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Vol. 5 No. 2 April 1990 £1.95

TECHNIQUE

How an ST was called in to create the multi-user game Federation

REVIEWS

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GAMES

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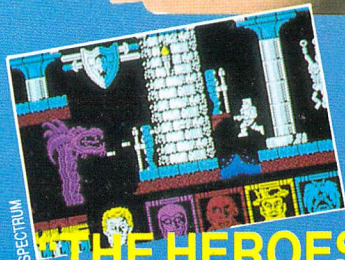


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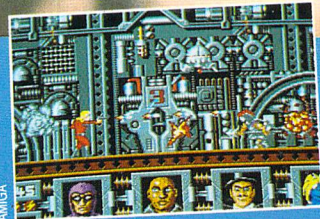


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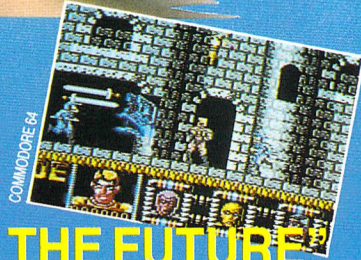
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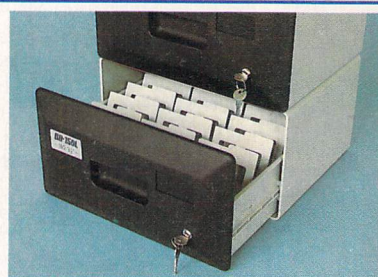
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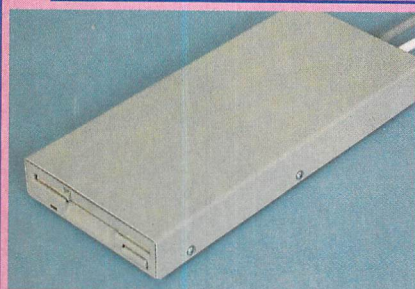
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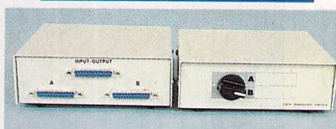
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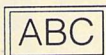
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revolution!*

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COMPUTER SHOPPER SHOW 1990



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"The most successful show we've ever done. I would advise anybody in the industry that this is the most cost effective exhibition to attend and we definitely intend to return next year."

Jeremy Rihill
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"An extremely busy and successful show."

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"A very successful show for us. We've already booked our stand for this year's show and will be taking a bigger stand in a prominent position."

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"A very good show and a great morale booster. We did extremely well and our products sold in droves."

Anil Chopra
RSC

"Our dealers at the show reported very good sales. We have already booked our stand for this year."

Lynne Evans
GST Software

"A great success. The show provided a forum for customers to buy different formats under one roof and in so doing proved extremely popular."

Roy Stoker
Silica Shop

"We were stunned at the level and quality of attendance."

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"People who came were definitely interested in buying and a lot of money changed hands. We will definitely be there this year."

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Computer Express

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The second **Computer Shopper Show** moves to a bigger venue, is open for four days and will be backed by an even larger visitor promotion budget. From 6th to 9th December 1990, at Wembley, we intend to break even more records. A record number of visitors and a record amount of money spent. Already more than the total floor area of the 1989 show has been reserved by companies that include Amstrad, G.S.T. Software, Silica Shop, Tynesoft and Mindscape.

Simply send for our information pack and book your stand now at the runaway success event of the decade - The 1990 **Computer Shopper Show**.

CONTACT

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Tel: 0625 879970 Fax: 0625 879961



BLENHEIM DATABASE
EXHIBITIONS

Riddle of hit arcade conversion Goldrunner

AS Atari ST User went to press, mystery surrounded the future of the new 3D version of hit arcade game Goldrunner.

Games giant Ocean was said to have bought up the rights to the eagerly awaited game from Microdeal but top brass at the Manchester-based firm denied all knowledge of this.

Working seven days a week and nearing completion of Goldrunner 3D, programmer Martin Kenwright of Digital Image Design said: "The project is no longer Microdeal's. Ocean has bought it up. We are rounding off the ST conversion of Retaliator for Ocean at the moment so this is a good move for us.

"It has allowed us to optimise the codes and take the best bits of both games. With Goldrunner 3D, we have the makings of a major game". John

Symes of Microdeal who originally commissioned Digital Image Design to work on Goldrunner 3D said he was pulling out of the games market and that the future of the title was "under negotiations" with Ocean.

"Our direction will not be with games in the future. We will be concentrating on music and professional products because as publishers, we have found a lack of publishable games", he said.

"We felt that the best interests of the publishers would be to place Goldrunner 3D with Ocean. I have agreed with them that they can place it elsewhere so long as we are reimbursed and royalty payment is made to us if the name is used".

Ocean boss Colin Stokes said he knew nothing about any deal concerning Goldrunner 3D.

A helping hand for pirates

ATARI ST users who want to copy worn out discs can do so with the Duplitwix Blitz copier cartridge from America but developers 1st Stop Computers have built in a protection which prevents multiple copying. After the second generation copy, discs will not run.

This anti-piracy stand is to be applauded but the responsible attitude of 1st Stop has not been shared by top weekly publication Popular Computing Weekly.

A bright spark in America has now come up with an antidote called Blitzfix which sidesteps the blocker making it possible to take multiple copies. In a recent edition, Popular gave readers his name and address and even the price of his product making it easier for them to rip off ST programs.

Midi gets its own show

MIDI music is a growth market and devotees will have a feast in store on April 7 and 8 when The Midi Music Show makes an appearance at Hammersmith's Novotel exhibition centre.

Organisers Westminster Exhibitions (01-549 3444) claim the event will give visitors a view of "tomorrow's music technology - today" and say there will be more than 60 companies exhibiting state-of-the-art computer music technology.

The first show to recognise Midi technology in its own right, it will include keyboards, soft and hardware, peripherals and consumables from America, Europe and the UK aimed at both the professional and the home user.

During the show there will be seminars, demonstrations and conferences covering subjects such as sampling, creative editing and sequencing.

Link with community

AS business links within the European Community increase, correct translation becomes a greater problem, especially when technical terms come into play.

Subscribers to electronic communications service MicroLink (0527 28515) can now get over many of these hurdles thanks to a new service which has just gone on-line.

A second gateway into the Luxembourg based Echo databases has been opened giving access into a massive on-line pan-European dictionary.

It provides accurate translations between all EC languages. Once users have specified their source language they can receive the foreign equivalents for up to seven other countries at a time.

The service translates not only on a one-to-one basis but also gives options to fit the right context in

which the word or term is used.

There are no surcharges for subscribers using this service which covers English, German, Danish, French, Italian, Dutch, Portuguese and Spanish.

When used with Echo I, the European on-line "yellow pages" index to foreign databases, this new service it yet another vital step towards the common community of 1992.

Arcade glitter

THE tilt features, double flippers, music and lights which are associated with large arcade machines are all included in Pinball Magic, the latest offering from French company Loricel.

Bought to the UK by US Gold, it has 12 levels. Release imminent.

Swing along with Dr T

THE amateur music maker who aspires to produce professional sounds with an ST now has help at an affordable price.

On sale in the UK through MCM (01-724 4104) is Tiger Cub, a 12 track sequencer from American company Dr T. It includes graphic editing, score writing, print out, loop recording, one step object-oriented editing and a built-in conductor track for £99.

Armada man joins Arc

BATTLESAPES programmer Peter Turkan who produced Borodino and Armada for Atari has signed a new deal with its Arc software label after a period working with Mirrorsoft affiliate PSS where he published Waterloo and Austerlitz.

"The series has been successful for ourselves and PSS but perhaps caused some confusion coming from two places", said Arc product manager Darryl Still.

Also joining the ARC fold is shoot'em up king Jeff Minter whose latest offering Photon Storm will appear on the Arc label later this year.

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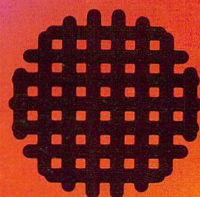
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Merger means a bright future for Atari ST User

A NEW look *Atari ST User* is on the way following the signing of a deal between its publishers Database Publications and computer magazine house Gollner Publishing.

This will bring Gollner's revolutionary colour printing process into play with more colour, more screen shots and even brighter page design.

It will also bring new ideas to the editorial content, further extending the magazine's scope.

"The most immediate changes our readers will notice will be visual", said commercial director of Database Publications David Hirst. "Our link with Gollner Publishing gives us access to better production techniques with less restrictions on design. *Atari ST User* has taken great strides since it was launched two years ago and the input of new editorial ideas promises to take it even further in future months to cover all aspects of computing with the ST."

Following their alliance, Database Publications and Gollner Publishing have set up Interactive Publishing, a new company which takes over *Amiga Action*, *ST World* and *ST Action* from Gollner and *Amiga Computing* and *Atari ST User* from Database. Other Database titles - *PC*, *The Micro User* and *Electron User* - are not involved.

Enter the Lynx

ATARI used the British Toy and Hobby Fair to launch The Lynx, its handheld games console which has been billed as "a one pound travelling arcade".

The first colour, programmable, handheld video entertainment system features a 3.5in backlit LCD display with a resolution of 160 x 102 pixels and 16 colours from a palette of 4,096.

The Lynx comes with an eight-way controller and two sets of fire buttons. Three option buttons accommodate up to five different functions. Included are volume, brightness and contrast controls as well as jacks for headphones and a Lynx port.

Operating on six AA batteries, The Lynx comes with California Games, a compilation of four titles on a single cartridge, a ComLynx cable and an AC adaptor and costs £149.

Four additional game cartridges are now available including *Blue Lightning*, *The Gates of Zendocon*, *Electro-cop* and *Chip's Challenge*. Probable price will be £29.99 each.

Chairman of the new company is Derek Meakin, who is also chairman of Database Publications and the controlling Europsych Group.

"For several years, we have admired the understanding of the computer entertainment market shown by the enthusiastic Gollner team, together with its highly innovative and technologically advanced approach to magazine production", he said.

"Interactive Publishing is in an ideal position to capitalise on the pioneering work of Hugh Gollner and his colleagues. The five magazines that form the nucleus of the new company already have a well established position in the leisure computing marketplace and new titles are being planned that will exploit the latest technical achievements to the full".

Managing director Hugh Gollner said: "For a long time now, the team at Gollner Publishing has felt the need for more strength in terms of both finance and management to fully exploit the commercial possibilities of the skills that have built up our existing magazine titles. Database, with 10 years experience in computer publishing, has that strength".

Existing production centres at Macclesfield and Chichester are being retained, as are all present employees.

Atari's going great guns

TRADE speculation that Atari's UK turnover increased to £40 million in 1989 and could reach £60 million this year are on the conservative side according to a company spokesman.

The rumoured 80 per cent increase for 1989 has been put down to growth in its leisure machines and improvements on the business side. Further growth throughout 1990 will be helped by increasing popularity of the Portfolio and by the launch of the new Lynx handheld console.

"In 1986 when Bob Gleadow took over, Atari was virtually a bankrupt company", said the spokesman. "In 1987 it was touch and go as to whether it would survive. Enormous profits were generated in 1988 and there was a massive increase on that in 1989. We are set to continue that trend this year".

SOFTWARE HOTLINE



THE Bitmap Brothers (above) are working on three new packages for release later this year.

Due to be launched on the Imageworks label in early autumn is a follow-up to *Speedball* which promises to retain the original gameplay and add new features.

These will include a playing area 100 per cent larger than the original battle dome and greater control of the team and its tactics.

Next release from The Bitmaps will be *Cadaver*. Again on the Imageworks label, it is due out in the summer and latest reports are that it has grown much larger than was originally envisaged.

Work has started on a third, as yet undisclosed, title and to cope with this, two graphic artists and two programmers have been added to the in-house team. Dan Malone is working on the graphics for *Cadaver* and *Speedball 2*.

Rob Chapman, whose previous games include *Galdregon's Domain* and the 16 bit versions of *Armalyte* and *Joe Blade* is working on *Cadaver*, and Rob Trevellian, who programmed *Artificial Intelligence*, moves onto *Speedball 2*.

★ ★ ★

JUST made available from The Software Business (0480 496497) are two games from France. *Antago* is the first offering from The Art of Dreams headed by Benoit Varasse who was responsible for the Hurikan Software game Vaux.

Astate comes from New Deal Productions, publishers of *Safari Guns* and *Fire*. Mouse controlled, it explores more than 50 levels as the user becomes an archeologist who must find the five pieces of the statue of Theomorphe. Price £19.95.

No More 'Out Of Memory' Headaches

With Frontier Software's XTRA-RAM, you can do away with those nasty 'Out Of Memory' messages which seem to come up just when you are in a hurry to finish your latest creation - whether it's a page of desktop published brilliance, a piece of superb artwork or a spreadsheet which contains all of the information which your bank manager has been demanding since last week.

• No Need To Send Your ST Away

Upgrading the RAM memory of your Atari ST (whether it's a 520ST, 520STM, 520STFM, 1040STF, 1040STFM, Mega 1ST or Mega 2ST) usually means sending your ST away or doing a large amount of delicate nerve-racking soldering yourself. Frontier's XTRA-RAM is installed by you, in your own home or office *without* the need for any soldering whatsoever (The XTRA-RAM even fits STs with surface-mounted MMU^{oo} or RAM chips)

• Easy To Install - No Soldering

The installation process takes around an hour (the XTRA-RAM simply plugs into two places inside your ST) and is carefully explained in a detailed 32 page manual which is written with the non-technical ST user in mind. If you have any problems during the installation process, Frontier's technical staff are always available on the phone to offer assistance.

• No Need To Stop At 1MB

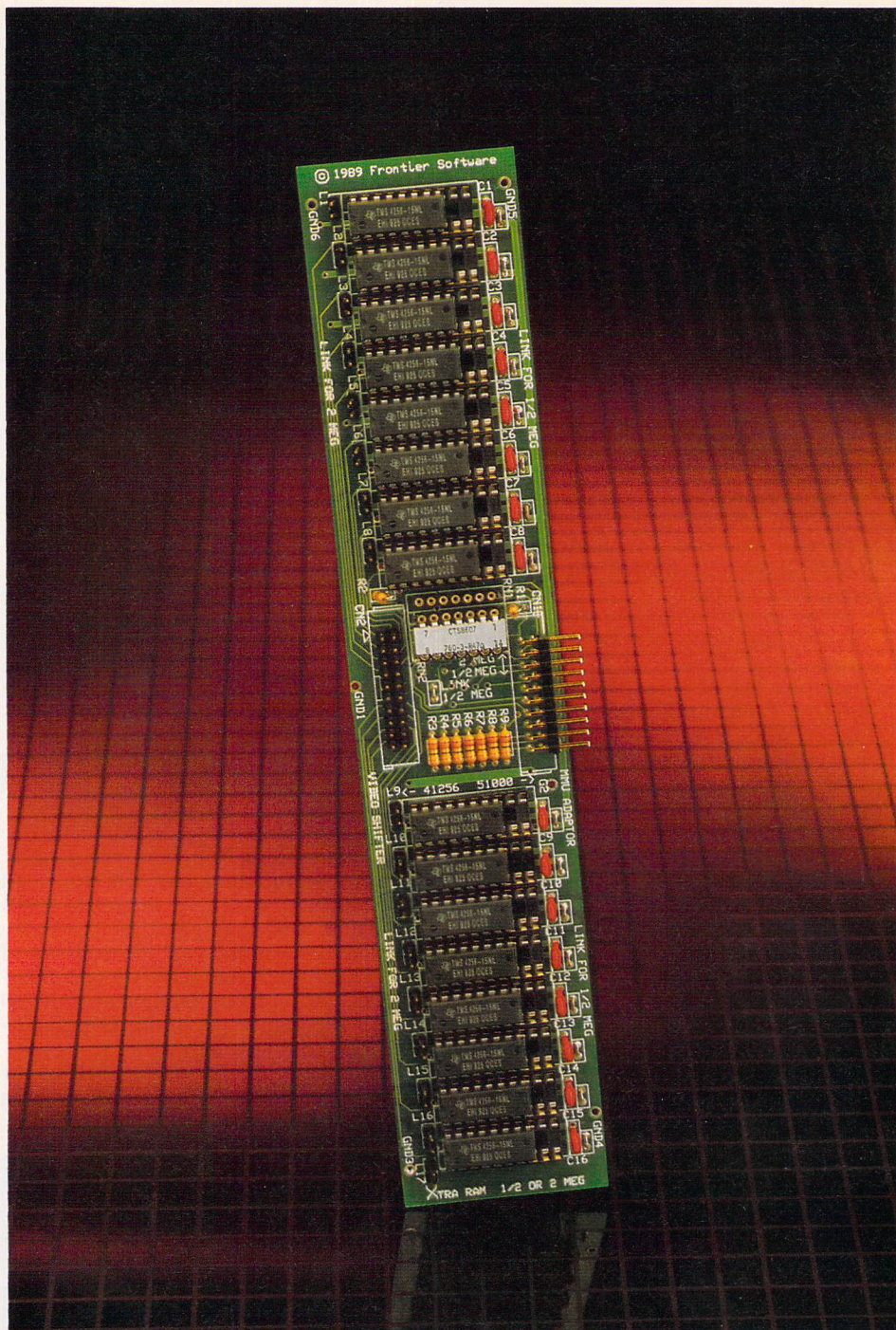
Most RAM upgrades leave you with your 1/2MB ST upgraded to 1MB and that's it! If you need any extra memory at a later date you are expected to go out and buy a Mega ST - Not so with the XTRA-RAM. The XTRA-RAM has been designed to take two sizes of industry-standard RAM memory chips. With sixteen 256Kbit RAM chips the XTRA-RAM will upgrade your 1/2MB Atari ST to 1MB, making it totally memory compatible with the 1040ST and Mega 1ST. When you decide that you need more memory you can change those sixteen RAM chips for sixteen 1Megabit chips (again with no soldering whatsoever) in around ten minutes and your ST will be expanded to 2 1/2MB (520ST, 520STM, 520STFM, 1040STF, 1040STFM and Mega 1ST will be expanded to 2 1/2MB, Mega 2ST will be expanded to 4MB).

• Totally Compatible

The extra RAM memory that the XTRA-RAM gives you is totally compatible with all of your Atari ST programs. The ST's memory controller chip 'logs' in the extra memory and makes it available for your programs. You will automatically get more memory for DTP, word processing, MIDI, running the Atari Laser printer and everything else that you use your ST for.

• Software Included

Every XTRA-RAM upgrade is supplied with a free



RAM testing program (so that you know *with certainty* that your installation has worked), RAM disk and printer spooler software.

• Satisfaction Guaranteed

The XTRA-RAM is supplied under Frontier's ten day money back guarantee, which means that if you don't like the XTRA-RAM, for any reason, you can return it for a full refund within ten days of purchase. The XTRA-RAM also carries a full twelve months' guarantee.

• Available With Or Without RAM Chips

Frontier supply the XTRA-RAM in three ways:

- (1) Unpopulated (with no RAM memory chips, so that you can purchase your own),
- (2) Populated with 16 256Kbit RAM chips (taking any 1/2MB ST to 1MB. This, of course, can take your ST to 2 1/2MB whenever you wish simply by changing to 1Megabit RAM chips)
- (3) Populated with 16 1Megabit RAM chips (to take any keyboard ST or Mega 1ST to 2 1/2MB or any Mega 2ST to 4MB).

• Prices

XTRA-RAM Unpopulated	£69.99
XTRA-RAM Populated to upgrade a 1/2MB ST to 1MB (can later upgrade to 2 1/2MB simply by changing RAM chips)	£99.99
XTRA-RAM Populated with 16 1Megabit RAM chips to upgrade keyboard STs and Mega 1STs to 2 1/2MB and Mega 2STs to 4MB	£299.99

All prices include VAT. Please add £2.30 postage and packing to all orders under £120.00. Frontier accepts payment by Visa or Access.

Available from your local dealer, or direct from:



Frontier Software

P.O. Box 113, Harrogate, North Yorkshire HG2 0BE.
Telephone (0423) 567140/530577. Fax (0423) 522874.

^{oo}The XTRA-RAM must be fitted to STs with surface-mounted MMU chips by Frontier Software. You can fit the XTRA-RAM to STs with surface mounted RAM chips with no soldering as long as the MMU and Video Shifter chips are in sockets. Call Frontier for more details.

Kinder shade of software..

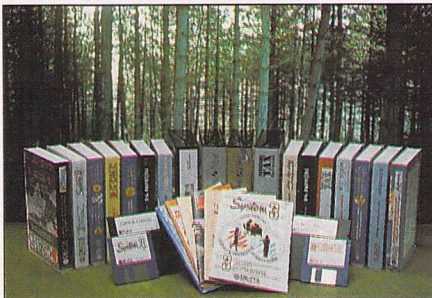
SOFTWARE house Digita International (0395 268893) has gone green and director Jeremy Rihl hopes others in the software business will be kind to the environment and follow suit.

"Packaging, manuals, brochures and box inserts for every Digita product are now printed on environment friendly paper", he told *Atari ST User*. "Although this costs 20 per cent more, it is a small sacrifice and I would encourage those manufacturers who require high quality paper beyond the standards of fully recycled paper to seriously consider the environment friendly alternative".

Jeremy has toyed with taking the green path for some time but could not find a re-cycled paper of the right quality. He then discovered the Environment Friendly Paper range which is made of 40 per cent straw and is free from chlorine. Because of its higher quality, it still contains some wood pulp but in much smaller quantities than normal paper.

"Most of us have had our cars converted and use bio-degradeable products so I thought it was time I used the same ideas with my business", he added.

"The software industry uses a lot of paper, particularly with manuals containing hundreds of pages. This alternative is better for the environment but still provides the right quality so there is no reason why other companies should not use it. It costs more but if more people were to use it the price would come down".



Environmentally friendly

Summer bargains

A NEW Atari bundle aimed at first-time buyers is to go on the market by the summer. It is certain to be cheaper than the £399 Powerpack and could even be reduced to the £299 price point of the Explorer bundle but with more software.

A spokesman discounted trade rumours that the Powerpack is to be phased out. "We may be looking at ways of making the £299 pack more attractive to the first time buyers by adding something extra to it", he added.

"This has been planned for some time and will be introduced during the first half of the year when stocks of the old Explorer bundle run out. If we find there is still a demand for the Powerpack we will keep it going".

Version 4 for K-Spread

BILLED as "the best ST spreadsheet ever released", K-Spread 4 is now available from Kuma Computers (0734 844335).

Aimed at professional users, this latest version of the top seller K-Spread includes more than 200 functions including statistics, trig, string, data management, error trapping, date and time, logical and conditional functions.

The date and time calculations make it a useful book-keeping package for small businesses, and extensive macro facilities are included to facilitate repetitive operations. They

can be generated either by programming or recording a series of commands and the record feature also allows many users who have never attempted to use macros in the past to experiment and benefit from these timesaving functions.

K-Spread 4 will load and save Lotus WKS and WK1, Ascii and DIF files. Supported by a 300 page manual, it costs £129.95. For ST users who do not need the full functions of K-Spread 4, versions 1, 2 and 3 are available for £24.95, £59.95 and £89.95 respectively. There are special prices for upgrades.

Cocksure coup

FRENCH publisher Cocktel Vision has been crowing about its latest coup – the licence for the computer game of the 500km Paris to Dakar car rally.

Players choose their vehicle then complete six stages of the rally which takes them across Africa taking in the Sahara. The game is under the Tomahawk label and users have been offered the chance to win a Peugeot 205 car by sending in their high scores to Active Distribution (01-384 2701). Paris-Dakar Rally costs £24.99.

SOFTWARE HOTLINE

FOUR Infogrames packages have been re-released by Interceptor Group (0734 817421) on its budget label Smash 16.

Warlocks Quest is a repackaged version of the original; Captain Blood is supplied on one double-sided disc rather than on the two single sided discs of the original; Outlaw is a re-run of the original Wanted and T.N.T. is the same as the original with new artwork and logo. Each costs £4.99.

★ ★ ★

THE ice age, rainforests, ancient Egypt and the industrial revolution are just some of the scenarios against which Atari ST users can play Kid Gloves, claimed by publishers Logotron Entertainment (01-359 3594) to be "the Rick Dangerous of 1990".

Hero Kid wakes up transported to the Amazonian jungle holding the boxing gloves he found in his uncle's attic. The player's task is to return him to his home and the boxing gloves are the clue. ST version of this platform game costs £24.99.

★ ★ ★

FRONTLINE from CCS (01-858 0763) is a strategy wargame in which players must launch frontal assaults or take rear-guard action to fulfill their commands.

Four scenarios give an ST re-enactment of former battles.



From 1944 is Cassino where New Zealand forces tried to crack the Gustav Line. Guadalcanal 1942 re-plays the Japanese attempt to dislodge US Marines in the Battle of Bloody Ridge; Stalingrad 1943 is the last stand of the XI Corps and Pegasus Bridge 1944 covers the glider-borne assault on D-Day.

Complete with two training exercises, Frontline costs £24.95.

Your stake in the City

PRIVATE investors who play the stock market can now bring their Atari ST into the money-making game.

Jewsbury Software has produced a share price analysis package and portfolio manager which works with the Microtext Teletext Adaptor and automatically downloads share price information from Ceefax or Oracle.

Share prices can also be input manually without the Teletext Adaptor and the package comes with information on hundreds of shares dating back to October 1987. Additional options allow users to keep track of investments and help in spotting promising new ones.

Called Market Breaker, it has been aimed at the many private investors who want an inexpensive alternative to systems costing thousands of pounds.

Graphs can be produced in one of

five formats, including moving average which shows suggested selling and buying points based on the average price of the share in the preceding weeks.

The package allows share portfolios to be set up and subsequent share acquisitions or sales to be recorded. It can accept part paid share and script or rights issues together with commission and taxes on share sales and then reports the profits in cash terms and also as a percentage of APR.

Performance of various market sectors can be charted, and the prediction analysis looks at recent performance to list the 10 best and worst performers.

Market Breaker is available from Microtext (0705 595694) for £69.95, and the Teletext Adaptor costs £148.90.



Into 2020AD

A NEW and complex strategy game is to be launched in April by Electronic Arts (0753 49442). Imperium starts in the year 2020 and simulates the next 1,000 years of human development. Players seek to become the last emperor of the galaxy involved in manipulation of economic, diplomatic, political and military factors. The ST version will cost £24.99.

Sequencer prices slashed

EVENLODE Soundworks (0993 89228) is about to add two new models to its range of Steinberg music sequencers for the Atari ST and has announced huge price cuts to existing products.

Awaiting a German launch is Cubeat, a scaled down version of top-of-the-range Cubase. UK appearance is imminent at a price of £300 but when contacted by Atari ST User, Evenlode could not release further

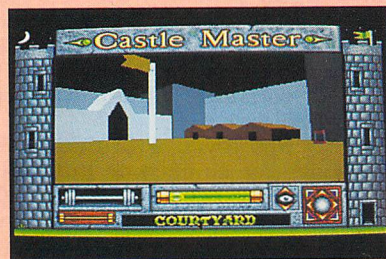
details. Also due soon is a score version of Cubase, the latest upgrade which will offer a complete sequencing package for £550.

Further down the range, the price of the Pro-24 has been slashed from £300 to £150 and the entry level Twelve sequencer drops from £129 to £75.

"This will mean a greater differential between the high and low ends", said Micky Taylor of Evenlode.

SOFTWARE HOTLINE

DOMARK (01-780 2222) is about to launch its two latest games releases. On the Broderbund label, Wings of Fury puts players at the controls of a Hellcat plane to provide air



Castle Master

support for a crippled aircraft carrier in World War II.

Basically a shoot-'em-up, it adds choice of rank, mission and weapons, with fuel consumption and damage taken into account.

Castle Master appears on the Incentive label. Set in 16th century England, it's an action adventure with two objectives - rescuing a captive prince or princess from one of four castle towers and flushing out the evil spirits which infest the castle.

Just released by Domark is Cyberball, the American football arcade conversion set in the 21st century where cybernetic robots rule the action. All ST versions of these three games cost £19.99.

★ ★ ★

A FANTASY strategy with elements of trading, role playing and arcade action is the description of Dragon's Breath, the latest offering from Palace (01-278 0751).

Players breed dragons, then send them out to conquer towns and villages in their battle to win the secret of immortality hidden in the forbidding castle on Dwarf Mountain.

It is played between three characters which can be either human or computer driven and in the closing stages they must conquer each other.

Much effort has been put into graphics and sound track. Dragon's Breath costs £29.99.

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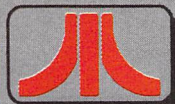
GALLUP

software chart

This month	Last month	Title (Software House)	Price	Month reviewed in Atari ST User	Comments	Marks from 10
1	NEW	BOMBER <i>Activision</i>	29.99	Oct 1989	Vektor Grafix's much vaunted multiple polygon simulator. The zoom and alternative views of your aircraft make it special.	9
2	NEW	CHAOS STRIKES BACK <i>Mirrorsoft</i>	24.99	April 1990	So you thought that you had mastered the dungeon? Well FTL have a few surprises in store for you. Well worth the sleepless nights.	9
3	8	CHASE HQ <i>Ocean</i>	19.99	March 1990	Out Run in a new suit, but far better. Similar in graphics and style, in your Porsche you chase the villains across America.	9
4	12	GHOSTBUSTERS 2 <i>Activision</i>	24.99	Feb 1990	Well, who are you going to call? You can't fault the graphics, and as a conversion it's true to the original film.	9
5	1	BATMAN – THE MOVIE <i>Ocean</i>	19.99	Feb 1990	Beautiful graphics and superb use of linking screens. Certainly one of the best film conversions ever. Atmospheric, but difficult.	8
6	2	HARD DRIVIN' <i>Domark</i>	19.99	Jan 1990	Will meld itself to your abilities. The harder you drive, the greater the thrill, and the simulator makes for exciting driving.	9
7	NEW	GHOULS AND GHOSTS <i>US Gold</i>	19.99	Feb 1990	Manages to capture the balance of addictive, unusual and extremely tough gameplay found in the original coin-op. One to look out for.	9
8	NEW	GAZZA'S SUPER SOCCER <i>Empire</i>	24.95	May 1990	Peter Beardsley move over as a new superstar adds his name to one of many new football games playing an ST screen near you.	●
9	NEW	ADVANCED SKI SIMULATOR <i>Code Masters</i>	4.99	*	Yes they're here and with a budget price, too. Missed out on the snow this year? Then this is your chance to catch up on the piste.	●
10	NEW	TURBO OUTRUN <i>US Gold</i>	19.99	March 1990	Pretty ordinary graphics and the driving simulation is far from realistic. But if you liked the original you'll appreciate this too.	7
11	10	INTERPHASE <i>Mirrorsoft</i>	19.99	Jan 1990	Sampled sound mixed with computer generated effects, faultless 3D graphics, and varied gameplay – you won't stop playing.	9
12	13	EXTRA TIME <i>Anco</i>	19.99	*	If you've already bought Kick Off you might now need a new challenge. So go into extra time with some new playing surfaces.	8
13	NEW	TREASURE ISLAND DIZZY <i>Code Masters</i>	9.95	*	Remember Dizzy? If so and you would like to renew your acquaintance, here's your chance. He's had a face-lift too.	●
14	NEW	DOUBLE DRAGON 2 <i>Virgin</i>	4.99	*	So you think you're tough? But will you have guts enough to fight your way through this bash-'em-up?	8
15	NEW	UNTOUCHABLES <i>Ocean</i>	24.99	Oct 1989	Elliot Ness and his Homberg come to you via Chicago and Manchester. A nice film conversion with a good variety of gameplay.	7
16	11	KICK OFF <i>Anco</i>	19.99	July 1989	One of the fastest and best football simulations around. With realism, thrills and unrelenting action, it will take some beating.	9
17	NEW	NINJA WARRIORS <i>Virgin</i>	19.99	Feb 1990	If you've been waiting for a good martial arts game for the ST here it is. A superb conversion of the Taito original.	8
18	6	TV SPORTS FOOTBALL <i>Mirrorsoft</i>	24.99	Sept 1989	Never have so many been addicted in such a short space of time to any sports simulation. All power to their padding and visors.	10
19	3	ROBOCOP <i>Ocean</i>	19.99	Sept 1989	Stylish but a bit sluggish. However, there is some good digitised speech and the gameplay of this conversion holds up well.	9
20	14	POWER DRIFT <i>Activision</i>	24.99	*	Back to the racing track again with this tongue-in-cheek offering. A wide range of drivers and courses to traverse.	8

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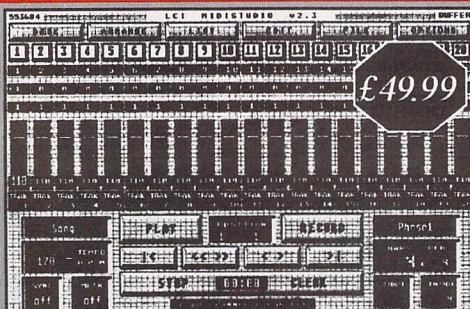
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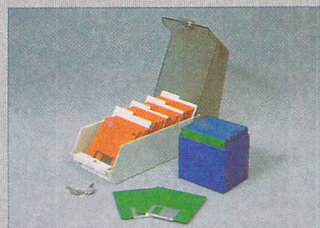
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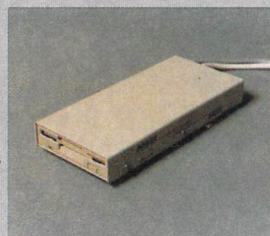
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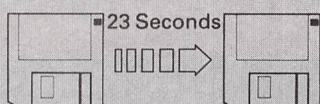
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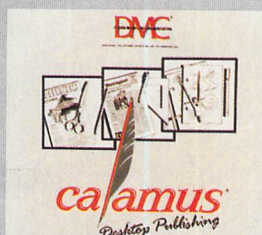
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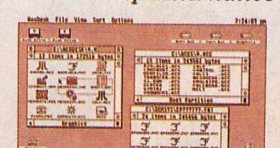
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ATARI STAR USER GAME

Program: Chaos Strikes Back

Price: £24.95

Supplier: Mirrorsoft, Irwin House, 118 Southwark Street, London SE1 0SW.
Telephone: 01-928 1454

CHAOS is back, he's hungry, and he's not a vegetarian. In fact he is not entirely sane either. The revenge of Lord Chaos forms the plot of Chaos Strikes Back - the sequel to Dungeon Master.

Originally Chaos was going to consist of an extra five levels for Dungeon Master, one of the best fantasy games ever. However, those extra levels have grown to become an entirely new game, one that doesn't require Dungeon Master to run. But it does require a saved game file in order to work.

So you have the choice of loading in Dungeon Master characters or using the character generator on the Chaos game disc. Choose the latter and you are presented with quite powerful characters which can be saved for loading into the utilities disc.

Once there their appearance can be modified. The saved character file is then turned into a Chaos saved game position by clicking on the Make Adventure gadget.

Finally you enter the adventure. Sixteen years have passed

Chaos will be free to wreak evil all over the land. Unfortunately, it won't be for long, because the ore will continue to absorb magic until it explodes, destroying the universe and everyone in it.

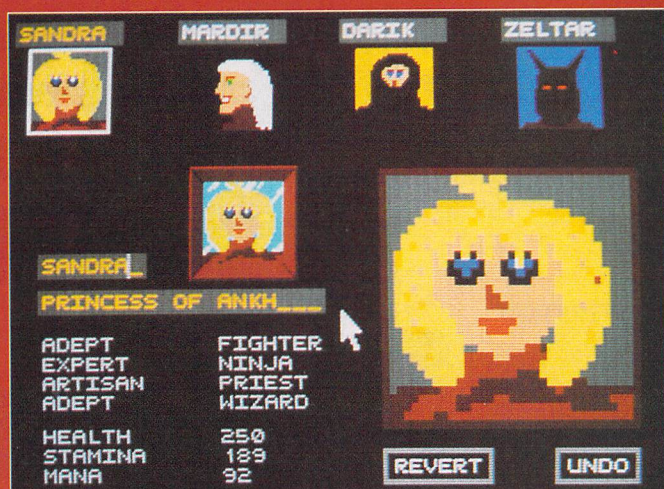
So the quest is to destroy the four parts of the ore and to confront and defeat Chaos. Easier said than done. You start in a darkened room facing a locked gate. On either side are two worms and dotted around are coins opening up little alcoves containing some of the necessities of life, like a lightning-charged sword and three time freeze boxes. There's also a chest in the middle of the room containing clothes.

Running away from the worms is only a temporary measure - they must be faced and destroyed. Not just because they are disgusting lower forms of life trying to kill you, but because they have the key to the door and another coin. Get past those and there is a corridor with a pit and a pressure pad.

Before long you're going to discover new monsters, such as armour-clad knights who have their visors up revealing grinning skulls, and a race of giant blue ants as well as old favourites like the dragon.

The dungeon's layout is roughly circular, with four paths leading to the four sides of the central obelisk. Naturally most of the meandering paths in this

Darker dungeons



Using the character generator to design your adventurers

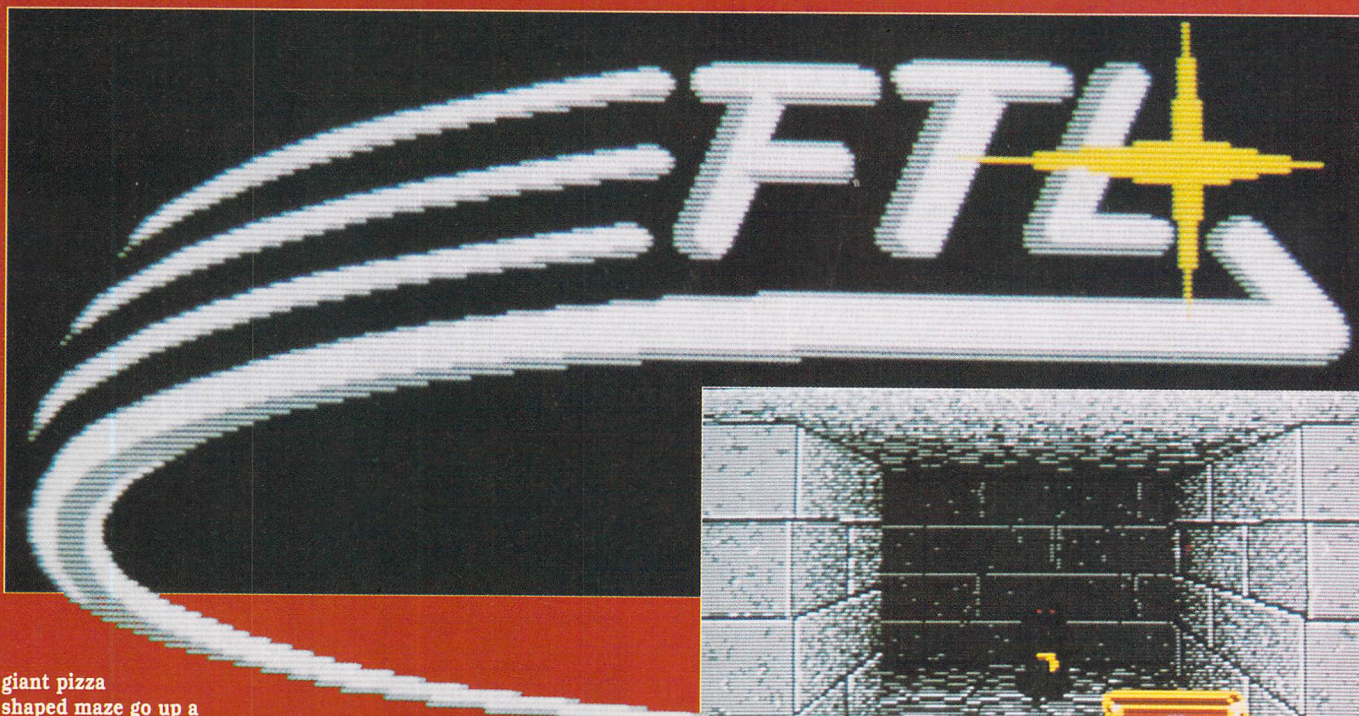
since the fall of Chaos in Dungeon Master, where the Dark Lord was revealed to be one half of the Grey Lord. Just before he was stifled in the original game he drew up plans for a new dungeon, and now is trying to separate himself fully from the Grey Lord.

Deep within the dungeon lies a maze, and at the centre four paths lead to an obelisk. Four paths, leading to four parts of the ore Corbum, which the Dark Lord has mined and forged.

Corbum has the property of sucking magic from the land, becoming more and more powerful, making Chaos more powerful still. With enough power



The dragon and armour-clad knights



giant pizza shaped maze go up a couple of sets of stairs, go along, come down a couple, and so on. Up, down and along until your maps are hopelessly complicated.

All the old tricks are here. Keys in holes, wooden slats that deposit you in pits, traps where the exit is blocked by a small wizard while a door drops repeatedly on your head. There's also a particularly unsavoury encounter with four giant spiders at the crossroads.

Help is at hand. Save the game and load it into the utilities disc, consult the Oracle gadget and help and hints are revealed. Good job really, because this game is very hard indeed, and will take as long to finish as the original Dungeon Master.

Rejoice then, for the best ever role playing game has

returned. Chaos is just as gripping, just as infuriating, and just as clever as the original.

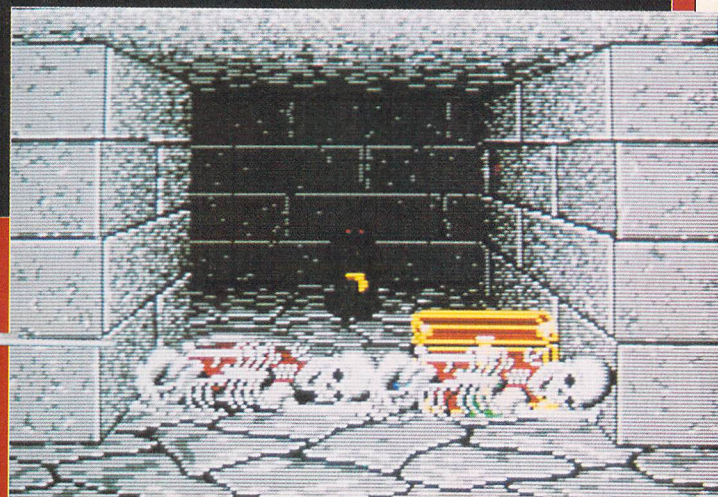
Duncan Evans

Sound	6
Graphics	8
Playability	10
Value For Money	10
Overall	9

SECOND Sight

There is only one game better than Dungeon Master, and that's its sequel, Chaos Strikes Back. Brilliant graphics, exciting role-playing and challenging gameplay make this one of the best releases so far this year. Recommended

Julie Boswell



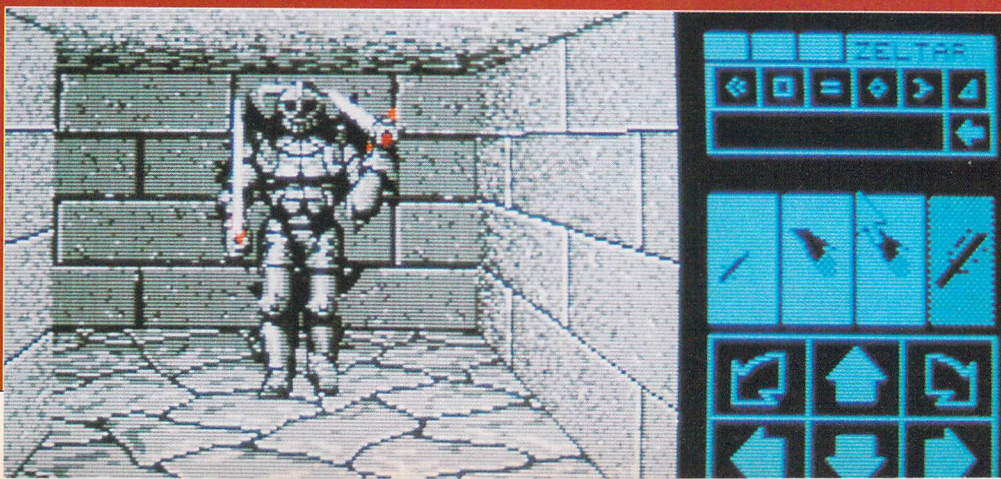
The remains of previous adventurers - will yours be added to the pile?



Friend, foe or food?



will be encountered



Product: *Jumping Jack Son*
 Price: £19.95
 Supplier: Infogrames, Mitre
 House, Abbey Road,
 Enfield, Middlesex EN1
 2RQ.
 Tel: 01-364 0123

ONCE again it's cute bouncing sprite time complete with a non-sense plot thrown in for good measure. It is a dead giveaway that summer must be on the way when games change from the Christmas tie-ins and winter shoot-'em-ups to meaningless fluffy animations. Time to put on the sun-glasses and shorts.

Jumping Jack Son is a cool dude - too cool to need shades, and absolutely no relation to bad Michael. In fact he's French, something you can easily deduce from the words Pif! and Paf! which appear whenever he gets knobbled.

The other way to spot his cross channel roots is to examine the graphics - the game looks superb. Clearly a lot of effort has gone into presentation. All the sprites are large, colourful and beautifully drawn.

The animation is well executed and speedy. Even the title pages have had more effort lavished on them than some games

have in their entirety. Everything is impregnated with immense cuteness.

The programmers clearly reckon that the game is addictive because they have an included provision for an incredible 1,000 names in the high score table. Lets hope that they can be stored on disc, or they won't mean an awful lot.

As in all the best addictive games, the plot is simple. The stumpy hero bounces his way across the vertically scrolling landscape trying to change the colour of certain squares. Every time he stands on a square it cycles through three colours, his shaggy mop of hair changing in sympathy.

The squares are grouped into islands, and to get from one island to another little trapdoors are used. Occasionally treats appear which are collected for bonuses, and of course there are always baddies out to make you say Pif!

The novelty factor in *Jumping Jack* is that while the bouncing wig with legs makes his way across the tiles, he generates his own musical soundtrack. The first game where you decide on the music that plays in the background. Apparently more than 400k of data is needed to generate the tunes so it

will certainly be worth hearing.

However, the demonstration version previewed here was a long way from completion, with the music and sound effects which form an integral part of the game yet to be implemented.

Obviously with this part of the coding not yet complete it is impossible to say what the finished game will be like. However, if the sonics are as good as the graphics, *Jumping Jack Son* will be a must - the first video game to integrate sights and sounds into one, very playable, audio-visual experience.

John Kennedy

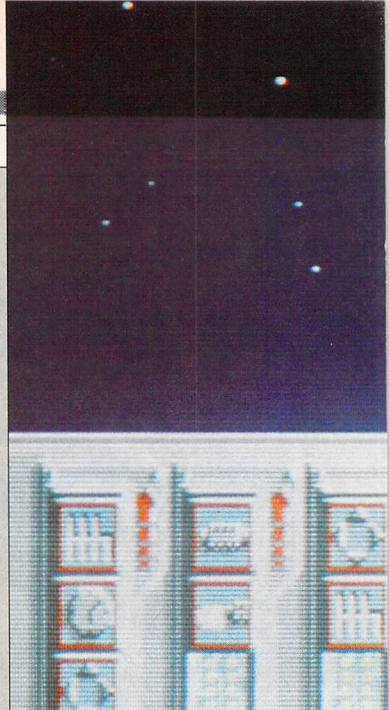
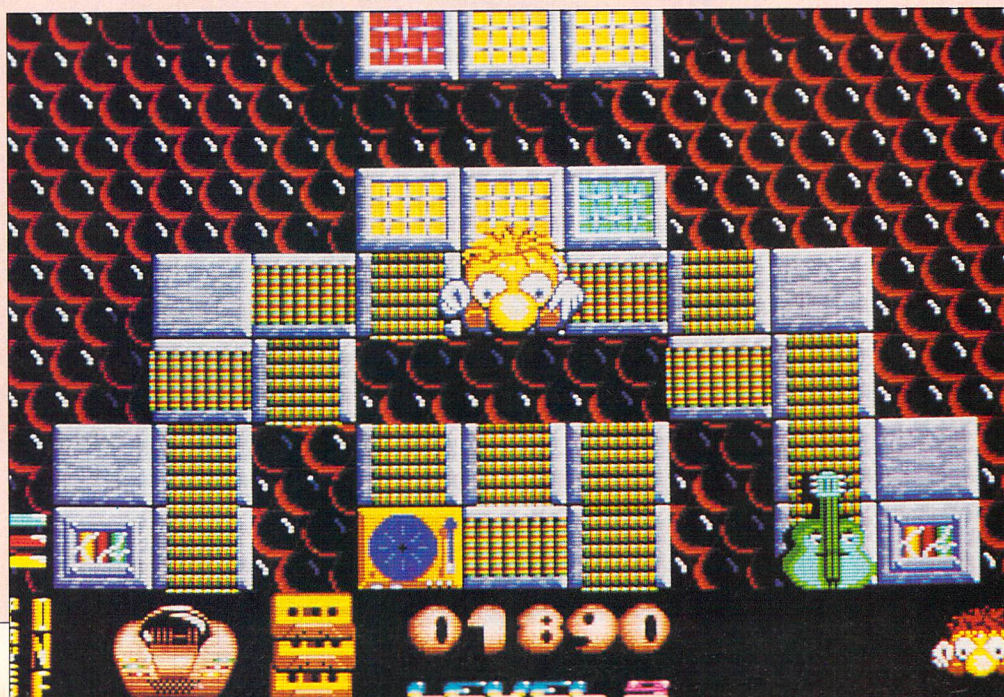
Sound.....	n/a
Graphics	9
Playability	9
Value for money.....	9
Overall	9

**SECOND
Sight**

*I can't wait until *Jumping Jack Son* is finished - this preview version looks superb. The cute graphics and addictive gameplay are sure to make a winning combination.*

Julie Boswell

Jumping on the bandwagon



Product: *Dark Century*
 Price: £19.99
 Supplier: Titus, Unit 4 Stan-
 nets, Laindon North
 Trade Centre, Basildon,
 Essex SS15 6DJ.
 Tel: 0268 541126

IN the year 2200 the prisons are overflowing with wrongdoers so it is decided that criminals should be incarcerated on artificial satellites orbiting the world.

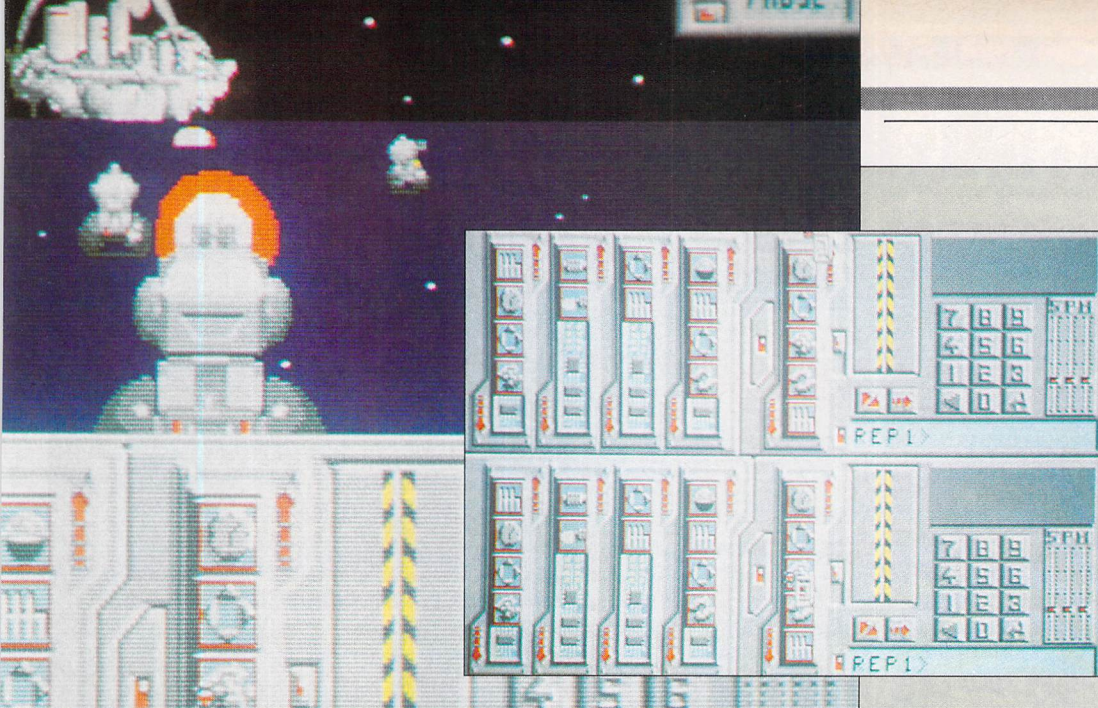
Each satellite would be equipped with its own manufacturing industry and the criminals set to work producing consumer goods for use on Earth. The system proves very successful until some lame brain on Earth decides that a satellite should produce tanks.

Several vehicles are hijacked by prisoners, their intention being to blast their way through the satellite's defences and escape to Earth. You and your prison warden colleagues have been ordered to seek and destroy the tanks and their drivers.

The simplest way to describe *Dark Century* is as a 1990 reincarnation of the Atari classic *Battle Zone*. The wire-frame representations of tanks and obstacles have been replaced by highly mobile Daleks and a featureless waste upon which to roam. The Daleks may be an improvement, but I'm not so sure about the landscape.

The game can be played against either a silicon or a human opponent. When competing against a friend the display is split horizontally giving both players access to a set of controls and a view of the surface.

Up to six tanks can be tracked at any one time, which enables you to tailor the likelihood of success to your own



Out of this world

taste. The simplest scenario is one against one, the most difficult one human tank against five computer assassins.

The tanks can be operated in either manual or automatic mode. In manual you can move in any direction and blast away to your heart's delight. There is a scanner – the familiar type where you are always in the middle and small coloured dots moving around representing the enemy.

Had the game operated solely in manual mode I would not recommend it, as accurate speed control is very difficult and the lack of objects to hide behind

very annoying. Dark Century's saving grace is the automatic control feature.

Every tank has a suite of four control programs which determine how it will perform in automatic mode. As the tank commander you are given the option to modify any or all of the four default programs before the game starts. Control programs may be saved directly to the game disc and re-loaded on a future occasion.

Each of the four programs is responsible for a different operation mode – one is for surveillance, two for attack, three for emergencies and a final mode

for dealing with obstacles.

Surveillance mode is engaged whenever the screen is devoid of other vehicles or energy bubbles. Using control icons, you can construct a chain of commands that constitute the surveillance program. It specifies a sequence of speed and direction changes that you feel will give you the best chance of encountering the enemy.

Attack mode is entered when an enemy vehicle moves within range – turret positioning, targeting and firing icons are all available.

Emergency mode can be divided into two sections. The

first is activated when the tank is attacked from the rear, and the second when the tank's energy reserves fall below a pre-determined limit.

Purpose of the obstacle program routine is the location and collection of energy bubbles.

Ten different icons are available and each can be used several times within one program. By their clever use, you can create a division of tanks with each individual vehicle having specific characteristics.

It is Dark Century's sit-back-and-watch approach that appeals to me more than the facility to drive around shooting. It was most satisfying to program my vehicles and then watch the ensuing fight to the death.

James Riddell

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

SECOND Sight

Unlike James, I am more of a death and destruction man. The automatic operation feature is nice, but I much prefer to press the fire button myself rather than rely upon automated accuracy.

Nev Astley



QUICK PEEK

Space Harrier II

Grandslam Entertainments
(01-655 3494)

SPACE HARRIER was a smash hit in the arcades, as was the sequel, Space Harrier II. Now Grandslam has brought out an ST version of Space Harrier II which is so close to the original you'd think you were playing the arcade machine.

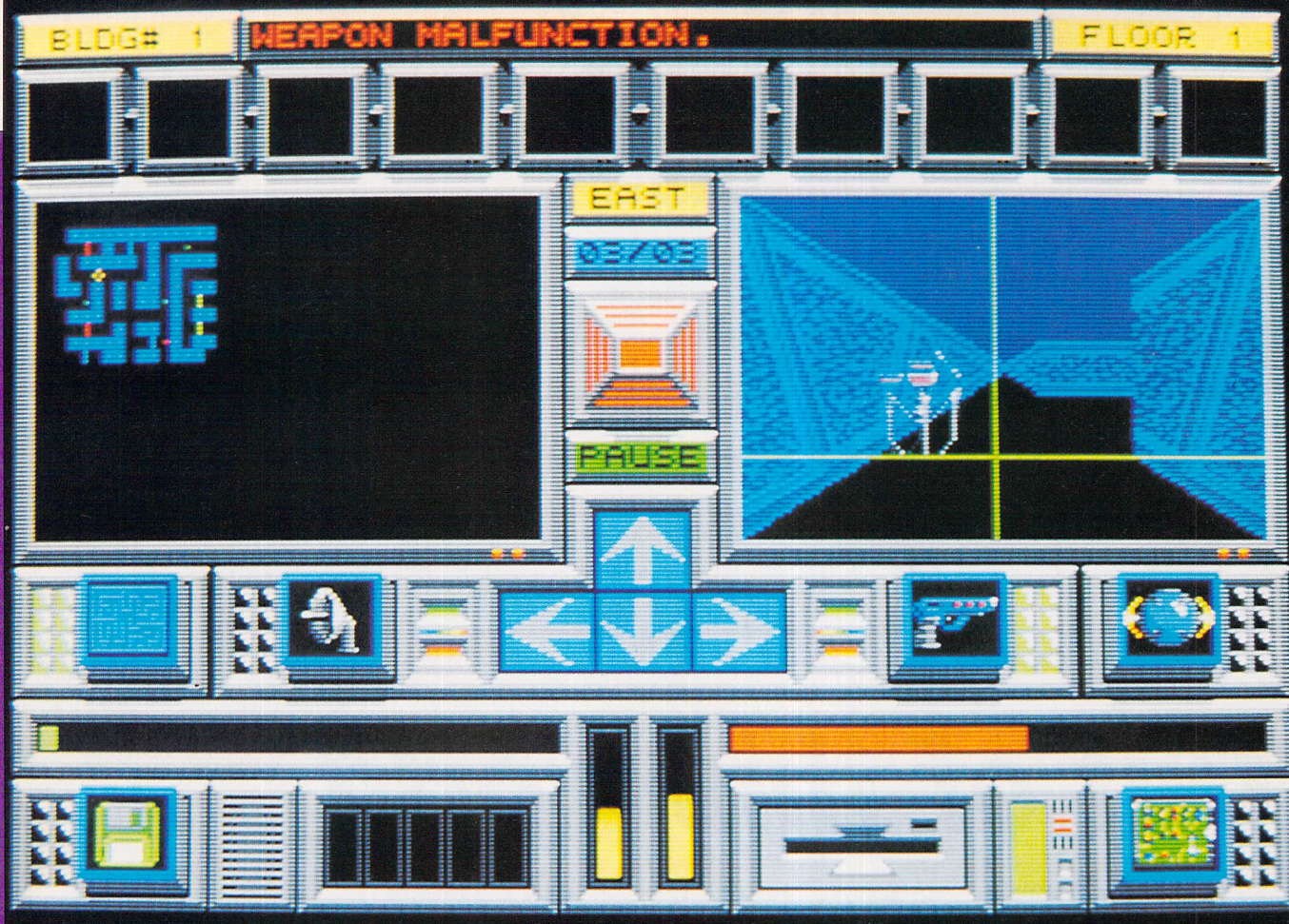
This action packed game is set in the Fantasy Land in which the Dark Harrier has imposed a terrible tyranny. One man alone can save Fantasy Land – you as the Space Harrier

set out to right the wrongs done by this devil's minion.

The viewpoint is a sort of pseudo 3D with your character running or magically flying into the screen, while a variety of monsters fly out towards you. The graphics are excellent with superbly drawn characters and effective use of colour. The sound department complements the graphic quality.

Space Harrier II is a faithful conversion of the arcade game so if you liked the original, then save your money and buy this instead.

Julie Boswell



Product: Day Of The Viper
 Price: £19.95
 Supplier: Accolade, Unit 17,
 50 Lombard Road, London SW11 3FU.
 Tel: 01-585 3308

I Robot

SOMEONE at the Rore Corporation made a big mistake. They designed a biotechnical race of super soldiers with computers for brains and yet retaining human traits. The prototype was called GAR (Genetic Android Race), but unfortunately suffered from headaches. Not your normal run-of-the-mill ones, not even a bad migraine. The sort of headache that makes you go mad and kill people.

Now for the really bad news - GAR has gone AWOL and was last sighted invading one of the Sun League's defence bases. (The Sun League are the good guys and have nothing to do with newspapers).

The base in question was a research centre specialising in new weapons, and when they advertised a major breakthrough in laser and shield technology, GAR intercepted the message and paid them a visit. Nothing has been heard since, other than rumours to the effect that GAR had brought an elite group of soldiers with him.

The plan of attack involves the existing defence systems,

which must have been switched off by GAR when he attacked. There must be a way of re-activating the defence systems and destroying GAR's fleet of pirates.

And this is where you come in. One small ship should be able to make it to the base undetected and beam aboard an android under remote control. Once there it should be a relatively simple matter to re-energise the systems.

You are to make use of the Nexus 2000 project and its result - the Viper android - to explore the base in search of equipment necessary to re-arm the defensive space mines.

After loading a well presented, but avoidable if need be, animated introduction section starts. This is followed by a single disc swap and the copy protection session begins. Here you must diagnose an error in your ship's computer using a little card.

The screen is divided into two main monitor displays. The first shows the Viper android's view as it traverses a maze of corridors. This display is quite

small, considering this is where the main action takes place. To its left is a map of your surroundings, and as you walk around the building it becomes more and more complete.

This monitor can also display the Viper's circuit board, with its electronic components ready for repair or replacement.

Around the screen are icons needed to control aspects of the game. For example, before you can shoot anything you must first activate the weapons systems, but before picking an object off the floor you remember to switch them off again.

The objects scattered around are usually extra fuel or colour keys to grant access to restricted areas. Other objects include proximity mines and improved weapons. Most important are the floppy discs which contain the defence systems' software.

The restricted access zones are sometimes empty rooms, but occasionally there will be something more interesting - a lift for example, to bring you to the other four levels in the building.

At every turn you may meet a

robot or two, intent on terminating your droid. No extra lives here - Nexus androids are so expensive that the military could only afford one.

Day of the Viper is not what you might call state of the art, but the extensive gameplay makes up for this. There are five buildings to explore, each with five floors. These floors are quite large, needing plenty of running around before you have completed examined every nook for hidden treasures. It will take you some time before you meet GAR for the final showdown.

John Kennedy

Sound.....	6
Graphics.....	7
Playability.....	9
Value for Money.....	8
Overall.....	8

SECOND Sight

Although the game may not be original - it is basically an expansion of the old 3D Monster Maze theme - there is certainly a lot to it. Accolade have produced a game which is playable and challenging, something which a lot of software houses seem to have given a low priority to.

Nic Veitch

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URGENT!

Product: Full Metal Planet
 Price: £24.95
 Supplier: Infogrames, Mitre
 House, Abbey Road,
 Enfield, Middlesex EN1
 2RQ.
 Tel: 01-364 0123

TAKING full advantage of the similarly named Vietnam war film, Full Metal Planet (FMP) is a rare thing in French software – a true strategy game. Converted from the French board game published by Ludodelire, Full Metal Planet is a deadly game of mining precious ore while blowing your competitors to kingdom come.

Up to four players can participate and any or all can be computer players. You must land your freighter on the planet's surface for an extraction period that can last between 21 to 25 game turns. After landing on the area of your choice you disperse your equipment.

Transports are used to gather the ore, which lies on the surface in blocks, and return it to the freighter. Destroyers are used to weaken the opposition by either capturing or blowing

Ore inspiring

up their units.

In addition you are able to negotiate non-aggression pacts which, with a combined attack strategy, can seriously damage an opponent's chances of winning.

The planet is viewed from overhead as a large rectangular area overlaid with a hex grid in typical wargame style. Move-

ment is governed by the terrain – mountains, reefs and swamps – as well as the potentially serious tides that can prove hazardous to those vehicles not designed for such swampy surfaces. Vehicles can bog down and become captured in this way.

Movement is governed by a strict credit system. Your initial

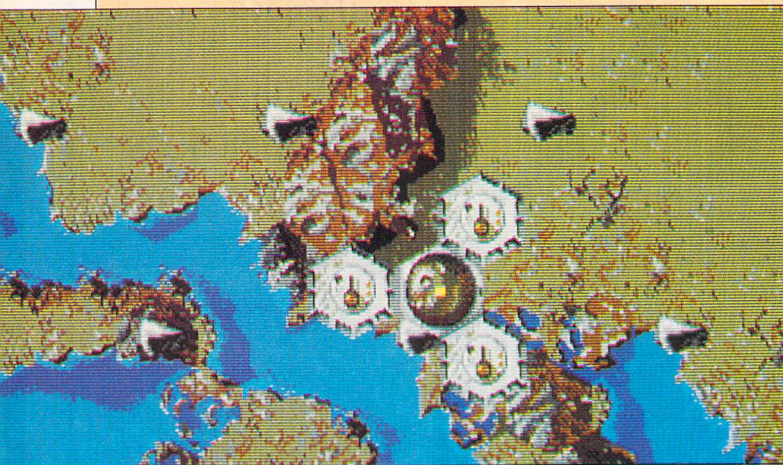
store of 15 moves can be taken up by moving one hex (one move), loading/unloading (one move), destroying another vehicle (two moves) and so on.

There are two types of transport vehicle. The barge, can carry up to four elements while the crab can carry two. They can also carry tanks, the weather hen and the pontoon, used for bridging water areas.

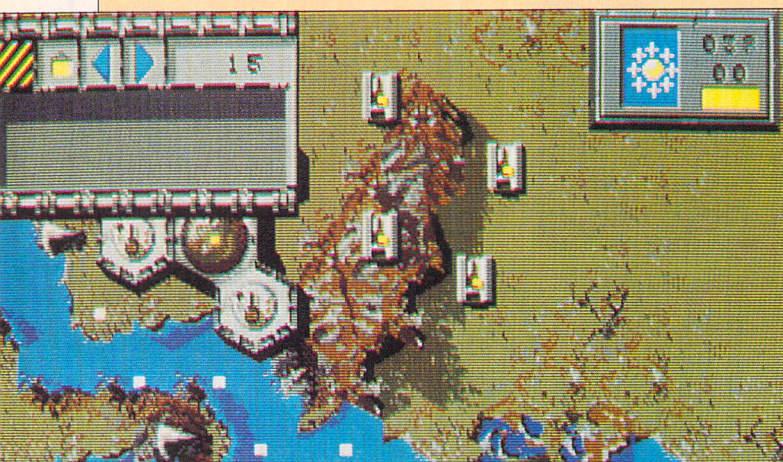
The stangely named weather hen is the device used to build extra vehicles. Destroyers can eliminate any unit, except freighters and their cargo.

Your first assignment is to select an emblem either from those available or from the nifty graphic utility called Full Metal Palette. This includes 16 colours, a fill command and an undo function.

The next step is to place your freighter on to the planet surface, which is carried out to suitable clunky sound effects. You can move your freighter via the mouse and when you are happy with its position, you click and, with a satisfying clunk, the freighter comes to rest. Clicking the mouse will



Land your freighter on the planet's surface...



...and use your transports to gather the ore



The graphics are typical wargame style



Commands are available via a number of icon menus

distribute the rest of your equipment.

Commands are available via a number of icon menus. The command box displays information including the player's emblem, the time remaining for that particular turn (from three to nine minutes), the action points remaining and the colour of your freighters.

From this box a number of command icons can be accessed. The rebuild function can be used to repair your freighter's damaged turrets, the hexagon display function tog-

gles between the grid being displayed onscreen or not, while the retreat function speaks for itself. The capture function will, if used successfully, change the colour of your opponent's vehicle to that of your own.

Clicking on the unit status icon tells you whether a unit is still operable, the remaining ammunition of a destroyer and the value of a freighter's contents. You can also view the strategic map from here.

Another range of icons herald the arrival of the movement icons which include directional movement, firing, load/unload and so on.

FMP is an enjoyable strategy game that will keep you engrossed for hours. Unusually, for its class, FMP successfully incorporates many additional graphic and sound enhancements, giving it a typically French feel.

Paul Rigby

Sound.....	8
Graphics.....	8
Playability.....	9
Value for Money.....	9
Overall	9

SECOND Sight

Full Metal Planet is a superb strategy game with a typically French feel to it. Set in the distant future you must mine ore on a distant planet, while battling computer and/or human adversaries. Good graphics, well thought out gameplay and acceptable sound effects combine to make a game with lasting appeal.

Roland Waddilove



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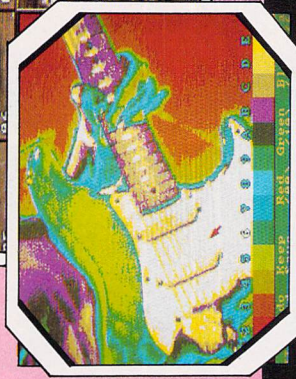
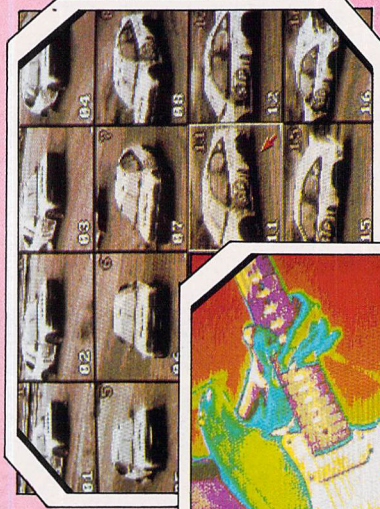
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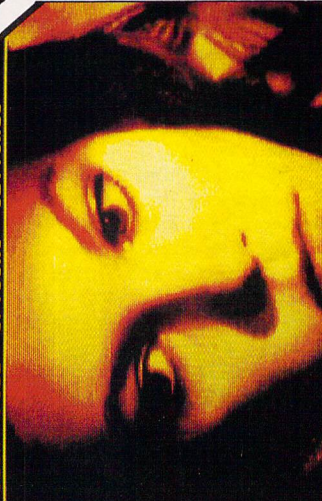
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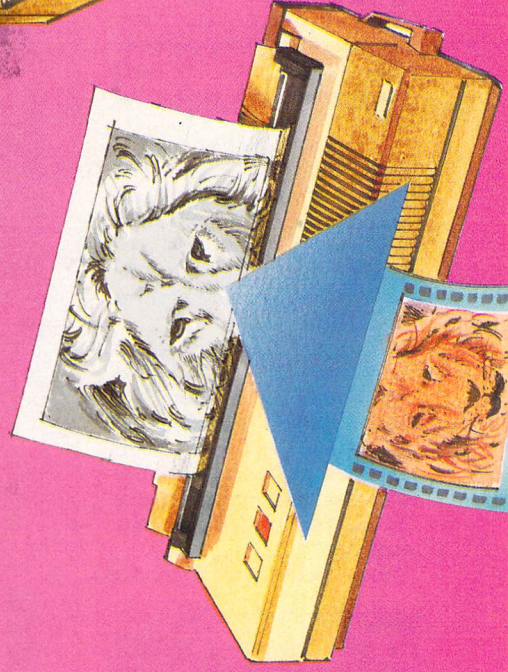
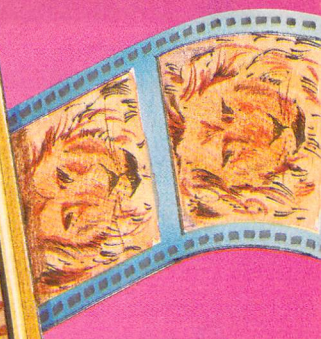
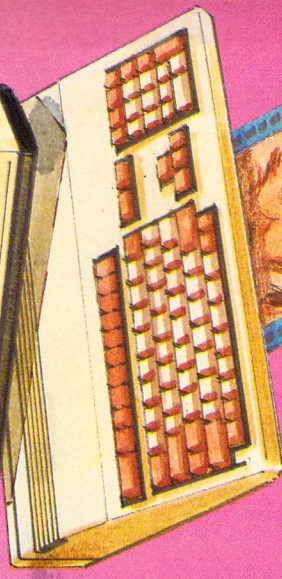
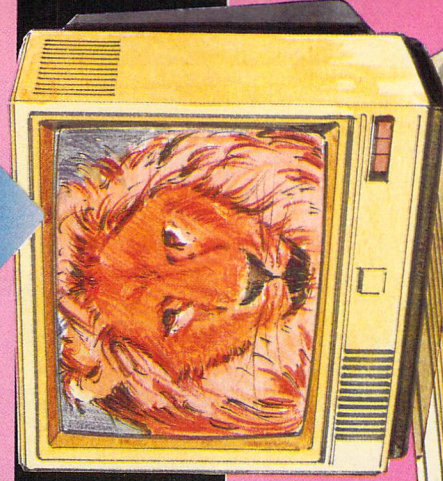
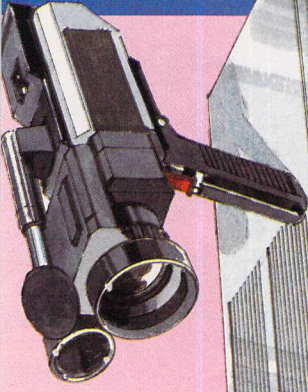


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QUICK PEEKS

Rotor

Arcana (0272 297162)

AS a young adult you have two choices in this grim vision of the future: Work under slave-like conditions in Antarctica's mines or sign up with the Roto-Raiders attack force. Not being utterly thick, you choose the latter.

At the academy you learn to fly the rotors - flying battle tanks - behind enemy lines. Starting off in a simulator you familiarise yourself with the controls and learn to handle the machine in small caverns and tunnels.

Having mastered that, you are told to seek out containers and retrieve their contents. A quick blast with your gun opens the container and the contents can then be beamed aboard. After that, you practice defending yourself against enemy weaponry.

Once you have attained a



certain skill level you can move on to real missions. Each mission is to a particular sector of an enemy fortress. You must collect the contents of the canisters and destroy the enemy defense systems. Energy crystals and extra fuel can be picked up along the way.

The game plays rather like Thrust as you fly through the cavern and tunnels. Gravity pulls you down so you have to keep giving short bursts of thrust, and inertia means you take time to slow down and alter direction.

It's really a very simple game, but is addictive and frustrating to play. It will take time to master and should keep you occupied for quite some time.

Julie Boswell

OUTLANDS



Product: Outlands
Price: £19.99
Supplier: Pandora, Mercury House, Calleva Park, Aldermaston, Berkshire RG7 4QW.
Tel: 0734 817421

If a game is to be successful it must be either original or better than any of its predecessors. And Outlands is neither. Set in a futuristic, vertically scrolling, landscape, it is a shoot-'em-up of the Xenon 2 variety - and there the similarity ends.

Whereas Xenon 2 was the first blaster in years that caused me to stretch my flexible friend close to breaking point, Outlands wouldn't tempt me unless it was half the price.

Pandora has catered for both single and double sided drive owners - the latter are treated to a sampled sound accompaniment while the title screen is being displayed. Having heard this I now wish that I had never got rid of my single-sided 520ST. Apart from the poor sound quality, it would appear that the original sound source was an LP that got stuck halfway through the recording session.

The background scenery is given depth by the use of parallax scrolling, while in the foreground the alien sprites are both colourful and varied in design.

Additional weaponry can be collected by flying through the pods that are jettisoned by the disintegrating alien craft. Double-shots, side-shots and an

interesting laser net are but a few of the goodies at your disposal.

Beginning at a steady pace you blast your way effortlessly up the screen. Most ships succumb to a single shot and your own craft moves quickly and smoothly. Before long you find yourself slap bang in the middle of the main battle fleet with shots coming in from all directions and your ship flying as though it has blown a gasket. The decrease in game speed is most noticeable as the sprite-count climbs.

Outlands may have sold had it been pitched at the budget end of the price range, but if you've got £20 to spend on an all out zapper I suggest that you give it to the Bitmap Brothers.

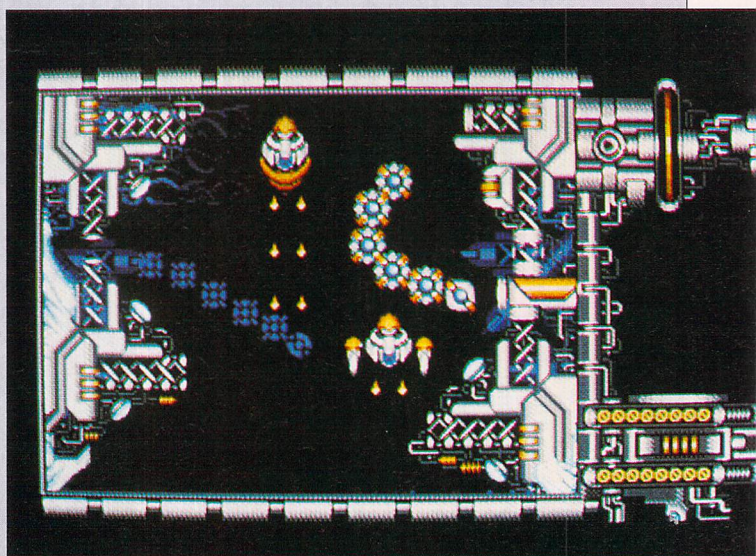
Jon Revis

Sound6
Graphics7
Playability6
Value for money5
Overall6

SECOND SIGHT

The packaging says that there is a 400k game-over routine awaiting the successful player. I will be very surprised if anyone ever sees it - the game is very difficult to play, especially with the poor joystick response.

Carol Barrow



Another vertically scrolling shoot-'em-up...yawn

Product: ESS
 Price: £19.95
 Supplier:
 Tomakawk/Active Studio
 Centre, 1 Ranelagh Gar-
 dens, London SW6 3PA.
 Tel: 01-384 2701

Space odyssey



ESS puts you in charge of a space agency in the year 2010. Not only does this include the glamorous job of flying shuttles but also the managerial task of making a profit.

Your main source of income comes from launching and maintaining satellites. To aid with their maintenance you can build yourself a space station, ferrying the modular parts up piece by piece like a giant Lego kit. Once the station can support life, you can also make money from conducting experiments of a civilian or military nature.

A typical mission starts well before take off, when you choose the hardware to bring and the crew and mission specialists required. Balancing profit with payload is a difficult task.

After the clichéd launch sequence your craft is launched into a low parking orbit. From here you must push the ship up to a higher orbit by controlling the amount of thrust. The on-board computer will correct your mistakes, but uses up precious fuel.

Once in the correct orbit the shuttle has to be hand manoeuvred to the satellite launching point or space station. Constant readings are supplied from your instruments and radar as you close on your objective. Once close enough, they appear as nice, solid 3D graphics and you can shoot them.

Did I say shoot them? I've been playing *Elite* too much. Well, you can shoot debris or old satellites if they are obstructing your valuable space. Taking a space walk is sometimes essential to repair satellites and also to have a good look round.

The work completed, you

leave orbit and begin the landing procedure. Unlike American or Russian shuttles, your company has decided upon the novel idea of landing on an aircraft carrier. This makes the graphical landing sequence much more fun, but if you would rather skip this arcade sequence, you can land using auto-pilot, forfeiting a cash bonus.

As a game, ESS is not of the action-packed shoot-'em-up variety. Nevertheless, it is a graphically and technically competent simulator. It would go down very well in schools, as an ideal program to demonstrate the concepts involved in the modern space industry.

Or it would be, if not for the poor manual. Written by someone who clearly thinks they understand the subtle nuances of the English language, it is a disaster.

ESS is a good program if you are interested in a simulator of this kind. Using three discs it

covers many aspects of space flight from launch to touch-down.

Each mission will give you a challenge, and you always have to keep working to make Eurodollars. I award ESS an instant bonus point for refusing to play 2001 music on take off.

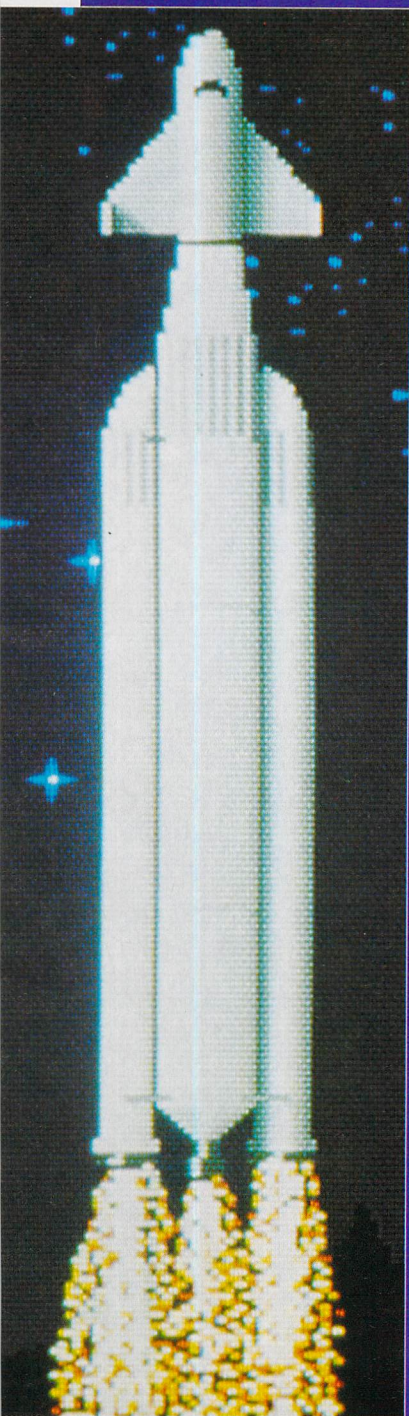
John Kennedy

Sound.....	7
Graphics.....	8
Playability.....	6
Value for Money.....	7
Overall.....	7

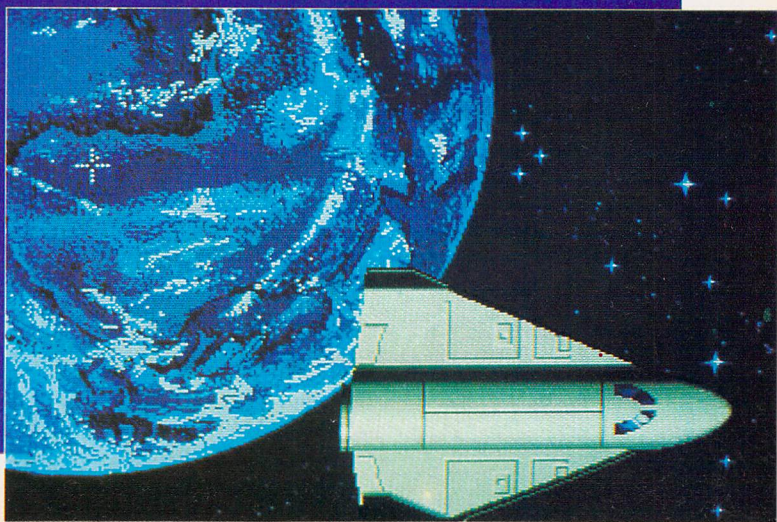
SECOND Sight

As a simulator it may veer towards playability and away from accuracy but it is still entertaining as a strategy game. It's like *Kingdom* with rockets.

Nic Veitch



...3,2,1 lift off!



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DEMON'S TOMB from Virgin starts with an original idea - a miniature adventure to play before the main challenge. This prologue is a game in its own right, and although finishing it will provide extra clues, it is not an essential requirement to enable you to play the rest of the game.

You are Professor Edward Lynton, who is taking part in an archaeological dig in Devonshire. He is exploring an ancient tomb when he is trapped as wind slams the heavy door shut.

The oil lamp falls and shatters, setting fire to the leaves and dried timber scattered on the floor. He has minutes to live, and must try to preserve as much information as possible.

Once this prologue is ended by the professor's unavoidable death you begin the adventure proper, controlling his son Richard as he tries to unravel the reasons for his father's disappearance.

He is accompanied by his faithful mutt Sam, following everywhere and occasionally being useful. At the very least the dog will carry an extra object around for you.

One of the first locations you will visit is the tomb, and if the prologue was played correctly some clues will be waiting to be carefully examined.

The major one is a notebook, complete with suitably vague scribbles. These notes point to unusual astral arrangements, which when combined with a strange happening in the locality, indicate nasty things afoot.

To add to the general weirdness, the adventure starts on Sunday, March 20th, 1990 - which is particularly odd because in my diary that date is a Tuesday.

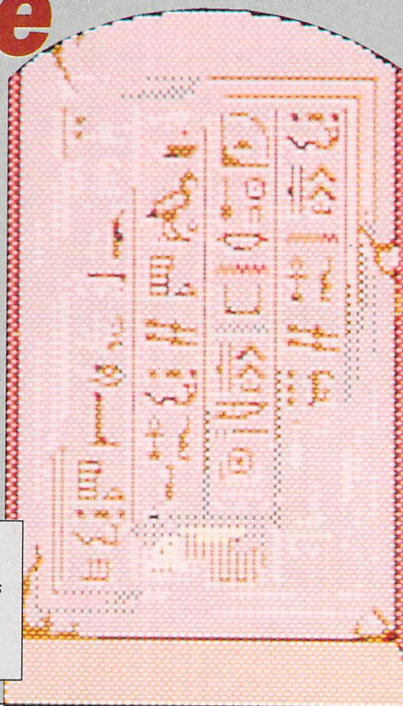
There are two ways of interacting with the program, via traditional text only, or by a menu-based system. The text parser is a pleasure to use, and it is a pity to play with only the menu system.

Text can be fully edited, and a history of the last few moves is kept in memory to enable typing mistakes to be corrected easily. You can also define macros - for example you might want to type Invent instead of the longer Inventory. In fact all the usual features such as ram load and save are included, as well as allowing complete control over how text is displayed.

The command "Thinking

Puzzle from the grave

Product: *Demon's Tomb*
Price: £19.99
Supplier: Virgin, 2/4 Verons Yard, Portobello Road, London W1 12X.
Tel: 01-727 8070



"...a hole in the roof..."

about" will provide a way of discovering what Richard knows of people and places. This is something that has always been lacking from games where you play a character other than yourself.

A sense of humour is always important in an adventure, and this time I think they've got it just right. Not too sarcastic, not too silly. Unless of course you type something strange like "Eat feet" which will produce an equally daft reply.

If you are stuck, or just plain lazy, using the menu system might provide clues.

All the possible verbs are provided at the bottom of the screen, to be selected with the cursors keys or a click on the mouse. Once a verb such as Drop has been highlighted all the objects that can be dropped will appear.

You might think that having all the options displayed like this will make the puzzles easier to solve, perhaps too easy, but this isn't the case. The problems involve more than just doing such a thing here or there - they require some thought.

Graphics for all main locations are loaded from the second disc. These small sketches help you visualise what is going on. If you prefer to stick to the mental images conjured by the text these images can be ignored.

Demon's Tomb uses a very good system, combined with an interesting plot. It is a tough adventure with many locations and puzzles to solve, and I look forward to seeing more adventures like it.

John Kennedy

Presentation.....	8
Graphics.....	7
Playability.....	8
Value for memory.....	8
Overall.....	8

SECOND Sight

Not very pretty in the graphic department, but this is not necessary for a good adventure. Although quite hard *Demon's Tomb* is playable through to the end and the hints provided should ward off frustration without actually spoiling the game.

Nic Veitch

Product: Drakkhen
 Price: £24.95
 Supplier: Infogrames, Mitre
 House, Abbey Road,
 Enfield, Middlesex EN1
 2RQ.
 Tel: 01-364 0123

If you have brandished the Firestaff and managed to kill Lord Chaos in Dungeon Master, like me you are probably looking for another game to challenge your computer role playing talents. I thought I'd found the answer to my prayers after reading the Drakkhen rulebook and viewing the game's superb boot up display.

Initially, Drakkhen showed a lot of promise. Like Dungeon-master, you control the actions of four characters, all with a wealth of individual abilities, who have to complete a perilous quest.

Your intrepid band has to scour the land for a certain priest and then solve the enigma of the tears, which will prevent the Great Age of the Dragons, thereby saving mankind.

This task will be made easier if you read the 78 page Drakkhen storybook, which contains a narrative by a paladin, the contents of a ship's log and a book of spells. The storybook comprises a series of short stories which offer clues. The spells, which are much easier to cast in this game than in Dungeon Master, need to be interpreted from time to time, as they are described in lengthy flowery prose.

The game starts with your

characters appearing in the middle of a wilderness, where they are immediately attacked by all kinds of creatures, ranging from poisonous snakes to violent dragon-men.

This is a regular, and fatal, occurrence with creatures springing up from absolutely anywhere, leaving you no time to work out any form of defensive strategy.

Your opponents start off tough and proceed to get even tougher. Every creature that you've ever imagined makes an appearance, including a Tyrannosaurus Rex which can inflict great damage with a single bite.

If you survive the early

attacks you are in for a nice surprise. The graphics are of a consistently high standard, be they when you are travelling through the country or engaged in conversation with the all-too-few peaceful inhabitants.

Interaction with non-player characters is a simple affair involving a few clicks on the mouse. This process reveals a wealth of information and you will need several reams of paper to note it all down. My only criticism here is that communication with the computer-controlled characters is far too limited.

The storyline itself is quite entertaining. Piece by piece

you should be able to gather together enough information to enable you to survive and succeed in your quest. Help comes from many unexpected sources, including a wizard who has a habit of materializing when things get rough, to clerics who have been unfairly dismissed by unappreciative royalty.

Moving around the lands can be accomplished in two ways - character and group mode. In character mode you can move your characters individually and let them act, fight, take objects, speak to creatures and explore dungeons, while in group mode your characters disappear and you can move through the world quickly using the cursor keys.

Drakkhen has all the required elements to make it a classic computer role-playing game; unexplored dungeons, a multitude of different useable weapons, undiscovered artifacts, character progression and trading facilities. Even the operational system is easy to use, being icon driven and controlled by both joystick and mouse.

However, it just doesn't hit the mark in my book. The initial characters' strengths are far too weak to survive more than a couple of encounters, the depressingly regular combat is almost completely unavoidable and the sound effects are minimal.

There is a fine dividing line between making a game enjoyably challenging or frustratingly difficult. In my view Drakkhen tends towards the latter, and my search for a new Dungeon Master continues.

Wayne

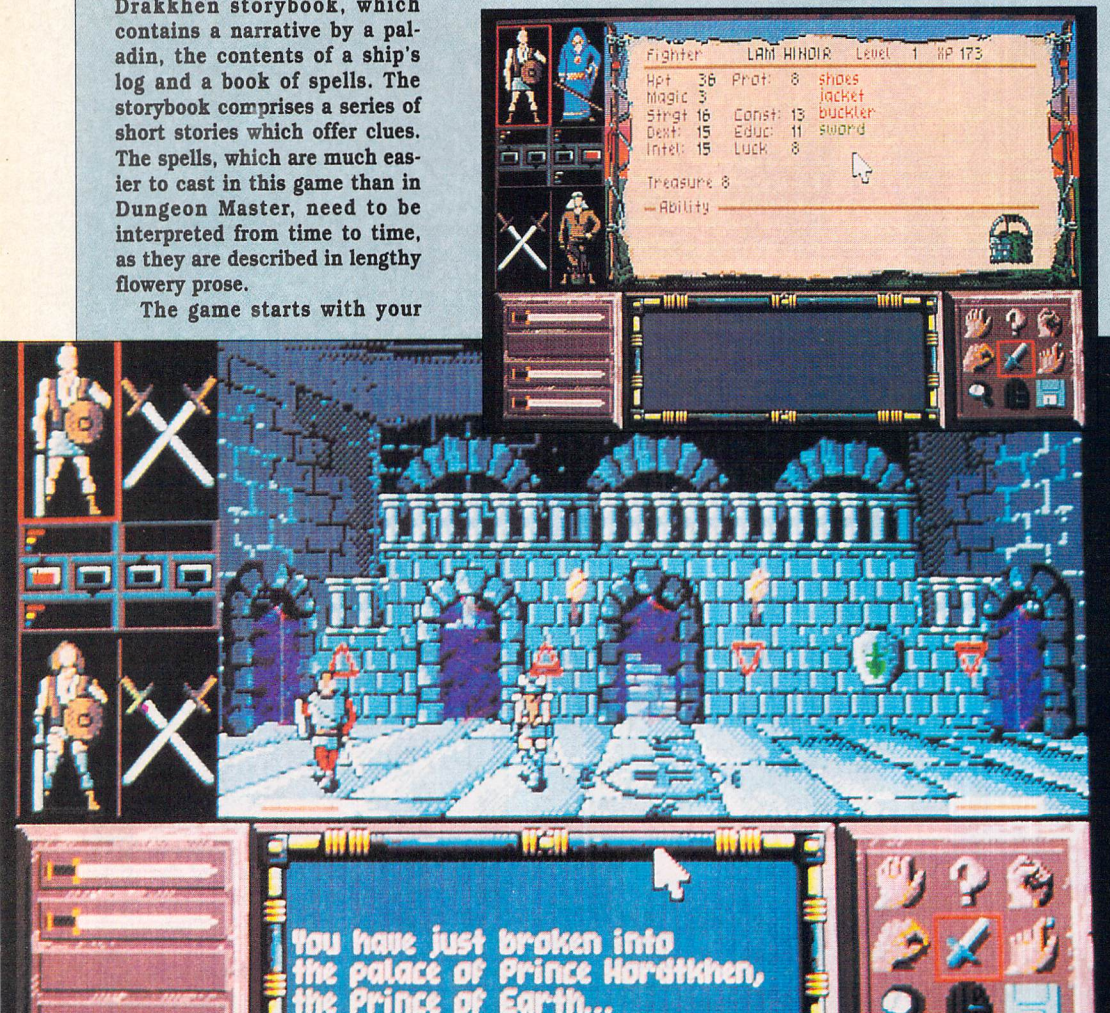
Sound.....4
 Graphics.....10
 Playability7
 Value for money7
 Overall7

SECOND SIGHT

Unlike Wayne, I thoroughly enjoyed this role playing game. The graphics are excellent with a superb 3D view as you speed over the lands of Drakkhen. The gameplay is good, but I also found the combat scenes a bit too common and too difficult. You'll either love it or hate it - try before you buy.

Roland Waddilove

Perilous quest



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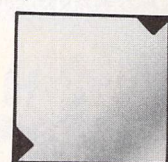
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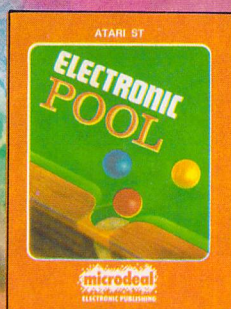
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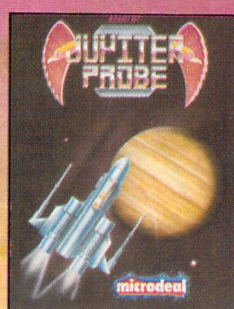
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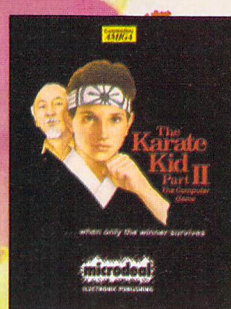
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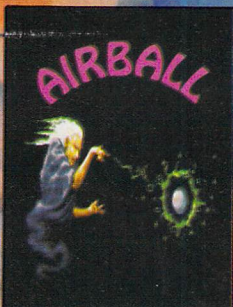
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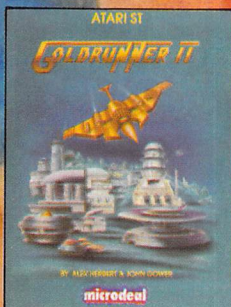
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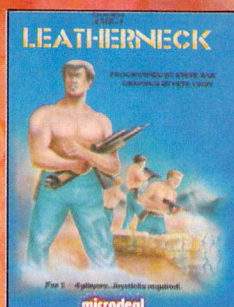
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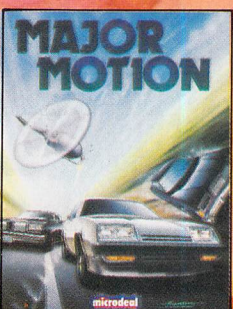
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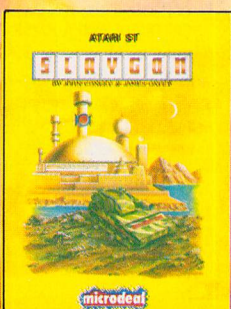
LEATHERNECK
Reviewed as the
best arcade war
game, program by
Steve Bak.



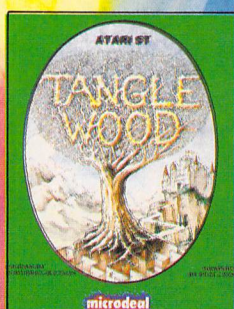
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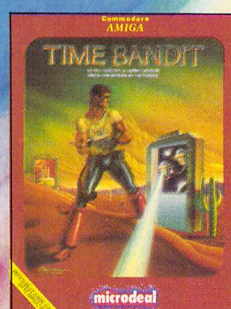
**MAJOR
MOTION**
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arcade game.



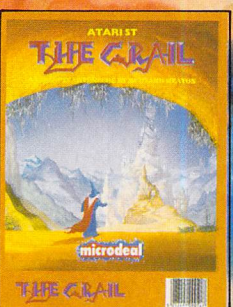
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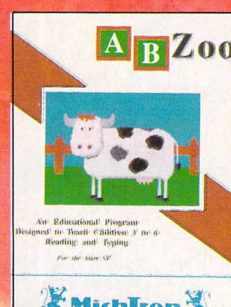
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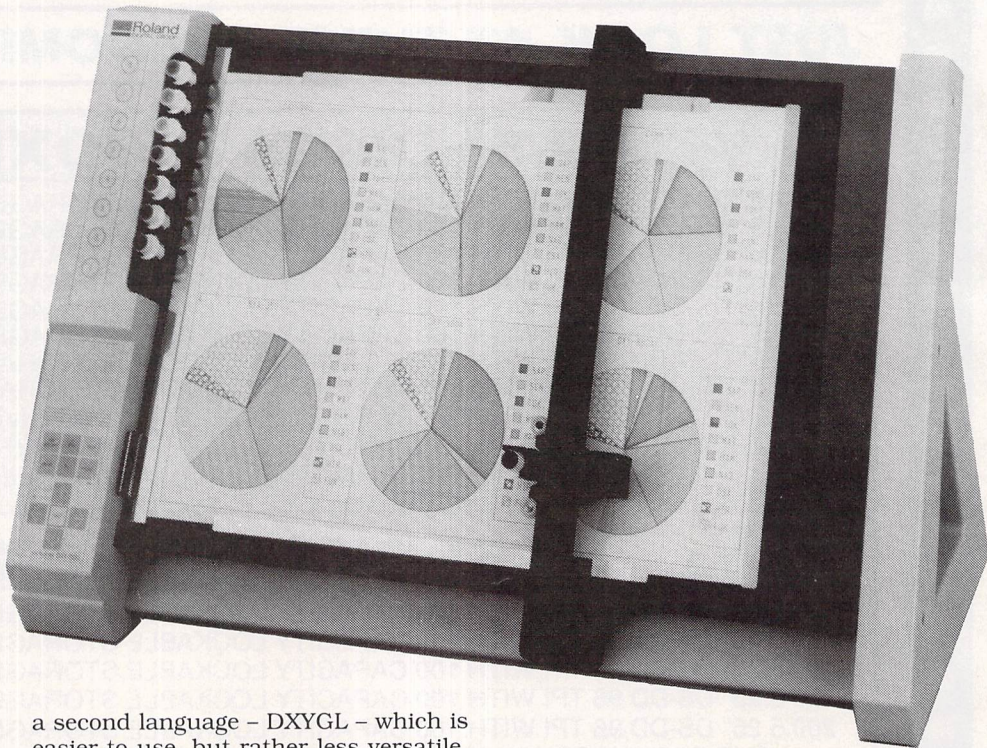
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Education Orders Welcome

It's all in the plot

Len Golding examines an inexpensive flatbed plotter and finds that it produces results as good as machines costing much more



If you are searching for a good quality plotter at reasonable price, you'll need no introduction to the Roland name. The DXY 880A has established itself as one of the best value A3 flatbeds around, and the new DXY 1100 seems destined to take a fair share of the market.

At £914.25 it isn't expensive as A3 plotters go, but still a major purchase. It arrives well packaged, with all the extras you need to get started, including eight coloured fibre tip pens and a few sheets of plotter paper. It even has a fitted 13 amp plug and a soft dust cover – nice touches in these cost-cutting days.

The plotter can operate flat, or at a 60 degree angle using a provided desk stand. There are two manuals. The first explains how to set up the plotter and configure it to suit your host computer – the ST in my case. It also leads you through the maze of pens, paper, ink and film available. The second manual lists all the commands.

Both manuals are clearly illustrated, and the text is relatively free from misprints and mis-translations, though some of the explanations, for example on scaling techniques, are a bit enigmatic.

The chances are that you'll be using a commercial ST CAD package, such as GFA Draft, which has its own built-in plotter driver. The Roland RDGLI language is similar to the industry standard Hewlett Packard HPGL, so most commercial drivers will work correctly.

The DXY 1100 can also understand

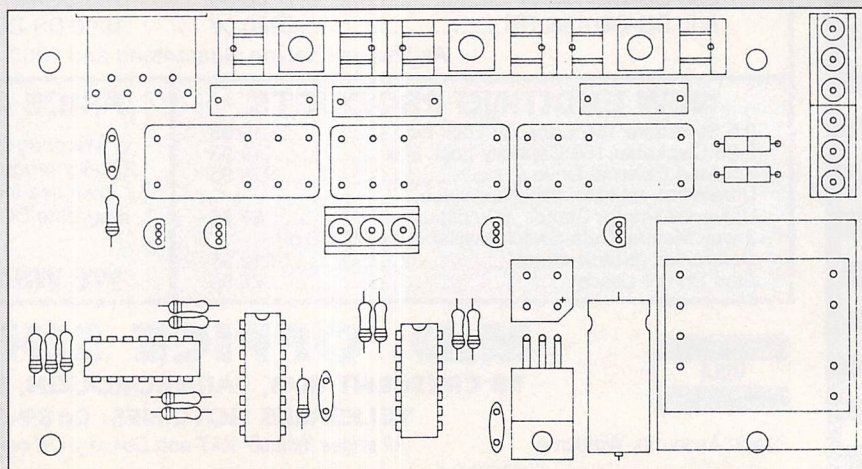
a second language – DXYGL – which is easier to use, but rather less versatile. All the plotter's functions can be accessed easily by Basic statements. For example: LPRINT "D 0,0,100,0" will draw a straight line from coordinates 0,0 to 100,0.

Other commands can be used to draw arcs and circles, change pens, alter pen speed, print alphanumeric characters, produce cross-hatching, zoom and rotate the picture. In fact, I haven't yet discovered any reasonable task this plotter can't perform, given appropriate software.

Two banks of easily accessible DIP

switches are used to set the default parameters. These include paper size, command language used (RDGLI or DXYGL), international character set selection and choice of Centronics or RS232 input. The Centronics option is easiest to use, and a standard printer cable will work perfectly well. If you prefer to use the RS232 interface, the DIP switches let you specify baud rate, stop bit and parity.

The plotter console contains a further 11 membrane switches, which can be used to select a range of func-



The DXY 1100... packs a second language

tions without help from the host computer. Four direction keys let you move the pen manually in tiny increments around the plotting area, and a Fast key speeds up this movement.

Pause halts the plotting process temporarily, and View sends the plotter head to its home position at top right of the board, allowing close inspection of the entire drawing. There's also a Pen Up/Down key, and three keys which enter scaling points to allow origin setting and zooming.

By pressing the console keys at power-up time, a second range of functions can be selected. For example, holding down the Fast key while switching on will set the pen speed to 100mm per second – about one quarter of its maximum capability – which is useful for very high precision drawing and overhead projector slides.

In serial mode, communication is two way. The host computer can receive information from the plotter – when an error occurs, for example – and either act upon it or simply report it to the user. The plotter will even

operate as a primitive form of digitiser: Use the direction keys to move the plotter arm, and press Enter when it reaches the desired digitisation point. The pen's coordinates will be sent to the computer which can be used to build up a picture on screen or in memory. This function is not available, of course, when the unidirectional Centronics option is selected.

Getting started

The first requirement is to insert a rubber pen cap at each of the eight positions in the pen stock – a fiddly and often frustrating operation. The pens can then be clipped into their holders, which requires a bit of practice.

It is easy to test whether you've fitted them correctly, by turning power on while holding key P1 – the plotter will attempt to pick up and replace each pen in turn, so any errors become distressingly apparent.

The paper is attached to the drawing

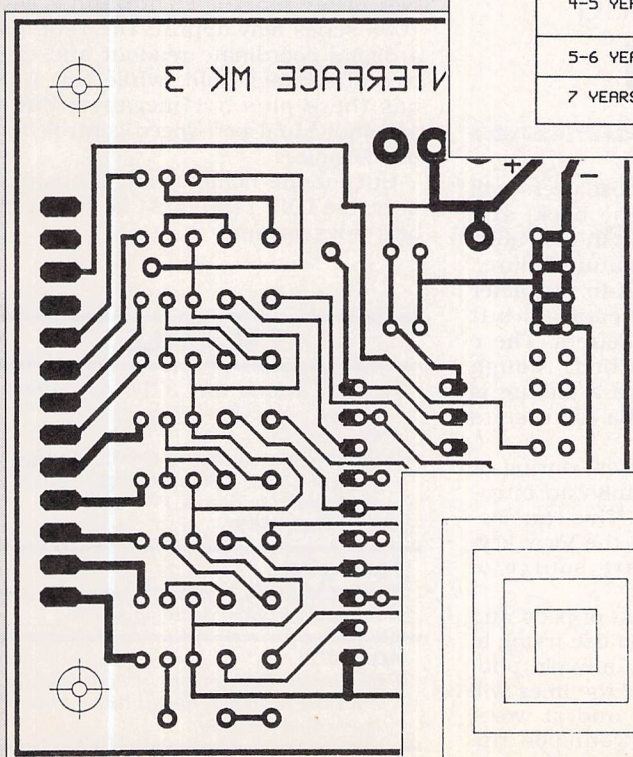
surface using a magnetic system – long thin metal strips clamped around the paper edges. Although this method seems a bit archaic when compared to modern electrostatic techniques, it does have a few advantages.

More than one sheet can be held at once, so you can use a white backing card when working with transparent film such as OHP slides. Also the magnetic system is relatively robust, whereas electrostatic surfaces are very delicate, and can be destroyed by some cleaning agents.

Now it is time to load your software and start drawing, and this is where the plotter really starts to shine. The DXY 1100 has a maximum hardware resolution of 0.0125mm – well beyond the capabilities of most software packages. GFA Draft Plus, for example, can produce resolutions of about 0.05mm at best, and the plotter can easily cope with this even at high speeds.

While we're on the subject, the DXY 1100 is probably the fastest plotter in its class, with a maximum drawing

Although one of the fastest plotters around with a drawing speed of 420mm/sec, for delicate jobs 100mm/sec gives best results

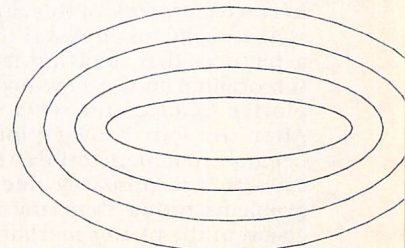
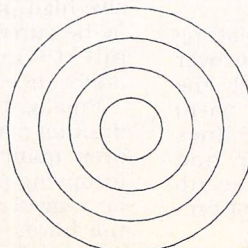
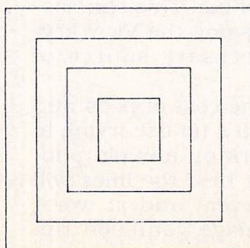


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4-5 YEARS	SIMILAR SOUNDS STILL CONFUSED (S/F/TH; R/L/Y/W) SOME SOUNDS OMITTED. WORDS MAY BE REVERSED.
5-6 YEARS	ALL SOUNDS CORRECT, EXCEPT S AND R
7 YEARS	ACCURATE ARTICULATION

Plotter output is both fast and of a high quality

The results of plotting the same picture four times shows that the plotter's head can accurately retrace its path



➤ speed of 420mm per second. However, this rate can be used only with certain pen and paper combinations, and should really be regarded as the draft mode.

A speed of 200mm/sec is better for most work, and 100mm/sec or less gives best results on really delicate jobs – like the printed circuit board master shown. When drawing circles and curves, the pen automatically slows down to less than 10mm/sec, regardless of the line drawing speed.

The plotter mechanism uses a toothed drive belt and is surprisingly quiet, though the pen makes quite a lot of noise as it lifts and drops. Unlike the 880A, the DXY 1100 incorporates soft pen landing, which means that you can use any kind of pen, including the delicate Rotring and Staedtler wet ink types.

Putting pen to paper

The cheapest pens available are ordinary fibre tips, which tend to spread and produce uneven lines after a while. My own preference when plotting on paper is for the Roland 0.2mm ceramic tip disposable pens, since they give uniform lines throughout their life and are virtually maintenance free. For plotting on film I use 0.2mm and 0.3mm wet ink pens, and for OHP slides the Roland range of oil based pens gives good results.

The DXY 1100 incorporates several features to improve pen performance. If no command is received for about three seconds the pen automatically lifts from the paper to avoid ink smearing. Fifty seconds later the pen is returned to its stock, which effectively caps it and helps to stop ink drying out. By selecting different pens for different parts of the drawing, it's possible to produce up to eight colours in a single plotting operation.

The ultimate test, of course, is the quality of finished artwork, and the illustrations show some examples. Small circles and curves are drawn smoothly and accurately, but larger curves tend to be a bit jerky. Line lengths and widths, however, come out more precisely than the best draughtsman could produce by hand.

The results are certainly good enough for inclusion in your average DTP publication – though they'll have to be pasted in manually, of course – and most magazines would be happy to receive artwork of this quality.

As a really tough test, I tried plotting a picture, then plotting it again over the original to see how accurately the plotter head could retrace its path. After the fourth over-plot, the lines became just perceptibly thicker, and even this is probably due to pen tip problems rather than any lack of precision in the plotter mechanism.

This test may sound a bit unfair, but

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Lowercase letters are poorly formed

in practice the plotter will often have to draw lines in two or more stages, with numerous head re-positions in between, so accuracy of return is vital – and the DXY 1100 cannot be faulted on this score.

So much for the good points, now let's have a look at one or two niggles. Firstly, if the plotter arm is not in its home position at power-up, it returns there with a resounding thump, which can't do it much good. A cushioned return is implemented during plotting, so why this potential source of damage at turn-on time?

The mains connection is via a small, rather fragile looking right-angle plug, but the cable comes out towards the

“It's possible to produce up to eight colours in a single plotting operation”

front of the machine. Most users will want to run it round the back, and this will put a sharp kink in the cable, probably leading to premature failure.

The plotter has a built-in character set, with well formed capitals but rather poor lower-case letters. The c and a are particularly bad, though still readable. Also, when a picture is zoomed down, the alpha characters tend to run together.

When the plotter pauses, during or after plotting, it often emits an intrusive high-pitched whine. This can easily be cured by pressing the View key, but it's an unnecessary source of annoyance.

Finally, there's the cost of pens and drafting materials. It's no use trying to draw quality artwork on any old photocopying paper. At best the lines will be ragged and uneven, and at worst the fibres will damage your pen tip. Careful matching of pen to paper or

film is essential. The pens are manufactured by Staedtler and Rotring, as well as by Roland, but for some reason they cost two to three times as much as their hand-drawing counterparts. A3 plotting paper is about 10p per sheet, and A3 plotter film can run as high as 70p a time, though it is possible to obtain these more cheaply if you shop around or buy in quantity.

All materials are available at full price direct from Roland, and some form of discount system would make their plotters more attractive for the small-time user. As a rough guide, expect to pay around £50 for all the ancillaries you will need in a domestic set-up, and between £100 and £200 to get you started in a commercial environment.

The plotter itself, however, represents excellent value for money, and produces results as good as machines costing a great deal more. Several mail order companies are currently offering heavy discounts, and a price around £700 is not unrealistic.

If you have a bit more to spend, the two other models in Roland's DXY 1000 series may appeal: The 1200 has a digital coordinate readout and electrostatic paper hold, while the 1300 has these plus a 1 megabyte buffer and individual pen speed control from the console.

But for the home or small-business user, the DXY 1100 must be one of the best buys around.

FACT FILE

Product: Roland DXY 1100 A3 flatbed plotter

Price: £914.25

Supplier: Roland Digital Group, Amalgamated Drive, West Cross Centre, Brentford, Middlesex TW8 9EZ.

Tel: 01-847-5665

POINTS FOR:

Fairly cheap (for a plotter). Good quality output. Very fast drawing speed.

AGAINST:

Poor lowercase letters. Occasionally emits a high pitched whine. Power lead could be better.

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IF names such as Autocad, GDS, Scribe and Gable have an unfamiliar ring it is hardly surprising, for none of these professional and extremely powerful CAD programs would run or are available for the ST.

Not such a surprise, however, is that they have rivals in the marketplace that are almost, if not equally, as capable, and at a fraction of the cost. Enter DynaCADD from Ditek, very much playing the role of the young pretender and seeking to find its niche in the market, aided strongly by its cost advantages in both hardware and software.

There may be a widening range of pseudo-CAD packages available for the ST, but many of these fall well short of the power required for full professional use. In this sense DynaCADD has bridged that gap and tags on to the coat tails of the accepted industry standards, particularly as a rival to the Apple Mac-based versions of Autocad and Versacad.

For those users free from the MSdos environment there are great advantages in wimp-based CAD, and the fact that these programs are favoured in higher education demonstrates how the learning period can be significantly reduced by the ability to offer screen-driven drawing commands.

DynaCADD's development seems to continue at a pace, only in spring 1989 was version 1.42 released, and we are already reviewing version 1.66 here, and by the time you read this version 1.7 should be available.

Not that this is bad news for existing owners or potential purchasers, for upgrades of the program also incorporate their own conversion routines so that older drawings can be loaded and used with full compatibility.

Free backups

Coming as a set of three program discs, DynaCADD allows full freedom to make additional copies and backups, though each user's authorisation is limited by the need to plug in a dongle.

This obviously restricts the use of other cartridges, though this is not the kind of program you would normally dip in and out of. It demands concentrated periods of work, and perhaps in the professional environment a designated workstation. The latter is a sound proposition, for the ideal hardware package comprises a minimum of 2 Mb ram, double sided floppy, and high resolution monochrome or professional colour

ST CAD gets

monitor. Add to this the speed advantages that a hard disc offers and also a maths co-processor, and your CAD-based ST becomes highly tailored to the program.

In version 1.66 the package's speed has been improved by as much as 300 per cent over previous versions, and with a maths co-processor it is 500 to 900 per cent.

As this review was prepared without the latter I must say that the speed was quite adequate, though regular users must benefit from the time saving device.

Having said that, DynaCADD is fundamentally no more than a very capable 2D package with only basic 3D wire frame graphics, and it is hard to envisage developments of the program ever matching the colorshading and superimposition of T 2 Sonata or Autocad Artisan in areas where computing speed are essential.

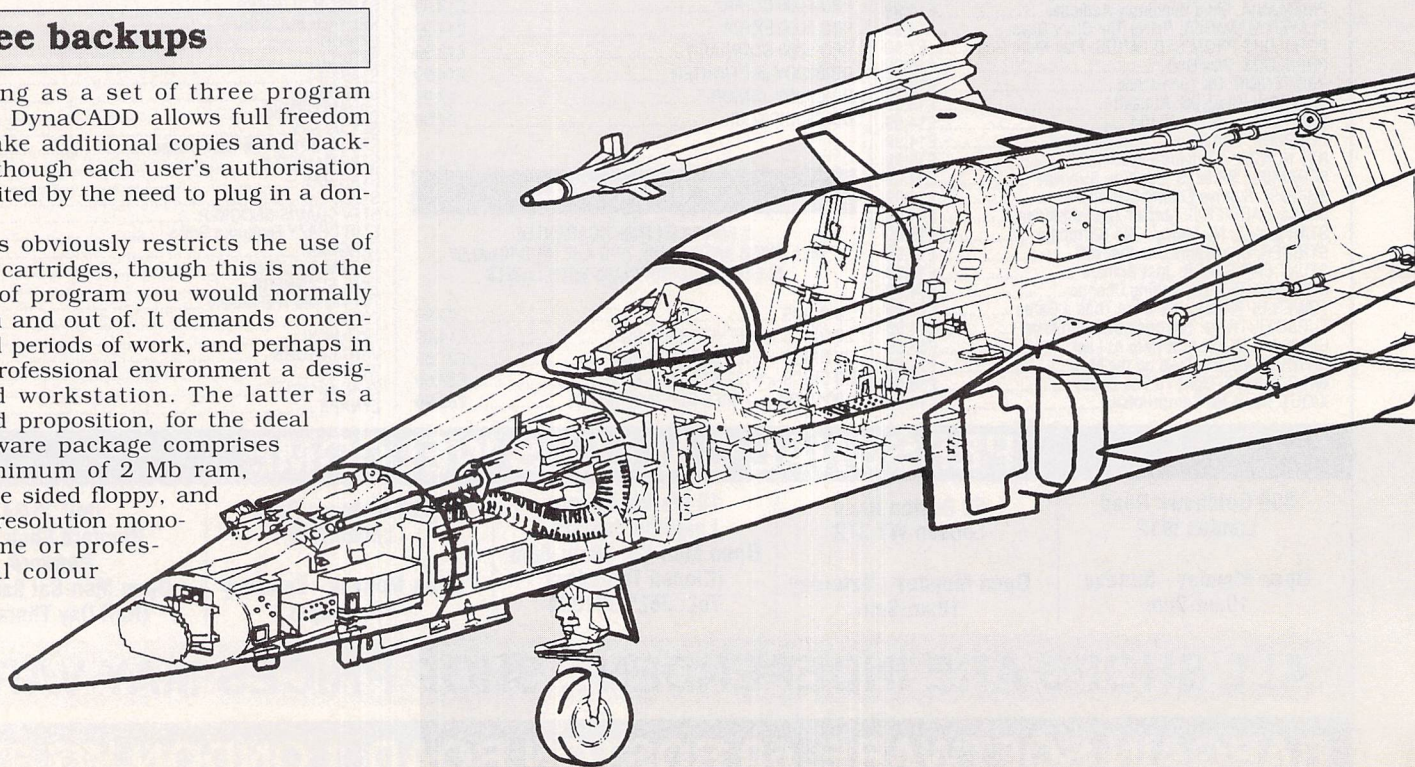
If those are your purchasing requirements then add at least another nought to your budget figure and look at the Sun SPARCstation or

Compaq 386-33. Remember also that CAD is one area where decreasing improvements in program capabilities are inversely reflected in their cost. At £650 therefore DynaCADD represents an excellent value for money package.

Recent changes to the package, other than the re-drawing speed, require more detailed use of the program functions, but of particular note are the improvements made to the vector font editor, which by the use of more numerous and powerful drawing and smoothing tools allow the development of very presentable user defined fonts.

The program also presently includes four Agfa Compugraphic fonts with further additions a promising prospect. Hatching and fill improvements upon earlier versions are beginning to show a response to the requirements of present DynaCADD system users. With a program of such specialised appeal this may take time to expand, however deserved the case.

The ring-bound manual provides an extensive source of detailed informa-



Examples of the quality of output possible from DynaCAD

a boost

Dominic Boyes tries a top-flight computer aided design package

tion, though is a poor source material for those wanting to get to grips with the program. I don't feel our intelligence patronised, nor whims indulged by step by step guides, so why can't more manuals develop the quality of Timeworks documentation?

However, there is some relief in the form of the supplementary 2D and 3D tutorial course taking the novice on a technical drawing tour to produce a fully annotated and projected nut and bolt component.

This demonstrates how lavishly featured DynaCADD is, and how – unlike many other systems – it produces finished 3D databases of parts rather than 2D drawings, allowing later recalling for use in a different guise.

The program's structure is divided in to two sections, CADDs, for all geometric manipulation and drawing creation work, and SYSTEM, the entry level allowing the definition of parts, drawings, scale and paper/out-

put sizing. The initialisation procedure typifies the range of features available to accommodate even the most peculiar of user requirements.

In the architectural field it is standard practice to use A sized paper, rare to use imperial, and English sizes went out with the Ark. There is also the potential to create user-defined standard sheets to cater for unusual presentation needs.

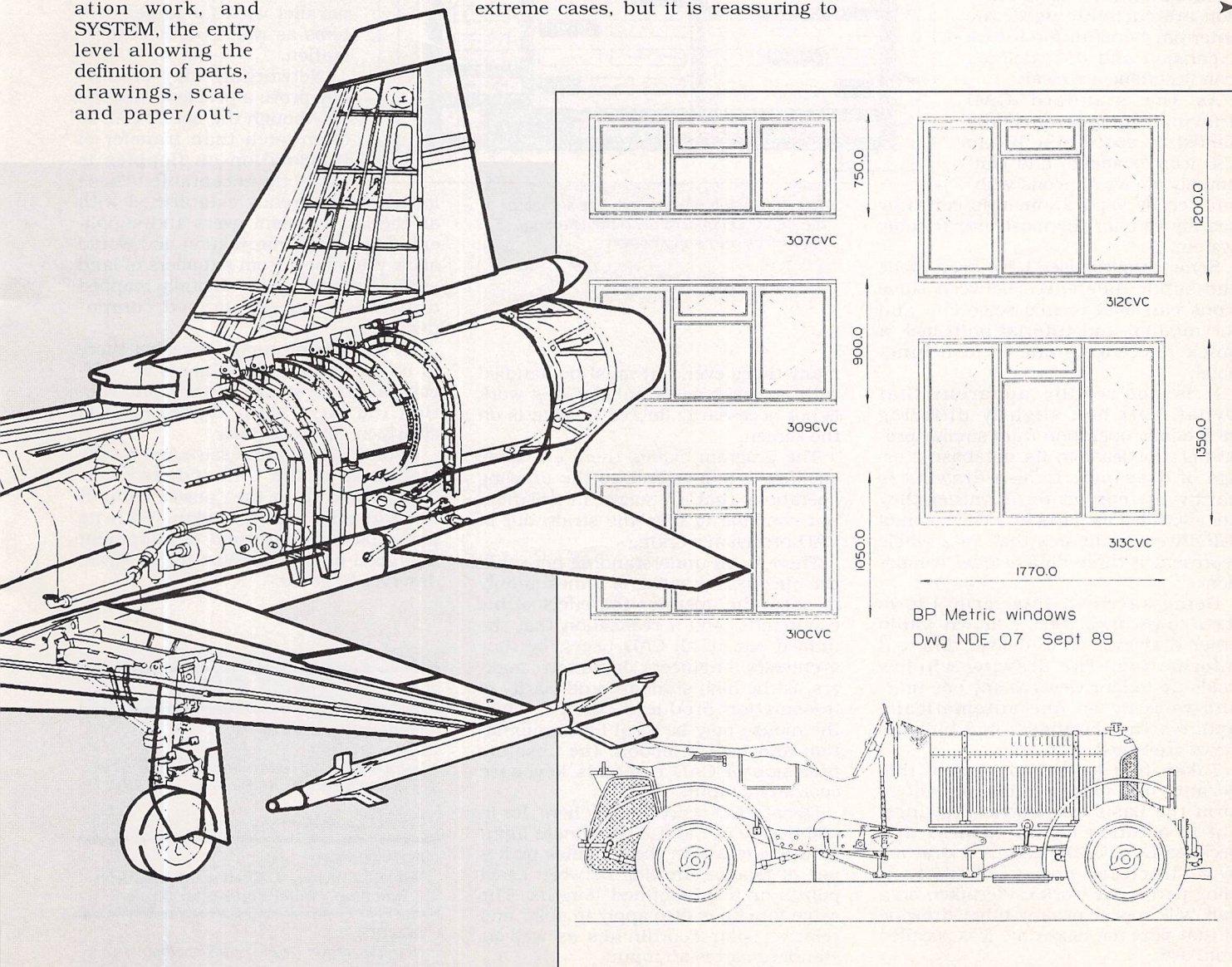
Unusual scaling

The scale setting adopts a similar approach, is unusual in its requirement to input data in two operations as a fraction rather than single ratio form, but advantageous in its accommodation of such oddities as 1cm:1ft. Perhaps this is only a requirement in extreme cases, but it is reassuring to

have, and potentially a major time-saving function. Before moving away from criticism of the program's quirks I would query the need to redefine a drawing Primitive as an Entity when this is now accepted terminology.

Having satisfied all the program data requirements, the system level is entered and the real potential of the program becomes apparent. Supporting up to four windows on the drawing plane the screen shows pull down menus, a row of global command icons for functions such as saves, snap to grid, and for returning to drawing parameters.

The exemplary four-block variable icon panel for drawing commands is mouse orientated, though allows a limited use of short-keys for more commonly used functions. This command structure is the key to



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**Don't miss
out on our
latest disc!**



Bigcolor

BIGCOLOR is the best colour emulator for monochrome monitors that we have seen and was written by Jon Dalton. Once installed, the ST – with monochrome monitor attached – acts as if it was using a colour monitor. Of course, you won't see any colours, but shades of grey.

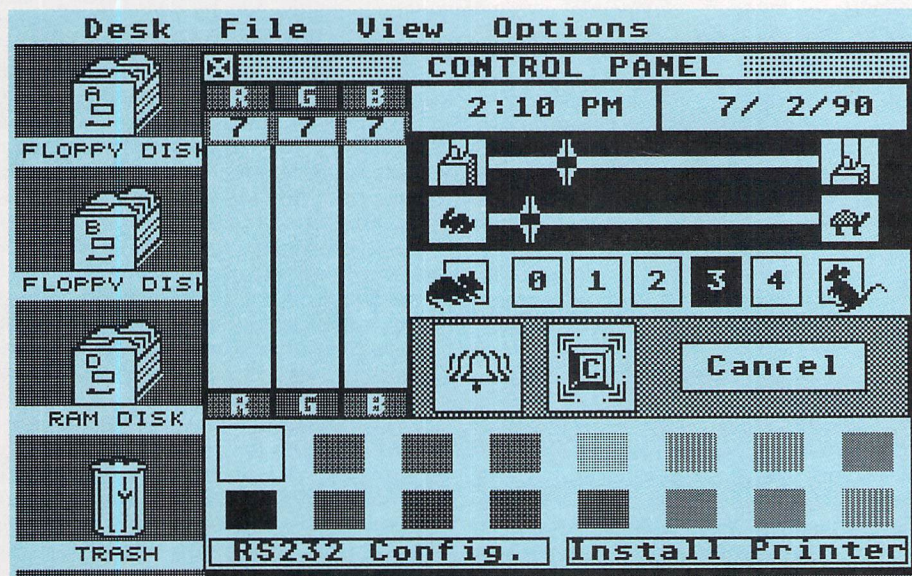
Don't expect commercial arcade games to run – you won't get Xenon II running on a monochrome monitor – but programs like Degas Elite, for instance, can be used in low resolution, allowing you to draw full colour pictures (in shades of grey, of course).

Unlike some colour emulators, it gives full screen emulation, producing seven different shades of grey in low resolution and three in medium.

Unfortunately, to achieve this it uses approximately 200k of memory, so boot up with as few desk accessories and ram discs as possible. You'll be struggling for memory if you have only a 520ST.

The program should be placed in the AUTO folder of your boot disc. It should also be put there before any other programs are input so that it is loaded and run first.

When you first boot up you must choose the screen drawing rate – pick a number from one to 10 by pressing keys 1 to 9 and 0 for 10. The program then installs, taking about 15 seconds. When the start-up screen appears, type any letter instead of a number and the program will not install itself.



A black and white screen dump of the 16-colour, low resolution control panel running on a monochrome monitor – confused? Try Bigcolour and see for yourself

Chemistry tutorial

WORRIED about impending GCSE exams this summer? Well, we can't provide any cheat modes unfortunately, but what Chris Parker-Jones has done is create a fully menu driven tutorial and revision aid for chemistry students.

It makes good use of the ST's sound and graphic capabilities, with a multitude of screens and simple menus.

Use it to learn about the states of matter, composition of the air, metals and non-metals. Atomic structure and radioactivity are also covered in detail. There are question and answer quizzes, and a simple game in which you fill a balloon with various gases and discover whether it will float.

Chemistry Tutorial is written in STOS and two versions are provided on the disc – an autobooting program that runs as soon as you switch on for anyone that doesn't have STOS, and a straightforward Basic listing for STOS owners. Which you use is up to you.

● *Even if you're not interested in chemistry, you'll find the listing contains many hints, tips and other programming techniques that can be cut out and used in your own programs.*

To take out a subscription turn to Page 83

FOUNDATION AND EMPIRE

FEDERATION II is a multi-user space trading game running on the MicroLink service. Multi-user games are a relatively recent innovation, designed to allow the player to compete not just against the computer, but against other players.

The game runs on MicroLink's computer and players access the game using their home micro and a modem. Having logged on to the game, players find themselves in what at first appears to be an ordinary text adventure.

Movement is by typing in the direction you want to go, objects can be picked up, examined and dropped, and the location descriptions can be brief or full at your choice.

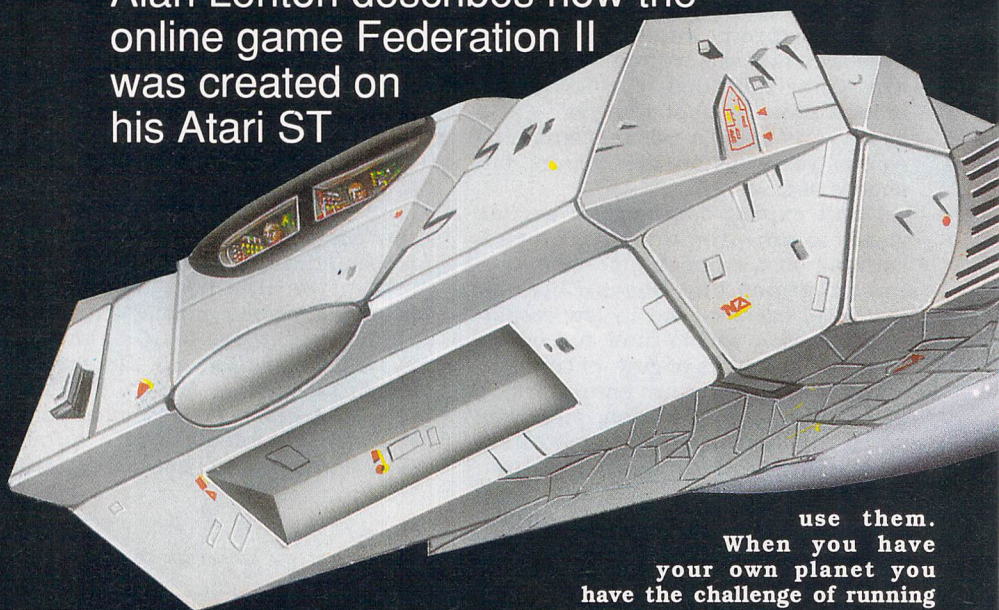
It soon becomes apparent, though, that this is not an ordinary adventure, for soon messages from other players start to appear on your screen giving help, advice and tips. The essence of a multi-user game is the competition and the cooperation between the players - in Federation II the other players can hear you scream!

I started writing Federation II nearly five years ago, and it was three years before I started to code it. At the time I was playing the very first multi-user game MUD (Multi-User Dungeon), and wanted something more than a dungeons and dragons type game in which you collected objects and dropped them into a swamp, well, pool or the like.

Being a sci-fi fan the idea of an adventure game set in space was very appealing. Originally, I was going to design the game and someone else was going to code it. Along the way he dropped out, and I taught myself to program to complete the project.

When I started all I really had in mind was the idea of a space adventure, but in the three years spent designing it a number of themes emerged which came to define its essentials:

CONSISTENCY: The place that is Federation II - what we call DataSpace - has a history. The things that happen, the locations and the mobiles (computer controlled characters) are consistent, and logical. For example, The Moon was colonised by Italians - that is, it has a plaza, a church and is the home of the Federation II Mafia fraternity.



Alan Lenton describes how the online game Federation II was created on his Atari ST

ECONOMICS: Early in the game's design I came to realise that I didn't want to write a Dungeons and Dragons transposed into the 21st century, and the idea of Federation II as an economic simulation was developed.

Planets have their own economies, they produce some goods and consume others, and once the players reach the right level they can take part in the trading, production, and running the planet's economy. All the planets have a specific history, and that helps to keep the game consistent.

EXTENSIBILITY: Everyone who plays a game, multi or single-user, knows that they can do better - after all that is why I started to write this game - but Federation II has the challenge built in to do better than the original game.

It has tools and facilities to build your own planets, link them in to the game and have other people visit and

use them. When you have your own planet you have the challenge of running it without going bankrupt.

SOCIABILITY: Federation II has a rich array of facilities which allow you to communicate your views and feelings to other players. Rather than dumping you in at the deep end, it starts off as an adventure in which you learn the necessities for the later levels while you are exploring and adventuring.

Many people are surprised when they discover that Federation II was developed entirely on the Atari ST. Since the Gem operating system is not multi-tasking or multi-user, I had to obtain a different operating system.

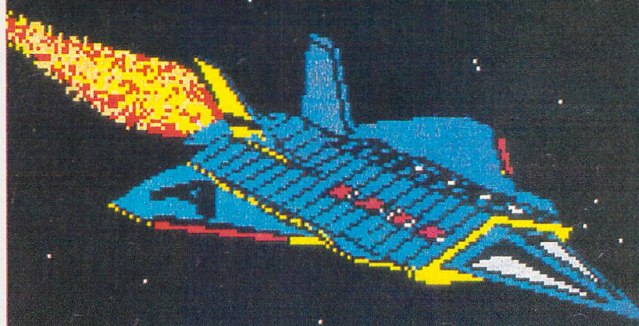
In late 1987 Cumana produced a version of the OS-9/68k operating system for the ST. This is very like Unix, but much faster, and usually runs on expensive 680x0 VME-bus systems.

It is very much a tribute to the design of the ST's hardware that not only does OS-9 run fast and efficiently on it, but, as I was later to discover, it could cope with 15 players without

COMMS
SPECIAL

Federation II

(Just one more load and I'll quit)



Hints and tips

- The official in the office block is very broke, and controls the issuing of ship permits.
- Buying clothes in the market lets you customise your description.
- Chez Diesel on Mars is the place to be seen and pick up information from higher level players.
- Typing SPYNET NOTICE when you log on will cost you 25 groats, but the SpyNet service will tell you when players log on and off the game.
- Typing WHO will tell you who else is playing, their rank and their spaceship's name.
- When you first buy a spaceship, choose a class B hull, a level one computer, and the minimum of everything else. You have to pay back to the bank the money you borrow, so keep the figure as low as possible.

Lost for commands to carry out what you want to do?

Type **HELP** followed by a letter and the game will give you a list of all the verbs it understands that start with that letter. For instance **HELP A** will list all the verbs starting with the letter A. There are no hidden verbs in *Federation II*.

Just started and can't work out what you should be doing?

Type **HELP** on its own for a few hints to point your way.

Locked in the cell?

Try attracting the guards' attention.

would provide more memory if I could prove that they would get their money back. Catch 22, and back to the drawing board.

Eventually the problem was solved by writing a program called a software multiplexer, which gathered in all the players' commands and fed them down a serial cable to the ST which sat on top of the host machine. *Federation's* responses were then sent back to the multiplexer which forwarded them to the correct player.

It was at this time that we found that the ST would happily cope with 15 users at once. Within three weeks the game had taken enough money to pay for a new memory board, and I was able to re-possess my development kit.

That was two years ago, and *Federation II* has come a long way since then. People often wonder how I test the code before it goes into the game (to be accurate, when something goes wrong people wonder whether I ever test the code before it goes in).

Obviously there are occasional problems. Originally I used to be able to test with two people by plugging my PC into the ST's serial port and using it as a terminal. This gave me a two player game to test player interactions.

Recently I have started using a program called GR, a graphics and windowing system for OS-9. Using it I can open a window for each player and test the game's response to the new code. This facility has greatly increased the amount of testing possible when new code is being put in.

I am working on the code to allow people to create their own planets. Most of the tools are already there, only the final bits to link players' planets into the game are needed. Multi-user games have a habit of never being

any loss of response.

Over a few months I put together the necessary hardware to form my development kit. The essentials were a Mega 2 ST and monochrome monitor, 20Mb Supra hard drive, printer (originally a Star NL10, since upgraded to LC24), and 5.25in external floppy drive.

About six months ago the hard drive was upgraded by a loaned 44Mb drive from Cumana for testing. How I will eventually pour all the stuff on it back into the Supra, I really don't know.

Federation II is written using the C programming language (a C compiler comes with Cumana's OS-9), which is unusual for a multi-user game. Most of them are written in games design languages, which are then interpreted at run time, a bit like Basic.

Unfortunately this approach makes for very large, processor intensive programs, and I just didn't have the space for that. In the event, writing it directly in C didn't prove to be much of a handicap, and even today *Federation II* will run happily in 1Mb of memory.

Once the game was ready to go live (multi-user games usually go live long before they are finished, and *Federation II* was no exception), I hit a snag - only half a megabyte of memory was available in the system it was due to go on to. Aaaaarrggghh!

The owners of the system said they

finished. Players always want something extra, and *Federation II* seems to be no exception.

Even though I am determined to finish it - the original completion date was the Christmas before last - I suspect that there will always be small tweaks to be done.

No doubt *Federation II* will continue to grow and develop, but some of the lessons learnt will be applied to other games and interactive services. By the time you read this MicroLink subscribers will have a new real time Chat and Conferencing facility called Forum which has been written using the interactive commands used in *Federation II*.

And this is just the start.

AS most ST users will have found, there is a wealth of excellent software available in the public domain and as shareware. A quick perusal of the adverts in this magazine will reveal a number of firms willing to supply discs and discs of software at almost-free prices. But writing cheques out, posting letters and waiting for Postman Pat to do his stuff is hardly high tech, is it?

Today, there is an alternative – online communications. This is just another piece of jargon which means linking your ST up to a modem (short for MOulator, DEModulator) and dialling up other computers over the telephone line.

Using a modem, you can transfer program and data files, exchange items of gossip, and read all the latest news ahead of everyone else.

Hold on a minute. That's all the marketing spiel for modems. How does it all work, and how much does it all cost?

Back to basics

At its simplest, a modem is a device that takes the digital pulses speeding out of a computer's serial port and converts them to a series of bleeps (analogue pulses) suitable for transmission over the telephone network. At the distant end of the phone link a second modem converts the analogue pulses back into digital pulses ready for feeding into another computer.

This second computer then either

acts upon the incoming data and does something – such as printing a message on the screen, or accessing the user's disc drive. A return stream of data then flows back along the same modem pathway.

Normally all this happens automatically, thanks to a communications software package loaded into both computers. Add a little human intervention, and you have two computer users communicating by modem. Great! This is the simplest form of modem communication.

A number of software packages are available for the Atari ST and other computers that allow the computer and modem to answer the phone in the absence of the distant computer user. The caller can then leave messages, upload or download a number of files, and even run software remotely.

In such situations the distant computer is usually called a bulletin board system – BBS for short. These have been around since late 1970s, when they used to run on the aged, but trusty TRS-80 and Apple series of computers. Today, most BBSs tend to run on PCs, since they are cheap and cheerful.

BBSs hold a great attraction for modem users, since the majority are free to use. Free access BBSs, however, usually only have one phone line. If they get popular – as good BBSs inevitably do – then most callers will hear only the engaged tone, rather than the welcoming hiss of the modem carrier. So commercial online systems

– running on mini and mainframe computers – began to spring up.

Commercial online systems have several lines for users to call, some even going to the expense of providing a national network of telephone numbers. In return for being allowed to access the services of major online services, users are expected to pay a modest subscription.

While the subscription costs just a few pence a minute, it usually allows the subscriber to access a wide variety of services, ranging from electronic mail (to allow communication with other users) to the ability to download software.

When used sensibly, and outside peak calling hours, it's possible to call hundreds of BBSs and dozens of online systems dotted around the UK, for little more than the cost of an off-peak telephone call.

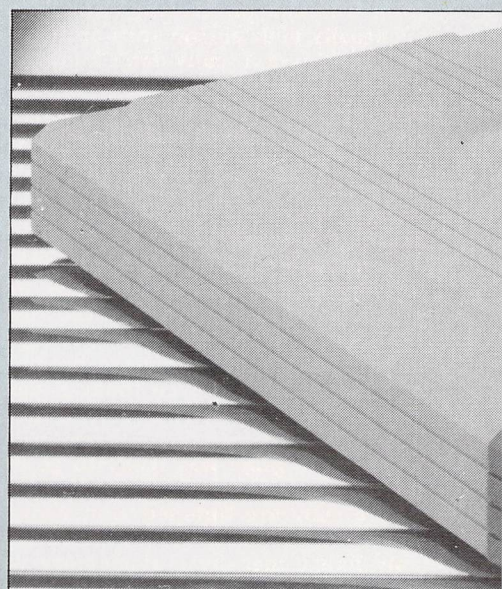
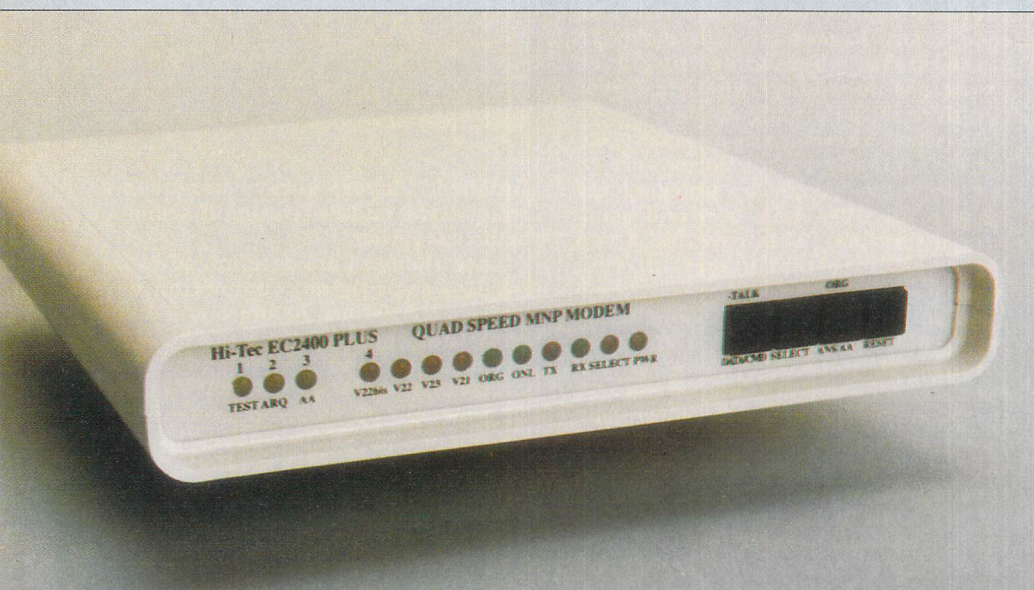
With call charges of between one and six pence a minute, it's no wonder that modem communication is a growing hobby among computer users. But how much does a modem and its associated communications software cost to buy?

Modem costs

Modems can operate at one or more different speeds, ranging from 300 bits per second (bps) right up to 19,200 bps and beyond. Since 10bps equals 1 character per second (cps), a 300bps modem is capable of transmitting and receiving 30cps. Most modems in the

Steve Gold provides an overview of the comms scene, detailing what is available and how it can be accessed

Comms



A large number of modems are available, ranging in price from as little as £20 to as much as £1,000

UK today operate at one of five different speeds:

300bps – both the send and receive channels process data at 300 bits per second.

1200/75bps – one channel operates at 1200 bits per second, and the other at 75 bits per second.

1200bps – data flows at 1200 bits per second in both directions.

2400bps – data flows at 2400 bits per second in both directions.

9600bps – data flows at 9600 bits per second in both directions.

Modems vary tremendously in cost and capabilities. Some online services, such as British Telecom's Prestel system, offer a selection of simple modems and communications software packages to subscribers willing to sign up for a minimum period of a year.

The modems that Prestel offers, however, are very basic, supporting only the 1200/75bps speed. They can be bought quite cheaply – for £20 or less – through mail order outlets.

Generally speaking, modems fall into three main categories: Single-speed, as above, middle-ranking and capable of auto-dialling (dialling the telephone number for you) and supporting 300/300, 1200/75 and 1200/1200bps, and high speed, supporting the middle-ranking modem speeds, along with 2400/2400 and – on the most expensive units – 9600/9600bps speeds.

Middle-ranking modems range in

COMMS SPECIAL



price from £80 to around £250, with a variety of capabilities. Since most online services and BBSs operate at all the above modem speeds, although generally without the expensive 9600/9600bps option, most users will be able to make do with a modem that supports 1200/1200 and 2400/2400bps.

Comms software

In the US, where communications began in the late 1970s, a wide variety of communications (comms) software is available for the ST. The vast majority is either public domain or shareware, plus a smattering of commercial packages.

In the UK, however, two ST comms packages dominate the industry: Flash from Antic Software in the US, and Uniterm, a public domain package that is available from several sources. Flash is a commercial package distributed by Electric Software in the UK, and retails for £29-95.

The package supports a variety of terminal emulations and allows software to be downloaded and uploaded using a variety of different protocols. Flash's success derives from the fact it is a modular program, allowing new facilities to be patched in when they become available. Most modem pack-

ages available for the ST in the UK usually include a low-cost or free comms package within the price. My advice is to log on to a local BBS and download a copy of Uniterm. It's free and it's excellent.

Once you've been using your comms package for a while you'll quickly discover what features you require and whether you wish to upgrade to a commercial package.

One other package worthy of note is Michtron's BBS 3.0 for the ST, price £49-95. It allows you to use your ST plus modem as a BBS in its own right. Ideally, the set up needs a hard disc to run as an effective BBS, but for specialist situations a floppy-based ST system can be used.

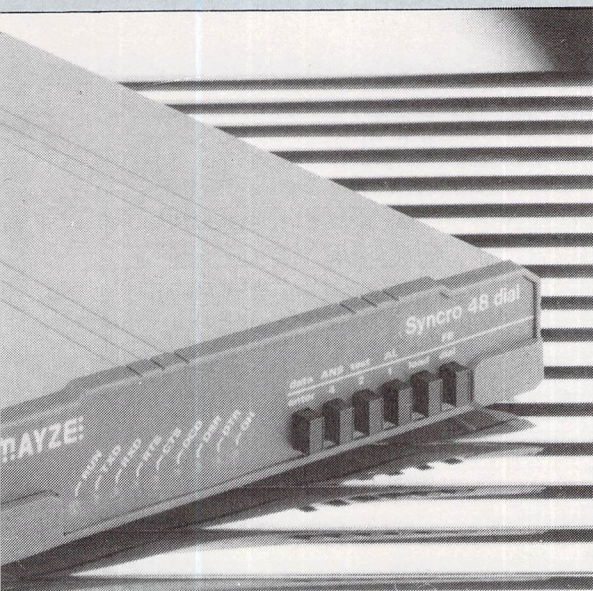
What's online?

As I mentioned, the beginnings of the online revolution in the UK was caused by the proliferation of BBSs around the country. From there, commercial online systems began to develop, charging callers for accessing the network services.

In the UK, online services fall into four distinct categories: Multi-user games systems, commercial BBSs with multiple line access, electronic mail services with database facilities, and database services with electronic mail as an additional extra.

Multi-user games systems are actually highly specialised commercial BBSs. Instead of supporting electronic

for beginners



mail, messaging and program transfer facilities, MUGs, as they are known, allow users to play an adventure game – just like Zork and its imitators – but playing with and/or against, other callers to the service.

MUGs have, in fact, been around since the earliest days of computing and modems. The very first online adventures were written for mainframes such as the Dec 10 computer found at Essex University. Essex University was the first site in the world where an online adventure system was opened up to the general public.

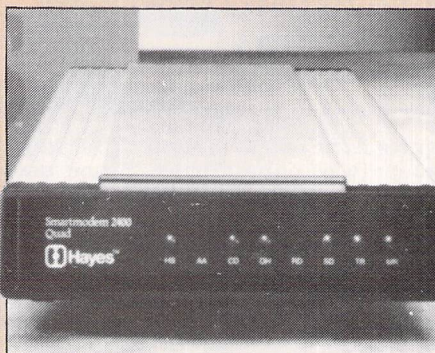
Such was the success of MUG which ran on the university's Dec-10 that the university authorities were forced to curtail user's activities to unsocial hours, usually to between midnight and 6am each day. Essex University's MUG was called MUD – short for multi-user dungeon – and formed the basis of virtually all MUGs around today.

The MUD system was, and still is, the MUG that other online adventures are measured by. MUD was written by Roy Trubshaw in 1979, then an undergraduate at the university. In 1980 another undergraduate, Richard Bartle, expanded the game and revised its command structure into the one we know today.

MUD's success has been little short of phenomenal, and licensed versions of the game appear on several online systems, including Compuserve – more of which a little later in this feature.

After graduating from Essex University, Bartle went on to form MUSE – multi user entertainment limited – which provides MUD II on a British Telecom computer, accessible on a local call basis for a modest hourly fee. Starter kits for MUD II cost £4.95, which entitles you to a user ID and a manual, plus maps and other documentation.

Usage charges on MUD II vary, depending on the number of MUD



Most modems understand software commands to control dialling, data rate and format. The industry standard is the Hayes set



credits which you contract to use and pay for. Prices start at £1 per hour and slide down to as low as 50 pence per hour if a large enough quantity of credits are bought.

The scenario of MUD II is similar to that found in most MUGs – a mystical land with goblins and dwarves to help or hinder your progress. There is an underground kingdom, a sea and an island. Players can become lost in forests or graveyards, drink poison and fall off cliffs.

The object is to amass as many points as possible, taking you through a total of 10 persona levels – novice, warrior, champion, hero, superhero, enchanter, sorcerer, necromancer, legend and wizard. Points are awarded for a variety of reasons, usually due to the collection of treasure, which is

then unceremoniously dropped in the swamp.

Other point-amassing activities range from smashing an innocent young rabbit over the head (causing it to whimper before dying!) to assisting your fellow players in their travels.

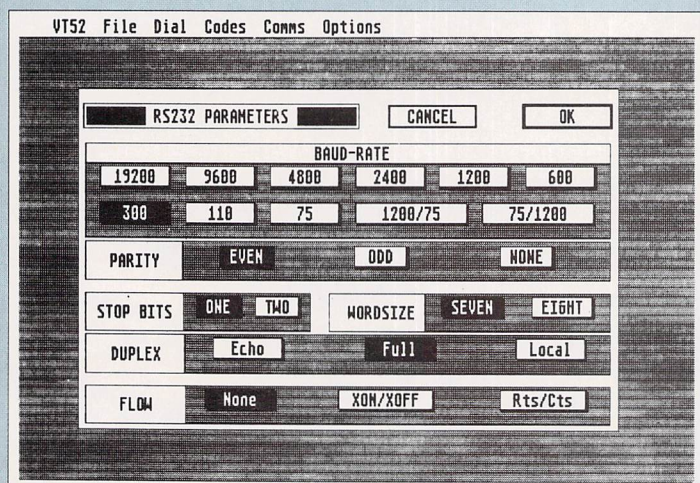
Some activities are, it has to be said, a little unusual, but are in keeping with the alternative comedy theme that pervades the game.

Two other popular MUGs are Shades and Trash, which are accessible on a gateway basis via BT's Prestel and Telecom Gold services. The costs of accessing Shades and Trash – over and above the costs of accessing Prestel or Telecom Gold – vary between zero and two pence a minute, depending on what time of day the service is used.

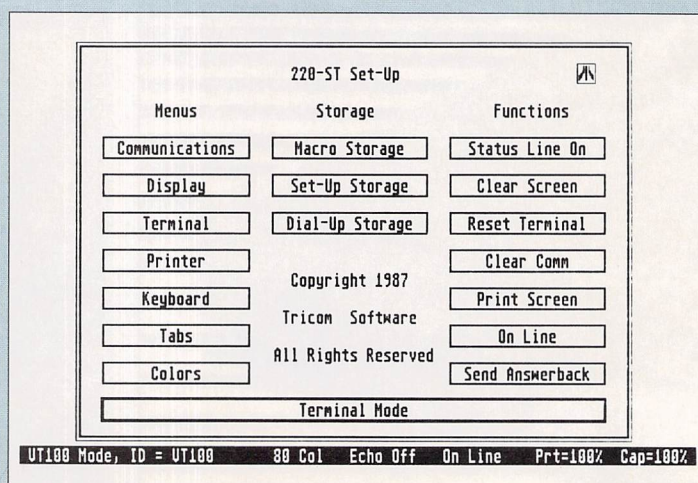
On the commercial BBS front, the market leaders at the moment are the Gnome at Home and CIX, the Compulink Information eXchange. The Gnome at Home (TGAH) is run by Glyn Philips, otherwise known as The Gnome. Glyn originally started TGAH as a special fun column on British Telecom's Prestel service. 1985 saw Prestel enter its sixth year of service, and Glyn taking his column off Prestel and transferring it over to his own BBS.

TGAH runs on a series of BBC B Micros, all linked with Econet, the BBS's local area networking software. Thanks to these parallel machines, TGAH is accessible on several modems. The number is 01-888-8894. It is available to the general public, with certain features – notably personal mailboxes and so on – available only to paying subscribers. Glyn charges a modest £1.50 a month for a subscription to TGAH.

TGAH is a viewdata BBS, which reflects the fact that The Gnome's board column was originally available on Prestel. The BBS currently provides a range of services, ranging from electronic mail – known as mailbox in viewdata terminology – downloadable



Setting Easitalk's RS232 parameters



The 220ST Set-Up menu screen

COMMS SPECIAL



software (telesoftware) and a variety of online newsletters.

CIX, meanwhile, is a scrolling Ascii service run by Frank and Sylvia Thornley who operate in Surbiton, Surrey. Like TGAH BBS, CIX is on a London number (01-399-5252) to allow long distance callers the benefit of using the reduced b1 calling rates.

CIX is a highly interactive system and offers easy to use BBS messaging, along with electronic mail to other CIX subscribers and, for a pay-as-you-go fee, electronic mail to a variety of other semi-commercial systems. Sign-up to the service costs £15, plus usage charges starting at £1.80 an hour, subject to a minimum monthly billing of £6.25.

A key feature of CIX is the ability to join a variety of conferences, which are run by moderators. Many computer companies run their own conferences on CIX, offering support for their users.

Thanks to the provision of software downloading facilities, CIX is an ideal medium for users to receive software updates and program patches, as well as a variety of public domain and shareware software.

There are currently four main services on the electronic mail system front: Mercurylink 7500, Microlink, One-to-One and Telecom Gold. All provide electronic mail, telex and fax facilities. Monthly subscription charges range from £5 in Telecom Gold's case to £20 for Mercurylink 7500.

On top of this, users pay for online access on a pay-as-you-go basis. The charges are not directly comparable, since some services charge only for actual time connected, while others work on a time plus messaging basis.

Another variant favoured by MicroLink and Telecom Gold is to charge users on the basis of time connected plus data transmitted and received. Despite the complex charging systems in use, off-peak use of the electronic mail services is surprisingly cheap, usually under £2 an hour.

All the electronic mail services provide access to extra facilities over and above basic electronic mail. These include onward (gateway) access to other systems, databases (for online searches for important information) and software downloads. These services are invariably provided free of charge, hence the basic monthly subscription charge, or on a pay-as-you-use basis.

The database services vary widely in terms of pricing and facilities. Of all the database services, British Telecom's Prestel is the cheapest at £8 a quarter year for the basic service. This entitles subscribers to access the bulk of Prestel's 500,000 pages of information on topics ranging from travel information and the weather to what's on at the theatre.

The key to Prestel's success, however, is that it allows subscribers to send and receive Email and telex items. In addition, online order forms and messages can be sent to information providers. Since these are variants on Email, they allow for a rapid response.

Prestel has a number of specialist information services, to which access is granted on an additional subscription basis. The most popular area on Prestel is Micronet, which costs £15 above the basic Prestel quarterly charges. Micronet offers the daily equivalent of a computer magazine, coupled with the ability to interact with other subscribers, and even download software online.

Prestel's charging structure varies depending on what type of subscription is taken out. As a general rule of thumb, however, peak rate access (during office hours) costs seven pence a minute, while off-peak access is one

pence a minute. These charges must, of course, be added to the local call charges payable to access the service.

Elsewhere on the commercial online services front, a recent newcomer is Compuserve, the US service which currently has more than 600,000 subscribers. Launched in the UK in February of this year, the European arm of Compuserve charges a hefty £14 an hour for local call access throughout the UK.

For your money you get access to a wide variety of in-depth news and information with an American bias, as well as the ability to join multiple computer hardware and software forums. It's a measure of Compuserve's success that it has more than 600,000 subscribers despite its high online usage charges.

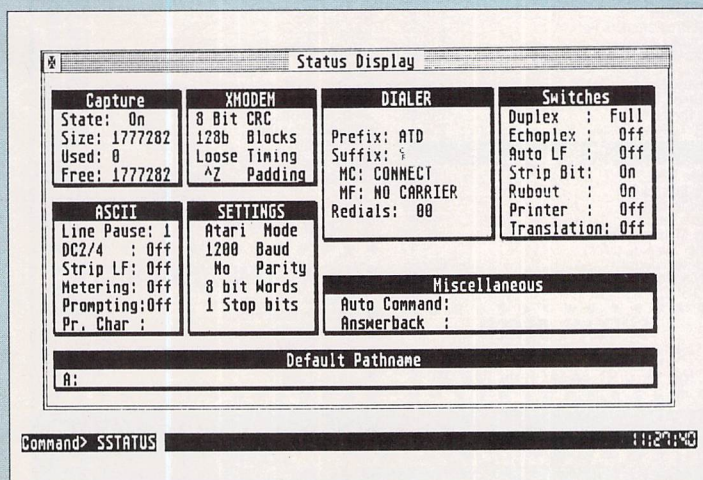
Cost of going online

In this feature, I have only just begun to scratch the surface of the variety of online services available for the typical ST user. I've outlined the broad costs of what modems and software to buy, and the costs of a number of online services, but what about the telephone bill?

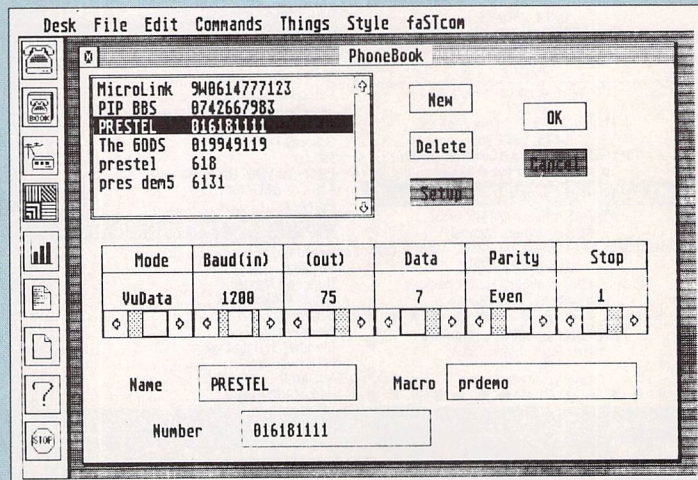
If you use your modem during peak and standard calling hours (that is Monday to Friday, 8am to 6pm) you'll end up spending a lot of money on telephone calls to online services. In off-peak hours, however, you can make a local call for around 60 pence an hour. Most commercial online services provide local call access using their own facilities.

BBSs, on the other hand, are usually free of charge, being run by their system operators on a charitable basis. Unless you live in a populous area, however, it's unlikely you will have a BBS within a local calling area. So calling your favourite ST BBS could cost you as much as £3 an hour.

This brings the commercial system



Flash is a popular comms package



Fastcom makes heavy use of icons

Desk File Printer **Terminal** Options Help

0 0000

Description: Internal Default Terminal-----

Terminal: **Teletype** ☐ VT52 ☐ VT100 ☐ User-defined

Terminal Ident. ☐ /Z___ ☐ [?];11c

Baud Rate: ☐ 9600 ☐ 4800 ☐ 2400 ☐ 1200 ☐ 1200/75 ☐ 600 ☐ 300 ☐ 110 ☐ 75/1200

Bits: **Seven** ☐ Eight Stop bits: **One** ☐ Two Parity: **None** ☐ Odd ☐ Even

Handshake: **None** ☐ Xon/Xoff ☐ CTS/RTS Width: **80** ☐ 64 ☐ 40

Echo: **Host** ☐ Local CR gives LF: ☐ Yes ☐ No

Debug Mode: ☐ On ☐ Off Send LFs: ☐ Yes ☐ No

Strip Top: ☐ On ☐ Off Wrap at EOL: ☐ On ☐ Off

K-Comm II has been around for quite some time, but is still good

online charges into perspective. Generally speaking, using online service for a couple of hours a week can cost anywhere between £2 and £5. This may sound a lot of money, but remember that you are buying entertainment and information. You probably spend this

amount on our software anyway.

Online services can greatly enrich your enjoyment of your ST computer. In many situations, they can also allow you access to a variety of business information at low cost as well. Small wonder then, that sales of modems are taking off as never before.

Phone numbers for further information

Modem manufacturers

Dowty Information Systems
Tel: 0635-33009
Hayes Microcomputer Products Limited
Tel: 01-848-1858
Miracom Limited
Tel: 0473-233888
Pace Micro Technology
Tel: 0274-488211
Tricom Communications
Tel: 05827-65171

Online services

MicroLink
Tel: 0527-64295
British Telecom (for Prestel/Telecom Gold)
Tel: 0800-200-700
Compulink Information eXChange (CIX)
Tel: 01-390-8446
Compuserve
Tel: 0800-289378
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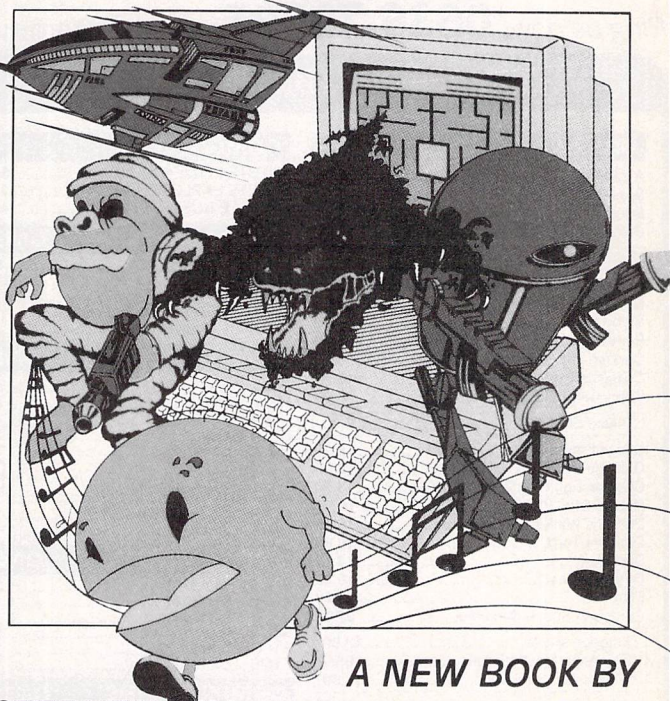


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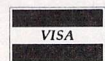
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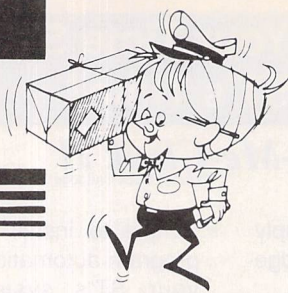
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Keep track of your files

Roland Waddilove
continues his
exploration of the OS
by taking a look at
some file functions

f_snext and print the filenames until there are no more files, indicated by a non-zero return value in register D0.

In assembly language these two Gemdos function calls look like this:

```
* Read the first file
MOVE #0,-(A7)    normal files
PEA fname(PC)    filespec = "*. *"
MOVE #78,-(A7)    f_sfirst
TRAP #1          GEMDOS
ADDQ.L #8,A7      tidy stack
BSR print        print filename

* Repeatedly read the next file
loop
MOVE #79,-(A7)    f_snext
TRAP #1          GEMDOS
ADDQ.L #2,A7      tidy stack
TST D0           no more files?
BNE exit         exit if no more
BSR print        print filename
BRA loop         repeat
```

The *f_sfirst* function requires two parameters on the stack. The first is the file attribute byte and the second is the address of the string containing the file specification to search for.

The print routine which displays each filename starts at byte 30 in the buffer and sends each character to Gemdos function two, *c-conout*, for printing. The end of the name is detected by testing for a zero byte.

Where is the buffer containing the useful file attributes returned by these functions? The DTA buffer can be anywhere in memory and you simply tell Gemdos where you want the information stored with function number 26, *f_setdta*.

Another program may be using a DTA buffer, so it is best to ask where the current one is, remember its position and restore it after we have finished with ours. Gemdos 47, *f_getdta*, asks the current location of the DTA buffer, and its value is returned in data register D0.

The two function calls to get and set the DTA look like this:

```
* Get the current DTA and save it
MOVE #47,-(A7)    f_getdta
TRAP #1          GEMDOS
ADDQ.L #2,A7      tidy stack

* Set the DTA pointer to my buffer
PEA dta(PC)       set my DTA buffer
MOVE #26,-(A7)    f_setdta
TRAP #1          GEMDOS
ADDQ.L #6,A7      tidy stack
```

You now have the bare bones of a directory listing program and all you need to do to create an executable program is to string the functions together, along with some of the others we looked at earlier in this series. Have a go at this, but if you get bogged down there is a full program listing on the following page.

● Next month I'll continue looking at more simple, but useful Gemdos function calls concerned with files and directories.

THE ST's operating system (OS) is a complex mixture of 68000 machine code and C routines. It can easily be broken down into more manageable sections by splitting it up into the AES (applications environment services), VDI (virtual device interface), Bios (basic input output system), XBIOS (extended Bios) and Gemdos (Gem disc operating system).

In this series I have been taking you on a guided tour of the ST's OS, showing how it works and writing some simple utilities making use of its facilities. Now let's consider some common Gemdos functions dealing with files and directories.

What we are going to do is simply to catalogue a disc and display on the screen a list of the files found – entirely from machine code. Two functions are used, the first being Gemdos 78, *f_sfirst*, which takes a filename like INVADERS.TOS and searches the directory for it. If it is found various file attributes are returned in a buffer.

What makes this command so useful is that if you supply a filename which includes wildcards like *.BAS the routine searches for the first file that matches this specification. The second function, Gemdos 79, *f_snext*, is related and simply gets the next file that matches the file specification.

The file attributes returned by *f_sfirst* and *f_snext* are copied into a section of memory called the DTA (disc transfer address) buffer. The structure of this is as follows:

Bytes	Attribute
0-20	Reserved for Gemdos
21	File attribute
22-23	Time file was created
24-25	Date file was created
26-29	Length of file
30-43	Filename plus extension

The file attribute in byte 21 can have one of seven different values as follows:

Value	Meaning
\$00	Normal file, read/write
\$01	Normal file, write protected
\$02	Hidden file
\$04	Hidden system file
\$08	Volume label – disc name
\$10	Subdirectory – folder
\$20	File to be written and closed

Using these two functions it is quite easy to list all the files in a directory. First call *f_sfirst* with a file specification of "*. *" and print the filename placed at byte 30. Then repeatedly call




```
*****
*      Display a directory listing      *
*      By R.A.Waddilove                *
*      (c) Atari ST User               *
*****
```

```
* Get the current DTA pointer and save it
  MOVE #47,-(A7)      f_getdta - get old DTA
  TRAP #1             GEMDOS
  ADDQ.L #2,A7        tidy stack
  LEA olddta(PC),A0   A0 points to olddta
  MOVE.L D0,(A0)      save old DTA pointer
```

```
* Set the DTA pointer to my buffer
  PEA dta(PC)         set my DTA buffer
  MOVE #26,-(A7)      f_setdta
  TRAP #1             GEMDOS
  ADDQ.L #6,A7        tidy stack
```

```
* Read the first file in the directory
  MOVE #0,-(A7)       normal read/write files
  PEA fname(PC)       filespec = "*. *"
  MOVE #78,-(A7)      f_sfirst
  TRAP #1             GEMDOS
  ADDQ.L #8,A7        tidy stack
  BSR print           print filename
```

```
* Repeatedly read the next one until no more left
Loop  MOVE #79,-(A7)   f_snext - get next file
      TRAP #1         GEMDOS
      ADDQ.L #2,A7    tidy stack
      TST D0          D0<=0 means no more files
      BNE exit        exit if no more
      BSR print       print filename
      BRA loop        loop round again
```

```
* Restore the original DTA pointer
exit  MOVE.L dta(PC),-(A7) restore old DTA pointer
      MOVE #26,-(A7)      f_setdta
      TRAP #1             GEMDOS
```

```
ADDQ.L #6,A7        tidy stack
```

```
* Wait for a key to be pressed
  MOVE #8,-(A7)      wait for keypress
  TRAP #1            GEMDOS
  ADDQ.L #2,A7        tidy stack
```

```
* Return to the desktop
  CLR -(A7)          p_term0 - exit to desktop
  TRAP #1            GEMDOS
```

```
*****
* Subroutine to print filename in DTA *
*   buffer starting at byte 30       *
*****
```

```
print  LEA dta(PC),A6   A6 -> my DTA buffer
      ADDA.L #30,A6     A6 -> to filename
      CLR D7
```

```
ploop  MOVE.B (A6)+,D7   get character
      BEQ crlf          0 = end of name marker
      MOVE D7,-(A7)     print it
      MOVE #2,-(A7)     c_conout
      TRAP #1           GEMDOS
      ADDQ.L #4,A7      tidy stack
      BRA ploop         another letter?
crlf   MOVE #13,-(A7)   print CR
      MOVE #2,-(A7)
      TRAP #1
      ADDQ.L #4,A7
      RTS
```

```
print LF
  MOVE #10,-(A7)
  MOVE #2,-(A7)
  TRAP #1
  ADDQ.L #4,A7
  RTS
```

```
olddta DC.L 0          store old DTA pointer
dta     DS.B 46        DTA buffer
fname   DC.B '*.*',0   filespec to search for
      EVEN
```

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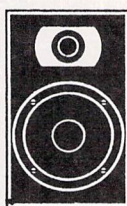
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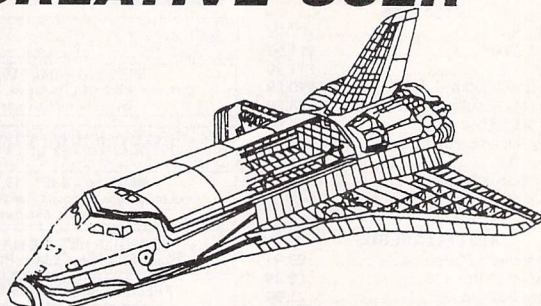
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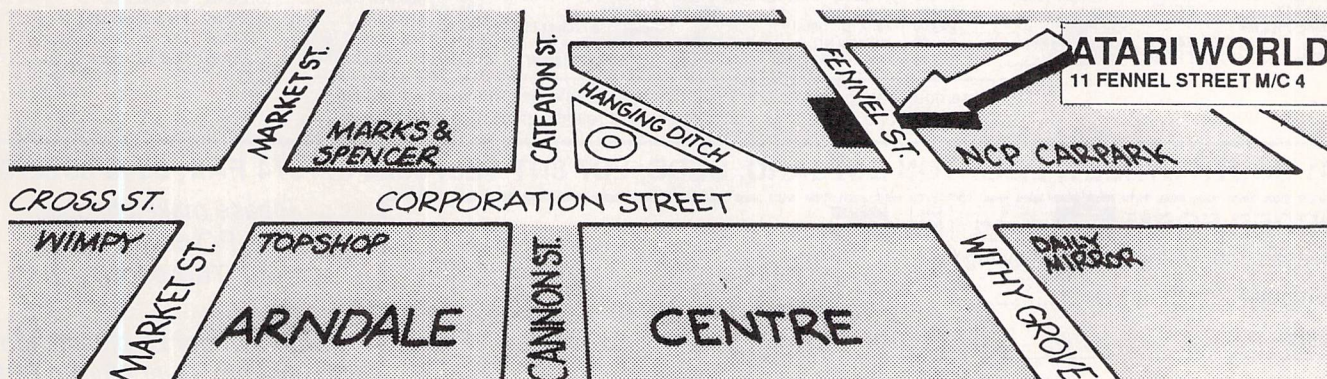
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THE majority of games programmers will at some time or other need to generate random numbers to control the movement of aliens, or to choose a course of action after a series of events. A degree of randomness isn't restricted to arcade programmers though, as many real-time simulations such as weather forecasting and the mathematical world of fractals, require the interaction only achieved with occasional changes in various parameters.

Producing a random number in machine code is quite simple, as XBIOS function 17 returns a 24 bit random number in register D0. However, 24 bits range from zero to more than 16 million, which is a bit of a problem if you only want a number between one and six, for instance, for a dice game.

One way around this is to check the number obtained and to keep calling the XBIOS routine until the number is within a specified range. However, it could take a long time before this occurs, even at machine code speeds.

To solve this irritating problem we can make use of the mathematical function MOD, which simply divides two given numbers and returns the remainder. For instance, dividing 14,567,364 by 100 gives a remainder of 64 which is within the range of zero to 99.

To produce a random number between 100 and 173, first subtract the smaller number from the larger, use the MOD command on the result and finally add the smaller number again. For instance:

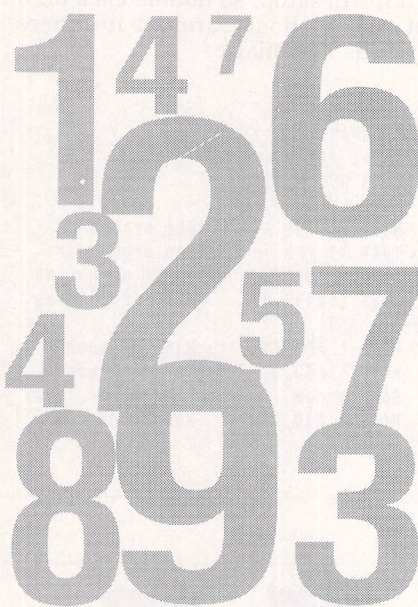
```
temp = max (173) - min (100)
get random number
value = random mod temp (73)
value = value + min (100)
```

This will always return a value between *min* and *max-1*, and involves no checking so the whole process will be completed in a very short time. Enough of the theory, Program I shows a machine code random number generator.

```
* PROGRAM I
* To use this routine set D3 and
* D4 and call it with BSR random
* D0.L - The returned random number
* D3.L - Minimum random value
* D4.L - Maximum random value+1
random
MOVE.W #17, -(A7) Use function
TRAP #14 17 to get the
ADDQ.W #2, A7 random number.
AND.L #$ffff, D0 Make it 16 bits
SUB.L D3, D4 D4=max-min
DIVU D4, D0 D0 / D4
SWAP D0 Put MOD value
AND.L #$FFFF, D0 into lower bytes
ADD.L D3, D0 D0=D0+min.
RTS Finished.
```

Browsing through the listing, you may be wondering why it is necessary to change the random number from 24 bits to 16 bits. Well, the DIVU com-

Now pick a number...



Writing in machine code can be difficult, but Phil Lawson provides three routines to make life that little bit easier

mand returns two 16 bit values – the quotient in the lower two bytes and the remainder in the upper two.

If the quotient is greater than 16 bits (65,535), the result of the DIVU instruction is garbage. Therefore we have to use the AND.L #\$FFFF, D0 to set the upper 16 bits to zeros.

As the remainder is stored in the upper word, the SWAP instruction puts it into the lower word. All that remains is to add the minimum value and return from the routine.

Getting into print

That wraps up the random number generator, but I expect you want to try it and see the numbers produced. What is needed is a routine to display a number, and Program II is just that. As an added bonus it will also print

the number in any base you require. To use it, put the number to be printed in D0.L and the base in D1.L:

```
*****
* PROGRAM II
* Print out any number in any base *
* D0.L=number / D1.L=base
* Uses D0, D1, A0
*****
printn
LEA buffer(PC), A0 A0->buffer
CLR.L (A0)+ Zero buffer
CLR.L (A0)+
CLR.L (A0)+
CLR.L (A0)+
CLR.L (A0)+ A0->buffer end
loop1
DIVU D1, D0 D0 DIV D1
SWAP D0 D0.low=remainder
ADDI #'0', D0 Make into digit
CMPI #'9', D0 Digit or letter?
BLE ok
ADDQ #7, D0 Make into letter
ok
MOVE.B D0, -(A0) Store character
CLR D0
SWAP D0 D0.low=quotient
BNE loop1 Another one?
loop2
MOVE.L A0, -(A7) c conws
MOVE #9, -(A7) Print string
TRAP #1 GEMDOS 9
ADDQ.L #6, A7 Tidy stack
RTS

buffer
DS.L 5 Number$ - 20
digits
DC.B 0 Buffer end marker
EVEN
```

(A full explanation of this interesting routine by Janice Murray can be found on page 109 of the April 1989 issue of *Atari ST User*).

How many readers have spotted a small flaw in these routines? If you type in and run these two routines you won't see anything, as the ST will immediately return to the desktop before we get a chance to look at the number.

We either need to include a short delay or wait until the user presses a key. As waiting for a keypress is more friendly we'll use this option, but rather than checking for any key the routine will wait until a specific key has been pressed. Program III is the wait-key routine, which needs the

upper case Ascii value of the required key in D7:

```
* PROGRAM III
* wait for a key press
* Uses D0, D7
wait_key
MOVE.W #255, -(A7) Set for read
MOVE.W #6, -(A7) Read the keyboard
TRAP #1
ADDQ.W #4, A7
BCLR #5, D0 Make upper case
CMP.B D7, D0 Is correct key?
BNE wait_key No
RTS Yes
```

Function number six can be used to either read information from the keyboard or print data to the screen. If the number placed on the stack is 255 this function will read the keyboard and return the Ascii value of the pressed key in the low byte of D0. Otherwise the number on the stack is taken to be an Ascii value and its corresponding character is displayed on the screen.

The instruction *BCLR #5, D0* simply resets bit five of the returned value, which is the same as the Basic command *UPPER\$*. This value is now checked with the one stored in D7 and the program returns to get another

key press if they're not the same.

You now have three interesting and invaluable routines to add to your collection, but to check you've understood their use – and typed them in correctly – try using them with Program IV. Enter this program and add the three utilities on the end, making sure the *printn* routine is the last. This way the *EVEN* command will make sure the assembled program is an even number of bytes long – just how Gem likes it.

Assembling will produce an executable program which can be used from the desktop, so double-click on it and watch those random numbers appear as if by magic.

```
* PROGRAM IV
* Shows all programs working
* Uses D0, D1, D3, D4, D7
MOVE.L #wrap, -(A7)
MOVE.W #9, -(A7) Make screen
TRAP #1 wrap around at
ADDQ.W #6, A7 end of each line
MOVE.L #199, D7 Do it 200 times
proglloop1
MOVE.L #01, D3 Minimum number
MOVE.L #50, D4 Maximum number
BSR random Get number in D0
MOVE.L #10, D1 Number base 10
```



These programs, written using Devpac 2, can be found in the LISTINGS folder on side one of the monthly disc. A full version is also included called **WHOLEPRG.S** and the assembled program is called **WHOLEPRG.TOS**.

```
BSR printn Print the number
MOVE.W #32, -(A7) Print a space
MOVE.W #2, -(A7) between numbers
TRAP #1
ADDQ.W #4, A7
DBRA D7, proglloop1 Done 200 times?
MOVE.B #65, D7 Ascii value of A
BSR wait_key Until A pressed
MOVE.W #0, -(A7) Back to desktop
TRAP #1
wrap
DC.B 27, "v", 0
EVEN
```



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ADVENTURES

Pendragon splashes in a few puddles and spouts forth on a full-sized PD version of Colossal Cave

THE rain is lashing against the castle walls – a sure sign that spring is once more with us. I meanwhile wipe the rust from my external drive, clear the pools from the desk, and hold forth once more.

Last month we were very proud to include on our *Atari ST User* monthly disc a full-sized PD version of the grandfather of all adventures, Colossal Cave. I thought it appropriate to take a little space to make a few comments on this excellent program.

Colossal Cave, as many will know, was written by Willie Crowther and Dan Woods in Fortran on a DEC-10 mainframe some 13 years ago. It was the very first computer game of its type, and for many years was simply referred to as *Adventure*, which in turn became the family name of our entire genre.

Since its inception it has been held

in awe by all adventurers. Commercial conversions have been attempted for almost all home micros – including Level 9's Colossal Adventure for the ST – but none have been entirely successful.

This was due partly to the interesting but lengthy textual descriptions of the Crowther/Woods original being abbreviated, so that the whole program would fit into memory, so destroying the game's atmosphere.

Also in some conversions the text was kept in disc files which needed constant accessing during play, and sometimes features of the original game were left out to reduce both the program and text size – making the whole thing less enjoyable.

However, the version we found in the vaults of Softville's PD library, and in turn presented on our disc, makes full use of modern programming tech-

Where the great adventure began

Problems solved

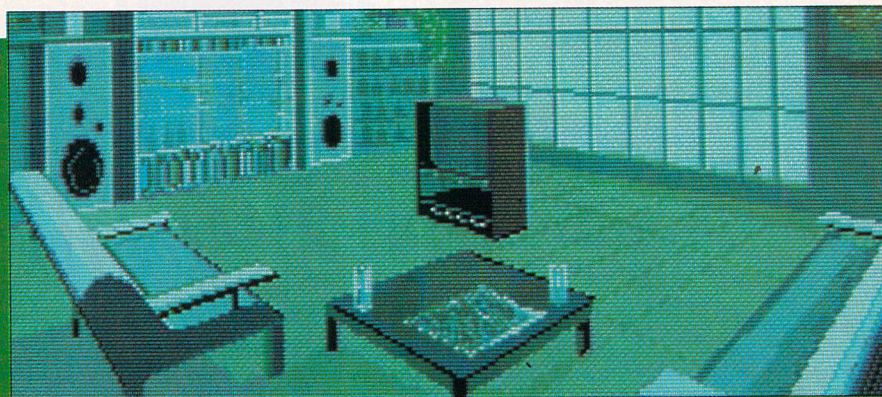
HERE I continue my serialisation of audit trails to three of the most popular and difficult adventures for the ST. If you wish to keep your dignity and not indulge in a bit of cheating, look away; otherwise read on:

Fish – The Boss

Having collected the three components you have a focus wheel, but you still can't pick it up. Enter the large warp to gain access to Dr Roach's apartment and his body. Search the fishton to find a travel pass.

Take the fishofax, fisa card and tatty card from the shelf. Put your hand on the print and turn off the light. Travel South and down.

Continue South, East and down to a platform on Paddlington Station. Enter



the train and disembark at Pickerel.

Go up, South-East and North into the clothes shop. Buy the glasses and the kipper tie with your fisa card. Wear the glasses and go South twice into the Hook, Line and Sink.

Buy the sniffer with your fisa card and give it to the drunk (Dr Salmon). Ask him for his card and buy two more

sniffers. Continue giving them to him.

The bartender now offers to sell you a whole canister of gas. Buy it and then watch it being stolen by one of the Fins. Sir Playfair comes over on the wire to tell you that it has been located.

You now need to enter a warp in your apartment in order to reach the canister. Go East, East and South and buy

niques and the ST's memory capabilities. It therefore retains the same playing characteristics of the original mainframe version without any detracting concessions.

Consequently it is warming to experience atmosphere and descriptions long held secret, and though holding a very primitive parser, the original adventure is a delight to play.

I can only suggest that if you missed out on our disc last month, you hunt out this version of Colossal Cave pronto. You cannot call yourself a self-respecting adventurer without it.

If you wish to understand more of the original development of computer text adventures I can thoroughly recommend a paperback book by Tracey Kidder entitled *The Soul of the New Machine*. I particularly suggest that you read the chapter entitled The Midnight Programmer – it drops you right in the heart of adventureland.

Meanwhile, Sarah Garner's pleas for help with Spellbreaker and Bureaucracy – made in January – have been answered most chivalrously by Dave Clifford of Swindon. He has sent full solutions and maps to both games which will enable me to pass on help to Sarah and other adventurers through this column – watch this space. A copy of Castle's Starwrek is now winging its way to Dave as a token of my thanks.

Also to find its way with a splash on to my table was an anonymous copy of a full solution to Manhunter San Francisco. This excellent audit trail will also be placed carefully in my chest of secrets for future reference.

Finally, by popular assent and bulging mailbags, I am pleased to continue with my treasured mappings to Sierra On-Line's Space Quest III – map 3.

● Well, that's about it for this month, so until rain is no longer wet, happy adventuring.

the plugs from the music shop.

Now go North twice and buy back your fishton. It will be delivered to your apartment, as is the case which you need, but which has already been bought by your neighbour.

Travel South and East, and buy a screwdriver, hyperdriver and bag from the hardware store. Now wear the plugs.

(Continued next month)

War in Middle Earth – Steve Perris

Since the need to command the armies is vital, do not waste any time in finding the various objects of fealty.

Start by sending your hobbits to Annuminas to fetch the sceptre. Then, having met Aragorn, find the Red Arrow and cross the mountains to get the silver orb. The latter can be very

Overture and beginners

In the February issue I began by explaining techniques to map and make sense of adventure mazes. Now I will continue by looking at how to make some sense of more devious and less logical mazes.

Such plays may confuse the standard mapping technique which I covered last time because of a number of factors, including limited number of moves, randomly generated directions, darkness, dropped objects suddenly disappearing and generating instructions such as listening or smelling.

I remember in one of the first adventures I ever played an underground maze could only be solved by listening to a dwarf singing and then following the sound of his voice. Once you found him, the dwarf was good enough to hand you a treasure and lead you back out of the maze.

But even further back in time, the original Crowther and Woods Colossal Cave featured the first non-logical mazes which required you to do a lot more than just drop a few objects and wander from one location to another.

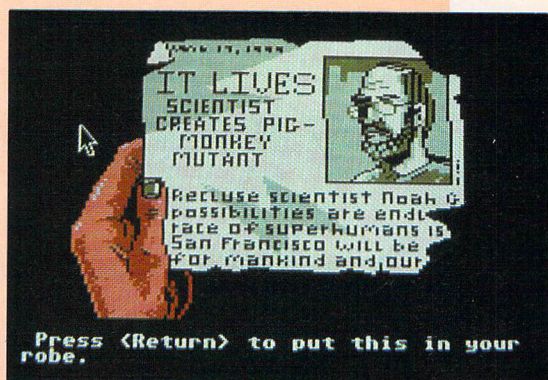
The diverse locations in Bedquilt and around the Pits require careful exploration and mapping. Bedquilt, for instance, is a long East-West passage with fixed moves West to the Cheese Room and other passages, and East to the complex junction of passages.

Many holes are explorable from Bedquilt and some generate in a random fashion. You often need to go in the same direction a number of times to reach a result. For instance, by going North five times from Bedquilt you may end up in the pit maze and by going South-West twice you enter the large dusty room.

The pit maze is indeed linked to Bedquilt, and though with patience it can be mapped, it is totally illogical in its layout and almost impossible to show pictorially – to try to do so would end in a mess of circles

and lines resembling spaghetti and meatballs. Hence Figure 1 shows a diagrammatic layout of the maze with each of 15 locations and the resultant move in each direction. Notice that the exits from one location in no way correspond to the exits from a sister location. However, noting which exit leads where is still very important. Though standard mapping may for the time being have taken a back seat, you still need a piece of paper and a pencil if you wish to plan further progress in the adventure.

The kewpie doll maze in Manhunter – New York, currently featured in our Problems Solved section, is another excellent example

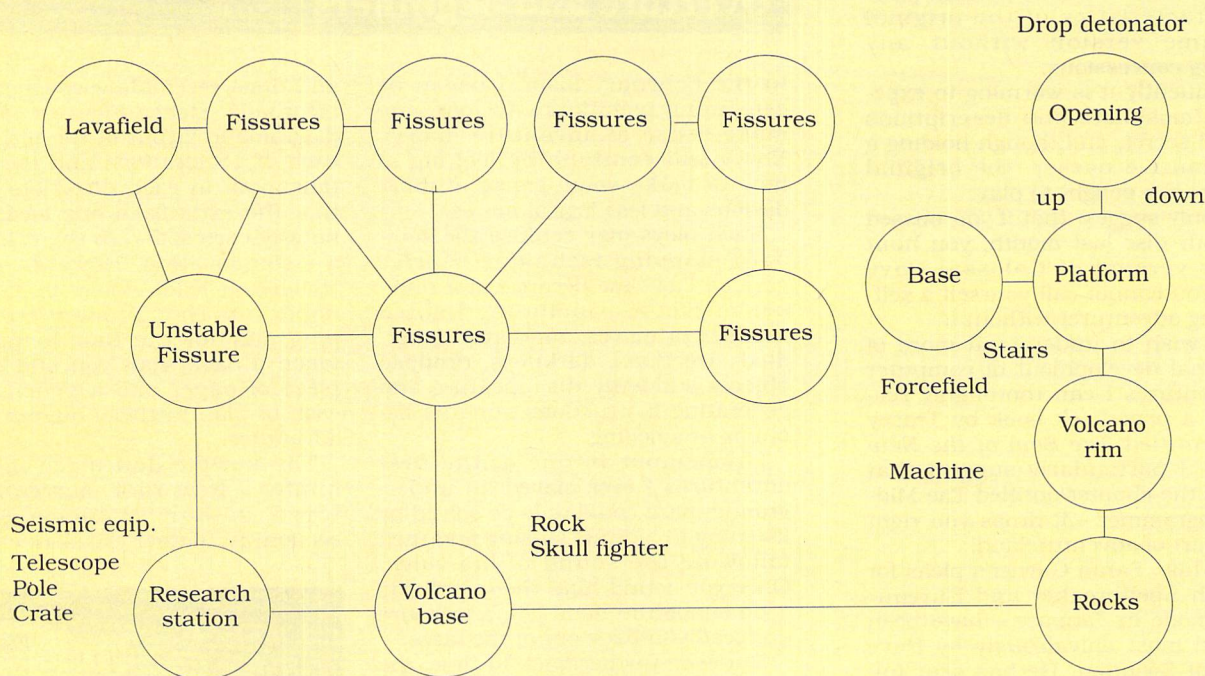


of a quirkish maze where the ability to map it lies elsewhere. In this case you must play a video game and note certain squares before venturing into the maze below Prospect Park.

Equally, the desert maze in Kings Quest III requires you to listen rather than wander around mapping. By listening, subtle clues will then help you find your way through the hot dry land. Don't forget that with patience and careful mapping, no maze is impassable. It just may mean that you have to develop different techniques to map different mazes.

ROOM	NORTH	SOUTH	EAST	WEST	UP	DOWN
1	-	4	2	3	EXIT	-
2	-	5	4	1	-	-
3	1	-	D/E	-	-	-
4	2	D/E	D/E	1	7	7
5	D/E	6	2	-	-	D/E
6	-	10	5	8	-	9
7	-	-	-	-	4	4
8	-	-	6	9	-	-
9	-	11	10	8	6	-
10	12	-	9	6	11	D/E
11	10	D/E	-	9	-	-
12	-	-	PIT	10	-	D/E
PIT	13	D/E	14	12	-	CANYON
13	-	PIT	14	D/E	-	-
14	PIT	-	-	13	-	-

Figure 1: The pit maze in Colossal Cave Adventure (note that D/E is a dead end)



Sierra On-Line's Space Quest III

Problems solved

time consuming, so an alternative plan is to send Eomer to fetch and deliver the orb for you.

The Dwarven ring is said to be located due north of the Necromancer's Tower, so once again using the power of proxy, send Faramir to find it. Having achieved these errands your first task is to protect Hornburg and Edoras from Isengard.

To do this you can either mobilise the Rohirrim and send them all to Hornburg, or you can mobilise the Ents. To get these woody creatures to fight for you, you must go with Gandalf to Treebeard's Hill, which is east of Derndingle. Once there, you will meet Treebeard.

Now you can return to Derndingle after February 1 to take part in an Entmoot. This will mobilise 1,000 Ents who will raze Isengard. In turn it will allow 1,000 Huorns to guard Hornburg. The Ents are not under your direct control and their attack only delays a minor siege on Hornburg. However, the 1,000 Huorns now on guard will easily defeat this intrusion, allowing you to divert your troops elsewhere.

Meanwhile the elves must be kept at Lorien and in turn will be able to fend off attacks until more elves join them. Do not attack Dol until you are sure of your position as Sauron will use any weakness to send troops to Lorien.

(Continued next month)



Manhunter New York — R.G.B. Marshall

Go to the nightclub and enter the alley on the left where you must overpower four thugs. The first throws knives, the second bottles, the third Molotov Cocktails and the fourth bullets. This is pure arcade action, and quite difficult to boot.

When you overpower the fourth thug he somehow manages to throw you through the side window of the club.

Once inside you can examine the person wearing the brown hood. You soon find it is a woman — she hits you with her handbag.

A keycard flutters down from her bag, so grab it quickly before a bouncer ejects you. You now have 13 keycards. Go to the Vend-o-Deli and read the far notice board.

You will see a message from someone called Harvey. It says that he has

seen the Mother (spacecraft) and that it is ready to go. There is also a message from someone called Harry about waiting until dark to visit the Battery Park (now Battered Park).

Travel to Central Park and you will discover that the whole area has been landmined. Replay Tracker and note precisely the route taken by the suspect.

From the first screen go to the right by the base of the red tree trunk. On the second screen go forward by the red tree by the archway on the left hand side of the screen. Next go to the right by the base of the tree with a brown trunk.

Now go forward by the red tree to get to the dead tree. From here go left below the third bush and you will find a crowbar. Retrace your steps to the dead tree and go forward by the left of the red tree to the Needle. A surprise is now in store.

(Continued next month)

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FROM the heart of County Limerick in Ireland comes the best collection of primary maths programs I have yet to see for the ST. Maths Mania, the company's first release for the ST, is aimed at 8 to 12 year olds with the emphasis on multiplication and division concepts, and some service also being paid to visual memory skills.

As a collection of five individual programs, the package tests and trains various aspects of these skills with many levels of difficulty to suit different ages and abilities. Maths Mania comes on a single disc in sturdy and colourful packaging, but with a dearth of substantial documentation, leaving you to find out how the programs work as you go along.

The master program boots to a colourful loading screen where you click and click again to load the first menu. Here you are given a first glimpse of the many loading/copyright screens which seem to plague this package. From a bright and concise main menu you can choose to play one of five educational games or exit to the desktop. These selections – and indeed all gameplay – can be made from the keyboard or by clicking on your choice with the left mouse button.

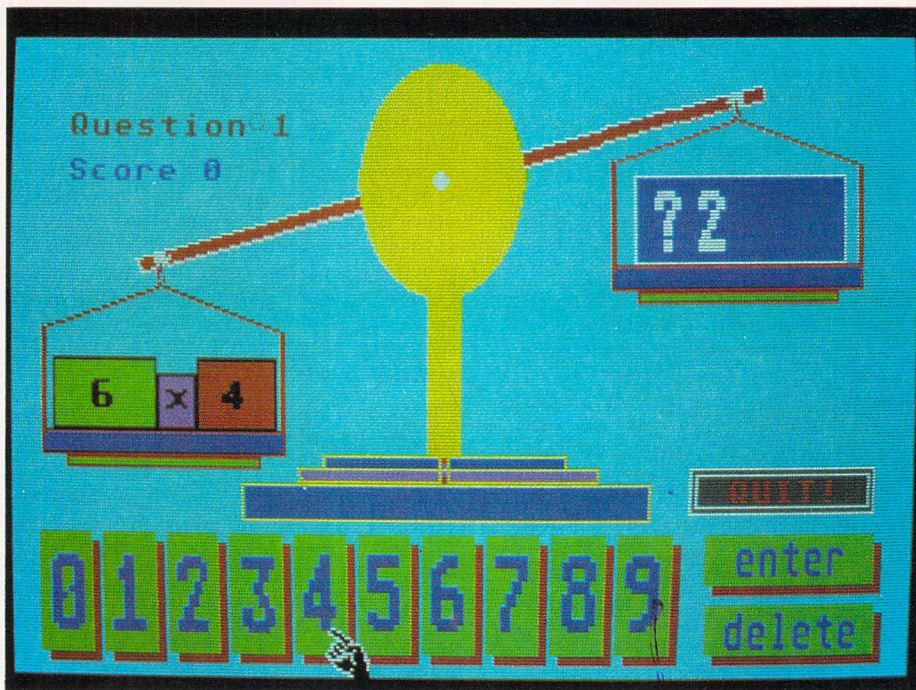
The first program on the list is Mind Power, which bears some resemblance to the board game, Mastermind. From its own sub-menu you can view on-screen instructions or choose a beginner's or expert level. Depending upon your selection, you go through yet another loading/copyright screen to the level of your choice.

At the beginners' stage you have to guess the order of five coloured shapes against the secret selection made by the computer. After making your attempt – using either mouse or keyboard – the program lets you know which are correct. Correct deduction of all five shapes leads to a reward screen where a light bulb flashes the word Brilliant.

The expert's level is similar, except that you are given six shapes to guess. Both levels offer interesting, if not very original, training in visual memory.

Rocket to the moon

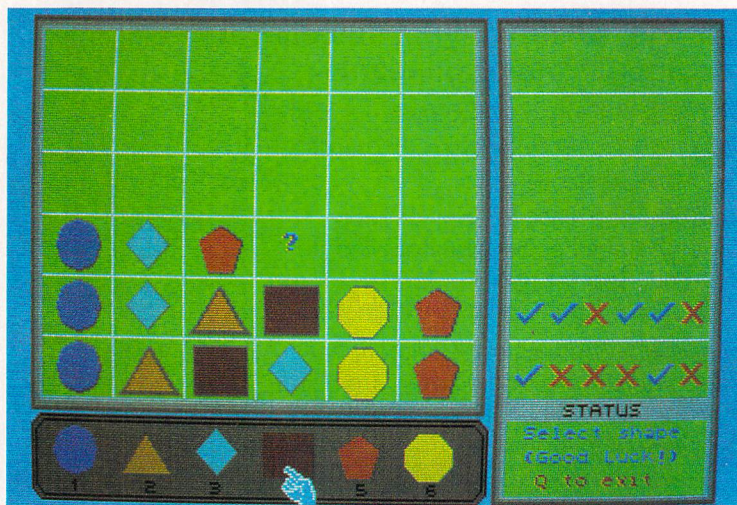
The second game, Blast Off, is more imaginative but borrows heavily from Pelmanism. Once again you enter a sub-menu where you can set a time factor between one and nine seconds, and choose to play at beginner or



Balance the scales

Mathematical feast

Nic Outterside looks at a package of maths programs designed for primary schoolchildren



Mind Power is similar to Mastermind

experienced level.

You then enter a screen which displays a 6 x 5 grid and a rocket launch pad. At the beginner's level you get to view five assorted shapes which appear in random positions on the grid for the amount of time you

selected at the time factor option.

When the shapes disappear you have to click on the positions where you remember they were. For each correct guess a tick is placed on the grid, a point is awarded to you and a

► piece of space rocket is assembled on the launch pad.

If you remember the position of all five shapes the rocket takes off and 10 more points are added to your score. At the experienced level you have to remember the colour and shape of the shapes as well – quite difficult, as the time decreases to two or three seconds.

This is a bright and motivating game which will do a lot to strengthen visual memory, but the graphics are rather weak and 8 bit in appearance.

The third selection, Memory Maths, also doesn't boast very good graphics, but is a clever idea aimed at bright or older pupils. From a sub-menu you can select easy, medium or hard level – though beware, as even the easy level is difficult.

After entering a chosen level, a combined multiplication/division sum in the form:

$$23 \times 6 / 3 =$$

is shown, which then fades from screen at a fairly rapid rate. Providing your memory and multiplication skills are sound enough, you enter the correct answer in a space provided.

For each correct answer, a coloured

pyramid drops from the top of the screen, to build up a tower from 10 possible sums at each level. This is a difficult game and one which will stretch mathematical and memory skills.

Driver, on the other hand, is quite simple and involves answering straightforward multiplication or division sums which appear on the sides of train carriages. If you get an answer right the train gains speed and also picks up a passenger. This continues until the train is full and maximum speed is reached at 100mph.

Off the rails

Once again the program operates at different levels and offers stimulating and solid practice in basic skills. However, the graphical representation of the train could be better, and is nowhere near as realistic as, say, the train in Softstuff's Things to do with Numbers.

The final program, Brain Boxes, also tests either multiplication or division skills, and asks you to balance a scales pan with an answer which matches the question in the other pan. If the answer is correct, the scales balance and the screen flashes a reward.

Although the game tests the number concepts well, it is not very original and owes a lot to an old BBC Micro game called Balance.

Overall, despite reservations concerning the graphics, this is an excellent collection of mathematics programs for the primary child. I would recommend it as a valuable addition to any educational software library.

FACT FILE

Product: Maths Mania

Price: £22.95

Supplier: School Software, Tait Business Centre, Dominic Street, Limerick, Ireland.

Tel: 010-353 6149477

POINTS FOR:

Colourful and easy to use. Well thought out and educationally sound. Fills an important vacuum in primary software need.

AGAINST:

Graphically weak and rather 8 bit in feel. Lack of any hard copy documentation. Too many copyright and loading screens between programs.

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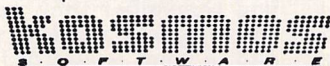
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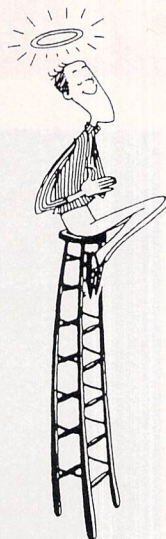


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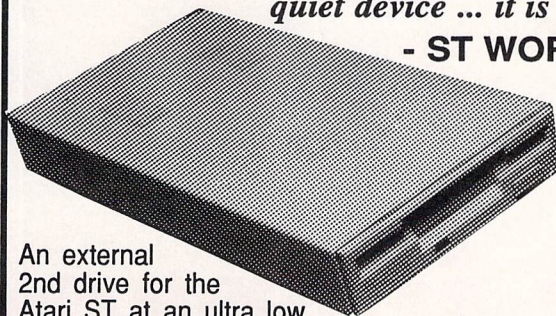
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First impressions

FOR the next few months I will be examining a variety of different subroutines commonly used in arcade games which can be added to your own listings. I'll start by examining the various methods of displaying a title screen. Future articles will cover high score tables, cheat modes, sprite routines and many other features that no game should be without.

All the programs shown here can be found in the LISTINGS folder on this month's *Atari ST User* disc. Alternatively draw your own title screen with an art package, compact it and store it in memory bank five. Bank six should also contain a compacted screen of

Phil Lawson takes a look at different methods of displaying title screens in your arcade and adventure games and provides several ready-to-use subroutines

text, and non-subscribers should design their own, with a routine similar to Program I (below).

The saved text picture should be compressed using COMPACT.ACB, but first you could add some interesting features to the letters with an art package such as Degas Elite. When

designing a title screen it's best first to write a routine which displays all the game's sprites and saves the whole screen as a picture file. This can then be edited and changed using an art package to give a professional, high quality appearance.

The different ways of displaying title screens we'll be covering are just a few of the many effects possible. I'll leave it up to you to discover others and include your own animation sequences, although it's worth bearing in mind that subtle effects can be achieved by simple palette switching with the SHIFT command.

Enough of the chat, let's get down to business. Of all the STOS programs that flood into the office each month the majority tend to rely on the familiar FADE and APPEAR commands to switch between two screen displays. While both give attractive results, they can bore after a while. The next two

```
10 REM Program I
20 REM Create text screen
30 MODE 0 : KEY OFF : HIDE
40 WINDOPEN 1,0,0,40,12,0,3 : CURS 0
FF: PEN 14
50 FOR a=0 TO 11 : LOCATE 0,a
60 READ mess$ : CENTRE mess$
70 NEXT a : WAIT 100
80 SAVE "MESSAGE.PI1",BACK
90 GOTO 90
1000 DATA "Build your title screens f
rom sprites","used within the game."
1010 DATA "Try different ways of disp
laying the","title screen for impressi
```

ve effects."

```
1020 DATA "Use scrolling text and fla
shing colours","for displaying instruc
tions."
```

```
1030 DATA "Don't forget to buy Atari
ST User for","STOS programming hints a
nd tips."
```

```
1040 DATA "Better still, take out a s
ubscription.,""Send in your hints and
tips."
```

```
1050 DATA "The best each month wins t
wo top games.,""Look out for Games Gal
ore and TOME."
```


programs show simple ways of adding spice these effects:

```
20000 REM Title screen #1
20010 MODE 0 : KEY OFF
20020 CURS OFF : HIDE
20030 RESERVE AS SCREEN 10 : RESERVE
AS SCREEN 11
20040 UNPACK 5,10 : UNPACK 6,11
20050 SCREEN COPY 11 TO PHYSIC : WAIT
50
20060 FADE 5,$777,$777,$777,$777,$777
,$777,$777,$777,$777,$777,$777,$777,$777,$777
20070 CLW : s$=SCREEN$(10,0,0 TO 320,
200) : SCREEN$(PHYSIC,0,0)=s$
20080 WAIT 50
20090 FADE 5 TO 10 : WAIT 35
20100 GOTO 20100
```

```
20000 REM Title screen #2
20010 MODE 0 : KEY OFF
20020 CURS OFF : HIDE
20030 RESERVE AS SCREEN 10 : RESERVE
AS SCREEN 11
20040 UNPACK 5,10 : UNPACK 6,11
20050 SCREEN COPY 11 TO PHYSIC
20060 APPEAR 10,77
20070 APPEAR 10,20
20080 GOTO 20080
```

The first program displays the message screen, fades all the colours to white, clears the screen, draws the title and fades from white to the correct colours. Most STOS programmers seem to fade the colours to black or white only, but there's no reason why others such as blue, green, yellow and red cannot be used.

The second program snippet implements a little used feature of the



You'll need to draw two title screens like these before running the example listings

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➤ APPEAR command, the syntax of which is:

APPEAR screen,fade type

If the *fade type* is greater than 72, the final picture is left as a mixture of the original screen display and the one you're attempting to fade in. This allows us to use two different types of fade, one immediately after the other, giving a very pleasing effect. Try altering the fade values in lines 20060 and 20070 and note those which give an interesting result.

Notice that in the above two programs lines 20010 to 20040 are identical. This is true for every program we'll be using this month, so to save space I'll omit them from the listings, but don't forget to type them in yourself.

Scrolled screens

One of the most versatile commands in STOS is SCREEN COPY, which, as its name suggests, copies a defined area of one screen to a given place on another. The syntax of this command is:

SCREEN COPY s1,x1,y1,x2,y2 TO s2,x3,y3

s1 = Source screen
s2 = Destination screen
x1,y1 = Top left corner of area
x2,y2 = Bottom right corner of area
x3,y3 = Top left corner to place area

This opens up the possibility of displaying a title picture one section at a time and scrolling the image over the current display. Run the following program:

```
20000 REM Title screen #3
20050 FOR a=1 TO 200
20060 SCREEN COPY 10,0,0,320,a TO PHYSIC,0,200-a
20070 NEXT a
20080 GOTO 20080
```

The scrolling effect may look rather complex, but it's all controlled with lines 20050 to 20070. Each time round the FOR/NEXT loop, an increasingly larger section of the picture stored in bank 10 is copied to the physical screen. This gives the appearance that the image is being scrolled up from the bottom of the screen. To see it slowly covering an existing picture, add this line:

```
20045 SCREEN COPY 11 TO PHYSIC:WAIT 100
```

Instead of overwriting the original picture we could scroll it off the top of the screen by adding line 20055 and changing line 20060:

```
20000 REM Title screen #3b
20055 SCREEN COPY PHYSIC,0,1,320,199 TO PHYSIC,0,0
20060 SCREEN COPY 10,0,a-1,320,a TO PHYSIC,0,198
```

It's also possible to scroll the picture

Hints and tips

This month's prize of a top quality arcade game goes to Mathew Barry for his tips on expanding the size of the sprite banks.

Since the maximum sprite bank for a standard 520ST is around 30k, some users may feel a little restricted in what they can achieve. One way around this problem, especially for games where different sprites are used on different levels, is to create two sprite files and store one of them in bank two.

To change between sprites all you need to do is use the command:

```
BCOPY 2 TO 1
```

This will copy the contents of bank two into bank one. Obviously it also destroys the first set of sprites, so if they'll be needed later you'll have to copy them first to a spare bank. For instance:

```
BCOPY 1 TO 15
BCOPY 2 TO 1
```

Another advantage of this technique is that separate levels can also have a different range of colours.

down the screen rather than upwards:

```
20000 REM Title screen #4
20050 SCREEN COPY 11 TO PHYSIC
20060 WAIT 100 : FOR a=1 TO 200
20070 SCREEN COPY 10,0,200-a,320,200 TO PHYSIC,0,0
20080 NEXT a
20090 GOTO 20090
```

So far we've scrolled the whole screen either up or down. However, it's possible to scroll the top half down and the bottom half up at the same time:

```
20000 REM Title screen #5
20050 SCREEN COPY 11 TO PHYSIC:WAIT 100
20060 FOR a=1 TO 100
20070 SCREEN COPY 10,0,100-a,320,100 TO PHYSIC,0,0
20080 SCREEN COPY 10,0,100,320,100+a TO PHYSIC,0,200-a
20090 NEXT a
20100 GOTO 20100
```

Scrolling text

You may have noticed that there is a blank area near the bottom of the screen and a screenful of text has been unused. These last two routines will scroll the text within this blank area, first horizontally and then vertically.

To save time I'll simply copy the title picture on to the screen instead of

using some of the fancier techniques we have covered:

```
20000 REM Title screen #6
20050 SCREEN COPY 10 TO PHYSIC:SCREEN COPY PHYSIC TO BACK
20060 FLASH 14,"(777,5)(666,5)(555,5)(444,5)(333,5)(222,5)(111,5)(222,5)(33,5)(444,5)(555,5)(666,5)(777,5)"
20070 FOR a=0 TO 11
20080 FOR b=-320 TO 320
20090 SCREEN COPY 11,b,a*16,b+320,(a+1)*16 TO PHYSIC,0,164
20100 WAIT VBL
20110 NEXT b : NEXT a
20120 GOTO 20120
```

The scrolling text effect is produced with lines 20070 to 20110. Each time around the loop a block of 320 pixels wide is copied from bank 11 to the physical screen. The value of *a* indicates which line of text to display and *b* indicates where the 320 pixel block starts.

Imagine we have two other blank screens by the left and right of bank 11. The SCREEN COPY command will use them to give the appearance of text moving on to the screen from the right side and disappearing off the left.

You may be wondering how this works when the value of *b* is not a multiple of 16. The manual states it will be rounded down to the next lowest multiple, but this is not the case. Providing the width of the area to be copied is multiple of 16 the start and end values, (*x1* and *x2*), can be anything at all.

Sadly this typed text scrolling is not only slow, but can be tedious, especially when waiting for the next line to appear. An interesting way around this is to scroll the text vertically within the blank area of the screen, as shown in our final routine for this month:

```
20000 REM Title screen #7
20050 SCREEN COPY 10 TO PHYSIC:SCREEN COPY PHYSIC TO BACK
20060 FLASH 14,"(777,5)(666,5)(555,5)(444,5)(333,5)(222,5)(111,5)(222,5)(33,5)(444,5)(555,5)(666,5)(777,5)"
20070 FOR a=0 TO 192
20080 SCREEN COPY 11,0,a-16,320,a TO PHYSIC,0,164
20090 IF (a MOD 16)=0 THEN WAIT 100
20100 WAIT VBL
20110 NEXT a
20120 GOTO 20120
```

This works in a very similar way to the last program, except it is the vertical values, (*y1* and *y2*), which are altered. Since the maximum height of each character is 16 pixels, line 20090 waits until the result of *a* divided by 16 is zero and then waits for two seconds.

Instead of scrolling up, the text could be made to scroll down, but I'll leave you to work out how. Also, as a small programming exercise try to combine the last two programs to produce text which scrolls right to left, but also moves slightly up and down.

● *Next month I'll show some of the many ways of entering your name into high score tables, along with a few examples on how to display them.*

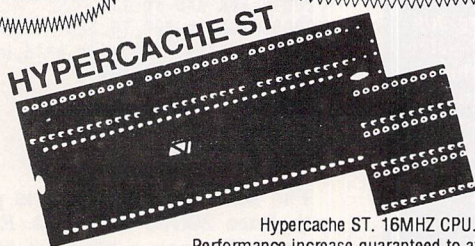
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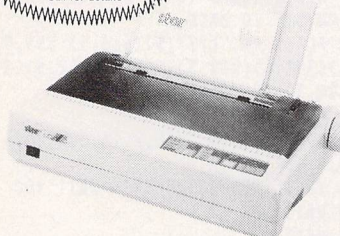
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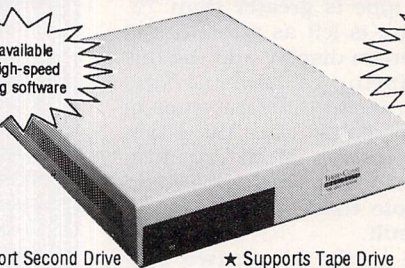
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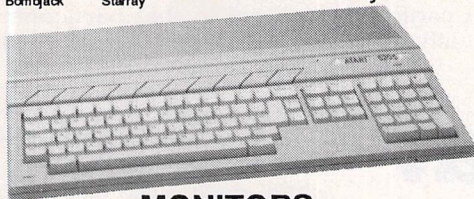
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OVER the past few years Prospero has established itself as one of the leading suppliers of development software for the Atari ST. Prospero products now include an impressive range of Ansi C, Pascal and Fortran compilers.

Despite the undoubted excellence of

these packages however, they've previously shared a number of minor shortcomings. Although they included outstanding support for the Gem operating system, they lacked the resource editor needed to exploit these features to the full. This omission was particularly noticeable because the utility was

provided free by most competitors.

There was also a problem with the workbench system which formed the heart of the development process. Each package used its own separate workbench program, which was customised to that particular language. So if you had several languages, you were continually forced to switch between the different workbenches.

Prospero has now attempted to correct these problems with the release of Developer's Toolkit. This comes on three single sided discs which contain a host of useful programming aids comprising an assembler, command line interpreter, resource construction set and a powerful make utility.

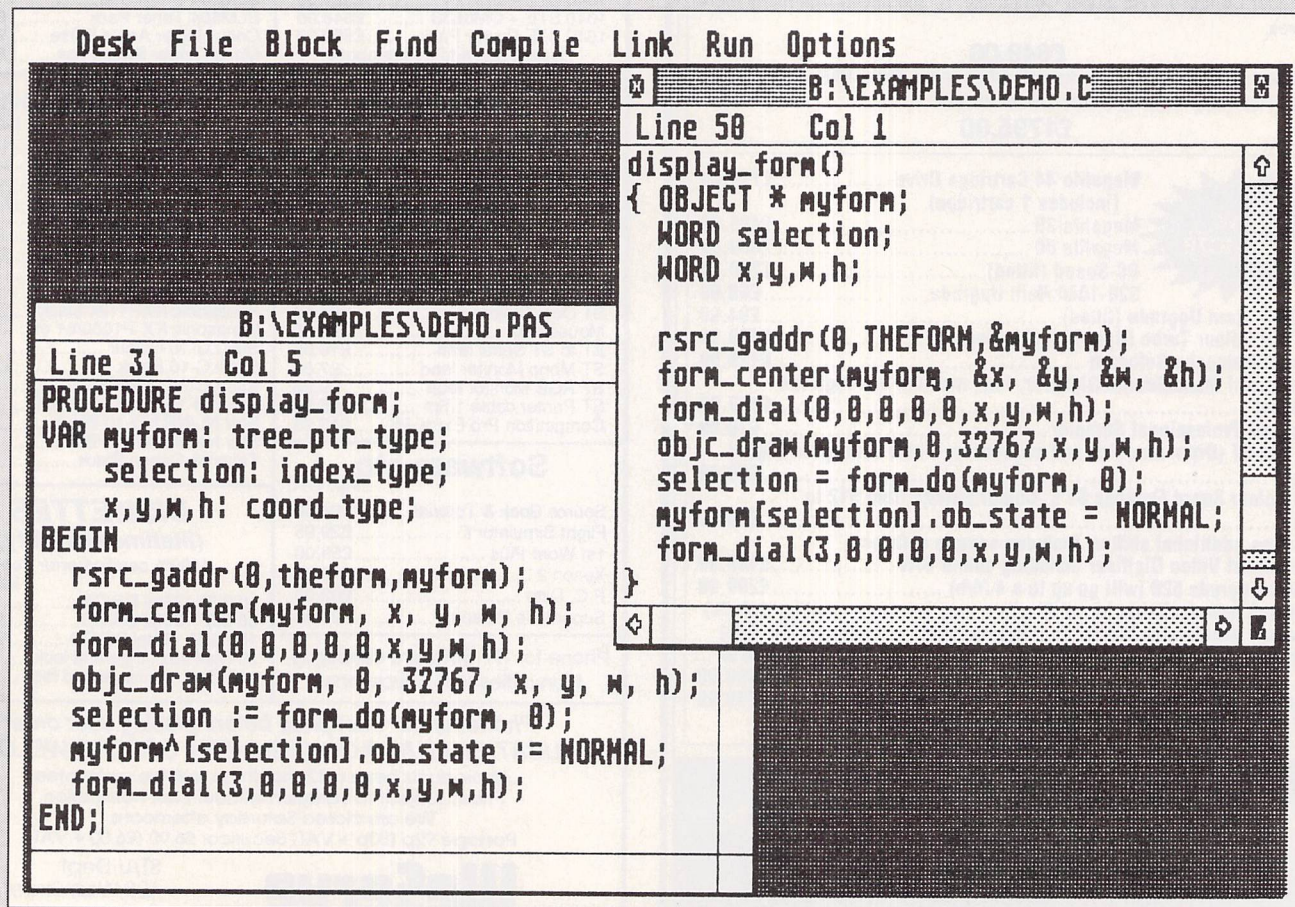
Tying the package together is a new version of the original workbench program. This has been considerably enhanced to support the entire range of Prospero languages.

In order to make these packages compatible with the Toolkit, Prospero has been forced to make major internal changes to some of its existing software. Updates to these versions are available free to registered users, incorporate a number of improvements in their own right so they are well worth getting.

The development package is intended to be compatible with most ST configurations, but if you want to

THE professional kit

Stephen Hill casts an expert eye over a developer's toolkit



Editing two files simultaneously using the new Workbench

Make Options

A Make targets unconditionally
 D Operate in debugging mode
 E Environment macros first
 I Ignore return codes
 M Minimize use of memory
 N Do not execute commands
 S Execute commands silently
 T Touch (don't make) files

Cancel

A Make utility now included with the package is available from Workbench

The extra linking options to enable code to use floating point maths processors

Linking options

Floating point maths

Standard : **Software** **None**

68881 : **Cautious** **Fast**

68881-20 : **Cautious** **Fast**

Libraries: **With GEM** **With DOS**

Execution mode:

Parent **Normal** **Child**

Cancel **OK**

get the most out of the system Prospero recommends at least two drives or a hard disc.

The new workbench looks and feels practically identical to the original. The most obvious difference is in the Edit and Compile menus which are now general purpose. So instead of an option like Compile Fortran, you now have just a single Compile command. All menu options are intelligent, and automatically invoke the appropriate language depending on the extension of the current file.

Another welcome addition is the Print File command. This allows you to create an instant printout of the program you are editing. If, like me, you tend to generate a lot of listings, this will be invaluable. Obviously Prospero thinks so too, since it has incorporated it into the dedicated workbenches supplied with the language upgrades.

The linker options have also changed, and are now set from their own separate dialogue box. Using this form, you can easily select between the various TOS or Gem libraries with your program during the linking process.

Extra support

Alongside the standard options there is extra support for the 68881 and 68881-20 floating point co-processors. As I've never even seen these chips, let alone programmed with them, I'm unable to test the effectiveness of these facilities. I'm sure some developers will find a use for them, especially with the imminent arrival of the Atari TT.

The workbench appeared to work equally well in either C, Fortran, Pascal, or assembler. For the purposes of my review I used a standard 1040ST with one 720k drive. With a little bit of fiddling, I was able to cram all the overlays for the languages on to one

double sided disc. It was also necessary to create a separate linker disc containing the compiler libraries. I could then place my source programs in a ram disc, and compile in all four languages with a single disc swap.

The compilation speed was reasonable, but seemed very sluggish when compared with a dedicated package like Megamax's Laser C. Overall performance was certainly acceptable though, and the Prospero system seemed to score in terms of reliability.

During my experiments I had endless fun contrasting the performance of the different languages. As you would have expected, C won easily when compiling Gem programs. There were, however, several routines in which Pascal surprisingly came out on top.

Even a diehard Gem enthusiast like me appreciates the ability to enter instructions using a command line on occasion. Although the Gem system is perfect for many applications, it's extremely cumbersome when copying or deleting lists of files.

Prospero has, therefore, provided users with a command line interpreter as an alternative to the standard workbench. This is stored on the disc

as a separate program and can be invoked from either the workbench or directly from the Gem desktop.

One minor snag was that the workbench expected the interpreter program to be stored in the same folder as the compiler overlays. I found this inconvenient, as I would have liked to have placed it on my ram disc. This would have allowed me to enter the interpreter instantaneously whenever I needed it.

Unlike many such shells, Prospero has adopted the MSDos approach rather than the Unix model. So the directory option is executed using the familiar DIR instead of Unix's enigmatic ls command. Many of the features are built into the program. This keeps the system running with a nice turn of speed.

It's also possible to call up any external program on disc by simply typing its name. Separate versions of the compilers and the linker are supplied for this purpose. You can therefore compile and link your programs straight from the command line.

This feature really comes into its own when used in conjunction with batch files. These are lists of instruc-

tions which can be stored on the disc and executed sequentially by the interpreter. Special commands are available which allow you to incorporate tests and perform simple loops.

With practice you can use these facilities to completely automate large and complex compilation procedures. Once you've created the required batch file you can execute it with a single command. This can remove much of the frustration from the development process, and is amazingly useful.

All the commands you type into the interpreter are placed in a separate history buffer. You can page through the last 24 of these commands at any time by pressing the up and down arrow keys, and re-execute them by hitting Return. Like the rest of the system, the line editor is firmly set in the MSDos mold. It even uses the standard IBM function keys.

The only thing which really irritated me was that the left arrow key implemented a backspace and deleted the preceding character. Although this may seem a minor quibble, it often forced me to tediously page through the line, character by character, in order to make a single alteration.

I would much have preferred a Unix style editor which allows you to move the cursor more freely. This would have improved the history buffer's usefulness enormously.

Assembler added

THE one feature I really missed from the original Prospero system, was an assembler. While it is possible to produce programs entirely in a high level language such as C, the performance of some programs can be improved immensely with the injection of a little assembly language. So it is nice to see that Prospero has thoughtfully included a powerful assembler with this package. The Proasm assembly system can be called directly from the workbench, and is treated in exactly the same way as any other language.

Compared with the assemblers provided by some competitors, Proasm is pretty good. It provides full macro capabilities and also supports conditional assembly and include files. The macro system is especially well implemented, and incorporates abilities such as string comparison which wouldn't look out of place in a language like C.

On the minus side, Proasm is hardly in the same league as a stand-alone assembler such as Devpac. There are none of the more modern features like binary include files or REPEAT, and it is also approximately 10 times slower than the HiSoft package.

So while Proasm would be ideal for use with a high level language, it's not suitable for developing large assembly language programs in its own right.

Nowadays it is common practice to

Construction kit

The final part of the Prospero development system is the resource editor. This is used to produce the fancy menus and dialogue boxes loved by Gem programmers. Rather than producing its own resource editor, Prospero has wisely decided to save money and license Kuma's excellent K-Resource program. This is now the de-facto standard for Gem programming, and is also provided by several of Prospero's competitors, so it is a welcome addition to the Prospero stable.

split a large programming project into several smaller modules. Unfortunately, it is all too easy to lose track of the connections between the different components.

Even the smallest modification to an inconspicuous little program module will often require the re-compilation of dozens of routines. If you make a mistake and forget to update just one of your files, your programs will be plagued with inexplicable errors.

In order to avoid these difficulties,

“The Proasm assembly system is treated in exactly the same way as any other language”

many programmers use a small utility called Make. This takes a list of the various dependencies and automatically recreates any programs which need updating. Prospero's Promake is an excellent example of this type of utility. Not only does it provide you with everything you need to keep your programs in step with each other, but there is also an attractive bonus.

Instead of having laboriously to generate the list of connections yourself, you simply call up one of four make-file utilities supplied on the development disc. These take a series of source files in a particular language and check for the existence of include directives. They then produce a detailed dependency list which can be easily expanded into your final make-file.

Since many programs are compiled in sections, there's also a special Libmake routine which searches through your linker control files in a similar

way. The result is a system which is quick and easy to use, even for beginners. Considering the complexity of the average make-file, that's quite an achievement.

In the past the Prospero has truly excelled in documentation. The Gem manuals provided with Prospero C for instance, were actually better than most books on the subject. Although the Toolkit manual doesn't quite reach the quality of some of Prospero's earlier documentation, it is still impressively good.

The most conspicuous flaw is that it lacks an index. This is a puzzling omission in a professional package of this quality.

I would also have preferred rather more information on the installation process. I appreciate that much of this is covered in some detail in the separate compiler manuals, but it would still have been useful to have had some assistance in getting the new package up and running as a complete development system.

Conclusion

If you are an existing Prospero user, the Developers Toolkit will undoubtedly prove a valuable addition to your compiler. At £69 it may not be the bargain of the century. The original Metacomco range actually included most of these options for no extra charge.

If you were to buy the components separately, and were prepared to risk PD versions of Make and the command line processor, you could easily shave about £20 from this figure. You wouldn't however, have the integration of the Prospero system, and there would be no support if things went disastrously wrong.

If you are involved in serious development work using Prospero software, there's no real alternative to this package. Many users would probably find it worth buying for the Make system alone. Furthermore, the level of support offered by Prospero is exceptional.

When you add this into the equation, the Developers package begins to look rather cheap. So I have no difficulty in recommending it wholeheartedly.

FACT FILE

Product: Prospero Developers Toolkit

Price: £69

Supplier: Prospero, 190 Castelnau, London SW13 9DH.

Tel: 01-741 8531

POINTS FOR:

Excellent make utility. Software works well. Good range of utilities.

AGAINST:

Manual lacks an index. Annoying left arrow key deletes characters.

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Algorithms make music, too

WE have many new programs from a variety of public domain sources this month and all for Midi equipment, so get out your connecting cables and plug in.

Let's start with a couple of programs of topical interest. One of the most popular current computer music fads is algorithmic composition programs – programs which compose music.

On Sound, disc 23 from Goodman Enterprises (Goodman PD), you'll find a Random Tune Generator which lets you set up a number of note selections, pitches and durations for a bass line and three other tracks. The program selects notes at random and plays them via Midi. The results are... er... interesting, but fun.

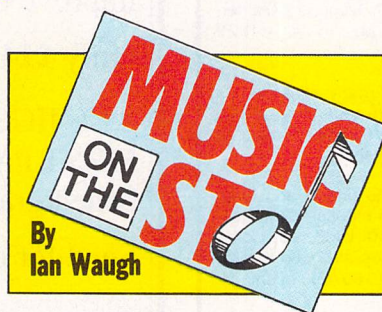
Also on this disc is a Midi System Exclusive Librarian designed primarily to help access the voice and performance data available over bulletin boards.

AMI – Algorithmic Musical Instrument – by Mike Yokum can be found on Goodman's Sound Disc 22. It is, perhaps, a little easier to produce a more melodic output with this than with the Random Tune Generator and it is simpler to use. You enter a list of 16 notes which it plays at random, but the lower in the note order, the more likely a note is to sound. The music plays across four Midi channels and there is a special voice select option for CZ-101 synths. Seven note lists are supplied on disc. Recommended.

Bessel is on Goodman's Sound Disc 9. It's a boffin's program designed to help convert voices from one FM synth to another and it carries conversion tables for the CX5, DX7, DX9, DX21, DX27 and DX100. Its name comes from the Bessel functions used to calculate the frequency sidebands produced by FM. Phew! Some clever people out there in PD land.

On Sound 21 is a demonstration version (no loading or saving) of FB-01 Controller, a Yamaha FB-01 editor and librarian which works as a desk accessory. It's American however, but the full program only costs \$49.95. Looks nice, too.

Staccato can be found on Goodman's Sound Disc 7. It is of French origin, but the large amount of documentation has been translated – with a sprinkling of poetic licence – into English. Basically, it plays music



using the ST's sound chip, but it's quite a fascinating program.

Dozens of classical, folk and standard music files are supplied and a Name That Tune option invites you to guess the tune being played. If you're clever you can enter your name in the Super League Table.

If you're really clever you can create your own tunes. Music is stored in a text format and you can stipulate legato or staccato style and incorporate accents, volume levels, vibrato and waveform. Recommended.

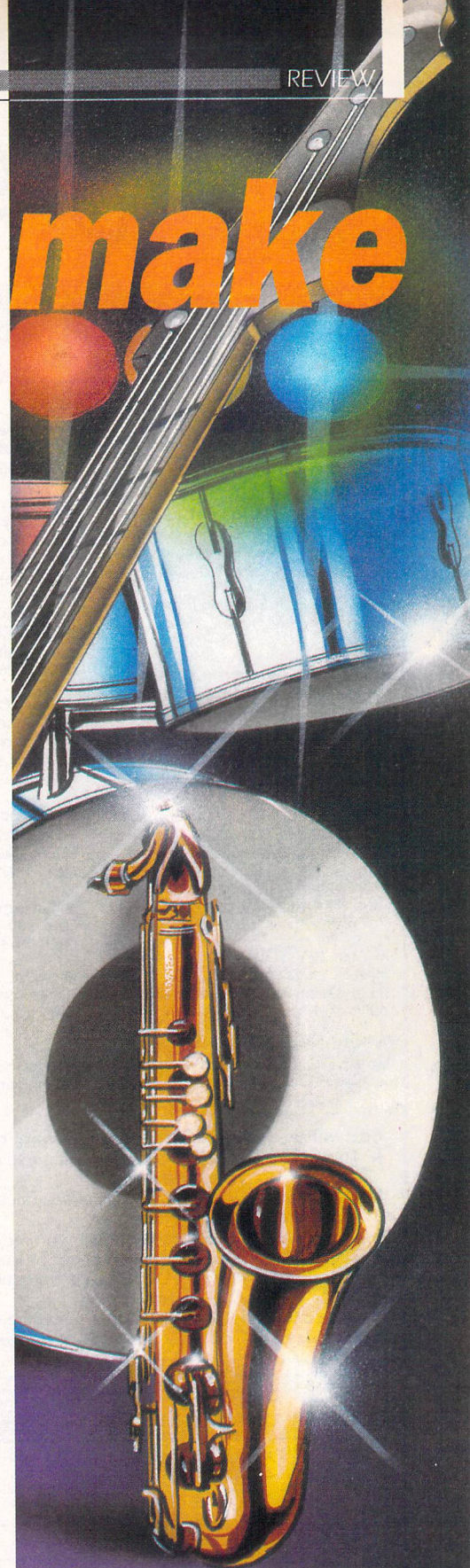
Softville's Music Disc 28 is a three-disc set in archived (compressed) form and costs £8. It contains lots of programs so here's a just a few of the more interesting ones.

Disc one contains a CZ patch librarian and several sounds, the FB-01 demonstration which is also on Goodman's Sound 21, MIDIPRT which analyses Midi data, and many SNG files.

Disc two contains six banks of DX7 sounds, a patch change chart for Yamaha TX81Z and Kawai K1/M expanders in Timeworks DTP format, a DX100/27/21 patch generator and librarian. There's an Ensoniq ESQ-1 patch editor, the AMI and Random Music Generator mentioned above, a program to make a system exclusive data dump (of 32k or less) compatible with Dr.T's KCS and a Music Studio song player which lets you modify Midi parameters and save them to disc.

Disc three contains a collection of SNG files for the Hybrid Arts' EZ-track sequencer, two simple sequencers and the TX81Z editor mentioned last month. All in all, a value-packed three-disc set.

The discs mentioned here may well be available from other PD sources than the ones mentioned. Prices vary between £2 and £4 per disc.



FACT FILE

Goodman Enterprises, 16 Conrad Close,
Meir Hay Estate, Longton, Stoke-On-
Trent, Staffordshire ST3 1SW.
Tel: 0782 335650.

Softville PD Service, 55 Highfield Avenue,
Waterlooville, Hampshire PO7 7PY.
Tel: 0705 266509.

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SUPER Card Index is a very simple computerised version of the sort of manual card index system. You might already use for names and addresses, business contacts and suppliers or simply for cataloguing your collection of LPs or stamps.

Figure 1 shows the main menu screen, an attractive Gem dialogue box. The rest of the program, however, isn't Gem-based and there is a curious mixture of mouse and keyboard commands. From this menu you can create a new card index file, load or merge an existing one and so on.

New cards can be added to an index by clicking on the Add button and this clears the screen then draws a blank card using dashes. You can type away and put anything you like on the card - there aren't any of the usual database fields such as text, numeric, date/time and so on, and it's up to you to lay out the information neatly on each card.

The lack of fields is annoying as you can't specify a layout or types of information to be stored, or validation procedures and so on. You can in fact, type in field names, like Name, Address, Tel. and so on, but this information isn't carried across to the next card, so you have to laboriously type this on every new card you add.

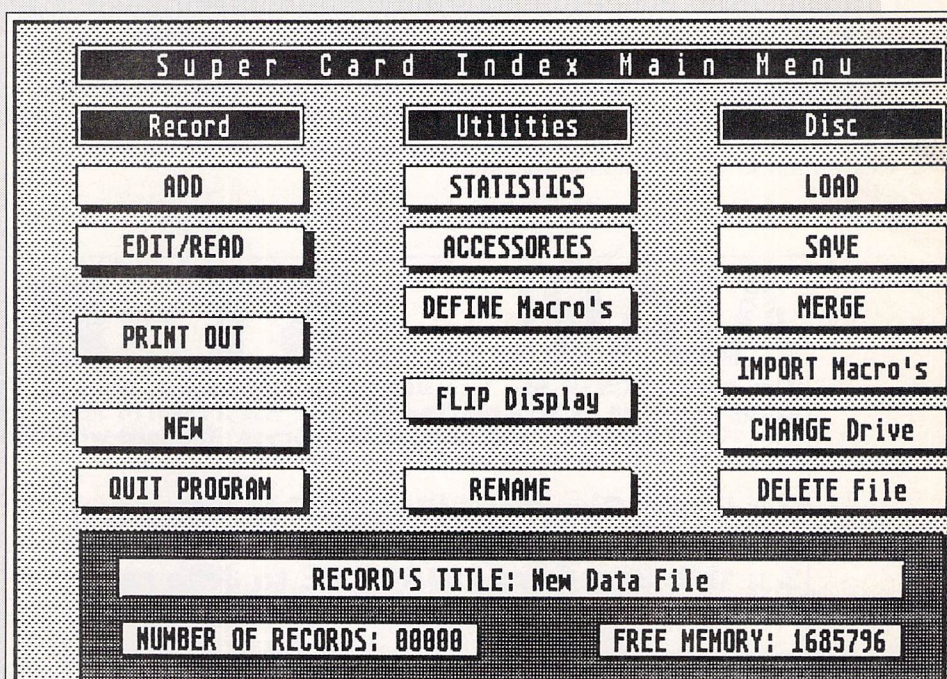
Defining macros

Fortunately, function key macros can be defined to help with text entry and this facility allows you to enter up to 20 strings which are then assigned to the function keys. Pressing a key (with or without Shift) prints the string. You could put the card field names in the function keys and then press each one in order when entering new information on to a card.

You can browse through the cards in the file and edit or delete cards and add new ones. These facilities are selected using the keyboard - no

Price without the power

Roland Waddilove flicks through a new electronic card index



Super-Card Filter Search Menu

Filter 1	Smith_____
Filter 2	London_____
Filter 3	_____
Filter 4	_____

Search

AND	NOT
AND	NOT
AND	NOT
AND	NOT

Case Dependent ?

YES	NO
YES	NO
YES	NO
YES	NO

CLEAR ALL

Click on Filter text line to edit filter,
Click on AND (Yes in record) or NOT (No not in record),
Click on YES (Case Dependent) or NO (Not Case Dependent)

Finally Click on Finished Box to complete edit.

Finished

Figure 1: The Super Card Index main menu dialogue box is easy to use

Figure 2: The search facilities include useful AND and NOT masks

Find Record 3 Out Of 6	
Arrow Keys : Up-Next Record, Down-Previous, Left-First, Right-Last R-READ, E-EDIT, D-DELETE, F-FILTER, C-CLONE, A-ADD, P-PRINT, Q-QUIT	
----- H -----	
HAY M (MR) 22 House Lane Chelsy Hay Walsley Leics Tel 0555 555555 ST user	
12.11.87	520STFM Super Pack (A283L40515690), Degas Elite, 5 Blank Disks 3.5", B.Base 2 Ver 1.5a, B.Spell Ver 1.0, B.Spell Construction Kit, Housemat
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25.12.89	ST Tricks and Tips (book)

Figure III: You can edit and delete cards while browsing through the index

► icons, buttons or pull down menus are available.

The search facilities include a simple filter facility which allows you to enter four search target strings along with AND and NOT to specify whether the cards found are to include the infor-

mation or not. The cards are marked and can be examined or saved to a new file.

The printout facilities are basic; you can set the number of lines per page, characters per line, space between cards and also an option to print one per page.

Conclusion

Super Card Index is exactly what its name suggests - a card index, not a true database. If all you want is an electronic means of writing down and storing information this program will suffice.

I think that its lack of facilities will become more frustrating the more you use it. Unless you have very simple requirements it might be better to save up and buy a true database like Superbase Personal.

FACT FILE

Product: Super Card Index

Price: £24.95

Supplier: B.Ware, 19, Southfield Road, Hinckley, Leicestershire LE10 1UA.

Tel: 0455 613377

POINTS FOR:

Basic card index system. Quite easy to use. Fairly cheap.

AGAINST:

Not cheap enough. Lacks many of the facilities expected of a true database.

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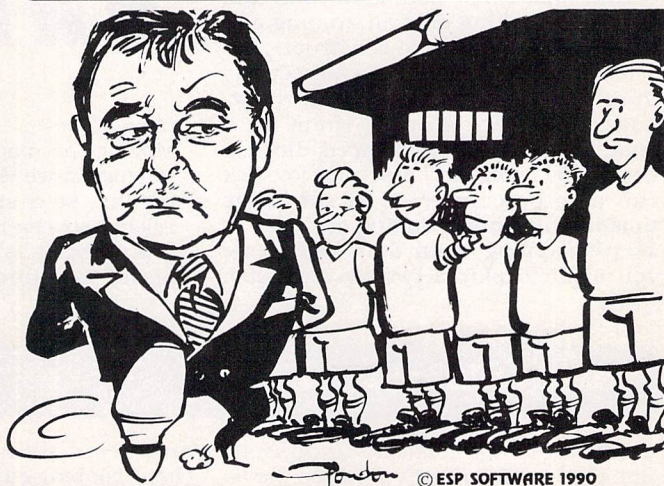
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Whoever suggested the location of the ST's mouse and joystick ports should be hung, drawn and quartered. John Kennedy shows how to move them to a more convenient location



HIDDEN away in the deepest recesses of your ST are the two sockets for your joysticks and mice. Their position has caused much frustration, as to get at them requires lifting up the computer to look underneath – plus a great deal of fiddling to plug the things in.

Another nuisance is the need to unplug the mouse to connect another joystick for two player games. Once again the computer must be lifted up as you strain your neck peering underneath.

However, now these problems are a thing of the past with the *Atari ST User Joystick Adaptor*, a simple device costing just a few pounds in bits and pieces and taking only an evening and some basic soldering to construct.

It works by taking the connections from the two sockets under the keyboard and reproducing them on a small box which can be placed directly beside the computer. A second joystick can also be connected at the same time as the mouse, ending the need to keep swapping them over every time you want to play a two player game.

Moving mouse

Moving the mouse and joystick simultaneously would cause unpredictable results, so a small switch is used to select between them.

Making it is a simple matter, but please read through these instructions

fully before starting.

As well as the components, you will need solder, a soldering iron and a pair of wire strippers or cutters and a sharp craft knife or drill to make the necessary holes in the plastic case. A friend would also make things easier, especially if they trust you enough to hold wires while you solder them.

The first part of the project is simply an extension of joystick port one. Remember to make holes in the box and pass the wires through to all the sockets before soldering anything. If you forget you will be forced to unsolder and start again – an incredibly frustrating experience and not recommended.

Now take the ribbon cable and cut off a length of about 10cms. This will be used for internal connections. Cut the remaining length in two. Remove four wires from one half and two from the other so that you have two pieces of cable, one with six and one with eight wires.

Solder the six wire cable between a plug and socket as shown in Figure 1,

Basic soldering skills

Soldering is not particularly difficult but care is needed to produce good results. Just remain calm and try not to melt the connectors by keeping the iron touching them for too long. And always use the minimum amount of solder.

To solder a wire to a connector, first remove about 1cm of the plastic coating and twist the wire to get rid of any loose ends. Next "tin" the iron by allowing a tiny smidgen of solder to melt on the tip.

Now coat the wire in a smooth layer of solder by touching it with the iron

and some solder simultaneously. Once cooled, cut off the end of the wire, leaving about 0.25cm to fit into the solder pins of the socket or plug. Applying a little heat and a tiny amount of solder should securely attach wire to socket.

To double a wire up with one already soldered to a socket, tin it as usual and then hold it next to the pin and touch both with the soldering iron.

If this is your first attempt at soldering, it might be a good idea to buy an extra socket or two on which to practice.

Qty	Part number	Description	Price	Total
2	RK60Q	9 Way D-plug	42p	£0.84p
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1	FH98G	toggle switch	1.20p	£1.20p
1	LL12N	plastic box	86p	£0.86p
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Total cost: £6.24p

Parts list with Maplin's order numbers and prices



taking careful note of the pin numbering arrangements.

Both the plugs and sockets should have numbers marked on them next to the soldering pins. Bear in mind that the numbering on a plug is the mirror image of the numbering on a socket. Final reminder: Make sure the cable is passing through the box before starting.

The remaining lead will connect socket zero to both the mouse and the second joystick and is shown in Figure II. This time the eight way cable is connected between a socket and two plugs, one for a mouse and one for a joystick.

Start by soldering the cable between

a plug and socket as before, but this time take the lead that would be connected to pin eight on the plug and connect it instead to the centre pin of the switch. Connect a lead from the other side of the switch to pin eight on the plug. This plug is used for the mouse.

Six of the eight wires must also be connected to the plug for the second joystick. First take a wire from the remaining switch terminal and solder it to pin eight on the new plug. Then solder short lengths between both plugs, taking care not to use too much

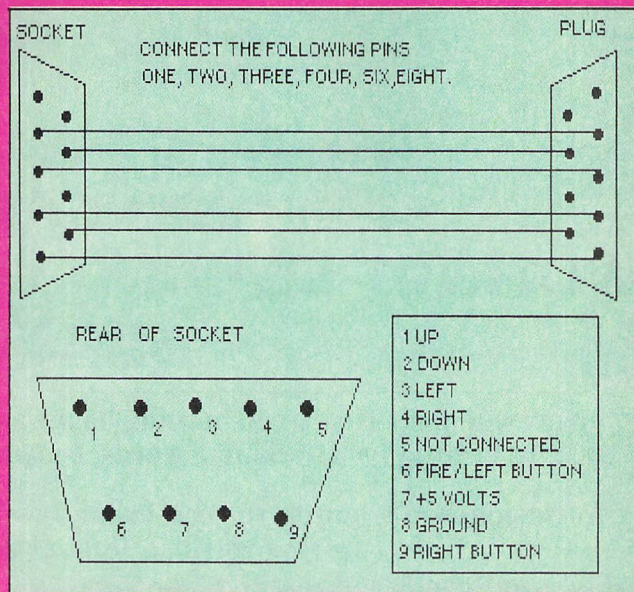


Figure I

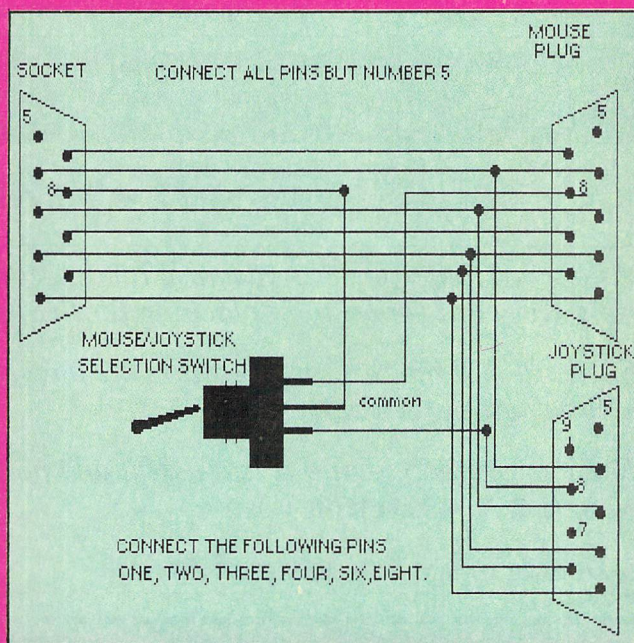


Figure II

solder, thus bridging the connections and causing short circuits.

The three plugs can then be mounted in the small plastic box by cutting small holes with a craft knife, slotting them through and bolting them into place. You will have to scrape away some of the box's rim for the cable to pass through.

The box provides you with plenty of scope for decorating in true Blue Peter sticky-backed plastic style, or just plain letter transfers to remind you of each socket's function.

Now just plug the sockets into your ST. The one with six wires connects to port zero, the joystick port, and the socket with eight wires connects to port one, the mouse port. Mission completed.

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ONE of the primary assets of any business is the ability to budget, a process which can be helped enormously by the use of a spreadsheet. For anyone new to the term, a spreadsheet is simply a computerised version of a giant piece of paper divided into rows and columns to form cells. Each cell can then be filled with a variety of information such as names, figures and formulae.

The beauty of a spreadsheet is that exercises such as cash flow forecast-

ing, which on paper would entail laborious calculations and extensive adjustments for the slightest amendment, can be carried out rapidly by leaving the computer to do the number crunching.

LDW Power is Gem-based with pull down menus, a worksheet size of 256 by 8192, around 300 commands and more than 80 functions. It lets you store a complex series of keystrokes as a macro which can then be accessed at any time - very useful for repetitive actions. In addition, up to four worksheet windows can be in operation at once. There is even a feature to make brief notes about any cell.

The spreadsheet can also be used as a database. Data can be found, extracted, sorted and have its fre-

quency distribution computed.

The package includes two discs, program and utilities, together with a 200 page ring bound manual. On booting the program the screen display shows the control panel at the top and an empty worksheet below with more than 100 cells on view.

Entering data is simply a matter of clicking on relevant cell then typing a label, value or formula. Entries may be formatted in a variety of ways such as left, right or centred, and values may be displayed as fixed point, scientific notation, monetary or percentage. Entries may also be displayed with bold type and/or underlining. Both single cells and ranges of cells can be moved around the worksheet or copied to other areas.

The power of a spreadsheet lies in its ability to perform rapid calculations based on the formulae involved. Programming allows formulae to contain references to other cells, so as values change in one area of the worksheet all other affected cells are recalculated.

Pat Winstanley takes
a detailed look at
Atari's spreadsheet

More power at your fingertips

The screenshot shows the LDW Power spreadsheet interface. At the top is a menu bar with options: Worksheet, Range, Copy, Move, File, Print, Graph, Data, Macro, and Quit. Below the menu bar is a status line showing 'READY' and 'OK'. The main window displays a spreadsheet with columns labeled A through H and rows numbered 1 through 15. The spreadsheet contains data for a stock portfolio, including stock names (Siemens, Volkswagen, AEG, Deutsche Bank, Telefunken, BASF) and their purchase prices. A pull-down menu is open, showing options like Type, X - range, A - range, B - range, C - range, D - range, E - range, F - range, Reset, View, Save, Options, and Name. Labels with arrows point to various parts of the interface: 'Current cell input line' points to the top left; 'Command button' points to the 'READY' button; 'Status line' points to the line below the menu bar; 'Scroll button' points to the 'SCRL' button; 'Note button' points to the 'NOTE' button; 'Help button' points to the 'HELP' button; 'The spreadsheet cells' points to the data area; 'Worksheet name' points to the 'STOCKN-A' label; and 'Pull down menus are used to select the functions' points to the open menu.

LDW Power is an
easy-to-use, Gem-
based spreadsheet

Different worksheets can be combined together either in whole or by specified range. Information can also

Ascii files containing both text and values can be imported to the worksheet, text appearing as long labels which can be broken up with the parse command. Numbers are automatically imported as values.

A variety of graphical displays can be produced including pie, line, bar,

All in all, a comprehensive program with enough features to satisfy most businesses, large or small.

AGAINST:
Manual follows menu order so scatters information which might be better collected together



94 Atari ST User April 1990

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AS the argument rages over the often quite extortionate prices of some commercial software for the ST, we PD enthusiasts can sit back in smug satisfaction, knowing that the software we collect is free or costs next to nothing. That self-righteousness has recently been bolstered even further by the launch last year of a new type of program going under the banner of licenceware.

I made passing mention last month of a form of PD software known as shareware which generally emanates from the USA. It is usually of a higher calibre than run-of-the-mill PD programs, and subsequently shareware programmers ask for a donation from users to help finance further developments.

Such an ethos is based on the honesty and integrity of the user, but as the human animal is often by nature selfish, donations are few and far between – particularly if it necessitates sending money to an address in the USA. The bottom line is that good shareware programmers desert the public domain and look for more direct commercial gain for their skills.

Now it seems the answer to such a dilemma has been found by PD programmer and distributor Camy Maertens, whose name is well-known by all British PD enthusiasts. In 1987 he launched Budgie UK as an umbrella label for his own and partner Simon Rush's programming talents. Over the next two years Budgie gained a well-respected reputation as a producer of top-notch public domain games.

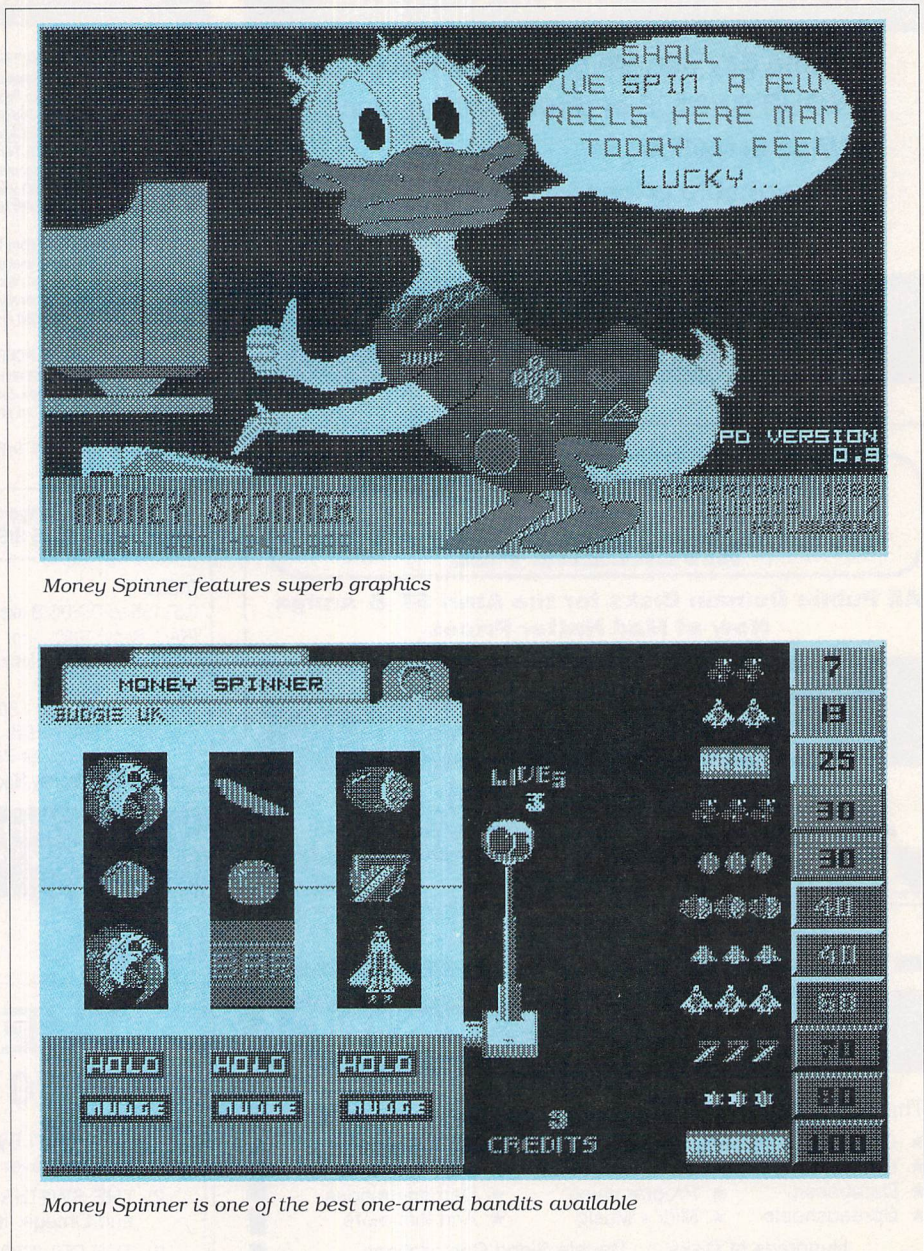
OK Budgie!

Early last year Camy excited the PD marketplace by launching licenceware software. The aim was to widen the umbrella to cover the talents of a number of ST programmers, to give a market to these programmers, to stymie software pirates and to overcome the dichotomy of the shareware market in this country.

The result is that Budgie UK offers a whole catalogue of high quality software via a string of PD libraries and distributors. Indeed, at the time of writing the PD libraries which are licensed to distribute Budgie software account for 95 per cent of the entire public domain circulation for the ST in this country.

The sting – though it's hard to call it that – is that the programs retail at £2.95 per disc, which is often slightly more than the average PD disc. This allows the retailer/distributor to set aside a percentage of every Budgie game he sells – this is typically between 5 and 10 per cent of the asking price.

In due course he then forwards these set amounts of money to Budgie UK who distributes it to its authors – thus guaranteeing a royalty for each programmer. In return the user gets



Money Spinner features superb graphics

Money Spinner is one of the best one-armed bandits available

high grade software, and is free to duplicate and share it among his friends and fellow collectors.

So what is available from this new area of software? Currently about 45 discs, of which the large majority are games, programmed either in 68000, Fast Basic or STOS. They are all well polished and generally of the arcade or arcade/adventure variety – the exceptions being an excellent trivia program, some superb demonstrations and a couple of addictive simulations and strategy exercises.

Every Budgie disc is virus protected by a simple but ingenious program called Virus Guardian. As you load a disc the program tells you whether the disc is virus free. It then enters a small friendly piece of code into the boot sector, either erradicating a boot virus or protecting the disc against future contamination. Bearing in mind that the bulk of ST viruses come from PD discs, this is a thoughtful addition by Budgie and one that other authors could do well to follow.

Also look out for the digitised picture of actress Jan Francis which scrolls on to the screen on most of the Budgie discs I have seen.

On the serious front Budgie is now offering a financial package called Electronic Bank Statement and an educational/leisure utility, Word Puzzle Generator, by Keith Bearman. Perhaps the oddest addition to the Budgie library is the extremely popular Programmer's 68000 Library.

I have now seen most of the Budgie games and am generally very impressed, so let's look at a few of them in detail.

Blitz III: One of the earlier licenceware efforts, was written and coded by Camy Maertens himself. It is a Bomber type jaunt with an excellent backdrop scenario.

You use a joystick to control and fly three aeroplanes in formation while trying to bomb a city below. As in Bomber, with each pass your altitude drops and your task becomes that much harder, but a big difference is

Jayne West sidesteps
the public domain to
look at the British
answer to shareware,
and asks if this is
the software future
for the ST

view of a scrolling island, you pilot a jeep-type ambulance over hostile terrain. Your task is to rescue British troops stranded on Bluff Cove, but nothing tells you where the mines are laid nor when the bombs will fall.

I found the game a little wooden, tiresome and 8 bit in character – I could easily imagine the same thing on a BBC Micro or Dragon 32. In fact of all the Budgie games I have played this is the only one which really disappointed me.

Licence for a killing?

that in Blitz your altitude is controllable. The theme may be a little hackneyed, but Camy has breathed new life into an old game.

Parabellum: An arcade adventure platform game which captures most of what is addictive about the genre. Its graphics are superb and the gameplay on a par with some commercial contemporaries.

In your quest you control a Grebit type figure as you try to escape from a labyrinthine underworld. You must collect candles in a predefined order before getting your mits on a key which will let you progress to the next level.

In addition you have to fight off the obligatory nasties and will soon discover that strategy is as important as joystick dexterity. Levels get progressively more taxing until you enter the sea bed and eventually outer space.

Operation Angelica: Another Camy Maertens game, it purports to represent army manoeuvres during the Falklands conflict. From a bird's eye

Perils of Penfold: One of my favourites from the Budgie stable. It is a STOS created arcade/adventure in which you must guide your hero, Penfold, through dungeons and dusty caves. Penfold himself is quite cute and capable of extraordinary feats of levitation, but watch out for the grueling death scenes.

You view all proceedings laterally as you collect potions and keys while avoiding ghosts, bats, murderous monks and horrid ghoulies.

You only have three lives and are equipped with a six-shot rifle which is useful for bumping off nasties which get in the way. However, I soon found conservation of ammo a prerequisite to success, and also discovered that many dangers can be avoided rather than shot.

Also on the same disc is a colourful and cleverly converted game of Connect 4. The game plays cleanly and quickly as you test your wits against a friend or your ST – beware the computer plays a good game.

Make a Break: Without doubt my favourite Budgie game, this shows high degrees of prolonged development and final polish. It is a loose adaptation of the old Radio One DLT trivia quiz of the same name.

You must answer selected multiple choice questions on various topics as you endeavour to get a high break in a one-sided game of snooker. Every question is worth a set number of points and if answered correctly you may pot a ball of that value.

The game is very colourful with superb sound effects echoing each ball as it is pocketed. It also boasts an excellent collection of questions which will tax even the trivia buff. Superb stuff: I would have been prepared to pay £20 for this one.

Tri-Heli: This disc contains two fast arcade games – one is a helicopter/Lander type blast, while the other is something akin to Galaxians. Each is testing and addictive, though true arcade junkies will probably make mincemeat of them.

Demonstrations

However, in addition the disc contains a number of good Degas pictures and some stimulating picture and sound demonstrations. Each in their own way show some of the true calibre of the Budgie authors.

So what of the future? It is early days yet, but last quarter Budgie shared more than £500 among its 15 programmers, and some of its games – such as Football '88 – have sales which even exceed commercial contemporaries.

This makes almost everyone happy, and as the word spreads more and more skilled authors are gathering around the Budgie stable and more games will be picked up by the devotee PD market. So quality is bound to improve even further and will surely begin to threaten the high prices asked for many commercial games.

For example, it is perhaps hard to justify the £24.95 asked by Domark for Trivial Pursuit on the ST when Budgie can offer a good trivia quiz game, Make a Break, for less than £3.

FACT FILE

The software in this month's article is available from:

Alpha Computing PD, Goodman PDL, Riverdene PDL, ST Club, 16/32 PD Library, VP ST, The PD Library, Atari ST Public Domain Library, MT Software, Floppyshop ST, The Page 6 Library, Softville, ST UK, Platinum Distribution, Wizard PD, Advent Software, Titan Games, Paradise Computers.

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Software:

Touch-Up, being a full-blown image editing program has hundreds of features not contained in any of the other simple scanning packages. Features include:

- Virtual paging to hard drive for images larger than available RAM. This is the most important feature for Atari ST owners with a limited amount of RAM. It allows 1040 owners to work on the same images that only Mega 4 owners could work on in the past. (User configurable RAM usage for resident images).

NOTE: While *Touch-Up* does not require a hard drive, it is strongly recommended if you will be working with images that use more memory than your computer has (especially 1 Mb systems). Caching only works well with a hard drive and not a floppy based system.

- Works on ALL monitors (including Viking 1 and colour).
- Loads and saves images in a variety of formats, these include Degas, Degas Elite, Neochrome, Macpaint, Tiff, PCX, .IMG, .GEM, IFF, Printmaster, and Tiny allowing files to be interchanged between Atari, Amiga, Apple Mac, and PC environments.
- Includes full paint program, with extensive drawing tools, including Bezier curves, scalable outline typefaces, and special effects.

User Interface:

- GEM dropdown menus
- Icon panel interface
- Tear-away menus

Draw Mode:

- All commands work at all zoom levels, including full zoom.

Clip Mode:

- (All commands work at all zoom levels, including full zoom).
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- Load .IMG or .GEM into clip area
- Save clip area in any of the supported formats.
- .IMG file previewer

Lightning:

- Full selection of user defined brush tools including box, circle, polylines, sketch, B-spline and Bezier curves.
- Special features including, Lasso, FatBits and Airbrush.

Scan Mode:

- Scan to full page
- Scan to clip area (Also uses writing modes).



Images created with *Touch-Up* can be loaded into Desktop Publishing programs, including Calamus, Fleet Street, PageStream, and Publisher ST, and others that support the listed file formats.

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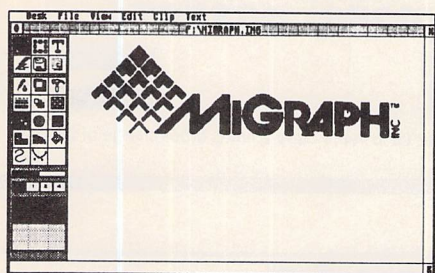
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For the first time on the Atari ST, you can now work with scanned and painted images larger than your screen. That's because Touch-Up is a "virtual page" graphics program. It can handle bit mapped images of any size and resolution, not based on your computer's available memory, but the amount of room on your hard drive, as Touch-Up now supports Hard Disk Caching.

And that's a sizeable advantage because high resolution images give your desktop publications the professional look they deserve.

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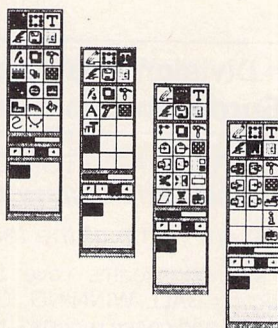
Your adjustable workspace is outfitted with powerful editing functions, a complete paint program, and an array of drawing tools, not to mention special effects and scalable outline fonts.

Touch-Up is easy to learn and easy to use, and Touch-Up imports and exports a wide variety of file formats - making it easy to share images with other programs.

Migraph Touch-Up, A powerful tool for professional-quality results.

Features Include:

- **GEM User Interface.** Touch-Up uses the convenient GEM interface. Pull-down menus, tear-away menus, icons, scroll bars, and dialog boxes to help you learn and use the program quickly and easily.



Icon Driven Menus.

- **Desktop publishing compatibility.** Touch-Up files load easily into your favourite programs, including Calamus, Page Stream, Publisher ST™ and Supercharged Easy-Draw™
- **Image accessibility.** You can import images in a variety of popular formats: .IMG, .GEM,

Neochrome, TIFF, Macpaint™, Degas™, Printmaster™, and PCX.

- **Versatile file formats.** Touch-Up exports monochrome images in these widely used formats:
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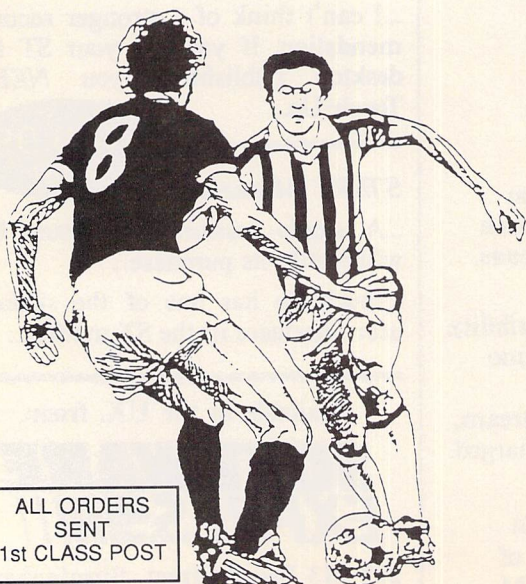
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SCROLL



Xenon II - a prime example of parallax scrolling

Roland Waddilove shows how to use a top animation technique in arcade games

LOOKING back over the arcade games released last year, one type cropped up with almost monotonous regularity - 1989 will probably be remembered as the year of the scrolling shoot-'em-up. No matter whether your preference is for the vertical or horizontal variety, there was easily a dozen or more games to choose from.

In this article I'm going to examine one of the popular programming techniques employed in this type of game, that of parallax scrolling backgrounds. Straightforward, single plane, scrolling backgrounds are commonly used in the simpler shoot-'em-up games, but the most impressive best sellers like Xenon 2 have always included multi-plane parallax scrolling.

When travelling in a car or train look out of the window at the scenery flashing past. You'll notice that objects near to you like lamp posts and buildings quickly rush past, but distant objects like mountains and hills creep slowly by.

This can be simulated on the screen and it gives a graphic display a feeling of depth. Using two-plane parallax scrolling, distant hills scroll slowly past while nearby buildings scroll quickly by.

There are many ways to produce

parallax scrolling backgrounds. The easiest way is to draw two background screens, one showing the hills and the other the buildings.

Both are stored in memory and the display is created by overlaying the buildings on top of the hills. As the background screens are stored independently, each can be scrolled at a different rate.

The first problem is how to overlay one screen on top of another, and for this a mask must be made. You can't see through buildings, so a solid black mask is made from the foreground screen to delete the appropriate parts of the background screen. The foreground is then combined with the masked background and the result placed on the real screen displayed on the monitor.

Here is the code required to produce a mask from the screen whose address is held in A1:

MOVE (A1),D0	Get 1st word
OR 2(A1),D0	OR 2nd word
OR 4(A1),D0	OR 3rd word
OR 6(A1),D0	OR 4th word
NOT D0	D0 = mask

The ST's low resolution screen memory is organised into blocks of 16 pixels. As there are also 16 colours, each requiring four binary bits, four words are required for each 16-pixel block. Therefore, 4-word blocks are ORed together to make the mask.

The NOT at the end inverts the bits so that the background can be ANDed with the mask and then the foreground ORed to produce the combined screen. Here is the code required to produce each 16-pixel block of screen (A0


```

*****
*      Parallax scrolling demo      *
*      By R.A.Waddilove             *
*      (c) Atari ST User            *
*****
OPT T+,0+,W-
in      EQU 0      input file handle
screen  EQU 4      screen start address
scr1    EQU 8
scr2    EQU 12
send1   EQU 16
send2   EQU 20
count1  EQU 24
count2  EQU 28
back    EQU 32      other screen
flag    EQU 36

f_open  MACRO          Open a file
MOVE #1,-(A7)          read/write flag
PEA 12(PC)             filename
MOVE #61,-(A7)         f_open
TRAP #1
ADDQ.L #8,A7
ENDM                      DO=handle

f_close MACRO          Close a file
MOVE 1(A6),-(A7)       handle
MOVE #62,-(A7)         f_close
TRAP #1
ADDQ.L #4,A7
ENDM

f_read  MACRO          Read into buffer
MOVE.L 1,-(A7)         input buffer

```

```

MOVE.L #12,-(A7)      bytes to read
MOVE 13(A6),-(A7)     handle
MOVE #63,-(A7)        f_read
TRAP #1
ADDQ.L #12,A7
ENDM                      DO=bytes read

*****
* Start of program
*****
*->Initialise
MOVE #-1,-(A7)        cursor off
MOVE #0,-(A7)
MOVE #21,-(A7)         cursconf
TRAP #14
ADDQ.L #6,A7
LEA var(PC),A6        A6 -> variables
MOVE #2,-(A7)         get screen address
TRAP #14
ADDQ.L #2,A7
MOVE.L D0,screen(A6)  screen start

*->Get buffer address
MOVE.L 4(A7),A0        A0=get base page
MOVE.L 5(A0),D0        get text segment
ADD.L 14(A0),D0        add data segment
ADD.L 11(A0),D0        add uninitialised
ADD.L 100(D0),D0       add base page
ADDQ.L D0,A0           A0 -> buffer
MOVE.L A0,scr1(A6)     address of scr1
ADDQ.L #33000,A0       screen2 start
MOVE.L A0,scr2(A6)     address of scr2
ADDQ.L #33000,A0       dual screen

```

```

MOVE.L A0,back(A6)     store address
ANDI.L #FFFFFF00,back(A6)

*->Load pictures
f_open 0,pic1          load PICTURE1.PIC
MOVE D0,in(A6)         store file handle
f_read scr1(A6),33000,in
f_close in
f_open 0,pic2          load PICTURE2.PIC
MOVE D0,in(A6)         store file handle
f_read scr2(A6),33000,in
f_close in

*->Skip Degas header, set screen ends
ADDI.L #34,scr1(A6)    skip header
ADDI.L #34,scr2(A6)    skip header
MOVE.L scr1(A6),A0
ADDQ.L #32000,A0
MOVE.L A0,send1(A6)    end of screen1
MOVE.L scr2(A6),A0
ADDQ.L #32000,A0
MOVE.L A0,send2(A6)    end of screen1

*->Display screen
CLR.L count1(A6)       set counter
CLR.L count2(A6)       set counter
scroll
BSR setscr             A0=screen
MOVEA.L scr1(A6),A1    A1=screen1
MOVE.L count1(A6),D0   get counter
CMPI #200,D0
BNE s2
CLR.L D0

```

points to the real screen, A1 is the foreground and A2 is the background):

```

MOVE (A1),D0           Make mask from scr1
OR 2(A1),D0            OR 4 words
OR 4(A1),D0
OR 6(A1),D0
NOT D0
MOVE D0,D1            store mask in D1...
SWAP D1
MOVE D0,D1            -lower and upper word
MOVE.L D1,D0          Get mask
AND.L (A2)+,D0        AND.L scr2 words 1+2
OR.L (A1)+,D0         OR.L scr1 words 1+2
MOVE.L D0,(A0)+       Store in real screen
AND.L (A2)+,D1        AND.L scr2 words 3+4
OR.L (A1)+,D1         OR.L scr1 words 3+4
MOVE.L D1,(A0)+       Store in real screen

```

This procedure must be carried out 20 times for each of the 200 rows of screen pixels. It looks like a lot of processing, but the ST is a fast micro and is able to perform all this bit manipulation in a fraction of a second.

There are methods of streamlining the code if extra speed is required. For instance, if you draw the foreground screen in only three colours, numbers 0100, 1000 and 1100 in binary, you only need to OR the first two words to make the mask. This saves 8,000 (2 ORs x 20 times per line x 200 lines) instructions each time the screen is re-drawn. You could also make similar savings with the background screen, or even have a separate ready-made mask screen.

So far we have seen how to overlay a foreground screen on top of a background one. There are different methods of scrolling, and to keep the code

as simple as possible, the backgrounds could be stored in memory in two continuous blocks of graphic data.

Keep two pointers, each pointing to the start of a screen, and every time around the main program loop, increment them. The following section of code uses two counters, *count1* and *count2*, which keep track of the screen scan line to start displaying from A6 points to the base of the variables:

```

* Start of main loop
BSR draw screen      Draw real screen
MOVEA.L scr1(A6),A1  A1=screen1
MOVE.L count1(A6),D0 get counter1
MOVE.L #160,D1       one scanline
MULU D1,D0           counter1 x scanline
ADDQ.L D0,A1         new start address
ADDQ.L #1,count1(A6) counter1 + 1
MOVEA.L scr2(A6),A2  A2=screen2
MOVE.L count2(A6),D0 get counter2
MULU D1,D0           counter2 x scanline
ADDQ.L D0,A2         new start address
ADDQ.L #2,count2(A6) counter2 + 1
* Repeat main loop

```

In this case, *screen2* will move twice as fast as *screen1*, so in our landscape, *screen1* would be the hills and *screen2* would be the buildings.

One other useful related technique is that of dual screens. All this processing of background and foreground screens takes time, and added to this is the usual sprite processing, collision detection, explosions, score routines and so on.

Two display screens are kept in memory to eliminate flicker. You display screen one on the monitor while on screen two you draw the sprites, scroll the background and update the

score. Then you display screen two and re-draw screen one. This means you are always drawing on a hidden screen and displaying a completed, static one.

A flag can be kept to indicate which screen is being updated and which displayed. The XBIOS function number five, *_setscreen*, can be used to display the appropriate screen:

```

EORI #1,flag(A6)
BEQ set1
MOVE #-1,-(A7)
MOVE.L screen(A6),-(A7)
MOVE.L #-1,-(A7)
MOVE #5,-(A7)
TRAP #14
ADDQ.L #12,A7
MOVEA.L back(A6),A0
RTS
set1
MOVE #-1,-(A7)
MOVE.L back(A6),-(A7)
MOVE.L #-1,-(A7)
MOVE #5,-(A7)
TRAP #14
ADDQ.L #12,A7
MOVE.L screen(A6),A0
RTS

```

This subroutine uses *screen* and *back* and returns with the screen to write to in the address register A0.

That takes care of the most important machine code subroutines and the rest is quite simple. To see a full working demonstration of parallax scrolling, type in the listing and assemble it to a TOS file using HiSoft's Devpac, or something similar, draw two Degas screens and save them on the same disc as the program. Double click on the machine code program.


```

MOVE.L D0,count1(A6)    set counter
s2
MOVE.L #160,D1          one scanline
MULU D1,D0
ADDA.L D0,A1            new start address
ADDQ.L #1,count1(A6)
MOVEA.L scr2(A6),A2      A2=screen2
MOVE.L count2(A6),D0     get counter
BPL s1
MOVE.L #199,D0
MOVE.L D0,count2(A6)    set counter
s1
MULU D1,D0
ADDA.L D0,A2            new start address
SUBQ.L #1,count2(A6)
BSR draw

```

```

*->Wait for keypress
MOVE #11,-(A7)          key pressed?
TRAP #1
ADDQ.L #2,A7
TST D0
BEQ scroll
MOVE #8,-(A7)           read keypress
TRAP #1
ADDQ.L #2,A7

```

```

*->Return to desktop
CLR flag(A6)            restore screen addr
BSR setscr
MOVE #-1,-(A7)          cursor on
MOVE #1,-(A7)
MOVE #21,-(A7)          cursconf

```

```

TRAP #14
ADDQ.L #6,A7
CLR -(A7)               back to desktop
TRAP #1

```

```

setscr
EORI #1,flag(A6)
BEQ set1
MOVE #-1,-(A7)
MOVE.L screen(A6),-(A7)
MOVE.L #-1,-(A7)
MOVE #5,-(A7)
TRAP #14
ADDA.L #12,A7
MOVEA.L back(A6),A0
RTS

```

```

set1
MOVE #-1,-(A7)
MOVE.L back(A6),-(A7)
MOVE.L #-1,-(A7)
MOVE #5,-(A7)
TRAP #14
ADDA.L #12,A7
MOVEA.L screen(A6),A0
RTS

```

```

*****
* screen = screen1+screen2
* A0=realscreen, A1=screen1
* A2=screen2
*****
draw
MOVE #199,D7

```

```

dloop
REPT 20
MOVE (A1),D0            make screen1 mask
OR 2(A1),D0             OR 4 words
OR 4(A1),D0             OR 4 words
OR 6(A1),D0             OR 4 words
NOT D0
MOVE D0,D1              store mask in D1...
SWAP D1
MOVE D0,D1              lower + upper words
MOVE.L D1,D0            get mask
AND.L (A2)+,D0          AND screen2
OR.L (A1)+,D0           OR screen1
MOVE.L D0,(A0)+         store in screen
AND.L (A2)+,D1          AND screen2
OR.L (A1)+,D1           OR screen1
MOVE.L D1,(A0)+         store in screen
ENDR
CMP.L send2(A6),A2
BLT d1
SUBA.L #32000,A2
d1
CMP.L send1(A6),A1
BLT d2
SUBA.L #32000,A1
d2
DBRA D7,dloop
RTS

```

```

*****
var DS.L 15             variables
pic1 DC.B 'PICTURE1.PI1',0
pic2 DC.B 'PICTURE2.PI1',0

```

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- Nov 1989

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Building a better board



board

How easy is it to set up your own bulletin board? Karen Howells tries two software packages aimed at making the process as trouble free as possible



A BULLETIN Board System (BBS) works in a similar way to the Oracle/Ceefax systems on TV. You are presented with a menu from which you may make selections. You can choose to read the latest messages posted to your mail box – private messages or public to all users of the board – or to play an online game.

These boards provide a way for people to exchange ideas and software, help solve computer games, or share articles of common interest. Sometimes it's just fun to read the gossip on the general message board. In addition, most boards

hold public domain software and text files for you to download and use.

Boards also split files and data into SIG areas or Special Interest Groups, so that, for instance, all the Atari ST files are stored together. The files are often held in a compressed format (archived) to speed up downloading and reduce online time.

Some BBSs are viewdata style, like Prestel, but most operate as text only scrolling terminals. All you need to join this twilight world of Atari owners with big phone bills is a modem and good commu-

nications software.

After many hours sampling the wide variety and flavour of the bulletin boards spread around the country, and being logged out of your favourite board for using it for too long, you'll soon begin to wonder what it would be like to have a BBS of your own. Would anybody ring you up? Will they use the message base? What will you specialise in?

All you need to run your personal bulletin board system is an ST, a modem and suitable software. Hey presto, you too are a sysop (system operator).

Michtron BBS 3.0

To run this BBS system you'll need a 520ST, double sided disc drive and a Hayes-compatible modem. The software features are also clearly listed. It can accommodate one user on the console (sysop), plus the incoming user. With an optional DC port the system can support another two lines, though this would require another two phone lines.

Five file transfer protocols are supported, although four are variations of Xmodem. A command language is included for customising the board to your own style. Maintenance can be done through the keyboard without shutting the board down, and you can perform all sysop activities over the telephone.

The Michtron BBS 3.0 disc comes

with a bulletin board ready to run, although there are no users set up or any messages waiting. You can choose to try out the bare BBS or start up the maintenance program to define the system defaults.

The maintenance program lets you give your BBS a name and set options such as a time limit for new unregistered users, the number of message blocks allowed and the number of SIGs. These last two need to be set before the board is running to allocate enough memory at the onset to prevent the disc filling up while the system is running. These defaults can always be increased, but you can only have up to 16 SIGs.

The User options allow you to modify a user's record in the userlog. This is where you change you setting to wizop (super sysop), and change new users' settings from unregistered to

registered, and even assistant sysop when you know them better.

On loading the sample BBS given you will be prompted with "Waiting for a call on the Console". You can logon from the console (keyboard) by pressing F1. This logs you on just as if you were using the modem. The menu can be shown by asking for help with the ? symbol.

The usual American logon prompts occur such as City, State, Zip Code and so on. It is a shame that a UK sample hasn't been made up – you'll find this when logging on to many currently operating British boards, too. The user should type in their full name and not just a first name as it is used as key field in the user data logfile, and there can easily be more than one John or David.

The function keys allow you to swap

between the console screen and the user screen, and extra users if you have them. It can be amusing to watch someone logging on and using your board.

In common with most BBSs, the unregistered user can only tour around the system; they cannot leave mail, or select files to download. They can, however, play the included online game of Hi-low or Guess the Number.

The Michtron BBS disc also gives some more sample systems written in Michtron Command Language, a compiled C-like language. Although the samples given will run adequately, there are areas where you will need to modify, such as adding something into the news area.

The manual is well written, small and neat, but most importantly in a logical order. It first deals with the set up routines, running and using the BBS, modem control, communications protocols, and sysop commands. The second section exclusively deals with the Michtron Command Language.

There are ample flow control commands such as IF/ELSE, WHILE, REPEAT/UNTIL, and FOR statements. GOTO and GOSUB are there if you need them, plus BREAK and CONTINUE. There are plenty of variables to access such as username\$, and system functions like beep() and readmail(). The final pages are a listing of the MAIN.M file from the master disc.

With a little effort, following the manual and the examples given, it would be possible to create an individual BBS in a short amount of time.

BBS Express!

ST The BBS Express! system consists of two unprotected master discs, and an A4 paperback manual. As with the Michtron software, you must create default settings and determine sizes for your user database and message base. These can be expanded later if needed, and BBS Express! allows twice as many SIGs to be defined as Michtron.

Express! also allows you to define the keystrokes for the system's set commands and the level a user needs to be to use this command, thereby allowing more choices than simply sysop or user. You can also use the sample BBS provided if you wish.

Express asks a new user for name and also for a handle - nickname to be known as on the board. It continues to ask the user's age, computer type, and finally gives the user a number, which must be remembered. This means that as a user your full name need not be displayed to the world, but you can become known as your BBS handle. Having a user number means you will be able to logon more quickly.

The log of new users can be written to a file or simply listed to a printer, which can act as a useful reminder to the sysop to register the user. However, make sure the printer is online,

or the system will crash.

The sample BBS contains an online hangman game, and the other sample script files included will give you a "fortune cookie" when you logon, and an online game of Wheel of Fortune.

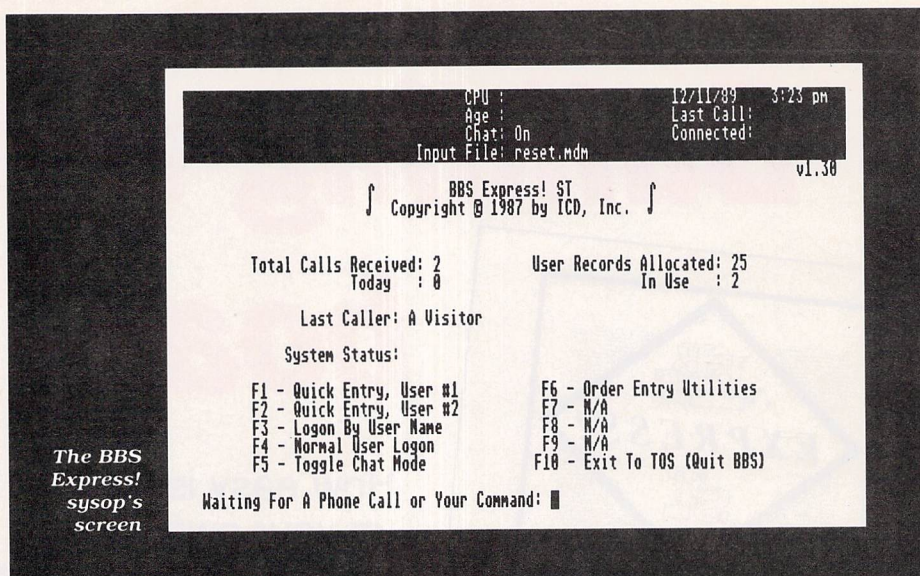
The manual suggests that users run the BBS from a hard disc, but if that is beyond your pocket use a combination of a ram and floppy discs, using ram for the most accessed files (the help files), drive A for volatile files (the user database and message base) and drive B for upload/download of files. This would mean a minimum configuration of 520ST and two floppy drives.

As well as the Script language for tailoring and creating new systems, you can also add menus and surveys, which are very simple to write. If you want to add a new SIG and want some user feedback simply add a survey to your board. The user selects a number from a list of options and the selection acts as a vote for that option. You can look at the statistics later.

The Script language is also a C-type language which is described as a mixture of an interpreted and compiled language. The interpreter interprets each command as it is met, but works quickly as the file is compiled (tokenised) ahead of runtime. There is a limit of 16,000 bytes after compilation, which would be a very large file before compilation, but even this limitation is not a problem as one script file can chain to another.

Like the Michtron system, you need to log on as a new user to get a user ID, and then modify your system priority using the user editor. The commands available to the sysop editor while the system is running mirror MSdos system commands such as DIR, COPY, RENAME and so on. You can also check the free space left on a disc and edit users' records while they are online, registering them immediately.

The manual isn't as well ordered as Michtron's one and I could find no mention of file transfer protocols. Two programs are not mentioned in the manual - utilities to transform your



Michtron BBS userlog into a BBS Express! userlog if you upgrade from Michtron, and a utility to convert your 8 bit Atari userlog file to your new software.

Conclusion

Both systems will need tailoring before going live with the BBS. Remember to change the default secondary password into the system, as this will prevent anyone choosing to use your name and id from gaining sysop control. Both systems can be updated and improved over time without losing the message base and userlog data.

The samples given and the depth of the manual covering the MCL and Script language is sufficient to allow a user acquainted with programming to develop an interesting and individual BBS.

FACT FILE

Product: BBS Express!
Price: £69.95
Supplier: Third Coast Technologies, Unit 4, Bradley Hall Trading Estate, Standish, Lancashire WN6 0XQ.
Tel: 0257 472444

POINTS FOR:

Interesting word parsing and array commands to develop online games.

AGAINST:

Not set up for UK, so needs a few adjustments.

Product: BBS 3.0
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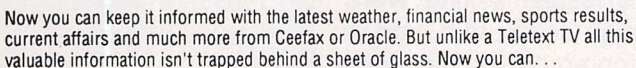
POINTS FOR:

Easy to start up. Very good manual. Powerful command language.

AGAINST:

Autodial modem needed to answer calls. Logon sequence not suitable for UK. Some preparatory work needs to be done.

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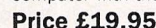
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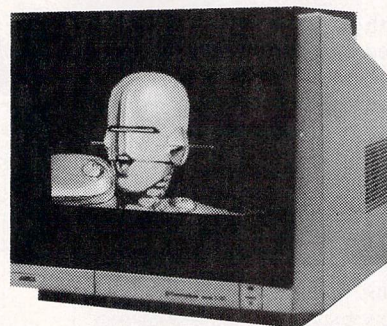
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	CHEQUES, P.O.'s, EUROCHEQUES, PLEASE MAKE PAYABLE TO: HI-TEK EUROPE LTD	
<input type="checkbox"/>	AUSTRALIA & N.Z. TO HARRIS HI-TEK PTY LTD.	
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ST USER 4/88

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Open: INVOICE (49F) Recs: 12 Sel: ALL Layout: 1 Index: 0 15:23:22

INVOICE		Select field name
Invoice Address	Del	Field 4 : Address 3
-----		Field 5 : Address 4
-----		Field 6 : Address 5
-----		Field 7 : Del Addr 1
-----		Field 8 : Del Addr 2
-----		Field 9 : Del Addr 3
-----		Field 10 : Del Addr 4
-----		Field 11 : Del Addr 5
-----		Field 12 : Telephone
-----		Field 13 : Fax
-----		Field 14 : Contact
-----		Field 15 : Invoice Number
DATE	Your Ref	Field 16 : Order Ref
????????????????		Field 17 : Quantity 1
		Field 18 : description 1
		Field 19 : Unit Cost 1

Top left = (0,0). Pos = (3,17). Length=20.
Variable name: DATE Use ^ to move, ^ to and ^ to resize
(F)ield (T)ext (V)ariable (L)ine draw (A)ttres (D)iel (E)dit (TAB) next:

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New lease of mouse life

HERE is a tip other readers may find useful regarding faulty mouse buttons. After a long period my mouse's left hand button failed and a replacement micro-switch costs five pounds, with a new mouse being £24.95.

Examining the faulty switch, I found that the action of pressing a button caused it to tilt rearwards and that by tilting it forward everything worked correctly.

After marking the front of the switch, I de-soldered and removed it from the board, turned it around and refitted it. The mouse now works fine and I have enjoyed many trouble free hours zapping aliens. – **A.P. Brooks, Taverham, Norwich.**

Artificially high prices

THE arguments in your letter pages continue, and seems likely to do so for some time. Software prices, piracy and virus protection seem to be the main concern of home computer users, but perhaps we're approaching the problem from the wrong angle.

Consider the following figures, which I'm assured are both accurate and typical. Of the purchase price of £24.95 for a piece of software, the proceeds can be divided as follows:

Vat	15%	£03.75
Retailer	40%	£10.00
Distributor	5%	£01.24
Software House	40%	£10.00

The Vat we can do nothing about. The software house has development, production and marketing costs, and after these bills only makes about 50 pence per unit sold. The distributors' share does not seem excessive.

But what of the retailer? In return for stocking his shelves with sure-fire best sellers, he promptly slaps £10 on to the price. How many other types of retailer would be grateful for that type of markup?

The proof of the pudding is in the

number of mail order firms, often advertising games with up to 50 per cent knocked off the price. Until retailers realise that cutting their costs need not mean a reduction in profits, we'll all be stuck with artificially high prices. Of course we could always buy mail order. – **Alistair McFadyen, Kilmarnock, Ayrshire.**

● If, for example, the price of the game came down to £20, using your percentages each party would then receive:

Vat	15%	£03.00
Retailer	40%	£08.00
Distributor	5%	£01.00
Software House	40%	£08.00

Instead of the software house making 50 pence profit for each copy sold, they would be losing £1.50. One way around this is to reduce the development and marketing costs, which might mean games of poorer quality.

It's true that retailers make a large profit on a full price game and the reduction in price could be borne in part by the retailer taking a slightly smaller percentage.

The reason that mail order companies can sell the games at lower prices is that they have very few overheads, as some of these firms operate from private houses.

Those elusive board games

PERHAPS you can help me – I am trying to find the games Monopoly and Cluedo for the Atari ST. Many mail order companies seem uncertain as to whether they have been released or not. – **L.D. Roebuck, Urmston, Manchester.**

● We can remember both of these games appearing for 8 bit micros, but have never seen a commercial version of either for 16 bit machines. Several versions of Monopoly have appeared in the public domain, but Cluedo remains a mystery.

Monopoly can be obtained from the

South West Software Library, PO Box 562, Wimbourne, Dorset BH21 2YD. If anyone knows where Cluedo can be found, drop us a line and we'll tell the rest of the world.

Hooked on Seuck

IN the February 1990 issue of Atari ST User you reviewed the Shoot-'Em-Up Construction Kit and also mentioned SEUCK, which I imagine is similar to the construction kit. These are my favourite type of games, so I would love to get one of these kits.

Could you please tell me something about both these games creators and what can be achieved with them, their pros and cons, and how background screens, bonus stages and sound effects are created? – **Jonathan Evans, Wolverhampton, West Midlands.**

● Take another look at the initial letters of the Shoot-'Em-Up Construction Kit – they spell SEUCK. Both pieces of software are in fact the same product, it's just easier to say Seuck. This abbreviation also gives magazine editors the chance of using a witty headlines such as "Seuck it and See" or "There's a Seucker born every minute".

As its name suggests, the main use of Seuck is to produce games which involve nothing more than blasting your way through wave upon wave of baddies. All the graphics, including sprites, explosions, missiles and background scenery, are built from blocks which you'll have to draw yourself.

Inserting bonus screens between levels can easily be achieved, and the process to do this is nicely explained in the manual. Seuck contains a sophisticated sound editor, allowing whizzes, bangs and background tunes to be created. The only thing missing is the ability to import sampled sound effects.

After using the package for some time, I can only say that it is quite difficult to get into until you realise how all the different sections interlink with each other and from then on it's plain sailing.

If you have no programming knowledge whatsoever, Seuck could just be the kit for you.

On the other hand, if you'd like to produce platform, ladders and maze games, I suggest you take a good look at STOS, which can easily incorporate sampled sounds and digitised pictures, allowing you to produce any type of game you want.

ATARI STAR USER GAME

Virus victims fight back

WHO are the mysterious Teknosis Group (February Mailbag)? Are they perhaps virus writers themselves, trying to justify their actions? I ask you, who is in the wrong, the person who accidentally leaves his discs un-write

Each month we select a letter of the month and the sender receives the program which our reviewers have rated Atari ST User Star game. This month Wayne Brown will receive *Chaos Strikes Back*, which is reviewed on Page 20. Letters on every subject are welcome. Send them to the Editor, Atari ST User, Europa House, Adlington Park, Adlington, Macclesfield SK10 4NP.

protected, or the person who deliberately causes people to suffer by introducing a virus into their system.

Is a house burglar to be admired for his cunning craft of stealing, and the blame placed on the poor victim for not closing a window? Of course not! We should not have to write protect our discs because of the possibility of an infection, just as we should be able to leave a window open with-

out fear of being robbed.

The writing of computer viruses, no matter how "elegant" as Teknosis would say, is an irresponsible and sickening act.

I can only assume they were dropped on their heads at birth. If they get robbed, perhaps they will write in saying how clever the burglar was? — **Wayne Brown, Maidstone, Kent.**

STE that's bogged down by bugs

MY brother bought me an Atari 520STE for Christmas, even though he ordered a standard STFM and didn't know of the STE's existence. I was over the moon at such a fantastic gift, but when I tried some of the latest games on it, they wouldn't work.

Each worked perfectly on my brother's 520STFM, so I went to the shop which sold my brother the STE. The games wouldn't even work on the shop models, so I demanded that he exchange the STE for the normal ST, which he did after a week of arguing.

According to the shop owner, 12 games have been found which fail to work on the STE machines. Why don't software companies put labels on their products warning the public the game will not run on the new machines. — **Mr. Brown, Walton-on-Thames, Surrey.**

★ ★ ★

According to Eavesham Micros, there is an incompatibility problem between the new range of STE machines and the older ST's. Is this true? If so, to what extent is the machine incompatible and will we ever see STE dedicated software? — **John Hammond, Sutton Coldfield, West Midlands.**

● It would seem the new STE isn't as compatible as Atari first announced. This is because of subtle alterations in the hardware and operating system, which means that certain functions no longer work exactly as they used to.

If you're in doubt about software running on the STEs, check it out in the shop first. If they don't have any STEs to try it on, get an agreement that the game can be returned and your money refunded if it refuses to work.

You cannot blame software houses for games which are quite old, probably released long before the STE. We

do, however, agree that these companies should now include labels on their packaging to give the public the facts.

We're glad to say that several companies do now have labels which state their software will run on a STE — but we haven't seen any indicating that it won't.

As for STE dedicated games, these will probably not appear for quite some time because of the large number of standard ST owners. However, some companies do include extra data on side two of discs, which is only loaded into the STE machines, and so possibly giving better graphics and sound. One such game is the excellent *Future Wars* from Delphine Software.

Several readers have written in with lists of games that don't run on the new STE, but we don't propose to print them as software houses are re-writing old games and releasing new versions thus quickly dating any list.

ST User and the sexy communists

YOU are soon to be overloaded with letters from readers who wrote to you in earlier issues concerning sexism and the pushing of communist ideals. They are going to flood your editorial office, just because of one program on the December 1989 Cover Disc called *IMGprint*.

I don't know whether you produce the discs yourselves or put it out to contract with some other company, but please control its contents before sticking them on the front cover. Your views concerning sexism and communism are a bit vague, as you never commit yourselves one way or the other, but use phrases such as "What do our readers think?" or "This is the end of discussion on this topic".

Combined with the *IMGprint* program were three picture files, the first giving a detailed image of a camera. Nothing

wrong there you may think, but horror of horrors, the text reads "PRAKTICA MTL 5 B", an East German model! My curiosity was aroused, what did the other pictures contain. After de-archiving them I found the two filenames, *FACE1* and *GIRL1*. Giving you the benefit of the doubt I first loaded *FACE1*.

Nothing special here, except the look was a little too sultry to be innocent, but this could have been my filthy little mind working overtime. So far we have one communist camera and a dodgy face, what was to come next? Of course, a lady wearing only a pair of bikini briefs.

No, this could not be true, not in Atari ST User, the magazine with all the emancipated readers who are against anything which even resembles exploitation of the female body. I blinked my eyes, but the picture was still there.

Why have you done this? If you're neutral in both topics, you would not have let these pictures get on the disc. If you're in favour, you might have said so in your comments. I can see just three possible reasons for this unfortunate event.

☐ Atari ST User doesn't produce the discs, but allows some other company to do it.

☐ This was all done to provoke a reaction and so produce some lively comments in the letter pages.

☐ It was an early Christmas present for double-sided drive owners, as the files are on side two of the disc.

Please don't consider me a communist, republican, sexist, womens lib supporter, but I do think you should try and make the magazine as consistent as possible. — **Edward W Kroeze, Reigerweg 16, The Netherlands.**

● Reason number two was the correct one and any other comments on this topic are most welcome. However, having said that, the camera just happens to be one of the best currently available for the price, and the scanned image was better than any of the oth-

How to check a micro mate

COMPUTER programs are brilliant at playing chess and world championships are often held to decide which program is better than the rest. This frustrates me, as I am unable to beat any computer chess program.

What I want to know is what happens when a program plays itself. Is the outcome always a draw, or does the computer which made the first move always win? If so, could you tell me this winning first move, and hopefully my computer will resign there and then. — P.D.Welsby, Edinburgh.

● When two computer programs of similar ability, or even the same program playing on a different computer are set against each other, the results are never predictable. Sometimes one

computer wins, sometimes the other, and occasionally, but by no means often, the result is a draw.

Chess programs can choose from a variety of opening moves at the start of a game. They usually have a book of opening moves and strategies to play, and some programs will display them in a special tutor mode.

The very nature of the game means computers will have to make decisions based on the current state of the board. Unlike humans, the use of "sacrificial" pieces is difficult to explain to a computer.

Even more difficult is the learning process most humans go through, remembering games from years ago and the result of playing a certain set of moves.

Computer strategy games such as chess, backgammon and draughts will never better their human counterparts. Well, not in the foreseeable future anyway.

► ers we tried. With the Berlin Wall coming tumbling down recently we thought it quite appropriate in the spirit of warming East-West relations.

The scantily clad young lady shouldn't cause too much embarrassment – all the relevant bits were discreetly covered up, and besides, nearly all the tabloid papers have far more revealing pictures on page three. Come to think of it, The Netherlands seem to have a reputation for far worse, too.

Each month we produce the disc ourselves and then deliver it the duplicators. You can be sure that everything on the disc has passed our stringent tests of quality and good taste. We saw nothing wrong with the pictures, but unfortunately we cannot please all the readers at the same time.

Wot no cover disc?

MAY I point out that Atari ST User is an excellent magazine and for me the free disc gave it the edge over the competition. However, although I cannot afford the price of a subscription, I will still buy the magazine for a few months in the hope you'll reverse your decision and bring it back. — B.Greengrow, Lydney, Gloschester.

★ ★ ★

I THINK it is a brilliant idea to give readers the choice of having the cover disc or not. I enjoy using the disc, the contents of which have become better and better over the months.

Readers with single sided drives don't actually miss out on much except

a few demonstrations, organisers and other programs which are often available in the public domain.

Why not make Arcade Corner better known, which may persuade readers to send in more hints and tips rather than just guides on how to complete a game? To start you off here's a cheat for Falcon. When flying all ranks but 1st Lieutenant, pressing Ctrl-X gives eight AIM-91's and 500 bullets. — Mark McGowan, Guildford, Surrey.

● It's amazing the controversy caused by our monthly disc. When it was on the front cover we many received letters asking for it to be taken off. Now it's gone – available to subscribers only – we're getting many requests to bring it back.

As for Arcade Corner, its contents rests with you readers. If you have hints and cheats for a game, send them in.

Penniless trader lost in space

I HAVE been playing Elite on my Atari ST and just cannot earn enough money to buy the docking computer. Can anyone help me by sending a saved game file with just the standard ship and aforementioned computer? — Tpr Willis, B Sqn Irtr, BFPO 102.

● We can do better than that. When asked for the password type in SARA. You'll be prompted for the password again, and this time enter the correct one from the manual and start playing.

To active the cheat mode press the * key on the keypad and the screen will

show a series of data bytes. You'll be asked which byte to change and to what value, so enter the correct byte from the table below and then the new value.

To get back to the game press the Escape key, and save your newly modified commander.

Byte	Value	Gives
1F	01	Fuel scoop
20	01	Escape capsule
23	01	Energy bomb
24	01	Energy unit
26	01	Docking computer
28	01	Galactic hyperdrive
34	03	Large cargo hold

A Gem of an AUTO boot

In the February issue of Atari ST User you stated (correctly), that Gem programs cannot be executed from within an AUTO folder. However, I'm sure that Mr. Burton doesn't wish to re-write all his routines, so may I recommend the public domain program Headstart.

To use it, simply place it in an AUTO folder and run the Data File Creator. This asks for the name of the Gem program to be booted, which is then saved to disc in a file.

Whenever you boot the system with this disc Headstart will boot first, initialise Gem and search the datafile for the program name to run.

If more than one name is held in the data file, a menu will appear asking which one to run. — Carl Leach, Rugby, Warwickshire.

Students call for A level software

I am writing to complain about the lack of programs available for university and polytechnic candidates. I'm a student at Barry Comprehensive Upper Sixth Year, studying A level in chemistry, physics and biology and often use my Atari ST for word processing and playing games.

However, I would gladly part with my money for decent software directed at these three topics. Not only would they help with my studies, but they'd also relieve the boredom of revising.

I recently came across an A level mathematics program, so why don't programmers take a wider view and include scientific based software, as they do with the standard GCSE subjects? — J.M.Pycroft, Barry, South Glamorgan.

● Has anyone found suitable software for A-level candidates, commercial or public domain? Let us know and with a bit of luck we should be able to give a full breakdown of what's available and where from.

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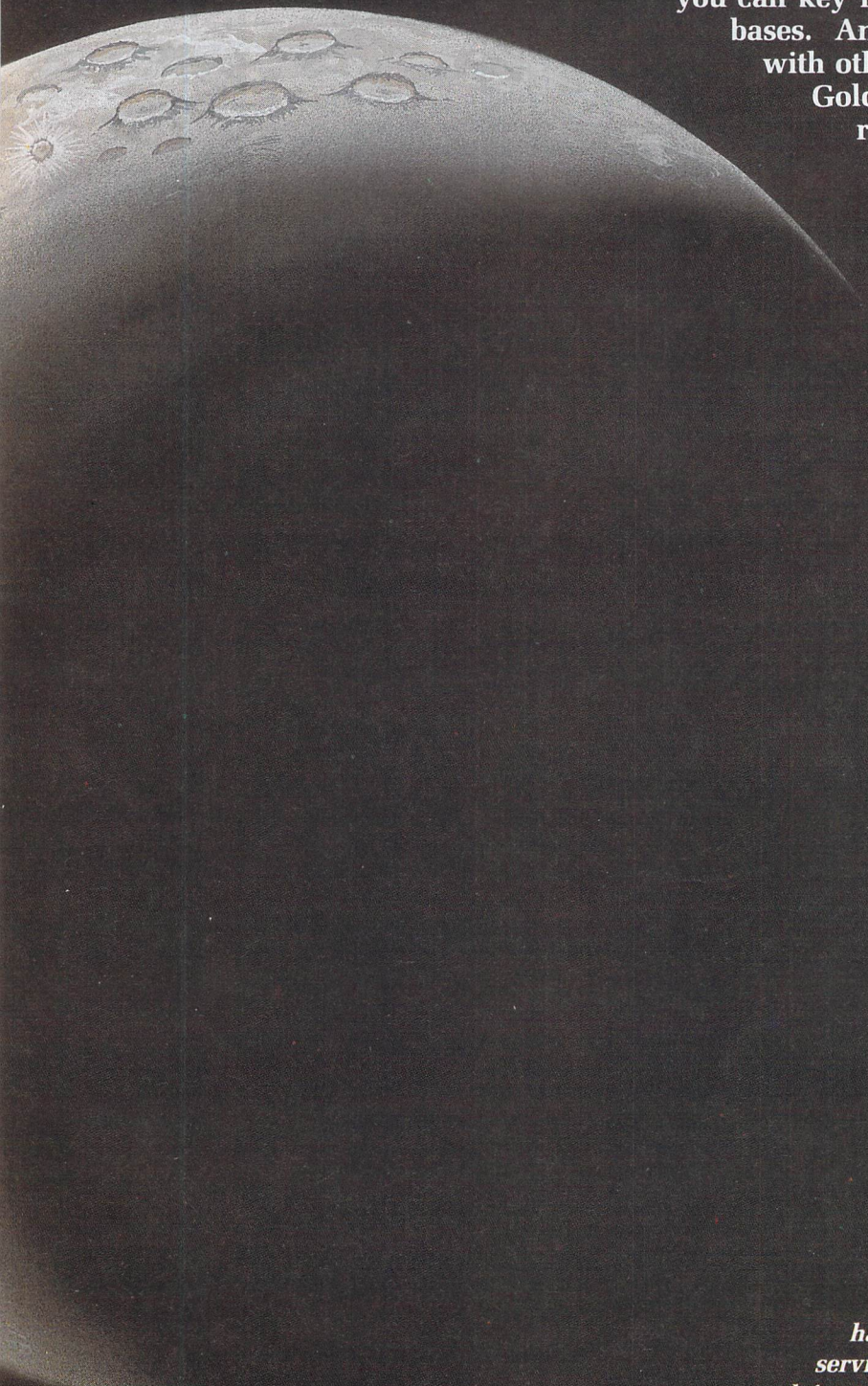
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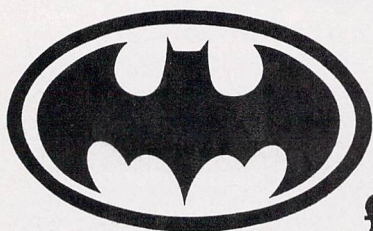
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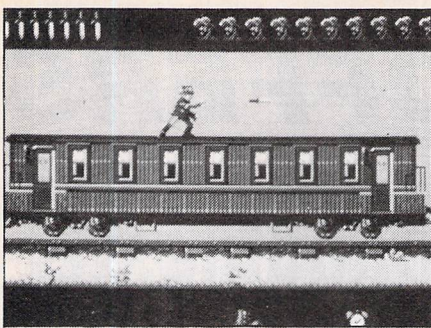
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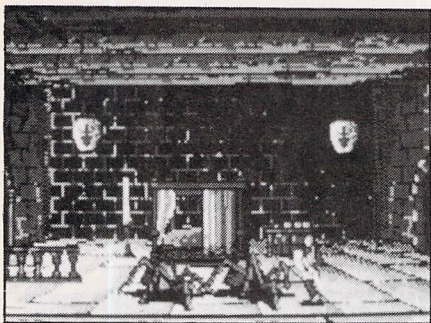
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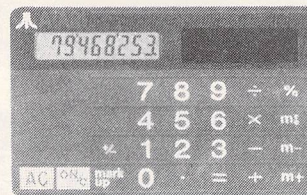
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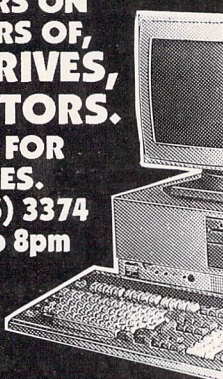
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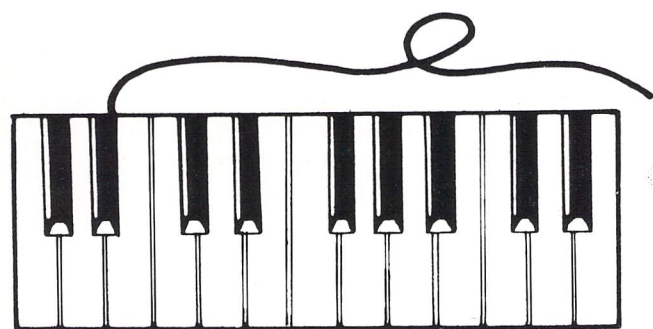
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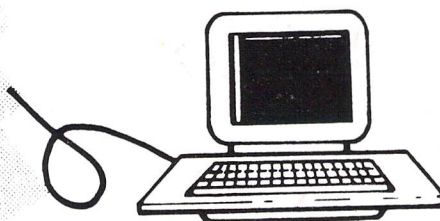
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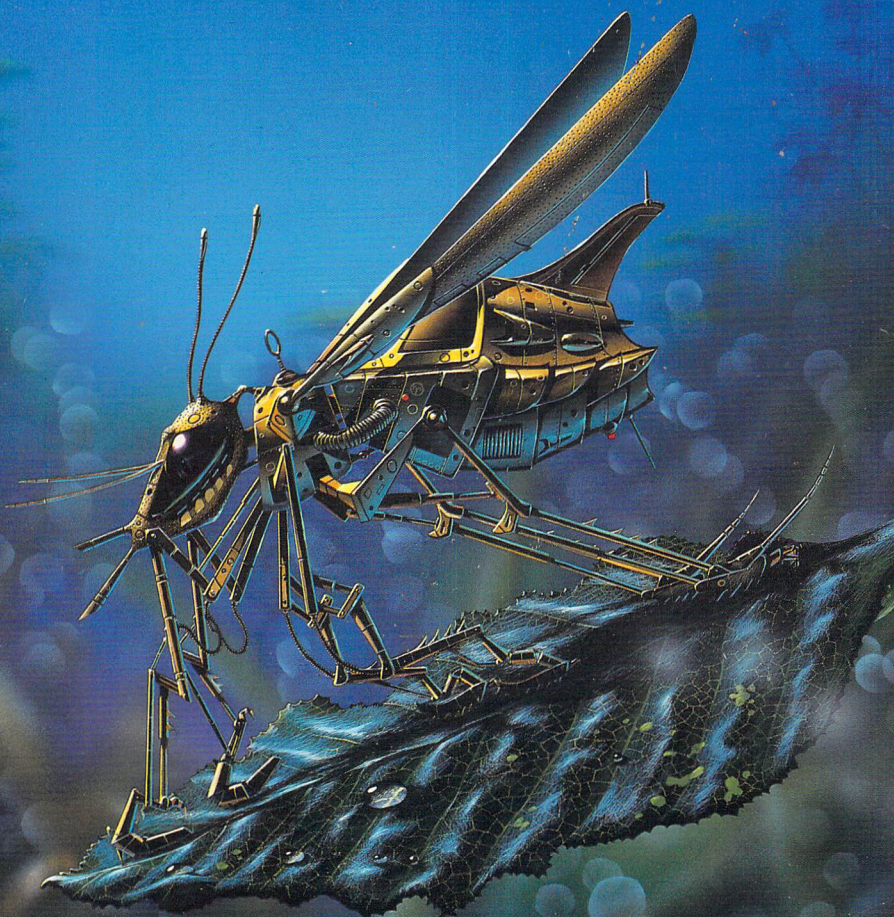
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