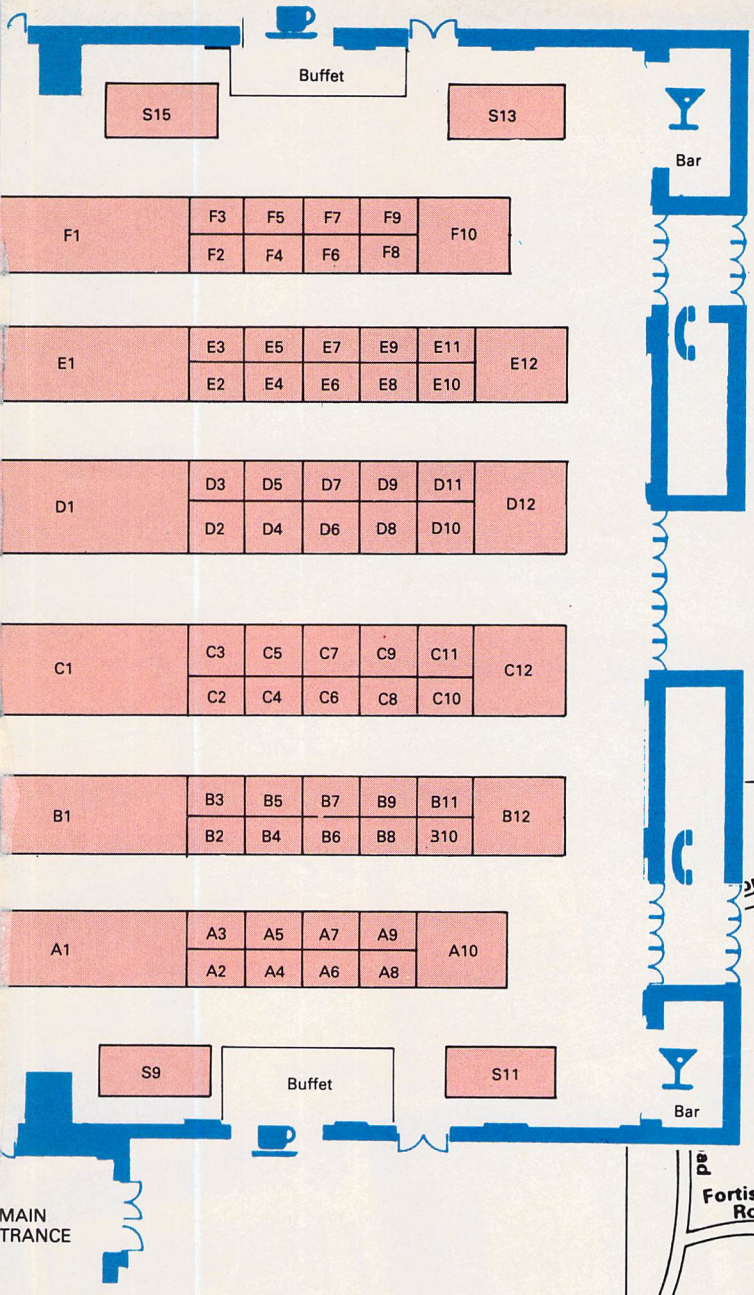
A wide range of public domain discs for the ST will be on the South West Software Libraries stand (H8). From games through spreadsheet and word processing programs to obscure file transfer programs, there are stocks of 600 programs which sell for £2.50 each.

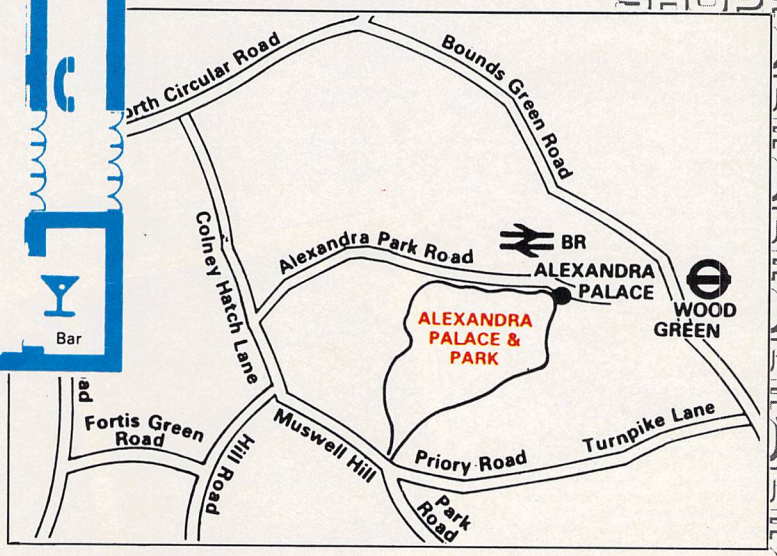
In their usual style, the staff of Silica Shop will be commandeering as many vans as possible and moving the whole of their Sidcup shop's contents to Alexandra Palace. Their full range of Atari products including software, hardware and books will be on offer at stands M1 and M3.

A selection of computer furniture will be displayed by Tirith on stand B3 and Tynesoft (stand F10) will be hoping for good pre-Christmas sales with its wide selection of games. Top of the list will be its Christmas release Beverly Hill Cop plus Elvira, Mistress of the Dark on the Horrorsoft label.

Videk (stand G10) will be selling a range of cables for almost every computer, and Hampshire Microcomputers (stand L5) a wide range of peripherals including Epson, Star and Panasonic printers.

On stand K2 Westoning will offer a range of computer consumables, and Wrighton Publications (stand S3) will have a selection of computer manuals to cover virtually every machine. The company will also be offering subscriptions to the Computer Users' Book Club. Membership is free and the only proviso is that at least three books are bought in the first year.





So easy to get there

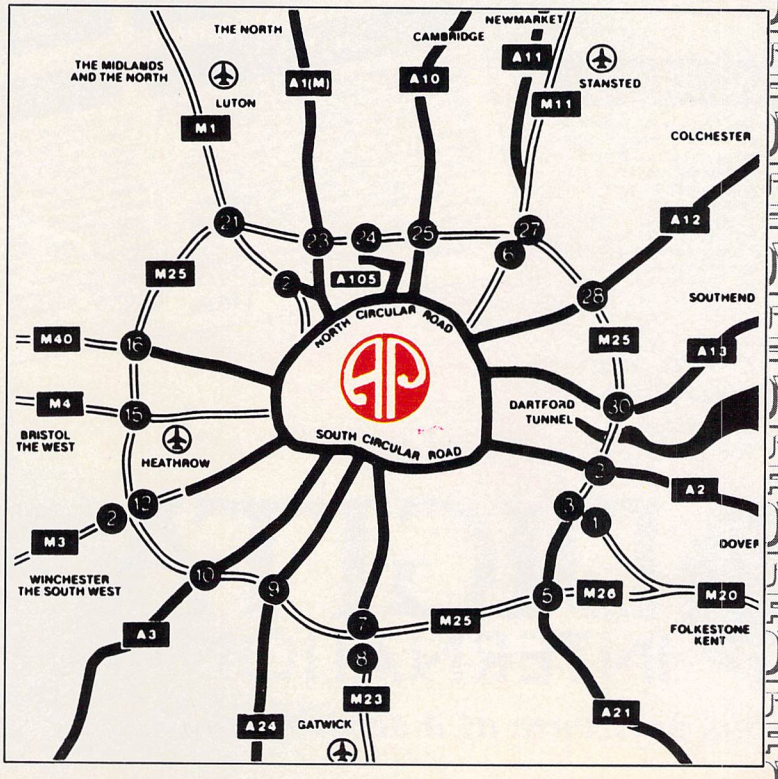
EXCELLENT communications make Aledandra Palace the ideal venue for the Computer Shopper Show.

By road, the show is just 15 minutes from junction 25 on the M25. There is free parking for hundreds of cars.

For rail travellers, Alexandra Palace has its own British Rail station, a nine minute journey away from Kings Cross. A free shuttle bus connects the station to the show.

Admission charges are £4 for an adult and £3 for children under 16, with a £1 discount for prepaid tickets. A special prepaid family ticket is also available for £9 which will admit two adults and two children. Prepaid prices can only be obtained by pre-registering on the ticket hotline, 051-357 2961.

The show is open from 10am to 6pm on Friday and Saturday, November 24/25 and from 10am to 4pm on Sunday November 26.



Distinctly Digita

Cleverly written and always favourably reviewed in the press, Digita produces a range of powerful, low cost software for the home and business user.

DGCALC

The fastest and most powerful spreadsheet available in this price bracket, with 512 rows by 52 columns, giving you up to 26624 cells. As with all Digita products, the operation of the program is clearly thought out. Being either menu, mouse or command driven you'll be able to start using it within minutes – even if you've never used a spreadsheet before. Some of the features which make it such good value are the exporting of ASCII files for integration with other programs, adjustable column width and text overflow, programmable function keys (macros), and a unique windowing facility, so that you can look at different parts of a sheet at the same time.

£39.95

MAILSHOT

If you ever need to send out mailings or print labels, you know how fiddly and time-consuming it can be making sure all the labels are printed correctly. Well now all that's a thing of the past. Because Mailshot actually shows you the labels on screen, you can type names and addresses in exactly the correct place. But more than that, the labels are animated on screen as a continuous sheet, allowing you to scroll backwards and forwards, to search for particular keywords or to edit entries with the minimum of fuss. Facilities include searching, detection of duplicate labels, sorting (even surname!) 9 labels across, 999 copies of any label. This has to be the simplest and most effective method of creating a mailshot available.

£24.95

FINAL ACCOUNTS

The program will take information prepared by Cashbook Controller and produce a complete set of accounts including:
* Trial Balance * Trading and Profit and Loss Account
* Balance Sheet * Notes to the Accounts
* Full Accounting ratios.

All reports may be produced at any time, with comparative/budget figures if required. The facility to produce these documents quickly, accurately, and regularly is of enormous help in running any business, large or small, since one shows the true profitability achieved, and the other the exact strength of the business in terms of assets and liabilities.

£29.95

E-TYPE

Do you ever have to print names and addresses at awkward places on envelopes, or do you ever need to fill in tricky forms or invoices where the text has to be in exactly the right place? Usually you have to do it by hand, or get your trusty old typewriter out of the cupboard and dust it off. Well not anymore. The Emulated TYPEwriter transforms your computer and printer into a fully fledged typewriter, supporting bold, underline, italic and other type-styles. Because it can display and print text INSTANTLY you can line up your form, press Return and Space a few times to move to the correct place, and then start typing. Alternatively you can switch to line-by-line mode, which offers word-wrap, justification and proportional spacing, so that you can edit each line before it's printed.

£39.95

MAILSHOT PLUS

Advanced version of Mailshot for the business user with the following extra facilities:
* integration with other software (using ASCII files)
* column/tabulated summary (ideal for telephone lists, etc)
* 4 extra memo lines per label (with defaults) * system for coding, dating and adding messages to each label
* different layouts available for horizontal and vertical justification.

£49.95

CLASSIC INVADERS

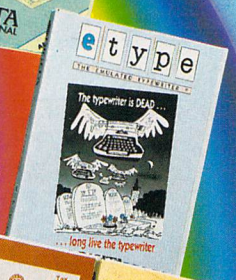
Escape from executive stress with the classic space invader game.

£14.95

PHARAOH III

Based on the classic gameplay of Galaxians, this original and unique game recreates the mystical atmosphere of ancient Egypt and the Pharaohs.

£14.95



PERSONAL TAX PLANNER

Are you absolutely sure your taxman is doing his job correctly? Plan your own tax with ease, this menu-driven program will calculate your income tax liability (4 tax years included) and provide pertinent facts about your tax position. You can perform 'what-if?' calculation to discover ways to minimise your tax liability. In fact, the program will advise you on things such as, if you are a married man, whether it would be advantageous to have your wife's income taxed separately or not. At this price who knows, you will probably find that PTP will pay for itself in tax savings the first time you use it!

** STOP PRESS **
July '89 – PTP user receives tax refund of over £2,000!!

£39.95

DAY-BY-DAY

An excellent way to get organised. With it you'll be reminded of birthdays and other anniversaries, meetings and appointments, phone calls to make and so on. As with all Digita products, inputting information is simplicity itself and, once entered, you can search for keywords or for particular events such as birthdays to see when one is coming up. Includes month/week/day planner, automatic reminders for overdue appointments, month and week summary at a glance. For less than £30 this is the ideal way to make sure you never miss that important occasion again!

£29.95

DAY-BY-DAY

An excellent way to get organised. With it you'll be reminded of birthdays and other anniversaries, meetings and appointments, phone calls to make and so on. As with all Digita products, inputting information is simplicity itself and, once entered, you can search for keywords or for particular events such as birthdays to see when one is coming up. Includes month/week/day planner, automatic reminders for overdue appointments, month and week summary at a glance. For less than £30 this is the ideal way to make sure you never miss that important occasion again!

£29.95

HOME ACCOUNTS

Ideal for both home users and small business. Simple to use, this package will keep track of all your finances and cater for 10 types of income (e.g. Bank, credit card) and 60 types of expenditure (e.g. rates, mortgage, gas, food), with optional budgeting and forecasting. The program will handle Standing Orders and Direct Debits, and automatically warn if for example, Bank charges are likely, or if you have exceeded your credit limit. With the comprehensive reporting and graphics facilities you can even produce your own monthly Bank/Credit card statements! Once you've used Home Accounts, you'll wonder how you ever managed without it.

£24.95

DGBASE

If you're looking for fast access to stored data, and the ability to create customised reports, including office/personal records, labels and mail-merging, without the need for technical knowledge, then DGBase is for you.
Designed and written specifically for the Atari ST, DGBase will fully utilise the facilities of your computer and GEM. This powerful, relational database offers access to 4 files simultaneously, full maths, integration with Digita's DGCalc and Mailshot Plus (and other programs using ASCII files). You can even change or add fields AFTER setting up your database.
Simplicity itself, DGBase comes on one disc which includes on-line help and limited only by the capacity of your ST and your imagination!

£49.95

CASHBOOK

Use your computer as a powerful business tool and take the drudgery out of book keeping! In its simplest form, the program will replace your Cash and Petty Cash books BUT Digita's program, in effect, does much more. Typical information includes: * Summary of VAT information to enable completion of VAT Return. * Monthly summaries and departmental analyses of sales and purchases. * Total debtors and creditors, sales, and overheads. * Income and expenditure analysis. * Journal routine for entering transfers between accounts. * 199 nominal account titles, most of which are user definable. * Observes accounting procedures and meets legal requirements, assuring correct approach to book keeping. * Full audit trail and integrates with Final Accounts.

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SYSTEM 3

Take the first essential step in computerising your business with this simple integrated suite of programs:
1. CASHFLOW CONTROLLER: Keep track of the most important aspect of business – cash flow. Essentially a debit/credit ledger, its flexibility lies in its ability to produce account balances instantly for debtors (from invoicing), creditors, VAT, Bank, Petty Cash, together with a record of all transactions, dates and descriptions. A management aid designed to run alongside your existing accounting system.
2. INVOICE & STATEMENTS: This program will greatly reduce time and cost of preparing invoices and statements. Professionally printed invoices and a full record of debtors. Integrates with Stock Control.
3. STOCK CONTROL: Effectively control your stock, purchasing and suppliers and produce re-order reports, stock valuation, price lists, etc.

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Available to the trade from:
Digita, GEM, Greyhound,
HB Marketing, Lazer,
Leisuresoft, R & R, SDL.

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"Serious software at a sensible price"

All software written in the UK. Prices include VAT & P & P (add £2.00 for export)

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Fax: 0395 268893

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Sixteen Bit Superdeals from the Sixteen Bit Specialists!

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520 STFM Power Pack
£359.00
Inc. VAT and Next Day Delivery

Power Pack includes:
- ★ 520 STFM 512K Keyboard with Built-in 1 Megabyte disk drive and TV Modulator
- ★ Over £550 worth of games software, including OutRun, Gauntlet 2, R-Type, Space Harrier, Super HangOn and 16 more Top Games
- ★ Organiser Business Software including WORDPROCESSOR, SPREAD-SHEET and DATABASE.
- ★ First BASIC and First Music Utility Software.
- ★ FREE JOYSTICK AND FREE MOUSE MAT WORTH £4.95.
- ★ All leads, manuals PLUS MOUSE and free mains plug!

REMEMBER! Many ST's do not come with BASIC – ours come with ST BASIC REV D by Metacomco.

520 STFM Explorer Pack
£279.00
- ★ Explorer Pack includes 520 STFM 512K Keyboard with built-in 1 Megabyte Disk Drive and TV modulator
- ★ 1 FREE Game, ST Tutorial and METACOMCO Basic worth £25.00
- ★ All Leads, Manuals PLUS MOUSE and FREE Mains Plug!
- ★ Free mouse mat worth £4.95

1040 STFM Midi Music Pack
£439.00
- ★ Includes 1 megabyte keyboard plus Hyperdraw, Hyperpaint, Organiser Business Software, First Basic, £50 Voucher towards 3 Atari Mind Games and Metacomco Basic.

1040 STFM Business Pack
£439.00

Business Pack includes:
- ★ Atari 1040 STFM Keyboard with 1 meg memory and 1 meg built-in disk drive plus TV modulator
- ★ £385 worth of Business Software including MICROSOFT WRITE word processor (£150), SUPERBASE PERSONAL Database (£60) and VIP PROFESSIONAL Lotus 123 Spreadsheet clone (£150), Metacomco Basic (£25)
- ★ All leads, manuals and mouse.

MEGA 1 Business Pack
£529.00

Features:
- ★ Separate Keyboard and System Unit
- ★ All the Software included with 1040 STFM Business Pack
- ★ Bitter chip installed for faster graphics

Inc SM124 Mono Monitor £628.00

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Quickshot II Turbo Joystick £9.95	Branded Memorex 3.5" DS DD Disks Box of 10 ..... £13.95
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Contriver Amiga and ST Mouse with FREE Holder and Mouse Pad £20.95

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Star LC24-10 24 pin incl. lead ST/Amiga £259.00
Star LC10 including interface lead for ST/Amiga £169.00
Star LC10 colour including interface lead for ST/Amiga £219.00
Citizen 120D including interface lead for ST/Amiga £159.00

SEIKOSHA 80 COLUMN PRINTERS – AMAZING PRICES

Seikosha 9 pin NLQ including interface lead for ST/Amiga £139.00
Seikosha 24 pin LQ including interface lead for ST/Amiga £239.00

NEW LOW PRICES!

Amiga A500 Games Pack
£389.00
Inc. VAT and Next Day Delivery

Game Pack Includes:
- ★ Amiga A500 512K Keyboard with Built-in 1 Megabyte disk drive
- ★ Free TV modulator worth £24.99 allowing you to use the Amiga with a normal TV
- ★ £230 worth of Games, Software, including BUGGY BOY, MERCENARY, BARBARIAN, WIZBALL and six more games
- ★ PHOTON PAINT or SPRITZ GRAPHICS PACKAGE worth over £50,00
- ★ FREE MOUSE MAT worth £4.95
- ★ Amiga BASIC, Amiga EXTRAS 1.3, Workbench 1.3 PLUS the Amiga Step by Step Tutorial
- ★ All leads, manuals PLUS MOUSE and mains plug!

Amiga A500 StandAlone
£369.00
- ★ Amiga A500 as above but without the £230.00 worth of Games Software

NEW!

Amiga A500 Business & Games Pack
£459.00

Includes everything in our Amiga Games Pack PLUS a Comprehensive Suite of Business Programs including, Scribble II WORDPROCESSOR, Analyse II Spreadsheet and Organise Database.

AMIGA 1 MEG!
£499.00

Announcing the new Amiga 1 meg – an A500 system with fit memory expansion and clock card PLUS TV Modulator and DRA LAIR a six disk 1 meg megagame!

AMIGA 1 MEG +
£519.00

Our Amiga 1 meg + also includes the £230 worth of games software normally given with our A500 Games Pack.

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Atari SF314 1 Megabyte £139.00
Amiga A1010 1 Megabyte £139.00
Cumana 1 Megabyte Atari or Amiga £99.95
NEC 1 Megabyte Amiga £89.95
Atari Megafile 30 Hard Disk £449.00
New! Commodore A590 20 meg hard disk £369.00
A590 Hard Disk & Memory Upgrade installed ..... Phone

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Commodore Amiga A1084 Stereo colour Monitor inc. lead £239.00
Atari SC1224 Colour Monitor inc. lead £249.00
Atari SM124 Mono Monitor including lead £104.00
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CREDIT CARD ORDERLINE 0908 378008 (Mon-Sat 9am-6pm)

To order: either call the orderline above with your credit card details OR make a cheque/PO payable to: Digicom Computer Services and send it with your order to the address below. Callers are also most welcome at the address below

DIGICOM

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All prices include VAT and next day delivery by courier.

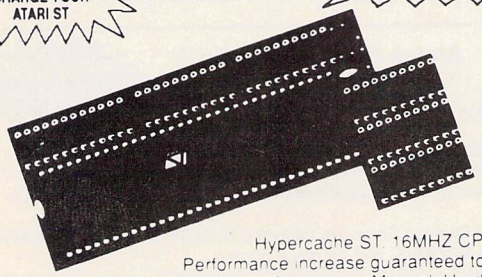
VISA

THIRD COAST ATARI HARD DRIVES & TAPE BACK-UP DEVICES

TAPE BACK-UP NOW AVAILABLE FOR ALL ST's

TURBO-CHARGE YOUR ATARI ST

PROCESSOR ACCELERATOR



Hypercache ST. 16MHZ CPU. UPTO 100% Performance increase guaranteed to at least double the speed of any application. Includes full utilities. Manual. Hardware 8-16 MHZ switch and Cache disable option to emulate an 8MHZ processor. 100% compatible with all applications. Compatible with all Atari ST's 520, 1040 and Mega.

£149.99 Fitted £169.99

THIRD COAST RAM UPGRADES FOR ATARI ST RANGE

520STFM Board + Chips Expands to 4 Megs (no soldering)	£129.99
520STFM Board Unpopulated	£49.99
520STFM Upgrade to 1040 Full Kit	£74.99
520STFM Upgrade to 1040 Fitted by TCT	£99.99
520STFM Solderless Board + Ram	£129.99
2 Meg Board Upgrades 1040 to 2 Megs (Expandable to 4 Megs)	£249.99
2 Meg Board Unpopulated	£79.99
4 Meg Board 2.5 Installed for 1040 520	£299.00
4 Meg Board 4 Megs Installed for 520 1040	£489.00
4 Meg Board Unpopulated	£79.99
Mega 2-4 Upgrade professionally Fitted	£249.00
Mega 1-2 Upgrade Professionally Fitted	£149.00
Mega 1-4 Upgrade Professionally Fitted	£399.00

All Ram is 100 Nanosecond or faster. All Upgrade kits come with Ram Checker, Ram Disk, and Print Spooler. All kits and Boards carry a full 12 Months Warranty.

STAR LC10

- ★ Four NLQ Fonts
- ★ Paper Parking
- ★ IBM/Parallel Interface
- ★ 4K Buffer
- ★ 96 NLQ Print Combinations
- ★ 144/36cps Speed
- ★ Colour Version available

MONO £154 COLOUR £195

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Kempston Data Scan 105mm wide scanner	£225.00
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Trackball ST	£23.99
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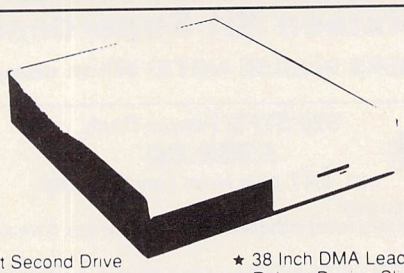
Video Digitiser for Atari ST (inc Colour Soft)	£94.95
Professional Video Digitiser (inc Colour Soft)	£149.99
RGB Colour Splitter for Colour Cameras	£99.99
Videotext/Teletext Adapters	£99.99
Videotext/Teletext Adapter Built in Tuner	£139.00
Professional Scanner 200 DPI (Copier, Scanner, Printer)	£449.00
Professional Scanner 300 DPI 64 Grey inc Paint Soft	£999.00
Professional Scanner 300 DPI OCR Reading soft	£249.00
(32 Grey Levels Calamus compatible)	
Scanner Canon 1X21 300 DPI	£1399.00
Vidi ST 16 Tone Frame Grabber Inc Soft	£92.99
Atari ST Real Time Clock Mega Compatible	£27.99
Tweety Board Perfect Sound on any Atari	£44.95
Happy ST Copier/Backup Device	£49.99
(Works just like Multiface)	



- ★ Will Support Second Drive
- ★ Supports Full Auto booting
- ★ 65 Watt PSU
- ★ Battery Backed Clock
- ★ Full 12 Months Warranty
- ★ Up to 14 Partitions
- ★ 38 Inch DMA Lead
- ★ Robust Design Slides under Monitor
- ★ Six Months free phone support
- ★ Over 60 Management Hard Drive utilities ICD

155 M/BYTE TAPE BACK-UP FOR ATARI ST COMPLETE HARD DRIVE RANGE

Compatible with Atari SH204/205. Megafile 20/30/60, Third Coast Drive, Supra Drive, Cumana Drive Backs up 155mb in 20 minutes, 20mb in 2 minutes

- ★ External enclosure off DMA IN/OUT
- ★ Battery backed clock
- ★ 50 way SCSI OUT
- ★ SCSI ID selector
- ★ Comes complete with own case & power supply and Host Adaptboard
- ★ Will support internal SCSI Hard Drive
- ★ Installation simply involves connecting tape drive into Atari then connecting Hard Drive into output of tape drive.
- ★ Offers long awaited DMA outport for Atari SH204 users wishing to connect to laser printer

FOR IMMEDIATE DELIVERY £649 INC. VAT

22 Megabyte Formatted Hard Drive Full SCSI	£369.00
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Syquest 44 megabyte Removable Cartridge Drive	£849.00
45 Megabyte with 155 Megabyte tape drive	£999.00
65 Megabyte with 155 megabyte tape drive	£1350.00
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External 1 Meg Floppy
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THIRD COAST DIY KITS (Everything to build your own Drive)

DMA/SCSI Host Boards - allows connection of up to 8 SCSI Hard Drives or ST506 IBM Compatible drives, comes complete with clock DMA in and out over 50 copyright commercial hard drive utilties	£94.99
Complete kit including all above with cable and mounting brackets forcontroller	£199.99
Above kit cased in our drive cabinet offering support of upto four hard drives this basically is one of our drives without the Hard Drive	£299.00
RLL Adaptec 4070 or Omti 3527 controllers (giving 50% more out of any drive + twice the speed)	£100.00
Astec 65 watt PSU's	£39.00
Enclosures (as above - including fan, Astec - everything bar drive)	£299.00

THIRD COAST DRIVE UPGRADES

Upgrade your Atari SH204/5, Megafile 20/30, Supra, Cumana, 45 M/Byte Mechanical Head Auto-park. Features faster software, upto 12 partitions, backup programs. Fast installation, all data copied to new drive. You will get your old drive cabinet back with the new drive fully warranted and ready to go. Upgrade yields over 100% more performance from your old drive.

Upgrade to 45 Megabytes	£299.00
Upgrade to 65 Megabyte	£349.00
Special Offer – Bare Drives	
22 Megabyte Full Embedded SCSI from	£150.00
50 Megabyte Full Embedded SCSI from	£250.00
65 Megabyte Full SCSI from	£350.00
22 Megabyte ST506 from	£115.00
45 Megabyte ST506 from	£200.00

Call for more details!!!

ATARI Hardware Offers

520 STFM *POWER* PACK

Amazing value, all-new special ST package from Atari, includes 520STFM with 1 Meg drive, joystick, mouse, user guide, 5 disks of public domain software, plus an incredible selection of chart-topping software worth over £500. Software included is:

R-Type	Pacmania	Out Run	Nebulus
Afterburner	Starglider	Bombuzal	Stargoose
Double Dragon	Super Huey	Xenon	First Music
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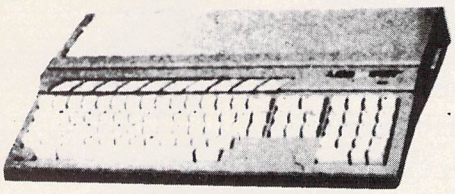

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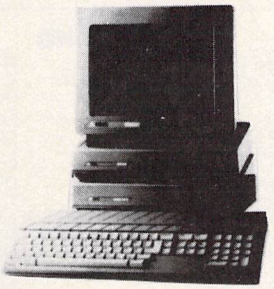

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SOMEWHERE in inside each of us is an adventurer groping to get out, and who better personifies the division between everyday meakness and rash adventure heroism than Dr Jones? Now basking in the megabucks of his third box office smash, Indiana is alive and kicking on your ST screens in an escapade of truely heroic proportions.

Indiana Jones and the Last Crusade is a fully graphical icon-driven adventure that spills on to six single sided discs. It comes accompanied by full documentation, including a facsimile Grail Diary and Quick Start guide.

The game loads with an impressive set of animated screens showing Indy making his way along the roof of a circus train upon which the credits are emblazoned — just a small taster of the thrills in store.

You, as Indiana, begin your quest in the college campus. The game closely follows the plot of the film and features much of the tongue in cheek humour for which the Indiana trilogy has become famous.

However, there are many surprises in store and though watching the film will help, it will not guarantee success.

You are portayed as a small but detailed sprite on a laterally scrolling screen, which at set points flicks to new locations. The graphics are similar in many ways to those in Zak McKracken, and though colourful, with smooth and fast animation, do not quite match the standard of Psygnosis games. They do improve as you progress, and are especially impressive in the catacombs.

You must complete a number of puzzles and routines in the college before you enter the quest proper. These include accurate translation of some cyphers and the discovery of your father's Grail Diary in your storeroom.

You will also get an early taste of the game's humour as you chat to Marcus, avoid pestering students and read the portico bulletin board. The jibe about you being wet is hurled at you throughout the adventure and becomes quite a rib tickler.

You eventually escape the drearyness of campus life by climbing out of a window, but are immediately accosted by two heavies who encourage you to take a short car journey.

In the reception of a nearby skyscraper Walter Donavon asks you to prove you are the famous Indiana Jones by translating cyphers. Watch for a lovely opening ripost from Indy.

Walter then informs you that your father has gone missing in Venice while on a quest for clues to the whereabouts of the Holy Grail. Without further ado you and Marcus make for Venice to begin an adventure to end all adventures.

The gameplay and humour had me hooked to my ST for three nights in a row, with the promise of many more sleepless hours to follow. The puzzles are extremely clever and the incorporated riddles make some very difficult to solve.

The problem involving the Grial Diary, Roman numerals and slabs in the Venetian library requires lateral thinking, logic and careful observation. I suggest that you save your position as you try the possibilities.

If it becomes too much for you look around the library, examine the books and read the plaques for some light relief.

I was at first daunted by the propect of changing six discs ad nauseum, however, though disc swapping is fairly frequent, the access time is fast and soon it becomes second nature.

A selection of appropriate jingles and sound effects accompany your journey, but grated on the ears after playing for a while. Of course, you can always turn down the volume.

I haven't yet completed this adventure and that in itself is testimony to a great and complex game from a seasoned wayfarer with more than 400 adventures under his belt.

I thoroughly recommend this to anyone with stamina who likes thrillers and enjoys a good chuckle.

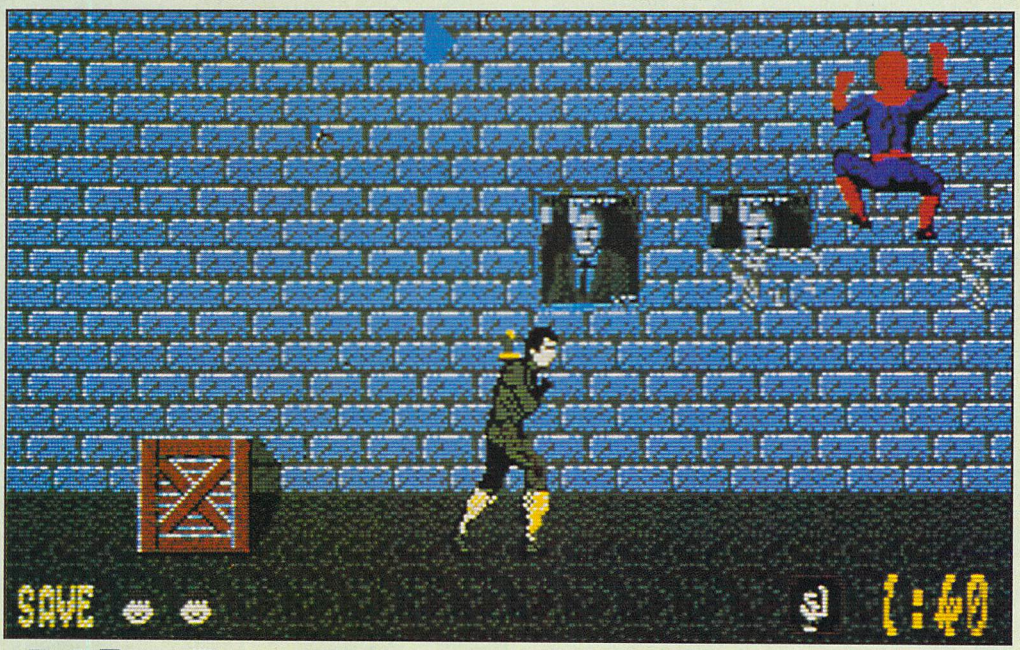
Pendragon

Sound	*8*
Graphics	*9*
Playability	*10*
Value for money	*10*
Overall	*9*

SECOND Sight

This is probably the most taxing adventure I have played since Lurking Horror. The puzzles are fair and logical, yet swathed in innuendo and riddle. The atmosphere is electric and the humour refreshingly Indiana Jones burlesque. I love the game and recommend it wholeheatedly. But it's a shame about the poor music.

Jayne West



Ninja to the rescue

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AS the most famous graduate of a secret Ninja school in Virgin Mastertronic's Shinobi you're invited back to the annual graduation ceremony and prize giving. Just as you start dishing out the goods there's a flash of Ninja magic, followed by the unexpected appearance of Bwah Foo.

The evil Foo, once a fellow student, demands all the gold from the school's coffers, and threatens to kill every member of the junior classes if it's not delivered by Wednesday evening. With another flash of magic he's gone, taking the kiddies with him.

Two options are available, either pay up and get the kids back, or charge in to Bwah Foo's lair and rescue them. Unfortunately, the school is flat broke, which means you'll have to use your skills as a Ninja warrior.

To reach Foo's stronghold in this oriental beat-'em-up arcade game you'll need to battle your way through five missions, divided into three or four sub-levels. Each mission is packed with expert henchpersons, a handful of children, and a big boss at the end, who must be disposed of before going to the next level.

As the bad guys are armed to the teeth it's fortunate that you've got a few surprises up your sleeves too. To start with, the only weapons available are shuriken stars, but as you progress these will be upgraded. However, if you're doing rather badly you may find yourself fighting with bare fists and feet.

To rescue a child you just walk past him and your Ninja magic will transport him back to his parents, earning their eternal gratitude, and increasing your score. After rescuing several youngsters your armoury will be changed to something more destructive.

Many sub levels contain platforms, crates and other obstacles to be overcome. Nearby you'll often find a couple of baddies waiting to pounce. Occasionally you'll come across a Ninja knight protected with a whopping great shield. Treat this guy with extreme caution, and watch out for his boomerang-type flying sabers.

At the end of each mission you have to defeat a boss, each is pretty good, with all kinds of lethal weapons at his disposal. The first one you'll encounter enjoys launching fireballs at you. If you keep jumping, firing and dodging you should manage to kill him.

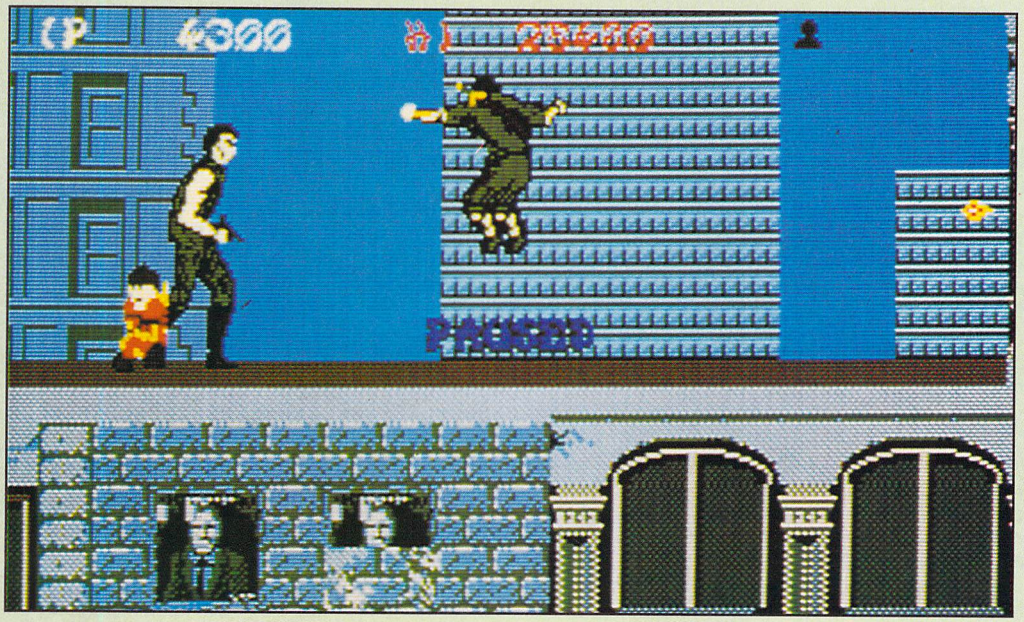
Chances are that if you've got this far, you may have lost a couple of lives on the way. At the end of each mission is a bonus stage, which if completed will reward you with extra lives. This involves killing hundreds of Ninjas with your shuriken stars.

Shinobi isn't the best Ninja martial arts program I've come across, but it has a great deal more appeal than just taking part in a contest.

The graphics are rather jerky, especially when jumping up to higher platforms, and the sound adequate, particularly the digitised speech introducing each level.

This game is very addictve. Gameplay is hard enough to keep you interested, allowing you to progress a fair way before being wiped out. Like most things oriental, after an hour you could do with another.

Henry Dee



Sound	7
Graphics	7
Playability	8
Value for money	7
Overall	7

SECOND Sight

Poor graphics may well be the downfall of what otherwise would have been a very sucessful game.

Phil Lawson.

Olympic bloodbath

Product: Futuresport
Price: £14.95
Supplier: Actual Screenshots/CRL, Unit 7D Kings Yard, Carpenters Road, London E15 2HD.
Tel: 01-533 2918

THE very brief instructions to CRL's new Futuresport say simply: Select a player, enter the sport zone and escape with your life. On loading the graphics you see a man and three aliens. After selecting one, the display changes to a bird's eye view of a large playing area with your man at the centre.

He can be moved in any direction by joystick, so I used the standard technique of shooting everything that even remotely looked threatening and trying to collect every other object. Progress is made by moving up the downward scrolling screen. Walls and canyons bar your way and must be walked around or crossed via a bridge.

An alien caterpillar-like creature appears at certain points and travels a set path, usually straight at you. After losing a couple of lives you soon learn to sidestep and blast it as it goes past. Gun emplacements take pot shots at you, but are easily neutralised with your rifle.

The most annoying attacker is a man who appears and disappears at random. He suddenly materialises on the screen and starts shooting, then after following you for a little way disappears as abruptly.

Trapdoors that randomly open and close are less hazardous as you can easily dash across them with a little practice. Extra weapons can be picked up along the way and a useful one is the multi-directional gun that sprays bullets in all directions.

I don't know how big the first level is – I travelled quite a long way, but never came to the end. The screenshots on the packaging show what could be a sideways viewed section later on which should add a little variety providing you can make it through the tough first level.

The sprite and background graphics are well drawn and the scrolling quite smooth. The sound didn't become tiring after a short while as it does in some games.

Futuresport is a competently programmed game with reasonably good graphics and sound. A simple but entertaining game.

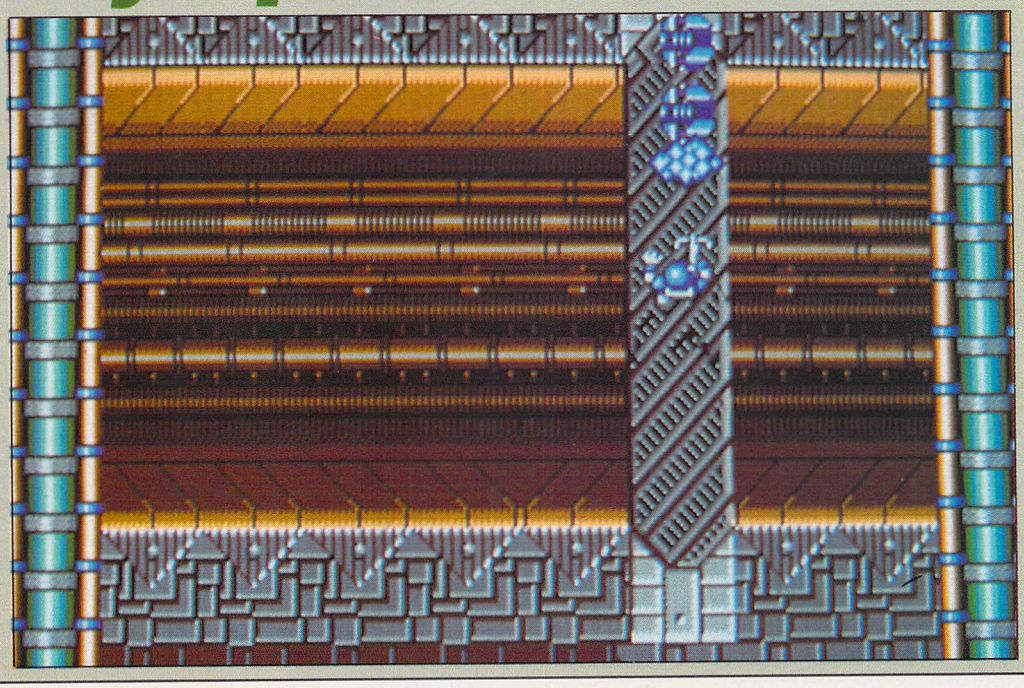
Roland Waddilove

Sound	7
Graphics	7
Playability	8
Value for money	8
Overall	8

SECOND Sight

Futuresport may not be original, but the idea is well implemented. The graphics and sound– music and effects – are good, but not up to the standard of, say, Xenon 2. Simple, but addictive (and difficult) gameplay should keep you entertained for quite some time.

Janice Murray



Rewarding blasting

Product: Triton III
Price: £9.99
Supplier: Wicked, Brooklands, New Road, St. Ives, Huntingdon PE17 4BG.
Tel: 0480 496497

TRITON III is a budget release from Wicked, and one of the hardest games I've played. Strapped into the pilot's seat the aim of the game is to fly from one end of a vertically scrolling landscape to the other.

Along the way you'll meet hundreds of bad guys, all hell bent on your destruction, so follow the standard procedure: If it moves, shoot it.

Each time a complete wave of baddies is eliminated a small token appears. Collecting it will endow you with more energy, firepower or defence, but wiping out each wave is so difficult you probably won't last long enough to enjoy this pleasure.

When a baddie gets through to you the amount of energy lost is so vast that only a few need to hit you before one life goes. Crashing into buildings is another way to impare your life expectancy. Your plane's wings can be retracted if the gap between the buildings is too narrow, but this stops the guns from firing.

At the side of the screen is a small short-range scanner showing the terrain and enemy ahead. It's quite a nice feature, but practically useless.

The scrolling is quite smooth, as are the many moving graphics, but the choice of colours could be better.

The graphics and sound aren't exceptional and I can't see this game appealing to anyone but the most ardent arcade fanatic, and even then not for very long.

For me, it's just too hard. Take a look and decide for yourself.

Henry Dee

Sound	6
Graphics	7
Playability	4
Value for money	7
Overall	6

SECOND Sight

Being a bit of an expert arcade player, I'm always on the lookout for challenging games.

Even if the sound and graphics are a little below par, a price tag of £9.99 makes this definitely one to add to my my collection.

Trev Harrison

HARLEY-DAVIDSON: THE ROAD TO STURGIS

It's Harley heaven as you straddle your 1340c.c. Hog and scream through the box. You're off to the biggest bikers rally yet in Sturgis, South Dakota - if you can make it in time.

Speeding tickets, blow outs and plain dumb decisions could leave you eating dirt instead of burning rubber. There are five games with varying difficulty levels. The graphics are great and the sounds will outrage even the friendliest neighbour.

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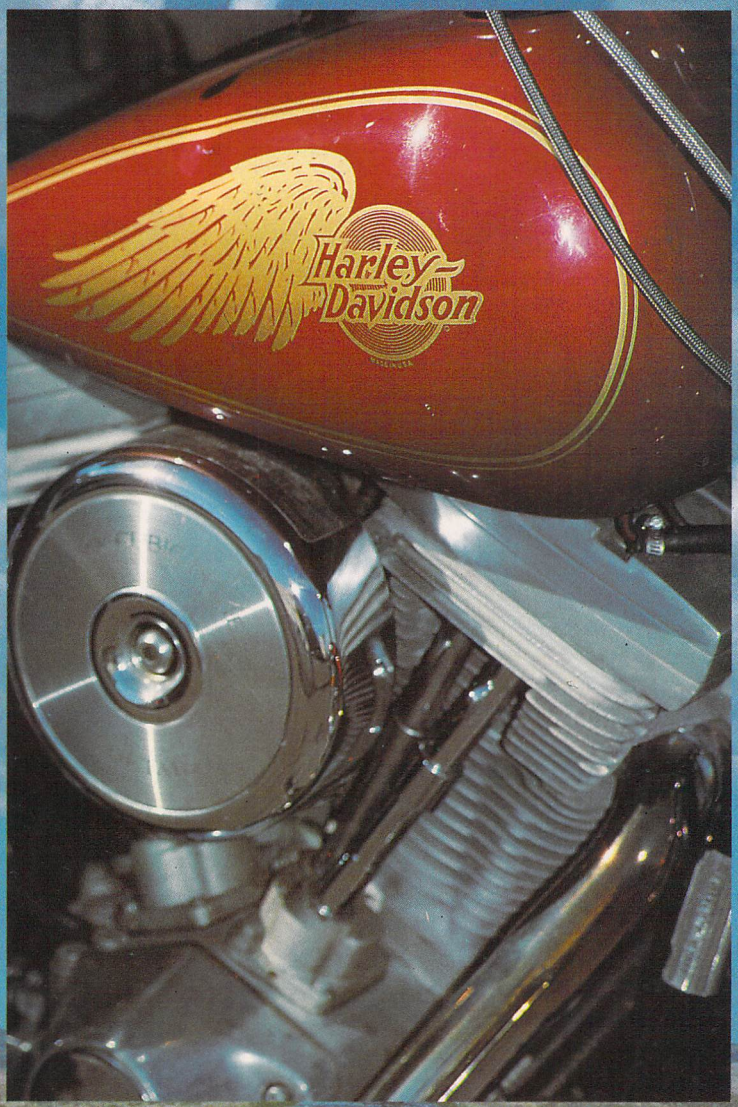

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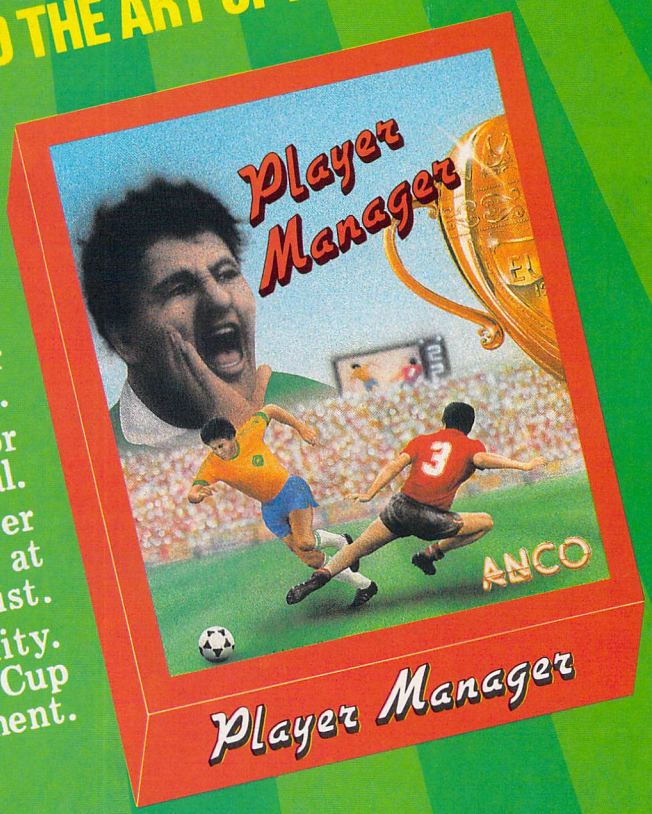

Bring Back The Glory Days. That's the brief of the newly appointed PLAYER MANAGER, an international class player, as he takes charge of a third division club. His success depends on four distinct aspects of the game.

PLAYING SKILLS OF THE MANAGER

This part of the game is a refined version of the KICK OFF, retaining it's pace, flavour and the universally acclaimed game play. Play in your position or control the nearest player. The first option combined with a tailor made tactics can play havoc in the opposition goal mouth.

MANAGERIAL SKILLS

Devising winning tactics, acquiring players with right skills from the Transfer market and selecting a team with the right balance is the test of the Managerial skills. He must aim to get promotion as quickly as possible while he can still influence the results as a player and before the age starts to effect his pace and stamina. When to hang his boots up is the toughest decision he has to make.

TACTICS

Four well proven tactics are provided to suit most situations but you can design your own tactics. The pitch is divided in blocks. Place the ball in a block and move the players to the required position. Repeat the process for each block. See the tactics in action using the Ray Trace facility.

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Brain strain

Product: Maniac Mansion
Price: £19.95
Supplier: Lucasfilm/US Gold, Units 2&3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-625 3388

TWENTY years ago a meteor landed next to the big house on the hill, and since then things just haven't been the same in US Gold's Maniac Mansion. The inhabitants, Dr Fred, Nurse Edna and their son Ed, are constantly on the lookout for more brain donors, the latest being your friend Sandy.

Choosing two other commrades you set off for the mansion to rescue your pal and discover the secrets within.

You start outside the mansion's grounds, which gives a perfect opportunity to get used to controlling all three characters. You can only direct one at a time, but by clicking on the New Kid option you can change between them at will.

Walking left brings your group to the front door. Locating the key shouldn't be too difficult, allowing entry to the house, where the fun really starts.

Actions are performed by clicking on one of the words displayed at the bottom of the screen, such as Open, Unlock, Read and Use, and by pointing to various objects you can build complex sentences. For instance Unlock door with key will make the current character go to the key, pick it up, walk to the door and unlock it.

Every now and then something will happen in another part of the mansion, and in true cinema style the screen will display these important events. If one character was left at the bottom of the stairs, and Dr Fred caught him or her, you'll be shown their capture and imprisonment.

Releasing your mates from the dungeons is pretty tricky, as is avoiding the bad guys, although it's virtually impossible to get killed — unless of course you activate the nuclear reactor in the basement.

At times it seems the whole place is packed with aliens, mutants, geeks and assorted small furry animals, some of which can be used to your advantage.

The graphics are excellent, and add to the spooky atmosphere. My only niggle is that the characters' legs look awful when they're walking. The humour can only be described as weird, and the few sound effects are reasonable.

With more than 50 locations and 450 objects to play with, this game is going to take a long time to solve. Many of the puzzles, such as opening the secret door in the hallway, require at least two of the party to work together. Maniac Mansion is certainly worth a close look.

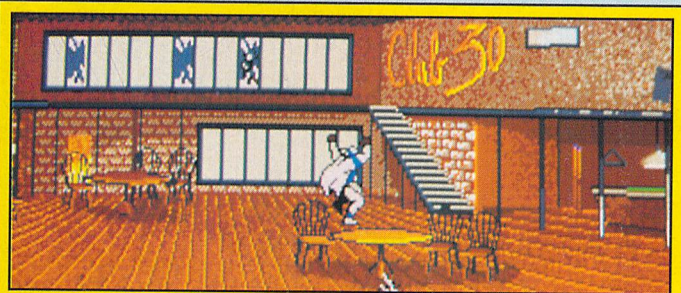
Phil Lawson

Graphics	*9*
Sound	*6*
Playability	*8*
Value for money	*8*
Overall	*8*

SECOND Sight

A brilliant spoof on all those American B movies in which the heros have to enter a haunted house. The brilliant graphics and sound effects, combined with the twisted humour, should take Maniac Mansion straight into the charts. Rush out and buy it now.

Henry Dee



Moonwalker

US Gold (021-356 3236)

PAM Turnbull visited Emerald Software in Ireland last month and reported that it is currently converting Michael Jackson's film Moonwalker to the ST. Two of the four levels in this arcade game have now been completed, so let's see how the game is progressing.

In the Arena level Michael Jackson struts into a large cellar and stands in the centre. He magically transforms into a large robot just as a crowd of hoodlums with shotguns appear from doorways around the edges of the cellar. In this subgame your task is to dispose of the gangsters who appear at the doorways in ones, twos, threes and even fours. Swing the robot round, line the sights on an attacker and disintegrate him with your laser. You can't be too trigger happy, as your laser quickly overheats, but carefully pacing yourself means you can pick off the majority of gangsters.

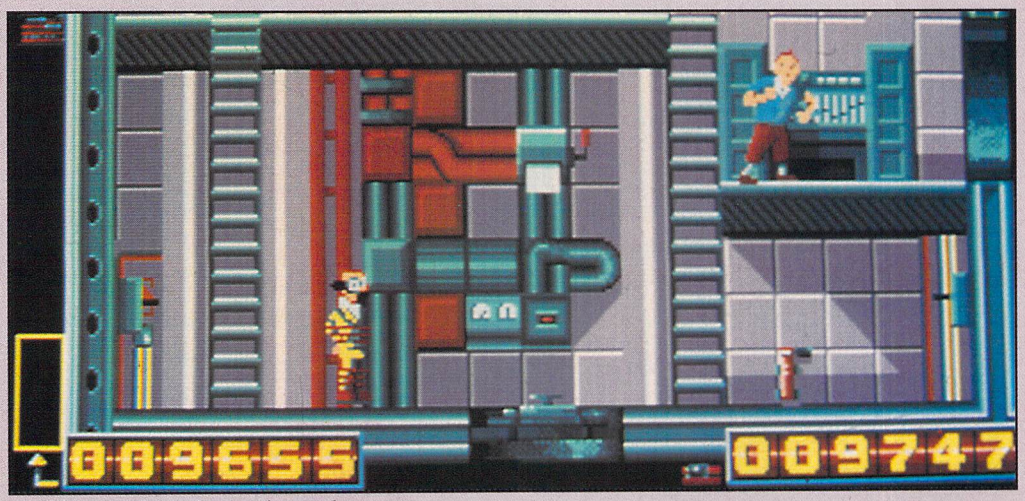
QUICKPEEKS

In the Club 30 level more unsavoury hoodlums have kidnapped some children. Dash across the room dodging the gunfire to where a machine gun has been dropped. Pick it up and make those kidnappers eat lead.

Attackers appear at windows both at ground level and also up on a balcony. Swing the sights round and drill them full of holes. Climbing stairs or jumping on to tables can give you a better line of fire to reach the higher balcony.

The gameplay on these two completed sections is simple but enjoyable. However, I hope that the other levels still being written tax the grey matter a bit more than these two or the game won't have sufficient lasting appeal.

Roland Waddilove



Ladders and levels on the rocket

Out of this world

Product: Tin Tin on the Moon
Price: £19.95
Supplier: Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.
Tel: 01-364 0123

I WAS instantly bowled over by the stunning graphics when Tin Tin on the Moon booted up. They are true to the original cartoon, so good it's easy to imagine you are watching a re-run of the classic comic book character that used to entrance mums and dads when they were young. The opening scene shows an old fashioned rocket ship being prepared for launch. A car speeds up to it, brakes with a screech and several characters enter the rocket. A digitised voice counts down to zero and it blasts off for the Moon, the view changing to Rocket Control on Earth.

Press the spacebar and you start the first arcade section, using the joystick to fly the rocket to the Moon. The 3D view is from a point just behind the rocket as you head into the screen. Asteroids must be avoided by flying around them, and energy collected by flying into red and yellow fireballs. The rocket gulps energy at a rapid rate and must be quickly replaced or the game will end with you tumbling helplessly in space.

Collect enough fireballs and you'll enter the next section of this space caper _ a ladders and levels game in which you control Tin Tin. The evil Colonel Boris has stowed away on board the rocket ship and has planted time bombs, started fires and tied up your friends, Captain Haddock and Professor Calculus.

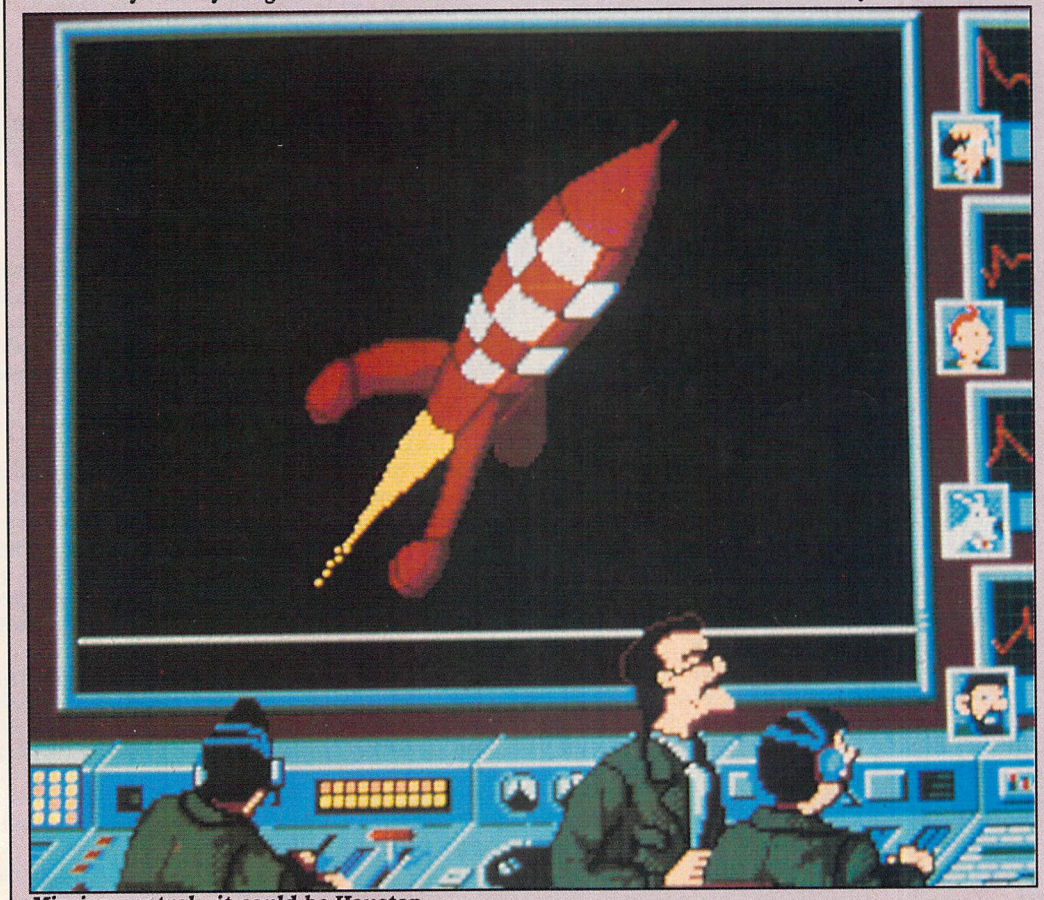
With your faithful mutt Snowy, you set off in search of the time bombs, climbing ladders and running along levels as fast as you can. There's no time to admire the scenery. You'll soon find a fire extinguisher with which you can put out the fires.

Simply running over Captain Haddock or Professor Calculus will free them from their bonds, but with Boris on the prowl they may be caught again. The bombs are also defused by running over them. Once through this section the 3D space flight of level one is repeated.

Graphically, Tin Tin is stunning, but the poor gameplay badly lets the game down. At first sight this was a contender for this month's Star Game, but there simply isn't enough variety to hold your interest.

The 3D space flight is a very simple game of dodging asteroids and ramming fireballs, while the ladders and levels is merely a race against time to find the bombs. Try it before you buy.

Roland Waddilove



Mission control...it could be Houston

Graphics	*10*
Sound	*7*
Playability	*7*
Value for money	*7*
Overall	*8*

SECOND Sight

Infogrames consistenly comes up with superb games oozing originality, and Tin Tin on the Moon is no exception. This graphical feast is spoilt by simplistic gameplay, but it still had me hooked for quite some time.

Janice Murray

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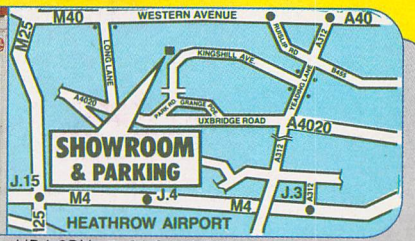

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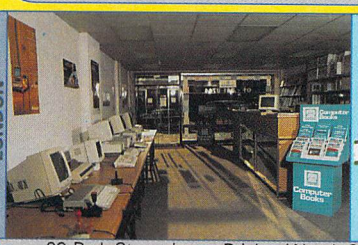

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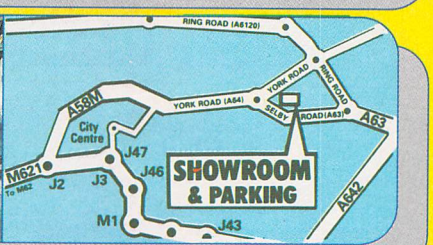

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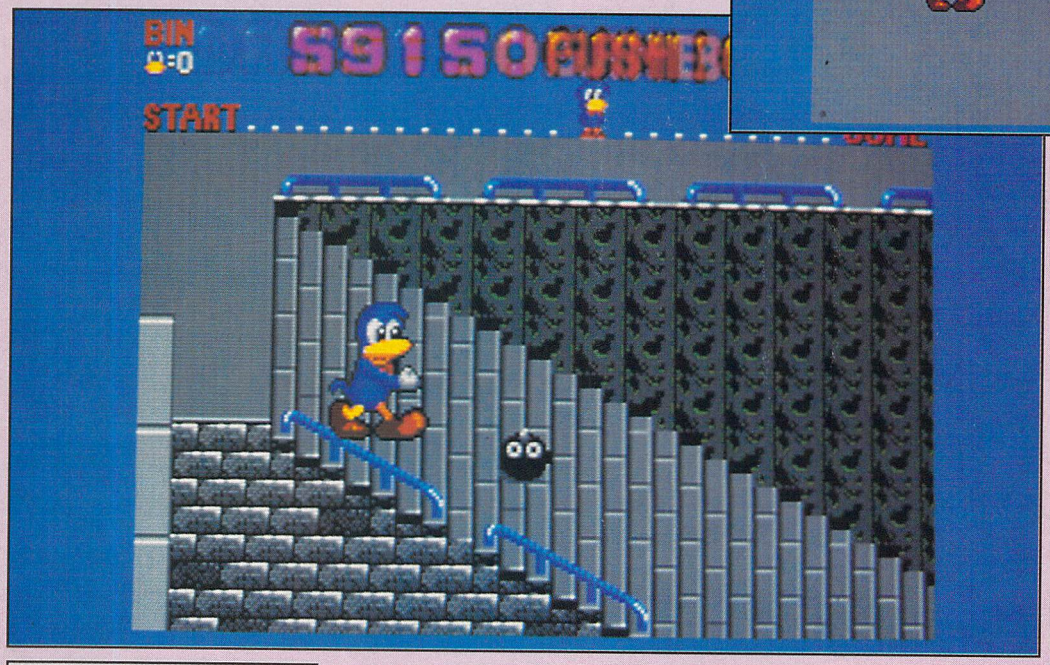
Cute cartoon capers



SECOND Sight

Dynamite Dux is an enjoyable romp through six levels against nicely-drawn cartoon creatures. Fun, and certainly worth a look.

Clive Barker

Sound	*6*
Graphics	*8*
Playability	*8*
Value for money	*7*
Overall	*8*

Product: Dynamite Dux
Price: £19.95
Supplier: Activision/Sega, Blake House, Manor Farm Road, Reading, Berkshire RG2 0JN.
Tel: 051-423 1965

DYNAMITE Dux is the latest release from Activision, and it's a fun game based on Sega's arcade machine in which you play a duck called Bin. The tale opens in a beautiful flower garden where you and your best friend, Pin, play with your owner, Lucy, who's all freckles and fun.

Glancing towards the woods, you spot a strange, black shadow which changes into Achacha the Great, foul tyrant of the world of Achacha. Grinning maddeningly, Achacha turns to Lucy and blows a huge bubble – a miracle ball. This bizarre device whisks your mistress off to Achacha.

This sounds like a job for Dynamic Dux. Striding forwards, you and Pin enter a conveniently-open doorway into Achacha World.

You notice a pack of giant sausages swarming at you – they're the dreaded Hot Dogs. The sharp-toothed nasties draw nearer, then Hai-Yah! In true Ali fashion, you floor the overgrown frankfurters.

Wandering further down the road you find rocks and hand grenades to hurl, giving Hot Dogs and Moose-Headed Space-Hoppers serious migraines.

A treasure chest in front of a 7-Eleven? Grab the loot, avoid the nasties and continue down the road.

A bazooka, what a lucky find. One of Achacha the Great's lackeys must have dropped it. Just the thing to dispose of some of those annoying roller-skating foxes. Not to mention the... what are they? Picture a dalek. Now shrink it and dress it up as Mickey Mouse. Bizarre!

And what on Earth are the strange-looking squat green things? Steer well clear of them, as they're armed with bazookas.

Bin encounters the Sumo Pigs, Manic Moles and many more nasties in his trek through six different levels.

Each offers a choice of routes through the landscape and collectible weapons such as flamethrowers and guided missile launchers. In addition, there are two bonus screens.

The game tries very hard to be cute, and succeeds admirably. Not only are the superbly drawn graphics captivating, but there are quite a few neat touches. For instance, the hi-score table is titled Best Friends and scores are displayed on a background of pastel-coloured close-ups of Bin and Pin.

The cartoon-style graphics, jaunty background music and silly plotline conspire to make an entertaining and enjoyable romp.

Roy Stead

QUICK PEEKS

Altered Beast

Activision (0734 311666)

THIS is Activision's ST conversion of Sega's hit beat-'em-up arcade game. Unlike many such games, this one features sideways scrolling backgrounds, and you start off dead. You don't stay that way very long as you are magically brought back to life in order to rescue a maiden in distress.

The screen scrolls from right to left and attackers approach from in front and behind. Your offensive moves consist of just a punch and a kick; you can also crouch, jump and turn around.

Gameplay is quite straightforward – simply bash the living daylights out of everyone who gets in your way. Pigs can fly in this game, or at least they appear to at times, floating across the screen in one or two bounds. Give one a good kick and it will turn into a balloon.

Collect a few balloons and you turn into a beast with the ability to throw fireballs. A large end-of-level guardian bars the way to the next screen, but he can be disposed of by a dozen or so fireballs.

Good graphics and addictive gameplay are let down by poor animation and a dearth of fighting moves.

Roland Waddilove

Blasted cheap

Product: Twylyte
Price: £9.99
Supplier: Wicked, Brooklands, New Road, St. Ives, Huntingdon. PE17 4BG
Tel: 0480 496497

QUALITY budget games are a bit thin on the ground, but the team from Wicked is busy rectifying that situation. Several of its games are to be found in this month's pages, but for me the best is Twylyte.

The objective here appears to be to last as long as possible before running out of energy. You fly a plane very close to the ground and obliterate the enemy from each level. This may sound easy, when you know that they don't bother shooting back at you, but there are a few snags.

One takes the form of missiles. They can be evaded or shot down, but you must be accurate. Then large pyramid shapes get in your way and make manouvring a nerve-wrecking business. On later levels the pyramids also bounce, making things even trickier. However, every now and then a green pyramid will appear, and flying under it will increase your energy, giving you a bit longer to play.

They also appear at the end of every level, surrounded by normal pyramids. If you manage to hit the green one you enter the Energy Run.

This involves either dodging between hundreds of columns or winging your way down a twisting canyon. Either way, your energy reserves can be built up ready for the next level.

The onscreen view is from the pilot seat, and mainly shows the field of battle. There's a radar scanner giving long-range warning of what's heading your way. Your score, energy level and round number are also displayed.

Twylytes' graphics don't match up to those normally found in full priced games, but the sound is exceptional. The opening titles contain sampled music, including a wonderful dawn chorus – nearly worth a tenner just on its own.

The arcade purists might not be too impressed, but the price combined with its addictive qualities make this one to look out for.

Henry Dee

Graphics.....7
Sound.....7
Playability.....7
Value for money.....8
Overall.....7

SECOND Sight

I've nothing against budget games, providing they're of a reasonable quality. Twylyte I'm afraid doesn't come into this category. If it wasn't for its addictiveness I'd give this one a miss, but to perfectly honest, I'm hooked.

Mike James

Yawning omissions

Product: Emperor of the Mines
Price: 24.95
Supplier: Impressions, 8 Dykewood Close, Bexley, Kent DA5 2JN.
Tel: 0322 555917

BOLDLY going where many others have gone before, we are presented with yet another Elite clone. However, Emperor of the Mines, from Impressions, is a space trading game with a slight difference and succeeds a little better than the tiresome Federation of Free Traders.

It comes on a single disc with hefty and necessary documentation. Impressions boasts that it "is a real-time wargame enabling the single player to control over 100 craft while trying to make a profit out of space mining... each set of 10 different episodes has taken our product testers on average around six hours to play through".

Now the fact is that Emperor is not a wargame, but a trading strategy game with a hint of arcade action. Secondly, the latter part of the above quote hints at the core problem of this pretender – its almost terminal boredom. I found that it took me almost two hours to get into the game.

Your task is to build up a fleet of craft to enable you to build a monopoly in the blue chip space mining game. These craft come in the shape of various models of explorers for exploring and drilling, transporters for shifting ore back to your home planet, and destroyers for protecting your cargo ships against aliens and asteroids.

The game has been well programmed and offers a vast range of possibilities for play, allowing you to operate a large fleet of spaceships. Emperor is totally icon-driven and takes place on a fairly unimpressive 2D space quadrant map.

All selections are made from one of three menus, each with five options. However, selecting individual icons, performing actions and moving your craft to required coordinates is awkward, slow, and will soon deter all but the most hardened space veterans.

You can progress in real-time through 10 episodes which aim to break you gently into the swing of play. Unfortunately, though the transition may be gentle, you will probably have decided to play Space Invaders long before you get to episode three.

The novel difference with this game and other pretenders of the ilk is that you can create your own mining platforms and watch your craft land, drill and transport the product. However, by limiting trade purely to extractable raw materials, a lot of motivating variety is lost.

The space combat barely makes up for the tedium of trade. Should you confront an alien raiding party or other unidentified craft a control panel appears on screen. By careful movement of two sighting arrows and a third Fire icon you can blast the enemy to kingdom come – none of the Elite manoeuvrability, tactics and variation of weaponry here.

I am quite disappointed by this offering from Impressions. The graphics are unimpressive, the sound effects weak, the plot unimaginative and the gameplay ... well, one minute while I wipe the sleep from my eyes.

Nic Outterside

Sound..... 5
Graphics.....7
Playability.....4
Value for money 7
Overall.....6

SECOND Sight

Yet another space trading game. At first my appetite was whetted by the diversion on a theme of space mining. However, Emperor of the Mines generates all the same problems that made me yawn with Federation of Free Traders – with which it is bound to be compared – that of difficulty of initial entry and slow real-time gameplay. Give me Elite any day.

Jayne West

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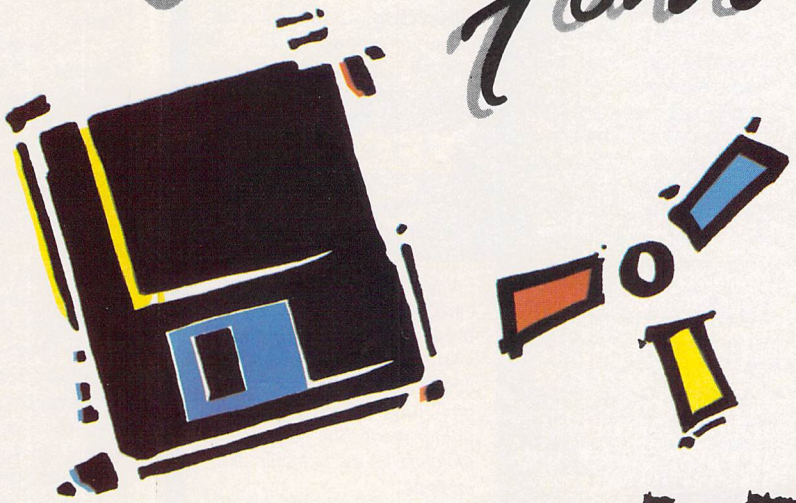

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Spice in spying

Product: Spy vs Spy
Price: £9.95 each
Supplier: Wicked, Brooklands, New Road, St. Ives, Huntingdon PE17 4BG.
Tel: 0480 496497

FIRST immortalised in the comic MAD, the world's worst espionage agents are now in two games for the ST, Island Caper and Arctic Antics. The first is set on the jungle-covered Spy Island which is in the middle of nowhere and deserted except for the other guy and a few sharks.

Your mission is to recover all three parts of a top-secret missile, rebuild it, and escape in your submarine. While you're doing all this the other guy will be rushing around, locating parts and setting booby traps.

In one-player mode, your opponent is computer controlled, and as a result tends to be a little too good at finding and assembling.

The booby traps range from simple pits to a good dose of napalm, and are triggered when either spy searches that area. This way a piece of missile can be buried for later, with a nice surprise placed on top.

Each time a spy is caught by one strength is lost, and the opponent sniggers at your misfortune. Therefore, whenever your man laughs you can be sure the other one is in trouble.

Arctic Antics also takes place on an island, but this time covered in ice. You have to find three objects which allow you to escape via a hidden escape rocket.

As in the first game, booby traps abound, including falling icicles, ice-patches, holes in the ice and good old TNT. Hand-to-hand combat is another feature, as are the snowball fights, but my own preferance is a good old blast with dynamite.

As the island is ice-bound, falling into holes and sea will reduce your body temperature, and when this reaches zero you're dead. To increase body heat, find an igloo, enter it and stand by the fire.

Finding the three objects is difficult, especially when they're buried, but in both games a map shows the island, your current position and where the objects are.

Moving east and west is no problem, just move the mouse/joystick in that direction, but north and south are a different matter. You'll have to find gaps in the landscape you can get through – and hope there's nothing nasty waiting for you on the other side.

Both games are good fun to play, especially in two-player mode, and the graphics are quite reasonable. At budget prices they deserve to sell like hot cakes.

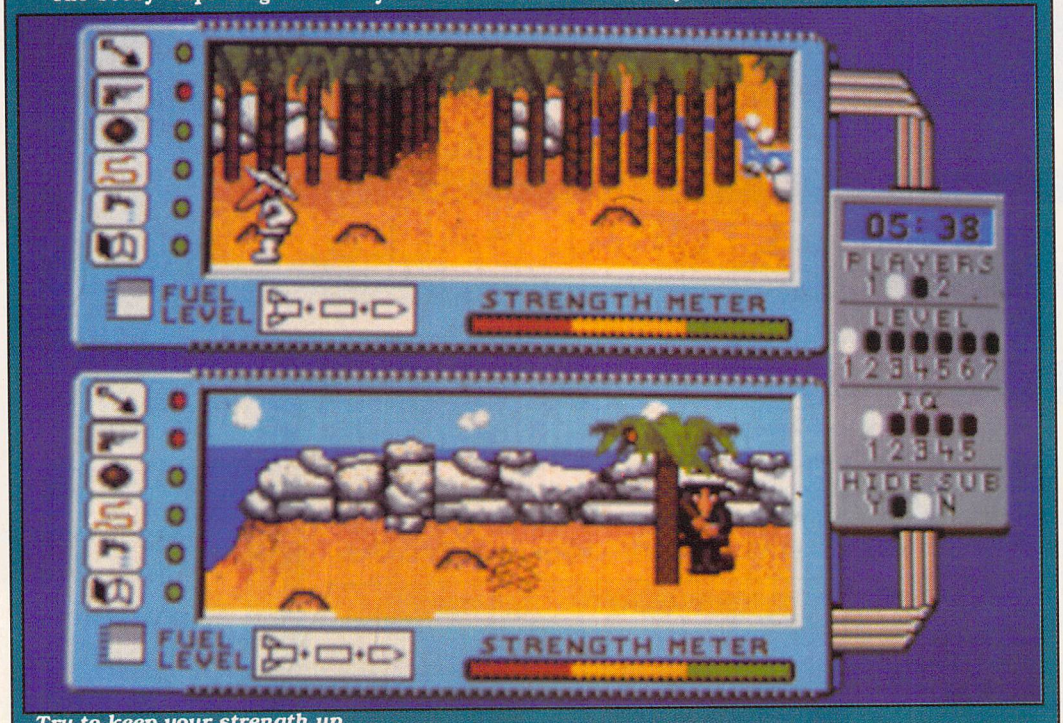
Henry Dee

Sound	7
Graphics	7
Playability	6
Value for money	9
Overall	8

SECOND Sight

Comic capers abound in Spy vs Spy, featuring those two inept and bumbling secret agents Black and White. The graphics are good and the gameplay is exciting in two player mode (the computer is too good for me in single player mode).

Janice Murray



Try to keep your strength up

Product: Hillsfar
Price: £24.99
Supplier: SSI/US Gold, Unit 2&3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-625-3388

THE conversion of the AD&D role-playing game, from its original tabletop board design to the new computer format, has been a massive success for the American partnership of TSR and SSI (available here from US Gold).

To date three computer games have sold more than 200,000 copies on the C64 alone, and by releasing the same products for the ST, these figures are expected to double. Hillsfar is the second in the Forgotten Realms series, and it is markedly different from the other two products in many ways.

The aim is to create four different characters – fighter, thief, magic user and a cleric – and then perform a series of quests set by their Guild masters. These mainly consists of gathering information from taverns and the like, which when placed together in the right order will help you conquer five arcade action sequences, the successs in which will lead to your character's advancement.

Your first task is to get your character to Hillsfar in one piece. Travelling to and from the town is done by horse, avoiding such obstacles as large pools of water, uprooted tree stumps and low flying birds, if you are to arrive unscathed.

Once you have arrived in town, explore it thoroughly, so you know the location and occupants of important buildings.

Finding the guild which relates to your character's class is imperative, as it is here you will learn about your quest. Each quest is linear and you have to complete a certain arcade sequence or obtain a piece of infomation before going on to the next stage.

The quests set are relative to each character's class; thieves have to steal, fighters fight, while magic users and clerics tend to end up using their intelligence and wisdom to work out logical situations.

That said, there are three actions which play a large part in Hillsfar for each class. These are lockpicking, archery and fighting in the arena. Throughout the game you have to enter various premises, where you

Magical quest

are given the chance to open the chests liberally strewn about each household.

If you decide to open one you are automatically transferred away from the main screen, which depicts your character's movement throughout its immediate surroundings to a new screen dedicated specifically for lock picking.

This screen is divided into three sections which show 10 different double ended lockpicks at the bottom of the screen, a lock with tumblers at the top right and a lit fuse at the top left indicating the amount of time you have left. You must match the lockpick with the tumblers before the fuse burns out.

As each tumbler is opened, it drops down, allowing you access to the next, and once they are all opened you get to keep the contents of the chest.

On the other hand, if you use the wrong pick for the wrong tumbler there is a good chance that you will break the pick, jamming the lock shut in the process. Furthermore, some locks are booby trapped and can emit poisonous fumes or even worse, large darts, all of which sap your strength and are potentially fatal.

Archery and fighting in the arena are simply arcade-based trials which involve a lot of joystick waggling and not much else. Although fun initially, the novelty wears off after a while.

Apart from this, your characters can visit taverns, where it is possible to socalise with the customers, meeting strangers who will try to help you or sell you a bargain.

For the right price, wizards can be useful source of magical items and obtain information. They can journey outside the town and search for secret locations, which will reveal additional information about the surrounding country.

The graphics throughout these arcade sequences are good, although the animation in the arena is poor and could have been designed with greater care. The non-animated graphics are better and add greatly to the atmosphere of the game.

Overall, Hillsfar is no more than a training ground for individual characters where they can enhance their skills to such an extent that they can tackle the trials and tribulations of The Curse of the Azure Bonds. The game does not reflect the true nature of the other two products in the series, as it is far more arcade-orientated.

Wayne

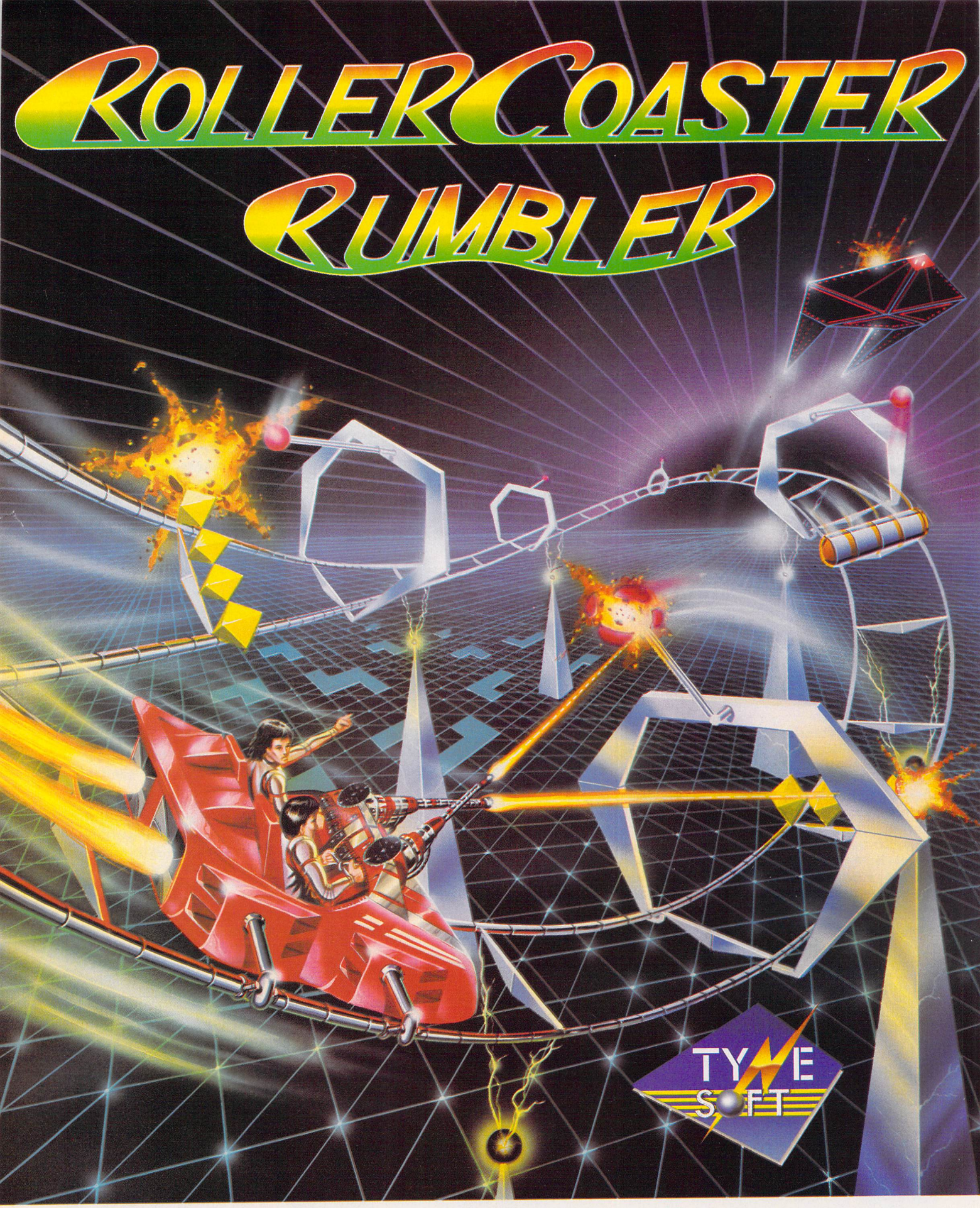
Travel in the countryside can be tricky

Sound	7
Graphics	7
Playability	7
Value for money	7
Overall	7

SECOND Sight

II was quite surprised by this AD&D game from US Gold – it has more arcade sequences than other titles of this type. The graphics are good and the game is quite addictive once you get into it. Well worth a close look.

Janice Murray



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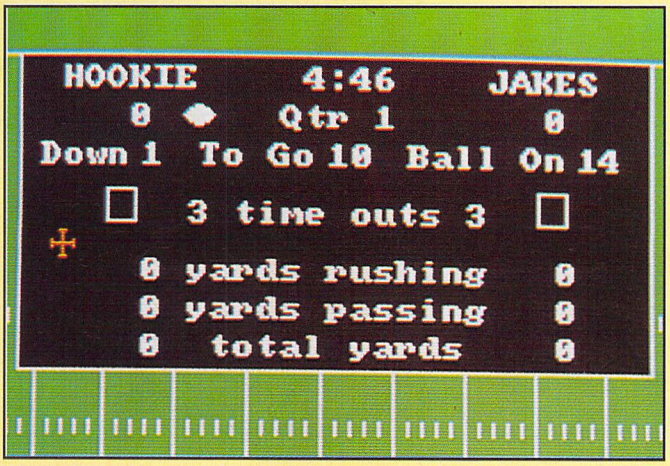
Transatlantic sport

Product: Gridiron
Price: £24.95
Supplier: Bethesda/Active Sales, Studio Centre, 1 Ranelagh Gardens, London SW6 3DA.
Tel: 01-384 2701



GRIDIRON, the latest offering in a fast growing number of American football simulations, claims to be the most realistic ever produced on a personal computer. But when this was written Cinemaware's TV Sports Football wasn't around and Bethesda's copyright tag dates from 1986.

The first thing that struck me was Gridiron's uncompromisingly American user manual. It assumes a knowledge of the game and uses terms that may well baffle the uninitiated.

Despite the manual I still don't know where the scrimmage line is, what a touchback is and when a player is positioned offside.

Even something as fundamental as the scoring system is not explained. I was twice awarded two points for no apparent reason.

An easily referred to glossary, an index and a better overall manual structure would be a great help.

The game is supplied on two discs which are not copy protected – don't mislay the manual though, as it contains six pages containing more than 2,500 code numbers. On booting up a random validation code number is asked for.

The game parameters are set by choosing the length of the game, number of players, difficulty level and use of the standard teams or your customised sides.

There are four competitive skill levels as well as a practice mode in which you keep possession of the ball. This is a handy option allowing you to get used to passing, punting and running the 20 possible offensive moves.

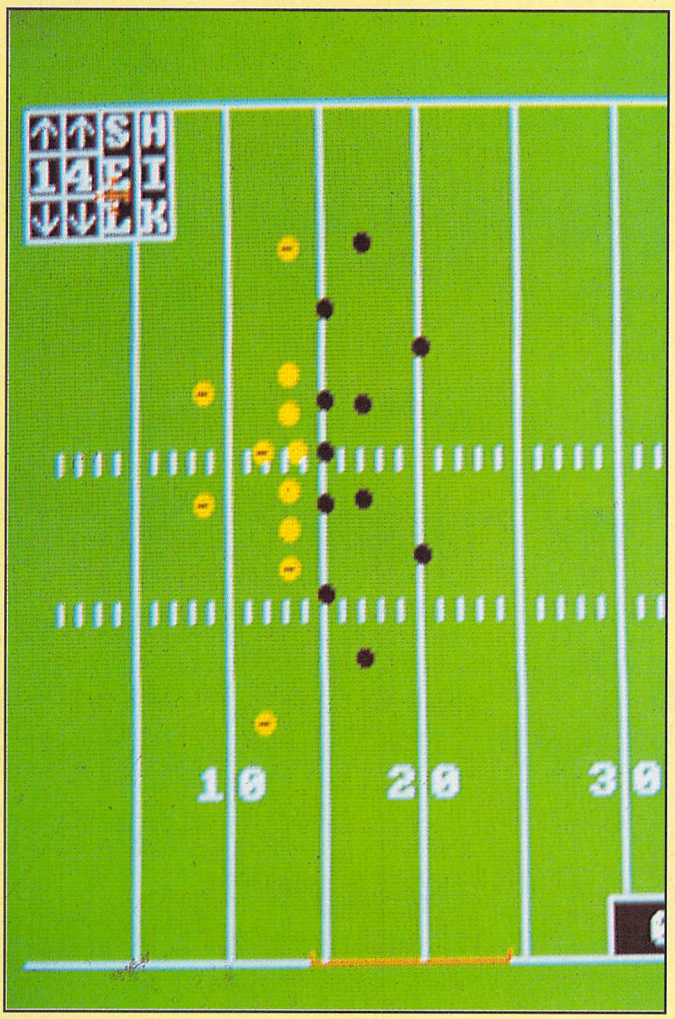
Visual presentation is disappointing by today's standards. You are shown a plan view of the pitch, with the two teams being represented by yellow and black dots. However this simple approach didn't detract with my enjoyment of the game once I got over the initial disappointment.

There is a short, rather mundane animated sequence when a touchdown is scored, but otherwise no visual excitement. A few sampled sound effects such as the crowd cheering, players grunting and the referee's whistle sporadically add to the atmosphere, but the game lives by its playability, to which graphics and sound contribute little.

From the kick-off the offensive players rush forward after the ball. As the defending team you have direct control of one player, who is highlighted on screen. He can be drawn into position using the mouse cursor and will always run towards it.

The ball is caught by the defensive fullback to whom control automatically switches. Using the mouse you control his progress in a way that reminded me of the old magnetic table football games.

As the opposition converges the rest of the defence will try to block them, giving the fullback the chance to make ground. Inevitably he is bundled to a halt, but retains possession.



Blobs mark the players

The defending team is now on the offensive and has an opportunity to gain yardage in four offence set play attempts, or downs. If you don't make at least 10 yards in four downs possession switches to the other side and you go back onto the defensive.

There are 20 pre-set offence and defence plays available to you. Each is briefly described, some for guaranteeing short yard gains or blocks, others, more of a gamble, may have more dramatic effects. Two play sheets are provided showing the plays visually with their corresponding names and numbers.

Control via mouse is well implemented, with the moves requiring just the right amount of timing and coordination. Movement, long throwing, short hand-offs and punts are all performed in this way, with control instantly switching to the player receiving the ball, making Gridiron very playable.

To maintain long term interest a powerful editing facility has been included. All the plays may be modified and saved to disc. Players' abilities and strengths can be modified and whole teams can be created and saved. Gridiron will have a difficult task competing with Cinemaware's TV Sports Football, and a lower price would have helped here. However, the game has much to commend it and should retain long term interest. Definitely worth a look.

Niels Reynolds

Graphics	7
Sound	7
Playability	8
Value for money	7
Overall	8

SECOND Sight

American football games have suddenly become very popular, however, the sport is not well understood on this side of the Atlantic and the lack of a good manual may spoil the fun. Buy it only if you already know the ins and outs of American football.

Beam down for a laugh

Product: Starwrek
Price: £19.95
Supplier: HAT Software, 21 Wyle Cop, Shrewsbury, Shropshire SY1 1XB.
Tel: 0743 231763

CAPTAIN Jimmy Birk of the U.S.S.Less has been forced to land on a Clinker planet to replenish the ship's supply of delerium crystals. Guess who's got the job of going to get them? That's right, you.

Based on the hit Star Trek TV shows, this tongue-in-cheek graphic adventure sets you as the newest member of the crew, and if you're a fan of the series you'll know that all new members are killed off in the first five minutes, so take care.

Your first task is to get off the ship, which is a mini adventure in itself. Here you'll meet all the old favourites, Mr Spook sporting a wig to cover his ears, Dr Decoy, who is as drunk as a skunk, and Snotty crying over a lump of twisted metal called the engine. Ahora, Zulu and Jerkov are also present.

Each location is accompanied by graphics, as are some of the objects you'll come across. Although not up to the standard of the original Star Trek game, they're very nice and add to the humour tremendously. The vocabulary is quite large – and much better than the old verb-noun system.

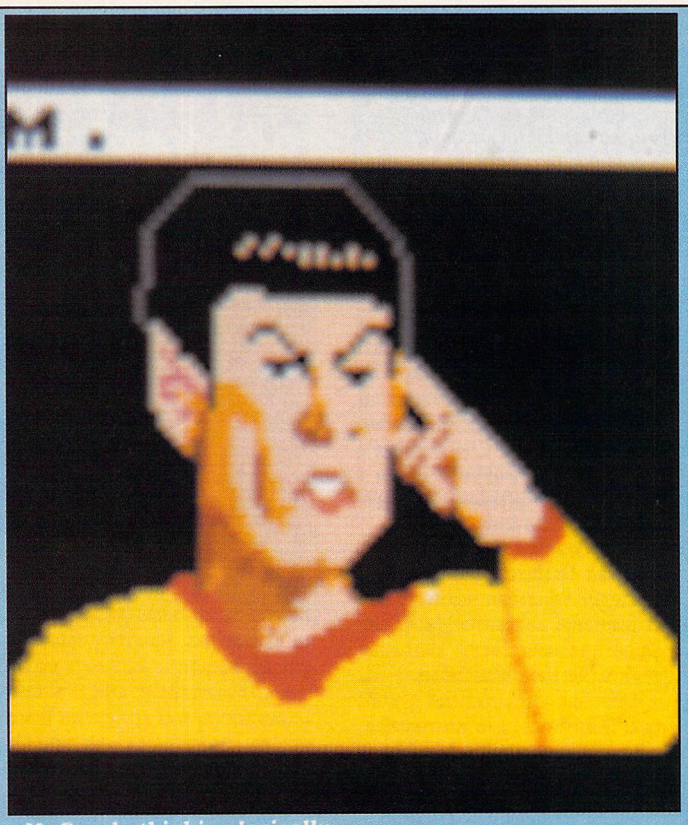
When stuck, try using lateral thinking instead of cold logic, and look out for the clues in the graphics and text.

Like most adventures, the first time you enter a location a full description is given, but returning there just displays the location name. The familiar Oops function is available, as is a hint facility to help with the difficult bits. With more than 350k this program, this program contains enough for the adventure purist, as well as being a must for any Trekie fan. Written with STAC, it just goes to show what can be achieved with a good games creator.

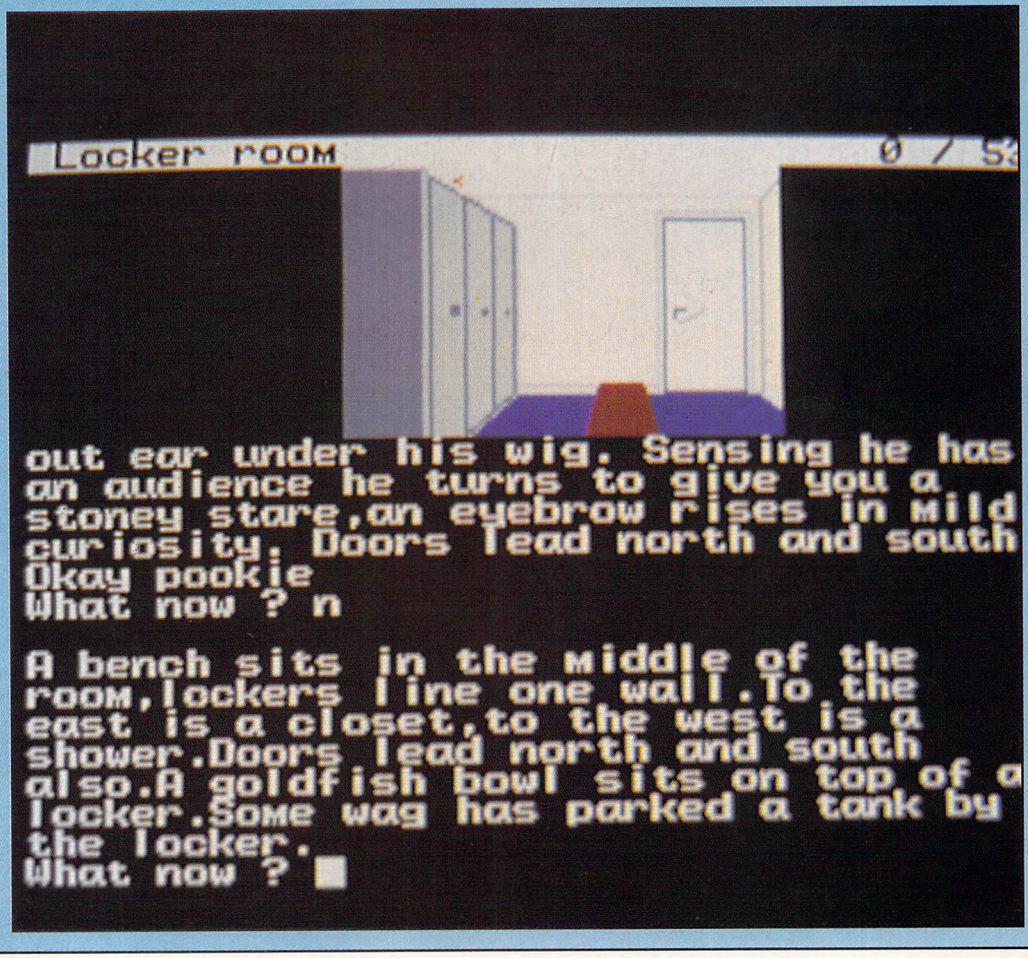
If your sense of humour is warped and you enjoy adventure games, order a copy now. Included in the package is a manual containing a brilliant short story and a few hints and tips.

This hilarious parody of the cult series deserves to become a classic, but the high price may well discourage many potential buyers. Knock a fiver off please, HAT.

Phil Lawson



Mr Spook, thinking logically



Presentation	*7*
Graphics	*9*
Playability	*9*
Value for money	*8*
Overall	*9*

SECOND Sight

This spoof adventure based on the cult Star Trek TV series is quite amusing – provided you're familiar with the characters. The humour will be lost if you have never seen the show. However, the adventure is still quite good fun for non-Trekie fans too.

Janice Murray

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2-4 Vernon Yard, 119 Portobello Rd, London W11 2DX

Move over, JR

Product: Oil Imperium
Price: £24.99
Supplier: Rainbow Arts/Leisuresoft, Sketty Close, Brackmills Business Park, Northampton MN4 0PL.
Tel: 0604 768711

J.R. EWING meets Esso in this oil-based strategy game from the German software house Reline revolving around the cut-throat world of international oil where commerce sits side-by-side with terrorism. To spice things up a little, Reline has added some attractive graphics and arcade sequences.

Suitable for one to four players, Oil Imperium presents you with four tasks.

The first is to become the richest player after three years of trading, the second challenges you to accrue more than $60 million of liquid assets, the third scenario can only be won when all of the other companies are bankrupt and the last mission is achieved by gaining more than 80 per cent of the market.

Nice touches abound as you prepare to play. You can select your company logo, name, desk and office which, after inputting your own name, gives you a sense of personal involvement. Each game-turn lasts one month during which you can perform a number of actions, all accessible from your desk-top menu.

Options are selected from icons. Selecting the computer icon allows you to work on your computer – an Atari ST naturally. From here you can buy and sell oilfields and storage tanks, sell crude oil, drill and access statistics which present you with a graphical sequence conveying your financial performance.

When you wish to buy, sell or act on an oilfield, you're faced with a world map upon which are the highlighted oil-rich zones. Clicking on one will zoom into it, and by selecting a sub-zone you are given the option to buy the oil concession for that whole area.

Clicking again on a sub-zone prompts the program to ask if you wish to buy it, and finally if you wish to drill on it.

Drilling a well can be done professionally (expensive) or by yourself. The latter will bring up the game's first arcade sequence. Basically, you must keep the drill in a central position as it bores deep into the earth's crust. Failure to do so results in a broken drill and a waste of money. Joystick-driven, this sequence is simple but relevant.

After a successful drill, your company logo is placed over the sub-zone as a form of claim. However, what is the point of drilling the stuff when you have not got anywhere to store it?

An oil storage tank is next on the shopping list, after which you can sell it direct or via a juicy supply contract – but woe betide you if you can't fulfil the contract order).

These are the basics of the game, which would be fine if it wasn't for the inconveniences – sabotage, terrorism, arson, the sort of everyday occurences which spoil your caviar and cornflakes. If you aren't careful you will find your oil wells burning as a result of underhand manoeuvres.

Such an occurence launches you into another arcade sequence. You must control your technician, moving him to each burning well to place dynamite to stop the fire.

You can take preventative measures to stop terrorism. Employing a range of detectives to keep watch may result in a rival company being caught red-handed. In which case they will be taken to court and fined, and could forfit a well to you.

Of course the wheels of justice may work against you if you employ devious and dangerous men to do your dirty work. The same penalties face you if you're caught.

Reline should be congratulated for developing such an original concept as Oil Imperium. While sound is sparse, the graphics are very good, using a nicely designed user-interface which looks clear and uncluttered.

The arcade elements, while being of average quality, intergrate successfully into the game, which is more important.

As far as the main strategy elements are concerned, I am a little worried about the long term interest of the game. I would have liked to have seen a little more variety in the strategy area. The opponents can be quite tough, but initially they keep the pressure off. However, as the world's oil areas fill up, things become quite hairy.

Oil Imperium provides a fair slice of excitment with addictive qualities that many other strategy games lack.

Mike Rowe

Sound	3
Graphics	7
Playablity	8
Value for money	8
Overall	8

SECOND Sight

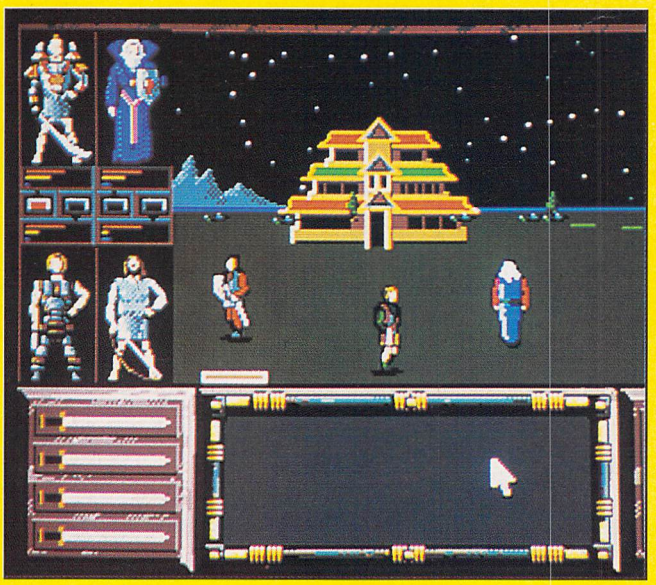
Full marks to Rainbow Arts for originality with Oil Imperium. Initially quite confusing – due the wealth of options and data available – but then quite addictive once you get your oil empire started. You can play like nice guy Bobby Ewing or his conniving brother JR.

Janice Murray

QUICK PEEK

Drakkhen

Infogrames (01-364 0123)



HERALDED as Infogrames' first major role-playing game, Drakkhen is the first in a range of similar products. The fate of the world lies in the hands of four bold adventurers whose task is to seek out the palaces of eight Dragon Princes. These hold the secret to the Dragon's jewels — the only way to summon the primordial Dragon to gain his pardon and save the world.

The skills and characteristics of the four adventurers under your control are decided partly by you and partly at random. You can move around the countryside using the cursor keys, while talking, magic and various actions take place at the click of the Return key and mouse buttons.

The 3D view of the scenery — flooded plains and scorched deserts — are very well drawn and the animation and reptilian monsters — reminiscent of those in Space Harrier — are impressive. You can navigate using the stars (real constellations as seen in a Parisian July sky), and days pass as the sun and moon traverse the skies.

Though these is nothing entirely new here, the game is well put together. Role-playing enthusiasts should not miss out on this title.

Pam Turnbull

Roll on summer

Program: California Games
Price: £19.95
Program: Games Summer Edition
Price: £19.95
Supplier: US Gold, Unit 2&3, Holford Way, Holford, Birmingham B6 7AX.
Tel: 021-625 3388

HERE is a novelty — two summer games in winter, and both from the same company, too. First off the starting block is California Games which contains six events.

The Half Pipe is a skateboarding track with two vertical walls at either end. You can perform a variety of tricks on it — if you're clever — and the display is kind enough to give you hints such as you can't kick turn backwards if you're daft enough to try. If you come off your board it rolls back down the wall and clobbers you with a sampled yell.

Foot Bag is about keeping a ball up in the air with your feet. A shadow on the ground helpfully tells you where the ball is going to land. Beware a disgruntled seagull flying overhead, but if you're feeling particularly vindictive you can try to knock it out with the ball. This is as much fun as foot juggling — and rather easier.

Next is Surfing. Rather like Half Pipe but in 3D. Listen to the porpoise, seagull and shark laugh when you fall off.

In Skating you traverse the boardwalk alongside the beach. Watch out for the cracks in the track and a bouncing beach ball which tries to knock you down.

If it succeeds, your competitor — a female sprite which would probably be attractive if blown up to full-size — bangs her hands and feet on the ground and sobs a sampled sob.

The BMX rider lets out a sampled Ouch! when he falls off. The track is rather narrow, so watch how you steer. Flying Disk is Frisbee Frowing. You have to start and stop an indicator moving along a horizontal bar to determine speed and angle of throw. After a successful throw control is transferred to a female catcher who you have to make collect it.

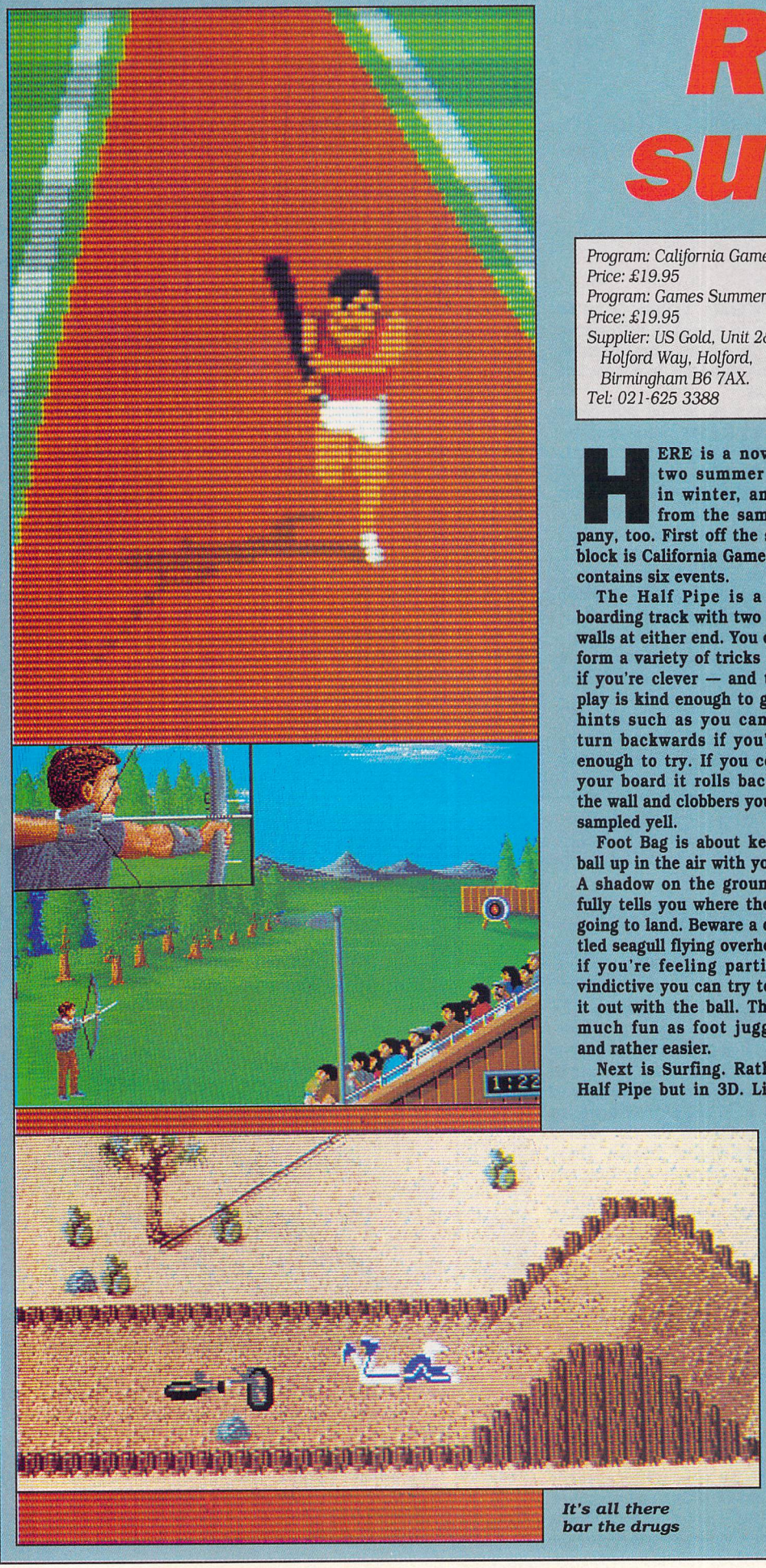
If California Games' graphics are good, Games Summer Edition's are superb. The eight events are selected using icons superimposed on a village map and the icons move when selected. The events are so graphically detailed that four discs are required to hold them.

In Racing you get a moving 3D cyclist's-eye view of the track, plus a bird's-eye view. You move by waggling the joystick and steering is easy, but your arm will be dropping off by the time you finish.

Archery is really cute and reminiscent of a number of darts games. You pull back the bow and line up the sights on the target. The sights wobble, so you can't be sure of a bull every time. And then there's the wind to take into consideration — aided by an anemometer. This was one of my favourite events.

In the Pole Vault you first set the height — minimum 16 feet 5 inches. Then you view your athlete running towards you. More waggling to gain speed then the view changes to side-on. Yank down on the joystick to place the pole and up again to make the jump.

An action replay sequence at the top of the screen embarrassingly shows any faults you make — like breaking the pole. It also



It's all there bar the drugs

ATARI STAR USER GAME

replays successful jumps. Cute.

The Uneven Parallel Bars is one of the trickiest events. There are so many moves you can make, and judicious joystick control is required to perform them all correctly.

The Rings is equally difficult to master, although in both events you can swing by the seat of your leotard and twiddle the joystick to see what happens. In the 400m Hurdles you automatically make a false start unless you take positive action to prevent it (keep a finger on the fire button). More waggling required here — and make sure you jump at the right time.

In the Hammer Throw, if you throw the hammer towards your viewing point it shatters the screen to the sound of breaking glass. Other false starts include wrapping the thing around your neck. Other than that, suitable joystick manipulation will be rewarded with a good throw.

In Springboard Diving you can perform a variety of tucks, spins and twists.

The marks are definitely biased — some judges give a five while others give zero (must be the Russian). If you don't get out of the pool quickly enough after your dive a shark appears and swims menacingly across the pool.

After winning the Games — which you do automatically if you have no opponents, you are treated to a short winning ceremony.

If you like multi-event, joystick-waggling games both programs are excellent buys. All the events are eminently playable although some are more difficult than others.

You can compete in all events or practise the ones you're shaky on and you can play with or compete against a friend, too. Just the thing for armchair athletes.

Ian Waugh

California Games	
Sound	9
Graphics	9
Playability	9
Value for money	8
Overall	9

Games Summer Edition	
Sound	9
Graphics	9
Playability	9
Value for money	8
Overall	9

SECOND Sight

I thouroughly enjoyed both games and think they will appeal to most that want a break from the common shoot-'em-ups. I have been playing California Games on the PC for about twelve months and now its on the ST I consider it to be slightly better than Games Summer Edition.

John Butters

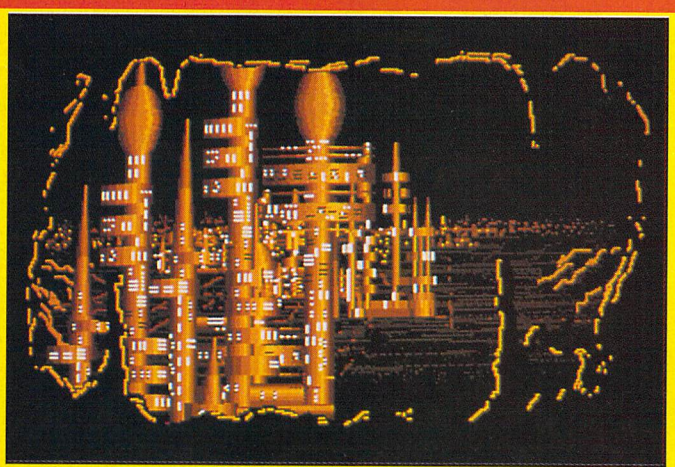
QUICK PEEK

Aquanaut

Addictive Games (01-804 8100)

AQUANAUT on the Addictive Games label is very much a tongue in cheek, spot-the-pun arcade adventure. You are Ric Flair, the famous intrepid hero. What do you mean you've never heard of him? Rod Whyatt's story and Adam Smith's programming skills have combined to produce a futuristic story of a botched attempt to conquer Earth. The Ramanishi invaders, though thwarted, managed to land their flagship.

You will find that the scenery is a little different to what you are used to — due to the greenhouse effect the Earth's ice caps have melted raising the sea level — as Ric sets off to destroy the Ramanishis in their underwater hideout.



Blast the mutated jellyfish and swordfish, save the dolphins and mermaids (Poseidon will not be amused if you don't), while shooting the pods to acquire helpful items.

As you near the flagship the blighters will launch depth charges. Added to this is toxic waste which poisons you. The message, "You should have voted Green, you know", will greet your demise.

Make it to the hideout and blow it up to complete the mission. However, this isn't the end of the game, just the end of the beginning. The resulting explosion blows a hole in the sea floor, and caught in a whirlpool you are sucked into an subterranean catacomb which defies you to complete without mapping.

Speed is of the essence here as you fight against weird creatures which can suck your air supply before you find an air pocket. You may need to blow holes in the maze as well as cope with Captain Nemo. The third level takes you to the fabled city of Atlantis.

There are some difficult puzzles requiring deft fingerwork and quick thinking.

Pam Turnbull

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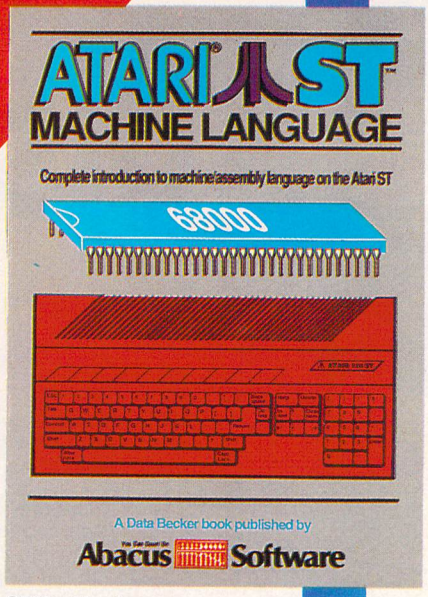

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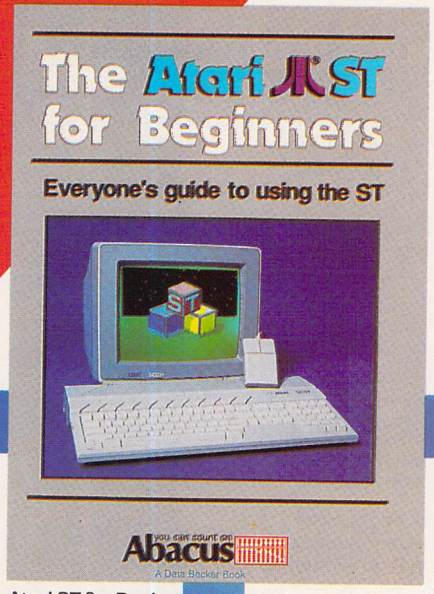

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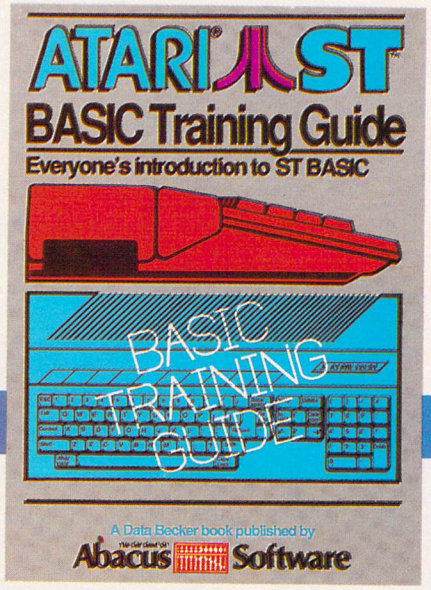

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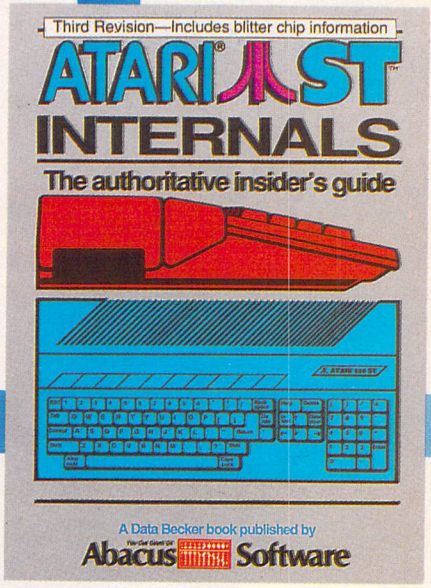

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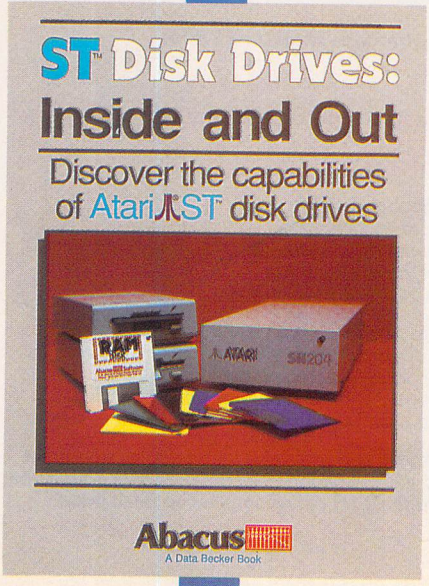

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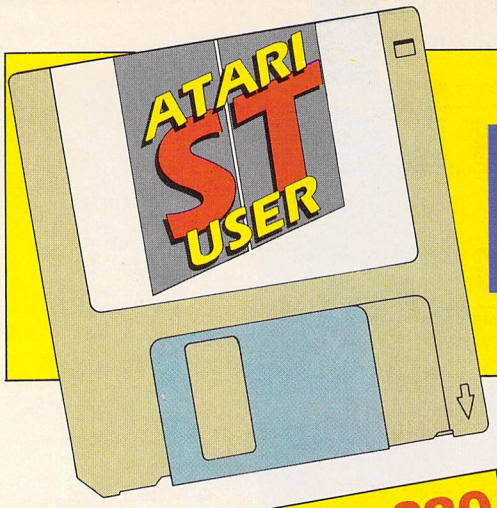

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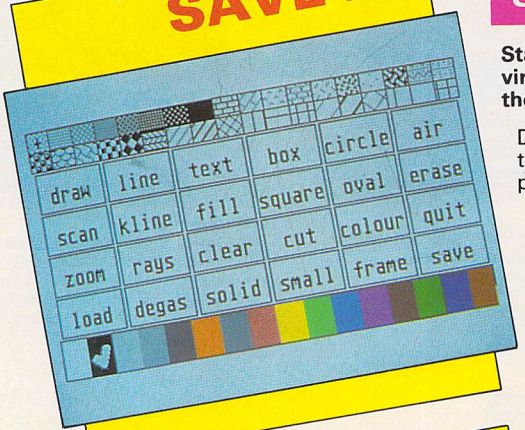

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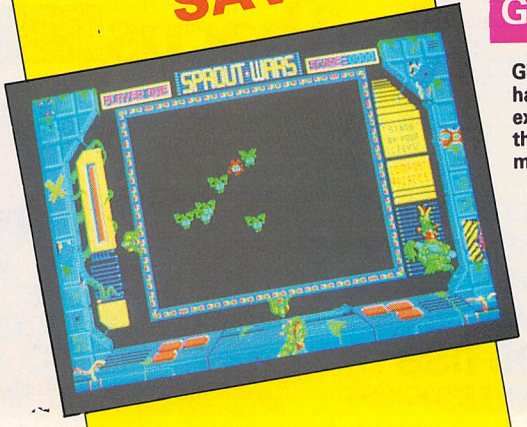

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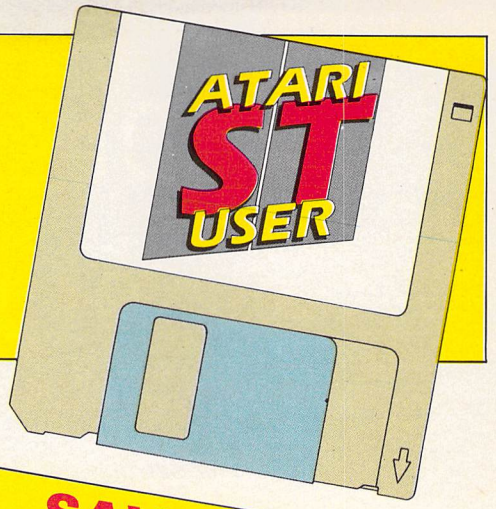

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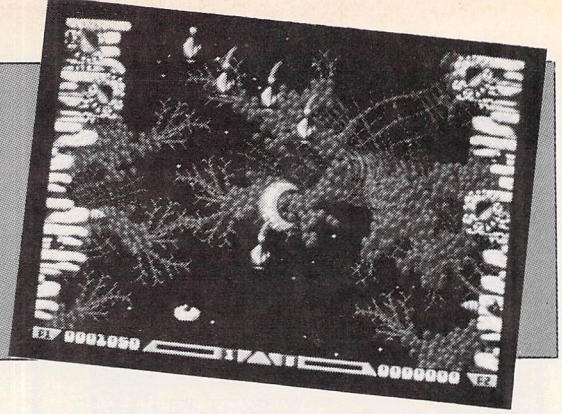

This month	Last month	Title (Software House)	Price	Month reviewed in Atari ST User	Comments	Marks from 10
1	*	XENON *Mirrorsoft*	24.95	Oct 1989	Lacking original gameplay, but a must for any serious arcade addict and it's unlikely to be bettered for a long time. Recommended.	10
2	*	POPULOUS – PROMISED LANDS *Electronic Arts*	9.99	Sept 1989	Extra screens for this very popular game. You don't need to buy them, but you will certainly miss out if you don't.	9
3	*	BLOODWYCH *Mirrorsoft*	24.99	Oct 1989	Assume the identity of one of the last 16 champions. Another role-playing game set in a maze of dungeons, but well implemented.	8
4	▽1	FALCON MISSION DISC 1 *Mirrorsoft*	19.99	Oct 1989	This mission disc will extend your enjoyment of Falcon, improve its value for money as well as its shelf life. One for enthusiasts.	10
5	▽2	NEW ZEALAND STORY *Ocean*	19.99	Oct 1989	Cute and fun. Guide your kiwi past bats and teddies to rescue your friends, cruelly captured and imprisoned by a walrus.	9
6	△15	INDIANA JONES – LAST CRUSADE *US Gold*	19.99	Oct 1989	Trace the exploits from the cinema to the arcade. From rumbling trains to rat-infested corridors and to the Holy Grail. Not bad at all.	9
7	▽5	POPULOUS *Electronic Arts*	24.95	May 1989	This is the game of the gods. Play on your own, against another ST, or oppose another micro using a modem link.	10
8	▽4	FALCON *Mirrorsoft*	24.95	March 1989	Prepare yourself for a Mach 2 flight in an F-16 and enjoy arguably the best in the growing class of flight simulators.	9
9	*	PASSING SHOT *Mirrorsoft*	19.99	Nov 1989	Not outstanding graphics, musically unspectacular, but the gameplay is exciting and very addictive.	8
10	▽6	ROBOCOP *Ocean*	19.99	Sept 1989	Stylish but slightly sluggish implementation, however there's good digitised speech with gameplay to match.	9
11	▽3	THE STORY SO FAR *Elite*	19.99	*	A good-value compilation presenting re-runs of Hopping Mad, Overlander; Space Harrier, Beyond the Ice Palace, and Live and Let Die.	●
12	▽9	KICK OFF *Anco*	19.99	July 1989	One of the fastest and most exciting games around. The best football simulation ever – realism, thrills and unrelenting action.	9
13	▽8	OUT RUN *Klassix*	9.99	July 1988	Hailed as one of the best car simulations for the ST. An arcade conversion, its initial release reached the number one spot.	9
14	△16	ROCKET RANGER *Mirrorsoft*	24.99	Nov 1989	The Nazis won, and on the fiftieth anniversary you have to change the course of history using spies and sheer brute force.	9
15	▽13	FORGOTTEN WORLDS *US Gold*	19.99	Sept 1989	An interesting variation on a theme. Very enjoyable with hours of fun for even the most hardened arcade fanatic.	8
16	*	BLOOD MONEY *Psygnosis*	24.95	Oct 1989	Another vertical/horizontal shoot-'em-up, with the graphics we have come to expect from this Liverpool house. A bit pricey though.	9
17	*	APB *Domark*	19.99	Nov 1989	Awkward controls, small but neat graphics. There are some nice animated linking screens and good music to boot.	6
18	*	HONDA RVF *Microprose*	24.99	Sept 1989	A really excellent simulation, with realism and style. Only let down by the ST itself – no analogue joystick capability.	9
19	*	GEMINI WING *Virgin*	19.99	Oct 1989	Good, fast, colourful, musical and contains touches of originality. But still another vertically scrolling shoot-'em-up.	8
20	*	F-16 COMBAT PILOT *Digital Integration*	24.95	July 1989	Impressive documentation, but the aircraft handling is not very realistic, with a tendency to over-respond. It's too easy to crash.	8

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Arcade CORNER

Mayday!

John Butters has some useful tips for would-be air traffic controllers

EVERY year the volume of air traffic increases throughout the world, resulting in those long summer delays. If it isn't out of date computers, it's striking air traffic controllers.

Although Europe is bad enough, the world's busiest airspace is in North America, especially so since the deregulation of air services a few years ago. And MicroProse's Kennedy Approach lets ST owners see for themselves the problems faced at a busy airport.

Inexperienced controllers are recommended to go for training at either Atlanta's Hartsfield Airport or Dallas Fort Worth. Later they move on to more difficult areas such as Denver or Washington which have high terrain, bad weather and in the case of Washington, prohibited zones where aircraft may be shot down.

MicroProse has made the job much harder by providing only one runway at each airport to handle both incoming and outbound traffic. Sorry Denver, you'll have to hand back your other seven runways.

At the top of the display is an area showing flight plans. You are given the first letter of each plane on the radar, where it is coming from and bound and its altitude in thousands of feet. Although messages between you and the pilot can be heard using digitised speech they are also shown at the top left of the screen. The remaining area is taken up with the radar display.

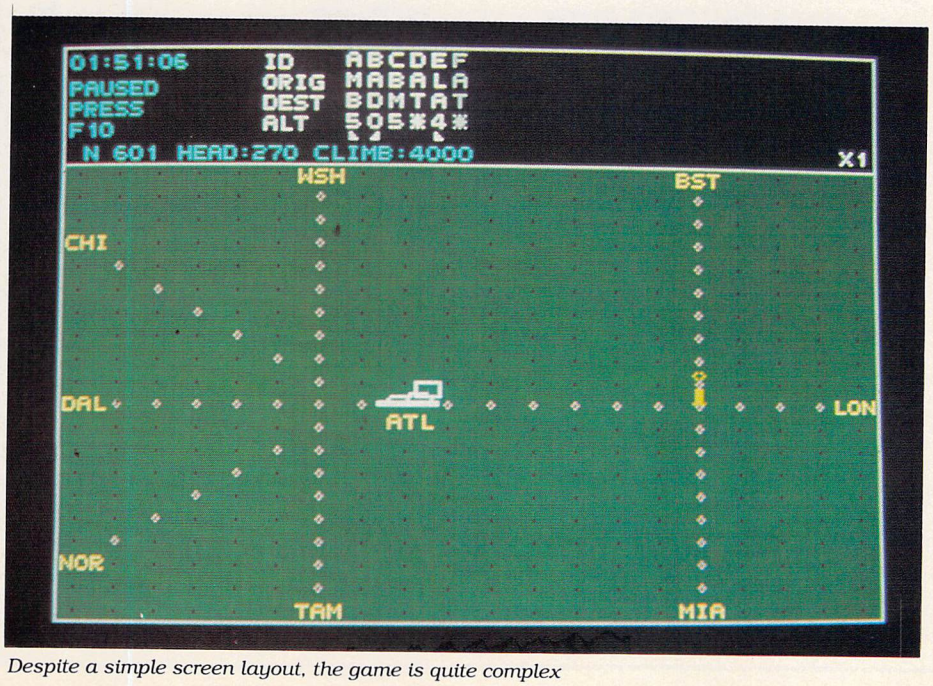
You will immediately notice that the screen is covered with dots forming a grid. Highlighted ones represent routes which aircraft should follow and in the real world of aviation are called airways. Other information offered is the airport's runway, your cursor control, mountains, bad weather, VORs and, of course, aircraft.

Your aim is to make money and at the end of a shift you will be given one month's salary plus $100 for each completed flight and $200 for each successful emergency landing. However, $100 is lost for each minute of flight delay you cause.

Aircraft already in flight must take priority over those waiting for take-off clearance. They will fly on to the screen, automatically following the airways and may be inbound to your airport, or simply overflying to another.

Whichever is the case, it is up to you to maintain enough separation to avoid conflicts or, much worse, mid-air collisions. Planes will come on to the radar at 5,000 feet and overflying traffic has to exit the area at 4,000 feet.

Turn to Page 58 ▶



Despite a simple screen layout, the game is quite complex

◀ *From Page 57*

Inbounds, of course, have to land, so descend to ground level.

It is best to take inbound planes as far from the runway as possible and then bring them around for a long straight approach rather than turning them in tightly for a short one. You are then given more time to make fine adjustments to the approach.

Sometimes there may be too many inbounds to handle. You can put some into the holding position at the airport's VOR beacon. The minimum spacing for aircraft is 1,000 feet so you can only have four aircraft circling at each VOR. They can circle clockwise or anti-clockwise but I find it easier to have them all going in the same direction.

Taking the bottom one out of the stack first and then descending the others will ensure that the 1,000 feet spacing is maintained at all times and that all the aircraft are in the hold for roughly the same period.

If, however, an aircraft higher up in the hold reports an emergency remember to take it away from the holding pattern at its current altitude before bringing it in to land – otherwise there may be a mid-air collision – and that's the end of your career.

It is better to leave one of the higher altitudes free of traffic whenever possible so you can let overflying planes carry on their path without re-routing them around the beacon.

The information box at the top of the screen shows the inbound and outbound flights, and those awaiting take off

The dots along the airways represent one mile. An aircraft can only change its altitude at a rate of 1,000 feet per mile so you can't bring one on to a two mile final approach when it is still at 5,000 feet. The planes have a turning radius of 1.5 miles which means you need to allow no less than three miles – three dots – to execute a 360 degree turn. As lost time costs you money its best to get as many departures as possible off the ground when the approach is slack, and if necessary circle them at the nearest beacon until you can move them safely on to their destinations.

As with overflying aircraft, departures should leave your area at 4,000 feet.

Finally, if all else fails take your headset off, walk away and tell everyone that the computer's gone wrong again.

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Come all ye merry adventurers...

CHRISTMAS is a wonderful time, even for mythical kings such as I. The holiday gives me chance to once more ask the question: "Do I really exist?" If I do, then why don't I use my ST's technology to keep the castle dry and the cave well lit? And if I don't, what am I doing here in legend anyway? I suppose Infocom has the answer, and it is bound to be 42.

The rest of you nether mortals are probably more interested in what goodies you can get your grubby paws on over the next few weeks. Well you can't say that I don't keep you informed about all the best adventure releases.

During the past three months I have detailed a wealth of new ones for the ST and the breadth of choice is indeed mindboggling. It becomes a difficult task sorting out which to recommend and which to leave on the shelf.

Many TV addicts will recently have watched my personal Irish leprechaun Terry "crock o' gold" Wogan interview a sultry temptress called Elvira, Mistress of the Dark. You may have been impressed, but do not be seduced by her flashing dark eyes and petulant lips, for she is indeed evil.

Elvira is now in the pay of that satanic majesty Horrorsoft, and as I speak, she is creeping into your own home by way of your ST. Elvira's Game is the latest release from this company and promises to surpass the excellent personal nightmare.

Also due on the Christmas shelves is Leisure Suit Larry III. It has yet to receive a suitably sleezy subtitle, but that aside, it's bound to be another best-seller for Sierra On-Line.

Not to be outdone, Activision has two new releases scheduled for imminent launch: The Colonel's Request and Conquest of Camelot – which was to be titled King Arthur. Both look appetising and I hope to make a real banquet of them soon.

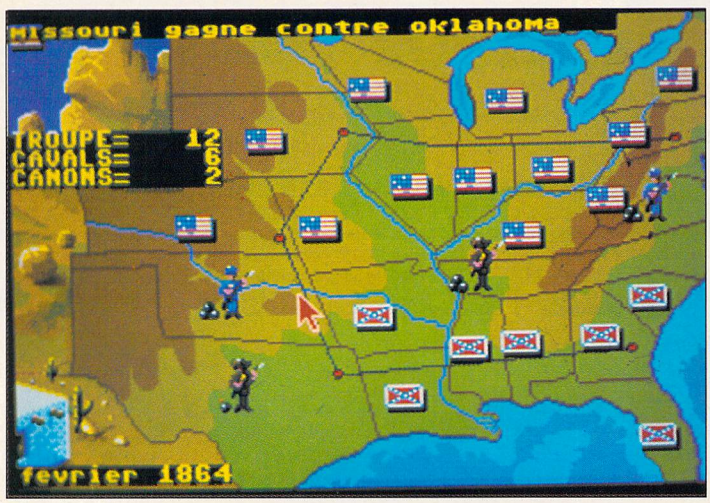
Meanwhile hot on the heels of its other recent best sellers, Infogrames announces the release of North and South – due out some time early in the New Year.

Last month I detailed information concerning the adventure specialists' Official Secrets. Since I last held forth, another of its excellent magazines, Confidential, has landed in the castle courtyard. It really is outstanding source material, and the latest issue features an article on writing your own adventures.

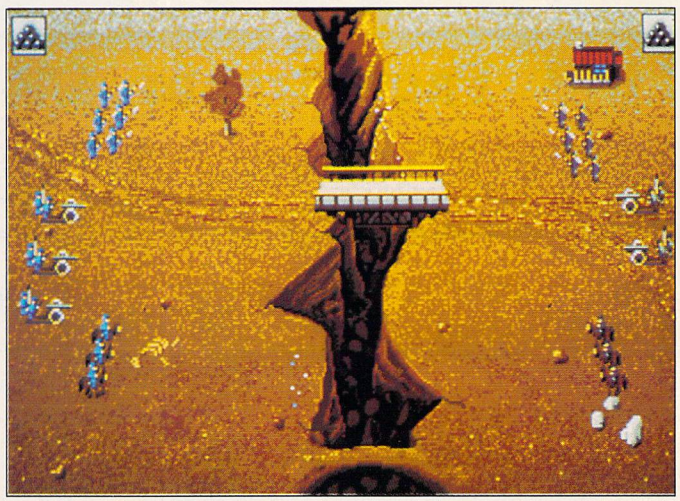
Another missive was dropped by passing carrier pigeon from old adventuring friend Neil Shipman of Bristol. Neil and I have been corresponding since the adventuring dark ages on the old Acorn Electron and BBC Micro.

He points out the existence of the excellent adventure disc organisation Syntax. I recently received the first Syntax disc and was most impressed by its contents. For more information about this quite unique service contact Sue Medley, 9 Warwick Road, Sidcup, Kent DA14 6lJ.

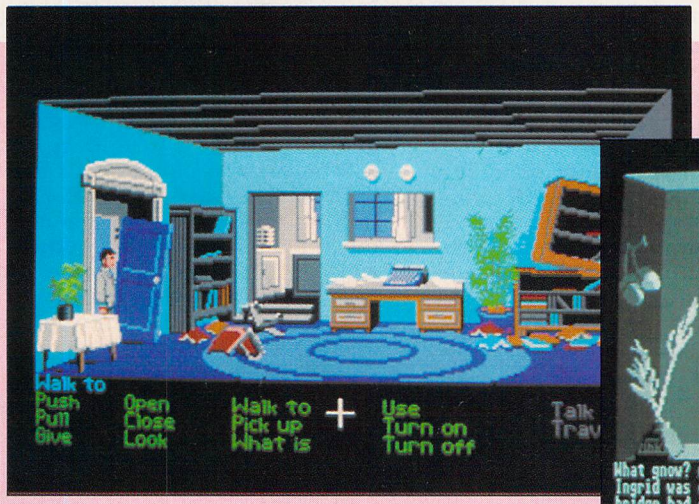
Neil also points out that adventure authors who have penned their own silicon escapades should not send them to any of the big software houses



North and South, soon to be converted from its native French...



...combining wargame and adventure strategy. Out in the New Year



Mouse-driven point and click adventures are increasing in popularity

...while text-based ones are becoming less common

as they will stand no chance of getting published. He suggests instead that authors publish their own games and advertise them via magazine adventure columns – there is only one worth reading – and fanzines such as Adventure Probe. I can see Neil's point and agree that publishing your own game is fun and brings its own rewards. However, I must also counter Neil, that in order to keep the market quality high, the big software houses such as Level 9 and Infogrames will only publish the very best. Each house may well discard more than 400 submissions before opting for one they like. Competition is truly fierce.

On to a different topic; the response to my plea for full audit trails to War in Middle Earth has been phenomenal. I must particularly thank M.P. Aldridge of Backwell, S. Hore of St Austell and Steve Peiris of Acton for their most detailed and concise solutions.

These will be placed alongside Colin Bass' earlier scroll to give future aid and succour to lost adventurers. With the wealth of material I have now accumulated on this adventure, I may even do a special on it fairly soon.

I must also extend my thanks to Mr M. Burland for an excellent trail to Police Quest II, and Nathan Powell for a host of tips for Dungeon Master.

Well, there's plenty there to mull over or spend your Christmas pennies on, so until Santa forgets to come, I wish you all many years of happy adventuring.

NTURES

Pendragon empties his Christmas stocking and looks at the new games releases

Overture and beginners

SO far I have dealt almost exclusively with different mapping techniques. However, you won't get very far in any adventure unless you can solve the puzzles and problems that occur along the way. Their manner and type vary from one game to another and may be logical or involve magic or random elements, and in some cases may be downright illogical.

I have a definite preference for long, involved adventures – such as Indiana Jones and the Last Crusade – in which the puzzles are totally logical.

In juxtaposition I therefore have a particular dislike for random magical elements. Yet the enormous sales figures of games such as Dungeon Master and Time and Magik tends to suggest that we all find quite different niches. Hence any judgement made by myself or any other critic must always, to a large degree, be subjective.

A classic, and oft used, adventure problem involves the opening of a door for which no there is no obvious means. This usually involves a clever chaining puzzle using some of the objects you have collected. A chaining puzzle involves the linking of different objects or events to achieve a single or multiple task. Let's look at it in practice.

You arrive at a locked door in which the key can be seen in the lock on the other side of said door. Hacking or thumping the door will usually do you no good and may waste valuable time and energy.

Maybe you have a piece of paper in your pocket or a ream of newsprint in your knapsack. You know, that piece you found earlier in the game. And the penknife which has been in your pocket since the opening location, that must surely be good for picking locks. But don't rush into it, think!

DROP PAPER – PUSH PAPER under door – PICK LOCK with penknife – PULL PAPER and you can now lay your hands on that valuable key. So,

Turn to Page 62 ▶

◀ From Page 61

TAKE KEY – TAKE PAPER (it might have another use) and UNLOCK DOOR.

OK, so the author borrowed the idea from Enid Blyton's Famous Five, but that kind of puzzle plagiarism is common in most adventures. The solution will usually be logical – but involved – or will have been displayed elsewhere many times before.

An interesting variation on the same problem occurs in Sierra On-Line's Gold Rush. Late in the game you enter a shaft and discover a locked mine door. Under it, but out of reach, you can see a key but you have no paper to slide under, so what now?

You may also have seen a hole, higher up in the door, which may give a clue to your strategy. From your inventory take the piece of string and magnet and tie the string to the magnet. Lower the retrieval apparatus through the hole, gently pull the string back and the key becomes yours.

The lesson to follow in such situtaions is to look very closely at the artifacts you have collected – or even failed to collect – and try to work out how they may be used in combination.

It therefore follows that you must always carefully examine the rooms and the objects you find. Almost all will have some use – only cads litter their games with red herrings – and linking objects leads to success on more occasions than bashing ever will. Successful adventurers tend to need brains as well as brawn.

Next month I will begin to look at making sense of magic.

So you thought you had a problem . . .

ONCE more the postbag is bulging with pleas for help and advice and offers of full solutions and maps. Please be patient if you have sent in a letter with an sae, requiring a personal reply, you will hear from me soon.

Judging by the mail, the most taxing adventure currently seems to be *Leisure Suit Larry II*. Karen Jackson asks how she can get past the swarm of bees in the jungle. If you stay to the left and crawl I think you will avoid them.

Meanwhile A.J. Brindle can't get across the quicksand. Just keep to the yellow line – centre screen – and you should be safe.

Elsewhere, self-confessed bad speller R. Glamborow is having difficulty extricating himself from the aeroplane. I suggest you use the pin in the padlock on the emergency exit. Then turn the handle, open the door and jump. When you are falling don't forget the parachute.

Peter Lewis offers the following potpourri of tips to help all wayfarers stuck on the island: When you are shipwrecked on the beach go through the undergrowth and pick the flower. At the restaurant, don't eat the meal you are given, but go to the buffet, get the cheese knife and leave.

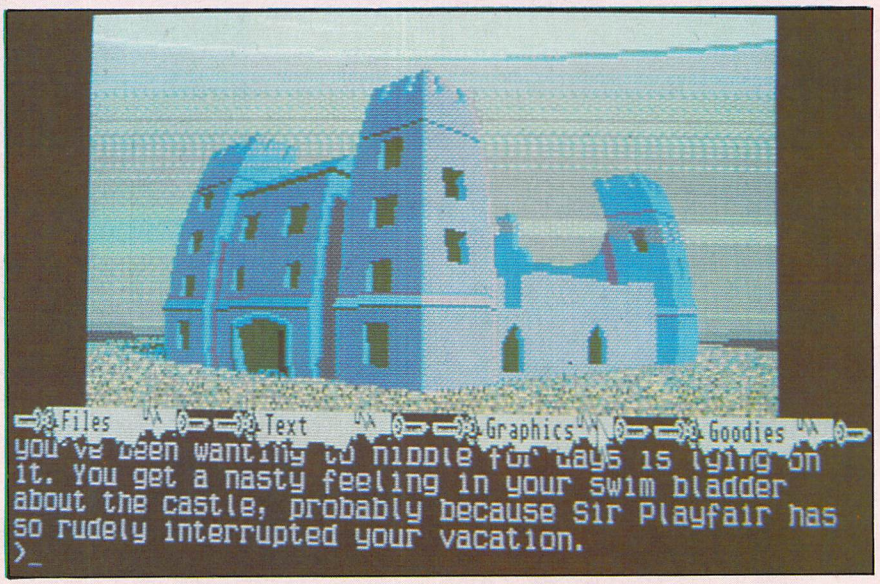
From the guest room take the soap and book of matches. Accept the attractive head of blonde hair from the barber. Become a temporary transvestite to fool the KGB agents. Give the flower to the Hari Krishna disciples.

In return, Peter asks for some assistance with Magnetic Scrolls' gem, *Fish*. Like most who have tackled this game, he cannot fathom out the maze created by the Seven Deadly Fins, and therefore cannot retrieve the cylinder.

The maze is indeed devious and cannot be mapped by most logical means. However, a few general pointers may help.

Going UP always causes exitable exits to close and non-exitable exits to open. Thus if in one location the exits are NW, N, NE and E, going UP you will find the new exits are SE, S, SW and W. DOWN is never an option, so this also helps a little.

The directions NW, NE, SE and SW are always covered by the directions either side of them in any given location. For instance, if you take the direction NW at one location, W, N and NW will not exist at the next.



There's help below if you're stuck in Magnetic Scrolls' Fish

This knowledge can be used to trace a route to recover the cylinder within 12 moves and crack the maze. Try it and see.

While on the subject of Fish, I should point out a little bug in the game. When you enter the sound recording studio through the jagged warp, do not type PUT TAPE IN PLAYER as you will find that you will unable to remove it. Instead enter PLAY TAPE IN PLAYER.

Mr K. Easom-Taylor is experiencing difficulties in the first part of Mandarin/Level 9's superb *Lancelot*.

You will need to take the pillow to Servage in order to defeat Nabom. You must also not choose any of the queens at Castle Chariot but instead should accept Morgan's gift.

The Turquin Manor obstacle is slightly more complex and you must solve the gateway problems before releasing the knights from the lower prison.

I must next thank Allen and Mark Errington for a superb solution to Space Quest III, which now goes on file. Like Peter Lewis, they ask for some help in return, and I am happy to oblige. In this case it is with *Manhunter New York*.

This is an adventure I have yet to complete, so in order to give assistance to their plight I had to refer to one of RGB Marshall's excellent audit trails.

Apparently they have located the crowbar and discovered the body in the park but are stymied for a next move. From RGB's meticulous notes, you should notice the P on the corpse and take the note and hanky. Access Info on Mad and enter the correct names – from your little piece of detection – to be given the necessary addresses.

Now venture to their appartment in the next stage of your investigation. By the way, the museum must be entered by the side door, and in this case, do use a key.

Finally, Paul Gowan writes to say he is stuck in Level 13 of *Dungeon Master*. I know that the Flammit is a useful weapon at that level, but can any reader provide more specific help to Level 13 of this cerebrally taxing epic.

More hints and tips next month.

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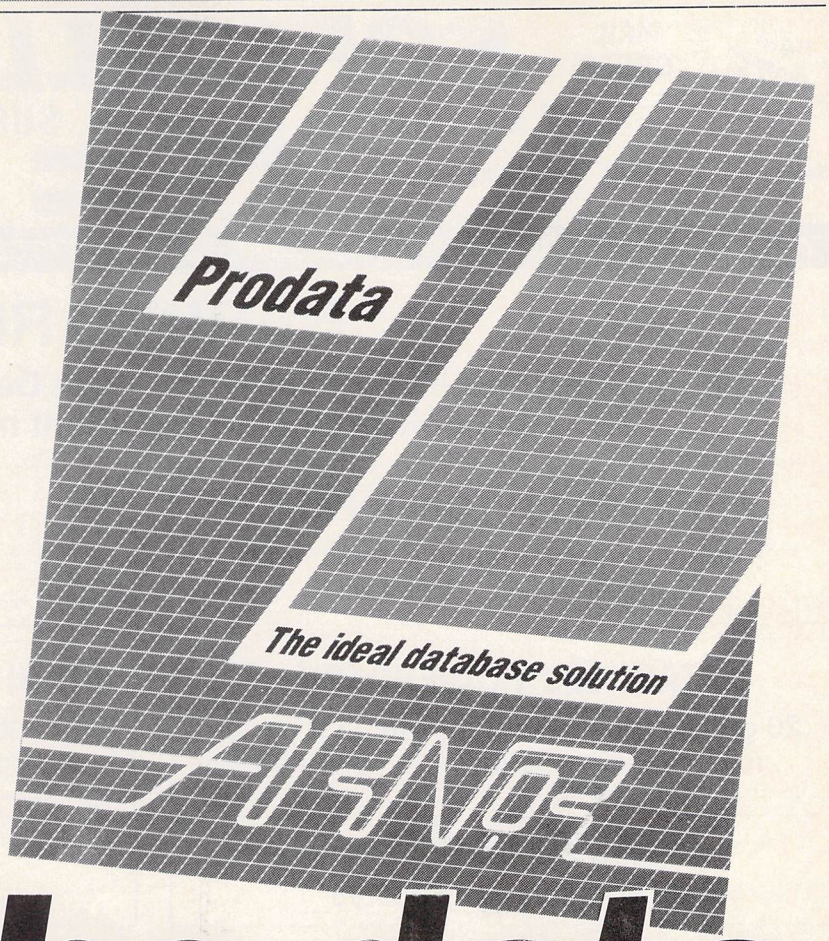
Access

Prop. M.J. Cooper

Phil Lawson previews Prodata, latest database from Arnor

A new eye on the data



NOT content to sit back on the success of Protext, the team at Arnor has been busily at work on a powerful database package, not entirely surprisingly called Prodata.

A database is simply a way of storing masses of information, and there are various ways of comparing and retrieving it. The data is contained in what are known as records and fields, which are similar in concept to the cards and lines on the card in a manual card index.

Product: Prodata
Price: £79.95
Supplier: Arnor, 611 Lincoln Road, Peterborough PE1 3HA.
Tel: 0733 68909

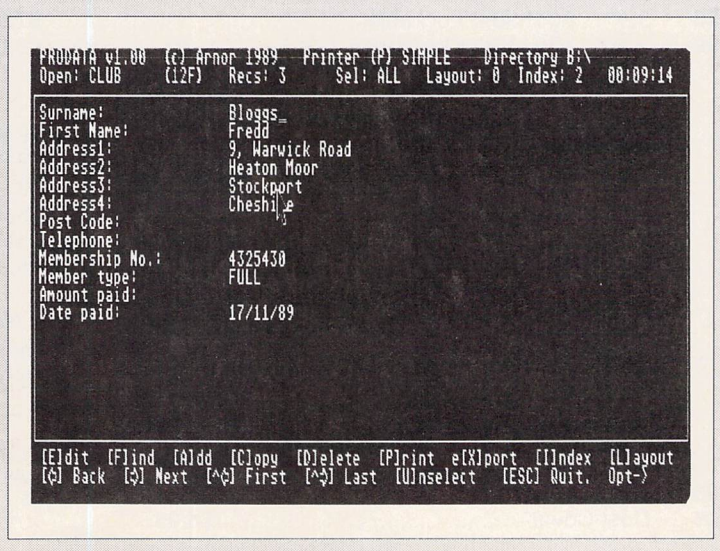
Like most databases, Prodata is able to scan any one of these fields for the required facts. Several fields, such as name, address and telephone number, can be grouped together as a single record. Extra fields can be added to the records at any time, up to a maximum of 300 – which should be more than enough for most purposes.

You have complete control over how the data is to be displayed, either on screen or a printer. For instance, you may design a layout which leaves the right side blank to include diagrams from an art package.

Changing this layout is possible without destroying the data that it contains, and 100 different layouts can be stored for recall and use at any time. You can also include commands to draw lines and boxes, so that tables of figures can be printed.

As Prodata has just been released, there's a function to import existing data from other software, which can be checked and modified at the same time. The ability to protect your files from prying eyes is a must. Using the password facility you can restrict users from examining any or all of your records.

Totally menu driven, Prodata must rank among the top database systems for the Atari ST. It is impossible to examine all its facilities in a short space, so an in-depth review will be appearing in next month's issue.



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Using the cover disc

Place the disc in the drive and switch on, then double click on README when the desktop appears. If you have a double sided disc drive you can double click on the SIDE–2 folder to access the programs on side two of the disc. You can't do this if you have a single sided drive. Some of the files have been archived to save space. These can be recognised by their .ARC file extension. To de-archive CAMERA2.ARC for instance, copy ARCX.TTP and CAMERA2.ARC to a blank disc. Double click on ARCX.TTP and enter CAMERA2 into the box.

SIDE 1

Tax planner

PAGE 74

Make the tax laws work in your favour and cut your bills with this powerful utility program.

Starwrek

PAGE 72

Escape from the USS Less in this spoof adventure based on the popular cult TV series.

Space Invaders

PAGE 74

Blast it! We're not racist, we just don't like aliens. Pick up your laser gun and give 'em hell.

Battleships

PAGE 72

The classic wargame now updated for two players on two STs linked by an RS232 cable.

IMGprint

PAGE 74

Load and display monochrome IMG picture files then convert them to Degas PI3 pictures.

SIDE 2

Pools Predictor

PAGE 73

This fascinating program will help you forecast next Saturday's football results. It beats sticking a pin in the coupon.

Quick Find

PAGE 74

Search your discs for lost files with this short but powerful Gem-based file and directory viewer.

Quick View

PAGE 72

Load and display up to four Ascii text files then browse through them with ease.

Kid Story

PAGE 74

Let your children make up their own fairy tales, then watch the micro tell the complete tale.

Stacatto

PAGE 73

Sit back and relax to soothing classic melodies, or get down and boogie with the latest pop tunes.

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Atari ST User,
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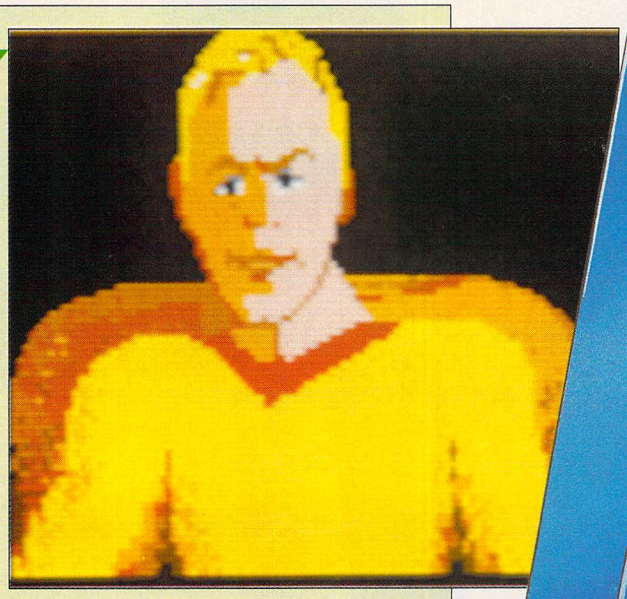
Disc problems?

If you have any difficulties loading programs from your disc it will be replaced free of charge. Send it with your name and address to: Protoscan, Burrel Road, St. Ives, Cambridgeshire PE17 4LE.

If you damage the disc yourself please include a cheque/postal order for £1.50 made payable to Protoscan. If the disc has been damaged in transit please return it to Database Direct at the address shown at the foot of the order form on Page 119.

Starwrek



SIDE 1

To load: Double click on the STARWREK folder, and then again on STARWREK.PRG.
- [x] **Low resolution**
- [ ] **Medium resolution**
- [ ] **Monochrome**

BASED on the hit TV show, Star Trek, this tongue-in-cheek graphic adventure sets you as the newest member of the crew, and if you're a fan of the series you'll know that all new members are killed off in the first five minutes, so take care.

This cover disc version is much smaller than the full game, but is still large enough to present you with a few puzzles that will have you scratching your head. Your aim is to escape from the starship, which is far from easy.

When stuck try using lateral thinking instead of cold-blooded logic, and look out for the clues in the graphics and text.

As with all adventures, an exploration of your immediate locations will help later on. Search everywhere and examine everything you find.

This game contains enough for the adventure puritan, as well as being a must for any Treckie fan. Each location is accompanied with graphics, as are some of the objects you'll come across. They're well drawn and add to the game's humour.

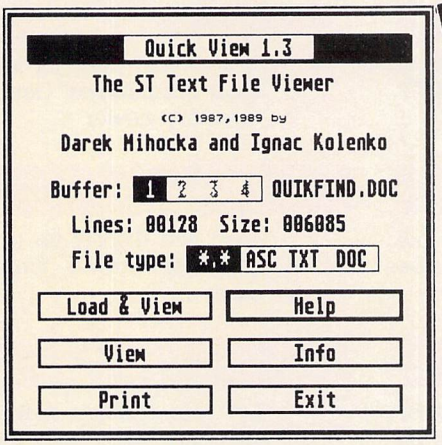
In this month's issue you'll find a full review of Starwrek and an article by the author showing how to get your software published.

● *Starwrek is available at £19.95 from Hat Software, 21 Wyle Cop, Shrewsbury, Shropshire SY1 1XB. Tel 0743 231763*

Quick View

SIDE 2

To load: Double click on the SIDE_2 folder, then again on the QUIKFIND folder and finally on QUIKVIEW.PRG.
- [ ] **Low resolution colour**
- [ ] **Medium resolution colour**
- [x] **Monochrome**



QUICK View, a handy shareware utility written by Darek Mihocha, is designed for browsing through Ascii text files on disc. You can, of course, display them from the desktop by double clicking on them and selecting the Show option, but Quick View also allows you to scroll forwards and backwards through the text and toggle between 24 and 48 lines.

Double click on QUIKVIEW.PRG and use the standard Gem file selector to choose the text file you want to display. The up and down cursor keys scroll the text one line at a time in the appropriate direction, and one screen at a time if you hold Shift down at the same time. The Home key takes you to the start of the text file, while Shift+Home takes you immediately to the end.

Press the Escape key to go to the menu dialogue box. From here you can choose to display a different text file, print the current one, set the file extension in the file selector search mask and access a help screen.

RS232

SIDE 1

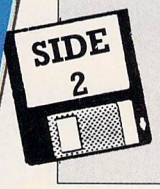
To load: First boot up Fast Basic then you should load BATTLEX.BSC from the LISTINGS folder.
- [x] **Low resolution colour**
- [ ] **Medium resolution colour**
- [x] **Monochrome**

ONE thing the ST is short of is simple games that make good use of its facilities. Among the least used of these is the RS232 serial port, apart from comms that is. Now, thanks to Fast Basic and some clever programming, we can offer a head-to-head version of the all-time classic Battleships.

To play you will need two STs with monitors and a null modem cable — a cable that connects the two RS232 ports. Connect the STs with the lead, boot up the game and you're ready to start.

The game first displays a couple of alert boxes — simply press Return to proceed — then the message: Guru

Pools Predictor



To load: Double click on the POOLS folder then on POOLS.TOS.
- ☐ **Low resolution colour**
- ■ **Medium resolution colour**
- ■ **Monochrome**

POOLS Predictor is a very easy to use package for predicting the football results. These can then be output either to the screen or printer and used to pick out the draws on your coupon.

At the start of a new season the program will predict results at random, as it hasn't any form to work with. As results are entered during the season the program becomes more accurate as the results databases are updated.

The main menu has options to Create a fixture list, show the league tables, predict match results, input match results, input midweek fixtures and results, modify the league table and modify the divisions.

The data files are already set for the start of 1989/90 football season, but you'll first have to select option six to modify the league table. This allows you to enter the number of games played and points gained.

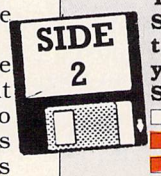
When first used the options Predict and Input Match Results will default to the Create Fixture List option, as when asked to predict results it needs to know which matches to predict.

At the start of a new season select the Luck for the first few weeks while the teams find their form for the new season.

The Form option is possible as the form figures from the previous season can be carried through.

The option Modify Divisions is protected to prevent you accidentally modifying the data files. The password to enter at the prompt is CONFIG.

Staccato



To load: Double click on the SIDE_2 folder, then again on the STACATTO.FLD folder. you should double click on STACCATO.PRG to run.
- ☐ **Low resolution colour**
- ■ **Medium resolution colour**
- ■ **Monochrome**

STACCATO draws a piano on screen so that you can load and play a wide variety of pieces of music stored in folders inside the STACATTO.FLD folder. You can choose pieces yourself or play a game where the ST picks the music at random while you guess the title.

You can also compose your own pieces, the music being stored as simple text files. It is possible, by means of a text editor to add your own tunes to the repertory.

You are first asked whether you are an amateur or expert user of Staccato — the program provides less help on the expert level. The next question is whether you want to listen to music or guess the titles. If you choose to listen use the file selector to pick the music.

When the tune has finished the file selector will be displayed ready for you to choose another piece. You can stop a piece at any time by clicking on the right hand mouse button.

If you choose to guess the tune you indicate the type of music by choosing a folder with the file selector. Press the right mouse button as soon as you think you know the title — this stops the music and you can indicate, again using the file selector, which file it was. You'll know from the cheery or dreary tune whether or not you identified the music correctly.

Battleships

meditation commander — clearing buffer. The input/output buffer must be cleared on both machines at about the same time or the game may fail to work. To do this, just make sure both programs are run at the same time.

Next you decide where to place the units under your command — the artillery, cruisers, submarines and aircraft. In this version of the game aeroplanes are not allowed over land, nor infantry in water. The unit being placed is shown at the bottom of the screen, so you know what comes next, and each item has its own type and definition.

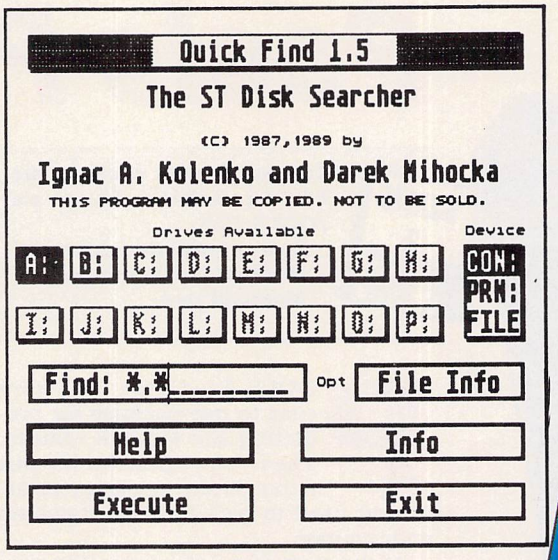
When you are both ready, decide who will attack first and who will defend. If you cannot decide click on Auto and the machine will choose for you. During the attack phase, select a square to attack and click on it. Whether you hit or miss, a message will be displayed telling you what happened. The colour of the square tells you what, if anything, you have destroyed. This will help you to destroy all the enemy forces.

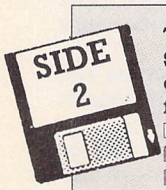
During the defence phase you will have to sit back and wait for the enemy to move. A message will be displayed telling you if they hit something. The damage map will give you some idea how well you are both doing. The game is won when one side has lost all its forces.

The null-modem connecting cable is easy to construct because you only need to connect three wires. No handshake connections are required for Battleships RS232. We recommend the lead is no longer than a few metres, otherwise data errors may start to crop up.

You'll need two 25-way female D connectors and a length of cable. Connect pin two (transmitted data) of the first plug to pin three (received data) of the second and pin three of the first plug to pin two of the second. Then connect pin seven (ground) to pin seven. What happens is that one ST transmits the data out through pin two and the other ST receives it through pin three, so you cross connect pins two and three.

Quick Find





To load: Double click on the SIDE_2 folder, then again on the QFIND15 folder and finally on QUIKFIND.PRG.
- ☐ **Low resolution colour**
- ■ **Medium resolution colour**
- ■ **Monochrome**

QUICK Find by Ignac A. Kolenko and Darek Mihocka is a shareware program developed for locating files. Although it may usually suffice to open a window from the ST's desktop to do this, it doesn't allow for search masks in the directory listing. Quick Find lets any number of drives to be searched, producing output which can be printed to screen, printer or file. Thus it can also double as a disc cataloger.

To use Quick Find, double click on the file QUIKFIND.PRG. A dialog box will appear, and the screen colours will change to white, black, red and green on a colour monitor. Enter your search mask in the edit field, select the drives you wish to search, and click on Execute to begin.

Each line of output consists of the attribute bits of the file — where a is an archived file, v is the volume label, s is a system file, r means the file is readable, and w is writable — the length, date and time stamp, and the path to the file.

If you click on the options box you will be presented with a new dialog box where you can choose options which will apply globally to all the files found in the file search once you press Execute on the main menu dialog box. These are the options available:

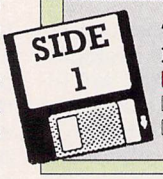
Touch: Update the date and time stamp of the files.
Hide: Set the hide attribute for each file.
Unhide: Reset the hide attribute.
WP: Write protect each file found.
UnWP: Un-write protect each file.
Delete: Delete all files found. Use this one with caution!
Arc: Set the archive bit on all files found. Useful for performing disc backups which check the archive bit for files that have already been backed up previously.

You can change the output device from the default CON: to PRN: (printer), or select a file to save the output to.

When you carry out a search with FILE selected a standard file selector will appear, prompting you to pick an output file. When viewing on the screen, pressing Control+S will stop the output, Control+Q will start it up again.

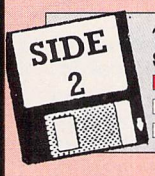
An important point for hard drive users: Due to the 40 folder bug in TOS, keep tabs on how many times searches are carried out.

Space Invaders



To load: Double click on INVADERS.TOS.
- ■ **Low resolution**
- ☐ **Medium resolution**
- ☐ **Monochrome**

Kid Story



To load: Double click on STORY_14.PRG.
- ■ **Low resolution colour**
- ☐ **Medium resolution colour**
- ☐ **Monochrome**

KID Story is an interesting utility aimed at young children which allows them to create their own stories. Once constructed, they are then displayed on the screen using both text and pictures. It might sound a strange idea, but the stories are very entertaining and great fun.

When the program is run you have three options. Click on INFO to read some background information on the program and others written by the author, Dorothy Brumleve. Click on STORY to write a story.

The STORY option allows you to create the fairy tale. You'll be presented with menus made from small picture icons displayed on the screen. Point and click on a picture to select it, then you'll move on to the next menu.

When you have finished, the story will be constructed from the picture icons and displayed on the screens along with accompanying text.

Personal Tax Planner

SIDE 1

To load: Double click on the TAX_PLAN.NER folder and then on TAX_PLAN.TOS.
- ☐ **Low resolution**
- ■ **Medium resolution**
- ■ **Monochrome**

PERSONAL Tax Planner (PTP) is a menu driven, but not Gem-based, income tax calculator which can be used to work out your tax liability for any year. Once the data has been entered it can be saved or amended, allowing a certain degree of "What if..." calculations to be performed.When you boot up the program you'll be presented with a menu consisting of eight options:

Enter data: Select this to enter your personal details – it's like filling in a tax return and it helps if you have some understanding of the tax laws, reliefs and benefits available.

The tax year runs from April 6 to April 5 the following year. You can enter your wife's earnings, if relevent, and PTP will tell you whether any savings are possible if she is taxed separately. Widow's bereavement allowance, housekeeper relief and dependent relatives are catered for.Retirement annuity premiums when in non-pensionable employment, employments and offices – tax perks like a company car – can be entered. Income from self employment is entered under the Trade Profession or Vocation heading. The data is usually based on the accounts for the year before to the start of the tax year.

Losses can be entered under Self Employments and Property income by entering a negative figure. Bank deposit interest is usually payed net of tax, however, gross interest can be entered in the Untaxed Interest category. when you have finished the main menu screen will be displayed.

Amend data: Choose this menu option to correct any mistakes you made when typing in your tax details, or to perform "What if..." calculations.

Examine data: This allows you to look at data you have entered.

Income tax computation: This option performs the calculations on the data and displays your tax liability. It also provides extra information when relevent, such as whether your wife should be taxed separately, class four national insurance and the amount of retirement relief available.

Save data: As the name suggests, this option saves the data you have entered.

Load data: Retrieves saved data.

Change tax year: This menu option won't work with the cover disc version of PTP and you're stuck with 1984/85. If you want to calculate your tax liability for any other years, such as last year's or the current one, you'll have to buy the full version of the software. PTP can also be updated by Digita should the government change any of the tax laws in the Budget.

● *Personal Tax Planner costs £39.95 and is available from Digita International, Black Horse House, Exmouth, Devon EX8 1JL. Tel: 0395 270273.*

TAKE a trip down memory lane with this fast-paced action packed version of that classic arcade game, Space Invaders. This ST clone is written in 68000 machine code by *Atari ST User* reader, Robert Leong from Dublin in Ireland. It may be as old as the hills,, but Space Invaders still generates a lot of interest among shoot-'em-up fanatics. Boot up the program and you'll be resented with a menu screen.

Use the joystick to move the pointer up and down the menu and the fire button to select an option. Choose the difficulty level from Easy, Medium or Tough and the style of graphics from Modern or Classic. Move the pointer down to Start and press fire to begin the battle.

The gameplay couldn't be simpler – blast those aliens and prevent them from landing. If you succeed then the next wave of aliens descend and these are tougher and meaner than the last.

IMG print

SIDE 1

To load: Double click on the LISTINGS folder then on IMGPRINT.PRG.
- ☐ **Low resolution**
- ☐ **Medium resolution**
- ■ **Monochrome**

THIS handy utility was published way back in the June issue, so if you missed it or didn't type in the listing it's now on disc, along with some superb picture files for you to examine. The program will load and display pictures saved with an IMG file extension, and the ones on the disc were created using Kempston's Daatascan hand scanner.

When the utility is run a standard Gem file selector is displayed. Use this to select the IMG file to load and click on OK. The picture is decoded and drawn on the screen. Be patient, as this takes quite a while for large pictures.

If the image is too large to be displayed on the screen just a small part of it will be shown. Use the cursor keys to scroll the picture up, down, left or right to see the rest. Press S when you've seen enough and an alert box will pop up and ask if you want to save the picture as a monochrome Degas PI3 file.

The pictures have been archived to save space and will require de-archiving before they can be used. This is easily done: To de-archive FACE1.ARC, first copy ARCX.TTP and FACE1.ARC to a blank disc. Double click on ARCX.TTP and enter FACE1 at the prompt. Now you can boot up IMGPRINT.PRG and load the picture.

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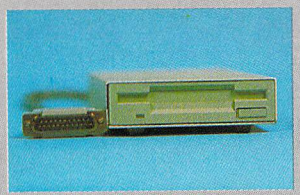

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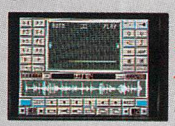

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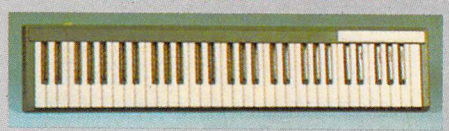

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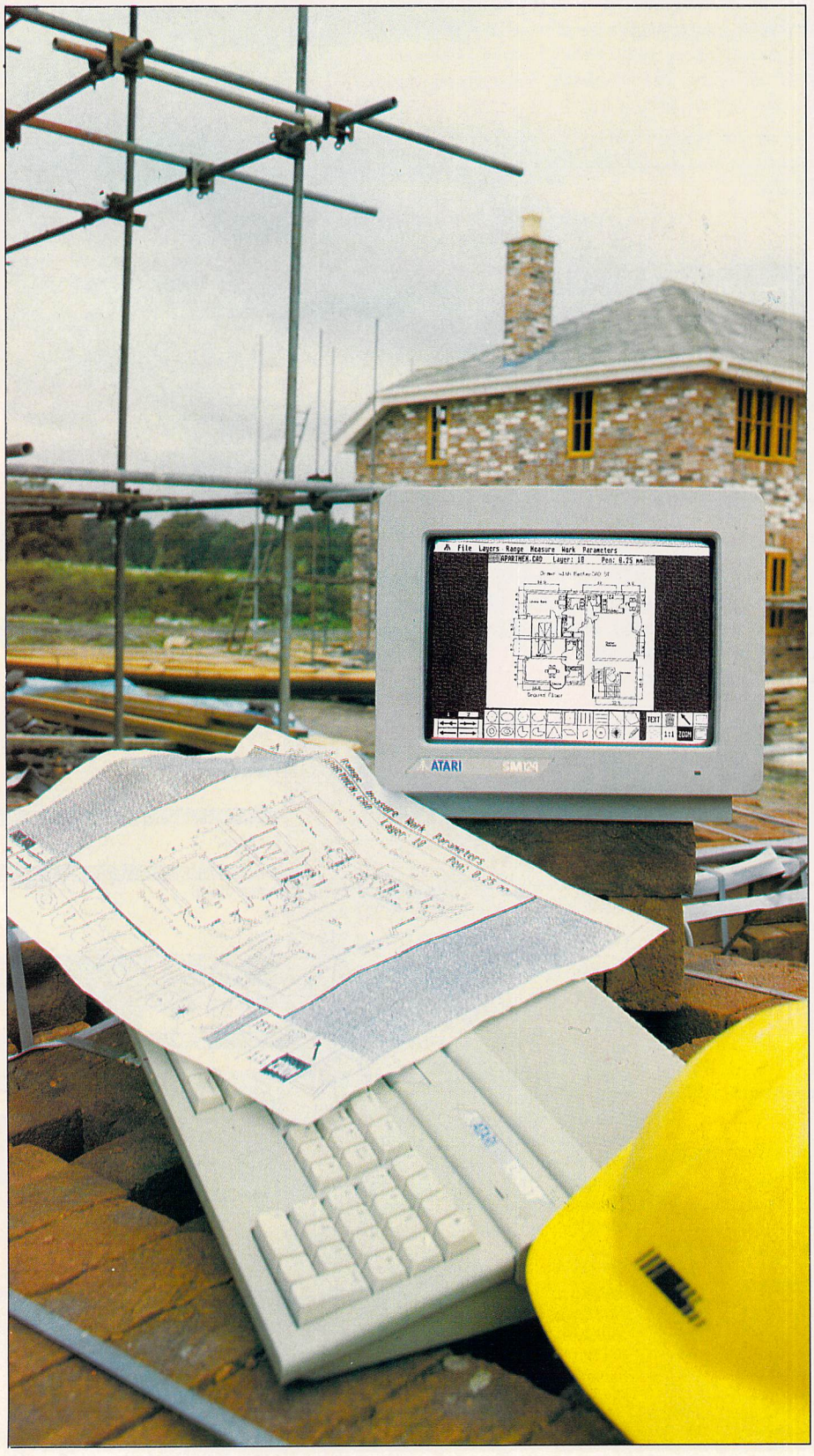
STF4

A willing workhorse, but no thrills

Dominic Boyes tries out BeckerCAD, latest graphics package from Abacus



AS the ST gets older, so the available software and the user's demands upon it become more sophisticated. Adding to the range of professionally targeted programs, Abacus, provider of such capable titles as PC Board Designer and Paint Pro, has launched BeckerCAD ST. Priced at £229, it attracts comparison with similar basic CAD packages such as GFA Draft Plus or Campus CAD.

The program supports all screen resolutions, and requires a minimum of 1Mb of ram with a double sided floppy disc drive. Serious commercial applications would call for a hard drive and high resolution monitor.

It is supplied as a set of three discs with a substantial manual that any program of this complexity demands. The manual's tutorial guide to developing a room layout is poorly illustrated and for a first time user is unclear.

BeckerCAD behaves very much as a professional CAD system would, being object oriented and component based. Each item, such as a chair, is made of components – a seat, back, and arms – allowing modification of each without having to re-draw the whole.

This is a fundamental of CAD, where there is an acceptance that the original input of information will take longer than traditional drawing, but the ease of making changes minimises the most expensive item – the operators's time.

Parts drawing is a simple operation of selecting a drawing tool from the 20 icons across the foot of the screen. A further 20 are accessed by toggling between tool icon selectors one and two, the one currently in operation being shown in reverse video.

With such a range of tools, each of which can be used in various pen thicknesses, the program's versatility is quite impressive, particularly for its more unusual drawing techniques. For example, it is simple to define the exact number of rays from a point, and the calibration of a line into equal fractions at the stroke of a key. Concentric circles and ellipses as standard tools are a godsend, particularly for engineering drawing.

Angled drawing and rotation is also simply performed, even allowing multiple replication of components through the specified angle, though specification of the angle from the horizontal leads to confusion, and

adoption of the more standard reference to angles as bearings would be an improvement. This may be a small matter, but in constant use such irritations can assume disproportionate significance.

BeckerCAD makes good use of the mouse for all operations and the Wimp-based system allows short keys to be used for many commands. It also possesss a powerful Undo and Reinstate tool that permits a step by step back-tracking of past operations and can then reverse the process back to the complete drawing.

An overlay grid may be toggled on or off and is specified to any square dimension. Grid snapping is also available, though such Utopic ideals as modular sizing never occur in practice.

In a budget CAD package it is encouraging to find BeckerCAD has a layering ability. This allows users to build up a drawing to show different levels of information. For instance, a house plan may show the walls on layer one, doors and windows on layer two, furniture on layer three, with text and dimensions on successive layers.

With a potential 300 working planes, BeckerCAD's capability in this department exceeds that which its price would suggest. The potential to show as many or as few layers as required at any time allows drawings for differing purposes to be generated from the same database.

Comprehensive

The handling and movement of components is totally mouse controlled, and comprising "parts" – collections of lines and vertices – can be in part or whole form.

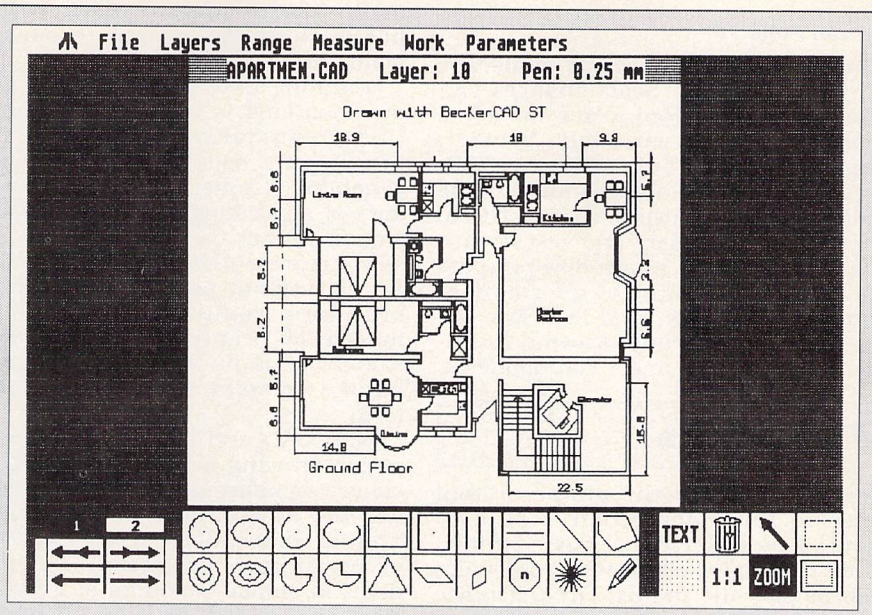
The movement option also contains interesting capabilities in form variation, for in selecting an object an imaginary frame comprising nine drag boxes is overlaid upon it. Straightforward free movement is undertaken by selecting the central box of the three by three arrangement. Stretching the component is possible in one direction only by dragging the central box on each side, or in two dimensions with a corner box.

A great deal of work may go into the creation of a component, so there is the ability to store and accumulate a personalised database in addition to the extensive library of components on disc.

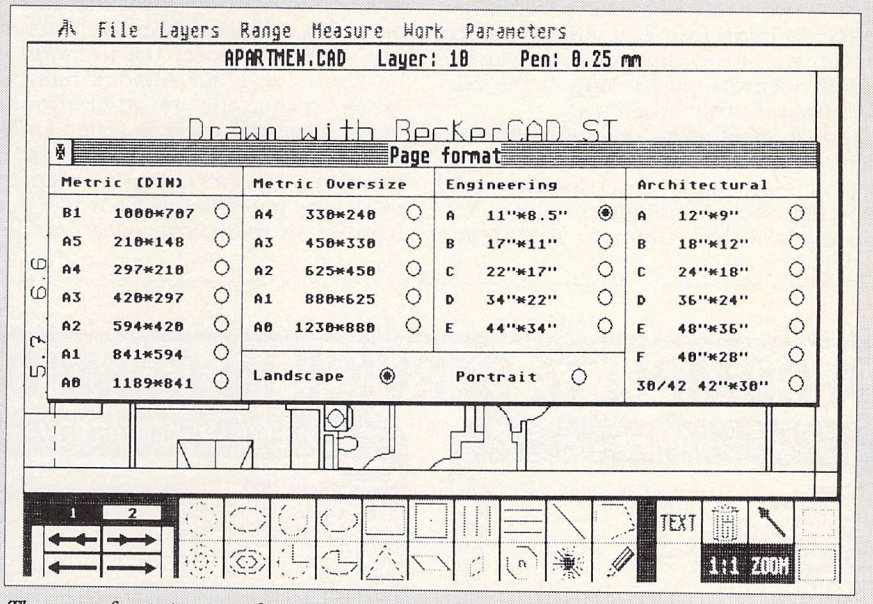
The five categories of library components supplied with BeckerCAD comprise electronic, electrical and mechanical services, and architectural symbols. For the last, the range is quite limited and it must be said these are suited solely to space planning rather than architectural uses.

Working parameters can be set or revised at any time in the compilation of the drawing. These allow the specification of 24 standard paper sizes

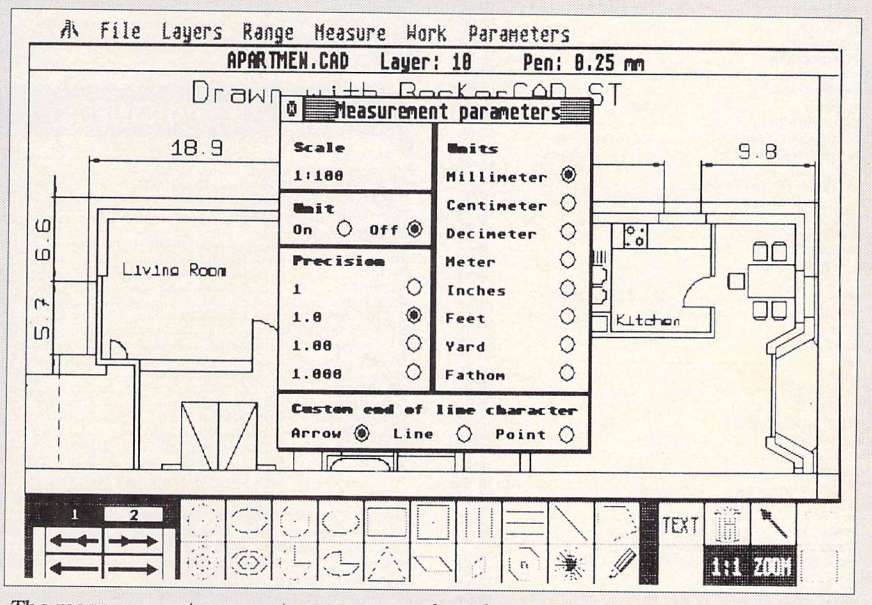
Turn to Page 80 ▶



The program's functions are accessed by pointing and clicking on the tools at the bottom of the screen pulling down the menus



The page format menu showing the vast range of sizes available



The measurement parameters menu overlayed on to a magnified section of the drawing

◀ From Page 79

from A5 to A0, and each in landscape or portrait format. Scale changes can also be readily revised to accommodate those infuriating variations between imperial 1/48th and metric 1/50th drawings, and will also instantly revise a dimensioned drawing from metric to imperial measurement and vice versa. The standard working window presents an adequate amount of information, and the crosshairs used to define the starting point for any drawing operation also display X and Y coordinates.

Tolerances

Depending upon the shape or tool selected this information is supplemented by other data. For example, while drawing a circle the cross hairs also display the radius, circumference and area. This display can prove an irritation however, as it masks the area directly adjacent to the cursor. The cross hairs can be removed, but when space is available elsewhere on the screen masking part of the drawing makes accurate positioning of the cursor unnecessarily awkward.

Screen resolution and mouse movement do not allow a level of dimensional precision many CAD users would demand, and an inability to plot to tolerances less than 10mm at 1/50th is a major shortcoming of BeckerCAD, nor is there the option to specify points numerically.

Scanning time for re-drawing and modifications is very quick, though this presumably has been at the penalty of a solely two dimensional capability. I must question the wisdom of suggesting that three dimensional objects can be designed and safely represented in plan form only. An elevational potential must be a minimum requirement for CAD. Indeed the beauty of CAD in professional use is its ability to show and handle complex three dimensional form.

With CAD and traditional pen and paper drawing being the means for conveying information it is difficult to see the advantages of BeckerCAD over its competition offering isometric or perspective projection, for both demand similar amounts of information input for greatly differing rewards.

Beckercad is certainly no graphic toy and is at best a workhorse without frills, thrills and spills. In its current guise I suspect the program will be short lived, for Abacus has been quick to upgrade its other products in the past and there is scope for that here. If improvements are in the pipeline BeckerCAD is certainly worth the investment, for it has many features of more expensive and more powerful packages.

In business use however, it is often the cost of the user's time rather than investment in hardware and software that is the priority, and in this respect the limitations of the bargain basement, albeit a lot of program for your pennies, may prove momentous.

On the other hand, there are undoubtedly many designers who do not have requirements outside the capabilities of this package. With a workload comprising a high percentage of repetitive drawing, BeckerCAD could prove to be an economic asset.

FACT FILE

Product: BeckerCad
Price: £299
Supplier:Abacus Software,DT Distribution,18, Norwich Avenue, Rochdale, Lancashire OL11 5JZ.
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AGAINST:
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Elliot Stein checks out three desk accessories to add to your boot disc

TAKING centre stage in the computer world are arcade quality games, dazzling graphics and animation programs, powerful text crunching word processors and intelligent business programs. But often lost in the background are the essential desk accessory tools and utilities.

Flexcessory, from ENS Distribution, solves the six desk accessory limitation imposed by Gem in a unique way. It still doesn't allow you to load more than six desk accessories into the computer, but instead gives access to 15 standard TOS applications, all stored under one accessory name.

With Flexcessory you can take many of your favourite TOS and TTP programs and use them as if they were desk accessories. When chosen, it offers you a menu with options to load and run applications, unload one or more applications, or configure the program.

The configure menu lets you customise Flexcessory to suit your own needs. One useful feature is the re-sizable ram disc and print spooler, which can be added or taken away at any time without having to reboot the ST. You can also place a clock in the upper right hand corner of the screen, and set applications to load automatically on boot-up.

Fifteen applications are available, including a sophisticated notepad/mini text editor, control panel, Dos functions, V52 Emulator set-up, printer configuration, snapshot, calculator and screensaver. Most are similar to desk accessories available in the public domain.

The real strength of the program lies in the ability to use other applications as desk accessories. You can use such diverse applications as Neochrome, CP/M Emulator, and ST Replay as desk accessories from within other programs. It also makes many other applications, especially public domain software, a great deal more effective.

So what doesn't Flexcessory run? Apart from programs which use Gem drop down windows, it has trouble with programs incorporating a separate RSC file.

If you expect every application to work with Flexcessory you will indeed be disappointed. However, if you hold no expectations, you will be surprised by this well programmed accessory. At only £29.95, this is a welcome addition to the desk accessory slot. While the latest in paint packages and desktop publishing easily make their way to the shelves, often the best of utilities have trouble getting distribution. Superb performance and practicality often aren't enough – showmanship, hype and spectacle are needed. Such is the case for two American programs struggling to make their way to European shores.

The first is an auto folder program called The Universal Item Selector (UIS), which replaces the inefficient Gem selector.

Its most obvious quality is that it makes the process of using the selector faster and more convenient. Examining files on several partitions with the standard selector can be a chore for hard disc users, as you must constantly enter the drive you want to see at the top of the selector.

With UIS, each drive is given its own button. All you have to do is click on the right drive and its contents are displayed. If you want more information about the programs on disc, a scroll bar revealing the size of the file, the date and the time it was created is displayed. You can also choose to have files listed by these criteria or alphabetically.

The top of the selector displays six file extenders to make selection more organised. Clicking one changes the current search mask so you can easily find all the files on the disc which end with DOC, NEO or whatever. These masks can also easily be manipulated and changed according to your needs.

This easy-to-use shell features formatting, renaming, deleting, copying and moving one or more files. The Move option, a handy facility not available from the standard Gem desktop, allows files to be moved to different folders on the same disc without having to copy then delete the original.

Selecting the Format button gives options for 80, 81 or 82 tracks with 9 or 10 sectors. It's a convenient option to have within the Gem selector, especially when caught in the middle of a program without any blank formatted discs available.

The disc status box allows you to set programs as read/write, write-only, shown or hidden. There are also search facilities featuring wildcards for scanning all the folders for the file you need. Other convenient features include printing file directories, printing unformatted copies of files and extended file display.

Individually the components may not seem particularly exciting, but when packaged in the Gem item selector they take on a new lease of life. So it's good-bye to the old Gem file selector... and good riddance!

The second American program, DeskCart, comes close to being one of the best multi-feature desk accessories available. It is similar in concept to Backpack, with 14 accessories occupying one DA slot and contained on a rom cartridge to save memory.

It's crammed with useful applications, all easily accessed while running a program – you never know when you're going to need a calendar, diary, notebook, card file, calculator or address book.

Though having an address book or notepad in a desk accessory slot is hardly new, the appeal of the program is having them all in one desk accessory slot and stored on a rom.

The calendar is a particularly useful feature which begins by displaying each month of the year. By clicking on a particular day, the diary menu for that date appears.

The diary is a mini-database which stores all of your appointments and can tie in with an alarm. There are also facilities for making a hard copies of your daily appointments.

Particularly useful is the macro editor with which you can create your own shortcuts on the keyboard. With it can be built a set of macro keys for phrases and key sequences used most often for the programs running under Deskart. The one failing of the macro facilities is that it stores text only, not

> ‘Remember, superb performance and practicality often are not enough’

commands such as Control and Alternate.

Another pleasant surprise is the ram disc. At any time, you can create, resize or remove it from memory.

There are a sprinkling of other commonly seen yet useful utilities such as a print spooler, control panel, disc utilities, a screen dump with easy-to-change printer driver and a bare-boned VT52 terminal.

As the DeskCart cartridge contains a battery driven real-time clock, it also becomes an alternative to having to use a separate clock cartridge or fitting an internal one.

The functions are generally well programmed, each containing all the features which you'd expect from such a desk accessory, plus a few extras into the bargain.

Perhaps the only feature it lacks that its British cousin Backpack has, is the ability to export data to the program running under it. For example, if you are working out a calculation in Backpack's calculator, by clicking the Off button, the result would appear in the word processor.

This feature is particularly useful, especially in the case of looking up an address in the address book and transferring it to a letter in the word processor. If this is a feature which you often use, its absence in DeskCart becomes frustrating.

DeskCart is a well designed and convenient package. For those who cannot wait until a UK distributor decides to take them, both programs can be obtained directly from the USA.

FACT FILE

Product: The Universal Item Selector
Price: £29.95
Supplier: ISM, 5 St John's Road, Sandown, Isle of Wight, PO36 8ER.
Tel: 0983 405655

POINTS FOR:
Powerful and full-featured replacement for the Gem file selector.

AGAINST:
Nothing substantial.

Product: DeskCart
Price: $99.95
Supplier:Quantum Microsystems Inc. PO Box 179, Liverpool, New York, 13088, USA.

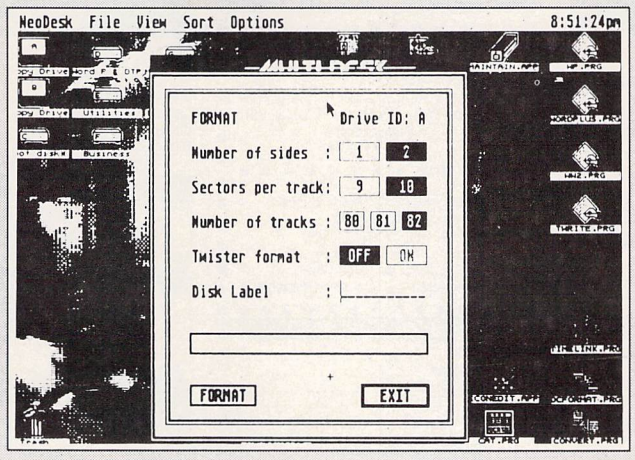
POINTS FOR:
Fourteen accessories in one rom cartridge.

AGAINST:
Can't insert data into an application.

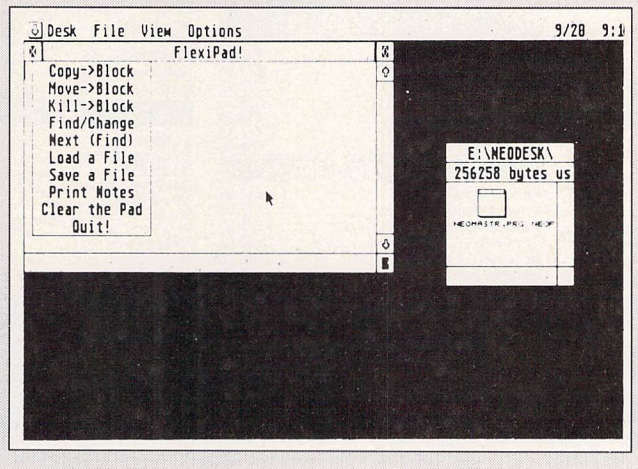
Product: Flexcessory
Price: £29.95
Supplier: ENS Distribution, 67 Sutherland Avenue, London W9 5HF.

POINTS FOR:
Transforms ordinary programs into desk accessories.

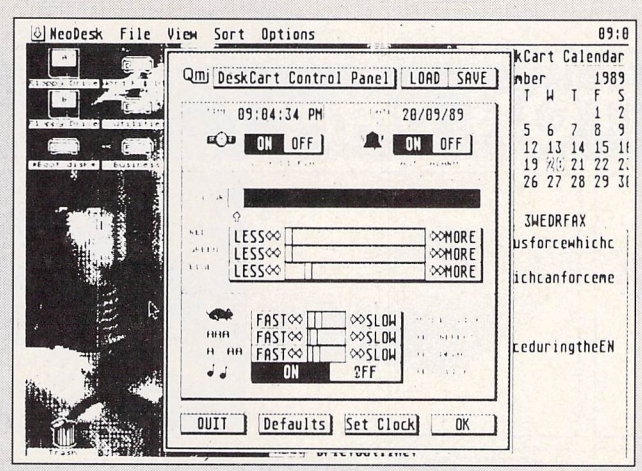
AGAINST:
Doesn't work with everything



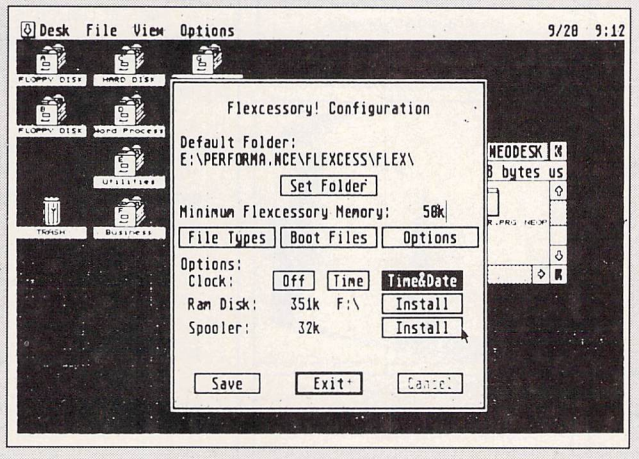
The Universal Item Selector's formatter is more flexible than Gem's



The Flexcessory Flexipad is a useful text



DeskCart's control panel replaces the standard Gem version



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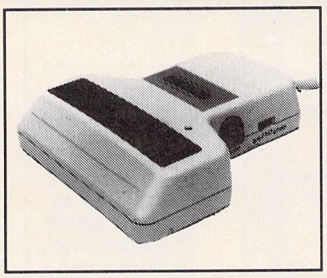

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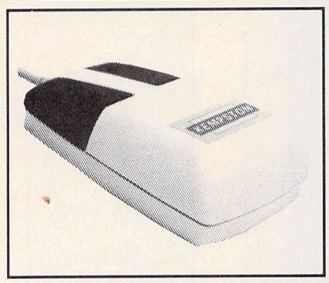

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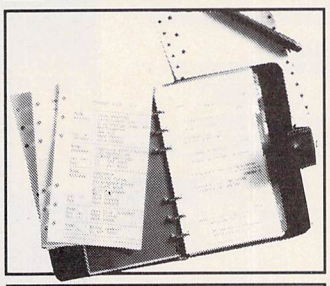

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Going for a drive

Roland Waddilove delving deeper into those OS calls

IN the first part of this machine code tutorial series we saw how to exit a machine code program without causing the ST to print a row of bombs on the screen, and also how to read a character typed at the keyboard and print one on the screen. This month we'll be using all three of these commonly used Gemdos routines in our investigation of the ST's operating system routines.

The OS is made up of Gemdos, Bios and Xbios routines and all are numbered starting with zero. I won't be working my way through them in order from the beginning as they aren't in order of complexity. I'll jump from routine to routine, covering the simpler ones first and then progressing to the more complex ones later.

The first call we'll examine this month is a straightforward one that finds out which the currently selected drive is. In other words, it asks which drive the program is being run from. The OS routine that supplies this information is *d_getdrv*, Gemdos function number 25:

```
* Program I
* Get the current drive
   MOVE.W #25,-(A7)      d_getdrv
   TRAP #1               Call Gemdos
   ADDQ.L #2,A7          Tidy stack
* Print the drive letter
   ADD.W #'A',D0         Drive->letter
   MOVE.W D0,-(A7)       Put on stack
   MOVE.W #2,-(A7)       c_conout
   TRAP #1               Call Gemdos
   ADDQ.L #4,A7          Tidy stack
* Wait for a keypress
   MOVE.W #1,-(A7)       c_conin
   TRAP #1               Call Gemdos
   ADDQ.L #2,A7          Tidy stack
* Return to the desktop
   MOVE.W #0,-(A7)       p_term_0
   TRAP #1               Call Gemdos
```

After the Gemdos call the data register D0 contains the drive number. The program turns this into the standard drive letter we are used to by adding on the Ascii value of A and then printing it on the screen. Assemble the program using HiSoft's Devpac to give a TOS file, then try running it from different drives, or even a ram disc. The correct drive letter will be printed in the top left-hand corner of the screen.

The next example is a little simpler; it sets the default disc drive. Gemdos function 14, *d_setdrv*, takes one parameter on the stack – the drive number:

```
* Program II
* Set the default drive
   MOVE.W #0,-(A7)    Drive number
   MOVE.W #14,-(A7)   d_setdrv
   TRAP #1            Call Gemdos
   ADDQ.L #2,A7       Tidy stack
* Return to the desktop
   MOVE.W #0,-(A7)    p_term_0
   TRAP #1            Call Gemdos
```

What is interesting about this call is that Gemdos returns a bitmap of the disc drives in the data register D0. If bit zero is set then drive A is plugged in to the ST. Bit one means there is also a drive B, bit two is drive C and so on up to drive P. Therefore a call to *d_setdrv* can be used to find out what drives are currently in use.

Program III is an extension of Program II – it sets the default drive then examines the bitmap in D0 and prints a list of all the drives present. Assemble it to a TOS file then double click on it from the desktop:

```
* Program III
* Set the default drive
   MOVE.W #0,-(A7)      Drive 0=A
   MOVE.W #14,-(A7)     d_setdrv
   TRAP #1              Call Gemdos
   ADDQ.L #2,A7         Tidy stack
* Print the drives
   MOVE.W D0,D7         Save bitmap
   MOVE.W #'A',D6       D6=drive letter
loop
   LSR.W #1,D7          Get 1st bit
   BCC nodrive          Drive present?
   MOVE.W D6,-(A7)      Stack letter
   MOVE.W #2,-(A7)      c_conout
   TRAP #1              Call Gemdos
   ADDQ.L #4,A7         Tidy stack
nodrive
   ADDQ.W #1,D6         Next letter
   CMP #'Q',D6          Finished?
   BLT loop
* Wait for a keypress
   MOVE.W #1,-(A7)      c_conin
   TRAP #1              Call Gemdos
   ADDQ.L #2,A7         Tidy stack
* Return to the desktop
   MOVE.W #0,-(A7)      p_term_0
   TRAP #1              CALL Gemdos
```

The bitmap is stored in D7 so it won't be corrupted by any operating system calls made – the contents of D4

Turn to Page 86 ▶

Function	Parameters	Description	Result
14	Drive.W	Set default drive	D0=drive bitmap
25	None	Get current drive	D0=drive
44	None	Get the time	D0=time
45	Time.W	Set the time	None

Op-code	Function
LSR a,b	Shift bits in *b*, *a* times
ADDI #a,b	Add immediate data *a* to *b*
DIVU a,b	Divide *b* by *a*,remainder in high word, quotient in low word
SWAP a	Swap the high and low words of *a*
BSR a	Branch to subroutine *a*
BLT a	Branch to *a* if last comparison was negative

```
* Program IV
* Get the time
  MOVE.W #44,-(A7)  t_gettime
  TRAP #1           Call Gemdos
  ADDQ.L #2,A7      Tidy stack
  MOVE.W D0,D7      Copy time to D7
* Print the hours
  LSR.W #8,D0       Roll bits
  LSR.W #3,D0
  ANDI.L #$1F,D0    Mask off bits
  BSR print
* Print the minutes
  MOVE.L D7,D0      Get time
  LSR #5,D0
  ANDI.L #$3F,D0    Mask off bits
  BSR print
* Print the seconds
  MOVE.L D7,D0      Get time
  ANDI.L #$1F,D0
  LSL.W #1,D0
  BSR print
* Wait for a keypress
  MOVE.W #1,-(A7)   c_conin
  TRAP #1           Call Gemdos
  ADDQ.L #2,A7      Tidy stack
* Return to desktop
  MOVE.W #0,-(A7)   p_term_0
  TRAP #1           CALL Gemdos

* Print number in D0
print
  DIVU #10,D0
  MOVE.L D0,D6      Save result
  ADDI.W #'0',D0    Make into digit
  BSR pchar
  MOVE.L D6,D0      Get result
  SWAP D0
  ADDI.W #'0',D0    Make into digit
  BSR pchar
  MOVE.W #' ',D0    Print space
pchar
  MOVE.W D0,-(A7)   Stack character
  MOVE.W #2,-(A7)   c_conout
  TRAP #1           Call Gemdos
  ADDQ.L #4,A7      Tidy stack
  RTS               Return
```

to D7 and A4 to A7 are normally preserved. The bits are shifted out of the drive bitmap one at a time and tested to see if they are set. Each time a set bit is found the corresponding drive letter is printed.

We'll leave disc drives for the moment and take time out to examine the ST's clock. The time is stored in a very compact form with the hours, minutes and seconds all crammed into a word – just 16 bits.

The first five bits hold the number of seconds, but as you can only count up to 31 with five binary bits you have to double the seconds to get the true time. This makes the clock accurate only to the nearest two seconds. The minutes are held in bits 5 to 10 and six bits enable the minutes to be held in full. The hours are in bits 11 to 15 in full.

The time can be set with Gemdos function 45, *t_settime*, and read with Gemdos 44, *t_gettime*. Manipulating the bits into the right positions isn't difficult using the 68000's handy LSR and LSL instructions. Program IV shows how to read the ST's clock by printing the time in the top left-hand corner of the screen.

The time is read using *t_gettime* and stored safely in D7. The method used to obtain the correct bits is to shift the time right with LSR and mask off the unwanted bits with an ANDI instruction. A subroutine called *print* displays the number on the screen. This divides it by 10 using a DIVU instruction then prints the tens followed by the units.

● *While you're waiting for next month's article try writing a short program to set the clock based on Program IV. Set the right bits in the time word, place it on the stack and call Gemdos 45.*

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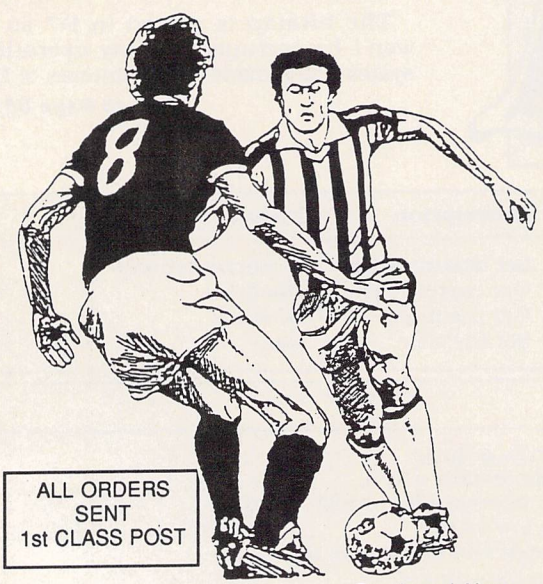

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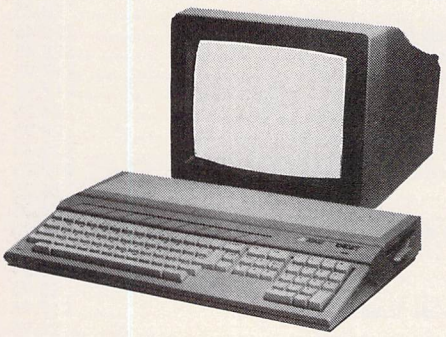

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From Hell to the graveyard

Pam Turnbull visits two Leeds freelancers to preview the next System 3 releases

MYTHS and legends are ideal ready-made game scenarios, and System 3 has sampled a variety of them to produce the arcade adventure Myth. In it, programmer Laury Senate and games designers Phil Harrison, Peter Baron and Bob Stevenson take you to the depths of Dante's Inferno.

Amid harpies, skeletons, demons and the ever-present flames you try to survive by making use of whatever lies to hand. Dead harpies provide energy to destroy skeletons to obtain swords to kill demons to acquire a trident to devastate chimeras – and so on.

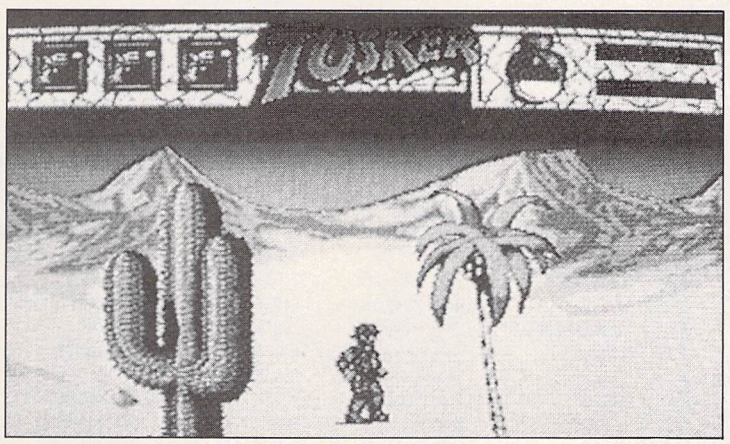
It's a classic arcade adventure with little distraction apart from the monsters. More activity is planned to be added to the already atmospheric backgrounds with their flickering torches, as well as a time limit. Maniacs of Noise have added the sampled music and, space permitting, sampled sound effects.

Using Artstudio because of its good animation facilities, the main character alone takes more than 150k as he runs, hops and jumps. The animation is timed to maximise both speed and smoothness. Even at this early stage, the game looks very playable.

From Hell you escape to a mixture of Greek/Roman deities and the dubious pleasures and threats of the Sirens and Achilles. This section features parallax scrolling and a 128 colour sky.

Linking screens take you to the Norse legends, and in particular a Viking longboat awaiting you on the second of the four levels. From there you will visit the Egyptian pantheon and then travel further east to Japan. The original story, a weighty tome, has had to be cut down somewhat for the ST.

Tusker, by Alaric Binney, is the second arcade adventure about to launched on to the 16 bit market. Primarily set in a Saharan landscape, your water bottle is the key to life and records your energy level as you search for the elephants' graveyard.



You travel by balloon, but the landing is a disaster and your possessions are scattered across the landscape. Find your gun and ammunition as soon as possible or you'll fall victim to a larger than life praying mantis. Then fill your bottle with water from cacti while avoiding deadly tornadoes.

When you have survived the desert horrors, fought aggressive arabs, run into an oasis cave and walked chest deep through the water, you will find a cask.

With a translation book in hand you set off through the jungle. Here you must think before you leap – and be wary of standing still too long. Be predictable and a giant-sized hand will grab you. Watch out for the native pigmies too, not to mention the baboons.

Survive to level two and move on to the relative serenity of a village. A quick sketch map will help you explore the huts. A sick witchdoctor could be the answer, but so could his spear. There are some nice graphics and detail in the huts.

Level three introduces the temple, and more detailed mapping is required to win through. It is too late if you have forgotten to collect the gold earlier, as to reach paradise you must balance the scales with your weight in gold. With three megabytes of data this is a massive game over three levels. The graphic characters are large but simple. A mini-mode shrinks the picture to less than a quarter of its original size where it continues to play in the middle of the screen. Clever programming, especially as it still shows all the details.

The graphic artist on Tusker is Bryn Redman who worked on SDI and his artwork improves as you work your way into the game.

Music again comes from the Dutch Maniacs of Noise. A jungle beat punctuates your journey, though memory restrictions may leave you to choose between music and effects.

Product: Myth
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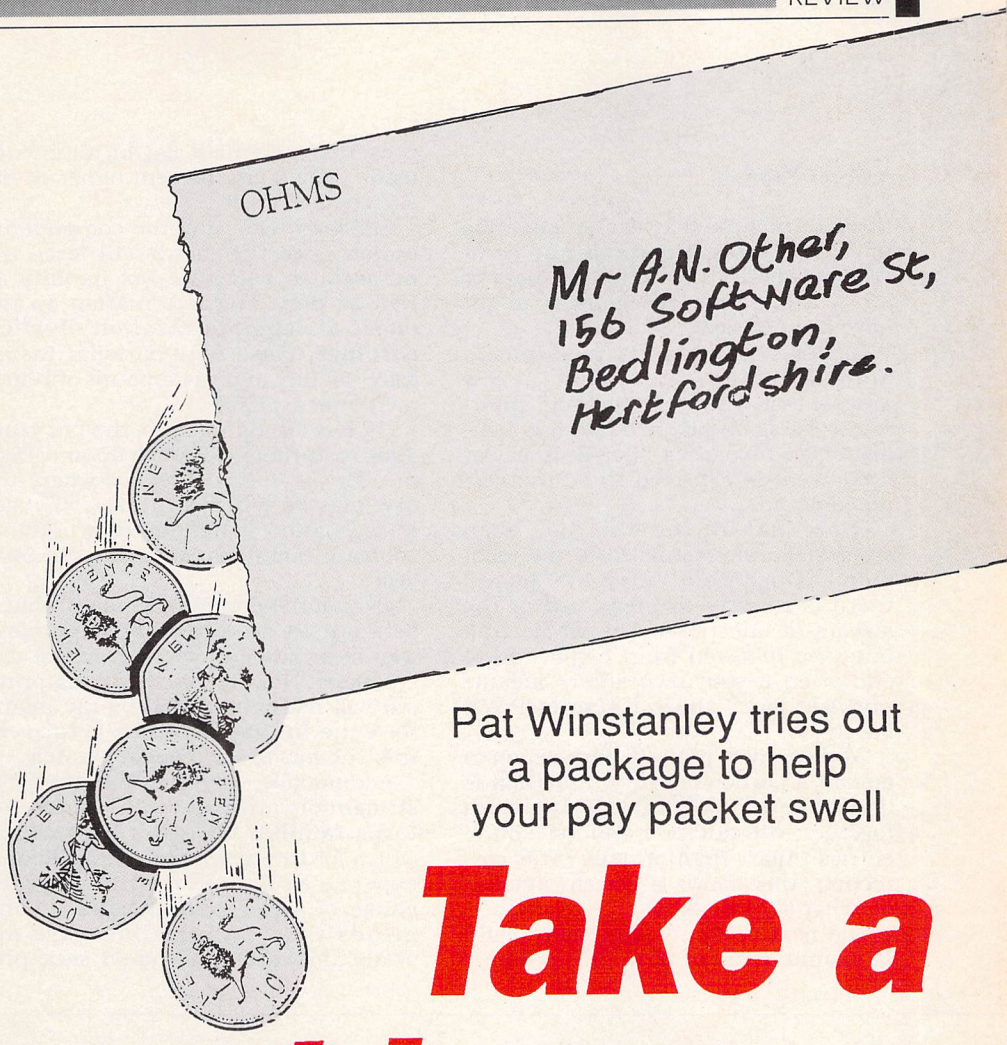

Pat Winstanley tries out a package to help your pay packet swell

Take a cut in your income tax

FIDDLING your income tax is of course illegal, but the income tax laws can be used to many people's advantage. In order to do so most people need to consult an accountant, so the specialist's fees are offset against any reduction of tax resulting from his work.

Personal Tax Planner is intended for people whose financial affairs are fairly straightforward yet still more complex than simple PAYE. It is effectively a computation program which when fed with personal and financial details will save you having to do sums on paper.

The package consists of a single disc, which can be backed up directly from the Gem desktop, and a rather superficial 17 page manual which spends more time discussing data security and machine differences than using the program. In fact only two pages of instructions are given on the program's operation.

PTP is keyboard driven and on booting offers numbered options to enter, amend or examine data. Data can also be saved or loaded and the tax year changed.

Having selected the relevant tax year, the first step is data entry. This is performed by presenting a list of questions covering personal details such as marital status and date of birth. Once these have been answered the program plunges straight into the topics of reliefs and allowances.

More relief

At this point the layman is likely to need the help of a separate tax guide, as the results produced by PTP will only be as accurate as the information entered.

Digita also states that a detailed explanation of UK tax legislation is beyond the scope of the manual – which is quite true. However, I would have liked to have seen rather more detail than has been included. A simple summary of available reliefs for different tax years with the relevant figures wouldn't have taken much space in the manual and would have provided a useful overview.

Following reliefs and allowances you are prompted for information about income of various types. Earned income is split into employments and offices, where details of PAYE are entered. Prompts allow you to enter details of taxable benefits such as a company car and private health plans. Also requested are details of expenses in employment such as professional body subscriptions or tool allowances.

Income from trades, professions or vocations is the next step where questions are asked regarding the name of the business, its adjusted profit, balancing charges and capital allowances. Details of up to six different businesses can be entered each with their own set of figures.

State pensions are the next topic with prompts for the name and amount of each one. Following this is a request for any other earned income which might include occasional payments for odd jobs not connected with normal business, such as the fee for a magazine article and so on.

Interesting

Having dealt with earned income, PTP moves on to unearned income, again splitting the questions into different types. These cover property income such as rent received, NSB ordinary account interest, untaxed interest, which might include that received from money held by a solicitor on your behalf, plus bank deposit and building society interest.

Next come UK dividends for those who have joined the growing ranks of shareholders. Up to six entries are possible, which doesn't seem a lot when many people have invested in all the recent privatisations and may well hold a few shares in other ventures, such as the local football club, in addition to a small portfolio inherited from a relative. Each entry asks for the name of the share, amount of dividend and the amount of the tax credit on the dividend.

In addition to UK dividends, provision is made for other taxed dividends and interest followed by other investment income. Here the prompts are for the gross amount and the tax deducted and again the limit is six entries for each type.

Once shares are out of the way PTP moves on to ask about charges on income. This includes tax reliefs on mortgage interest, loans to private companies, deeds of covenant and investments in the Business Expansion Scheme.

Finally, any tax payments already made for the tax year can be entered. These need not necessarily have been

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made during the tax year, as might be the case if you are reworking an earlier year where it is likely that part or all of a previous assessment might have been settled.

In some cases it is possible to appeal against an earlier year's assessment. However, to avoid interest accruing on tax paid late it is usually in the taxpayer's interest to pay at least what is expected to be the correct amount.

Now that all the data has been entered you are returned to the main menu. Once data entry has begun there is no way to break out of the stream of questions. The whole trail must be followed from beginning to end, even if your own affairs include nothing more than a simple PAYE based job.

You can now jump to any section to amend a particular entry. Provision is made for amending existing data together with addition and deletion of entries. Apart from obvious error correction, this allows a certain amount of "what if?" calculation.

The next option on the main menu is examination of data. This simply presents a detailed list of all entries made, which can be sent either to the screen or a printer.

Similarly, choosing the computation option from the menu will force the program to calculate tax liability as well as providing information on the effect of separate taxation of wife's earnings, class four national insurance liability and the amount of retirement relif available.

PTP is set up to cover the tax years 1984/5 through to 1989/90 and Digita offer an upgrade service where the disc may be returned to have changes in legislation installed. This optional software maintenance costs £12.50 a year.

Overall the program achieves what it sets out to do, providing a painless way of avoiding paper and pencil calculations. However the resulting printout will not be accepted by the Inland Revenue in place of a tax return, so this still has to filled out separately.

Additionally, anything but the most straightforward case will require you to be familiar with tax legislation, which for the layman means additional expense to be incurred in the purchase of a tax guide. Digita recommends that if your affairs are not straightforward you should seek professional advice. On the other hand, if your affairs are very simple the program is unlikely to be of any use.

PTP then is probably most useful for users with a modicum of understanding of taxation whose affairs are rather more complex than simple PAYE, but not so tortuous that an expert is required to seek out the tiniest loopholes in the law.

As a computation program it works well, but I wonder if many people will find their investment pays off in terms of tax saved.

FACT FILE

Product: Personal Tax Planner
Price: £24.95
Supplier: Digita International, Black Horse House, Exmouth, Devon EX8 1JL.
Tel: 0395 270273

POINTS FOR:
Easy to use and potentially profitable in planning elections and pensions.

AGAINST:
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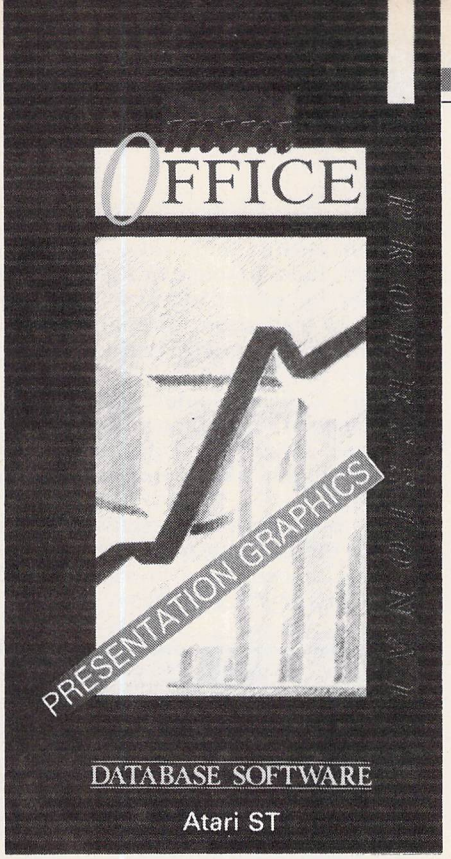


Worth a thousand words

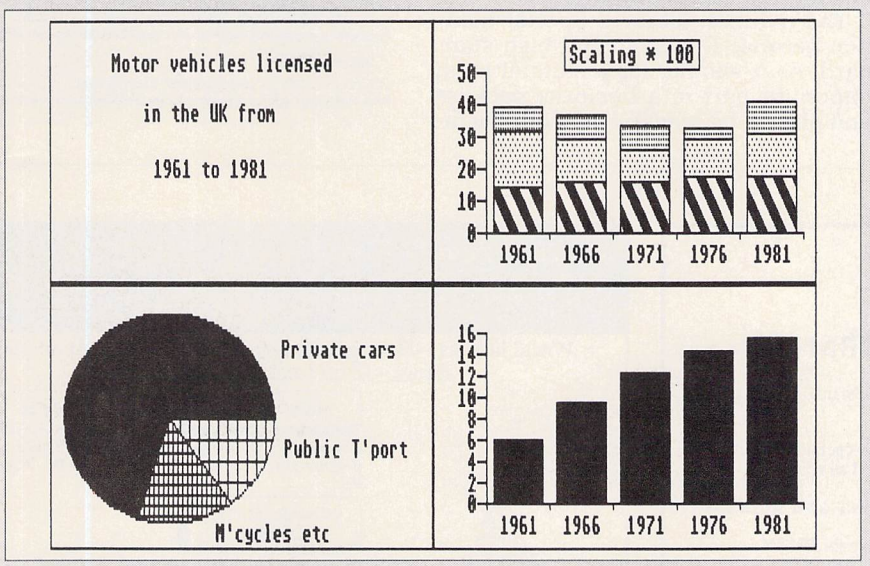
Duncan McCleod reviews a graphic package for displaying numeric data

THE graphic power of the ST is harnessed by Mini Office Presentation Graphics (MOPG) to provide, simple flexible ways of displaying numeric data produced by spreadsheets – Mini Office spreadsheet included – databases or any package with an Ascii output or DIF file format. You can also enter data directly from the keyboard.

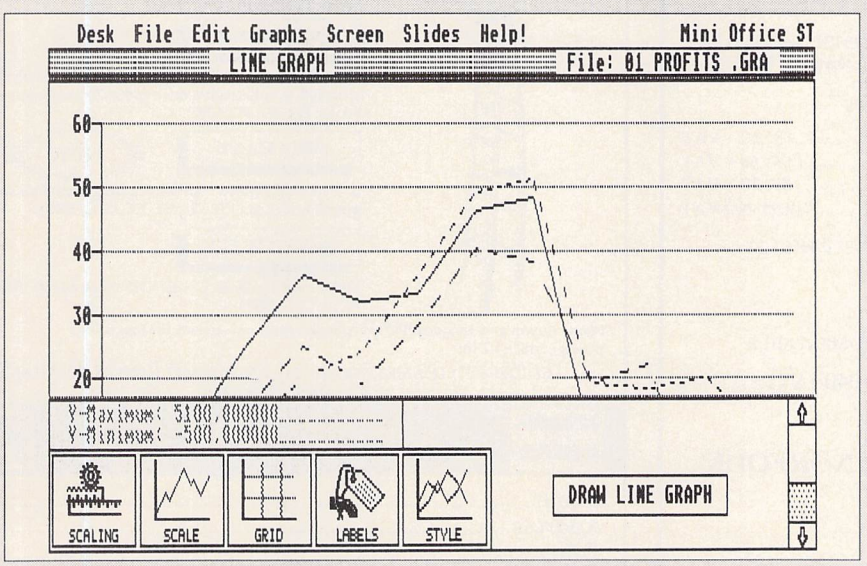
How often have you been confused by a technical article that presented tables of numeric tables? Or bemused by the reams of data spewed out by a spreadsheet or financial package? The old adage "a picture is worth a thousand words" is certainly true here, as it is much easier to make sense of graphs, diagrams and other pictorial information. That's the concept behind MOPG.

Data can be presented in a combination of line, area or scatter graphs, in addition to bar or pie charts, each with an impressive choice of point, line, fill and text labelling options.

You can draw up to four graphs per screen, a useful feature to highlight relationships between values in the same set of data. The screen can be saved in either Degas format with PI2 or PI3 extension for loading into any art program which supports Degas, for further modification, or as a slide for inclusion in a slide show.



Up to four graphs per screen can be drawn



The icons and menus provide easy access to the program's facilities

Grouping data

The procedure for creating a graph is to enter the data, select the items to be plotted, choose the type of graph, plot it, add text and touch up the art work. Finally you save or print it.

Pull down menus are available for entering and editing field names, data items and their values. You can also group data for presentation as a pie chart.

The edit screen provides a useful option to calculate simple statistical values like the total number of items in the data set, the sum of their values, their arithmetic mean and standard deviation – a measure of dispersion around the mean.

Up to 100 sets of data can be included in one file, and the program can handle up to 10 files at a time on a 1040ST or one file on a 520ST.

Main workhorse of the package is the graphic menu, where selection and

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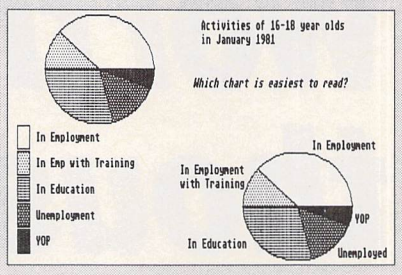
◀ From Page 95

plotting of the data is controlled. The graph menu provides 2D or 3D graph options.

All the graph screens have several common control features: Scroll bars raise or lower the graph above the control icons, clicking on the graph produces a full screen view, clicking on various buttons displays the selected graph. Additionally graphs can automatically be scaled to fill the screen or manually set to home in on a specific area.

Field names are drawn with the picture, but you can opt to write your own if you wish. Toggling between no grid and two grid sizes helps to line up values. Each graph can be drawn in a variety of styles, outlines and fills to differentiate between data sets. An Art screen provides a primitive drawing package to add any additional text, figures or shapes required.

Some graphs are more effective than others at presenting certain types of data and the five graphs available with MOPG are those most commonly used. A Z chart would have been useful, for example. Cumulative totals, moving averages and monthly totals plotted on a Z chart provide a wealth of information on a simple picture.



You can group data and present it as a pie chart

My biggest disappointment with the package was not being able to print the graph in colour. Having spent a lot of time and effort in producing very attractive graphs why isn't a colour printer driver included as part of the package? The default printer driver is Epson compatible and a configuration utility is included for installing your own driver and/or control codes.

MOPG does more than illustrate figures using colourful graphics, it also has a set of desktop accessories including a text editor, memo pad, calculator and useful disc utilities.

The manual deserves special mention because it is of such a high standard. As it should, for a manual is an important part of a business package and should be readable by both beginners and experienced users.

Most manuals usually provide a tutorial, but Database has gone a step further by providing a Quick Start Guide to lead users through the program. It took me only half an hour to produce my first graph.

There is also a comprehensive reference section describing the program's features, options and desktop accessories, which uses computer jargon sparingly.

This is an impressive software package for the price, despite the print limitations. It compares favourably with K-Graph and VIP graphics i.

FACT FILE

Product: Mini Office Presentation Graphics
Price: £24.95
Supplier: Database Software, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.
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Unix on a shoestring

If you would like to learn Unix but have been put off by the high cost, Minix could be the answer. Mike Rowe tries it for size

UNIX looks set to become the most important multi-user, multi-tasking operating system of the '90s, with some government departments already insisting that it is used on their systems.

It has a very close relationship with the C programming language, which was written specially for Unix – or was it the other way round? – and because of this, programs written for it should be portable to any machine running it.

Unix is one of the big expansion areas at the moment, and getting to know it on one system will give you a head start when you come to use it on another. If you like programming, wouldn't it be a good idea to do it using an industry standard?

One of the drawbacks is that a Unix system is thought of as being cheap if it costs less than £5,000. It also requires around 40Mb of hard disc storage space; 4Mb of ram is considered useful, too. The price of Atari's new TT computer plus Unix operating system hasn't been set yet, but should be in the region of £4,000.

Enter Minix. This is what might be described as a Unix lookalike. None of the source code is Unix, but nearly all the system calls are identical, with what the documentation calls a few very minor exceptions. It can be coaxed into running on a basic 520ST with just a single-sided floppy disc. Of course, a few megabytes of spare ram would make life easier, and a hard disc as well makes it a doddle to use – but a 520 can handle it.

Minix comes on nine single-sided floppies, only one of which can be read by TOS. The others use a special Minix-specific filing system which confuses TOS if you try examining it from the desktop.

The reason for this is a little obscure, something to do with being Unix-compatible rather than TOS compatible, which sounds rather dodgy, as it is only source files that are meant to be transportable across Unix, not the media they come on. The discs have to be formatted using TOS anyway, as Minix has no format command, so it seems an unhelpful approach. There are, however, special commands to allow you to read from and write to TOS discs; it's just a shame that you should need them.

When you boot up the program you have to log in to the system just as you would with Unix – in fact you can assume you are using a Unix machine. Nearly all the commands you use are actually separate programs held in files. The most commonly used ones can be put into an area of ram so they can be acted on instantly. This means that a lot of disc accessing occurs whenever you try to execute a series of commands as these are searched for on disc, loaded, then run.

The beauty of this is that as commands are files, you can write your own and so extend the range of the system, and since they can be held on disc, your ram isn't consumed by rarely used commands. The ugliness is that the disc swapping quickly becomes a pain in the neck.

When you log in, you can either do it as an ordinary user, or you can tie a cape around your shoulders, put your underwear on the outside of your trousers and log in as the superuser. This enables you to do things to the system that ordinary users can't.

For instance, each file has a set of permissions, which tell the system who created it and who is allowed to read, write or execute it. If the author is a stickler for privacy, he can set the file so that only he can do anything with it. Everyone else will be able to see that the file is there, but they won't be able to do anything with it – unless, that is, they are the superuser.

He can crash through solid protections, leap tall permission blocks and fly through the operating system with no restrictions at all. Of course, that sort of power is very tempting, so there are passwords for everyone, including the superuser, to ensure that no one gets carried away.

Minix commands are similar to their Unix counterparts. Certain command options are occasionally more restrict-

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```
reg = 00008BF8,  ksp = 0000B10E
 pc = 00000780,   sr =     2200,
 d0 = 00000000,   d1 = 000002D0,
 d4 = 00000404,   d5 = 00000505,
 a0 = 00000FAA,   a1 = 00009988,
 a4 = 00000C0C,   a5 = 00000D0D,

720: 2D49003C 1D57004B 4217225F
740:  A7E46FC 27000C79 FC190000
760: 66044E60 60022E48 2F2E0042
780: 60FA40C0 46FC2700 4E7546EF

9960:      C54          0 676C0000
9980:     8BF8        742          0
```

Screen dump showing status of the current process

◀ From Page 99

ed, and there are a few extra ones, mainly to do with interfacing with TOS discs. Unfortunately not all Unix commands are present in Minix.

The powerful awk is absent, and that is understandable as it is almost a language in itself, but other, more basic, utilities are also absent, such as cut and paste. Perhaps this can be explained by the author's comment that small is beautiful.

As Unix was originally designed as an environment for writing C programs, it has facilities for creating and compiling C source code. The Minix C compiler, which is apparently fully compatible with the original Kernighan and Ritchie specification, can be called using the standard Unix cc command. I haven't used it extensively, but so far it seems to work fine.

The libraries of C routines included with Minix contain more than 100 procedures including all the standard routines that you'd expect of an average C compiler – outputting to screen, printing and so on, with no big surprises. What might come as a shock is the fact that as Minix was written from scratch with no reference to the original Unix source code, the author has released the Minix source along with the operating system. This makes it relatively easy to re-write any parts of the operating system, then recompile it from within Minix.

The source was written for students studying operating systems. There's even a book – mentioned with monotonous regularity in the manual – which describes the complete listing.

New standard

Minix is a great program, but if you expect it to be your home Unix workstation then it starts to crumble. The system is based on Unix version 7 which was written in 1979 – the final scholars' version before it was sold commercially to businesses. Needless to say, it has changed since then.

It is currently going through a process of developing an international standard (Posix), so any system you come across in a business environment is likely to be different to Minix in a number of ways. Similarly, the C compiler is based on an old specification, not the new ANSI standard.

This means it is a program using two non-standard versions of standard languages, running a single-user version of a multi-user system. It is unlikely to attract businesses to invest in it.

In its defence, it must be said that this is probably the cheapest commercially available pseudo-Unix system, and it already has a wide and active user base which is continually adding extra facilities via an energetic bulletin board. So the system is constantly expanding in its usefulness.

If you just want to dabble in Unix to see what it's like, you'd be better advised to get hold of one of the PD programs, such as Gulam, which will give a good idea of how the system works and only cost you a few pounds. If you want to have a full Unix-compatible workstation, you'll have to be on very friendly terms with your bank manager. Minix falls between these extremes.

FACT FILE

Product: Minix
Price: £99.95
Supplier: Prentice Hall, 66 Wood Lane End, Hemel Hempstead, Hertfordshire HP2 4RG.
Tel: 0442 231555

POINTS FOR:
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AGAINST:
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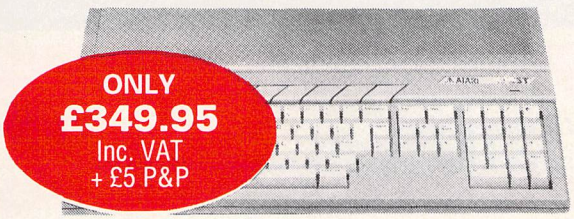

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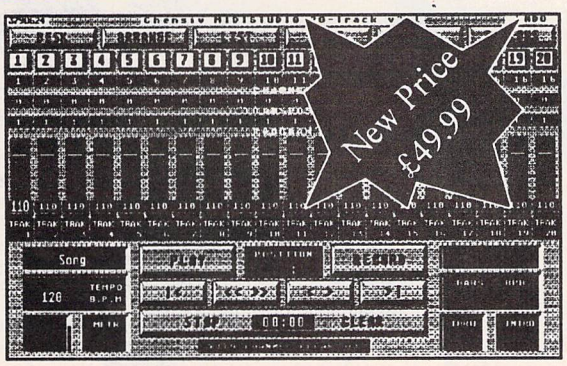

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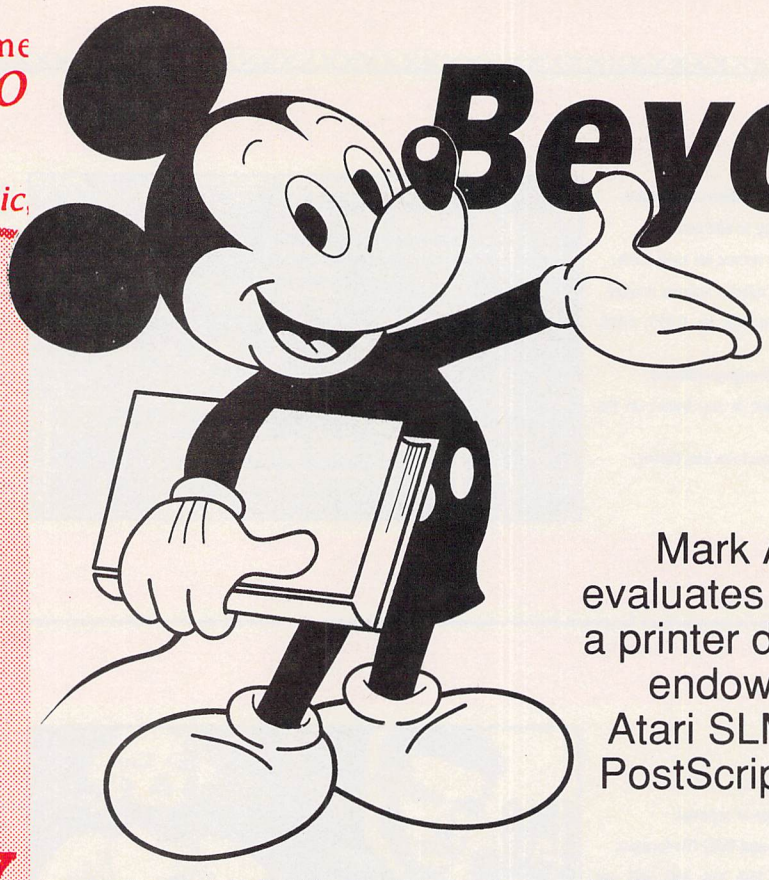


Mark Annetts evaluates Ultrascript, a printer driver which endowes your Atari SLM804 with PostScript qualities

IN a nutshell, UltraScript simply takes files produced by other programs and prints them. Nothing too spectacular, you might think, but you would be wrong. What UltraScript does is turn a humble SLM804 Atari laser printer into a fully fledged PostScript machine, capable of the fine quality output delivered from, say an Apple LaserWriter.

In order to do anything with UltraScript you have to use software that will produce PostScript output. UltraScript grabs it and transmogrifies it into a bit image suitable for the SLM804 laser printer. Although it is possible to generate raw PostScript code with UltraScript via its Executive Mode, it isn't really a viable way to generate pages of printed matter.

First and foremost, PostScript is a programming language, which can be used like Basic or C. Developed by Adobe Systems specifically as a page description language, it was intended to control laser printers, photo-typesetting machines or any other high resolution output device.

To illustrate that it isn't just for printers, it has recently been adapted for use as a video screen controller in the new NeXT machines. Now what you may not be aware of, is that PostScript is available in the public domain so anyone can write a PostScript interpreter and not have to worry about law suits from ASI.

Adobe was rather subtle about its new language, and by not copyrighting it insured its rapid acceptance within the industry. However, to reap the financial rewards due to them, the company carefully kept one vital ingredient to themselves, namely the high resolution outline, or vector, fonts.

All the fonts are encrypted, so anyone wishing to use PostScript in earnest must pay a whopping licence fee for the interpreter. Anyone caught trying to sell illegal font decryption printers will soon face Adobe's legal wrath.

PostScript output is simply a verbose Ascii text file, and if you wished to do it, you could write a PostScript output file using an ordinary text editor. You would have to know the language inside out, but it could be done.

A better way would be to have your favourite program generate PostScript output which could then be saved to disc. On the Apple Macintosh, for instance, virtually every program has such a capability.

At present, however, very few ST specific programs are capable of generating PostScript output, the two main ones being TimeWorks DTP and Publishing Partner. Fleet Street Publisher can be made to do it, but only when a special driver has been added. At the bottom end of the market, GST can provide a program that will convert a 1st Word Plus file to PostScript format, but with text only and in a single typeface.

Hardly a wide choice of programs to choose from. The ranks may soon be swelled by the release of PageStream, but not by Calamus – the new star of the DTP world. Calamus uses its own page description language, supposedly more accurate than PostScript, and so hasn't yet bothered to reduce itself to mere PostScript compatibility.

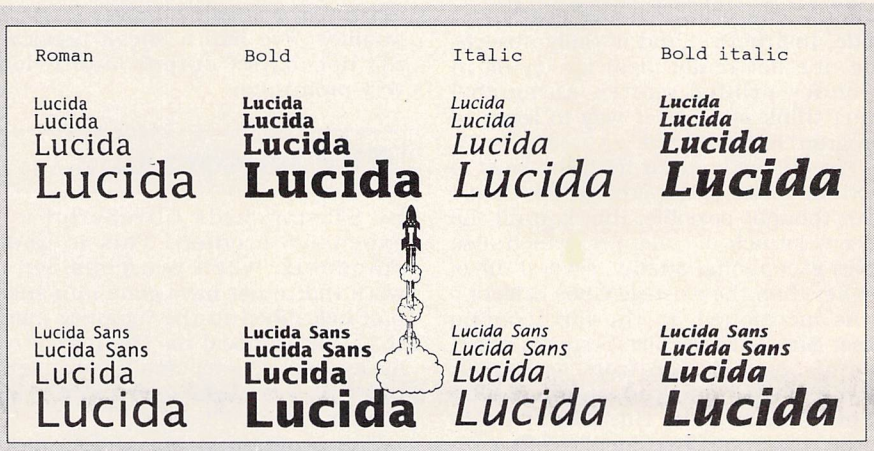
UltraScript works by taking a PostScript file and turning it into a bit image, suitable for beaming to the SLM804 laser over the DMA port at high speed. In a conventional

the written word

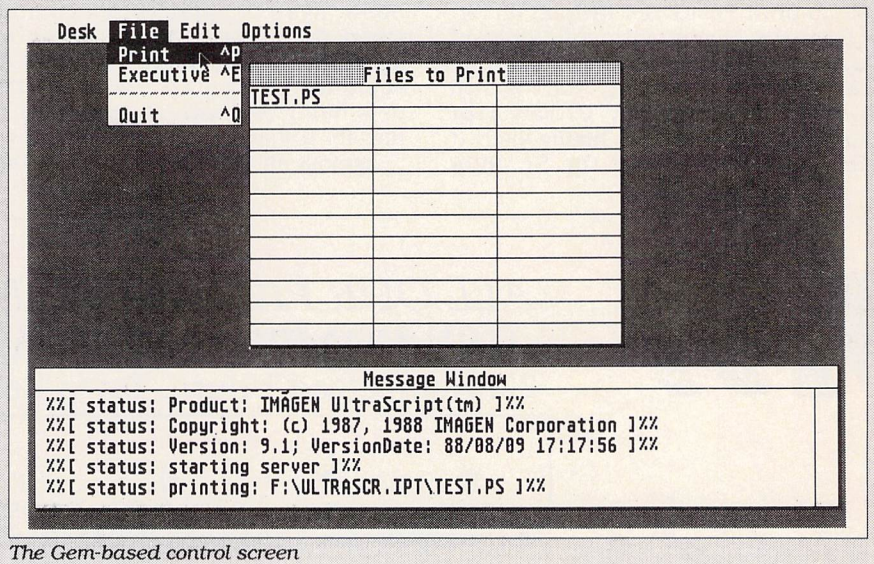
PostScript printer this side of things is achieved within the printer itself. The traditional PostScript interpreter is in fact a computer in its own right, typically powered by a Motorola 68000 or 68020 CPU, with 2Mb or more of ram.

Tucked into the rom of the laser printer are the Adobe fonts. Not, incidentally, stored as bit images, but as mathematical descriptions of lines and curves and so forth. This gives PostScript printers a huge advantage over bit image font-based laser printers, as fonts can be scaled or manipulated to any degree without causing significant aliasing problems. That means no ugly staircase effects on the curved parts of characters.

It's worth mentioning that even a conventional PostScript printer is still only a bit image device. PostScript is only there to describe the page as precisely as possible before it is printed.



The Lucida fonts in different styles and sizes



The Gem-based control screen

What you get

The program comes packaged with two discs and a small manual. Disc one contains the program and disc two a set of fonts. The manual could be described as taciturn, but it is enough to get you started. For in-depth analysis of PostScript you will have to look elsewhere, and as noted in the manual, UltraScript will struggle along with floppies, but it is much more at home on a hard disc.

The standard fonts supplied are Courier and the Lucida family. The latter was previously unknown to me, and is provided in a serifed and non-serifed style. They were designed in 1985 specifically for laser printers. Also included, somewhat inexplicably, is a set of Lucida Hebrew fonts, along with a more useful set of Lucida symbols.

It is the question of fonts which raises the one major stumbling block of the whole package, as with the exception of the Courier font, they're not supported by any of the present Atari DTP programs.

Mirrorsoft however, will soon be launching an UltraScript driver for Fleet Street Publisher which will recognise them all, and as an added bonus allows UltraScript printing from within Fleet Street Publisher. After seeing a demonstration of this system in action, I can only say that it is outstanding.

TimeWorks DTP is another matter. The program simply will not recognise the Lucida fonts. A piece of brute force PostScript programming may achieve this, but the better idea is to go for the full 35 extra fonts upgrade. With these, TimeWorks behaves very well, within its own limited fashion.

When I talked to GST about TimeWorks and UltraScript, they were less than enthusiastic, referring to the initial expense and Lucida fonts as major problems.

I suspect the same is true of Publishing Partner and PageStream, in that they won't like the Lucida fonts, but will get on very well with the extra ones. These consist of the whole set of fonts that can be found in most normal PostScript laser printers, such as Times, Helvetica, Bookman, Zapf Chancery et al, and it's expected these will just about double the cost.

It is possible to save some money by buying only Times, Helvetica and Symbol, but you will probably soon feel restricted with only these few at your disposal. In the near future many more fonts are likely to be made available for UltraScript, increasing it's appeal still further.

How to use it

Operation is straight forward. Double-clicking on the program file produces a simple display consisting of a menu bar, file name grid and a Gem window. File names can be entered into the grid to create a batch print queue, which can store up to 36 files in monochrome, and slightly less in medium resolution.

Once there, you simply click on Print, and sit back to watch the pages slide out of the printer. The Gem window keeps you informed of progress with an endless display of PostScript feedback.

From a totally subjective point of view I would say that UltraScript is a fast PostScript interpreter. The nearest rival in terms of speed is Qumes' new Crystal Print Publisher. That runs at over twice the speed of an Apple Laser-

Turn to Page 106 ▶

◀ From Page 105

Writer IINT, but has to use custom Risc chip technology to achieve it. So well done to UltraScript and its designers.

The only other option available is to switch UltraScript into Executive mode, allowing interactive programming of the printer using PostScript code. Instructive, and initially absorbing, it's not really ideal for trying to produce printed matter, although I can't think of a better way to learn to program in PostScript.

The finished output from the laser is nothing short of superb. Better than I ever thought possible, that is until the recent launch of Calamus, which also gives exceptional quality, several times higher than the existing Gdos drivers.

As mentioned, in the forthcoming Fleet Street driver UltraScript is capable of being driven from within an application. One programmer who expects to support UltraScript in its direct mode is Dave Small of Spectre 128 fame. He intends the user to be able to print PostScript fashion directly from the Macintosh emulator, and it's to be hoped that others follow suit.

At the time of writing Atari is still undecided as to how UltraScript should be marketed. It's highly likely it will be packaged with the SLM804 laser printer, but does this mean all 804s, or only those that are part of a DTP bundle. As to whether it will be sold separately, and at what price, is anyone's guess.

Future plans include drivers for other printers such as Hewlet Packard LaserJets, and Epson 9 and 24 pin dot matrix printers and compatibles. Plus, of course, a steady stream of new font families. I've had a sneak preview of the dot matrix output, and it looks very promising.

The bottom line

By ST standards UltraScript is an expensive product. This is understandable, when you consider the work that must have gone into such a product, allied to the minority market that it will appeal to. The market was always going to be small, because you must have a Mega-2 or 4 and a laser printer, before it'll work.

The program is big, unfortunately lacking in font compatibility in the basic system, and very expensive when the extra fonts are taken into account. To run it you need top end equipment and other expensive DTP, or similar, software to generate the files for it to work on.

Against all that, however, is the simple fact that it produces some of the highest quality output that you are likely to achieve with an SLM804 laser printer. An example of combining text and drawing can be seen in the accompanying artwork.

Certainly the only competition it has is from the Calamus DTP package from Signa, which unfortunately most people may see as the better option. This may become trickier to decide, with the release of Fleet Street Publisher 3.0, but that is another story.

The bottom line is this. If you have the equipment, the money, and a desire for premium quality output, take a good look at UltraScript.

FACT FILE

Product: UltraScript
Price: tba
Supplier: Atari UK/SDL, 1-4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX
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Security check up

Roland Waddilove presents a utility to check for data corruption

ALTHOUGH the ST's disc filing system is very reliable, data is still occasionally lost. You have probably at one time or another double clicked on a file to run it only to be greeted by a frustrating *Tos error 35* message. This usually means you've got a duff disc and the program has been corrupted. More subtle errors can be introduced by malignant viruses lurking either in the boot sector of your disc or at the end of a normally benign program.

The most widely used method of checking that files and data haven't been tampered with is to calculate a cyclic redundancy checksum – CRC for short. Disc filing systems calculate and store them on disc alongside the data whenever you write to the disc. When the data is read the CRC is recalculated and the new figure is compared to the original. If they are different the data has been corrupted.

This utility will calculate the CRC for files and data stored on disc. You can then either write the CRCs down on paper or store them on disc in a simple Ascii text file using a word processor or text editor. If you suspect a program or data file has been corrupted in some way, perhaps by a virus, you can re-run the utility and recalculate the CRC. The new one should be the same as the old – if it isn't the data has been altered.

Using it is a piece of cake. Double click on CRC.PRG, and when the dialogue box appears click on the CRC button when you'll be presented with a standard Gem file selector. Click on the file you want and then again on OK. The CRC will be calculated and displayed in the lower window in the dialogue box.

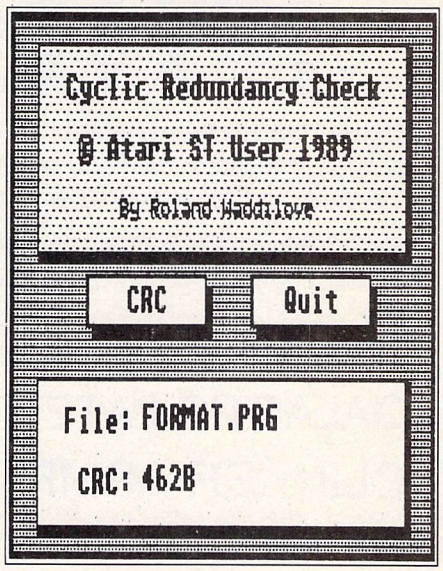
You can quit by clicking on the Quit button or calculate another by clicking again on CRC.

The utility is written in C and the basic function that calculates the CRC of a block of data *len* bytes long in memory is:

```
get_crc(data,len)
unsigned char data[];
int len;
{
    int x, y;
    long hl;
    hl = c = 0;
    for (y = 0; y < len; ++y) {
        hl ^= data[y]<<8;
        for (x = 8; x YY 0; --x) {
            c = hl>>15;
            if (c)
                hl ^= 0x810;
            hl = hl<<1;
            hl |= c;
            c = hl>>16;
            hl &= 0xFFFF;
        }
    }
    return (hl);
}
```

Although fairly short, it is quite complex and involves rotating bits of the data through the CRC stored in the variable *hl*. It is very sensitive and can detect differences of one bit and bytes swapped round. If the choice of variable names seems strange it's because the code is a direct conversion of a 6502 assembly language version.

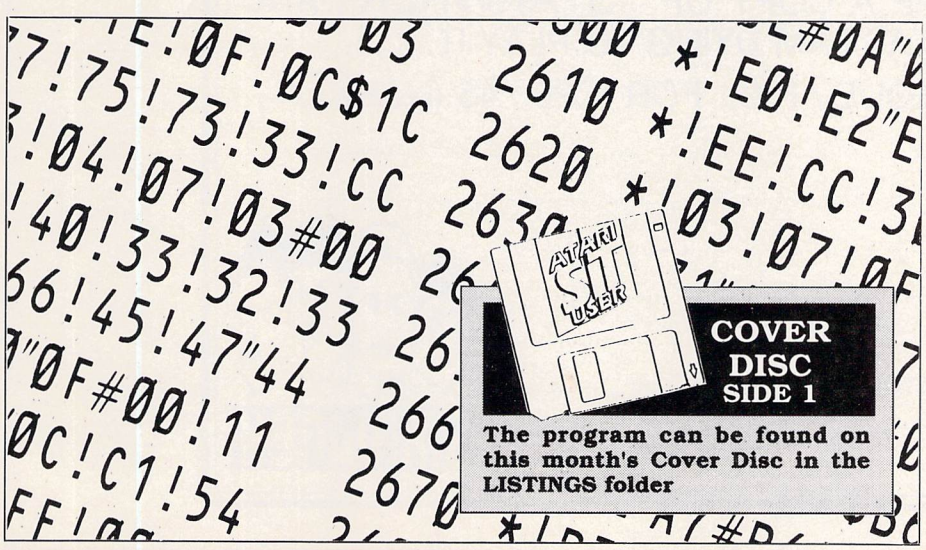
The Gem file selector is easily accessed from C with a simple call to *fsel_input(path,name,&button)*. The path – the drive and directory – is stored in *path*, the filename is put in *name* and the button clicked on – 0 for cancel, 1 for OK – is placed in *button*. After the call the name is added to the path to obtain the full pathname of the file:




```
char path[80],name[20];
int button,len;
strcpy(path,"A:\\*.*");
strcpy(name,"");
fsel_input(path,name,&button);
len = strlen(path);
while ( path[len-1]!='\\' )
    --len;
path[len] = '\0';
strcat(path,name);
```

Note the double backslash in the path string. The C compiler would interpret a single backslash as indicating that the following character was a control code, like \n for newline. So to include a proper backslash in the string you must use it twice.

That's the meat of the program, the rest of the code simply makes the program user friendly and attractive to look at.



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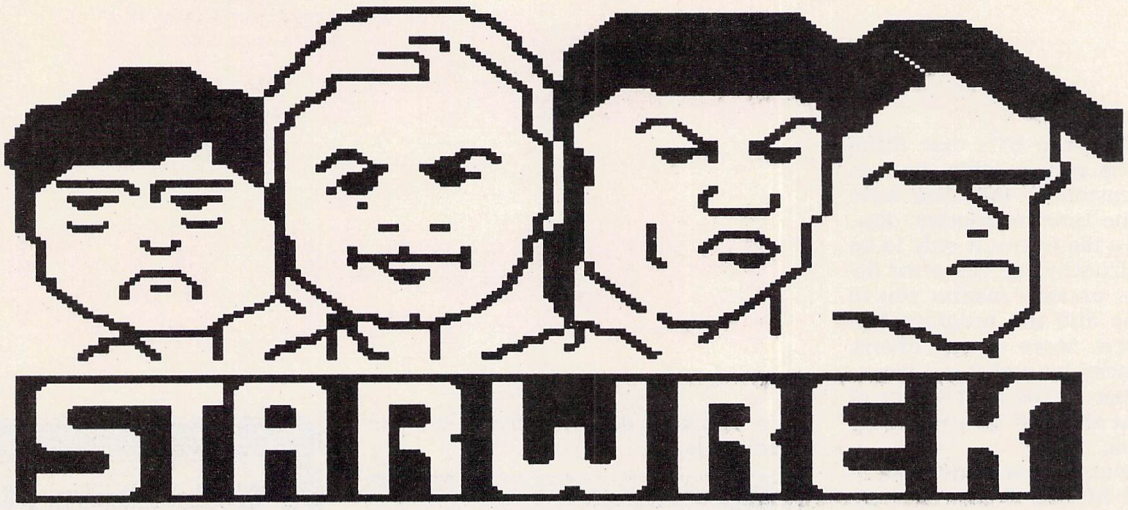

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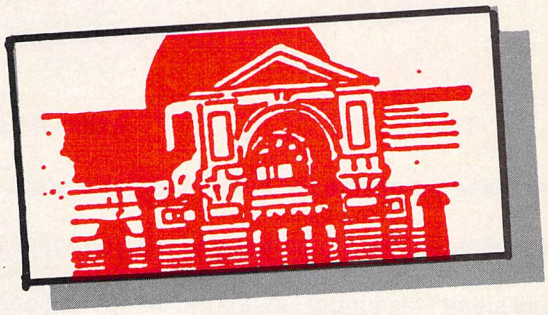
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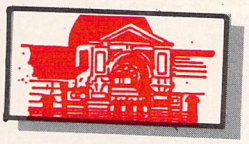

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..."*At last one that seems to fit most of what I call essential in a word processor*" PAGE 6 #34

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Sweet 16

Margaret Clarke has a host of utilities tucked away in one short program

SUITE 16 is an AUTO folder resident application written using HiSoft's Devpac 2. It provides a shell for installing a suite of 16 machine code routines, the first bank of eight being timer events and the second bank keyboard events.

The timers may be switched on or off by pressing the Control key and 0 to 7 on the numeric keypad. They may also be optionally switched on at boot up. There will a key ping on switching on a timer, but no ping on switching one off. The key routines can be executed by pressing Control+Alternate and 0 to 7 on the numeric keypad. There will be a key ping only if a routine has been installed.

When a timer reaches zero the program – running in the background – will execute one of the 16 machine code routines. A couple of examples have been included in the program, but the rest is up to you.

Applications concurrent with a main application may exist either in parallel – that is multi-tasking – or in series. The former, on the standard ST are desk accessories (they have a limited multitasking ability), and the latter are executed, for example, during the vertical blank interrupt or the timer interrupts.

When reading the keyboard with one or more programs in series using accepted methods we have a situation of first come, first served. So if there is a new character in the keyboard buffer and one application takes it then the other program will find an empty buffer.

The method Suite 16 uses is transparent as we must ensure that our key combinations do not coincide with another application's. Briefly, the method is to find out if the tail index of the keyboard buffer differs from the last recorded value. If it doesn't this is taken as no key press.

However, if the tail index has moved, and if the keyboard status is of interest, the data at the tail is read.

Setting bit three of $484 ensures that the keyboard shift status is included in bits 24 to 31 of the key word before placing the data into the keyboard buffer, so we can test for a status/keypad combination in one step.

Unfortunately, the escape facility was found to be disabled when using Basic. It would appear that the upper word of the data is examined rather than the lower byte of the upper word.

Since the keyboard buffer cannot be filled at a rate greater than the key repeat will allow, our routines cannot be repeated at a greater rate either, obviating the need to implement a delay. We can, however, include within our suite of routines a key repeat toggle so that the remaining routines cannot be repeated without a key release first. The routine *cisr1* does just this.

The heart of the program is the exception routine *timer_A*, vectored through interrupt level 13 of the MFP 68901, and it uses both a local stack and a local save area for the central processor registers after a Bios/Xbios call. A local supervisor stack is employed because the system supervisor stack is inadequate for the additional space used. A local save area is used to avoid any possible corruption on interrupting the code of the Bios/Xbios.

The timer runs at 400Hz and calls *timer_events* each time. The eight software timers form a circular queue with only one being executed per 400Hz, giving a 50Hz pass rate. The routine *keyboard_events* is called every 16 interrupts, producing a 25Hz sampling rate.

One of the timer slots has been implemented to provide a simple screen protector. After a defined period of keyboard inactivity the screen blacks out. Any keyboard event will restore the screen, the mouse being most convenient. The delay is asked for on boot up and may be one to nine minutes.

Basically, the timer counts down from the delay start value and if it reaches zero the screen's physical area pointer is altered to a dead screen area. The countdown is reset to the start value in the event of the keyboard interrupt being entered and is achieved by revectoring the keyboard interrupt and including a small patch.

Only two of the keyboard slots have been used. The first, *isr*, inverts the current monochrome display or toggles the border of a colour display. The second toggles the key repeat.

It should be noted, that an unlimited time cannot be spent within the interrupt. Eventually the machine will baulk and, in particular, the mouse will misbehave. Routines which process the data packages should be kept within one millisecond and although the default routines are well inside this bound we may interrupt them and thus add to their time. Some of the interrupt service routines may require initialisation and an appropriate branch should be included before the timer's installation.

I find it useful to have DATA and BSS fairly close to where they are first used, rather than at the end of code – trimming code for a particular boot disc is that much easier. You may find the screen protector, for example, takes up too much memory for your word processor. In this case all that is required is the removal off the BSR.W *timer1_initialise*, *timer1_initialise* itself and the *cisr0* code replaced with *cisr0* RTS.

The STORAGE macro originally relied on space being intialised at the start of the source, but as it begs to be placed in a macro library it's much more convenient to have space initialised within the macro itself.

The code first tested was:

```
                IFND space
space           SET -$8000
                ENDC
```

This caused a phasing error. The factorial program in the Devpac manual uses a similar technique of post-setting and was found to produce incorrect values, although no error is generated.

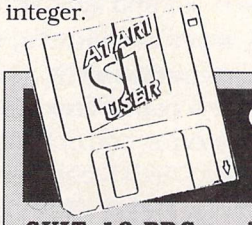
After some investigation it turned out that if a label is SET twice it will never be considered undefined at the start of pass two. This is, of course, in the context of IFND. The resulting code takes the form:

```
                IFND bug
bug             SET -$8000
space           SET bug
                ENDC
```

If you have an older version of Devpac 2 you'll have to modify this slightly to the following code:

```
bug             SET -$8000
space           SET bug
```

By initialising space to -$8000 we double the variable space limit from 32k to 64k, the limit being imposed by the sign extended 16 bit displacement integer.



COVER DISC SIDE 1

SUIT_16.PRG and the source code, SUIT_16.S can be found in the LISTINGS folder on this month's cover disc.

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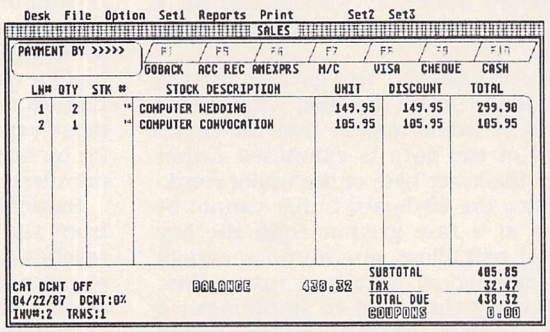

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Doppleganger

Anthony Sewell simplifies the process of copying files on a single drive system

GEM has many advantages, but in an effort to be friendly and protect users from complex commands and procedures it sometimes uses long-winded methods. Nowhere is this more true than in its system for copying files from one disc to another if you only have one drive. Even copying a single file requires four disc changes – and for more than one file the proceedure becomes almost physically tiring.

Filecopy, the machine code utility presented here, simply asks you to insert the disc you want to copy from and at the press of a key produces a numbered directory listing. Use this to select by number all the files you want to copy. Then you just put in your new disc, press another key and every file you selected will be copied. If, like me, you are used to struggling with the old system it seems like magic. The program works by setting up a large buffer and reading each selected file into it:

```
selecin:
    MOVE.L #pathbf,A4
    MOVE.L #length,A3
    MOVE.L #databuff,D4
lec1:
    MOVE.W #2,-(SP)     read/write
    MOVE.L (A4)+,-(SP)  point name
    MOVE.W #$3D,-(SP)   open
    TRAP   #1
    ADDQ.L #8,SP        handle in d0
    MOVE.W D0,-(SP)     save it
**  read
    MOVE.L D4,-(SP)     data buff
    ADD.L  (A3),D4      inc buff
    MOVE.L (A3)+,-(SP)  bytes to read
    MOVE.W 8(SP),-(SP)  handle
    MOVE.W #$3F,-(SP)   read
    TRAP   #1
    ADD.L  #12,SP
**  close
**  (handle is on stack)
    MOVE.W #$3E,-(SP)   close
    TRAP   #1
    ADDQ.L #4,SP
    TST.L  (A4)
    BNE    lec1
```

This done, it uses the same buffer to write the new files to the destination disc:

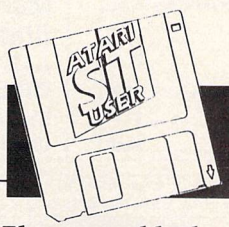
```
    MOVE.L #pathbf,A4
    MOVE.L #length,A3
    MOVE.L #databuff,D4
copy:
    MOVE.W #0,-(SP)     read/write
    MOVE.L (A4)+,-(SP)  point name
    MOVE.W #$3C,-(SP)   create
    TRAP   #1
    ADDQ.L #8,SP        handle in d0
    MOVE.W D0,-(SP)     save it
**   write
    MOVE.L D4,-(SP)     data buff
    ADD.L  (A3),D4      inc buff
    MOVE.L (A3)+,-(SP)  bytes to read
    MOVE.W 8(SP),-(SP)  handle
    MOVE.W #$40,-(SP)   write
    TRAP   #1
    ADD.L  #12,SP
**  close
**  (handle is on stack)
    MOVE.W #$3E,-(SP)   close
    TRAP   #1
    ADDQ.L #4,SP
    TST.L  (A4)
    BNE    copy
```

In order to keep the program short, error trapping has been kept to a minimum. No harm will come to your files but the program will crash if you make mistakes. If you are worried by this you can always use the write protect notch on your source disc.

You can only copy files with a read/write status. You can check this and alter it from the desktop using the Show Info option from the File menu. You cannot correct a file number if you enter it wrongly. In practise I have never done this, but if you do, no great disaster will result. Finally, your destination disc should not be write protected and must be formatted.

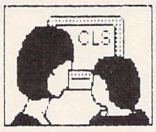
```
1 TUTOR1
2 TUTOR2
3 TUTOR3
4 TUTOR4
5 PROTEXT.CFG
6 TUTOR1.DOC
7 TUTOR2.DOC
8 TUTOR3.DOC
9 CONVERT.DOC
10 COMMAND.HLP
11 EPSON.PPD
12 CONFIG.PRG
13 CONVERT.PRG
14 MAXIDISK.PRG
15 PROTEXT.PRG
16 PROTEXT.RSC
17 MAXIDISK.INF
18 TUTOR4.DOC
19 PROTEXT.BAK
20 PROTEXT
```

Type the numbers of the files you wish to copy



COVER DISC SIDE 1

The assembly language source code – FILECOPY.ASM and the compiled program – FILECOPY.PRG – can be found on side one of this month's cover disc.



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So you want to be a programmer

Chris Jones, creator of Starwrek, explains the pitfalls and rewards of producing your own software

AFTER 18 months hard slog the launch of my adventure Starwrek has just taken place, and as any programmer will tell you, this can be an exciting time. Finding a software company bold enough to release it was an adventure in itself. When I began the long haul of writing the game, I had absolutely no idea of what lay ahead. Indeed, if I had known then what I know now, perhaps the adventure would never have been started.

Have you ever fancied your chances at writing a game, in the hope of getting it released? If you like the idea of a pushover job, with the reward of instant fame and fortune, forget programming. Most ideas never get further than the drawing board, and of those that do, very few make a mint.

If you're prepared to settle for the fame of seeing your name on someone else's screen, perhaps I can give you a few pointers in the right direction. I'll also cover some of the more worrying aspects such as selling, packaging and design – three of the major stumbling blocks.

To stand any chance of success there's one word you'll have to become very familiar with – patience. The time between your initial idea and the final package appearing in the shops can be anything up to 12 months, especially if the majority of work is being carried out in your spare time.

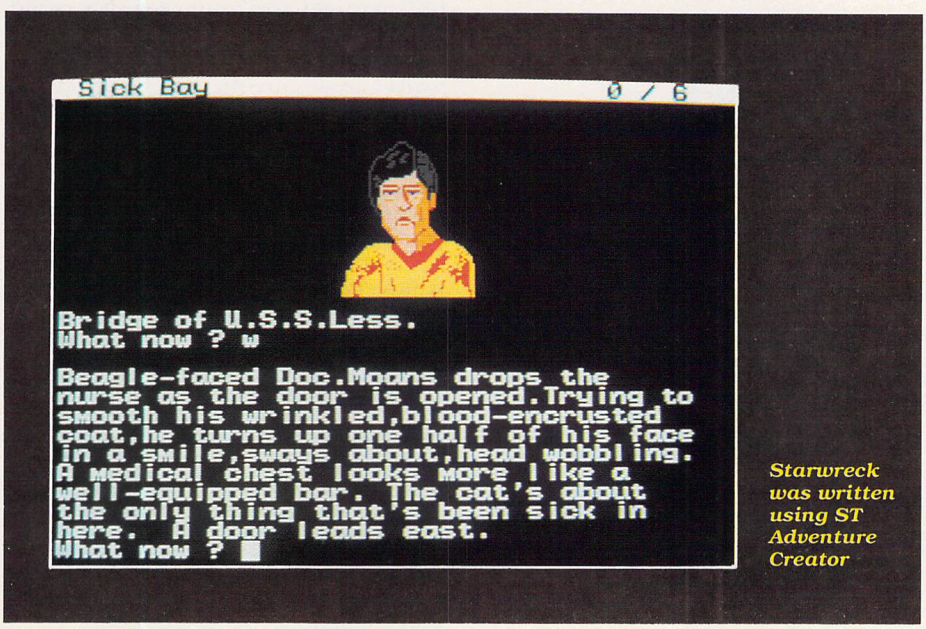
One of the first things you must consider is which language your game is to be written in. Make a list of everything it is going to incorporate, including graphics, joystick or mouse control, animation and memory constraints. If the language you had in mind cannot cope with some of them, you'll have to either look for another or redesign the game.

I chose to write using STAC because it did everything I wanted it to and it's tailored to writing adventures. There was no need for an all-singing, all-dancing language, just one that would handle the graphics and text, and was fairly easy to program.

The next step is to develop the game ideas. Plan it out, preferably with a storyboard of cartoons, describing exactly what's happening at each stage. Friends can be an enormous source of help and inspiration, and they may even offer to assist in some way. The best thing to do now is take a break for couple of weeks, so when you come back to it you can easily spot the weak points before wasting valuable time and money.

In order to sell your game it must appeal to a particular section of the market. Maybe it could include brilliant graphics, amazing sounds, novel gameplay or a mixture of all these and more. In Starwrek I leaned heavily on humour. All the descriptions, puzzles and graphics have a humorous slant so the whole feel of the game comes together. Remember, a game's atmosphere can determine its success or failure.

Don't try to compete in an already overcrowded market, as yet another version of Chess or Pacman would have to be exceptional to succeed. Likewise, don't fall into the trap of pro-



Starwreck was written using ST Adventure Creator

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ducing something nobody wants anyway. A good idea is to ask yourself, friends, family and anyone who'll talk to you, would you buy this game? If the answer is No, start again.

If your idea needs graphics, they must be of a high standard. Often a good product can be flawed through poor, even childish graphics. Most people are used to a level of sophistication unheard of a few years ago, but it's well to remember that some of the best concepts rely on few, if any graphics at all. Games like Tetris have sold thousands on their addictive gameplay, rather than fancy pictures and sprites.

Few good programmers can produce quality drawings, so look around for someone who can. Whatever you decide, you'll need outside help eventually, so why not get together from the start and sort out all the problems at the beginning?

After sorting all this out, you can start writing the program. Spend as much time as possible on this, keeping notes of everything, and try several ways of achieving the same result. Just because the first method works, it isn't necessarily the best. Above all, try to enjoy programming. This may seem odd, but chances are that if you don't like the project, nobody else will either.

Try to keep your ideas innovative, and don't re-use existing routines in new clothing. If you do, there's a good chance that potential buyers will recognise them, and the original author may get a little upset. Also make sure the program is user-friendly, which not only makes it easier to play, but more fun as well.

When you eventually emerge with a working prototype, let someone else play it. You'll be so indoctrinated by knowing the program backwards, you may never try doing the silly things novices try. Other programmers, not involved in your project, often make good testers, as they delight in trying to make other people's programs crash.

After the bugs have been removed, and the whole thing tidied up, you may end up with a product that you have enough confidence in to start seriously thinking about marketing. Be it an adventure, shoot-'em-up, educational program or whatever, the biggest hurdle is selling your pride and joy.

Get expert help if you can. Even small towns have a local computer shop, so try selling it to them. Give them a few copies along with a demonstration to try out on their customers.

You could also try sending copies to all the major software houses, but don't expect an immediate reply, as they're probably inundated with other people's efforts. Many magazines now contain cover discs, and getting a demonstration on one of these means perhaps 50,000 readers will see your game.

Before having thousands of copies produced, try sending the final game to magazines, as they may decide to review it for you. Send a few copies to distributors, who may order further copies from you, although at a greatly reduced price.

Deciding on the packaging and inlay design is the next big hurdle, but don't be tempted to go straight for the least expensive, as this could leave your otherwise excellent program looking cheap. Getting the inlay design right is also important, and it's best to stick to four colours, giving pleasing effects without too high a cost.

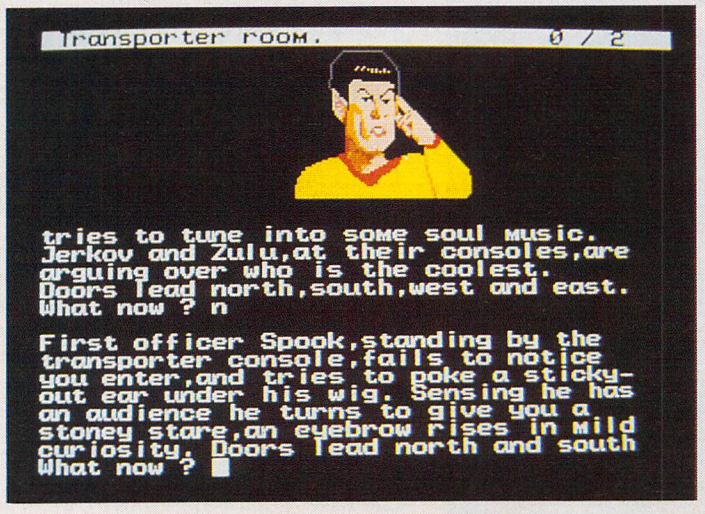
Choosing the right price can be bewildering. Weigh up how long it has taken to write, and give yourself a reasonable rate of pay. Also take into account costs, including advertising and copying, and then take out the distributor's slice, not forgetting a discount for large orders.

Do not be talked into large production runs and expensive advertisements, as any well produced, thought-out and attractively presented program should sell reasonably well without having to spend to much in the first place. Shop around for the best deals and work to a tight budget.

Don't have too many copies produced at first, otherwise you could find yourself with masses of unsold games, and nothing coming in but bills. Work out how many copies you expect to sell in the first month, and duplicate this number. If you sell them all, order more, but if there's quite a few still on the shelves, adjust next month's order to suit.

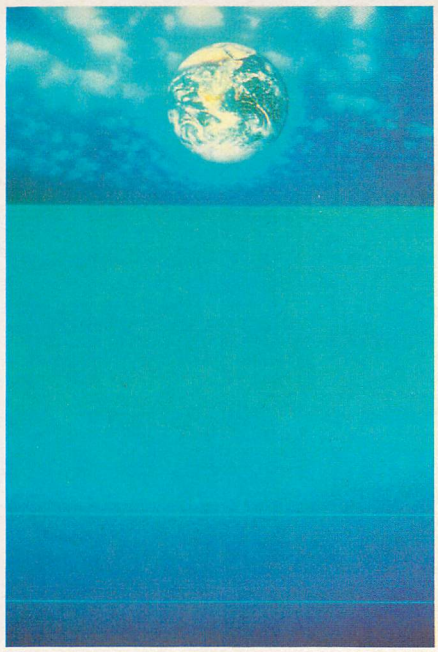
Plan well in advance. There's no point in trying to get a release date for Christmas in October, as you won't get it advertised and it won't sell. Many magazines have a small backlog of games to be reviewed, so be prepared to wait.

From the original concept of Starwrek to now, more than 18 months have passed, so it's certainly not a get rich quick scheme. Don't be disappointed if in two years you're not quite a millionaire. After all, if it were that easy everyone would be doing it.



Few programmers can produce quality drawings, so look around for someone that can

● *There's a review of Starwrek on page 40, and this month's cover disc contains a playable demonstration.*



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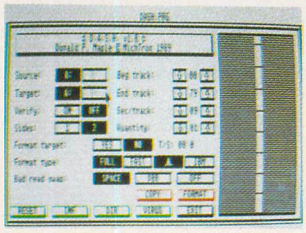

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Bouncing around

Phil Lawson unravels more screen secrets as he continues his STOS series

WE examined a few minor problems in STOS last month, and found a couple of interesting screen features. Now we'll continue with more screen effects, and finish with some sound and music.

If you missed last month's article, one of our discoveries was that the SCREEN COPY command does not automatically round all the X coordinates to the nearest multiple of 16 as stated in the manual. As long as the difference between the two X coordinates is a multiple of 16, the values can be anything you want. However, don't forget that the destination X coordinate is reduced to the nearest 16.

This fact can be used for some very impressive horizontal scrolling, which can even be faster than the built-in scroll functions. Text can also be scrolled, which some Amiga users say cannot be done on the ST. Proof coming up —load and run Program I:

```
  10 REM Program I
  20 MODE 0:KEY OFF:HIDE:CURS OFF
  30 RESERVE AS SCREEN 5:CLS 5
  40 RESERVE AS SCREEN 7:UNPACK 6,7
  50 GET PALETTE (7)
  60 LOGIC=5:WINDOPEN 1,0,0,40,12,0,3
  70 RESTORE 160:FOR a=0 TO 4:READ mes
s$
  80 LOCATE 0,a:PRINT mess$:NEXT a
  90 LOGIC=PHYSIC:SCREEN COPY 7 TO PHY
SIC:WAIT VBL
 100 SCREEN COPY PHYSIC TO BACK:WAIT
VBL
 110 FOR b=0 TO 4:FOR a=-320 TO 320
 120 SCREEN COPY 5,a,b*16,a+320,(b+1)
*16 TO PHYSIC,0,175
 130 WAIT VBL
 140 NEXT a:NEXT b
 150 GOTO 110
 160 DATA "Nice title scolling availa
ble in Stos."
 170 DATA "Stick your name, or your c
ompanies name"
 180 DATA "in a scrolling message for
 publicity."
 190 DATA "Say HI! to friends and col
legues."
 200 DATA "Mention forth-coming produ
cts and games."
```

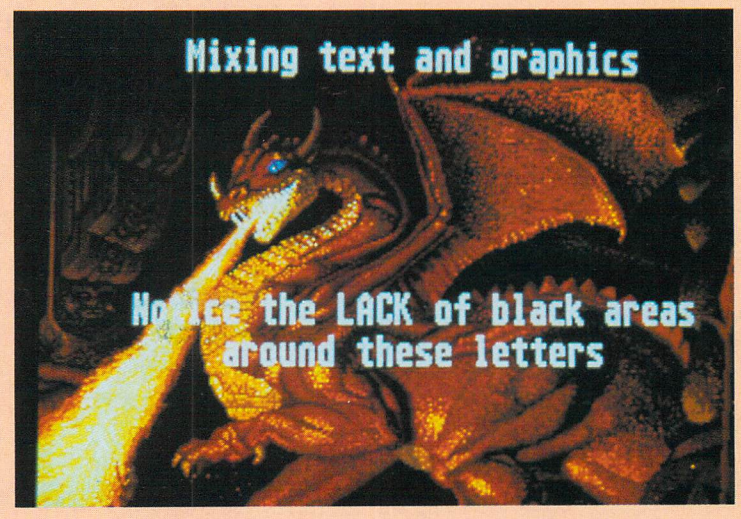
Explaining all the commands in this program would take a lot of space, so here's a brief summary. Two temporary screens are set up, and the STOS title screen is unpacked into bank seven.

The data messages are read and printed on screen five, each one on a different row. The title screen is then copied to the physical and background screens.

All the hard work is performed by the FOR ... NEXT loops, which continually copy sections of screen five to the PHYSIC screen. The WAIT VBL command in line 130 makes the scrolling smooth, but also slows it down a bit. Removing this line will result in very fast scrolling, but the text flickers.

Another screen function can be used to place text on a picture screen.

When text is printed on graphics you get an unsightly black border



This is easily solved by copying the text using the SCREEN$ function

To see this load and run Program II:

```
  10 REM Program II
  20 MODE 0:KEY OFF:CURS OFF:HIDE
  30 WINDOPEN 1,0,0,40,12,0,3
  40 CURS OFF:RESERVE AS SCREEN 6
  50 UNPACK 5,6
  60 SCREEN COPY 6 TO PHYSIC
  70 SCREEN COPY PHYSIC TO BACK
  80 PEN 15:LOCATE 0,0:CENTRE "Mixing
text and graphics"
  90 LOCATE 0,6:CENTRE "Notice the bla
ck areas"
 100 LOCATE 0,7:CENTRE "around these
letters"
 110 GOTO 110
```

Printing normally puts a rather

messy black border around the words, which doesn't look very elegant. To get rid of it, make the following changes:

```
  75 RESERVE AS SCREEN 7:CLS 7:LOGIC=7
  90 LOCATE 0,6:CENTRE "Notice the LAC
K of black areas"
  105 LOGIC=PHYSIC:a$=SCREEN$(7,0,0 TO
 319,199):SCREEN$(PHYSIC,0,0)=a$
```

All we've done is printed the text to another screen and copied it across using the *SCREEN$* function.What this does is to transfer all the specified area of the screen into a string. The syntax for this command is:

```
a$=SCREEN$(scrn,x1,y1 TO x2,y2)
```

The *x1,y1* and *x2,y2* coordinates are the top left and bottom right positions of the area to store in the string *a$*. The variable *scrn* gets the area from any screen currently in use. To copy the area, the same instruction is used, but in a different way:

```
SCREEN$(scrn,x,y)=a$
```

In this case *scrn* is the screen the area is to be copied to, and the coordinates *x,y* is where the top left corner of the area will appear on the screen.

Looking at line 105, we can see that *a$* is firstly storing the whole of screen seven, which is then copied to the physical screen.

Using this technique rather than the straight forward *PRINT* leaves the background alone, so removing the unsightly black border around the text.

See how a few extra commands can improve the display. It is important to remember these small points when adding the finishing touches to your programs. First impressions really do count.

A musical interlude

STOS, and the ST in particular, are capable of very good music and sound effects, but problems may arise when you try to do both at the same time. What happens is that when a piece of music uses all three sound channels, any sound effects (set with the PLAY command) are obliterated by the music. Let's first take a look at the syntax of the *PLAY* command:

```
PLAY [voice],pitch,duration
```

The *pitch* is the note to be played and *duration* is how long it will last in fiftieths of a second. The *voice* is an optional parameter, and can be used to specify on which sound channel the note will be played. If this is omitted the note will be played on all three channels simultaneously. Section 5, page 103, of the STOS manual explains this and other music commands in greater detail.

Load and run Program III, which is a bouncing ball demonstration:

```
  10 REM Program III
  20 GOSUB 200
  30 DIM c(15),mx$(2),my$(2),an$(2)
  40 GOSUB 150
  50 SPRITE 1,100,100,1
  60 dx=2:dy=1
  70 MOVE X 1,mx$(dx):MOVE Y 1,my$(dy)
  80 MOVE ON:MUSIC 2
  90 WHILE X SPRITE(1)>2 AND X SPRITE(
1)<250 AND Y SPRITE(1)>4 AND Y SPRITE(
1)<130:WEND
  100 MOVE OFF:VOLUME 3,15:PLAY 3,30,2
  110 IF X SPRITE(1)>2 THEN dx=2 ELSE
IF X SPRITE(1)<250 THEN dx=1
  120 IF Y SPRITE(1)>4 THEN dy=2 ELSE
IF Y SPRITE(1)<130 THEN dy=1
  130 VOLUME 3,0:MOVE X 1,mx$(dx):MOVE
 Y 1,my$(dy)
  140 MOVE ON:WAIT 10:GOTO 90
  150 REM SET DIRECTION MOVEMENT
  160 REM **********************
  170 mx$(1)="(1,-1,0)":mx$(2)="(1,1,0
)"
  180 my$(1)="(2,-4,0)":my$(2)="(2,4,0
)"
  190 RETURN
  200 REM SET UP SCREEN AND COLOURS
  210 REM *************************
  220 KEY OFF:MODE 0:HIDE ON:CURS OFF
  230 x=HUNT(START(1) TO START(1)+LENG
TH(1),"palt")+4
  240 FOR l=0 TO 15:COLOUR l,DEEK(x):I
NC x:INC x:NEXT
  250 RETURN
```

I won't bore you with a complete breakdown of how this program works, but just look at the important bits between lines 60 and 140. Firstly the directions and movements are set, and the music is started, which uses all three sound channels.

Line 90 waits until the sprite is just about to go off the screen, by testing the X and Y position. Line 100 stops the sprite and plays a note, giving a bounce effect. Lines 110 and 120 alter the direction by checking where the sprite is and reversing the X or Y movement.

The next two lines stop the note, reassign the direction, set the sprite moving again, and loop back to line 90. The WAIT command is there to make sure the sprite has moved away from the edge of the screen before line 90 checks its position again.

If you listen to the sound effects, you'll notice that every now and then the note will be distorted by the music. This is because the music reclaims channel three for its own tunes, giving the note a click sound.

Try changing line 80 to:

```
80 MOVE ON:MUSIC 12
```

This is exactly the same piece of music, but with channel three unused. Now when the note is played it won't be interfered with by the music, which is practically unchanged.

If you wish to see the ball spinning, add the command *SWITCH 5,9* to the end of line 80. This waits for 5/50ths of a second and then rotates all the colours, beginning with number nine. Try changing these two numbers for interesting effects.

You may have noticed that the music is quieter than the bounce note. This is quite useful, as your programs can now have a nice background tune, while the sound effects _ whizzes, bangs and whoopies _ appear to be even more spectacular. To accomplish this make the volume of music about 10 and the sound effects 14 or 15.

● *Next month we'll examine some of the accessories, and show a useful technique for reducing the size of sprite banks, without reducing the size or number of sprite patterns.*

to a lively tune

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VISA

A spell of shopping

Nic Outterside examines two exciting new educational programs designed for younger children

GOOD news for all parents and teachers looking for good new educational software for primary aged children is that it is here, thanks to Children's Learning Software of London, which has married concrete educational material with imaginative and stimulating play to produce outstanding examples of what educational software should be.

Let's Spell at the Shops and Let's Spell in French are two colourful spelling programs aimed at the 4 to 9 and 7 to 11-year-olds respectively. Each is programmed in STOS Basic and makes full use of that language's excellent graphic handling capabilities. Both pieces of software tackle the subject of spelling in the same safe way, with the same core program – albeit one in French and the other in English.

The programs are designed to teach children the shape of letters and some common social sight words, thus building an early sight vocabulary, and can operate at different levels according to ability. Also included is digitised sampled speech to stimulate interaction and help with the tuition of correct letter sounds – achieved more successfully than in the B.Ware programs.

However, these programs are not meant to be phonically based and therefore do not rely on lists of phonically regular words. Both programs need not just be used as educational tools, but can also be played as shopping games. This is important for young children as they can play and become familiar with the program, mouse manipulation and letter recognition.

Both are also entirely mouse-driven and use a lower-case letter grid throughout, thus overcoming the confusion of keyboard capital letters. Soon to be available are extra scenario discs which will work with the programs, and by so doing, create a wider and more varied picture dictionary.

The programs are auto-booting and once loaded you are presented with an attractive title screen. Next you can view an information summary screen which explains by arrows and labels the working of the exercise or game.

You now progress to a 3D menu picture of a modern shopping arcade which is both colourful and motivating. In it are a toyshop, DIY store, fruiterers, bakers and cake shop and clothes boutique. Each has a sign outside, and in Let's Spell in French the signs are in that language.

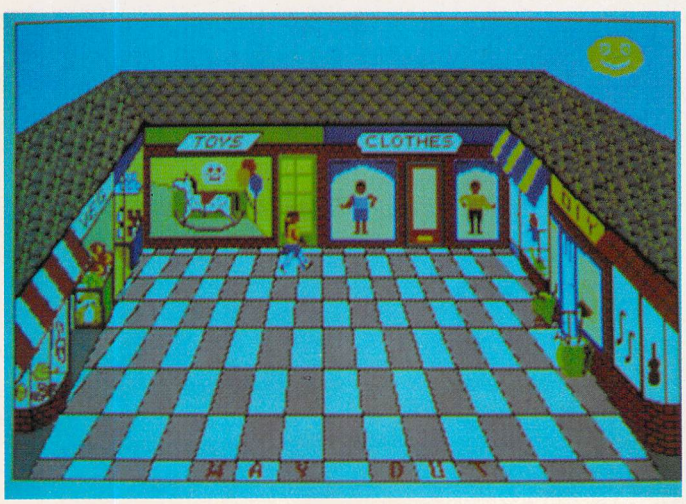
Centre screen is the mouse pointer which is an animated little girl which can be changed to a little boy by pressing the right mouse button. It is nice to see positive reverse sexism in a children's software package for a change!

You can play, making imaginary shopping trips, and if you move the pointer to a shop doorway, a bell will ring. If you press the left mouse button the screen fades and a new one displaying the inside of the chosen shop appears. The pointer becomes a shopping basket and moving this across the screen will cause a bell to ring when it passes over an item for sale. But to buy the item, you must spell it correctly.

Pressing the left mouse button again toggles the screen to the spelling work area. This shows a lower-case alphabet grid, a complete/finis icon – with different pictures in the French and English versions – a delete (oops/oh) icon, two small teddy bears, a teddy's face, a picture of the item selected and a thermometer – which does not appear in the French version.

There are varying levels of play. To select the lower level – age four to six in the English version and six to nine

Turn to Page 127 ▶



Let's Spell at the Shops

. . . and in French

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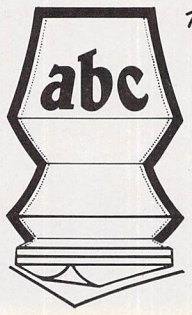

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◀ *From Page 125*

in the French – you click on the small teddy with the left mouse button. The spelling of the item in the picture will appear in uncoloured boxes. All you then do is place the pointer over matching letters in the alphabet grid and click the left mouse button. The first box will fill with colour. This is done until all the boxes are filled and then the complete icon is clicked on.

A correct answer is rewarded with a smiling face, a rather twee tune and a congratulatory message. The screen now toggles back to the shop. A wrong answer is greeted with a sad face and the word is respelt. As this is done, correct letters are greeted with a bell sound and incorrect letters are greeted with a shooting sound while the letter is changed to the correct one. In Let's Spell in French the correct spelling of the whole word is displayed in full. You are also allowed to attempt to spell the misspelt word again.

The next age range – 5 to 7 in English and 8 to 11 plus in French – can be selected by clicking on the larger teddy, the default setting. No letters appear and you must spell the word without help. This is achieved in the same way as in the lower age group.

An interesting addition is that if the teddy's eyes are clicked on the word is displayed for about four seconds. You may then have a go at spelling the word. Success or failure is treated as before. This uses a tried and tested primary school reading technique to help children who have progressed from letter matching. It is basically a Look, Cover, Spell and Check method and emphasises the educational solidity of the software.

In Let's Spell at the Shops, in both ranges and with the teddy's eyes option, the help of the thermometer can be obtained by clicking on it. This will show a rise of temperature when the pointer is close to the correct letter. This is a thoughtful extension and shows carefully tested development of the program. It also allows your child independence to work with the program alone.

Exiting to the shop is via the way out or sortie sign, and returns you to the shopping arcade. Exiting from here finishes the session. If you are really finished the screen will display a list of the words you have spelt correctly in that particular session. This list can be printed out to keep a permanent hard copy record for you to assess progress.

Let's Spell at the Shops will find its true home in the infant school classroom or at home. Used in conjunction with other spelling software and standard teaching methods, it will be a boon to any teacher or parent. It is fun and captivating, and I find it hard to tear my five year old away from the ST once he begins a shopping expedition.

Let's Spell in French will suit a slightly older child – probably aged 7 to 12 – and uses the same techniques and similar graphics to reinforce French spelling and correct gender. It will certainly fill a void in the educational market.

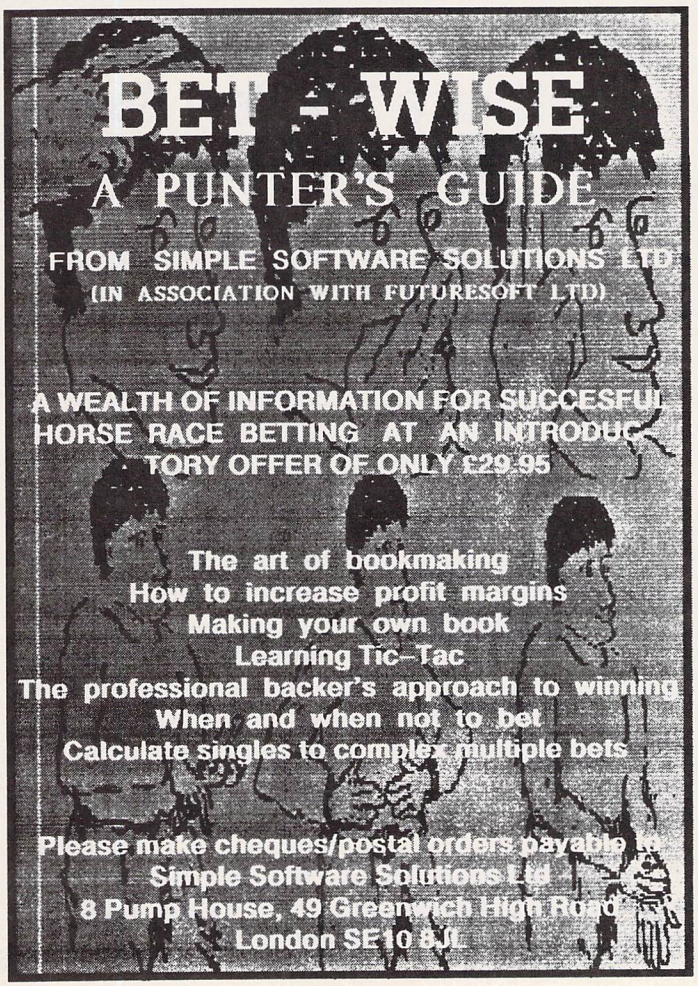
I am most impressed by both offerings and have no hesitation in recommending them without reservation to parents and teachers alike.

FACT FILE

Product: Let's Spell at the Shops
Product: Let's Spell in French
Price: £14.99
Supplier: Children's Learning Software, PO Box 119, London SW14 8BL
Tel: 01-878 8761

POINTS FOR:
Attractively presented and well priced. Sound educational content. Fun to play and both may be used at different primary levels. Print out facility to keep a record of progress.

AGAINST:
Nothing substantial. Perhaps workcards could be included in future editions.



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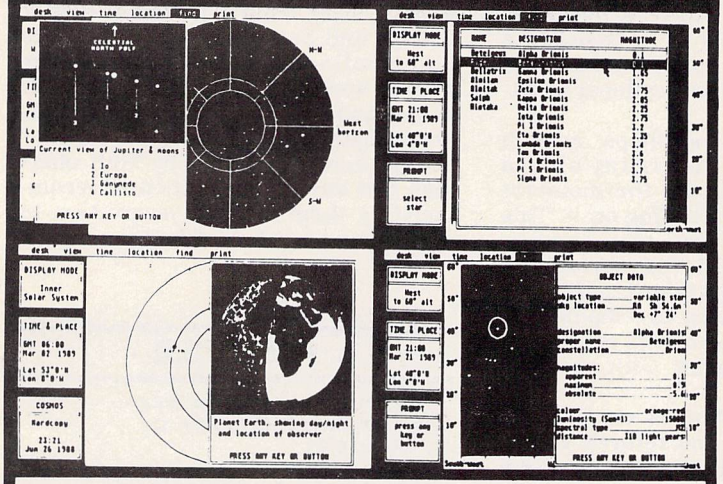

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"Will grab a childs attention and maintain concentration",
"A valuable addition to any home education library".–Nic Outterside–ST User, July, 1989

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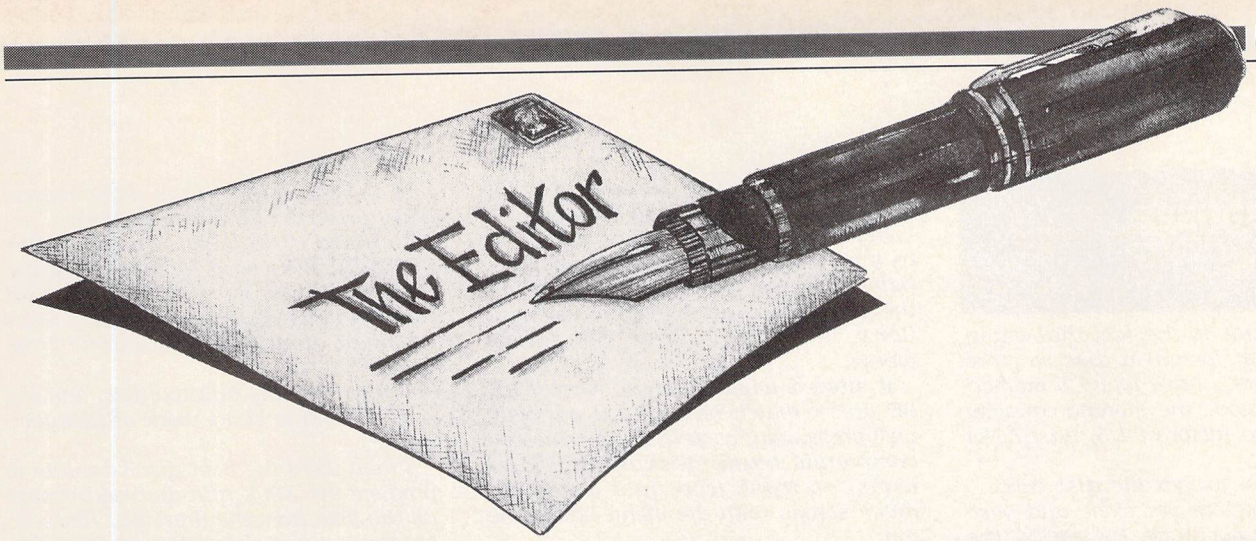


How compatible is the new STE?

I HAVE some questions about the new Atari STE computer. Will software for it be compatible with the 520STFM and will the micro be released before Christmas? – **Cathal Dillen, Omagh, County Tyrone, Northern Ireland.**

● Software written for the ST should work on the new STE because everything the old micro can do, the new one can do better. However, the new STE has over 3,500 more colours, stereo sound output, extra joystick ports – analogue ones too – and so on.

This means that any program designed to make use of these extra facilities will not work properly on an old ST.

Until there are a lot of STEs about software will not be written to take advantage of it, so applications and games will run just the same as on an old ST.

The micro should be available for Christmas, but don't expect any STE-specific software until next summer.

Start making money on your micro

I AM a programmer and have recently bought an Atari ST. After buying the excellent STOS software I have now decided that it is time that my computer paid for itself. I have come up with basic ideas for several games and after I have developed them I would like to market them.

Could you give me some information on how to copyright programs and how I should go about marketing them. What pitfalls could I encounter on the way? – **David Burns, Rochester, Kent.**

● You own the copyright to everything you create, so you should display a message in the program, along with the date, saying that you own the copyright. The only problem you may come across with this is if someone else reproduces the program and changes the copyright message to read that it is theirs.To get around this small hiccup you could put a copy of your work into a sealed envelope and post it to yourself. Keep it safe – and sealed.

You could try selling the programs yourself, but a better way is to let an established software company market the game.

They will pay for the advertising and marketing involving you in no financial outlay.

Going green on Atari ST User?

I AM a 13-year-old girl and have been buying Atari ST User *for more than a year. I find it very helpful – the software reviews are essential when buying games.*

Even though I am young I take a special interest in our environment and especially in the destruction of rain forests. Which brings me to the point of this letter.

I am sure that the magazine would still be as enjoyable if recycled paper was used.

I imagine that a fair number of your readers share my views, maybe you could conduct a survey concerning this issue. – **Sarah Booker, Sheffield.**

● What do other readers think?

There's no joy with multi-tasking

I OWN an Atari 520STFM and use it for writing programs in Prospero Pascal among other things.

Could you or any of your readers tell me how to do multi-tasking on the ST? Will Gem/TOS allow you to do this function? – **Anthony Rogerson, Dalton-in-Furness, Cumbria.**

● Real multi-tasking is not possible on the Atari ST. It is possible, however, to load several programs into memory and swap between them using a utility like Revolver (reviewed last month). A desk accessory is the closest you'll get to a multi-tasking program.

Clearer pictures on Super VHS

IN reply to Mr Ford's letter in your August 1989 issue of Atari ST User *in which he reported problems of fuzzy playback pictures recorded from his ST, I think this is because of the low resolution of the VHS system.*

Television resolution is measured in lines. VHS is 250 lines, which is less than the resolution of the video output from the ST.

Therefore the recorded picture will always look softer than the unrecorded picture.

One solution might be to invest in the recently introduced Super VHS (SVHS) system which has a much higher resolution of 420 lines. This will give results nearer to what is seen on the monitor before recording.

It might be the case that Mr Ford's VHS machine is faulty, but this would show up on recorded TV programmes.

Linking a video to the ST

I HAVE an Atari 1040ST and have the use of a JVC GR7 video camera. I would like to know whether the camera can be coupled directly to the computer? If so, which input and what lead is required, and last but not least what can be achieved by doing so? I am interested in animated titles in colour. — **Leon Collins. Leeds.**

● Yes the camera can be coupled to the computer. To do it you will need the Rombo Vidi-ST digitiser. A demonstration version of this product was on the cover disc of our September issue. It can be ordered for a special price of £89.99 using the order form on Page 143.

By doing this you will be able to capture pictures and use them in art or DTP packages.

For titles we recommend you try the Cyber series of art and CAD packages.

Turn to Page 130 ►

Mega storage on discs

WITH reference to the fact that many programs can format a disc to more than 80 tracks, I have found a method that will increase the storage capacity of a disc by a factor of 1.5. Easy? Not really.

You have to format the disc twice – once to 11 sectors per track and once to 10 sectors per track, 82 tracks. The 10 sector formatter will not suspect the extra formatted sector, so the formats will merge, giving a total storage capacity of 1,039k, over one megabyte.

A disc formatter for 10 sector per track and 82 tracks exists on the Multiface ST, and 11 sector per track formatters should be available in the public domain. This can prove extremely useful as more than 30 Degas files can be stored on one disc.

Keep up the good work. I remember the 8 bit days when Atari ST User *magazine was a mere pullout inside* Atari User. *Don't spoil the letters page by printing silly letters and sarcastic replies like some other magazines. Best wishes for the future.* – **William White, Brussels, Belgium.**

● 1,093k per disc! Pull the other one.

Desktop swept clean — by a virus

I HAVE discovered a potentially very annoying virus which I discovered in my ST. Like most people I'm full of good intentions about turning the machine off between disc swapping, especially if they're from an untried source – PD libraries or borrowed from friends.

In practice it just becomes too tedious to switch off and wait 15 seconds before starting up again. Well, I paid the price for overlooking the precautions, but it could have been much worse.

It started when I noticed one of my PD discs, which had booted perfectly well previously, booted, but produced a completely blank desktop – no disc icons, no trash icon, just an empty green screen with the menu bar at the top.

Booting from another disc, and then swapping that for the unusual one, showed that the contents of the disc were intact and all the programs and utilities could be run as usual.

I tried saving the desktop and rebooting, but was faced with the same problem.

I tried deleting the original DESKTOP.INF file and saving the desktop again but to no avail.

I couldn't remember when I'd last used the disc or if I'd ever tried to boot from it before, so I made a mental note and put it to one side.

A couple more months of anti-virus vigilance followed.

I bought a few PD discs from the Atari User Show at Ally Pally and one of them had several ram-disc utilities which I was keen to try. I finally got around to using them in earnest last night, so I made a boot disc which would create a 300k ram disc on start-up.

I played with a few of the other discs until well into the night and then went off to bed.

In the morning one of the utilities discs – the one with the ram disc program on it – booted with the same problem as the earlier one – a completely blank desktop. I was sure that the disc had booted perfectly the night before, so I started thinking about a virus.

I used the PD virus killer VIRUSKIL.PRG v2.0 by Richard Karsmakers to search all the discs and found a virus on one of the utility discs I'd been given by a colleague from work.

It was the only infected disc, and the program made short work of disinfecting it.

I then used the boot disc I'd made to produce the 300k ram disc and copied all the files from the damaged discs, in stages, to non-damaged ones, reformatted the originals and copied the contents back.

This seems to have cured my immediate problems, but as I have about 170 discs to check for viruses it's going to be a while before I'm 100 per cent sure I am infection free.

This has drummed into me the need for anti-virus precautions, and I hope anyone else who doubts the wisdom of switching off the machine between discs – and waiting – rather than using the reset button takes heed too. It can happen to you. – **Steve Tetchner, Westcliff-on-Sea**

ST has been given the wrong image

WHY isn't the ST regarded as a real workhorse like the IBM and Apple Mac? Why aren't Microsoft, Borland and Ashton Tate converting their well known packages for the Atari ST?

It can't be the lack of potential market nor the piracy, because that is as bad, or even worse, on MSdos and the Macintosh as it is on the ST.

What is putting the big software houses off from converting the heavy business programs for the ST? My opinion is that Atari, especially the USA department, failed to promote the ST in the right way.

Atari had at the start only one idea of promoting the ST and that was to give the ST a game's machine image. This is preventing potential office users from buying the ST and business software houses from converting their programs.

What Atari should have done was to split the promotion into two or three sections: A game section (520ST), home section (1040ST, Mega 1) and business section (Mega STs).Two or three different advertisements will cost a fair amount of money, but Atari has made loadsamoney in the last few years.

Availability of high-potential hardware isn't enough, you also need some high-potential software as well and together they form high-potential business equipment.

So the right advertisment is of vital interest to make the ST succesful in the non-games market as it is in the games market. – **Jay Lee, Capelle, The Netherlands.**

The pools system that paid off

IN reply to A.J. Emery's letter in the September issue about the Apolonia's Pools System, I think he should perhaps criticise his interpretation of the information rather than the program itself.

His anecdote of having won nothing in a full season contrasts with my more recent experience.

In the 10 weeks that I have been using the program, 13 out of 47 lines that I have entered have given 20 points or more, including one line each of 24, 23 and 22.5 points, with an average of 18.

Before anyone gets too excited I should add that because of the perm I use the most points in one line came to 22.5, paying out a meagre £21.60 on Vernons.

It is the time and trouble you take to analyse the selections and adjust the method you use that actually brings the desired results.

To other users of this program that want to emulate the results I had, when you obtain your forecast and run your reports, pay absolutely no attention to the Best Draws list. Even if I had a perm that covered half the fixtures I would barely have had 20 points if I had used the best 29 draws given.

Always mark down the results on your printouts and see if you can establish a pattern as to how they fall compared to the prediction. – **Harry Sideras, Yardley, Birmingham.**

Each month we select a letter of the month and the sender recieves the program which our reviewers have rated *Atari ST* Star game. This month Gareth Bradley will receive Indiana Jones, which is reviewed on Page 26. Letters on every subject are welcome. Send them to the Editor, Atari ST User, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

Way to defeat the virus idiots

I WOULD like to comment on the virus problem, which seems to be forever increasing.

Although many programmers have produced virus destruction utilities and immunisation programs such as the public domain Virus Destruction Utility and many other cheap commercial programs, it appears that no one has thought to tackle the situation as a whole.

By creating a program that acts like a virus, copying itself from disc to disc and then immunising the others against possible infection from the malicious viruses which some mindless idiots seem to find pleasure in producing, surely the tables could be turned.

The program could include an information screen on boot-up telling the current state of play and also an option to disable the self copy function, which might otherwise, as Stephen Hill points out, corrupt commercial programs with true boot sectors.

The program could also be available in double click from the desktop form as an ordinary immunisation program. Such a program wouldn't be able to overcome new viruses unless it was constantly updated.

The war between destruction utilities and virus programmers will never end, but if the program was kept up to date by a team of proficient virus experts the problem could be kept to a minimum. – **Gareth Bradley, Wimborne, Dorset.**

Star game FOR A star letter

Abandoned in Elite space

RECENTLY I wrote to you about my missing pages from The Complete Atari ST. *I must thank you for your prompt action in supplying these. Good work, chaps.*

Like many other readers I have been spending many happy hours piloting my Cobra through the darker reaches of space in Elite.

When trading and blasting pirates began to pall I was happy to accept the Special Missions offered. Indeed, the first one appeared in the second galaxy when I was merely Competent and had amassed a meagre score of 40,000.

Unfortunately my voyage through the universe has now stalled at mission five.

The task is to destroy an enemy space station that has been taken over by Thargoids. Although I have repeatedly done this, I can't complete the mission.

I have also hung around the destroyed station and finished off the mysterious spaceships that subsequently appear, but to no avail.

Can anyone suggest where I am going wrong? Or is there a bug in the program? I hope someone can help or I'll be stuck here in space forever. – **Laura Gow, Buckie, Baffshire.**

● We haven't managed to get past mission two. Can any readers help Laura?

Employment for the redundant

I OWN a 520STFM which I recently upgraded by fittng a 1Mb internal disc drive.

I now have a redundant 0.5Mb drive which I would like to use as an external drive.

What modifications does this involve and what are the power requirements to run the drive from its own supply?

I have heard that it is possible to modify a monitor to display all three resolutions and that software is available to allow colour only programs to run on a mono monitor. Any details on either of these?

I find your letters pages very interesting, and sometimes find very useful tips in the letters. – **Ian Haining, Aberdeen.**

● It will cost almost as much to buy a power supply and drive case and to make the (minor) internal modification to the old drive as it will to buy a new one ready made. It may be possible to pick up an old faulty external drive for a few pounds and cannibalise it for spares.

You can't modify a monitor to display all three screen resolutions, but such monitors can be bought, for instance, the NEC Multisync. However, it only displays a monochrome picture. Emulators are available in the public domain that allow colour programs to run on a monochrome monitor and vice versa.

Scanning for information

I WANT to buy either a digitiser or scanner. Could you please tell me the advantages and disadvantages of both and any other relevant information. – **R. Woolsgrove, London.**

● We think you may be confused about what these products do. Both take images and turn them into pictures that can be loaded into an art package, but they operate in completely different ways.

A digitiser is for grabbing snapshots of moving pictures from a TV, video recorder or video camera. A scanner scans hardcopy such as a newspaper, magazine, photograph or other artwork on paper.

Stuck with drive A

I HAVE recently bought a second drive for my 520STFM. The drive works fine, but I have one slight problem – how do I boot from it?

I know there is a software solution – a public domain program called Bboot – but this seems to have problems with multi-load programs. Some programs will boot the first part OK then try to load the rest of the program from drive A.

Is there a hardware solution to my problem? I don't mind if it means going inside the ST, as I have some experience in electronics. – **Carl Leach. Rugby, Warwickshire.**

● Some programs use the currently selected disc drive, but others insist on using drive A.

That's the way the programmers wrote the software, and nothing can be done about it.

Trackman goes under the spotlight and gets a thorough play-testing

On the

IF you are a software company planning to launch an ST sequencer it will have to be something pretty special in order to cut a swathe through the competition. Hollis Research reckons Trackman has that something extra. It was two years in development and, indeed, it does boast some excellent features.

So what do you get for the money? As well as the obligatory dongle there is also an auxiliary Midi socket which plugs into the cartridge port, two manuals and a footswitch. One of the manuals is a tutorial and the other is for reference purposes. Both are extremely well produced.

The main screen is uncluttered and you can see at a glance what most functions will do. Operation is based around tape transport controls and there are big buttons for Record, Play, Rewind and Fast Forward; 16 tracks are shown on screen.

Clicking on the Bank button brings up another 16 tracks which can be sent to the auxiliary Midi socket, giving you access to 32 Midi channels. Some other sequencers offer a similar feature but the socket is an extra.

The footswitch, which plugs into the joystick port, can be assigned to control a number of Trackman's operations including Play/Stop, Record, Locate, Erase, Repeat and the left Mouse button. The system can support four footswitches although this requires an additional interface costing £89.99.

A collection of 32 tracks is known as a sequence and you can record up to 100 sequences each of up to 999 bars. These can in turn be linked together to form a song. A 1040ST will be able to store around 80,000 notes, although all Hollis Research software will also run on a 520STFM.

Tracks 1 to 16 are set to transmit on Midi channels 1 to 16 respectively – this is easily altered. If you switch Midi Echo on, whatever you play into the sequencer is transmitted back out on the currently-selected track and Midi channel.

Once you've assigned your instruments' sounds to Midi channels you can play any of the sounds simply by clicking on the relevant track.

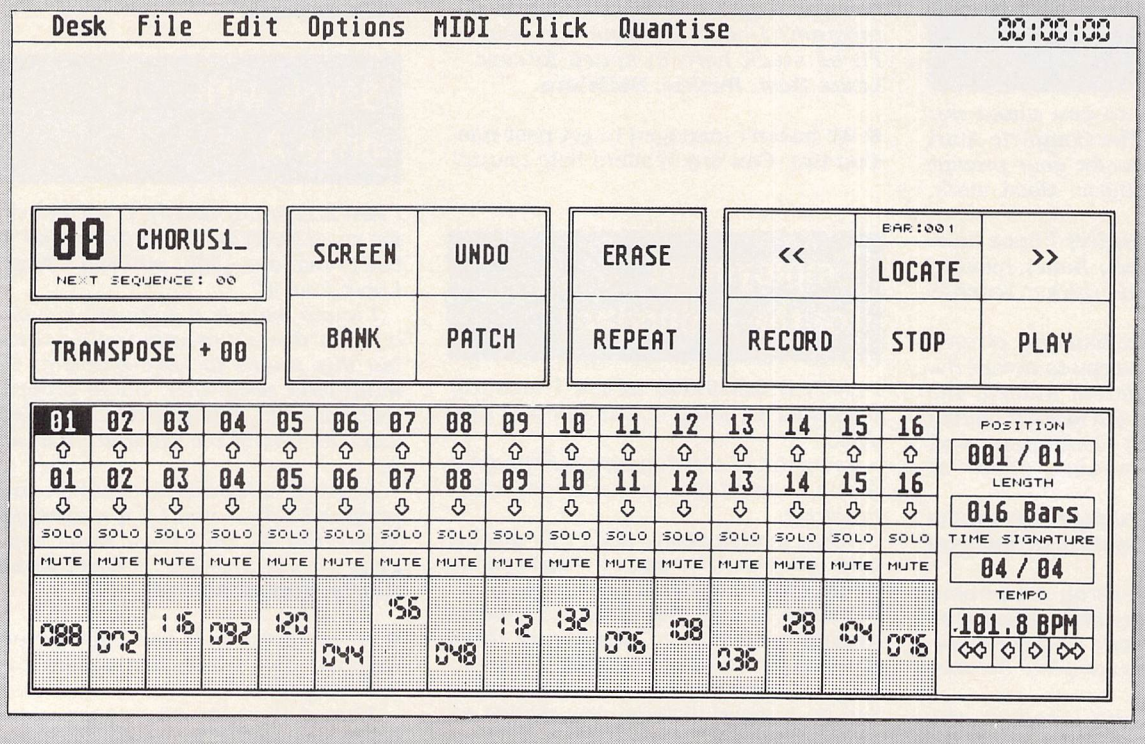
Each track has a fader which controls Midi velocity, allowing you to mix the relative volume of each track from the sequencer. You can also adjust this as the music plays.

To start recording select the track you want to record on. Then when you start to record a new sequence enter the number of bars it is to contain. During recording you can make the sequence loop, allowing overdubs.

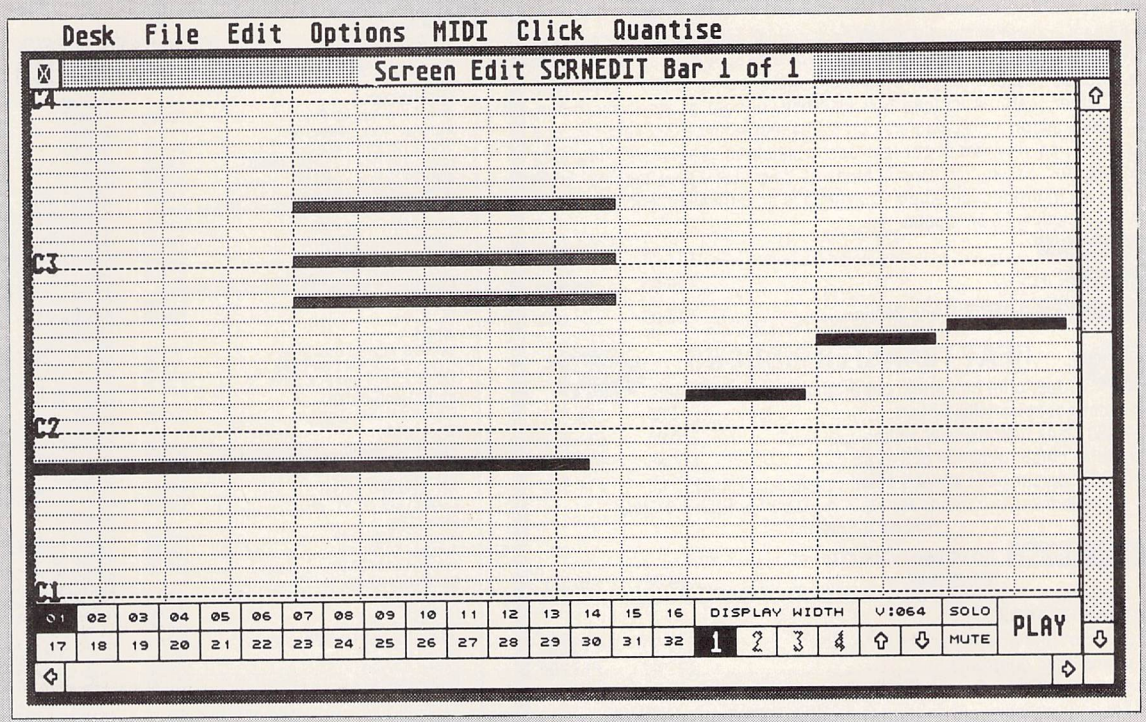
You can also set the bar to which the program loops back – it doesn't have to go back to bar one. A clock in the top right corner of the screen shows how long a sequence has been playing.

The footswitch – or spacebar – can be used to punch in and out. This allows you to play along with a sequence until you get it right and then tap the footswitch and record the part without losing your stride. If you mess up a take there's always the Undo button.

To edit a track, click on Screen and up pops a grid editor in which notes are represented as horizontal bars. Here you can Move, Copy, Delete,



Trackman's main screen with its large cassette recorder-style buttons



The edit screen indicates notes by horizontal bars

right track

Insert and alter the duration and pitch of the notes. This is currently the only method of step-time input and while it's fine for adding a few notes here and there it's not really an ideal method of step-time entry.

Editing facilities are comprehensive and include Copy, Insert, Append, Replace Erase and Delete bar functions. Sequences can be copied from one to another. You can move a range of notes on a range of Midi channels from one track to another. Rotate Sequence moves a sequence back or forward in time and you can transpose both Velocity and Pitch.

There is also a facility to save Midi bulk such as voice data to disc. This would allow you to store voice files on the same disc as your sequence.

Index is very useful, as it shows the sequences which have been recorded and how many bars they contain. There is also a Track Sheet which lists the tracks – with names – along with a Notepad area.

Sync Output is routed to the auxiliary Midi out and can range from a quarter to one sixty-fourth clock pulses or sync 24 (DIN) which is suitable for some older drum machines.

You can select a range of Midi controllers and filters to prevent recording unwanted information and the clock can be set to Internal, External or Automatic. On the latter, if the sequencer is started from the computer Internal is selected. If it senses a Continue message or receives an external clock signal it selects External.

Midi filter settings, clock, transpose and a host of other assignments can be saved to be loaded automatically next time you boot the program.

The disc also contains a public domain Roland D50 Patch Librarian, plus 1000 DX voices from the Yamaha X Club. Trackman has swiftly been updated following comments from users and is now in version 1.5. All software updates are free – a policy other distributors would do well to adopt.

There are more than 20 additions or alterations to the original program including a Drum Edit List which lets you assign drum sounds to note numbers and velocity compress and expand. Version two, which will be the next official release, will support the Midi file format allowing exchange of data between Trackman and other programs.

FACT FILE

Product: Trackman
Price: £199
Supplier: First Rate, La Ramee, St. Peter Port, Guernsey, Channel Islands.
Tel: 0481 23169

POINTS FOR:
Easy to use, 32 Midi channels, hardware supplied, free updates.

AGAINST:
Poor step-time input, some operations require use of mouse and keyboard.

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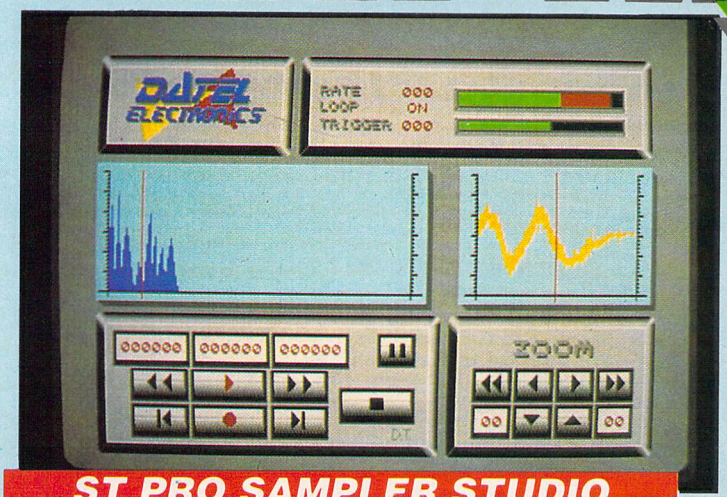

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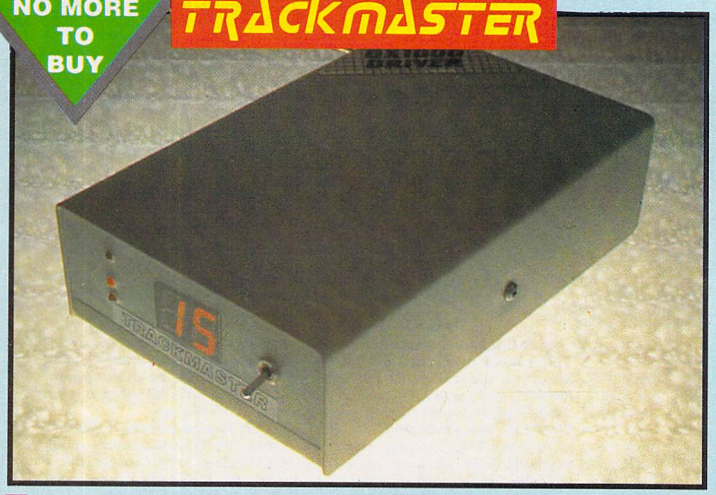

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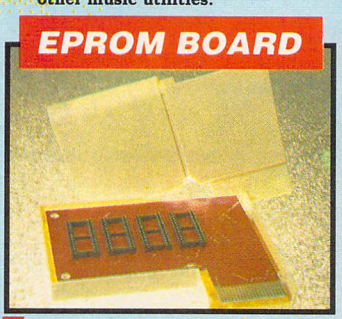

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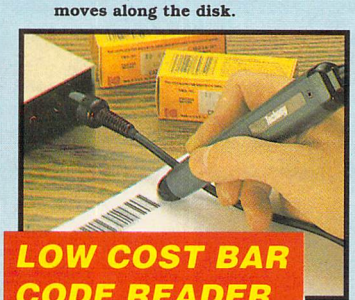

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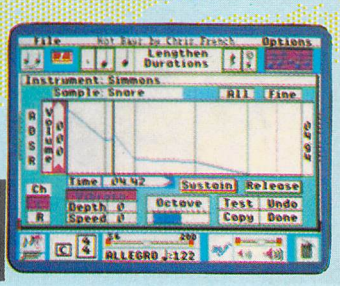

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Plug in for more performance

Kenn Garroch examines the ST's cartridge port and looks at two new hardware add-ons

ONE of the most under used facilities on the Atari ST is probably the cartridge port, through which up to 128k of rom software can be plugged into the machine and accessed as though it were another disc.

The port's main drawback is that it can only be read from and not written to. When designing the ST, Atari seems to have decided that no one in their right mind would want to write to the cartridge port. Presumably this is a hang over from the days of 8 bit Atari machines, where the port's main use was for plug-in-and-run games.

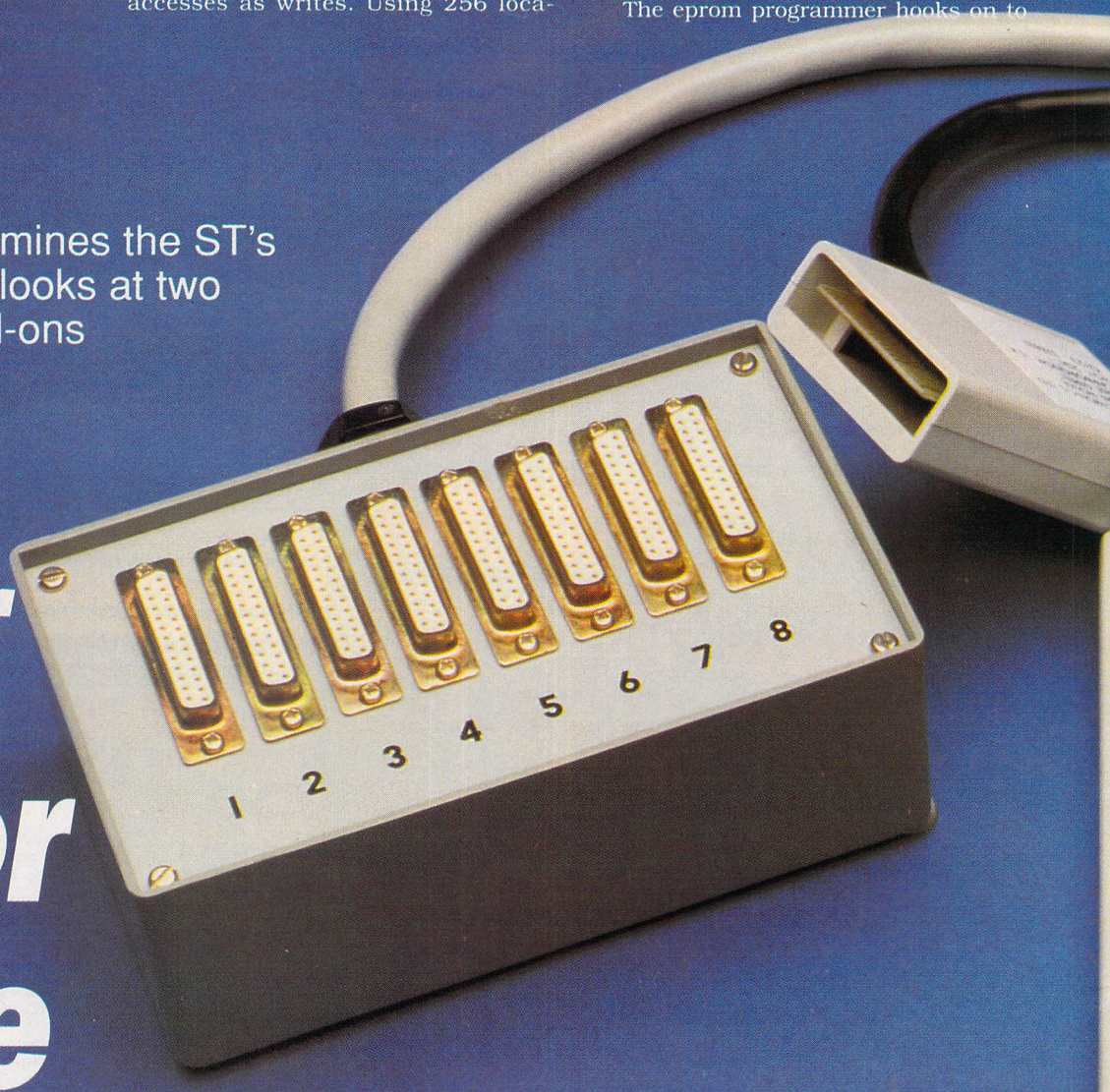
If a write line had been included, attaching extra ram and all sorts of expansions would have been easy. However, to get around the problem, manufacturers of hardware extensions have to be rather clever and use the read line and addresses to send data out. The way this is done is to use the external hardware to interpret read accesses as writes. Using 256 locations will give 8 bit output.

Unison has produced an eprom (erasable programmable read only memory) programmer that will take chips from 2764 to 27512 giving storage from 8k to 64k for those who want to write their own rom cartridge software. In fact, the storage is from 16k to 128k as two eproms would normally be used together in a cartridge. The unit is also able to take two eproms at a time.

Addressing the eprom

To use it, the address of the memory location is placed on its address bus and the data to be programmed on its data bus. A high voltage pulse is then written to the programming pin. The data is then usually read back to make sure it was written properly. All of this presumes that the eprom was originally empty, that is, it was erased by exposing it to ultra-violet light.

The eprom programmer hooks on to



the ST via the cartridge port, using the clever address reading method to write data to it. The software comes in two formats, Gem and OS9, with manuals for each.

An eprom eraser and eproms will be needed to use the device. An eraser costing around £50 will erase an eprom in 20 minutes. The smallest eprom, the 2764, costs around £4 and the 27512 around £11 so another £70 or so will have to be lashed out along with the £249 for the programmer and software. Normally four eproms will be needed so-that one set can be in the eraser while the others are being programmed. Any software programmed into the eprom will have been tested at another memory address to make sure it works properly.

The usual reason for putting software on to eprom is so that it can be accessed quickly when the machine is turned on. It is also an easy method of distributing it to other users. At around £320 for a full system, it's quite a lot to lay out if no profit is being made from software sales.

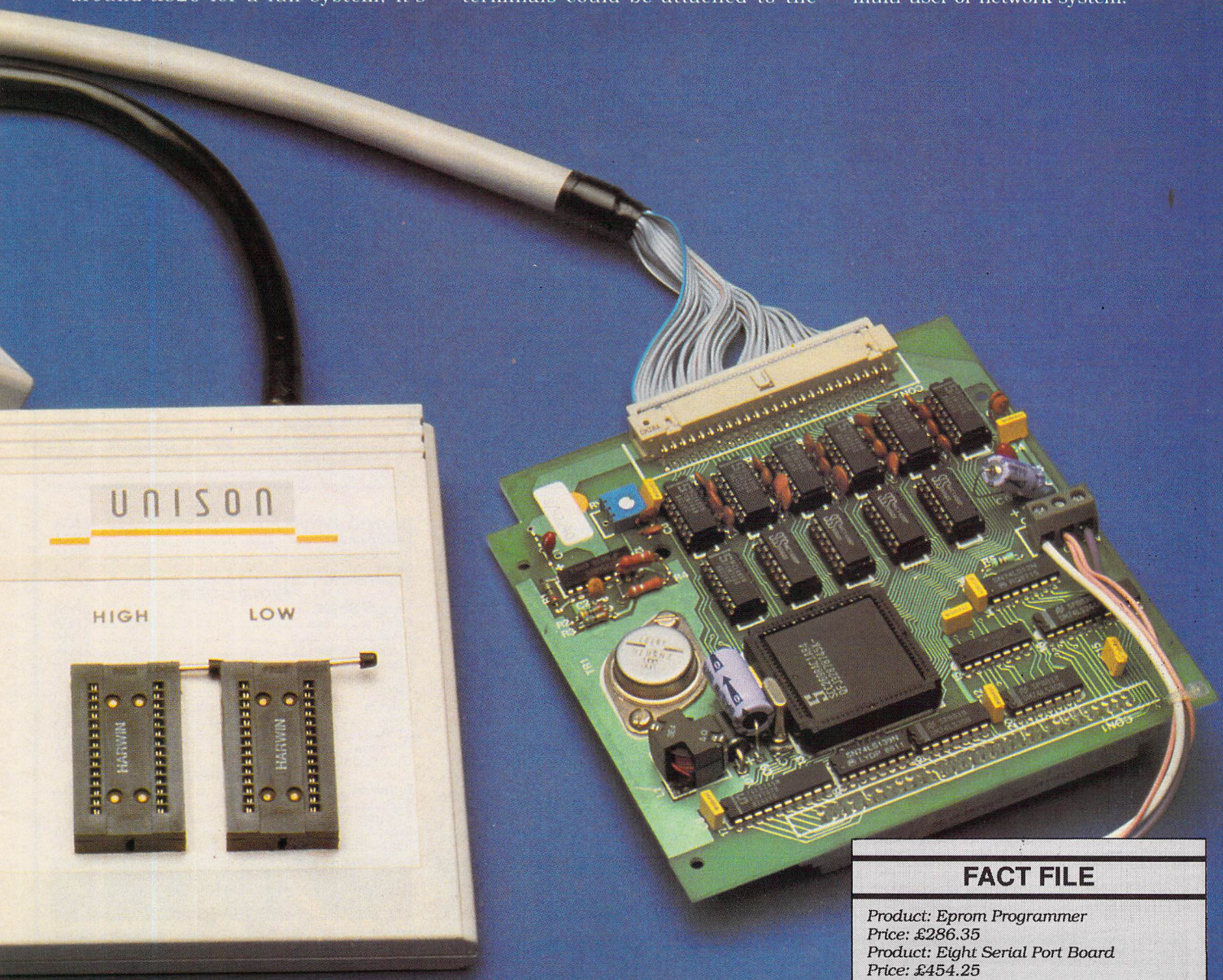
Another product from Unison is a gadget that allows eight serial ports to be added to a Mega ST. Connection to the machine is via an expansion board which attaches to the 64 pin connector mounted on the Atari motherboard. The box with the eight 25 way connectors connects to this expansion board and the cable threads through the removable slot at the rear of the ST. As with the eprom programmer, the software is supplied in both Gem and OS9 format and a manual is available for each.

Networking

The most obvious use for eight serial ports is to connect to eight modems or eight other computers to form a star network with a Mega ST as central control. The OS9 system allows multi-tasking, so it is conceivable that eight terminals could be attached to the Mega ST to give a multi-user system. However, I suspect that it would be a bit slow.

Each port can be individually configured to run at its own speed and data format from 50bps to 19200. The serial format conforms to the widely used RS232 standard and the 25 way connectors are set up with TX(2), RX(3), RTS(4), CTS(5), DCD(6), GND(7) and a user defined input on pin eight. A note in the manual states hat DCD is ignored.

The system is based around a 2698 Octal UART (universal asynchronous receiver transmitter) which is on the board that plugs into the interior of the Mega ST. This also uses the internal power supply, and although fitting instructions are given, they are not very comprehensive and would probably confuse any non-technical or unadventurous user. At £454.25 it is quite an expensive add-on, but could provide a cheap method of setting up a multi-user or network system.



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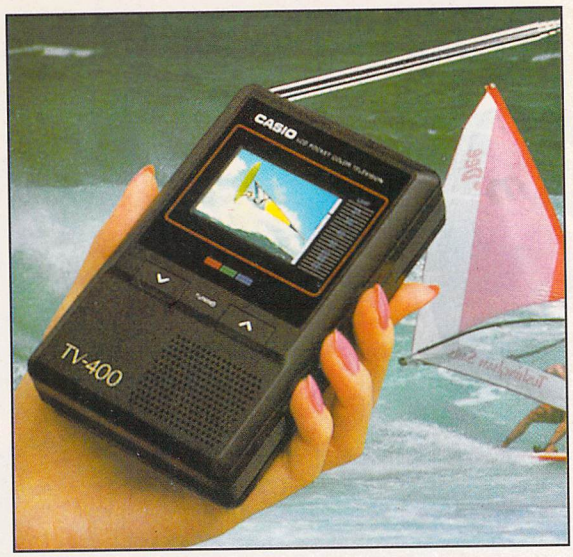

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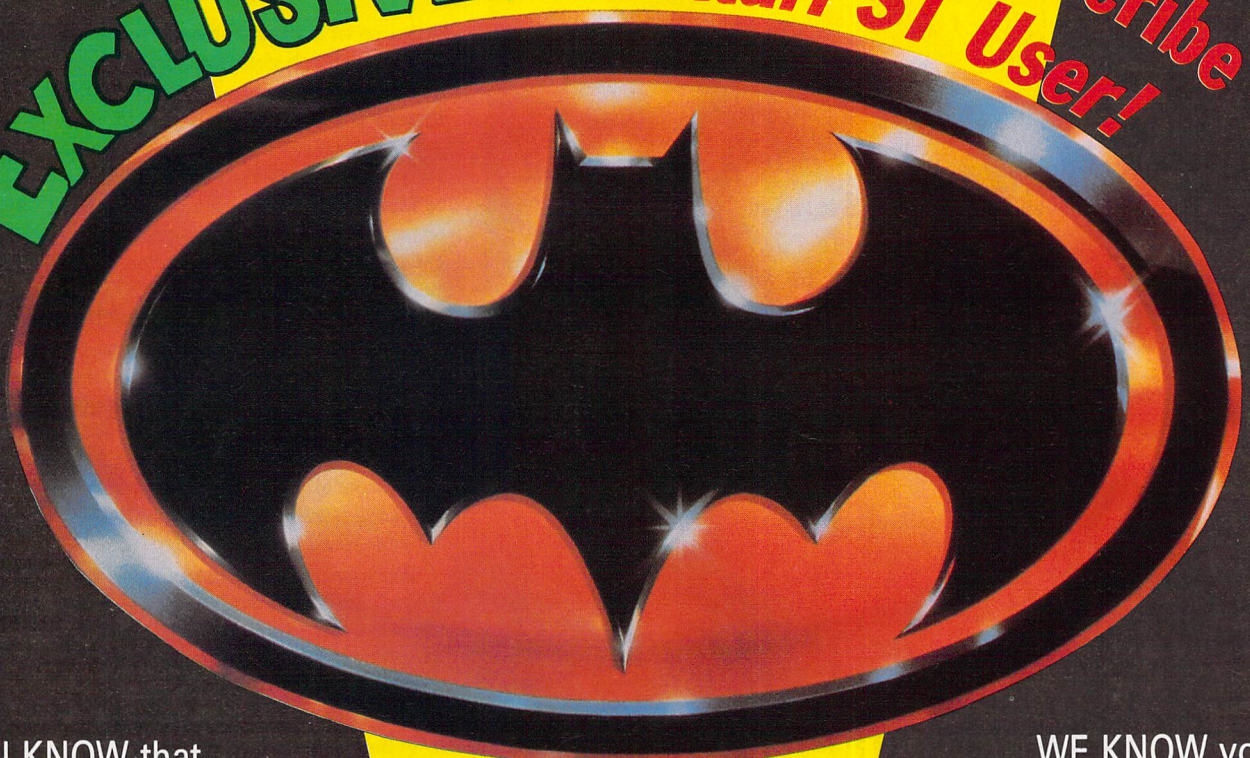

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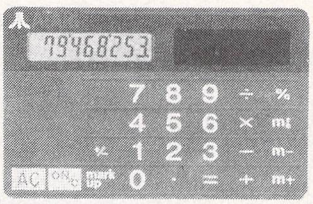

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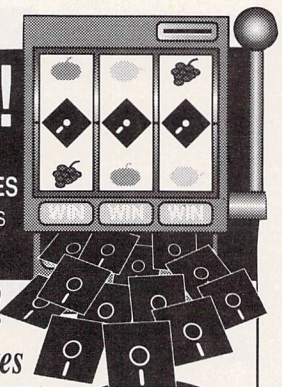

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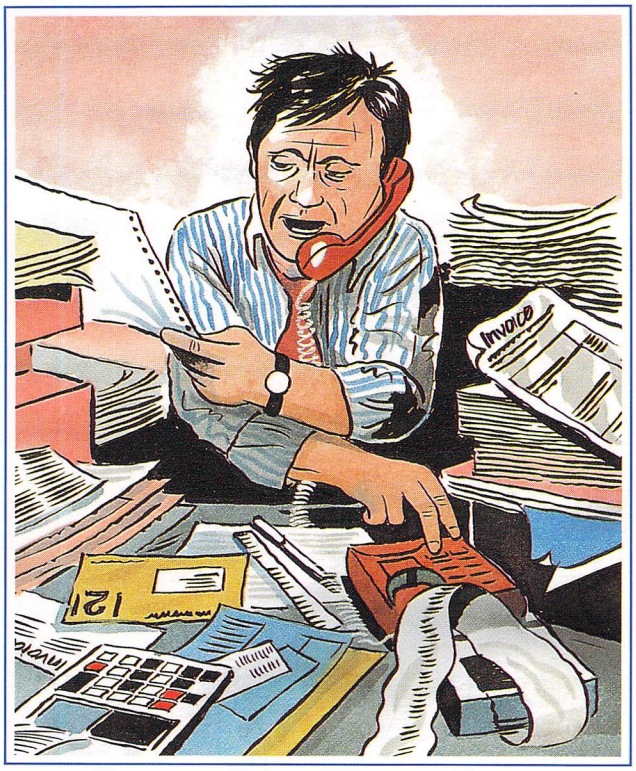

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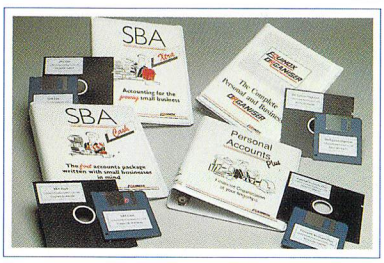

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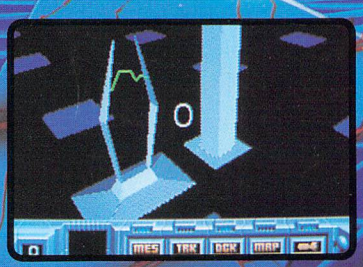

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